TECHNICAL MANUAL

OPERATOR, ORGANIZATIONAL,

DIRECT SUPPORT, AND GENERAL SUPPORT

MAINTENANCE MANUAL

(INCLUDING REPAIR PARTS AND

SPECIAL TOOLS LIST)

FOR

TRUCK, FIREFIGHTING, MINI-PUMPER

18,000 GVW

NSN 4210-01-026-2567

Approved for public release; distribution is unlimited

HEADQUARTERS, DEPARTMENT OF THE ARMY

17 JUNE 1987

VOLUME 2

Section III

International Shop Manual

Section IV

International Parts Manual

Section V

Vendor Technical Manuals

Section VI

Transmission Manual

	[
SECTION III MT-140	GROUP INDEX
REV. NO. 04	AND
	FRAME BUMPER
DADTE CATALOE	
PARTS CATALOG	FRONT AXLE
S - SERIES MODELS	CHASSIS SPRINGS
1624, 1654, 1724, 1754	BRAKES
1723, 1823, 1853, 1853FC	
1824, 1854, 1924, 1954	STEERING GEAR
1 824-4X4, 1854-4X4	
F1924, F1924-6X6	PROPELLER SHAFTS
F1954, F1954-6X6	EXHAUST SYSTEM
1925, 1955	
2125, F2125, 2155	ELECTRICAL
	SYSTEM
	FRONT
	SHEET METAL
	SPEEDOMETER
	& MISCELLANEOUS
INTERNATIONAL	СLUTCH
TRUCKS	ENGINES
	TRANSMISSIONS
	REAR AXLE
HOW THIS CATALOG CAN SERVE YOU International Vehicles are custom built to meet	FUEL TANKS
the specific needs of individual customers. That's why there are so many customer options in trans- missions, rear axles, propeller shafts, and other components. To service a truck properly, you must have the parts that match its specifications. You can do that only if you find the right part numbers.	CAB AND BODIES
This catalog guides you to the right part numbers quickly.	WHEELS
	NUMERICAL INDEX
JAN 1982	

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REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistake or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to: Commander, U.S. Army Troop Support Command, ATTN: AMSTR-MCTS, 4300 Goodfellow Boulevard, St. Louis, MO 63120-1798. A reply will be furnished directly to you.

REPORTING EQUIPMENT IMPROVEMENTS (EIR's)

If the Fire Fighting Truck needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you do not like about your equipment. Let us know why you do not like the design or performance. Put it on an SF 368 (Quality Deficiency Report). Mail it to us at: U.S. Army Troop Support Command, ATTN: AMSTR-QX, 4300 Goodfellow Blvd., St. Louis, MO 63120-1798. We will send you a reply.

MT-140

GROUP 01-FRAME AND BUMPER

INSERT HEADING

FRAME ASSEMLY INCLUES SPRING BRACKETS BUT DOES NOT INCLUDE BUMPER FRAME ASSEMBLY MUST BE ORDERED BY DESCRIPTION FURNISHING MODEL AND CHASSIS SERIAL NMBER01-008A09JECK PLATE CODE 01893101-008A09FRAME ASSEMBLY EXCEPT F1924, F1954, F2125 MODELS01-004A07 10-005FRAME EXTENSION-CODE 0163601-002A05FRONT BUMPER STANDARD CODE 0163601-007A09 A10CODE 01619 CODE 0163601-007A09 01-002FRONT TOW HOOK CODE 0157001-007A09 01-002FRAME TOWING EYE CODE 0158001-003A05
INCLUDE BUMPER FRAME ASSEMBLY MUST BE ORDERED BY DESCRIPTION FURNISHING MODEL AND CHASSIS SERIAL NMBER01-008A09DECK PLATE CODE 01893101-008A09FRAME ASSEMBLY EXCEPT F1924, F1954, F2125 MODELS01-004A07FOR F1924, F1954, F2125 MODELS01-005A08FRAME EXTENSION-CODE 0163601-002A05FRONT BUMPER STANDARD EXCEPT 2125, 2155, F2125 MODELS01-007A09CODE 01619 CODE 0163601-007A09CODE 0163601-007A09FRONT TOW HOOK CODE 0157001-002A05
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FRAME ASSEMBLY EXCEPT F1924, F1954, F2125 MODELS FOR F1924, F1954, F2125 MODELS 01-004 01-005 A07 A08 FRAME EXTENSION-CODE 01636 01-002 A05 FRONT BUMPER STANDARD EXCEPT 2125, 2155, F2125 MODELS 01-007 01-008 A09 A10 CODE 01619 CODE 01636 01-007 01-002 A09 A05 FRONT TOW HOOK CODE 01570 01-002 A05
EXCEPT F1924, F1954, F2125 MODELS 01-004 A07 FOR F1924, F1954, F2125 MODELS 01-005 A08 FRAME EXTENSION-CODE 01636 01-002 A05 FRONT BUMPER STANDARD EXCEPT 2125, 2155, F2125 MODELS 01-007 A09 FOR 2125, 2155, F2125 MODELS 01-007 A09 CODE 01619 CODE 01636 01-007 A09 FRONT TOW HOOK CODE 01570 01-002 A05
FRONT BUMPER STANDARD EXCEPT 2125, 2155, F2125 MODELS 01-007 A09 FOR 2125, 2155, F2125 MODELS 01-007 A09 CODE 01619 CODE 01636 01-007 A09 FRONT TOW HOOK CODE 01570 01-002 A05
STANDARD EXCEPT 2125, 2155, F2125 MODELS 01-007 A09 FOR 2125, 2155, F2125 MODELS 01-008 A10 CODE 01619 CODE 01636 01-007 A09 FRONT TOW HOOK CODE 01570 01-002 A05
EXCEPT 2125, 2155, F2125 MODELS 01-007 A09 FOR 2125, 2155, F2125 MODELS 01-008 A10 CODE 01619 01-007 A09 CODE 01636 01-002 A05 FRONT TOW HOOK CODE 01570 01-002 A05
CODE 01636 01-002 A05 FRONT TOW HOOK CODE 01570 01-002 A05
REAR TOWING EYE CODE 01580 01-003 A05
TIRE CARRIER UNDERSLUNG 01-001 A04
TOW PIN CROSMEMBER 01-002 A05

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MT-140 GROUP 01-FRAME AND BUMPER FIG NO FICHE LOC			Þ i d	
		FIG NO	FICHE LOC	
	HOLD FOR FUTURE USE			
	01-INDEX REV.			

MT140 GROUP 01-FRAME AND BUMPER



TM 5-4210-230-14&P-2 MT140 GROUP 01-FRAME AND BUMPER

REF NO.	PART NUMBER	DESCRIPTION

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REV. 4 PAGE NO. 3

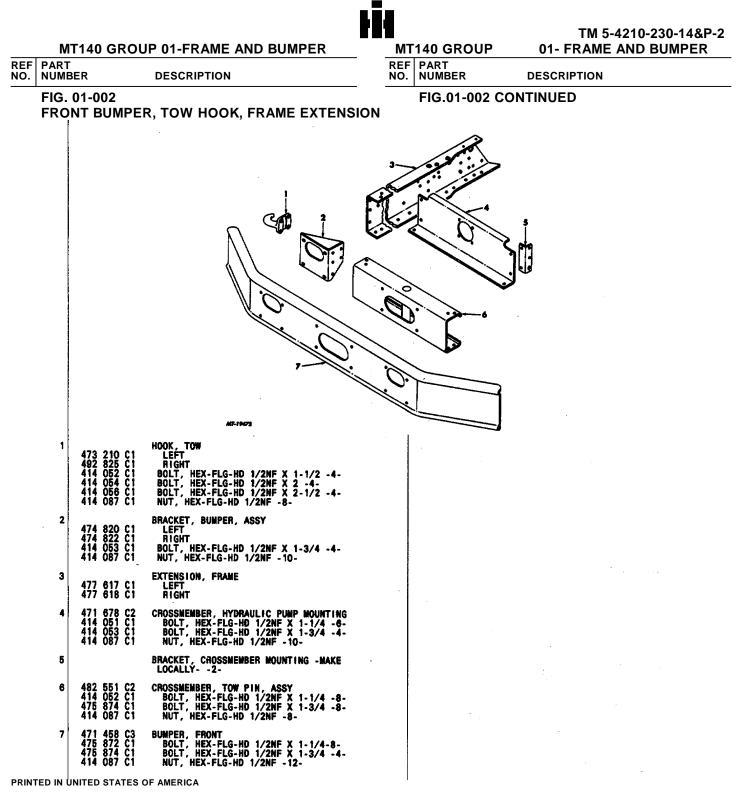
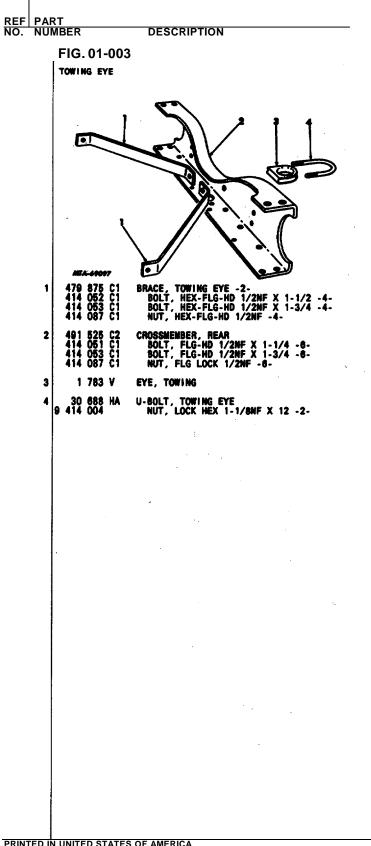


FIG. 01-002 PAGE NO.

MT140 GROUP 01- FRAME AND BUMPER



TM 5-4210-230-14&P-2 MT140 GROUP -01 FRAME AND BUMPER

REF PART NO. NUMBER

DESCRIPTION

	Г		MT REF		
_		DESCRIPTION	NO.		
1	FIG.01-004 FRAME ASSEMBLY	(FRAME ASSEMBLY	4 CONTINUED
	به نې				
1	471 631 C1 494 193 C2 471 635 C2	CHANNEL, ENGINE FRONT MOUNTING RIGHT D150, 170, 190, V537, 3208 ENGINES 9.0 LITER ENGINE V345, 392, MV404, 448 ENGINES	6	493 738 C4 414 052 C1 414 087 C1	M2-19844 CROSSMEMBER, FRAME -WILL WORK FOR 493528C4AR- BOLT, HEX-FLG-HD 1/2 X 1-1/2 -AR- NUT, HEX-LOCK 1/2NF -AR-
	471 641 C1 414 052 C1 414 053 C1 414 087 C1	07466, DT14668 ENGINES BOLT, HEX-FLG-HD 1/2NF X 1-1/2 -10- BOLT, HEX-FLG-HD 1/2NF X 1-3/4 -10- NUT, HEX-LOCK 1/2NF -10-		104 131 12 017 R1	RIVET, RD-HD 1/2 X 1-3/8 -W/O REINF- -AR- RIVET, RD-HD 1/2 X 1-5/8 -W/REINF-AR-
2		SIDEMEMBER -ORDER BY DESCRIPTION-	7	471 630 C1 494 192 C2	CHANNEL, ENGINE WOUNTING LEFT D150, 170, 190, V537, 3208 ENGINES 9.0 LITER ENGINE
3	468 836 C1 468 837 C1	GUSSET, CROSSMEMBER -2- EXCEPT 2125, 2155 NODELS LEFT RIGHT		471 634 C2 471 640 C1 414 052 C1 414 053 C1	V345, 392, MV404, 446 ENGINES D7466, D714668 ENGINES BOLT, HEX-FLG-HD 1/2NF X 1-1/2 -8- BOLT, HEX-FLG-HD 1/2NF X 1-3/4 -8-
	473 322 C2 104 131	FOR 2125, 2155 MODELS RIVET, RD-HD 1/2 X 1-3/8 -12-	8	414 087 C1 492 077 C2	NUT, HEX-LOCK 1/2NF -8- CROSSMEMBER, ENGINE FRONT -WILL WORK
4		CROSSMEMBER, CAB REAR EXC FBC CODE 16010 EXC 2125, 2155 MODELS		414 052 C1 414 087 C1	FOR 473915C1- BOLT, HEX-FLG-HD 1/2NF X 1-1/2 -8- NUT, HEX. LOCK 1/2NF -8-
	484 261 C2 484 571 C1 473 323 C2	W/O DT466 ENGINE W/DT466 ENGINE		580 189 C1	CROSSMEMBER, ENGINE REAR Upper Frame tie W/9.ol Engine and 13312, 13672,
	4/3 323 C2 484 261 C2 414 052 C1	FOR 2125, 2155 WODELS FOR FBC CODE 16010 BOLT, HEX-FLG-HD 1/2NF X 1-1/2 -W/0		580 185 CT	13674 TRANSMISSIONS W/B.OL ENGINE AND 13326, 13464
	414 053 C1	REINF12- Bolt, Hex-Flg-HD 1/2NF X 1-3/4 -W/		579 107 C1	TRANSWISSIONS, W/DT466 ENGINE AND 13464 TRANSWISSION W/DT466 ENGINE AND 13312, 13672,
	414 087 C1 473 323 C2	REINF12- Nut, Hex-Lock 1/2NF -12- Crossmember, CAB Rear Rear -travelcrew			13674 TRANSMISSIONS LOWER FRAME TIE
	501 759 C1	ONLY- Bracket, center Brg -exc V345, 392 Eng-		505 245 C3 505 847 C4 414 051 C1	W/9.OL ENGINE W/DT486 ENGINE BOLT, HEX-FLG-HD 1/2NF X 1-1/4 -4-
	414 051 C1 414 087 C1	-TRAVELCREW ONLY- BOLT, HEX-FLG-HD 1/2NF X 1-1/4 -2- NUT, HEX-FLG LOCK 1/2NF -2-		414 087 C1	NUT, HEX-FLG. LOCK 1/2NF 4-
	571 427 C2	CROSSMEMBER, REAR SPRING -WILL WORK FOR 473369C2, 491525C34-			
5					

FIG. 01-004 PAGE NO. 6 REV. 4

		UP 01-FRAME AND BUMPER		T140 GROU	JP 01-FRAME AND BUMPE
	MBER	DESCRIPTION	NO.		DESCRIPTION
1	FIG. 01-005				
	FRAME ASSEMBLY	r		FRAME ASSEMBL	T
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	· ·	Si -			
					M3-19945
1		CHANNEL, ENGINE FRONT MOUNTING RIGHT	8		GUSSET, UPPER
	471 631 C1 471 635 C2 471 641 C1	D190, V537, 3208 ENGINES MV404, 446 ENGINES DT466, DT1466B ENGINES		468 900 C1 468 901 C1 414 076 C1	LEFT Right Bolt, Hex-Flg-HD 5/8NF X 1-1/2 -14-
	414 052 C1	BOLT, HEX-FLG-HD 1/2NF X 1-1/2 -10- BOLT, HEX-FLG-HD 1/2NF X 1-3/4 -10-		414 077 C1 414 089 C1	BOLT, HEX-FLG-HD 5/8NF X 1-3/4 -14- NUT, HEX-LOCK 5/8NF -14-
	414 053 C1 414 087 C1	NUT, HEX-LOCK 1/2NF -10-	9	401 525 62	CROSSMEMBER, REAR EXC F1924, F1954 NODELS -WILL WORK
2	492 077 C2	CROSSMEMBER, ENGINE FRONT -WILL WORK For 473915C1- Bolt, Hex-Flg-HD 1/2NF X 1-1/2 -8-		491 525 C3	FOR F1924, F1954 MODELS -WILL WORK FOR F1924, F1954 MODELS W/O CODE 01580
	414 052 C1 414 087 C1	NUT, HEX-LOCK 1/2NF -8-		493 528 C3 491 525 C3	W/CODE 01580 -WILL WURK FUR
3		GUSSET, CROSSMEMBER -2- Except F2125 Model		12 014 R1	473369C1, 571427C2- RIVET, RD-HD 1/2 X 1-1/4 -4-
	468 836 C1 468 837 C1 473 322 C2 104 131	LEFT Right For F2125 Model	10		GUSSET, LOWER EXCEPT SUSPENSION CODES 14531.9201,
		RIVET, RD-HD 1/2 X 1-3/8 -12-		468 904 C2 468 905 C2	14532.9202, .9203 LEFT
	473 323 C2 414 052 C1 414 087 C1	CROSSMEMBER, CAB REAR Bolt, Hex-Flg-HD 1/2NF X 1-1/2 -8- NUT, HEX-LOCK 1/2NF -8-		405 905 C2	RIGHT FOR SUSPENSION CODES 14531.9201, 14532.9202, .9203
4	+14 U07 U1	SIDEMEMBER -ORDER BY DESCRIPTION-		468 902 C1 468 903 C1	LEFT RIGHT
	493 528 C3 414 052 C1	CROSSMEMBER INTERMEDIATE REAR -AR-		414 077 C1 414 089 C1	BOLT, HEX-FLG-HD 5/8NF X 1-3/4 -16- NUT, HEX-LOCK 5/8NF -16-
4 5 6		BOLT, HEX-FLG-HD 1/2 X 1-1/2 -AR- NUT, HEX-LOCK 1/2NF -AR- RIVET, RD-HD 1/2 X 1-3/8 -6-	11		SIDEMEMBER -ORDER BY DESCRIPTION-
5	414 087 C1		12	471 630 C1	CHANNEL, ENGINE FRONT MOUNTING LEFT D190, V537, 3208 Engines MV404, 446 Engines
5	414 087 C1 104 131		1	471 030 01	
5	414 087 C1 104 131	CROSSMEMBER, TORQUE ROD -2- RIVET, RD-HD 1/2 X 1-3/8 -28-		471 634 C2 471 640 C1 414 052 C1 414 087 C1	MV404, 446 ENGINES DT466, DT1466B ENGINES BOLT, HEX-FLG-HD 1/2NF X 1-1/2 -8-

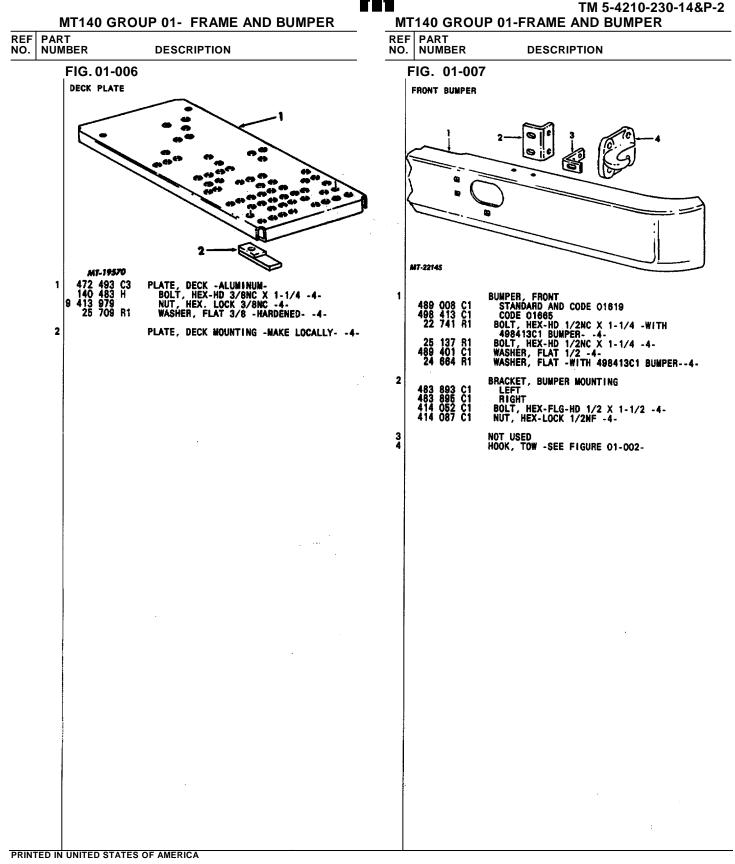


FIG. 01-006 REV. 4 PAGE NO. 8

MT140 GROUP 01-FRAME AND BUMPER



TM 5-4210-230-14&P-2 MT140 GROUP 01-FRAME AND BUMPER

141.1			
	PART NUMBER	DESCRIPTION	

MT140 GROU	JP 01-FRAME AND BUMPER	MT140 G
REF PART NO. NUMBER	DESCRIPTION	REF PART NO. NUMBE
FIG. 01-008		i
FRONT BUMPER		
MT-22145		
1 475 146 C1 498 412 C1 22 741 R1 25 137 R1 9 412 230 489 401 C1 24 664 R1	BUMPER, FRONT STANDARD CODE 01865 BOLT, HEX-HD 1/2NC X 1-1/4 -WITH 498412C1 BUMPER6- BOLT, HEX-HD 1/2NC X 1-1/4 -6- NUT, HEX. LOCK 1/2NC -2- WASHER, FLAT 1/2 -6- WASHER, FLAT 1/2 -6- WASHER, FLAT -WITH 498412C1 BUMPER6-	
2 483 882 C1 3 4	BRACKET, BUMPER MOUNTING -2- Not USED Hook, Tow -SEE FIGURE 01-002-	
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MT140 GROUP 01-FRAME AND BUMPER

REF PART NO. NUMBER DESCRIPTION

TM 5-4210-230-14&P-2 MT140 GROUP 01- FRAME AND BUMPER

GROUP 02-FRONT AXLE	1	
	FIG NO	FICHE LOC
IDENTIFICAION-SEE PAGE 3		
BY DESCRITION- SHOWING TRUCK MODEL AND AL NUMBER- FROM THE REGIONAL OFFICE. THE FICE WILL THEN ORDER FROM THE FORT WAYNE BUTION CENTER. THIS APPLIES ONLY TO ASSEMBLIES		
MBLY, TIE ROD	02-001 02-002	B04 B06
	02-003 02-004	B07 B06
	02-003 02-004	B07 B06
MBLY, TIE ROD	02-001 02-002	B04 B05
MBLY, TIE ROD	02-001 02-002	B04 B05
	02-005 02-005	B09 B10
,B;U POINT PINCH MECHANISM DRAW KEY	02-007 02-013 02-008	B11 B17 B12
	IDENTIFICAION-SEE PAGE 3 IDENTIFICAION-SEE PAGE 3 IBLY IS REQUIRED, ORDER COMPONENTS- ASSEMBLY, AXLE HOUSING -OR I - BEAM-, ETC. AXLE INCLUDING BRAKES IS NEEDED, IT CAN YD DESCRITION - SHOWING TRUCK MODEL AND AL NUMBER - FROM THE REGIONAL OFFICE. THE ICE WILL THEN ORDER FROM THE FORT WAYNE JUTION CENTER. THIS APPLIES ONLY TO ASSEMBLIES SED IN PRODUCTION. APCO 9000 LB. DRIVING- MBLY 5000LB. MBLY APCO 9000 LB. DRIVING MBLY, TIE ROD EEL LOCKING HUM-CODE 02915 APCO 7500 LB. DRIVING MBLY, TIE ROD EEL LOCKING HUB-CODE 02915 APCO 7500 LB. DRIVING MBLY, TIE ROD EEL LOCKING HUB-CODE 02915 APCO 7500 LB. DRIVING MBLY, TIE ROD EEL LOCKING HUB-CODE 02915 7500 LB. MBLY 9000 LB. WIDE TREAD BU Y 9000 LB. WIDE TREAD BU Y	FIG NO IDENTIFICAION-SEE PAGE 3 IBLY IS REQUIRED, ORDER COMPONENTS- ASSEMBLY, AXLE HOUSING -OR I - BEAM-, ETC. EAXLE INCLUDING BRAKES IS NEEDED, IT CAN BY DESCRITION- SHOWING TRUCK MODEL AND AL NUMBER- FROM THE REGIONAL OFFICE. THE ICCE WILL THEN ORDER FROM THE FORT WAYNE BUTION CENTER. THIS APPLIES ONLY TO ASSEMBLIES SED IN PRODUCTION. APCO 9000 LB. DRIVING- MBLY, TIE ROD EEL LOCKING HUB-CODE 02915- 02-001 02-002 15000 LB. MBLY 02-003 02-004 5000LB. MBLY 02-003 02-004 5000LB. MBLY 02-003 02-004 5000LB. MBLY 02-001 02-002 5000LB. DRIVING MBLY, TIE ROD EEL LOCKING HUB- CODE 02915 02-001 02-002 5000 LB. DRIVING MBLY 02-001 02-002 5000 LB. MIDE TREAD BU ONT PINCH MECHANISM DRAW KEY 02-007 02-007

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02-INDEX REV. NO. 4 PAGE 1

MT-140 GROUP 02-FRONT AXLE	FIG NO	FICHE LOC	ÞĪł
CODE 02118 -IH 8000 LB. WIDE TREAD-			
AXLE ASSEMBLY			
SINGLE POINT PINCH MECHANISM ODRAW KEY	02-009	B13	
DOUBLE WEDGE DRAW KEY	02-014	B18	
	02-012	B16	
CODE 02127 -IH 10800 LB. WIDE TREAD-			
AXLE ASSEMBLY SINGLE POINT PINCH MECHANISM DRAW KEY	02-00	D13	
DOUBLE WEDGE DRAW KEY	02-00	B18	
TIE ROD	02-014	D16	
CODE 02139 -IN 12000 LB. WIDE TREAD-			
AXLE ASS,ELY			
SINGLE POINT PINCH MECHANISM DRAW KEY	02-009	B13	
OUBLE WEDGE DRAW KEY	02-014	B18	
TIE ROD	02-012	B16	
CODE 02309 -IH 9000 LB. WIDE TREAD-			
AXLE ASSEMBLY			
SINGLE POINT PINCH MECHANISM DRAW KEY	02-010	B14	
DOUBLE WEDGE DRAW KEY	02-015	B19	
	02-008	B12	
CODE 02329 -IH 10500 LB. WIDE TREAD AXLE ASSEMBLY			
SINGLE POINT PINCH MECHANISM DRAW KEY	02-011	B15	
DOUBLE WEDGE DRAW KEY	02-016	B13 B20	
TIE ROD	02-012	B16	
CODE 02339 IH 12000 LB. WIDE TREAD-	02 012		
AXLE ASSEMBLY			
SINGLE POINT PINCH MECHANISM DRAW KEY	02-011	B15	
DOUBLE WEDGE DRAW KEY	02-015	B20	
TIE ROD	02-012	B16	
CODE 02342 -IH 14000 LB. W/DISC HEELS-			
AXLE ASSEMBLY -DOUBLE WEDGE DRAW KEY-	02-015	B20	
TIE ROD	02-012	B16	

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02-INDEX REV. NO. 4 PAGE 2

MT-140 GROUP								
	FIG NO	FICHE LOC						
RONT AXLE MODEL, CODE AND IDENTIFICATION								
FRONT AXLE MODEL, CODE AND IDENTIFICATION FA64 02084 NAPCO 9000 LB. DRIVING FA73 02073 IH 6000 LB FA73 02073 NAPCO 7500 LB. DRIVING FA81 02081 NAPCO 7500 LB. DRIVING FA109 02101 IH 7500 LB FA11 0211 IH 7500 LB FA127 02127 IH 10000 LB. WIDE TREAD FA139 02139 IH 10000 LB. WIDE TREAD FA329 02339 IH 12000 LB. WIDE TREAD FA329 02329 IH 10800 LB. WIDE TREAD FA329 02339 IH 12000 LB. WIDE TREAD FA329 02329 IH 14000 LB. FA342 02342 IH 14000 LB.								

MT140 GROUP 02-FRONT AXLE

REF PART NO. NUMBER

DESCRIPTION

FIG. 02-001

FRONT AXLE ASM-CODES 02064;02078,02081-

TM 5-4210-230-14&P-2 MT140 GROUP 02-FRONT AXLE

REF PART NO. NUMBER DESCRIPTION

FIG. 02-001 CONTINUED FRONT AXLE ASM-CODES 02084,02078,02081-

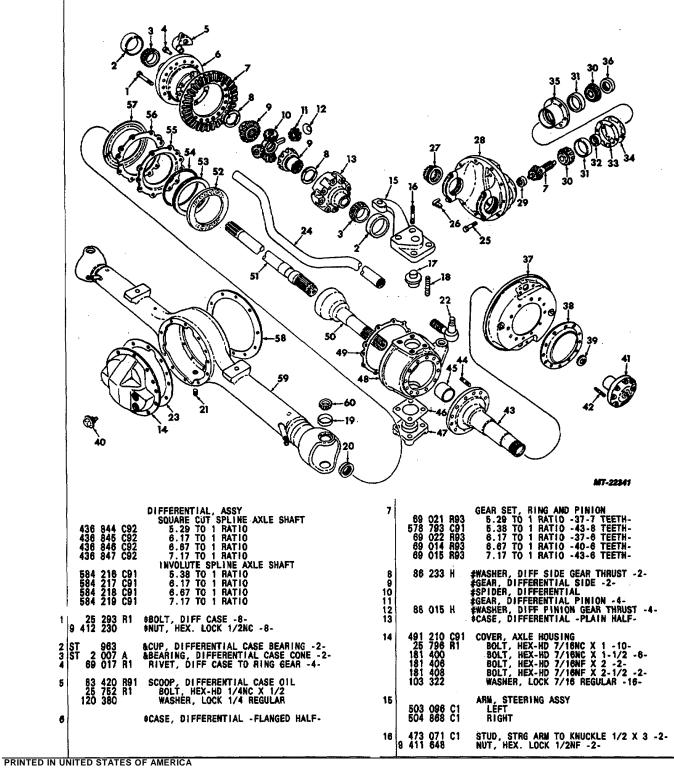


FIG.

REV. 4

02-001

MT140 GROUP 02- FRONT AXLE

			0.0		OF 02- FRONT AALE
REF NO.	PAR NUN	T IBER			DESCRIPTION
			-		CONTINUED M-CODES 02064,02078,02081-
	17		084		PIN, TRUNNION
	18	973 9 411	390 648	R2	STUD, TRUNNION TO KNUCKLE -14- NUT, HEX. LOCK 1/2NF -14-
	19 20 21	473	245 084 057	C1	CUP, FRONT AXLE BEARING -4- SEAL, OIL AXLE SHAFT -2- PLUG, MAGNETIC DRAIN 1/2NC
	22	503 26 103	100 577 387		SOCKET, ASSY -2- NUT, HEX-HD 1-1/8NC -2- PIN, COTTER 1/8 X 1-1/2 -2-
	23	549	918	C2	GASKET, ELIMINATOR -24CC TUBE-
*	24	574 574	877 878 879 454	C1	ROD, TIE ENG, TIE ROD NUT, TIE ROD END FITTING, LUBRICATION
	25	69	018	R1	BOLT, BEARING CAP -4-
	26	116 103	163 407	H	LOCK, DIFF BEARING ADJUSTER -2- PIN, COTTER 3/16 X 1 -2-
	27 28 29 30 31	54 69 308 917	528 016 023 276 217	R93	ADJUSTER, DIFFERENTIAL BEARING -2- CARRIER, W/CAPS DIFFERENTIAL &BEARING, PINION REAR &BEARING, PINION FRONT CONE -2- &BEARING, PINION FRONT CUP -2-
	32	49	415 416 417 418	HA HA	SPACER, PINION BEARING -AR- .525 THICK .528 THICK .531 THICK .534 THICK
	33	683 52 52	284 748 749	R 1 HA HA	SHIM, PINION BEARING CAGE .005 THICK .010 THICK .030 THICK
	34	52 52	773 774	HA H	SHIM, PINION BEARING CAGE .003 THICK -UPPER HALF- .003 THICK -LOWER HALF-
	35		711 255		CAGE, PINION BEARING BOLT, HEX-HD 9/16NC X 1-1/2, W/PATCH -6-
		138	498		WASHER, LOCK 9/16 REGULAR -6-
	36	117	755 557 804 388	C1 H H	&SEAL, OIL PINION WASHER, COMPANION FLANGE NUT NUT, COMPANION FLANGE NUT PIN, COTTER 1/8 X 1-3/4
	37 38	498 491	097 212	Ç1	PLATE, BACKING -SEE GROUP 4- GROMMET, BACKING PLATE DEFLECTOR, 01L -2-
	39 40	472 586	987 045	C1	WASHER, RETAINER -2- Plug, Filler -2-
	41		869 305		FLANGE, DRIVING ASSY -2- BOLT, HEX-SOC-HD 7/16NF X 1 -2-
	42		072 632		STUD, DRIVE FLANGE 7/18 -16- Nut, Hex. Lock 7/16NF -16-
	43	503	086	C91	SPINDLE, W/BUSHING -2-
	44	19	077 632	Ř1	STUD, SPINDLE TO KNUCKLE -24- NUT, LOCK SPINDLE STUD 7/16NF -24-
	45 46	504 473	870 001	C1 C1	BUSHING, SPINDLE -2- Shim, .005 Thick -AR-
	47	503	087 095	Ç91	CAP, KING PIN LOWER LEFT AND LOWER RIGHT UPPER RIGHT AIR BRAKES Hydraulic Brakes
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TM 5-4210-230-14&P-2

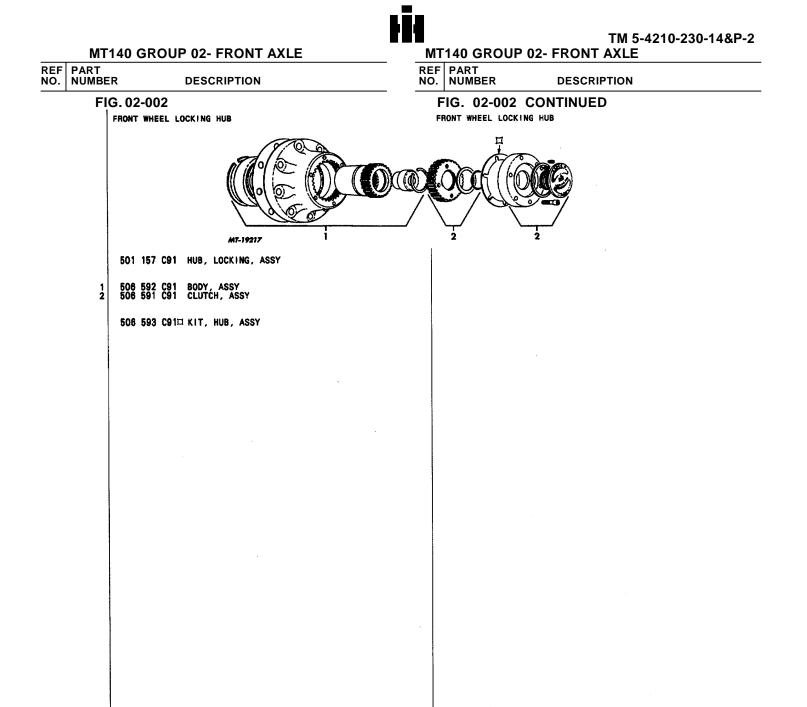
REF		RT.		P 02- FRONT AXLE DESCRIPTION
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Ī	-	-		M-CODES 02064,02078,02081-
48	503	089	C1	KNUCKLE, STEERING LEFT
	503 25	090 653 080	C1 B1	RIGHT Bolt, Hex-HD 5/16NC X 1/2 -24- Dowel, Taper -4-
49	473	016	C 1	GASKET, RETAINER TO KNUCKLE -2-
50		092 014	C91 C1	SHAFT, W/JOINT, AXLE OUTER -2- RING, SNAP -2-
51				SHAFT, INNER AXLE Square cut spline
		093 094		LEFT Right
		413 414		INVOLUTE SPLINE LEFT RIGHT
52 53	503 503	083	C1	SEAL, DUST -2- SEAL, FRONT AXLE OIL -2-
54 55	503 503	082 079 081	Č1 C1	SPRING, OIL SEAL -2- RETAINER, STEERING KNUCKLE -2-
56 57	503 503	081 080 091	C1 C1	RETAINER, HALF RING -4- RETAINER SPLIT RING -2-
58	69	177	R1	&GASKET, DIFF CARRIER TO HOUSING -WILL WORK FOR 473021C1-
59	968		891	HOUSING, AXLE BREATHER, ASSY
		961 993	DA	FITTING, LUBRICATION 1/8 STRAIGHT -2- PLUG, GREASE 3/8 SLOTTED
60	503	098	C91	BEARING, FRONT AXLE CONE -4-
		909		*SCREW, STEERING KNUCKLE STOP -2- 7/16NC X 1-1/2 SQ-HD SET
	578 271	206	C1	1/2NC X 2-1/2 SO-HD SET *NUT, FRONT AXLE STOP SCREW -2- 7/16NC
		572	HA	1/2NC
	400	100		#GEAR SET, DIFF SIDE AND PINION SQUARE_CUT_SPLINES
			C91 C91	INVOLUTE SPLINES
				\$CASE, DIFF W/BOLTS
	504	266	C91	&KIT, DIFF BEARING AND SEAL
				*PARTS NOT ILLUSTRATED

FIG. 02-001 REV. 4

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GROUP 03-CHASSIS SPRINGS

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I624 MODEL FRONT AXLE CODE 02071 PIC NO PIC HE LOC 1624 MODEL FRONT AXLE CODE 02071 03-002 C06 CODE 03020 CODE 03020 FORENT AXLE CODES 02071. 02073, 02101 03-003 C08 REAR AXLE CODE 14030 AXLE CODE 14030 03-004 C10 AXLE CODE 14030 AXLE CODE 14030 03-004 C10 W/ROUND HOUSING W/SQUARE HOUSING 03-004 C11 W/ROUND HOUSING W/SQUARE HOUSING 03-005 C11 REAR FRONT -CODE 03703- REAR-CODE 03703- REAR-CODE 03703- CHASSIS BUILT PHI-179 AND LATER 03-010 C17 CHASSIS 02109, 02118, 02309 03-003 C08 C006 CODE 03020 CODE 03020 0271, 02073, 02101 03-002 C06 AXLE CODES 02071, 02073, 02101 03-003 C08 C08 CODE 14030, 14039, 14187 03-004 C10 AXLE CODES 02071, 02073, 02101 03-003 C08 AXLE CODE 14030, 14039, 14187 03-004 C10 AXLE CODE 14030, 14039, 14187 03-004 C10 AXLE CODE 14099 03-003 C08 C12 AXLE CODE 14099, 14187 03-006 C12 AXLE CODE	AT-140 GROUP 03-CHASSIS SPRINGS			
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w/ROUND HOUSING 03-004 C10 W/SOMUE HOUSING 03-005 C12 AXLE CODES 14042, 14044, 14186, 14197 03-006 C12 AXLE CODE 14199 03-008 C15 AUXILIARY SPRINGS -REARCODES 03103, 03105- 03-009 C16 SHOCK ABSORBERS 03-005 C11 FRONT -CODE 03703- 03-005 C11 REAR -CODE 03703- 03-010 C17 CHASSIS BUILT PRIOR TO 1-11-79 03-010 C17 CHASSIS BUILT 1-11-79 AND LATER 03-019 D02 1823, 1824, 1863. 1854 MODELS FRONT FRONT REGULAR 03-002 C06 CODE 03020 20073. 02101 03-003 008 FOR AXLE CODES 02071, 02073, 02101 03-003 008 FEAR AXLE CODES 14029, 14039, 14187 03-004 C10 W/ROUCD HOUSING 03-004 C10 04 W/ROUCD HOUSING 03-004 C10 04/04/04/04 W/SQUARE HOUSING 03-004 C10 04/04/04/04/04/04/04/04/04/04/04/04/04/0		00-00 4		
AXLE CODES 14042, 14044, 14186, 14197 03-006 C12 AXLE CODE 14199 03-008 C15 AUXLILIARY SPRINGS -REARCODES 03103, 03105- 03-009 C16 SHOCK ABSORBERS 03-005 C11 REAR -CODE 03703- 03-010 C17 CHASSIS BUILT PRIOR TO 1-11-79 03-010 C17 CHASSIS BUILT 1-11-79 AND LATER 03-003 C08 FRONT REGULAR 03-002 C06 FRONT REGULAR 03-002 C06 EXCEPT AXLE CODES 02073, 02101 03-003 C08 FOR AXLE CODES 02071, 02073, 02101 03-003 C08 FOR AXLE CODES 02071, 02073, 02101 03-002 C06 CDE 03020 008 03-002 C06 EXCEPT AXLE CODES 02071, 02073, 02101 03-003 008 FOR AXLE CODES 14029, 14039, 14187 03-004 C10 W/O AUXILIARY SPRINGS 03-004 C10 W/O AUXILIARY SPRINGS 03-006 C12 W/O AUXILIARY SPRINGS 03-006 C12 W/O AUXILIARY SPRINGS 03-006 C12 W/O AUXILIARY SPRINGS 03-017	w/ROUND HOUSING			
AXLE CODE 14199 03-008 C15 AUXILIARY SPRINGS -REAR - CODES 03103, 03105- 03-009 C16 SHOCK ABSORBERS 03-005 C11 FRONT -CODE 03703- 03-005 C11 REAR -CODE 03728- 03-010 C17 CHASSIS BUILT PRIOR TO 1-11-79 03-010 C17 CHASSIS BUILT PRIOR TO 1-11-79 03-019 D02 1823, 1824, 1863. 1854 MODELS 7 FRONT REGULAR 03-003 C08 EXCEPT AXLE CODES 02073, 02101 03-002 C06 CODE 03020 03-002 C06 EXCEPI AXLE WOES 02071, 02073, 02101 03-003 008 FOR AXLE CODES 02071, 02073, 02101 03-002 008 REAR AXLE CODES 14029, 14039, 14187 03-004 C10 W/O AUXILIARY SPRINGS 03-004 C10 W/O AUXILIARY SPRINGS 03-004 C10 W/O AUXILIARY SPRINGS 03-006 C12 W/O AUXILIARY SPRINGS 03-006 C12 W/O AUXILIARY SPRINGS 03-006 C12 W/O AUXILIARY SPRINGS 03-017 C23				
AUXILIARY SPRINGS -REAR - CODES 03103, 03105- 03-009 C16 SHOCK ABSORBERS 03-005 C11 FRONT -CODE 03703- 03-005 C11 REAR -CODE 03728- 03-010 C17 CHASSIS BUILT PRIOR TO 1-11-79 03-010 C17 CHASSIS BUILT 1-11-79 AND LATER 03-019 D02 1823, 1824, 1863. 1854 MODELS 03-003 C08 FRONT REGULAR 03-002 C06 EXCEPT AXLE CODES 02073. 02101 03-003 008 FOR AXLE CODES 02071, 02073, 02101 03-003 008 FOR AXLE CODES 02071, 02073, 02101 03-002 008 REAR 03-004 C10 AXLE CODE 14030 03-004 C10 AXLE CODE 14030, ALLIARY SPRINGS 03-004 C10 W/ROUCD HOUSING 03-004 C10 W/ALLIARY SPRINGS 03-017 C23 W/SQUARE HOUSING 03-006 C12 W/AUXILIARY SPRINGS 03-017 C23				
SHOCK ABSORBERS 03-005 C11 REAR -CODE 03703- CHASSIS BUILT PRIOR TO 1-11-79 03-010 C17 CHASSIS BUILT 1-17-9 AND LATER 03-019 D02 1823, 1824, 1863. 1854 MODELS 03-003 C08 FRONT REGULAR 03-002 C06 EXCEPT AXLE CODES 02073. 02101 03-003 C08 FOR AXLE CODES 02073. 02101 03-002 C06 CODE 03020 03-002 C06 C06 EXCEPI AXLE WOES 02071, 02073, 02101 03-003 008 008 FOR AXLE CODES 02071, 02073, 02101 03-002 008 008 FRAR 03-002 008 008 03-002 008 REAR 03-002 008 03-002 008 03-002 008 W/ROUCD HOUSING 03-004 C10 C10 03-004 C10 03-0017 C23 W/SQUARE HOUSING 03-017 C23 03-017 C23 03-017 C23				
REAR -CODE 03728- CHASSIS BUILT PRIOR TO 1-11-79 03-010 C17 CHASSIS BUILT 1-11-79 AND LATER 03-010 C17 B23, 1824, 1863. 1854 MODELS 03-019 D02 FRONT 03-003 C08 CODE 03020 03-002 C06 EXCEPT AXLE CODES 02073, 02101 03-003 008 FOR AXLE CODES 02071, 02073, 02101 03-003 008 FOR AXLE CODES 02071, 02073, 02101 03-003 008 FOR AXLE CODES 02071, 02073, 02101 03-002 008 REAR 03-002 008 FOR AXLE CODE 14030 03-004 C10 AXLE CODE 14030 03-004 C10 AXLE CODE 14030, 03-004 C10 W/ROUCD HOUSING 03-017 C23 W/Q AUXILIARY SPRINGS 03-017 C23 W/SQUARE HOUSING 03-006 C12 W/O AUXILIARY SPRINGS 03-017 C23	SHOCK ABSORBERS			
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CHASSIS BUILT 1-11-79 AND LATER 03-019 D02 1823, 1824, 1863. 1854 MODELS FRONT 03-019 D02 REGULAR 03-003 C08 EXCEPT AXLE CODES 02073. 02101 03-002 C06 CODE 03020 03-003 008 EXCEPI AXLE WOES 02071, 02073, 02101 03-003 008 FOR AXLE CODES 02071, 02073, 02101 03-002 008 FOR AXLE CODES 14029, 14039, 14187 03-004 C10 W/ROUCD HOUSING 03-004 C10 W/AUXILIARY SPRINGS 03-017 C23 W/SQUARE HOUSING 03-006 C12 W/O AUXILIARY SPRINGS 03-006 C12 W/AUXILIARY SPRINGS 03-017 C23		03-010	C17	
1823, 1824, 1863. 1854 MODELS			-	
REGULAR 03-003 C08 EXCEPT AXLE CODES 02073. 02101 03-002 C06 FOR AXLE CODES 02073. 02101 03-003 008 CODE 03020 03-003 008 EXCEPI AXLE WOES 02071, 02073, 02101 03-003 008 FOR AXLE COOES 02071, 02073, 02101 03-002 008 REAR 03-002 008 AXLE CODE 14030 03-004 C10 AXLE COES 14029, 14039, 14187 03-004 C10 W/ROUCD HOUSING 03-004 C10 W/O AUXILIARY SPRINGS 03-017 C23 W/SQUARE HOUSING 03-006 C12 W/O AUXILIARY SPRINGS 03-006 C12 W/AUXILIARY SPRINGS 03-017 C23				
EXCEPT AXLE CODES 02073 02101 03-003 C08 FOR AXLE CODES 02073. 02101 03-002 C06 CODE 03020 03-003 008 EXCEPI AXLE WOES 02071, 02073, 02101 03-003 008 FOR AXLE COOES 02071, 02073, 02101 03-002 008 REAR 03-002 008 AXLE CODE 14030 03-004 C10 AXLE COES 14029, 14039, 14187 03-004 C10 W/ROUCD HOUSING 03-004 C10 W/Q AUXILIARY SPRINGS 03-017 C23 W/SQUARE HOUSING 03-006 C12 W/O AUXILIARY SPRINGS 03-006 C12 W/AUXILIARY SPRINGS 03-017 C23				
FOR AXLE CODES 02073. 02101 03-002 C06 CODE 03020 EXCEPI AXLE WOES 02071, 02073, 02101 03-003 008 FOR AXLE COOES 02071, 02073, 02101 03-002 008 REAR AXLE CODE 14030 03-002 008 AXLE COES 14029, 14039, 14187 03-004 C10 W/ROUCD HOUSING 03-004 CIO W/AUXILIARY SPRINGS 03-017 C23 W/SQUARE HOUSING 03-006 C12 W/O AUXILIARY SPRINGS 03-006 C12 W/AUXILIARY SPRINGS 03-017 C23		03-003	C08	
CODE 03020 03-003 008 EXCEPI AXLE WOES 02071, 02073, 02101 03-002 008 FOR AXLE COOES 02071, 02073, 02101 03-002 008 REAR 03-002 008 AXLE CODE 14030 03-004 C10 AXLE COES 14029, 14039, 14187 03-004 C10 W/ROUCD HOUSING 03-004 CIO W/O AUXILIARY SPRINGS 03-017 C23 W/SQUARE HOUSING 03-006 C12 W/O AUXILIARY SPRINGS 03-017 C23				
FOR AXLE COOES 02071, 02073, 02101 03-002 008 REAR AXLE CODE 14030 03-004 C10 AXLE COES 14029, 14039, 14187 03-004 C10 W/ROUCD HOUSING 03-004 CIO W/O AUXILIARY SPRINGS 03-004 CIO W/SQUARE HOUSING 03-017 C23 W/O AUXILIARY SPRINGS 03-006 C12 W/AUXILIARY SPRINGS 03-017 C23	CODE 03020			
REAR 03-004 C10 AXLE CODE 14030 03-004 C10 AXLE COES 14029, 14039, 14187 03-004 C10 W/ROUCD HOUSING 03-004 CIO W/O AUXILIARY SPRINGS 03-004 CIO W/SQUARE HOUSING 03-017 C23 W/O AUXILIARY SPRINGS 03-006 C12 W/AUXILIARY SPRINGS 03-017 C23	EXCEPI AXLE WOES 02071, 02073, 02101			
AXLE CODE 14030 03-004 C10 AXLE COES 14029, 14039, 14187 03-004 C10 W/ROUCD HOUSING 03-004 CIO W/O AUXILIARY SPRINGS 03-004 CIO W/SQUARE HOUSING 03-017 C23 W/O AUXILIARY SPRINGS 03-006 C12 W/AUXILIARY SPRINGS 03-017 C23		03-002	800	
AXLE COES 14029, 14039, 14187 W/ROUCD HOUSING W/O AUXILIARY SPRINGS W/AUXILIARY SPK INGS W/SQUARE HOUSING W/O AUXILIARY SPRINGS W/AUXILIARY SPRINGS 03-006 C12 03-017 C23	AXLE CODE 14030	03-004	C10	
W/O AUXILIARY SPRINGS03-004CIOWI/AUXILIARY SPK INGS03-017C23W/SQUARE HOUSING03-006C12W/O AUXILIARY SPRINGS03-017C23	AXLE COES 14029, 14039, 14187			
WI/AUXILIARY SPK INGS03-017C23W/SQUARE HOUSING03-006C12W/O AUXILIARY SPRINGS03-017C23		02.004		
W/SQUARE HOUSING03-006C12W/O AUXILIARY SPRINGS03-017C23				
W/O AUXILIARY SPRINGS03-006C12W/AUXILIARY SPRINGS03-017C23		03-017	025	
	W/O AUXILIARY SPRINGS			
AXLE UXES 14047, 14188, 14182, 14193, 14197, 14292				
AXLE CODES 14042. 14044. 14057		03-006	C12	
W/O ALXILIARY SPRAINGS 03-006 C12		03-006	C12	
W/AUXILIARY SPRINGS 03-017 C23	W/AUXILIARY SPRINGS	03-017	C23	
AXLE CODE 14199 03-008 C15				
AUXILIARY SPRINGS -REARCODES 03103, 03105- SHOCK ABSORBERS 03-009 C16		03-009	C16	
FRONT				
EXC CODE 03703.9202 03-005 C11	EXC CODE 03703.9202	03-005	C11	
FOR CODE 03703.9202 03-007 C13	FOR CODE 03703.9202	03-007	C13	
REAR -CODE 03728- 03-010 C17		03-010	C17	
CHASSIS BUILT 1-11-79 AND LATER 03-010 D02				

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REV. NO. 4 03-INDEX PAGE 1

T-140	GROUP 03-CHASSIS SPRINGS									
		FIG NO	FICHE LOC							
FIG NO. FICHE LOC										
1824-4X4, 1864-4X4 MODE										
FRONT -AXLE CODES REAR -AXLE CODES 1	02064, 02078, 02081- 4029, 14039, 14042, 14044, 14057-	03-001 03-017	C05 C23							
1863FC MODEL										
FRONT REAR		03-003	C08							
EXCEPT MOR/RYDE S EXCEPT REAR AXLE		02.006	C12							
FOR REAR AXLE CODE	14199	03-006 03-008	C12 C15							
FOR IOR/RyuE SUSF SHOCK ABSORBERS	PENSION	03-020	D03							
FRONT		03-005	C11							
REAR 1924, 1925, 1954. 1955 MC		03-019	D02							
FRONT										
REGULAR EXCEPT AXLE CODE	E 02101	03-003	C08							
FOR AXLE CODE 02 CODE 03020		03-002	C06							
EXCEPT AXLE CODES	02071, 02073. 02101	03-003	C08							
FOR AXLE CODES 020 REAR	071, 02073, 02101	03-002	C06							
EXCEPT AXLE CODES		03-008	C12							
FOR AXLE CODES 140 W/ROUND HOUSING		03-004	C10							
W/SOUARE HOUSIN	G	03-00.	C12							
FOR AXLE CODE 1419 AUXILIARY SPRINGS -RE	9 EARCOOES 03103, 03105-	03-000 03-009	C15 C16							
SHOCK ABSORBERS			C11							
FRONT -CODE 03703- REAR -CODE 03728-		03-005	-							
CHASSIS BUILT PRI CHASSIS BUILT 1-11		03-010 03-019	C17 D02							
F1924, F1964 MODELS			002							
FRONT REGULAR										
EXCEPI AXLE CODE FOR AXLE CODE 02		03-003 03-002	C08 C06							
CODE 03020		03-002	000							
EXCEPT AXLE CODE FOR AXLE CODE 02		03-003	C08 C06							
REAR										
SUSPENSION CODES 14 SUSPENSION CODES 14		03-011 03-013	C18 C20							
SUSPENSION CODE 145 EOUALIZER BEAMS	48	03-018	D01							
SUSPENSION CODES 14		03-014	C21							
SUSPENSION CODES 14 SHOCK ABSORBERS	532. 1448	03-018	C22							
FRONT -CODE 03703-		03-006	C11							
REAR -CODE 03728- TORQUE RODS		03-010 03-012	C17 C19							
1924-6X8, 1954-8X8 MODE FRONT -AXLE CODE 020		03-001	C05							
REAR										
SUSPENSION CODES SUSPENSION CODE 1	14518, 14621 4632	03-011 03-013	C18 C20							
SUSPENSION CODE- 1		03-010	D01							
EQUALIZER BEAMS SUSPENSION CODES 14	618. 14621, 14532	03-014	C21							
SUSPENSION CODE 145 SHOCK ABSORBERS -FRO	48	03-015	C21							
TORQUE RODS		03-007 03-012	C13 C19							
			1							

GROUP 03-0	GROUP 03-CHASSIS SPRINGS							
	FIG NO	FICHE LOC						
2124. 2125, 2154, 2165 MODELS								
FRONT REGULAR								
EXCEPT AXLE CODE 02101	03-003	C08						
FOR AXLE CODE 02101 CODE 03020	03-002	C06						
EXCEPT AXLE CODES 02071, 02073 02101 FOR AXLE CODES 02071, 02073. 02101	03-003 03-002	C08 C06						
REAR								
EXECPT AXLE CODE 14199 FOR AXLE CODE 14199	03-006 03-008	C12 C15						
AUXILIARY SPRING8 -REAROOES 03103. 03105- SHOCK ABSORBER8	03-009	C16						
FRONT -CODE 03703-	03-005	C11						
REAR -CODE 03728- CHASSIS BUILT PRIOR TO 1-11-79	03-010	C17						
CHASSIS BUILT 1-11-79 AND LATER F2125 MODEL	03-019	D02						
FRONT								
REGULAR EXCEPT AXLE CODE 02101	03-003	C08						
FOR AXLE CODE 02101	03-002	Č06						
CODE 03020 EXCEPT AXLE CODES 02071, 02073, 02101	03-003	C08						
FOR AXLE CODES 02071, 02073, 02101 REAR -SUSPINSIOR CODEB 14518 14521-	03-002 03-011	C06 C18						
EQUALIZE BEAMIS -SUSPENSION CODES 14518,14521-	03-014	C21						
SHOCK ABSORBERS -FRONTCODE 03703- TORQOUE RODS	03-005 03-012	C11 C19						

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REV. NO. 4 03-INDEX PAGE 3

<u>MT-140</u>	GROUP 03-CHASSIS SPRINGS									
		FIG NO	FICHE LOC	H						
RESERVE FOR FUTURE USE										
	ED IN UNITED STATES OF AMERIC	^	ļ							

	T BER			DESCRIPTION	REF NO.	PAR NUM		DESCRIPTION
	FIG.	03-(NT SP					03-001 CC	DNTINUED
					6	2	2	
						. •		MT-19679
1	48	4 081 4 083	<u>61</u>	BRACKET, FRONT SPRING FRONT EXCEPT FRAME EXTENSION CODE 01836 LEFT Right	10 11 12	468 70 109 46	1 LUBRI	REAR SHACKLE -4- ICATOR, 1/8 STRAIGHT -6- NG, ASSEMBLY -2-
	48	4 082 4 084 4 053 4 054 4 087	C1 C1 C1	FOR FRAME EXTENSION CODE 01636 LEFT Right Bolt, Hex-Flg-HD 1/2NF X 1-3/4 -4- Bolt, Hex-Flg-HD 1/2NF X 2 -8- NUT, HEX-FLG, LOCK 1/2NF -12-		484 31 484 31 484 31 484 31 572 35 572 36 572 38	8 C91 # CH/ 7 C91 I 8 C1 L 9 C1 L 9 C91 # CH/ 0 C1 L 1 C1 L	NG, ASSEMBLY -2- ASSIS BUILT PRIOR TO 1-29-81 LEAF, W/BUSHINGS, NO. 1 -2- LEAF, NO. 2 -2- LEAF, NO. 3 -2- ASSIS BUILT 1-29-81 AND LATER LEAF, W/BUSHING, NO. 1 -2- LEAF, NO. 2 -2- LEAF, NO. 2 -2-
2		9 209 • 222		CLIP, SPRING -6-		572 3 6		ÈĂF, NŎ. 3 -2- E, U-BOLT
3	1	8 223 3 033		BOLT, CENTER -2- NUT, CENTER BOLT -2-	13	485 02 484 49	5 C1 LEF 2 C1 RIC	FT
4		9 893 5 914		SEAT, FRONT SPRING U-BOLT -2-	14	468 70 472 47	5 C2 PIN, 9 C1 BUSH	FRONT SPRING FRONT BRACKET -2- Ing, spring eye -4-
6	41	6 743 4 203 4 205 4 861 4 862 2 230	C.1	U-BOLT, W/NUTS -4- NUT, U-BOLT -8- BRACKET, AXLE STOP LEFT Right BOLT, HEX-HD 1/2NC X 1-1/4 -8-			#PRIOF ARE CHASS	TO CHASSIS BREAK, SPRING LEAVES NOT SHOT PEENED. SIS BREAK AND LATER, SPRING LEAVES SHOT PEENED.
	9 41	4 862 2 230	Ŕİ	BOLT, HEX-HD 1/2NC X 1-3/4 -6- Washer, Lock 1/2 -6-				
7	19 41	1 246 3 979 5 709		KEY, DRAW -10- NUT, HEX. LOCK 3/8NC -10- WASHER, FLAT 3/8 -HARDENED10-				
8		8 699		SHACKLE, FRONT SPRING REAR -4-				
9	48	4 086 4 090	C91 C91	BRACKET, W/BUSHING, FRT. SPRG. REAR 4X4 MODELS LEFT RIGHT	-2-			
	48 48	4 086 4 090	C91 C91	6X6 MODELS W/O REINF. CODES 01418, 01419,01 Left Right	535			
	48	4 088 4 092 4 054	C91 C91	W/INVERTED L AND FULL CHANNEL RE LEFT Right Bolt, Hex-Flg-HD 1/2NC X 2 -W/REINF				
		4 087 2 479		-9- NUT, HEX-FLG. LOCK 1/2NF -9-	•			

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FIG.

03-001

REV. 4

PAGE NO. 5

REF PART NO. NUMBER	DESCRIPTION	REF PART NO. NUMBER DESCRIPTION
FIG. 03-002		FIG. 03-002 CONTINUED
FRONT SPRINGS		FRONT BPRINGS
1 470 231 C1 414 052 C1 414 087 C1	BRACKET, FRONT SPRING FRONT, ASSY2- BOLT, HEX-FLG-HD 1/2NF X 1-1/2 -12-	7 AXLE CODE 02073 HEGULAR SPRING 472 699 C91 \$ CHASSIS BUILT PRIOR TO 8-20-80
2 465 919 C11 414 089 C1		-7 LEAVES- 472 700 C91 FAF W/BUSHINGS NO 1 -2-
3 469 895 C1 469 895 C1 469 895 C1 469 895 C1	NUT, HEX-FLG. LOCK 5/8NF -8- SEAT, FRT. SPRING U-BOLT -2- AXLE CODES 02071, 02073 AXLE CODE 02101 W/REGULAR SPRINGS W/HEAVY DUTY SPRINGS -CODE 03020- EXCEPT 3208 ENGINE	472 701 C1 LEAF, NO. 2 -2- 472 702 C1 LEAF, NO. 3 -2- 572 347 C91 CHASSIS BUILT 8-20-80 AND LATER -6 LEAVES- -6 LEAVES- -6 LEAVES- -6 1 -2- 572 348 C1 LEAF, W/BUSHINGS, NO. 1 -2- -2 -2 -572 349 C1 LEAF, NO. 2 -2- -2 -572 350 C1 LEAF, NO. 3 -2- -2
469 896 C1 4 469 886 C1 104 131 12 017 R1	FOR 3208 ENGINE BRACKET, AXLE STOP -2- Rivet, RD-HD 1/2 X 1-3/8 -W/0 Reinf6- 1/2 X 1-5/8 -W/Reinf6-	471 241 C91 CHASSIS BUILT PRIOR TO 8-22-80 471 242 C91 LEAF, W/BUSHINGS, NO. 1 -2- 471 243 C1 LEAF, W/BUSHINGS, NO. 1 -2- 471 244 C1 LEAF, NO. 2 -2- 471 244 C1 LEAF, NO. 2 -2- 572 351 C91 CHASSIS BUILT 8-22-80 AND LATER 572 352 C1 LEAF, W/BUSHINGS, NO. 1 -2- 572 353 C1 LEAF, MO. 2 -2- 572 353 C1 LEAF, NO. 2 -2- 572 572 54 C1 LEAF, NO. 3 -2- 572 354 C1 LEAF, NO. 3 -2- -2- -2- -2- 572 354 C1 LEAF, NO. 3 -2- -2- -2- -2- 572 354 C1 LEAF, NO. 3 -2- -2- -2- -2- -2- -2- -2- -2- -2- -2- -2- -2- -2- -2- -2-
5 470 228 C1 414 052 C1 414 087 C1 6 470 248 C91 26 720 R1 9 414 002	BRACKET, FRONT SPRING REAR ASSY2- BOLT, HEX-FLG-HD 1/2NF X 1-1/2 -8- NUT, HEX-FLG. LOCK 1/2NF -8- SHACKLE, FRONT SPRING REAR, ASSY2- BOLT, HEX-HD INC X 5 -2- NUT HEX LOCK INC X 5 -2-	AXLE CODE 02103 REGULAR SPRING -7 LEAVES- 471 241 C91 % CHASSIS BUILT PRIOR TO 8-22-80 471 242 C91 LEAF, W/BUSHINGS, NO. 1 -2- 471 243 C1 LEAF, ND. 2 -2-
9 414 002 7 489 696 691 489 697 691 489 698 611 489 699 611 572 343 611 572 344 611 572 345 611 572 346 611 472 700 691 472 700 691 472 700 611 472 700 611 472 702 611 472 702 611 572 348 61 572 348 61 572 348 61 572 349 61 572 350 61	LEAF, W/BUSHINGS, NO. 1 -2- LEAF, NO. 2 -2- LEAF, NO. 3 -2- % CHASSIS BUILT # AND LATER LEAF, W/BUSHINGS, NO. 1 -2- LEAF, NO. 2 -2- LEAF, NO. 3 -2- HEAVY DUTY -CODE 03020- % CHASSIS BUILT PRIOR TO 8-20-80 -7 LEAVES- LEAF, W/BUSHINGS, NO. 1 -2- LEAF, NO. 2 -2- LEAF, NO. 3 -2-	471 244 C1 LEAF, ND. 3 -2. 572 351 C01 % CHASSIS BUILT 8-22-80 AND LATER 572 352 C1 LEAF, W.D. 2 -2. 572 353 C1 LEAF, NO. 2 -2. 572 354 C1 LEAF, NO. 3 -2. HEAVY OUTY -8. LEAVES CODE 03020- 471 249 C91 % CHASSIS BUILT PRIOR TO 8-28-80 471 250 C91 LEAF, NO. 3 -2. 471 250 C91 LEAF, NO. 3 -2. 471 251 C1 LEAF, NO. 3 -2. 572 355 C91 % CHASSIS BUILT PRIOR TO 8-28-80 471 251 C1 LEAF, NO. 3 -2. 572 355 C91 % CHASSIS BUILT 8-28-80 AND LATER 572 355 C91 % CHASSIS BUILT 8-28-80 AND LATER 572 355 C91 % CHASSIS BUILT 8-28-80 AND LATER 572 355 C91 % CHASSIS BUILT 8-28-80 AND LATER 572 355 C91 % CHASSIS BUILT 8-28-80 AND LATER 572 356 C1 LEAF, WO. 3 -2. 572 358 C1 LEAF, NO. 3 -2. 8 268 223 C1 BOLT, CENTER 80LT -2. 53 033 R1 NUT, CENTER BOLT -2. 9 469 885 C1 SPACER, FRONT AXLE -2. 9 989 209 R11 CLIP, SPRING -FOURTH LEAF4. 10 809 209 R11

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FIG.

03-002 REV. 4

PAGE NO. 6

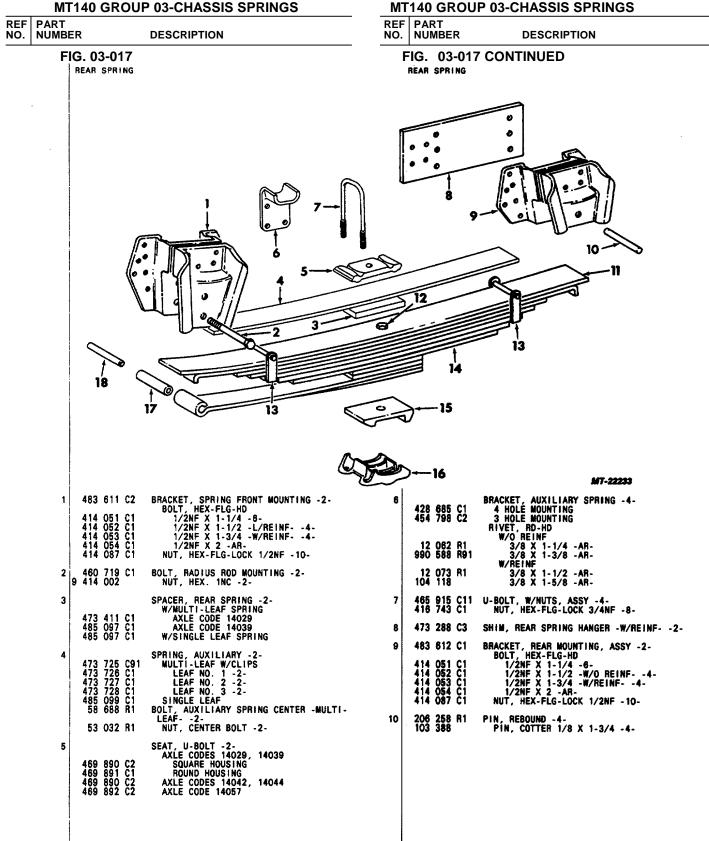
TM 5-4210-230-14&P-2 MT140 GROUP 03-CHASSIS SPRINGS

REF PART NO. NUMBER DESCRIPTION

TM 5-4210-230-14&P-2 MT140 GROUP 03-CHASSIS SPRINGS

REF NO.	PART NUMBER	DESCRIPTION

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TM 5-4210-230-14&P-2

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FIG. 03-017

		UP 03-CHASSIS SPRINGS					
REF PA NO. NU	RT MBER	DESCRIPTION					
FIG. 03-017 CONTINUED							
	REAR SPRING						
11		LEAF, SPRING -2- W/471288C91 SPRING ASSY					
	471 283 C1 471 284 C1	LEAF NO. 1 LEAF NO. 2					
	471 284 C1 471 285 C1 471 281 C91	LEAF NO. 3 LEAF, W/BUSHING NO. 10 -RADIUS ROD-					
	471 288 C1	W/471287C91, 471292C91 SPRING ASSYS					
	471 289 C1 471 290 C1	LEAF NO. 2 LEAF NO. 3					
	471 291 691	LEAF, W/BUSHING NO. 12 -W/471287C91					
	471 291 C91	SPRINGRADIUS ROD- LEAF, W/BUSHING NO. 13 -W/471292C91					
		SPRINGRADIUS ROD- W/492803C91 SPRING ASSY					
	492 804 C1 492 805 C1	LEAF NO. 1 LEAF NO. 2 LEAF NO. 3					
	492 806 C1 492 807 C91	LEAF NO. 3 LEAF, W/BUSHING NO. 13 -RADIUS ROD-					
12	58 694 R1	BOLT, CENTER -2-					
	59 235 R1	NUT, CENTER BOLT -2- W/471286C91, 471287C91, 471292C91					
	25 527 R1	SPRINGS W/492803C91 SPRINGS					
13	899 209 R11	CLIP, SPRING -4-					
14		SPRING, ASSY -2- AXLE CODE 14029					
	471 286 C91 471 287 C91	REGULAR CODE 03651					
		AXLE CODES 14039, 14042 REGULAR					
	492 B03 C91	CODE 03652					
	471 292 C91 492 803 C91	CODE 03653 Axle code 14044 Regular					
	471 292 C91 471 292 C91	CODE 03643 AXLE CODE 14057					
15		SEAT, SPRING					
	473 398 C1	EXCEPT AXLE CODE 14057					
	473 399 C1	RIGHT For Axle code 14057 Left					
	473 396 C1 473 397 C1 495 364 C1	RIGHT WEDGE, REAR SPRING -2-					
16		PLATE, U-BOLT -2-					
10	471 488 C1	W/471286C91 SPRING ASSY ROUND HOUSING					
	467 990 C3 467 990 C3	SQUARE HOUSING W/471287C91, 493803C91 SPRING ASSYS					
	473 395 C1	W/47129/091, 493803091 SPRING ASSTS W/471292091 SPRING ASSY					
17 18		BUSHING, RADIUS ROD -2- SPACER, REAR SPRING BUSHING -2-					
	501 912 01	*SUPPORT, REAR SPRING BRACKET W/O REINFORCEMENT					
	501 912 C1 501 913 C1	W/REINFORCEMENT					
		*PARTS NOT ILLUSTRATED					
	1						

TM 5-4210-230-14&P-2 MT140 GROUP 03-CHASSIS SPRINGS

		140 GROUI	Р 03-СП	49919 944	KING3
	REF NO.	PART NUMBER	D	ESCRIPTION	
IUS ROD- ASSYS					
1287091					
1292091					
US ROD-					
292C91					
			•		
ASSYS					

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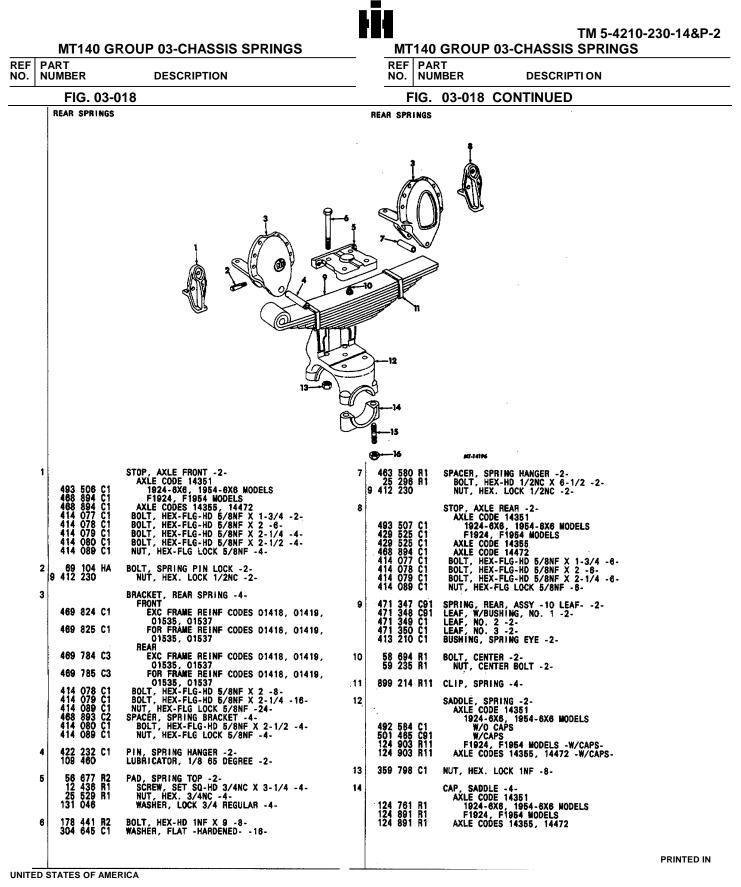


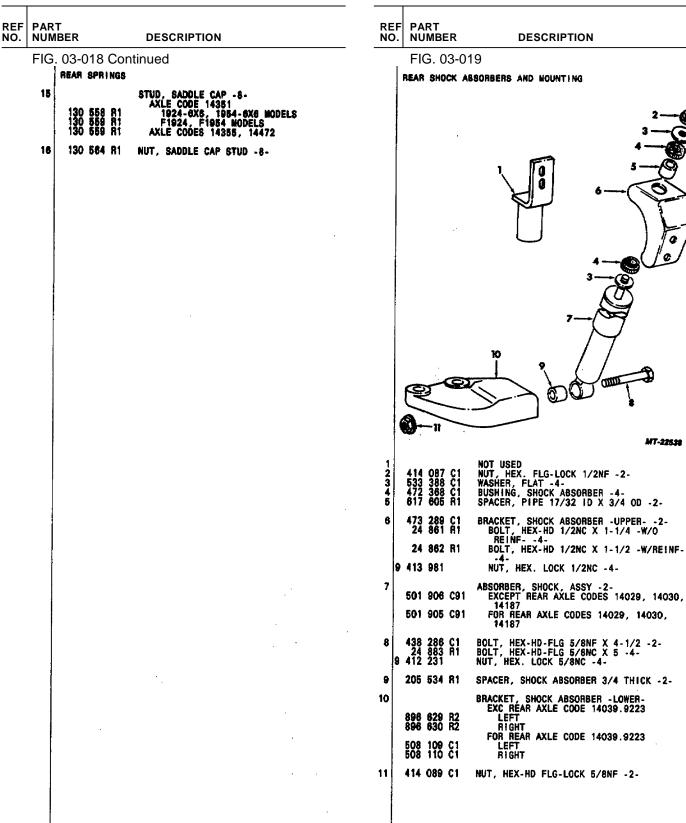
FIG. 03-018

PAGE NO. 26

REF

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16



TM 5-4210-230-14&P-2 MT140 GROUP 03 CHASIS SPRINGS

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FIG. 03-019 PAGE NO. 27

MT140 GROUP 03 CHASIS SPRINGS REF PART NO. NUMBER

TM 5-4210-230-14&P-2 MT140 GROUP 03 CHASIS SPRINGS REF PART NO. NUMBER DESCRIPTION DESCRIPTION

FIG. 03-020		FIG. 03-020 CONTINUED
MOR-	RYDE RUBBER SUSPENSION	MOR-RYDE RUBBER SUSPENSION
		<image/> <image/>
3 50 41 41 41 41 41 41 41 41 41 41 41 41 41	27 502 C1 BUSHING, TORQUE ROD -4- 8 855 C1 BRACKET, TORQUE ROD -4- 14 051 C1 BOLT, HEX-FLG-HD 1/2NF X 1-1/4 -2- 4 052 C1 BOLT, HEX-FLG-HD 1/2NF X 1-1/2 -2- 1 4 052 C1 BOLT, HEX-FLG-HD 1/2NF X 1-1/2 -2- 1 4 053 C1 BOLT, HEX-FLG-HD 1/2NF X 1-3/4 -2- 1 4 057 C1 NUT, HEX-FLG-LOCK 1/2NF X -3/4 -2- 4 067 C1 NUT, HEX-FLG-LOCK 1/2NF X -4- SPACER, SPRING BRACKET -MAKE LOCALLY- 29 788 C1 ROD, TORQUE	16 465 914 C1 U-BOLT. AXLE BEAM -2- NUT, HEX. 3/4NF -2- 25 712 R1 WASHER, FLAT 13/18 ID X 1-1/2 OD -2- 469 890 C2 SEAT, REAR SPRING, W/CODE 14057 -2- 17 BRACKET, SPRING HANGER 508 856 C1 LEFT FRONT 508 857 C1 RIGHT FRONT 414 076 C1 BOLT. HEX-FLG-HD 5/8NF X 1-1/2 -8- 414 089 C1 NUT, HEX-FLG. LOCK 5/8NF -7- 18 575 515 C1 BEAM, AXLE -2- 532 286 C1 *BRACKET, AUX SPRING -W/14047, 140574- 414 052 C1 BOLT. HEX-FLG-HD 1/2NF X 1-1/2 -6- NUT, HEX-FLG. LOCK 1/2NF -6- 506 854 C1 *PAD, AXLE -02- 12 436 R1 SCREW, SET SG-HD 3/4NC X 3-1/4 -2- NUT, HEX. JAM 3/4NC -2- 522 287 C1 *SRAR, FRAME TIE -MAKE LOCALLY - 4- BOLT, HEX. HD 1/4NC X 1-1/4 -8- *STRAF, FRAME TIE -MAKE LOCALLY - 4- 9 412 230 NUT, HEX. LOCK 1/2NC -8- 427 501 C91 #KIT, SHOCK ABSORBER MOUNTING -4- *PARTS NOT ILLUSTRATED

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FIG. 03-020 PAGE NO. 28

MT-140

GROUP 04-BRAKES

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	FIG NO	FICHE LOC	
GUIDE TO UNITS IN GROUP 04 INDEX			
HYDRAULIC BRAKES			
WHEEL BRAKES BRACKETS -HOSE AND PIPE MOUNTING BRAKE PEDAL AND MOUNTING FTTINGS -HYDRAULIC AND VACCUUM- HOSING PIPING -TUBING- AND CLAPS HYDRAULIC BRAKE HOSE AND PIPING -SMBR TO WHL CYL HYDRAULIC BAKE HOSE AND PIPING -SWBR TO CALIPER HYDRAULIC PUMP ASSEMBLY. MOUNTING AND HOSING HYDROVAC AIR CLEANER AND MOUNTING HYDROVAC AIR CLEANER AND MOUNTING MASTER CYLINDER ASSEMBLY AND HUTING POWERHEAD ASSEMLYJ IMOUI IING VACUUM CHECK VALVE. GAUOE/WARNING VALVE SWITCH VACUIM RN VACULI RESERVE TANK AND MOUNTING WARNING VALVE AND SWITCH	PAGE 02 PAGE 03 PAGE 03 PAGE 03 PAGE 03 PAGE 03 PAGE 03 PAGE 03 PAGE 03 PAGE 03 PAGE 04 PAGE 04 PAGE 04 PAGE 04 PAGE 04		
AIR BRAKES			
WHEEL BRAKES CHAMBERS AND SLACK ADJUSTERS AUXILIARY AIR GLAD HAND CONNECTION BLOCK, MANIFOLD BRAKE PEDAL AND MOUNTING BRAKE VALVE CHAIERS -SEE WHEEL BRAKE-	PAGE 06 PAGE 06 PAGE 06 PAGE 06 PAGE 06		
CHECK VALVE -SEE AIR TANK- COMPRESSOR. GOVERNOR. MOUNTNG AND HOSING DOUBLE CHECK VALVE DOUBLE CHECK VALVE/STOPLIGHT SWITCH EVAPORATOR ALCOHOL EXHAUST VALVE	PAGE 07 PAGE 07 PAGE 07 PAGE 07 PAGE 07		
FITIINGS AIR BRAKE -SEE IIT-87- GUAGE -PRESSURE-,BUZZER AND LOW PRESSURE SWITCH HAND CONTROL VALVE HOSE. FLEXIBLE BRAKE CHAMBER INVERSION VALVE LIMITING VALVE UNITING VALVE OUICK RELEASE VALVE RELAY VALVE SAFELY VALVE SAFELY VALVE SEMI-TRAILER CONNECTIONS SENSOR	PAGE 07 PAGE 07 PAGE 08 PAGE 08 PAGE 08 PAGE 08 PAGE 08 PAGE 08 PAGE 08 PAGE 08 PAGE 08		
SLACK ADJUSTER -SEE WHEEL BRAKES- SLUDGE REMOVER VALVE STOPLIGHT SWITCH TANKS AND MOIRWING TRACTOR PROTECTION VALVE TRACTOR PROTECTION VALVE CONTROL TRAILER HOSE DUMMY COUPLING TRAILER BRAKE HOSE COUPLING	PAGE 08 PAGE 08 PAGE 08 PAGE 08 PAGE 08 PAGE 08 PAGE 08		
PARKING BRAKES	PAGE 09		

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04-INDEX PAGE NO. 1

	FIG NO	FICHE LOC	
HYDRAULIC BRAKES			
FRONT WHEEL BRAKES CODE 04128 -15 X 3- AXLE CODES 02071, 02073 DUAL HYDRAULIC BRAKE SYSTEM CODES 04044, 040556, 0409 SINGLE HYDRAULIC BRAKE SYSTEM CODES 04011, 04058 AXLE CODES 02078, 02081	04-001 04-002 04-155	A14 AIS G16	
CODE 04131 -15 X 3-1/2- AXLE CODES 02071, 02073, 02101, 02109, 02127 DUAL HYDRAULIC BRAKE SYSTEM COOES 04044,04055, 04059 EXCEPT F1924, F1964 MODELS FOR F1924. F1954 MODELS SINGLE HYDRAULIC BRAKE SYSTEM CODES 04011, 04068	04-068 04-059 04-059	C17 C18 C18	
CODE 04132 -15 X 5CODES 02118, 02127, 02138- DUAL H'TRAULIC BRAKE SYSTEM CODE 04044 SINGLE HYDRAULIC BRAKE SYSTEM CODE 04058 COOE 04144 -15 X 1.436DISC-	04-005 04-003 04-184	A19 A1I H21	
REAR WHEEL BRAKES CODE 04211 -10 X 0AXLE CODES 14047, 14057, 14192, 14193, 14197, 14292- DUAL HYDRAULIC BRAKE SYSTEM CODE 04044 SINGLE HYDRAULIC BRAKE SYSTEM CODE 04058	04-171 04-187	H10 H06	
CODE 04213 -15 X 7- AXLE COES 14044, 14185 DUAL HYDRAULIC BRAKE SYSTEM CODES 0404404055, 04059 SINGLE HYDRAULIC BRAKE SYSTEM CODES 04011, 04068 AXLE CODE 14351 DUAL HYDAULIC BRAKE SYSTEM CODE 04044 SINGLE HYDRAULIC BRAKE SYSTEM CODE 04058	04-004 04-188 04-004 04-188	A17 H07 A17 H07	
CODE 04214 -15 X 8- AXLE CO DES 14039, 14042, 14044, 1418., 14199 DUAL HYDRAULIC BRAKE SYSTEM CODES 04044 04055, 04059 SINGLE HYDRAULIC BRAKE SYSTEM CODES 04011, 0405 AXLE CODES 14029, 14030, 14187 DUAL HYDRAULIC BRAKE SYSTEM COOES 04044, 04065, 04059 SINGLE HYDRAULIC BRAKE SYSTEM COWES 04011, 040568 AXLE CODES 14341, 14351 DUAL IYDRAULIC BRAKE SYSTEM CODE 04044 SINGLE HYDRAULIC BRAKE SYSTEM CODE 04058	04-008 04-007 04-055 04-058 04-000 04-007	A200 A22 C13 C1 A20 A22	
CODE 04228 -15 X 5AXLE COES 14029, 14030, 14187- DUAL HYDRAULIC BRAKE SYSTEM CODES 04044, 04056, 04059 SINGLE HYDRAULIC BRAKE SYSTEM CODES .4011. 04068	04-057 04-189	C1i H08	
CODE 04231 -15 X 7AXLE CODES 14039, 14042, 14199- DUAL HYDRAULIC BRAKE SYSTEM CODES 04044 040566, 04069 SINGLE HYDRAULIC BRAKE SYSTEM CODES 04011, 04068	04-008 04-168	A23 H07	
CODE 04237 -15 X 1.435DISC-	04-184	H21	

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04-INDEX PAGE NO. 2 REV. 4

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	FIG NO	FICHE LOC	
HYDRAULIC BRAKES			
BRACKETS -HOSE AND PIPE MOUNTING BRAKE PEDAL .J M I UIING	04-071	D07	
CODES 04011, 04058 -SINGLE POWER SYSTEM- CODES 04044, 0405, 040659 -DUAL SPLIT POWER SYSTEM FLAT BACK COWL CODE 16010	04-072	008	
CHASSIS BUILT PRIOR TO 6-30-80	04-073	D09	
CHASSIS BUILT 6-30-80 AND LATER REGULAR CAB COE 16030	04-178 04-074	H16 D10	
TRAVELCREW CAB CODE 18198	04-074	D10	
FITTINGS -HYDRAULIC AND VACUUM- HOSING -EXCEPT AT AXLES-, PIPING -TUBING- AND CLAMPS HYDRAULIC BRAKE HOSE AND PIPING-SIDEMELWER TO WHEEL CYLINDER	04-076 04-078 R-	D11 D12	
-AT FRONT AXLE- FRONT AXLE CODES 02071, 02073, 02101 FRONT AXLE CODES 02078, 02081	04-077 04-078	D12 013	
FRONT AXLE CODE 02109 CODE 04068 -SINGLE POWER SYSTEM- CODE 04044 -DUAL SPLIT POWER SYSTEM- FRONT AXLE CODE 02440	04-077 04-079	012 013	
FRONT AXLE CODE 02118 CODE 04058 -SINGLE POWER SYSTEM- CODE 04044 -DUAL SPLIT POWER SYSTEM- FRONT AXLE CODES 02140 - 02127	04-077 04-078	012 D13	
FRONT AXLE CODES 02119. 02127 CODE 04068 -SINGLE POWER SYSTEM- CODE 04044 -DUAL SPLIT POWER SYSTEM-	04-077 04-079	D12 013	
FRONT AXLE CODE 02139 HYDRAULIC BRAKE HOSE AND PIPING-SIDEMEMBER TO CALIPERAT FRONT AXLE-	04-077	012	
1 PIECE HOSE 2 PIECE HOSE	04-179 04-177	H17 H1S	
HYRAULIC BRAKE HOSE -AT REAR AXLE- HYDRAULIC PUIP ASSEMBLY, MOUNTING AND HOSING MANUAL STEERING ASSEMBLY	04-185	H22	
CODES 04044, 04059 CODE 04056 MOUNTING	04-118 04-119	E24 F01	
CODES 04044, 04069 3208, DT406, DT466B, DTI406 ENGINES	04-122	F03	
9.0 LITER ENGINE 0150, 170. 190 ENGINES	04-122 04-122	F03 F03	
MV404 44, V346, 392 ENGINES CODE 04655	04-123 04-121	F04 F03	
HOSING CODES 04044, 040659	04-118	E24	
CODE 04066 POWER STEERING -SEE GROUP 06 INDEX US1MG THE POWER STEERING CODE FOR IDENTIFICATION OF PROPER PUMP, MOUNIING AND HOSING	04-119	F01	
PULLEYS BELT HYDROVAC AIR CLEANER AND MOII ING	04-122	F03	
CHASSIS BUILT PRIOR TO 9-24-80 CHASSIS BUILT 9-24-80 AND LATER HYDROVAC ASSEMBLY AND MOUNTING	04-080 04-181	D14 H18	
CODES 04011, 04058 -4X2, 4X4 MODELS- CODES 04011, 04068 -OX4, 8OX MODELS- MASTER CYLINDER ASSEMBLY AND MOUNTING	04-081 04-082	014 015	
CODE 04011 CODES 04214, 04228 CODES 04211. 04213, 04231 CODE 04058	04-116 04-017	E22 809	
4X2, 4X4 MOOELS CODES 04214, 04228	04-118	E22	
CODES 04211. 04213, 04231 6X4 MOD ELS	04-017 04-117	BO9 E23	
CODES 04044, 04055, 04059	04-083	015	
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MT-140

GROUP 04-BRAKES

	FIG NO	FICHE LOC	
HYDRAULIC BRAKES			
POWERHEAD ASSEMBLY AND MOUNTING -DUAL SPLIT POWER SYSTEM- CODES 04044, 040569 -HY-POWER BOOSTER- CODE 04055 -DUAL POWER BOOSTER-	04-103 04-084	E11 D16	
VACUUM CHECK VALVE, GAUGE AND WARMING VALVE WITCH	04-099	E07	
VACUUM CHECK VALVE, GAUGE AND WARMING VALVE WITCH VACUUM PUP ASSEMLY 3208 DT4110 DT466B DTI480B ENGINES EX DUAL STEP FUEL TANKS CHASSIS BUILT PRIOR TO-11-1-78 CHASSIS BUILT 11-1-78 AND LATER FOR DUAL STEP FUEL TANKS 9.0 LITER ENGINE D150, 170 190 ENGINES MANUAL STEERING POWER STEERING MOUNTING AI LINES 3208 ENGINES 9.0 LITER. D150, 170, 190 ENGINES DT406, DT468B, DTI480B ENGINES VACUUM RESERVE TANK AND OUINTING STANDARD CODE 04055 -BUS MODEL CODE 04055 -BUS MODEL CODE 04058 4X2 4X4 MODELS HORIZONIAL MOUNTED TANK VERTICAL MOUNTED TANK 6X4 MODELS CODE 04010 CODE 04011, 04056 HORIZONTAL MOUWTED TANK VERTICAL MOUNTED TANK	04-099 04-085 04-080 04-088 04-087 04-087 04-088 04-089 04-089 04-090 04-154 04-125 04-180 04-127 04-125 04-180 04-126 04-124 04-175	E07 D17 D18 D19 D18 D19 D20 D21 D22 G14 F05 H17 F08 F05 H17 F08 F05 H17 F08 F05 H17	
FOR TRAILER TOTER CODE 01924 FUEL TANK CODES 15030, 15157 FUEL TANK CODE 15293	04-124 04-128	F04 F06	
WARNING VALVE AND SWITCH	04-128 04-091	F06 D23	

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04-INDEX PAGE NO. 4 REV. NO. 4

MT-140

GROUP 04-BRAKES

	FIG NO	FICHE LOC	
AIR BRAKES			
FRONT WHEEL BRAKES			
CODE 04173 -15 X 3-1/2AXLE CODE 02101- CODE 04174 -15 X 4AXLE CODES 02309, 02329, 02339-	04-009	A24	
CHASSIS BUILT PRIOR TO 3-17-81 CHASSIS BUILT 3-17-81 AND LATER	04-010 04-187	B01 H24	
CODE 04175 -15 X 4AXLE CODE 02329- CHASSIS BUILT PRIOR TO 3-17-81	04-010	B01	
CHASSIS BUILT 3-17-81 AND LATER	04-187	H24	
CODE 04179 -15 X 4AXLE CODE 02309-	04-010	801	
CHASSIS BUILT PRIOR TO 3-17-81 CHASSIS BUILT 3-17-81 AND LATER	04-010	H24	
CODE 04181 -16-1/2 X 6AXLE CODE 02339- CODE 04184 -16 X 4AXLE CODE 02064-	04-012 04-170	B03 H09	
CODE 04184 - 18 X 4 AXLE CODE 02064- CODE 04185 - 10-1/2 X 5 AXLE CODES 02329, 02339, 02342-	04-012	503	
CODE 04190 -16-1/2 X 0AXLE CODE 02227-	04-180	H23	
FRONI WHEEL AUTO. SLACK ADJ REPAIR KITS REAR WHEEL BRAKES	04-189	103	
CODES 04272, 04293 -16-1/2 X 6e-			
AXLE CODES 14039, 14042, 14199	04-013	B04	
AXLE CODE 14341 CODES 04273, 04290 -16-1/12 X 7-	04-014	B06	
AXLE CODES 14039, 14042, 14199	04-193	107	
AXLE CODES 14044. 14186	04-020	B12	
AXLE CODES 14047, 14067, 14192, 14193, 14197, 14292	04-016	B06	
AXLE CODE 14351 AXLE CODES 14355, 14472	04-010 04-018	B08 B10	
AALE OODES 14333. 14472	04-010		
REAR WHEEL AUTO. SLACK ADJ REPAIR KITS	04-189	103	

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04-INDEX PAGE NO. 5 REV. NO. 4

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MT-140

	FIG NO	FICHE LOC	
AIR BRAKES			
AUXILIARY GLAD HAND CONNECTION -CODE 04685- 1925: 1955 MODELS			
CHASSIS BUILT PRIOR TO 3-16-79 CHASSIS BUILT 3-16-79 AND LATER 2125 MODEL	04-083 04-183 04-021	C21 H20 B13	
BLOCK, MANIFOLD	04-022	813	
BRAKE PEDAL AND MOUNTING	04-023	B14	
BRAKE VALVE EXCEPT 1853FC MODEL FOR 1853FC MODEL	04-023 04-191	B14 105	
CHAMBERS -SEE WHEEL BRAKES-			
CHECK VALVE -SEE AIR TANK-			
COMPRESSOR, GOVERNOR. MOUNTING AND HOSING ASSEMBLY 4X2. 4X4 MODELS			
STANDARD -7-1/4 CUBIC FOOT- AIR COOLED	04-088	D02	
WATER COOLED- EXCEPT 1853FC MODEL FOR 1853FC MODEL	04-089 04-024	D04 816 815	
CODE 04639 -12 CUBIC FOOTWATER COOLED- CODE 04550 -BENDIX-WESTINGHOUSE TYPE BW601 COMPR- 8X4, BX. MODELS	04-024 04-070	WDO	
STANDARD -MIDLAND-ROSS IYPE EL13OO COMPRESSOR- CODE 04550 -BENDIX-WESTINGHOUSE TYPE BW01 COMPR-	04-024 04-070	B15 006	
GOVERNOR	04-025	B18	
MOUNTING AND HOSING 4X2, 4X4 MODELS			
STANDARD -7-1/4 CUBIC FOOT- AIR COOLED -V345. 392 ENGINES-	04-092	024	
WATER COOLED 3208 ENGINES 9.0 LITER ENGINE	04-030	B21	
EXCEPT 1853FC MODEL FOR 1853FC MODEL	04-109 04-188	E17 101	
D150, 170, 190 ENGINES DT466, DT468B. DT1466B ENGINES	04-109 04-106	E17 E14	
MV404, 448 ENGINES- V537 ENGINES CODE 04539 -12 CUBIC FOOTWATER COOLED-	04-093 04-027	E01 B18	
3208 ENGINES D150, 170, 190 ENGINES	04-028 04-094	817 E02	
DT468, DT466B8_DT1466B_ENGINES MV404, 446_ENGINES V345, 392_ENGINES	04 -107 04-095 04-098	E16 E03 E04	
V345, 392 ENGINES V537 ENGINES 9.0 LITER ENGINES	04-098	B19 H12	
CODE 04550 -12 CUBIC FOOT- 9.0 LITER, DT486 DT468B DTI455B ENGINES -PURCHASE LOCALLY-			

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04-INDEX PAGE NO. 6 REV. NO. 4

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MT-140

GROUP 04-BRAKES

	FIG NO	FICHE LOC	
AIR BRAKES			
COMPRESSOR GOVERNOR MOUNTING AND HOSING-CONTINUED MOUNTING AND HOSING CONTINUED 6X4, 6X6 MODELS -12 CUBIC FOOTWATER COOLED. STANDARD 3208 ENGINES D190 ENGINE DT48, DT466B, DT1466B ENGINES MV404, 446 ENGINES VS37 ENGINES CODE 04550 3208 ENGINES D190 ENGINE DT446, DT446B DTI4466B ENGINES MOUNTING AND HOSING BRACET CONNECTIONS MV404 446 ENGINES V537 ENGINES	04-028 04-094 04-107 04-096 04-028 04-029 04-094 04-108 04-172 04-173 04-095 04-031	B17 E02 E15 E03 B19 B20 E02 E16 H11 H11 E03 522	
STRAINER	04-032	B23	
DOUBLE CHECK VALVE DOUBLE CHECK VALVE AND STOPLIGHT SWITCH EVAPTORATOR, ALCOHOL -CODE 04709- EXAUST VALVE FITTINGS, AIR BRAE -SEE MT 87- GAUGE -PRESSURE-, BUZZER AND LOW PRESSURE SWITCH HAND CONTROL VALVE HOSE, FLEXIBLE BRAKE CHAMBER	04-033 04-034 04-03e 04-030 04-037 04-038 04-129	B23 B24 C01 C01 C02 F07	

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04-INDEX PAGE NO. 7 REV. NO. 4

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	FIG NO	FICHE LOC	
AIR BRAKES			
INVERSION VALVE LIMITING VALVE -CODE 04670- LIMITING VALVE CONTROL -COOE 04570- QUICK RELEASE VALVE	04-039 04-040 04-041 04-042	002 C03 C04 CO5	
RELAY VALVE AIR OPERATED SOLENOID OPERATED SAFETY VALVE SEMI-TRAILER CONNECTIONS SENSOR	04-064 04-043 04-041 04-045 04-046	C22 C06 C04 C05 C07	
SLACK ADJUSTER -SEE WHEEL BRAKES- SLUDGE REMOVER VALVE -CODE 04721- STOPLIGHT VWITCH W/O DOUBLECHECK VALVE W/DOUIBLE CHECK VALVE TANS AND MOUNTING EXCEPT 1853FC MODEL CAB CWOE 16030 EXCEPT 2126, F2125, 2155 MODELS CHASSIS BUILT PRIOR TO 3-16-79 CHASSIS BUILT 3-16-79 AND LATER	04-047 04-045 04-034 04-066 04-182	C07 C06 124 C24 H19	
FOR 2125 F2125 2166 MODELS FLAT RAC &K, CODE 10010 FOR 1853FC MODEL	04-007 04-0W 04-192	D01 C23 106	
TRACTOR PROTECTION VALVE TRACTOR PROTECTION VALVE CONTROL SINGLE VALVE DUAL VALVE TRAILER HOSE DUY COUPLING	04-049 04-041 04-190 04-050	C08 C04 104 C09	
TRAILER BRAKE HOSE COUPLING	04-051	C09	

04-INDEX PAGE NO. 8 REV. NO. 4

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	FIG NO	FICHE LOC	
PARKING BRAKES			
-CODES 04006, 04009, 04036-			
BRAKE CODE 04006			
TRANSMISSION CODE 13017			
	04-134	F12	
FLAT BACK COWL CODE 16010 TRANSNISSION CODE 13426	04-136	F16	
CAB CODE 16030			
	04-151	010	
MV404, V345, V392 ENGINES FLAT BA6CK COWL CODE 10010	04-134 04-136	F12 F10	
TRANSMISSION CODES 13496, 13496, 13698, 13699	01100		
CAB CODE 16030	04.450	000	
D10, 170 ENGINES MV404 V345, V392 ENGINES	04-150 04-135	008 F14	
FLAT BACK COWL CODE 16010	04-137	F18	
TRANSMISSION CODES 13098, 13897			
CAB CODE 16030 9.0 LITER ENGINE	04-160	022	
D160, 170 ENGINES	04-160	G22	
MV404, 448, V346, V392 ENGINES	04-159	020	
FLAT BACK COWL CODE 16010	04-158	018	
BRAKE CODE 04009 -12 X 4-			
WITHOUT AILUXILIARY TRANSMISSIONS			
EXCEPT 44 MODELS TRANSMISSION CODES 13404, 13456			
ASSEMBLY	04-097	E06	
CONTROL AND LEVER			
CAB CODE 16030 320B, IV404, 440, V56, 392 ENGINES	04-140	F22	
9.0 LITER, D10, 170, 190 ENGINES	04-167	017	
DT406, DT460, DT1400B ENGINES			
EXC BENCH SEAT FOR BENCH SEAT	04-156 04-176	G16 H14	
FLAT BACK COWL CODE 18010	04-102	E100	
TRANSMISSION CODES 13495, 13490, 1309B, 13699			
ASSEMBLY CONTROL AND LEVER	04-097	E06	
CAB CODE 16030			
D150, 170 ENGINES	04-146	003	
MV404W V345 V392 ENGINES FLAT BACK COWL CODE 16010	04-162 04-100	G12 E08	
TRANS CODES 13672, 13673, 13074, 13876, 13677, 13878	04-100	LUO	
ASSEMBLY	04-097	E05	
CONTROL AND LEVER CAB CODE 16030			
3208 IN404 446 ENGINES	04-152	G12	
9.0 LITER ENGINE	04-145	003	
D160 170. 190 ENGINES DT486. DT4600. DTI40B ENGINES	04-145	003	
EXC BENCH SEAT	04-138	F20	
FOR BENCH SEAT	04-178	H14	
FLAT BACK COWL CODE 16010 TRANSMISSION CODES 13696, 13697	04-101	E09	
ASSEMBLY	04-097	E06	
CONTROL AND LEVER			
CAB CODE 16030	04 145	002	
9.0 LITER, D150. 170, DT466B ENGINES 3208, IV40 44, V345 392 ENGINES	04-145 04-152	003 G12	
FLAT BACK COWL CODE 16016	04-101	E09	
		ļ ļ	

04-INDEX PAGE NO. 9 REV. NO. 4

	FIG NO	FICHE LOC	
PARKING BRAKES -CODES 04006, 04009, 04030-			
BRAKE CODE 04009 -12 X 4CONTINUED-			
WITHOUT AUXILIARY TRANSMISSIONS -CONTINUED- FOR 4X4 MODELS			
ASSEMBLY	04-116	E21	
CONTROL AND LEVER		500	
9.0 LITER ENGINE D170, 190 ENGINES	04-141 04-141	F23 F23	
DT400, DT46U DTI480B ENGINES	04-1lee	H05	
MV404, 446, V345, 392 ENGINES	04-105	H04	
WITH AUXILIARY TRANSMISSIONS AUXILLIARY TANSIMISSION COOE 13536			
ASSEMBLY	04-098	E06	
CONTROL AAND LEVER		0.07	
3206, MV404, 448 ENGINES D190 ENGINE	04-149 04-103	G07 1H02	
DT400, DT400B DT1460B ENGINES	04-142	F24	
AUXILIART IA1MISSION CODE 1355662		500	
ASSEMBLY CONTROL AND LEVER	04-098	E06	
D190 ENGINE	04-161	G24	
DT466, DT4600, DT1466B ENGINES	04-148	0G6	
MV404, 446 ENGINES AUXILIARY IANSMIIISSION CODE 135564	04-162	H01O	
ASSEMBLY	04-098	E06	
CONTROL AND LEVER	04.440	0.07	
3208, MV404, 448 ENGINES D190 ENGINE	04-149 04-103	Go07 H102	
DT406, DT400B, DTI4068B ENGINES	04-142	F24	

04-INDEX PAGE NO. 9A REV. NO. 4

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	FIG NO	FICHE LOC	
PARKING BRAKES			
-CODES 04006, 04009, 04036-			
BRAKE CODE 04036			
4X2 MOOELS			
TRANSMISSION CODE 13017			
ASSEMBLY	04-130	F08	
CONTROL AND LEVER	04.444	0.00	
CAB CODE 16030 FLAT BACK COWL CODE 16010	04-144 04-131	G02	
TRANSMISSION CODE 13425	04-131	FO9	
ASSEMBY	04-130	FO8	
CONTROL AND LEVER	04-130	100	
CAB CODE 16030			
D150 ENGINE	04-143	GO1	
MV404, V345, V392 ENGINES	04-153	G13	
FLAT BACK COWL CODE.18010	04-132	F10	
TRANSMISSION COOES 13451, 13454			
ASSEMBLY	04-130	FO8	
CONTROL AND LEVER			
CAB CODE 16030			
9.0 LITER ENGINE	04-143	G01	
D150, 170(190 ENGINES	04-143	GO1	
MV4W, V345, V392 ENGINES FLAT BACK COWL CODE 16010	04-153 04-133	G13 F11	
FLAT BACK COWL CODE 16010	04-133	FTT	
4X4 MODELS			
ASSEMBLY	04-130	FOB	
CONTROL-AND LEVER	01100	100	
9.0 LITER ENGINE	04-146	W04	
D170 190 ENGINES	04-148	004	
DT46, DT4WOB, DT1466B ENGINES	04-164	H03	
MV404, 446, V346, 392 ENGINES	04-147	GO0	

04-INDEX PAGE NO. 9B REV. NO. 4

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	FIG NO	FICHE LOC	
PARKING BRAKES -CODES 04006, 04009, 04030-			
BRAKE CHALMERS CODES 04272, 04273 STANDARD -MGM STOPGARD MODEL 30- OPTIONAL -ROYAL-ANCHORLOCK MODEL 3030-	04-052 04-053	C10 C11	
CODES 04290, 04293	04-053	C11	
CODE 04683 CODE 04273 CODE 04290	04-052 04-053	C10 C11	
BRAKE CHAMBER CONTROL VALVE	04-054	C12	
PARKING BRAKE RELAY VALVE	04-139	F21	
DRIVE SHAFT PARKING BRAKE SHIELD			
PARKING BRAKE SHIELD TRANSMISSION CODE 13017 TRANSMISSION CODES 13425, 13495, 13496, 13098, 13699 TRANSMISSION CODE 13454 TRANSMISSION CODE 13404 TRANSMISSION CODES 13672, 13073, 13074, 13676, 13677, 13678 3208. MV404, 446 ENGINES DT406, DT466B, DT1466B ENGINES	04-110 04-111 04-112 04-113 04-111 04-114	E18 E19 E19 E19 E18 E20	

04-INDEX PAGE NO. 10 REV. NO. 4

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14&P-2

	N	AT 1 1			JP 04- BRAKES			P 04- BRAKE	TM 5-4210-230-1
REF NO.		г	0.0	NUL	DESCRIPTION	REF	PART NUMBER	DESCRI	-
		FIG.			TYDRAULIC BRAKE		IG. 04-001	I CONTINUED	
	1				MT-22057 Stud -Not Serviced Separately-	Ľ.			
	2	95	905	H	SPRING, CAM CHASSIS BUILT PRIOR TO 8-21-80 -1 Serviced Separately- Chassis Built 8-21-80 and later	NOT			
	3	72	550	R1	SCREW, BRAKE CYLINDER BLEEDER -4-				
	4	498 456 448	021 052 577	C91 C91 C1 C1 R1	BACKING	RIGHT			1
	5	341	035	C91 C91	≢CYLINDER, BRAKE, ASSY -2- LEFT -WILL WORK FOR 498227C91 -				
	6				CAM -NOT SERVICED SEPARATELY-				· · · ·
	7	578 578	581 582	C91 C91	<pre>eshoe, w/lining, brake -4- eset, shoe w/lining, brake -will woi for 490409C91-</pre>	RK			
	8	578	583	C9 1	eSET, BRAKE LINING W/RIVETS -WILL W For 490410C91-	DRK			
		95	304	R9 1	<pre>#KIT, BRAKE CYLINDER REPAIR -CONSIST BOOT AND CUP4-</pre>	TS OF			
		386 386	026 027	C92 C92	<pre>\$KIT, SELF ADJUSTING REPAIR LEFT BRAKE RIGHT BRAKE</pre>				
		498	023	C91	SKIT, BRAKE SPRING AND WASHER HOLD & REPAIR	DOWN			
					WHEN CHANGING BRAKE LINING OR SHOES BOTH SIDES MAY HAVE TO BE CHANGED PIL 80-04-01-	S -SEE			

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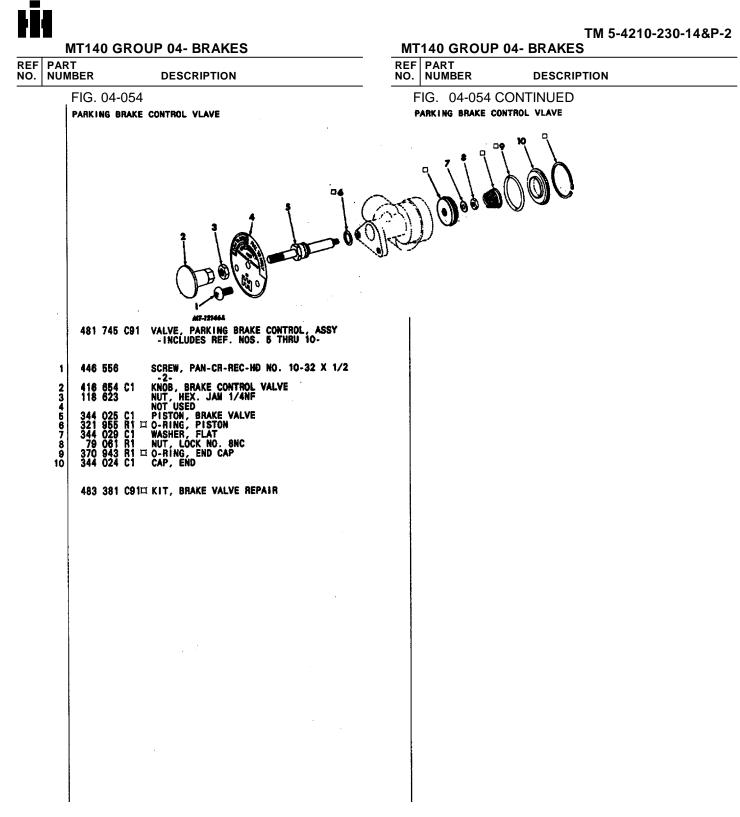
TM 5-4210-230-14&P-2 MT140 GROUP 04- BRAKES MT140 GROUP 04- BRAKES REF PART NO. NUMBER REF PART NO. NUMBER DESCRIPTION DESCRIPTION FIG. 04-002 FIG. 04-002 CONTINUED FRONT WHEEL HYDRAULIC BRAKE FRONT WHEEL HYDRAULIC BRAKE OL so MT-19902

1	425	934	C1	STUD, CAN SHOE, ADJUSTING CHASSIS BUILT PRIOR TO 9-23-80 -NOT SERVICED SEPARATELY- CHASSIS BUILT 9-23-80 AND LATER
2				SPRING, CAM CHASSIS BUILT PRIOR TO 9-23-80 -NOT SERVICED SEPARATELY-
	95	905	H	CHASSIS BUILT 9-23-80 AND LATER
3	72	550	R1	SCREW, BRAKE CYLINDER BLEEDER -4-
4	498	018	C91	PLATE, W/CAMS, STUDS AND SPRINGS, LEFT BACKING
		019	•••	PLATE, W/CAMS, STUDS AND SPRINGS, RIGHT
	456 448 73	052 577 243	C1 C1 R1	BOLT, BACKING PLATE MOUNTING -16- NUT, BACKING PLATE MOUNTING -16- #SPRING, SHOE RETURN -2-
5	341	035 036	C91	CYLINDER, BRAKE, ASSY -2- LEFT -WILL WORK FOR 498227C91-
8	72	525	R 1	CAM, ADJUSTING Chassis Built Prior to 9-23-80 -NOT Serviced Separately- Chassis Built 9-23-80 and Later
7				WASHER -NOT SERVICED SEPARATELY-
8	582 582	471 472	C91 C91	<pre>OSHOE, W/LINING, BRAKE -4- OSET, SHOE W/LINING, BRAKE -WILL WORK FOR 392843C91-</pre>
9	578	583	C91	<pre>@SET, BRAKE LINING, W/RIVETS -WILL WORK FOR 386042C91-</pre>
	95	304	R9 1	#KIT, BRAKE CYLINDER REPAIR -CONSISTS OF BOOT AND CUP4-
	498	022	C9 1	\$KIT, BRAKE SHOE HOLD DOWN REPAIR
				ANNEN CHANCING DOAKE LINING OD CHOES

WHEN CHANGING BRAKE LINING OR SHOES BOTH SIDES MAY HAVE TO BE CHANGED -SEE PIL 80-04-01-

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FIG. 04-002 PAGE NO. 12



MT140 GROUP 04- BRAKES REF PART NO. NUMBER

REAR WHEEL HYDRAULIC BRAKE

FIG. 04-055

TM 5-4210-230-14&P-2

	140 GROUP	04- BRAKES	
	PART NUMBER	DESCRIPTION	

FIG. 04-055 CONTINUED

REAR WHEEL HYDRAULIC BRAKE

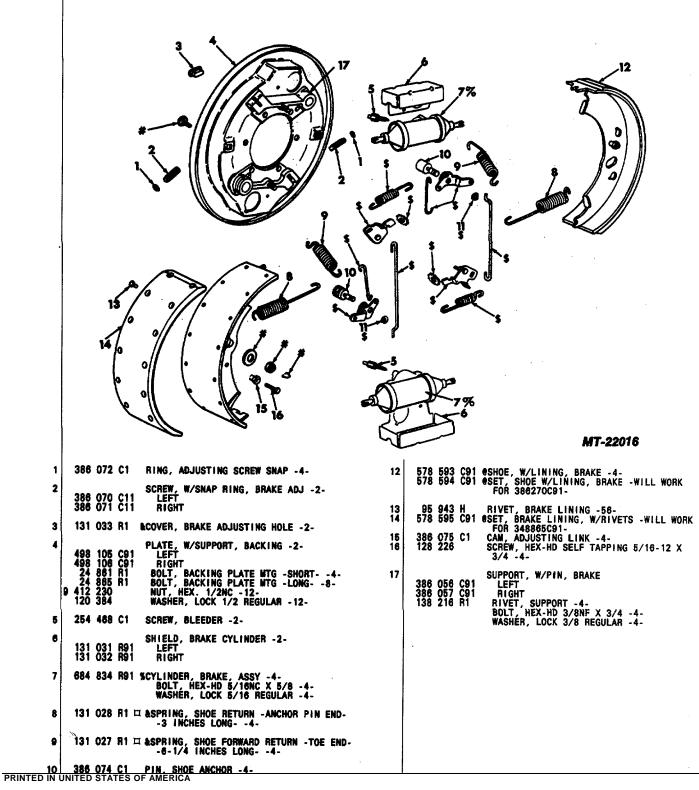


FIG. 04-055 PAGE NO. 60

ŀĪł MT140 GROUP 04- BRAKES

					TM 5-4210-230)-14&P-2	
		40 GROUP 04- BRAKES	MT140 GROUP 04- BRAKES				
REF PART NO. NUMBE		R DESCRIPTION		PART NUMBER	DESCRIPTION		
	FIG	G. 04-055 CONTINUED	1				
		REAR WHEEL HYDRAULIC BRAKE					
		166 739 R91 %KIT, BRAKE CYLINDER REPAIR -CONSISTS OF BOOTS AND CUPS4-					
		*KIT, SELF ADJUSTING REPAIR 386 076 C91 LEFT BRAKE 386 077 C91 RIGHT BRAKE					
		876 567 C91 #KIT, GUIDE BOLT					
		498 108 C911 KIT, RETURN SPRING					
		498 107 C91 &KIT, HOLD DOWN -ALSO INCLUDES GUIDE BOLT KIT-					
		OWHEN CHANGING BRAKE LINING OR SHOES BOTH SIDES MAY HAVE TO BE CHANGED -SEE PIL 80-04-01-					

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PAGE NO. 61

MT140 GROUP 04- BRAKES REF PART NO. NUMBER DESCRIPTION

REAR WHEEL HYDRAULIC BRAKE

FIG. 04-056

TM 5-4210-230-14&P-2

MT140 GROUP 04- BRAKES							
	PART NUMBER	DESCRIPTION					
F	IG. 04-056 CON	FINUED					
1	REAR WHEEL HYDRAULIC I	BRAKE					

MT-22029

1	299	487 399 064	C1	PIPE, BRAKE CYLINDER, ASSY -2- Clip, Pipe -2- Screw, Clip Mounting -2-
2	131	016 017 216	R91	SUPPORT, W/PIN, BRAKE Left Right Rivet, Support -4-
3	131	033	R1	\$COVER, BRAKE ADJUSTING -4-
4		031 032		SHIELD, BRAKE CYLINDER, ASSY -2- LEFT RIGHT
5	498 24 24 9 412	103 104 861 865 230 384	C91 R1 R1	PLATE, W/SUPPORT, BACKING LEFT Right Bolt, Backing Plate MTG -Short4- Bolt, Backing Plate MTG -Long8- Nut, Hex. 1/2nc -12- Washer, Lock 1/2 Regular -12-
6 7 8		025 028		SCREW, ADJ -NOT SERVICED SEPARATELY- PIN, SHOE ANCHOR -4- \$SPRING, SHOE RETURN -ANCHOR PIN END3 INCHES LONG4-
9	578 578	593 594	C91 C91	<pre>@SHOE, W/LINING, BRAKE -4- @SET, SHOE W/LINING, BRAKE -WILL WORK FOR 386270C91-</pre>
10	131	027	R1	\$SPRING, SHOE RETURN -TOE END8-1/4 Inches Long4-
11	131 158	021 532	R1 R91	<pre>\$\$PRING, SHOE ADJUSTING WHEEL -4- \$\$CREW, W/LW -CODE 04214.92024-</pre>
12 13	254	468	C1	WHEEL -NOT SERVICED SEPARATELY- Screw, bleeder -4-
14	684	834	R9 1	<pre>#CYLINDER, BRAKE, ASSY -4- BOLT, HEX-HD 5/16NC X 5/8 -8- WASHER, LOCK 5/16 REGULAR -8-</pre>
15				SEE REF. NO. 9
16	578	595	C91	<pre>eset, BRAKE LINING, W/RIVETS -WILL WORK FOR 348865C91-</pre>
		943		RIVET, BRAKE LINING -56-
UNI	TED S	TATE	S OF	AMERICA

876 567 C91 SKIT, GUIDE BOLT 498 107 C91 #KIT, HOLD DOWN WHEN CHANGING BRAKE LINING OR SHOES BOTH SIDES MAY HAVE TO BE CHANGED -SEE PIL 80-04-01-

166 739 R91 #KIT, BRAKE CYLINDER REPAIR -CONSISTS OF BOOTS AND CUPS- -4-

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FIG. 04-056

PAGE NO. 62

MT140 GROUP 04- BRAKES REF NO.

TM 5-4210-230-14&P-2

			IT140) G	RO	UP 04- BRAKES	м	T14	40 G	ROI	JP 0	4- BRA	KES
AIR COMPRESSOR ASSEMBLY 27 482 992 C1 CRANKSHAFT, AIR COMPRESSOR 370 920 R1 O-RING, SEAL -4- 328 528 C91 SEAL, CRANKSHAFT 28 472 130 C91 CRANKCASE, AIR COMPRESSOR 338 191 R1 O-RING, END COVER 1/2 ID -LOWER CRANKCASE END - 4- CRANKCASE END - 4- 579 455 C1 RETAINER, O-RING SEAL 1/2 OD -4- 29 474 476 C1 GASKET, ADAPTER 30 483 160 C1 ADAPTER, BASE 487 925 C1 SCREW, ADAPTER TO CRAMKCASE -8- 120 382 WASHER, LOCK 3/8 REGULAR -6- 31 NOT USED 32 25 920 H0 XEY, CRANKSHAFT 888 429 C1 283 641 C1 *PLATE, ADAPTER -3208 ENGNOT INCLUDED 188 684 R910 KIT, PISTON UNLOADER 2 483 638 C1 BRACKET, HYDRAULI 21 483 638 C1 BRACKET, HOSE SUP 22 483 638 C1 BRACKET, HOSE SUP 338 641 C1 *PLATE, ADAPTER -3208 ENGNOT INCLUDED 1 486 748 C1 BRACKET, HOSE SUP 308 684 R910 KIT, PISTON UNLOADER 2	F	PAR	г				RE	FP	PART				
28 472 130 C91 CRANKCASE, AIR COMPRESSOR 338 191 R1 0-RING, END COVER 1/2 1D -LOWER CRANKCASE END4- 579 455 C1 RETAINER, 0-RING SEAL 1/2 OD -4- 29 474 476 C1 GASKET, ADAPTER 30 483 160 C1 ADAPTER, BASE 487 925 C1 SCREW, ADAPTER TO CRANKCASE - 8- 31 NOT USED NOT USED NOT USED 32 25 920 HO KEY, CRANKSHAFT 283 641 C1 *PLATE, ADAPTER -3208 ENGNOT INCLUDED IN ASSEMBLY- 1 168 684 R91II KIT, PISTON UNLOADER 2			AIR C	COMPE	RESS	DR ASSEMBLY				-		IC PIPE/	HOSE M
338 191 R1 0-RING, END COVER 1/2 1D - LOWER CRANKCASE END - 4- 579 455 C1 RETAINER, 0-RING SEAL 1/2 OD -4- 29 474 476 C1 GASKET, ADAPTER 30 483 160 C1 ADAPTER, BASE 487 925 C1 SCREW, ADAPTER TO CRANKCASE -8- 31 NOT USED NOT USED NOT USED Image: Crankchaft 32 25 920 HO KEY, CRANKSHAFT 283 641 C1 *PLATE, ADAPTER -3208 ENGNOT INCLUDED IN ASSEMBLY- 1 168 684 R91□ KIT, PISTON UNLOADER 2 168 684 R91□ KIT, PISTON UNLOADER 2		27	482 370 328	992 920 528	C1 R1 C91	CRANKSHAFT, AIR COMPRESSOR O-Ring, Seal -4- Seal, Crankshaft				_			~
29 474 476 C1 GASKET, ADAPTER 30 483 160 C1 ADAPTER, BASE 487 925 C1 SCREW, ADAPTER TO CRANKCASE - 8- 120 382 WASHER, LOCK 3/8 REGULAR - 8- 31 NOT USED 32 25 920 HO 33 25 920 HO 41 *PLATE, ADAPTER -3208 ENGNOT INCLUDED 1 489 429 C1 ************************************		28	338	191	81	O-RING, END COVER 1/2 1D -LOWER CRANKCASE END4-			0 01	•		•	0
30 483 160 C1 ADAPTER, BASE 31 SCREW, ADAPTER TO CRANKCASE - 6- 32 WASHER, LOCK 3/8 REGULAR - 6- 31 NOT USED 32 25 920 HO 33 25 920 HO 481 C1 *PLATE, ADAPTER -3208 ENGNOT INCLUDED 108 684 R91□ KIT, PISTON UNLOADER 2 483 638 C1 843 641 C1 *PLATE, ADAPTER -3208 ENGNOT INCLUDED 108 684 R91□ KIT, PISTON UNLOADER		29			-				1			2	
33 25 920 H0 KEY, CRANKSHAFT 283 641 C1 *PLATE, ADAPTER -3208 ENGNOT INCLUDED 1 880 429 C1 W/0 STUD 108 684 R91□ KIT, PISTON UNLOADER 2 483 639 C1 BRACKET, HYDRAULI 108 684 R91□ KIT, PISTON UNLOADER 2 483 748 C1 BRACKET, FRONT WE			483 487 120	160 925 382	C1 C1	ADAPTER, BASE Screw, Adapter to crankcase -8-			Ŀ		2		
283 641 C1 *PLATE, ADAPTER -3208 ENGNOT INCLUDED 489 429 C1 W/O STUD 108 684 R91 KIT, PISTON UNLOADER 2 483 639 C1 BRACKET, HOSE SUGENERIE 168 684 R91 KIT, PISTON UNLOADER 3 486 748 C1 BRACKET, FRONT WE		32	25	920	но	NOT USED Not Used Key, Crankshaft	•		•	<u> </u>	ッ 		
SIDEMENBER-			283	641	C1	*PLATE, ADAPTER -3208 ENGNOT INCLUDED IN ASSEMBLY-	1		532 4	20 C1	1	V/O STUD V/STUD	
			168	684	R9 1	T KIT, PISTON UNLOADER			483 6 486 7	39 C1 48 C1	BR/	ICKET, F	RONT WH
						•PARTS NOT ILLUSTRATED	. 4		578 7		BAJ	ACKET, H	DSE AT

DESCRIPTION

C PIPE/HOSE MOUNTING-

0 00 ۵ 2 3 **NT-88**111A CKET, HYDRAULIC PIPE 10 Stud 15tud KET, HOSE SUPPORT KET, FRONT WHEEL HOSE/PIPING -AT Demember-KET, Hose at differential

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	40 GROL	JP 04- BRAKES				UP 04- E	BRAKES
PART NUMBER	<u> </u>	DESCRIPTION		F PAF			DESCRIPTION
1	. 04-072					2 CONT	
	BRAKE PEDAL	AND MOUNTING		BRAKE	PEDAL	AND MOUNT	ING to the subjects of the subject to the subject of the subject o
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						(12)	
					· · · ·	0	
		MT-19790					
1	476 408 C 185 062 R		NG- 1:	491	558 C2	PEDAL,	BRAKE, ASSY HEX-HD 1/2NC X 9
2 3	185 062 R 482 512 C			9 412	558 C2 691 R1 230	BOLT, NUT,	HEX-HD 1/2NC X 9 HEX. LOCK 1/2NC
	114 496	NUT, HEX. JAM 1/2NF	1;	9 413		NUT, HE	EX-HD 7/16NC X 1-1/2 X. LOCK 7/16NC
4 5 6	361 607 C 162 550 R 118 624	2 BUSHING, PUSH ROD 91 BUMPER, BRAKE PEDAL STOP NUT, HEX. JAM 5/16NF -2-	14		846 R1 987 C1	BUSHING	FLAT 7/16 , BRAKE PEDAL -AUTOMATIC TRANS
7	491 442 C 25 493 R 25 708 R		1	· ·		-1.06	DIA X 3.73 LONG- , STEERING COLUMN -SEE GROUP OF
	25 708 R 120 214	1 WASHER, FLAT 5/16 -2- WASHER, LOCK 5/16 REGULAR -2	- 1	472	354 C1	REINFOR	CEMENT, MASTER CYLINDER
8		BRACKET, STOPLIGHT SWITCH-MAKE	LOCALLY-	26 25 120	099 R1 709 R1 382	SCREW WASHE	, HEX-HD TAPPING 3/8-16 X 1 -3 R, Flat 3/8 -2- R, Lock 3/8 regular -3-
9	358 560 C 107 825	1 SWITCH, STOPLIGHT NUT, SPEED 1/2NC -2-				moyil	
10	166 880 R						

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FIG. 04-072 PAGE NO. 80

REF PART NO. NUMBER

DESCRIPTION

FIG. 04-075

FITTINGS -HYDRAULIC AND VACUUM-

TM 5-4210-230-14&P-2 MT140 GROUP 04- BRAKES

NO. NUMBER DESCRIPTION

FIG. 04-075 CONTINUED

REF PART

FITTINGS -HYDRAULIC AND VACUUM-

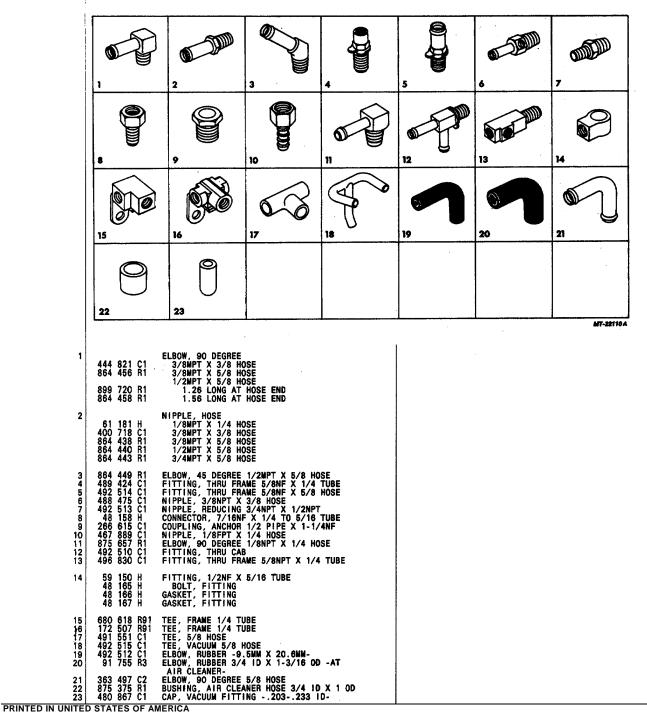


FIG. 04-075

PAGE NO. 83

MT140 GROUP 04- BRAKES REF PART NO. NUMBER DESCRIPTION

REF NO.	PART NUMBER DESCRIPTION	REF PART NO. NUMBER DESCRIPTION
	FIG. 04-076	FIG. 04-077
	HOSING, PIPING -TUBING- AND CLAMPS	HYD BRAKE HOSE/PIPING -SMBR TO WHL CYL-
	571 549 C1 7 INCHES -177.8 MM3/16 ID- 483 151 C2 10.9 INCHES -277.0 MM3/16 ID- 491 548 C1 12 INCHES -305.0 MM1/4 ID- 571 548 C1 14 INCHES -355.6 MM3/16 ID- #HOSE, VACUUM 427 693 C2 3/8 ID X 13/16 0D 427 693 C2 3/8 ID X 13/16 0D 430 950 C2 5/8 ID X 1-1/8 0D 446 960 C1 3/4 ID X 1 0D 995 107 R1 3/4 ID X 1 0D 995 107 R1 3/4 ID X 1-3/16 0D 364 361 C1 1.0 ID 364 319 C1 TUBE, HOSE -5/8 HOSE X 2.5 INCHES LONG- #TUBING -COPPER- 995 060 R1 3/16 0D 995 061 R1 1/4 0D 995 063 R1 3/8 0D 995 064 R1 1/2 0D 995 065 R1 3/16 0D 995 065 R1 3/16 0D 995 065 R1 3/16 0D 995 065 R1 3/16 0D 995 065 R1 3/16 0D 995 065 R1 3/16 0D 995 065 R1 3/16 0D 995 065 R1 3/16 0D 995 065 R1 3/16 0D 995 065 R1 3/16 0D 995 065 R1 3/16 0D 995 065 R1 3/16 0D 995 065 R1 3/16 0D 990 093 C1 3/16 0D 990 095 C1 5/16 0D CLAMP, HOSE 299 401 C1 5/16 996 261 R91 3/8 TO 3 274 085 R91 9/16 TO 1-1/16 299 410 C1 5/8	AS 184 H CLIP, ANCHOR -2-
	48 184 H CLIP, HOSE ANCHOR	2 489 518 C1 HOSE, HYDRAULIC BRAKE, ASSY -2- 25 751 R1 BOLT, HEX-HD 5/16NC X 1-1/4 -2- 9 413 994 NUT, HEX. LOCK 5/16NC -2-
	\$PART NO. COVERS 1 FOOT OF BULK MATERIAL	9 413 994 NUT, HEX. LOCK 5/18NC -2- 3 BRACKET, HOSE SUPPORT -MAKE LOCALLY2-
		9 413 994 NUT, HEX. LOCK 5/16NC -4-
		4 990 094 C1 \$TUBE, STEEL 1/4 OD
		<pre>\$PART NO. COVERS 1 FOOT OF BULK MATERIAL</pre>

TM 5-4210-230-14&P-2

MT140 GROUP 04- BRAKES

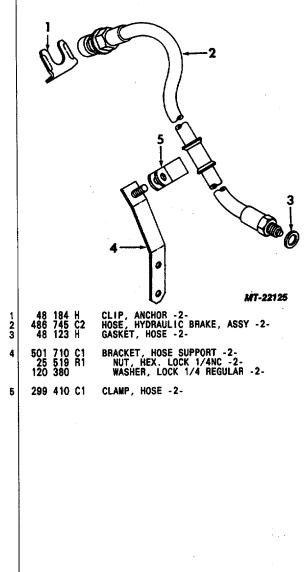
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FIG. 04-076 PAGE NO. 84

MT140 GROUP 04- BRAKES REF PART NO. NUMBER DESCRIPTION

FIG. 04-078

HYD BRAKE HOSE/PIPING -SMBR TO WHL CYL-

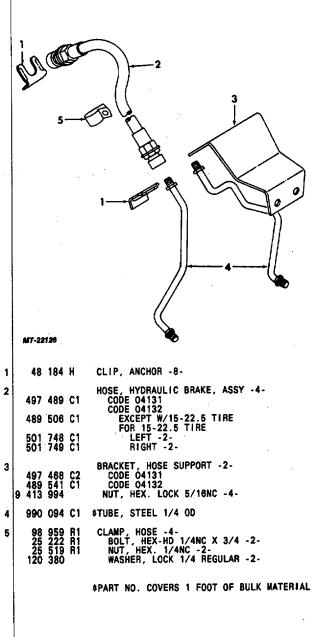


TM 5-4210-230-14&P-2 MT140 GROUP 04- BRAKES

	PART NUMBER	DESCRIPTION	
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FIG. 04-079

HYD BRAKE HOSE/PIPING -SMBR TO WHL CYL-



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FIG. 04-079 PAGE NO. 85

MT140 GROUP 04- BRAKES REF PART NO. NUMBER DESCRIPTION

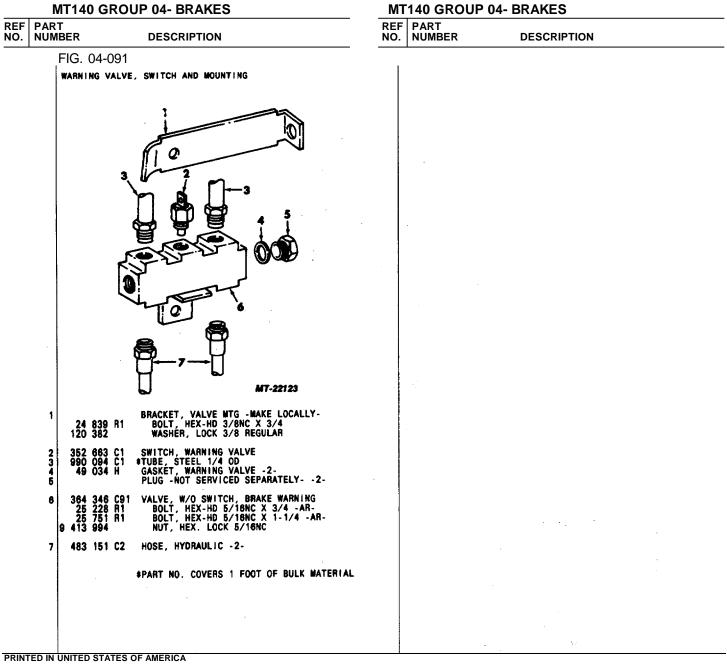
PAR NUM		ER			DESCRIPTION
	FI	G.	04-0	080	
					CLEANER AND MOUNTING
		Ć)0 ~-	
		472	382	C91	CLEANER, AIR, ASSY - INCLUDES ITEMS 2, 5 AND 6-
		25 26	522 110	R1 R1	BOLT, HEX-HD 1/4NC X 3/4 -2- NUT, HEX. LOCK 1/4NC -2-
1 2		199	160	R2	CAP, 3/4 TUBE BODY -NOT SERVICED SEPARATELY-
3		91 996	755 261	R3 R9 1	ELBOW, RUBBER CLAMP, ELBOW -2-
4		491 25 25	567 493 751	C1 81 81	BRACKET, AIR CLEANER MOUNTING BOLT, HEX-HD 5/16NC X 1-W/O REINF2- BOLT, HEX-HD 5/16NC X 1-1/4 -W/REINF- -2-
	9	413	994		NUT, HEX. LOCK 5/16NC -2-
5 6		474	281	C1	COVER -NOT SERVICED SEPARATELY- Element, Air Cleaner

TM 5-4210-230-14&P-2 MT140 GROUP 04- BRAKES										
	REF PART NO. NUMBER DESCRIPTION									
	FIG. 04-081									
	HYDROVAC ASSEMBLY AND MOUNTING									
	MT-22121									
1	491 566 C1 575 040 C1 571 422 C1 25 770 R1	BRACKET, HYDROVAC MOUNTING EXC W/DUAL STEP TANKS CHASSIS BUILT PRIOR TO 10-20-80 CHASSIS BUILT 10-20-80 AND LATER FOR DUAL STEP TANKS BOLT, HEX-HD 3/8NF X 3/4 -AR- BOLT, FLG-HEX-HD -AR-								
	414 052 C1 414 053 C1 414 054 C1 414 055 C1 414 087 C1 120 382	1/2NF X 1-1/2 1/2NF X 1-3/4 1/2NF X 2 1/2NF X 2-1/4 NUT, FLG-HEX 1/2NF -2- WASHER, LOCK 3/8 -AR-								
2	572 535 C1	SPACER, SUPPORT -AR-								
3	491 564 C1 575 042 C1 571 424 C1 25 770 R1	BRACKET, HYDROVAC MOUNTING EXC W/ DUAL STEP TANKS CHASSIS BUILT PRIOR TO 10-20-80 CHASSIS BUILT 10-20-80 AND LATER FOR DUAL STEP TANKS BOLT, HEX-HD 3/8NF X 3/4 -AR- BOLT, FLG-HEX-HD -AR-								
	414 052 C1 414 053 C1 414 054 C1 414 055 C1 414 087 C1 120 382	1/2NF X 1-1/2 1/2NF X 1-3/4 1/2NF X 2 1/2NF X 2-1/4 NUT, FLG-HEX 1/2NF -2- WASHER, LOCK 3/8 -AR-								
4	430 280 C92 277 082 C93 25 770 R1 120 382	HYDROVAC, ASSY CODES 04211, 04213, 04231 CODES 04214, 04228 BOLT, HEX-HD 3/8NF X 3/4 -3- WASHER, LOCK 3/8 REGULAR -3-								

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TM 5-4210-230-14&P-2



PAGE NO. 95

ŀĪł MT140 GROUP 04- BRAKES RE NC

MT140 GROUP 04- BRAKES						TM 5-4210-230-14&P-2 MT140 GROUP 04- BRAKES					
REF	PART		200	UP 04- BRARES		MT140 GROUP 04- BRAKES					
NO.	NUME			DESCRIPTION		NUMBER	DESCRIPTION				
	F	FIG. 04-0 FIG. 04-0				FIG. 04-092	2 CONTINUED				
		AIR COMPI	RESSO	R MOUNTING AND HOSING		AIR COMPRESSO	OR MOUNTING AND HOSING				
	1 2			BELT, AIR COMPRESSOR DRIVE HOSE, OIL SUPPLY -MAKE LOCALLY-	15	223 739 R21 25 955 R1 24 839 R1	BRACKET, COMPRESSOR STABILIZER BOLT, HEX-HD 5/18NC X 5/8 -2-				
	3	375 051 25 236 120 214	R1	<pre>\$HOSE, AIR 1/4 GOVERNOR -SEE GROUP 04 INDEX- BOLT, HEX-HD 5/16NC X 3 -2- WASHER, LOCK 5/16 REGULAR -2-</pre>		140 483 H 120 214 120 382	BOLT, HEX-HD 3/8NC X 3/4 BOLT, HEX-HD 3/8NC X 1-1/4 WASHER, LOCK 5/16 REGULAR -2- WASHER, LOCK 3/8 REGULAR -2-				
	5	203 762 9 413 981	R1	COMPRESSOR, AIR -SEE GROUP 04 IN BOLT, HEX-HD 7/16NC X 2 -4- NUT, HEX. 7/16NC -4-	NDEX -	438 669 C91	*HOSE, COMPR PIPE TO AIR TANK PIPE, ASSY -10 INCHES LONG- *HOSE, GOV PIPE TO AIR TANK PIPE, ASSY				
		25 846 120 383	81	WASHER, FLAT 7/16 -4- WASHER, LOCK 7/16 REGULAR -4-		199 742 R92 697 520 R92	9 INCHES LONG -FOR 1723, 1823 MODELS-				
	6	25 653 120 214	81	STRAINER, AIR -SEE GROUP 04 INDE BOLT, HEX-HD 5/16NC X 1/2 -2- WASHER, LOCK 5/16 REGULAR -2-		151 415 R2 306 132 C1	*PULLEY, ACCESSORY DRIVE *STRAP, LOCK -WILL WORK FOR 291207C1-				
	7 8	302 044 413 446	R1 C1	GASKET, AIR STRAINER BRACKET, GOVERNOR MOUNTING			PARTS NOT ILLUSTRATED				
	9	60 697 25 492 120 214 55 916 429 523	81 811	FITTING, DISCHARGE BOLT, HEX-HD 5/16NC X 7/8 -2- WASHER, LOCK 5/16 REGULAR -2- ELBOW, DISCHARGE FITTING ELBOW, 90 DEGREE 1/2MPT X 5/8			\$PART NO. COVERS 1 FOOT OF BULK MATERIAL				
	10 11 12 13	92 474 470 477 216 246 83 817	R2	GASKET, DISCHARGE FITTING BRACKET, COMPRESSOR MOUNTING GASKET, COMPRESSOR MOUNTING BRAC GASKET, COMPRESSOR MOUNTING	CKET						
	14	875 723 465 515	R1 C1	PULLEY, AIR COMPRESSOR EXCEPT EMISSION AIR PUMP FOR EMISSION AIR PUMP							

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FIG. 04-092 PAGE NO. 96

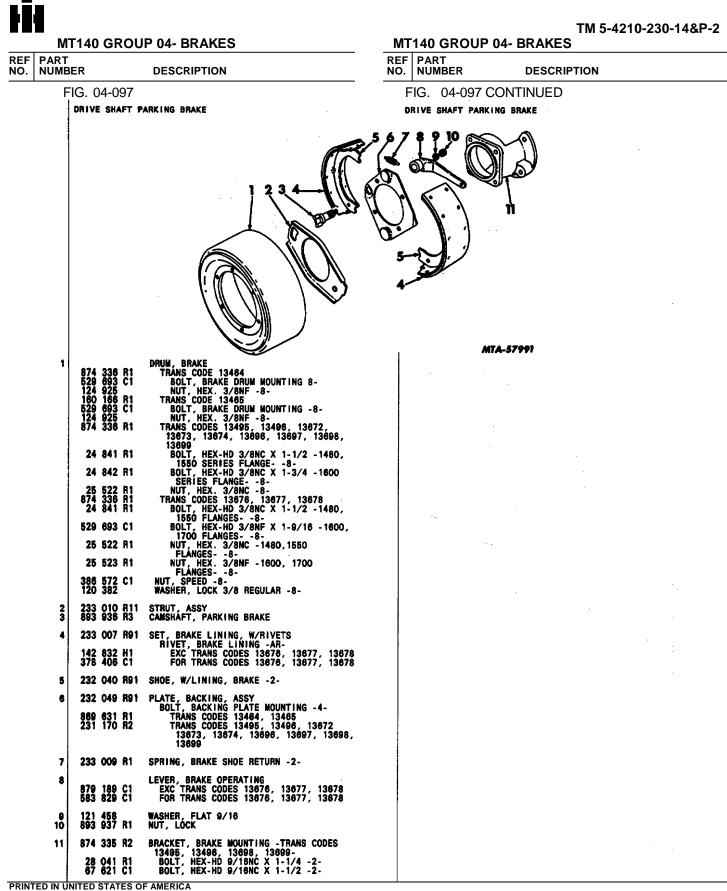
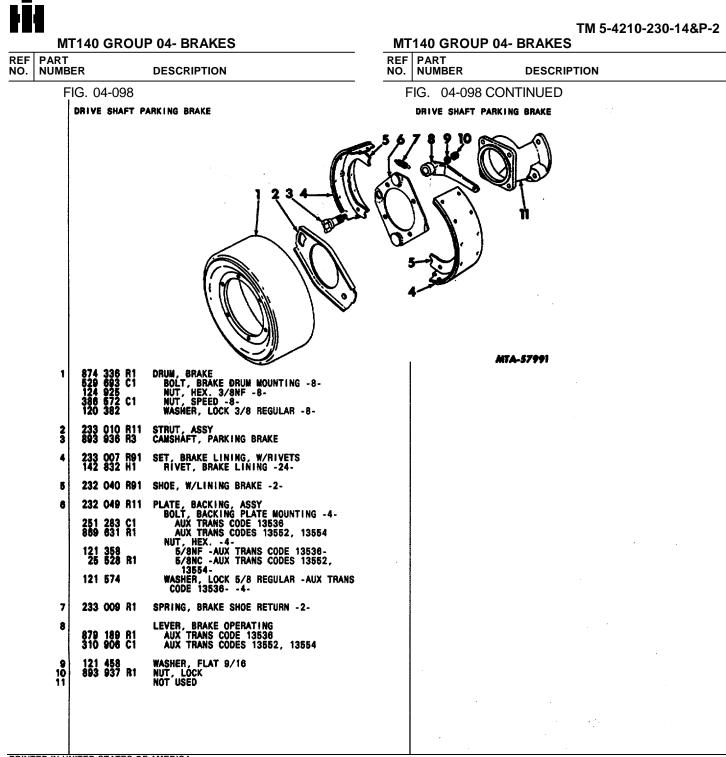
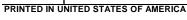


FIG. 04-097

PAGE NO. 101



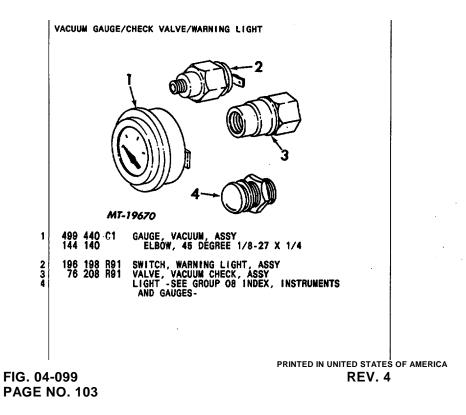


REF PART NO. NUMBER

R DESCRIPTION

NUMBER

FIG. 04-099



TM 5-4210-230-14&P-2

MT140 GROUP 04 -BRAKES REF PART NO. NUMBER DESCRIPTION

PARKING BRAKE CONTROL LEVER AND CABLE

REF PART NO. NUMBER DESCRIPTION

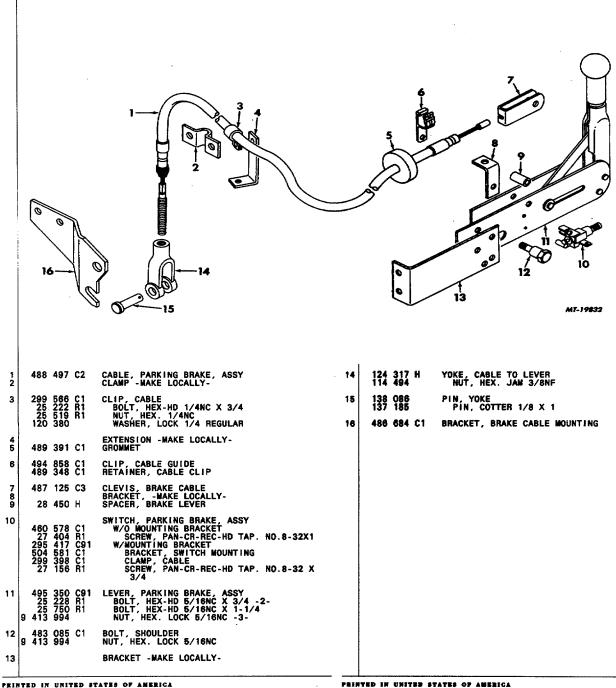
FIG. 04-100

REF PART NO. NUMBER DESCRIPTION

MT140 GROUP 04 -BRAKES

FIG. 04-100 CONTINUED

PARKING BRAKE CONTROL LEVER AND CABLE



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FIG. 04-100 PAGE NO. 104

REF PART NO. NUMBER DESCRIPTION

FIG. 04-115

REF PART NO. NUMBER DESCRIPTION

FIG. 04-115 CONTINUED

	DRIVE SHAFT P	ARKING BRAKE	DRIVE SHAFT PARKING BRAKE
	D74 326 D4		MTA-57991
1	874 336 R1 24 841 R1	DRUM, BRAKE BOLT, HEX-HD 3/8NC X 1-1/2 -1480, 1550 SERIES FLANGE8-	
	529 693 C1 25 522 R1 25 523 R1 386 572 C1 120 382	BOLT, HEX-HD 3/8NF X 1-9/18 -1600, 1700 SERJES FLANGE8- NUT, HEX. 3/8NC -8- NUT, HEX. 3/8NF -8- NUT, SPEED -8- WASHER, LOCK 3/8 REGULAR -8-	
23	233 010 R11 893 936 R3	STRUT, ASSY Camshaft, parking brake	
4	233 007 R91 196 977 R1	SET, BRAKE LINING, W/RIVETS Rivet, brake Lining -24-	
5	232 040 R91	SHOE, W/LINING, BRAKE	
6	232 049 R11 231 170 R2	PLATE, BACKING, ASSY BOLT, BACKING PLATE MOUNTING -4-	
7 8 9 10 11	233 009 R1 968 875 R1 121 458 893 937 R1	SPRING, BRAKE SHOE RETURN -2- LEVER, BRAKE OPERATING WASHER, FLAT 9/16 NUT, LOCK NOT USED	
		PRINTED IN UNITED STATES	
FIG. 04- PAGE N		REV. 4	

TM 5-4210-230-14&P-2

REF PART NO. NUMBER

DESCRIPTION FIG. 04-116

BRAKE MASTER CYLINDER

MT140 GROUP 04 -BRAKES

REF PART NO. NUMBER DESCRIPTION

FIG. 04-116 CONTINUED

BRAKE MASTER CYLINDER

				2 3 2 3 4 0 5 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1	
		175	H	CYLINDER, MASTER, ASSY -INCLUDES REF. NOS. 4 THRU 6, 8 THRU 16- BOLT, HEX-HD 3/8NC X 1-1/2 -3-	
;		022 382		WASHER, LOCK 3/8 REGULAR -3-	
1 2 3		035 034		NOT USED PLUG, CYLINDER OUTLET GASKET, CYLINDER OUTLET PLUG	1
4 5 6 7 8 9 10 11 12 13 14 15 16	230 53 121	846 385 401	R91 H HB	BODY -NOT SERVICED SEPARATELY- CAP, FILLER, ASSY GASKET, FILLER, CAP KIT, MASTER CYLINDER REPAIR VALVE, W/SEAL, CHECK -ORDER REPAIR KIT- SPRING -NOT SERVICED SEPARATELY- CUP, PRIMARY -ORDER REPAIR KIT- PISTON, SECONDARY -ORDER REPAIR KIT- PISTON, SECONDARY -ORDER REPAIR KIT- RING -NOT SERVICED SEPARATELY- PLATE, STOP -NOT SERVICED SEPARATELY- RING, SNAP -ORDER REPAIR KIT- BOOT, CYLINDER -ORDER REPAIR KIT-	
17	423 501 124	215 691 394	R91 C1	ROD, CYLINDER PUSH, ASSY Rod, Stud Nut, Hex. Jaw 1/2NF -2-	
18 19 20 21 22	59 48	167 150 166 165	H	GASKET, OUTLET FITTING FITTING, OUTLET GASKET, OUTLET FITTING BOLT BOLT, OUTLET FITTING SWITCH, STOP LIGHT -SEE BRAKE PEDAL AND MOUNTING-	
9	24 413	320 840 979 470	Ř1	*BRACKET, MASTER CYLINDER MOUNTING BOLT, HEX-HD 3/8NC X 1 -3- NUT, HEX. LOCK 3/8NC -3- WASHER, FLAT 3/8	
				PART NOT ILLUSTRATED	

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FIG. 04-116 **PAGE NO. 118**

REF PART NO. NUMBER

DESCRIPTION

BRAKE MASTER CYLINDER

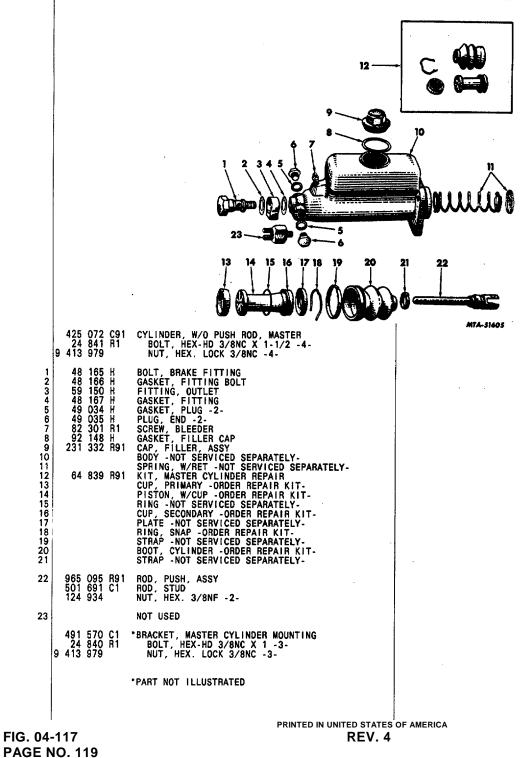
FIG. 04-117



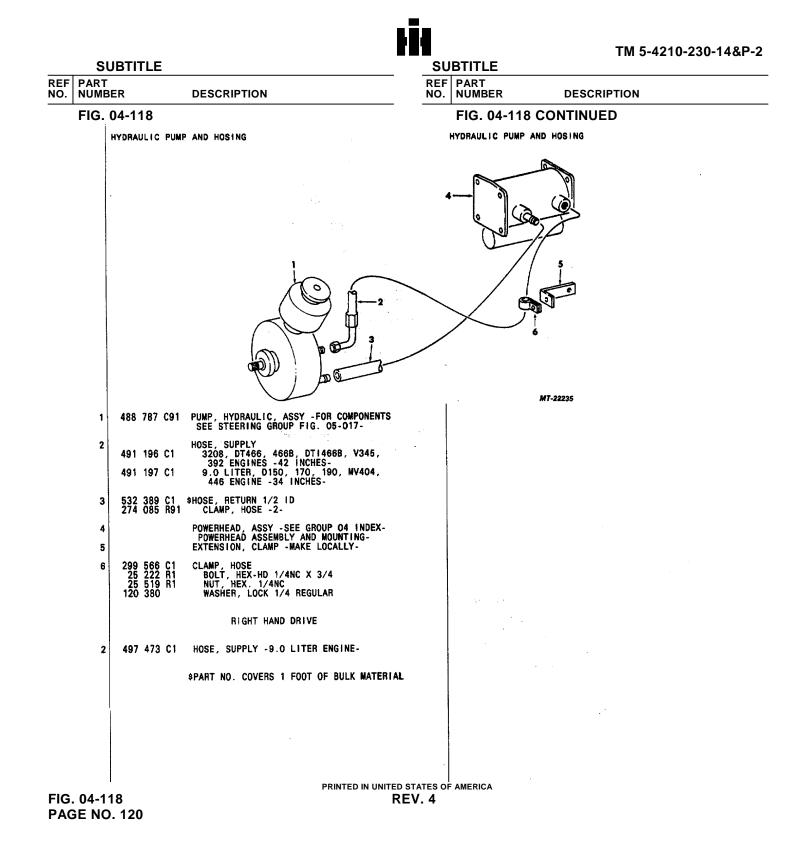
REF PART NO. NUMBER DESCRIPTION

FIG. 04-117 CONTINUED

BRAKE MASTER CYLINDER



TM 5-4210-230-14&P-2



REF PART NO. NUMBER

DESCRIPTION

FIG. 04-121

HYDRAULIC PUMP MOUNTING

MV SERIES ENGINE

492 616 C1 406 097 R1 492 575 C1 417 820 C1 446 712 C1	RELT PIMP
417 790 C4 432 045 C2 358 347 C91 354 025 C91 492 843 C1 444 581 C1 417 820 C1 417 800 C2	V345, 392 ENGINES BRACKET, PUNP MOUNTING EXCEPT EMISSION AIR PUMP FOR EMISSION AIR PUMP BELT, PUMP EXCEPT EMISSION AIR PUMP FOR EMISSION AIR PUMP PULLEY, CRANKSHAFT SPACER, BRACKET STRAP, PUMP ADJUSTING
	. 7

MT140 GROUP 04 -BRAKES

REF PART NO. NUMBER DESCRIPTION

FIG. 04-122

HYDRAULIC PUMP MOUNTING

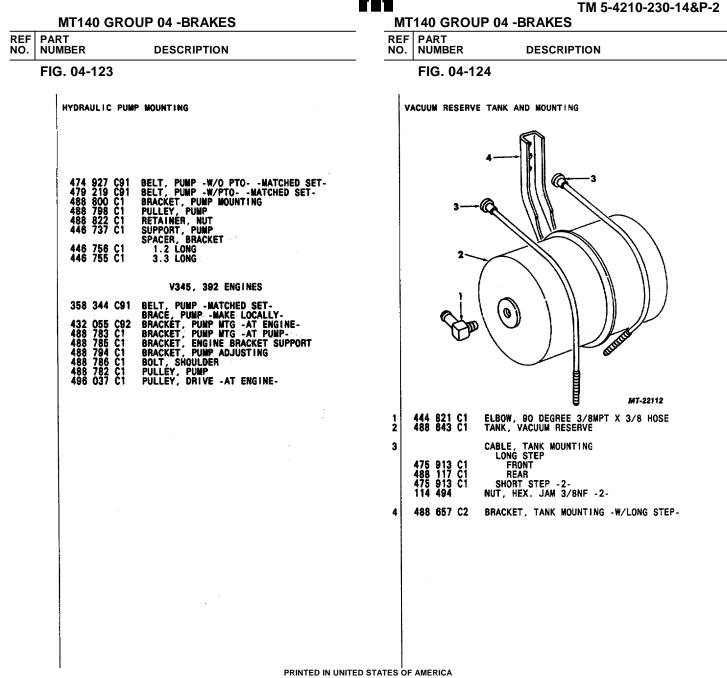
3208 ENGINES

	488 305 114 534	654 402 505 311	C2 C1 B1	BRACKET, W/ADJUSTING BOLT FLANGE, PUMP MOUNTING BRACKET, PUMP MOUNTING BOLT, ADJUSTING -3.75 INCHES LONG- NUT, HEX. JAM 1/2NC BELT, PUMP -2- PULLEY, WATER PUMP PULLEY, WATER PUMP PULLEY, CRANKSHAFT
	491	594	C2	DT466, DT466B, DT1466B ENGINES BRACKET, PUMP MOUNTING BRACKET, W/EYE BOLT FLANGE, PUMP MTG BOLT, EYE BELT, PUMP -MATCHED SET- PULLEY, PUMP SPACER, BRACKET -W/VACUUM PUMP- SPACER, BRACKET -W/VACUUM PUMP-
	494 494 494 24	410 411 412 842	C1 C1 C1 81	D150, 170, 190 ENGINES BRACKET, PUMP MOUNTING SUPPORT, PUMP MOUNTING SPACER, PUMP MOUNTING BOLT, HEX.HD 3/8NC X 1-3/4 -3- BOLT, HEX.HD 7/16NC X 1 BOLT, HEX.HD 7/16NC X 1 -3- PULLEY, PUMP
1	414 25 120 124 489 358 489 489	087 228 214 543 310 348 255 286	C1 R1 C91 C1 C1	9.0 LITER ENGINES PULLEY, PUMP, USED W/ 1700681C1 HUB HUB, PUMP NUT, FLANGED HEX. LOCK 1/2NF BOLT, HEX-HD 5/16NC X 3/4 -4- WASHER, LOCK -4- KEY, WOODRUFF BRACKET, HYDRAULIC PUMP BELT, PUMP -MATCHED SET- BRACKET, W/ ADJ BOLT BOLT, ADJ STRAP, ADJ -MAKE LOCALLY- SPACER, BRACKET

FIG. 04-122 **PAGE NO. 123** PRINTED IN UNITED STATES OF AMERICA

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TM 5-4210-230-14&P-2

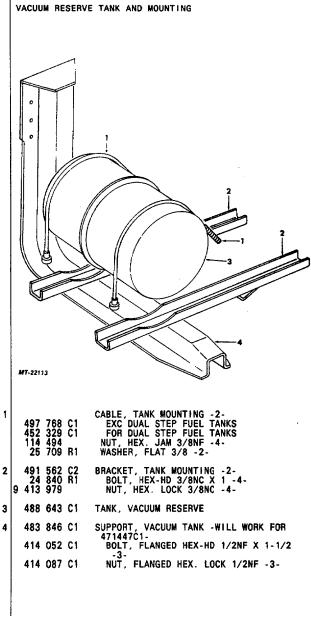


REV. 4

FIG. 04-123 PAGE NO. 124

REF PART NO. NUMBER DESCRIPTION

FIG. 04-125



TM 5-4210-230-14&P-2 MT140 GROUP 04 -BRAKES

KEF	PARI		
NO.	NUMBER	DESCRIPTION	

FIG. 04-126

VACUUM RESERVE TANK AND MOUNTING

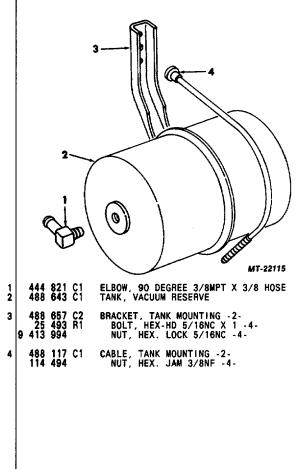
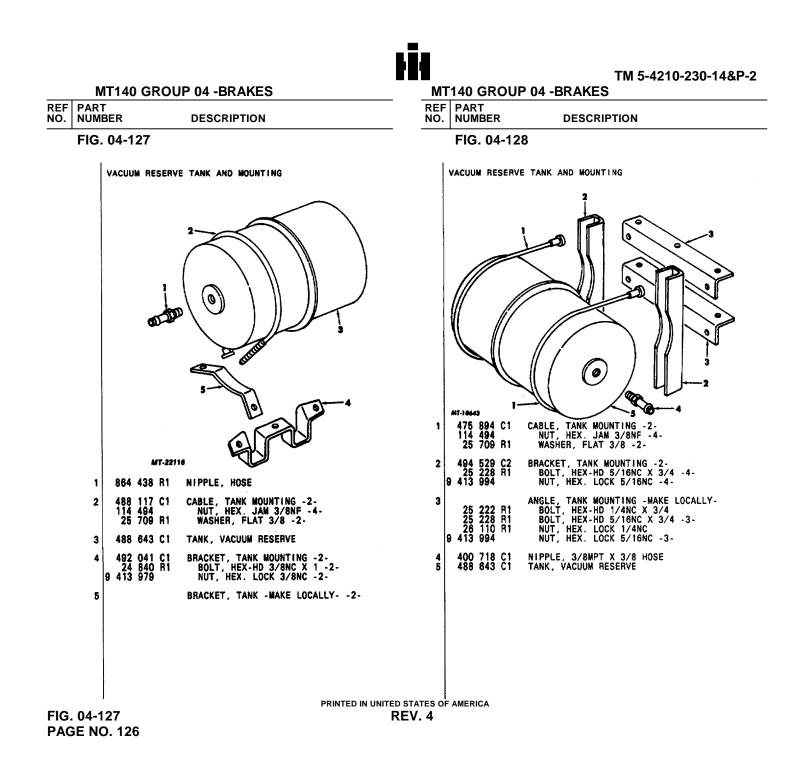


FIG. 04-126 PAGE NO. 125 PRINTED IN UNITED STATES OF AMERICA REV. 4



		TM 5-42
	MT140 GROUP 04 -B RAKES	MT140 GROUP 04 -BRAKES
REF NO.	PART NUMBER DESCRIPTION	REF PART NO. NUMBER DESCRIPTION
	FIG. 04-129	FIG. 04-129 CONTINUED
	ATR BRAKE CHAMBER HOSE	AIR BRAKE CHAMBER HOSE
		6X6 MODELS 417 200 C2 0 FORWARD-BEAR AXLE -

459 017 C1	SHOSE, FRONT BRAKE CHAMBER -2-
400 017 01	SHOSE, REAR BRAKE CHAMBER
459 025 C1	AXLE CODES 14029, 14030, 14186, 14192, 14193, 14197, 14199, 14292 SERVICE -2- EMERGENCY -LEFT- EMERGENCY -RIGHT- AXLE CODES 14039, 14042, 14044, 14057 EXCEPT 1853FC MODEL 4X2 MODELS
459 025 C1 459 019 C1 523 445 C1	EMERGENCY - LEFT- Emergency - Aight-
	AXLE CODES 14039, 14042, 14044, 14057
450 005 01	4X2 MODELS SERVICE -2-
459 025 C1 459 019 C1 523 445 C1	ENERGENCY LEFT-
	EMERGENCÝ -RIGHT- 4x4 Models
473 255 C1 459 022 C1 459 026 C1	SERVICE -2- Emergency -left-
459 026 C1	SERVICE -2- Emergency -Left- Emergency -Right- For 1853FC Model
	SERVICE W/MOR-RYDE SUSPENSION
459 022 C1 459 026 C1	LEFT RIGHT
	W/VARI-RATE SPRINGS
459 020 C1 523 445 C1	LEFT RIGHT
459 019 C1 523 445 C1	EMERGENCY LEFT
523 445 C1	RIGHT Axle codes 14047, 14058
459 025 C1	AXLE CODËS 14047, 14058 Except 1853FC Model Service -2-
459 025 C1 459 019 C1 523 445 C1	EMERGENCY - LEFT- Emergency - Right- Emergency - Right-
320 440 01	FOR 1853FC MODEL SERVICE
450 000 01	W/MOR-RYDE SUSPENSION
459 022 C1 459 026 C1	RIGHT
459 020 C1 523 445 C1	W/VARI-RATE SPRINGS
	RIGHT Emergency
459 019 C1 523 445 C1	LEFT RIGHT
417 200 C2	AXLE CODE 14341 FORWARD-REAR AXLE -NYLON TUBE-
	REAR-REAR AXLE CODE 04081
459 022 C1 159 601 R92	LEFT Right
459 021 C1	CODE 04091 LEFT
459 021 C1 460 254 C1	RIGHT Axle Codes 14351, 14355, 14472
417 200 C2	8X4 MODELS S FORWARD-REAR AXLE -NYLON TUBE-
	REAR-REAR AXLE TRACTOR MODELS
459 021 C1 159 601 R92	
100 001 1102	TRUCK MODELS EXCEPT CODE 04683 CODE 04081
460 000 01	CODE 04081 LEFT
459 022 C1 159 601 R92	RIGHT
459 021 C1 460 254 C1	CODE 04091 LEFT
	RIGHT FOR CODE 04683
459 025 C1 459 026 C1	FOR CODE 04683 LEFT -SERVICE- LEFT -EMERGENCY- Right -SERVICE-
523 445 C1	RIGHT - SERVICE- CODE 04081 CODE 04091
523 445 C1 459 026 C1 460 253 C1	CODE 04091 Right - Emergency-

6X6 MODELS FORWARD-REAR AXLE -NYLON TUBE-REAR-REAR AXLE CODE 04081 LEFT -SERVICE-LEFT -EMERGENCY-RIGHT -SERVICE-LEFT -SERVICE-LEFT -SERVICE-LEFT -SERVICE-LEFT -SERVICE-RIGHT -SERVICE-RIGHT -SERVICE-RIGHT -SERVICE-RIGHT -SERVICE-RIGHT -SERVICE-RIGHT -SERVICE-RIGHT -SERVICE-RIGHT -SERVICE-RIGHT -SERVICE-NUT, 1/2 -W/417200C2 HOSE-INSERT, 1/2 -W/417200C2 HOSE-473 255 C1 460 253 C1 459 029 C1 459 028 C1 473 255 C1 459 026 C1 459 030 C1 460 253 C1 47 128 H 47 126 H 414 506 C1 PART NO. COVERS 1 FOOT OF BULK MATERIAL

SFOR BRAKE CHAMBER HOSE REPLACEMENT SEE THE AIR BRAKE HOSE SECTION IN THE MT-90.

FIG. 04-129 **PAGE NO. 127** PRINTED IN UNITED STATES OF AMERICA

REV. 4

210-230-14&P-2



TM 5-4210-230-14&P-2

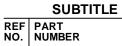
NO. NUMBER DESCRIPTION NO. NUMBER DESCRIPTION	REF NO.	PART NUMBER	DESCRIPTION	REF NO.	NUMBER	
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FIG. 04-130

FIG. 04-130 DRIVE SHAFT PARKING BRAKE DRIVE SHAFT PARKING BRAKE Q 10 . Q MTA-57991 DRUM, BRAKE 4X2 MODELS BOLT, HEX-HD 3/8HC X 1-1/2 -8-NUT, HEX. 3/8NC -8-NUT, SPEED -8-WASHER, LOCK 3/8 REGULAR -8-4X4 MODELS BOLT, HEX-HD 3/8NC -4-NUT, HEX. 3/8NF -4-WASHER, LOCK 3/8 REGULAR -4-1 383 344 C1 24 841 R1 25 522 R1 386 572 C1 120 382 393 292 C1 194 567 R1 120 369 STRUT, ASSY CAMSHAFT, PARKING BRAKE SET, BRAKE LINING, W/RIVETS SHOE, W/LINING, BRAKE -2-388 914 C1 893 936 R3 388 913 C91 388 912 C91 2345 PLATE, BACKING, ASSY 4X2 MODELS TRANSMISSION CODE 13017 BOLT, HEX-HD 1/2NC X 1-1/2 -4-NUT, HEX. 1/2NC -4-WASHER, LOCK 1/2 REGULAR -4-TRANSMISSION CODE 13425 BOLT, HEX-HD 1/2NC X 1 -4-TRANSMISSION CODE 13451, 13454 BOLT, HEX-HD 1/2NC X 1-1/2 -4-4X4 MODELS BOLT, BACKING PLATE MOUNTING -4-6 388 910 C1 24 862 R1 25 526 R1 120 384 388 909 C1 26 316 R1 498 071 C1 26 318 R1 388 909 C1 876 867 C1 BOLT, BACKING PLATE MOUNTING -4-SPRING, SHOE RETURN LEVER, BRAKE OPERATING WASHER, FLAT 9/16 NUT, LOCK NOT USED 233 009 R1 394 984 C1 7 8 9 10 11 893 937 R1

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FIG. 04-130 **PAGE NO. 128**



DESCRIPTION



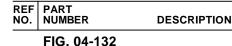
TM 5-4210-230-14&P-2

REF NO.	PART NUMBER	DESCRIPTION

FIG. 04	-131			F	IG. 04-	131 CONTINUED
FIG. 04		CONTROL LEVER AND CABLE	-6			131 CONTINUED CONTROL LEVER AND CABLE
					0	18 MT-19826
1 9 2 3 4 5 6 7 8	24 840 R1 413 979 124 317 H 114 494 138 086 137 185 364 116 C1 131 016 137 185 438 935 C1 138 084 121 222 487 173 C1 140 483 H 120 382	CLAMP - MAKE LOCALLY- BOLT, HEX-HD 3/8NC X 1 NUT, HEX. LOCK 3/8NC YOKE, CONTROL CABLE NUT, HEX. JAM 3/8NF PIN, ROD END -2- PIN, COTTER 1/8 X 1 -2- LEVER, BELLCRANK, ASSY WASHER, FLAT 5/8 PIN, COTTER 1/8 X 1 ROD, CONTROL, ASSY PIN, ROD END PIN, COTTER 3/32 X 3/4 BRACKET, BELLCRANK LEVER, ASSY BOLT, HEX-HD 3/8NC X 1-1/4 -2- WASHER, LOCK 3/8 REGULAR -2- CLAMP, CONTROL CABLE BOLT, HEX-HD 1/4NC X 3/4	17	28 460 295 504 299 27 495 25 25 9 413 9 413 9 413 25	125 C3 450 H 578 C1 404 R1 417 C91 538 C1 156 R1 350 C91 228 R1 750 R1 994 085 C1 994 228 R1	BOLT, SHOULDER
Ů	299 566 C1 25 222 R1 25 519 R1 120 380	BOLT, HEX-HD 1/4NC X 3/4 NUT, HEX. 1/4NC WASHER, LOCK 1/4 REGULAR	19 20	488 310	494 C2 335 R1	CABLE, PARKING BRAKE, ASSY Spacer, bracket
9 10	228 971 R1 489 391 C1	EXTENSION, CLANP GROMMET	21	24	488 C1 840 R1 843 R1	BRACKET, CONTROL CABLE BOLT, HEX-HD 3/8NC X 1 BOLT, HEX-HD 3/8NC X 2
11	494 858 C1 489 348 C1	CLIP, CABLE GUIDE RETAINER, CLIP		120	382	WASHER, LOCK 3/8 REGULAR -2-
		PRINTED IN UNITE	υ σιΑΙΕδ		NERICA	

FIG. 04-131 **PAGE NO. 129**

MT140 GROUP 04 -BRAKES



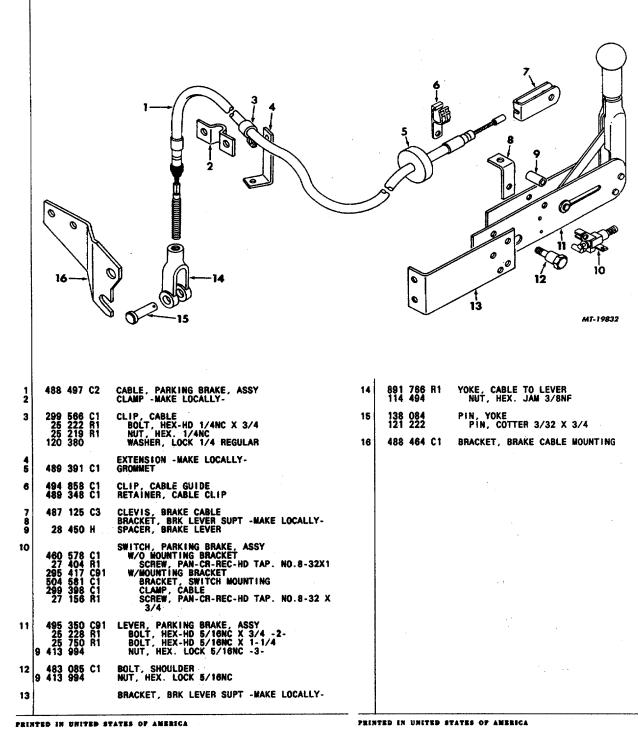
PARKING BRAKE CONTROL LEVER AND CABLE

TM 5-4210-230-14&P-2 MT140 GROUP 04 -BRAKES

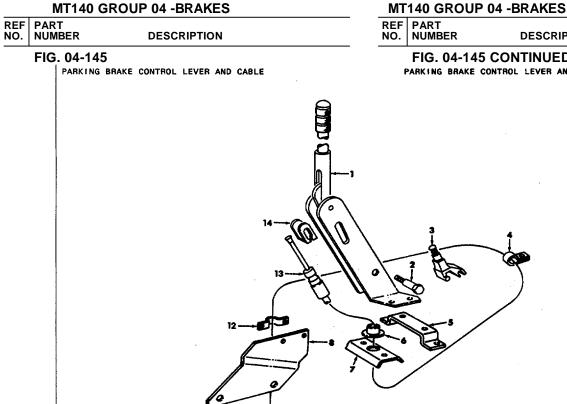
REF PART NO. NUMBER DESCRIPTION

FIG. 04-132 CONTINUED

PARKING BRAKE CONTROL LEVER AND CABLE



MT140 GROUP 04 -BRAKES



DESCRIPTION

FIG. 04-145 CONTINUED PARKING BRAKE CONTROL LEVER AND CABLE

Image: Note of the state of the st								
120 213 WASHER, LOCK 3/10 REGULAR -4 500 056 C91 SWITCH, WARNING LIGHT, ASSY-CODE 08848- 27 004 R1 SCREW, TAP. PAN-CR-REC-HD NO. 10-24 2 120 217 WASHER, LOCK NO. 10 REGULAR -2- 120 217 WASHER, LOCK NO. 10 REGULAR -2- 2 483 085 C1 BOLT, SHOULDER 9 413 994 NUT, HEX. LOCK 5/16NC 3 460 578 C1 SWITCH, PARKING BRAKE, ASSY 24 383 R1 SCREW, PAN-CR-REC-HD TAPPING NO. 8-18 120 29 566 C1 CLAMP, BRAKE CABLE 24 380 R1 BOLT, HEX-HD 1/2NC X 1 120 384 WASHER, LOCK 1/2 REGULAR 25 228 R1 BOLT, HEX-HD 1/2NC X 1 120 384 WASHER, LOCK 1/2 REGULAR 25 228 R1 BOLT, HEX-HD 3/30K 20 384 WASHER, LOCK 1/2 REGULAR 25 228 R1 BOLT, HEX-HD 3/30K 384 WASHER, LOCK 1/2 REGULAR 11 138 086 PIN, YOKE 1/2 X 1-27/64 25 228 R1 <	1			8				BRACKET, BRAKE CABLE
120 213 WASHER, LOCK 3/10 REGULAR -4 500 056 C91 SWITCH, WARNING LIGHT, ASSY-CODE 08848- 27 004 R1 SCREW, TAP. PAN-CR-REC-HD NO. 10-24 2 120 217 WASHER, LOCK NO. 10 REGULAR -2- 120 217 WASHER, LOCK NO. 10 REGULAR -2- 2 483 085 C1 BOLT, SHOULDER 9 413 994 NUT, HEX. LOCK 5/16NC 3 460 578 C1 SWITCH, PARKING BRAKE, ASSY 24 383 R1 SCREW, PAN-CR-REC-HD TAPPING NO. 8-18 120 29 566 C1 CLAMP, BRAKE CABLE 24 380 R1 BOLT, HEX-HD 1/2NC X 1 120 384 WASHER, LOCK 1/2 REGULAR 25 228 R1 BOLT, HEX-HD 1/2NC X 1 120 384 WASHER, LOCK 1/2 REGULAR 25 228 R1 BOLT, HEX-HD 3/30K 20 384 WASHER, LOCK 1/2 REGULAR 25 228 R1 BOLT, HEX-HD 3/30K 384 WASHER, LOCK 1/2 REGULAR 11 138 086 PIN, YOKE 1/2 X 1-27/64 25 228 R1 <		485 824 C91 508 785 C91 25 228 P1	WARNING LIGHT CODE 08848					13699
120 217 WASHER, LOCK NO. 10 REGULAR -2- 13679 - MAKE LOCALLY- 2 483 085 C1 BOLT, SHOULDER 26 510 R1 BOLT, HEX-HD 5/8NC X 1-1/2 -2- 3 460 578 C1 SWITCH, PARKING BRAKE, ASSY 25 827 R1 BOLT, HEX-HD 9/16NC X 1 -2- 3 460 578 C1 SWITCH, PARKING BRAKE, ASSY 23 223 R1 SPACER, PIPE 5/8 X 5/8 - TRANS CODES 24 383 R1 SCREW, PAN-CR-REC-HD TAPPING NO. 8-18 9 114 494 NUT, HEX. JAM 3/8NF 4 299 566 C1 CLAMP, BRAKE CABLE 10 124 317 H YOKE, BRAKE CABLE 4 299 566 C1 CLAMP, BRAKE CABLE 10 124 317 H YOKE, BRAKE CABLE 120 384 WASHER, LOCK 1/2 REGULAR 11 138 086 PIN, YOKE J2 X 1-27/64 120 384 WASHER, LOCK 5/16 REGULAR 122 24 840 R1 BOLT, HEX-HD 3/8NC X 1 -2- 120 384 WASHER, LOCK 5/16 REGULAR 122 24 840 R1 BOLT, HEX-HD 3/8NC X 1 -2- 120 214 WASHER, LOCK 5/16 REGULAR	9	120 214	BOLT, HEX-HD 5/16NC X 1 -AR- NUT, HEX. LOCK 5/16NC -4- WASHER, LOCK 5/16 REGULAR -4- GWITCH WARNING LIGHT ASSY CODE OPP49.		488 25	468 827		1-1/2 -2- TRANS CODES 13672, 13673, 13674 BOLT, HEX-HD 9/16NC X 1 -2- WASHER, LOCK 9/18 REGULAR -2-
9 413 994 NUT, HEX. LOCK 5/16NC WASHER, LOCK 9/16 HEGULAR -2- 3 460 578 C1 SWITCH, PARKING BRAKE, ASSY SPACER, PIPE C/8 X 5/8 - TRANS CODES 3 460 578 C1 SWITCH, PARKING BRAKE, ASSY SPACER, PIPE C/8 X 5/8 - TRANS CODES 4 299 566 C1 CLAMP, BRAKE CABLE 10 124 317 H YOKE, BRAKE CABLE 4 299 566 C1 CLAMP, BRAKE CABLE 10 124 317 H YOKE, BRAKE CABLE 24 860 R1 BUT, HEX.HD 1/2NC 11 138 086 PIN, YOKE 1/2 X 1-27/64 25 526 R1 NUT, HEX. LOCK 1/2 REGULAR 11 138 086 PIN, YOKE 1/2 X 1-27/64 5 SUPPORT, BRAKE LEVER -MAKE LOCALLY- 24 840 R1 BOLT, HEX-HD 3/8NC X 1 -2- 12 25 228 R1 BOLT, HEX-HD 5/16NC X 3/4 -2- 13 979 NUT, HEX. LOCK 3/8NC -2- 120 248 823 C2 BOOT, BRAKE CABLE 14 13 979 NUT, HEX. LOCK 3/8NC -2- 6 485 823 C2 BOOT, BRAKE CABLE 14 <td< td=""><th></th><td></td><td>X 1/2 -2- WASHER, LOCK NO. 10 REGULAR -2-</td><td></td><td>26</td><td>5<u>10</u></td><td>81</td><td>13679 -MAKE LOCALLY- Bolt, Hex-HD 5/8NC X 1-1/2 -2-</td></td<>			X 1/2 -2- WASHER, LOCK NO. 10 REGULAR -2-		26	5 <u>10</u>	81	13679 -MAKE LOCALLY- Bolt, Hex-HD 5/8NC X 1-1/2 -2-
24 383 R1 SCREW, PAN-CR-REC-HD TAPPING NO. 8-18 X 1 9 114 494 NUT, HEX. JAM 3/8NF 4 299 566 C1 CLAMP, BRAKE CABLE BOLT, HEX-HD 1/2NC X 1 10 124 387 H YOKE, BRAKE CABLE YOKE, BRAKE CABLE 11 120 384 BOLT, HEX-HD 1/2NC X 1 11 120 384 WASHER, LOCK 1/2 REGULAR 11 5 SUPPORT, BRAKE LEVER -MAKE LOCALLY- 120 214 10 6 485 823 C2 BOOT, BRAKE CABLE 14 7 CHANNEL, BRAKE CABLE 485 820 C1 EVER MOUNTING EXCEPT TRANS CODES 13676, 13677, 13678, 13679 13679	9	413 994	NUT, HEX. LOCK 5/16NC		498 25 120 23	479 827 898 223	C1 81 81	BOLT, HEX-HD 9/16NC X 1 -2- WASHER, LOCK 9/16 REGULAR -2- SPACER, PIPE 5/8 X 5/8 TRANS CODES
4 299 566 C1 24 860 R1 125 526 R1 120 384 CLAMP, BRAKE CABLE BOLT, HEX-HD 1/2NC X 1 120 384 11 138 086 137 185 PIN, YOKE 1/2 X 1-27/64 PIN, COTTER 1/8 X 1 5 SUPPORT, BRAKE LEVER - MAKE LOCALLY- 25 228 R1 120 214 SUPPORT, BRAKE LEVER - MAKE LOCALLY- BOLT, HEX-HD 5/16NC X 3/4 -2- 120 214 12 CLAMP, BRAKE CABLE - MAKE LOCALLY- BOLT, HEX-HD 5/16NC X 3/4 -2- 13 6 485 823 C2 BOOT, BRAKE CABLE 14 7 CHANNEL, BRAKE LEVER MOUNTING EXCEPT TRANS CODES 13676, 13677, 13678, 13679 14	3	24 383 R1	SCREW, PAN-CR-REC-HD TAPPING NO. 8-18	9	114	494		NUT, HEX. JAM 3/8NF
120 384 WASHER, LOCK 1/2 REGULAR 12 CLAMP, BRAKE CABLE - MAKE LOCALLY- BOLT, HEX-HD 5/16NC X 3/4 - 2- 5 SUPPORT, BRAKE LEVER - MAKE LOCALLY- 120 214 12 24 840 R1 BOLT, HEX-HD 3/8NC X 1 - 2- 6 485 823 C2 BOOT, BRAKE CABLE 13 7 CHANNEL, BRAKE LEVER MOUNTING EXCEPT TRANS CODES 13676, 13677, 13678, 13679 14	4	299 566 C1	CLAMP, BRAKE CABLE				H	YOKE, BRAKE CABLE
SUPPORT, BRAKE LEVER - MAKE LOCALLY- 12 CLAMP, BRAKE CABLE - MAKE LOCALLY- 25 228 R1 BOLT, HEX-HD 5/16NC X 3/4 -2- 9 413 979 NUT, HEX-HD 3/8NC X 1 -2- 120 214 WASHER, LOCK 5/16 REGULAR -2- 9 413 979 NUT, HEX. LOCK 3/8NC -2- 6 485 823 C2 BOOT, BRAKE CABLE 13 488 491 C1 CABLE, PARKING BRAKE, ASSY 7 CHANNEL, BRAKE LEVER MOUNTING 14 487 125 C3 CLEVIS, BRAKE CABLE 7 CHANNEL, BRAKE LEVER MOUNTING 13678, 13676, 13677, 13678, 13677, 13678 RIGHT HAND DRIVE		24 860 H1 25 526 R1 120 384	NUT, HEX. 1/2NC	11	137	185		
6 485 823 C2 BOOT, BRAKE CABLE 13 488 491 C1 CABLE, PARKING BRAKE, ASSY 7 CHANNEL, BRAKE LEVER MOUNTING 14 487 125 C3 CLEVIS, BRAKE CABLE 7 CHANNEL, BRAKE LEVER MOUNTING 13676, 13677, 13678, 13679, 13678, 13679 RIGHT HAND DRIVE	5	25 228 R1	SUPPORT, BRAKE LEVER -MAKE LOCALLY- Bolt, HEX-HD 5/16NC X 3/4 -2-		24 9 413	840 979	R1	BOLT, HEX-HD 3/8NC X 1 -2-
485 820 C1 EXCEPT TRANS CODES 13676, 13677, 13678, 13679	6				488 487	491 125	C1 C3	
13678, 13679	7	485 820 01						BIGHT HAND DRIVE
13 488 510 C1 CABLE, PARKING BRAKE, ASSY	·	700 0AU UI	10070 10070 000E0 10070, 10077,					terrighter territor briting bases

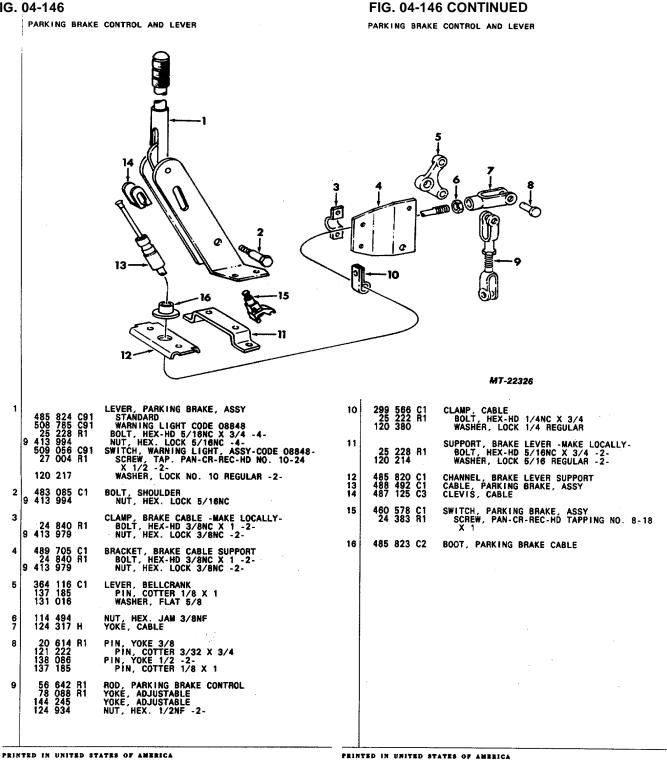
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MT140 GROUP 04 -BRAKES

REF PART NO. NUMBER DESCRIPTION

FIG. 04-146



TM 5-4210-230-14&P-2

MT140 GROUP 04 -BRAKES

DESCRIPTION

REF PART

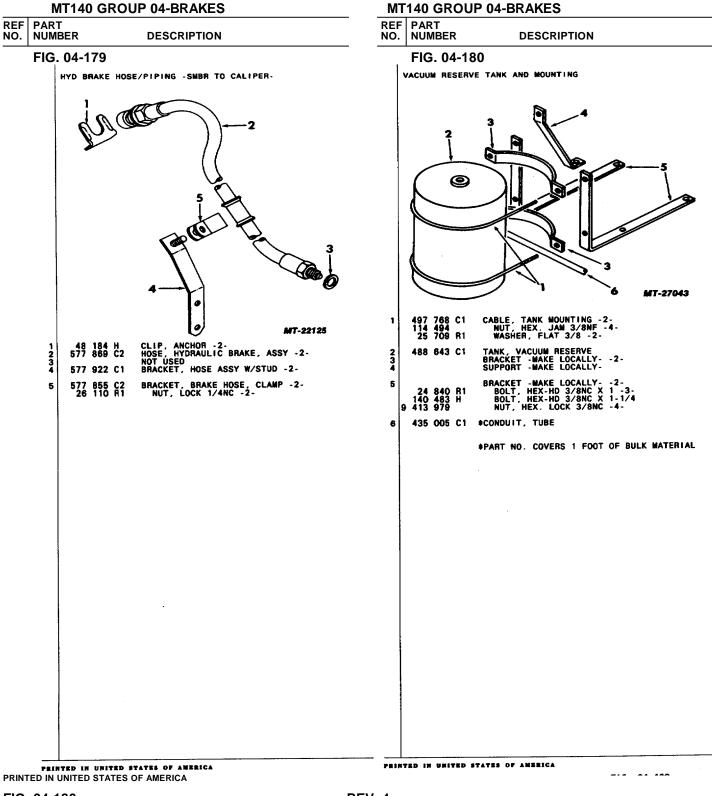
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FIG. 04-146 **PAGE NO. 148**

MT140 GROUP 04-BRAKES



TM 5-4210-230-14&P-2

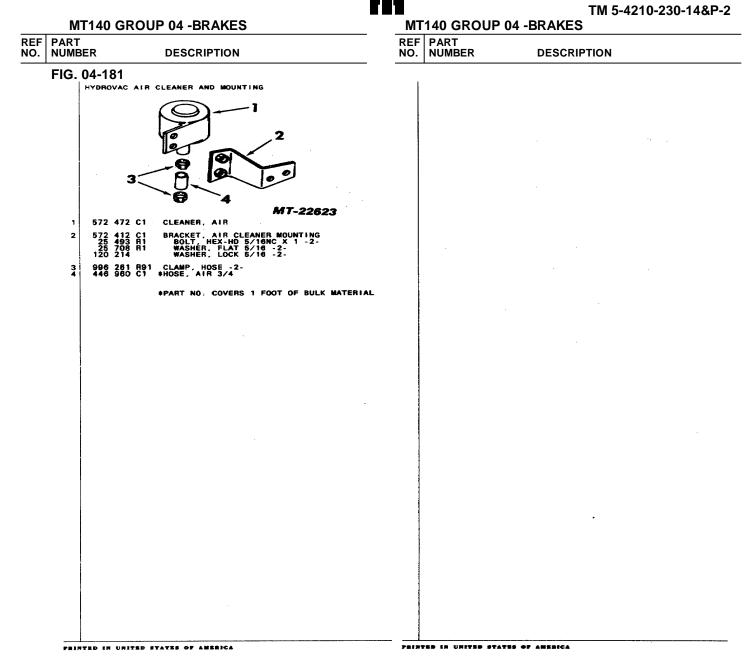


FIG. 04-181 PAGE NO. 186

MT 140 GROUP (GROUP 05-STEERING GEAR		
	FIG NO	FICHE LOC	
VENDOR IDENTIFICATION SEE PAGE 6			
DRAG LINK	05.000		
CODE 05031 CODE 05057	05-003	A16 A16	
CODE 05058	05-003	A16	
CODE 051605	05-003	A16	
CODE 05332 CODE 05333	05-003 05-003	A16 A16	
CODE 05335 EXCEPT 1853FC MODEL	05-018	B11	
FOR 1863FC MODEL	05-075	D24	
CODE 05342	05-003	A16	
CODE 05345 POWER STEERING HOSE AND FITTINGS	05-003	A1B	
CODE 05332			
MV404, MV446 ENGINES V537 ENGINES	05-016 05-008	B09 A22	
D150, D170, D190 ENGINES	05-032	C02	
DT466, DT1468B ENGINES 3208 ENGINES	05-022	B15 B14	
9.0 LITER ENGINE	05-021	D13	
CODE 05333 MV404, MV446 ENGINES			
EXCEPT 2126, 2166, F2126 MODELS W/BRAKE CODE 04044	05-037	C07	
W/BRAKE CODE 04058	05-036	C06	
W/BRAKE CODES 04081, 04082, 04091, 04092 FOR 2125, 2166, F2125 MODELS	05-036 05-036	C06 C06	
V537 ENGINES	05-030	B04	
D150, 0170, 0190 ENGINES W/BRAKE CODE 04044	05-038	C08	
W/BRAKE CODE 04058	05-038	B04	
W/BRAKE CODES 04081, 04082, 04091, 04092 DT466 DT4688, DT1466B ENGINES	05-012	B04	
EXCEPT 2125, 2156, F2125 MODELS W/BRAKE CODE 04044			
EXC REXHOTH POWER STEERING PUMP	05-039	<u>C09</u>	
FOR REXROTH POWER STEERING PUMP W/BRAKE CODE 04058	05-009	D19	
EXC REXROTH POWER STEERING PUMP	05-035	C05	
FOR REXKOTH POWER STEERING PUMP	05-070	D20	
W/BRAKE CODES 04081, 04082, 04091, 04092 EXC REXKOTH POWER STEERING PLMP	05-035	C05	
FOR REXROTH POWER STEERING PUMP FOR 2125, 2155, F2126 MODELS	05-070	020	
EXC REXROTH POWER STEERING PUMP	05-035	C05	
3208 ENGINES	05-068	D18	
EXCEPT 2125, 2155, F2125 MODELS W/BRAKE CODE 04044			
EXC REXHOTH POWER STEERING PUMP FOR REXROTH POWER STEERING PUMP	05-033 05-069	C03 D19	
W/BRAKE CODE 04058 EXC REXROTH POWER STEERING PUMP	05-034	C04	
FOR REXROTH POWER STEERING PUMP	05-070	D20	
W/BRAKE CODES 04081, 04082, 04091, 04092 EXC REXROTH POWER STEERING PUMP	05-034	C04	
FOR REXROTH POWER STEERING PUMP	05-070	D20	
FOR 2125, 2155, F2125 MODELS EXC REXROTH POWER STEERING PUMP	05-034	C04	
FOR REXROTH POWER STEERING PUMP 9.0 LITER ENGINE	05-068	D18	
W/BRAKE CODE 04044	05-062	D12	
W/BRAKE CODES 04058, 04081, 04082, 04091, 04092	05-057	D06	

	FIG NO	FICHE LOC
POWER STEERING HOSE AND FITTINGS-CONTINUED CODE 06336		
V345, V392 ENGINES		
	05-030	B24
W/BRAKE CODE 04055 MIV404, MV446 ENGINES	05-031	C01
EXCEPT 2125. F2126 MODELS		
W/BRAKE CODES 04011, 04058		
EXCEPT AXLE CODE 02081	05-036	C08
FOR AXLE CODE 02081	05-043	C13
W/BRAKE CODE 04044 W/BRAKE CODE 04055	05-037	C07
W/BRAKE CODE 04055 W/BRAKE CODES 04081, 04091	05-040 05-036	C10 C06
WIBRAKE CODES 04082, 04082, W/AXLE CODE 02101, RHD	05-043	C13
FOR 2125., F2126 MODELS	05-036	C20
V637 ENGINES	05-012	B04
D150, D170, D190 ENGINES		
W/BRAKE CODE 04044	05.000	000
EXCEPT AXLE CODE 02081 FOR AXLE CODE 02081	05-038	C08 C20
W/BRAKE CODES 040568, 04081, 04091	05-050	C20
EXCEPT AXLE CODE 02081	05-012	B04
FOR AXLE CODE 02081	05-044	C14
DT466, DTI46BBB ENGINES		
EXCEPT 2155 MODEL		
EXC REXROTH POWER STEERING PUMP EXC AXLE CODE 02081	05-039	C09
FOR AXLE CODE 02081	05-048	C18
FOR REXROTH POWER STEERING PUMP	05-069	D19
W/BRAKE CODES 04058, 04081 04091		
EXC REXROIH POWER STEERING PUMP		
EXC AXLE CODE 02081	05-035	C05
FOR AXLE CODE 02081 FOR REXROTH POWER STEERING PUMP	05-020	B13
EXCEPT 1853FC MODEL	05-070	D20
FOR 1853FC MODEL	05-077	E02
FOR 2155 MODEL		
EXC REXROTH POWER STEERING PUMP	05-035	C05
FOR REXROTH POWER STEERING PUMP	05-068	D18
3208 ENGINES		
EXCEPT 2155 MODEL W/BRAKE CODE 04044		
EXC REXROTH POWER STEERING PUMP	05-033	C03
FOR REXROTH POWER STEERING PUMP	05-006	D19
W/BRAKE CODES 04068, 04081, 04091		
EXC REXROTH POWER STEERING PUMP	05-034	C04
FOR REXROTH POWER STEERING PUMP	05-070	D20
FOR 21665 MODEL EXC REXROTH POWER STEERING PUMP	05-034	C04
FOR REXROTH POWER STEERING PUMP	06-068	D18
9.0 LITER ENGINE		210
W/BRAKE CODE 04044	05-061	D10
W/BRAKE CODES 04058, 04081, 04082, 04091, 04092		
EXCEPT 1863FC MODEL		
EXCEPT AXLE CODE 02081	05-057	D06
FOR AXLE CODE 02081 FOR 1853FC MODEL	05-058	D07
AXLE CODE 02227	05-080	E06
	05-078	E03

	FIG NO	FICHE LOC	
POWER STEERING HOSE AND FITTINGS-CONTINUED			
CODE 05342			
3208 ENGINE	05-034	C04	
D150, 170, 190 ENGINES	05-038	C08	
DT466, DT14668 ENGINES	06-035	C05	
MV404, 446 ENGINES	05-036	C06	
9.0 LITER ENGINE	05-038	C08	
CODE 05345			
V345. V392 ENGINES			
W/BRAKE CODE 04011	05-027	B20	
WIBRAKE CODES 04044, 04059	05-028	B21	
WIBRAKE CODE 04055	05-028	B21	
W/BRAKE CODES 04081. 04091	05-029	B23	
MV404, MV440 ENGINES			
W/BRAKE CODES 04011, 04058	05-054	D03	
W/BRAKE CODES 04044, 04059	05-065	D04	
W/BRAKE CODE 04055	05-065	D04	
W/BRAKE CODES 04081, 04082, 04091, 04092	05-054	D03	
V537 ENGINES	05-041	C11	
D150, D170, D190 ENGINES	05.040		
W/BRAKE CODE 04044	05-046	C1B	
W/BRAKE CODES 04058, 04081, 04082, 04091, 04092 DT466BB, DT46BB, DT14668B ENGINES	05-049	C19	
EXCEPT 2155 MODEL			
W/BRAKE CODE 04044	05-045	C15	
W/BRAKE CODES 04058, 04081, 04082, 04091, 04092	05-047	C17	
FOR 2166 MODEL	05-047	C17	
3208 ENGINES			
EXCEPT 2155 MODEL			
	05-042	C12	
W/BRAKE CODES 04068, 04081, 04082, 04091, 04092	05-015	B08	
FOR 2155 MODEL 9.0 LITER ENGINE	05-015	B08	
W/BRAKE CODE 04044	05-060	D09	
W/BRAKE CODES 04058, 04081, 04082, 04091, 04092	05-059	D08	

REV. NO. 4

INDEX - 05 PAGE NO. 1B

	FIG NO	FICHE LOC
POWER STEERING PUNP		
	05.000	
MV404 MV440 ENGINES V637 ENGINES	05-006	A19 A19
037 ENGINES D160 D170, D190 ENGINES	05-006	A19 A19
DT466. DT1408B ENGINES		7.13
EXCEPT 2166 MODEL	05-006	A19
FOR 2156 MODEL	05-023	B16
3208 ENGINES	05-019	B12
9.0 LITER ENGINE CODE 06333	05-024	B17
MV404, MV440 ENGINES	05-024	B17
V537 ENGINES	06-024	B17
D160, 0170, D190 ENGINES	05-024	B17
DT466 DT466B, DT14668 ENGINES		
EXCEPT 2125, 215566, F2125 MODELS	05 00 4	
EATON REXHOIH	05-024	B17 D16
FOR 2125, 21655, F2125 MODELS	05-065	DI6
EATON	05-026	B19
REXROTH	05-065	D16
3208 ENGINE		
EATON 05-025	05-025	
REXKOTH 9.0 LITER ENGINE	05-065	D15 B17
CODE 05335	00-024	
V345 ENGINES	05-017	B10
MV404, MV440 ENGINES		
AXLE CODES 02064, 02078, 02127, 02139	05-024	B17
AXLE CODES 02081, 02101	05-017	B10
AXLE CODES 02329, 02339 V537 ENGINES	05-024	B17
EXCEPT CODE 06336.9239	05-006	A19
FOR CODE 05335.9239	05-024	817
D150 D170, D190 ENGINES		
AXLE CODES 02064, 02078, 02127, 02139 AXLE CODE 02081	05-024 05-017	B17 B10
AXLE CODES 02329, 02339	05-006	A19
DT466, DTI468B ENGINES		
AXLE CODES 02064, 02078, 02127, 02139 EATON	05-024	B17
REXHOTH	05-065	D15
AXLE CODE 02081	05-017	810
AXLE CODES 02329, 02339, 02342 EXCEPT 2155 MODEL		
EATON	05-006	A19
REXROTH	05-006	D15
FOR 2155 MODEL EATON	05-023	B16
REXROTH	05-065	D15
3208 ENGINES		[
AXLE CODES 02084, 02078, 02081, 02127, 02139 EATON	05-025	B18
REXHOTH	05-065	D15
AXLE CODES 02329, 02339		
EATON REXROTH	05-019 05-065	B12 D15
9.0 LITER ENGINE		
AXLE CODES 02081, 02101	05-017	810
AXLE CODES 02004, 02078, 02127, 02139 AXLE CODES 02329, 02339, 02342	05-024 05-024	B17 B17
CODE 05342	05-024	
3208 ENGINES	05-025	B18
D160, 170, 190 ENGINES DT468, DT1468 ENGINES	05-024 05-024	B17 B17
MV404, 440 ENGINES	05-024	B17
CODE 06345	05-017	B10

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MT 140

	FIG NO	FICHE LOC	
POWER STEERING PUMP MOUNTING CODE 05332			
MV404, MV446 ENGINES	05-016	B09	
V537 ENGINES	05-008	A22	
D150, D170. D190 ENGINES	05-032	C02	
DT466. DT1466B ENGINES 3208 ENGINES	05-022 05-021	815 B14	
9.0 LITER ENGINE	05-063	D13	
CODE 05333 MV404, MV446 ENGINES			
EXCEPT 2125. 2155, F2125 MODELS			
W/BRAKE CODE 04044	05-037	C07	
W/BRAKE CODE 04058	05-036	C06	
W/BRAKE CODES 04081, 04082, 04091. 0409 2	05-036	C06	
FOR 2125, 2155, F2125 MODELS V537 ENGINES	05-036 05-012	C06 B04	
D150, D170, D190 ENGINES	05-012	D04	
W/BRAKE CODE 04044	05-038	CO8	
W/BRAKE CODE 04058	05-012	B04	
W/BRAKE CODES 04081. 04082, 04091. 04092	05-012	B04	
DT466, DT4668, DT1466B ENGINES EXCEPT 2125, 2155. F2125 MODELS			
	05.000	000	
EXC REXROTH POWER'STEERING PUMP	05-039	C09	
FOR REXROTH POWER STEERING PUMP W/BRAKE CODE 04058	05-067	D17	
EXC REXROTH POWER STEERING PUMP	05-035	C05	
FOR REXROTH POWER STEERING PUMP	05-067	D17	
W/BRAKE CODES 04081, 04082, 04091, 04092 EXC REXROTH POWER STEERING PUMP	05-035	C05	
FOR REXROTH POWER STEERING PUMP	05-035	D17	
FOR 2125, 21655. F2125 MODELS	00 001	517	
EXC REXROTH POWER STEERING PUMP	05-035	C05	
FOR REXROTH POWER STEERING PUMP	05-067	D17	
3208 ENGINES			
EXCEPT 2125, 2155. F2125 MODELS			
W/BRAKE-CODE 04044 EXC REXROTH POWER STEERING PUMP	05-033	C03	
FOR REXROTH POWER STEERING PUMP	05-066	D16	
W/BRAKE CODE 04058		210	
EXC REXROTH POWER STEERING PUMP	05-034	C04	
FOR REXROTH POWER STEERING PUMP	05-066	D16	
W/BRAKE CODES 04081. 04082, 04091, 04092	05.024	C04	
EXC REXROTH POWER STEERING PUMP FOR REXROTH POWER STEERING PUMP	05-034	C04 D16	
FOR 2125. 2155, F2125 MODELS	00-000		
EXC REXROTH POWER STEERING PUMP	05-034	C04	
FOR REXROTH POWER STEERING PUMP	05-066	D16	
9:-OITTERENGINE		R in	
W/BRAKE CODE 04044 W/BRAKE CODES 04058, 04081, 04082, 04091, 040-T	05-062	D12	
	05-057	D06	

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INDEX - 05 PAGE NO. 3

	FIG NO	FICHE LOC
POWER STEERING PUMP MOUNTING-CONTINUED CODE 05335		
V345 ENGINES		
W/BRAKE CODE 04011 W/BRAKE CODE 04055	05-030 05-031	B24 C01
MV404, MV446 ENGINES	05-031	
EXCEPT 2125' F2125 MODELS		
W/BRAKE CODES 04011, 04058		
EXCEPT AXLE CODE 02081	05-038	C08
FOR AXLE CODE 02081 W/BRAKE CODE 04044	05-043 06-037	C13 C07
W/BRAKE CODE 04056	05-040	C10
W/BRAKE CODES 04081. 04091	05-038	C08
FOR 2125, F2125 MODELS V637 ENGINES	05-036 05-012	C20 B04
D150, D170, D190 ENGINES	05-012	B04
W/BRAKE CODE 04044		
EXCEPT AXLE CODE 02081	05-038	C08
FOR AXLE CODE 02081	05-050	C20
W/BRAKE CODES 04058, 04081, 04091 EXCEPT AXLE CODE 02081	05-012	B04
FOR AXLE CODE 02081	05-044	C14
DT466, DT14868 ENGINES		
EXCEPT 2156 MODEL W/BRAKE CODE 04044		
EXC REXROIH POWER STEERING PUMP		
EXC AXLE CODE 02081	05-039	C09
FOR AXLE CODE 02081	05-048	C18
FOR REXROTH POWER STEERING PUMP W/BRAKE CODES 04058, 04081, 04091	05-087	D17
EXC REXROTH POWER STE ERING PUMP		
EXC AXLE CODE 02081	05-035	C05
FOR AXLE CODE 02081	05-020	813
FOR REXRHOH POWER STEERING PUMP EXCEPT 1853FC MODEL	05-067	D17
FOR 1853FC MODEL	05-078	E01
FOR 2155 MODEL		
EXC REXROIH POWER STEERING PUMP	05-035	C05
FOR REXROTH POWER STEERING PUMP 3208 ENGINES	05-087	D17
EXCEPT 2155 MODEL		
W/BRAKE CODE 04044		
EXC REXROTH POWER STEERING PUMP	05-033	C03
FOR REXROIH POWER STEERING PUMP W/BRAKE CODES 04058. 04081, 04091	05-088	D18
EXC REXROIH POWER ST EERING PUMP	05-034	C04
FOR REXROTH POWER STEERING PUMP	05-088	D16
FOR 2166 MODEL	05.004	C04
EXC REXROTH POWER STEERING PUMP FOR REXROTH POWER STEERING PUMP	05-034	C04 D16
9.0 LITER ENGINE	00-000	
W/BRAKE CODE 04044	05-081	D10
W/BRAKE CODES 04058, 04081, 04082. 04091, 04092		
EXCEPT 1853FC MODEL EXCEPT AXLE CODE 02081	05-057	D08
FOR AXLE CODE 02081	05-057	007
FOR 1853FC MODEL	05-078	E03

	FIG NO	FICHE LOC	
POWER STEERING PUIMP MOUNTING-CONTINUED CODE 05342			
3208 ENGINE	05-034	C04	
D150, 170, 190 ENGINES	05-038	C08	
DT466, DT1466B ENGINES	05-036	C05	
MV404_446 ENGINES	05-038	C06	
CODE 06345			
V345, V392 ENGINES W/BRAKE CODE 04011	05-027	B20	
W/BRAKE CODES 04011 W/BRAKE CODES 04044, 04059	05-027	B20	
W/BRAKE CODE 04055	05-028	B21	
W/BRAKE CODES 04081, 04091	05-029	B23	
MV404 IIV448 ENGINES			
W/BRAKE CODES 04011, 04058	05-054	D03	
W/BRAKE CODES 04044, 04059	05-055	D04	
W/BRAKE CODE 04055	05-055	D04	
W/BRAKE CODES 04081, 04082, 04091, 04092	05-064	D03	
V537 ENGINES DI50 D170, D190, ENGINES	05-041	C11	
W/BRAKE CODE 04044	05-046	C16	
W/BRAKE CODES 04068, 04081 04082, 04091, 04092	05-049	C19	
DT466, DT466B, DTI466B DT ENGINES			
EXCEPT 2155 MODEL			
W/BRAKE CODE 04044	05-045	C15	
WIBRAKE CODES 04058, 04081, 04082, 04091, 04092	05-047	C17	
FOR 2155 MODEL 3208 ENGINES	05-047	C17	
EXCEPT 2166 MODEL			
W/BRAKE CODE 04044	05-042	C12	
WIBRAKE CODES 04058, 04081, 04082, 04091, 04 092	05-015	B08	
FOR 2155 MODEL	05-016	608	
9.0 LITER ENGINE			
W/BRAKE CODE 04044	05-060	D09	
W/BRAKE CODES 04058, 04081, 04082, 04091, 04092	05-059	D08	

INDEX - 05 PAGE NO. 3B PRINTED IN UNITED STATES OF AMERICA

MT 140 GROUP 05-STEERING GEAR	P14		
	FIG NO	FICHE LOC	
POWER STEERING RESERVOIR			
CODE 05332			
MV404, MV446 ENGINES	05-006	A19	
V537 ENGINES D150, D170 D190 ENGINES	05-006 05-006	A19 A19	
DT466, DT1466B ENGINES	00 000	////	
EXCEPT 2155 MODEL	05-006	A19	
FOR 2155 MODEL	05-023	B16	
3208 ENGINES 9.0 LITER ENGINE	05-019	B12 A19	
CODE 05333	00-000		
MV404, MV446 ENGINES	05-024	B17	
V537 ENGINES	06-024	B17	
D150, 0170, D190 ENGINES DT466, DT466B, DT1466B ENGINES	05-024	B17	
EXCEPT 2125, 2155, F2126 MODELS			
EATON	05-024	B17	
	05-065	D15	
FOR 2125, 2155, F2125 MODELS EATON	05-026	B19	
REXROTH	05-026	D15	
3208 ENGINES			
EATON	05-025	B18	
REXROTH 9.0 LITER ENGINE	05-065 05-024	D15 B17	
CODE 05335	00 024		
V345 ENGINES	05-017	B10	
MV404, MV446 ENGINES	05.004	D.(7	
AXLE CODES 02064, 02078, 02127, 021 39 AXLE CODES 02081, 02101	05-024	B17 B10	
AXLE CODES 02081, 02101 AXLE CODES 02329, 02339	05-024	B17	
V537 ENGINES	05-006	A19	
D150, D170, D190 ENGINES		D / D / D	
AXLE CODES 02064, 02078, 02127, 02139 AXLE CODE 02081	05-024 05-017	B17 B10	
AXLE CODES 02329. 02339	05-006	A19	
DT466, DT1466BB ENGINES			
AXLE CODES 02064, 02078, 02127, 02139	05-024	617	
AXLE CODE 02081 AXLE CODES 02329, 02339, 02342	05-017	B10	
EXCEPT 2155 MODEL			
EATON	05-006	A19	
REXROTH	05-065	D15	
FOR 2155 MODEL EATON	05-023	B16	
REXROIH	05-025	D15	
3208 ENGINES			
AXLE CODES 02064, 02078, 02081, 02127, 02139	05.005	D10	
EATON REXROTH	05-025	B18 D15	
AXLE CODES 02329, 02339	03-003		
EATON	05-019	B12	
	05-065	D15	
9.0 LITER ENGINE AXLE CODES 02081, 02101	05-017	B10	
AXLE CODES 02064, 02078, 02127, 02139	05-024	B10 B17	
AXLE CODES 02329, 02339, 02342	05-024	B17	
CODE 05342	05.005	B18	
3208 ENGINE D150, 170, 190 ENGINES	05-025	B18 B17	
DT466, DT1466B ENGINES	05-024	B17	
MV404, 446 ENGINES	05-024	B17	
CODE 05345	05-017	B10	

	FIG NO	FICHE LOC
STEERING GEAR		
CODE 05031 -RHD-	05-064	D14
CODE 05057	05-001	A14
CODE 05058	05-002	A15
CODE 05165	05-007	A20
CODE 05332	05-005	A18
CODE 05333	05-052	C23
CODE 05335		
AXLE CODES 02084 02078, 02081, 02101, 02109, 02118,		
02127, 02139, 02309	05-053	D01
AXLE CODES 02329, 02339, 02342		
EXCEPT 1 863FC MODEL		
HFB64003 -W/ADJUSTMENT SCREW FOR GEAR TRAVEL-	05-011	B02
HFB6400 -W/O ADJUSTMENT SCREW FOR GEAR IKAVEL-	05-053	D01
FOR 1853FC MODEL		
AXLE CODE 02227	06-079	E04
AXLE CODES 02329, 02339, 02342	06-074	D23
CODE 05342	05-056	D05
CODE 05346	05-061	C21
STEERING COLUMN MITER BOX -1853FC MODEL-	05-073	D22
STEERING COLUMN WHEEL HORN BUTTON AND MOUNTING		
STANDARD -STATIONARY-		
EXCEPT 1863FC, 21265 2165 F2126 MODELS		
EXCEPT FLAT BACK COWL CODE 16010	05-009	A23
FOR FLAT BACK COWL CODE 16010	05-010	B01
FOR 18563FC MODEL	05-071	D21
FOR 2125, 2155, F2125 MODELS	05-004	A17
CODE 06708 - ADJUSTABLE-		
EXCEPT FLAT BACK COWL CODE 10010		
EXCEPT 1653FC MODEL	05-013	B05
FOR 1863FC MODEL	05-072	D22
FOR FLAT BACK COWL CODE 16010	05-014	B07

INDEX - 05 PAGE NO. 5

MT 140	GR	OUP 05-STEERING GEAR			₽ Ī 4
			FIG NO	FICHE LOC	
STEERING	GEAR MODEL	, CODE AND IDENTIFICATION			
TD67	05031	ROSS W/JT COL			
6653	06057	SAGINAW W/JT COL			
555	05068	SAGINAW W/JT COL			
378	05165	GEMMER W/JT COL			
M292	05332	SHEPPAR D -BELT DRIVE-			
HFB62	05333	ROSS -BELT DRIVE-			
HFB64	05335	ROSS -BELT DRIVE-			
M252	05342	SHEPPARD -BELT DRIVE-			
710	05346	SAGINAW -BELT DRIVE-			

INDEX - 05 PAGE NO. 6 **REV. 4**

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T 140	GROUP 05-STEERING GEAR			H
		FIG NO	FICHE LOC	
	RESERVED FOR FUTURE USE			

INDEX - 05 PAGE NO. 7 **REV. 4**

40	GROUP 05-STEERING GEAR	FIG NO	FICHE LOC	
	RESERVED FOR FUTURE USE			

REV. NO. 4

INDEX - 05 PAGE 8

REF PART NO. NUMBER DESCRIPTION

TM 5-4210-230-14&P-2 MT140 GROUP 05-STEERING GEAR

REF PART NO. NUMBER DESCR

ESCRIPTION

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PAGE NO. 19



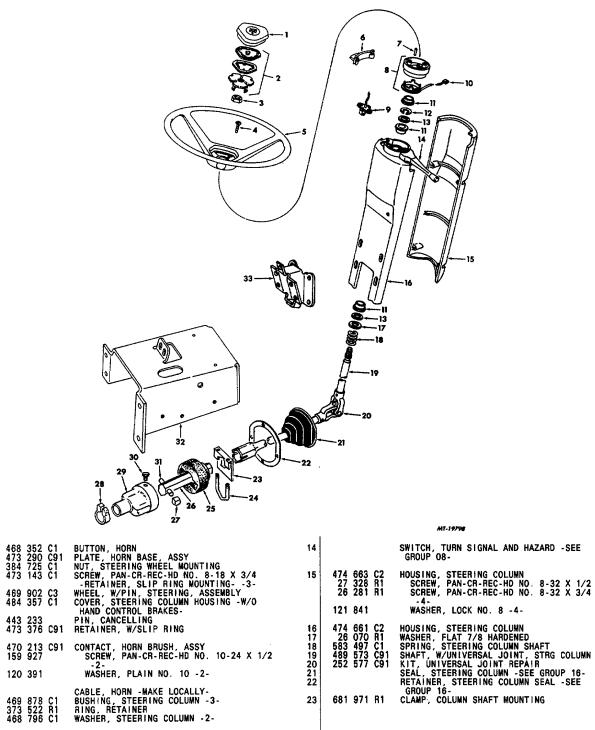
FIG. 05-009

STEERING COLUMN AND WHEEL

TM 5-4210-230-14&P-2 MT140 GROUP 05-STEERING GEAR

REF PART NO. NUMBER DESCRIPTION

FIG. 05-009 CONTINUED STEERING COLUMN AND WHEEL



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FIG. 05-009 PAGE NO. 20

G GEAR MT140 GRO

REF PART NO. NUMBER DESCRIPTION FIG. 05-009 CONTINUED STEERING COLUMN AND WHEEL
 892
 738
 R1
 U-BOLT, COLUMN SHAFT MOUNTING

 120
 369
 NUT, HEX. 3/8NF -2

 120
 382
 WASHER, LOCK 3/8 REGULAR -2 24 BOOT, FLEXIBLE COUPLING SHAFT, W/PIN, LOWER STRG COLUMN DRIVE 892 759 R1 489 571 C1 25 28 BUTTON, FLEXIBLE COUPLING -2-WASHER, FLEXIBLE COUPLING -2-27 270 288 C1 225 218 R1 507 855 C91 24 842 R1 9 413 979 CLAMP, STEERING COLUMN TUBE, ASSY BOLT, HEX-HD 3/8NC X 1-3/4 NUT, HEX. LOCK 3/8NC 28 SHELL, STEERING, ASSY CHASSIS BUILT PRIOR TO 6-11-81 CHASSIS BUILT 6-11-81 AND LATER PLUG, EXPANSION 1-1/4 29 489 569 C91 584 021 C91 172 558 30 27 248 R1 227 110 R1 BOLT, HEX-HD 1/4NF X 3/8 -2-WASHER, STAR LOCK -2-225 217 R1 PIN, STEERING COLUMN SHAFT 31 BRACKET, STEERING COLUMN SUPPORT, ASSY -WELDED- -INCLUDES REF NO. 33-BRACKET, STEERING COLUMN SUPPORT, ASSY BOLT, HEX-HD 3/8NC X 1 - 10-BOLT, HEX-HD 3/8NC X 1 - 1/4 - AR-NUT, HEX. LOCK 3/8NC -6-WASHER, LOCK 3/8 REGULAR -5-WASHER, FLAT 3/8 -7-32 581 858 C1 473 889 C3 24 840 R1 433 351 C1 413 979 120 382 25 709 R1 9 477 679 C1 24 840 R1 9 413 979 BRACKET, STEERING COLUMN SUPPORT, ASSY BOLT, HEX-HD 3/8NC X 1 -4-NUT, HEX. LOCK 3/8NC -4-33

TM 5-4210-230-14&P-2 MT140 GROUP 05-STEERING GEAR

NO.	NUMBER	DESCRIPTION	

			OUP 05-STEERING GEAR			JUP 05-STEERING GEAR
REF NO.	PART		DESCRIPTION	RE NC	EF PART D. NUMBER	DESCRIPTION
	FIG.	05-010			FIG. 05-	010 CONTINUED
	s	TEERING COLU	MN AND WHEEL	5	STEERING COLU	MN AND WHEEL
		27 28 27 28 27 28 27 28 27 28 28 20 27 28 20 24 24			e e e e e e e e e e e e e e e e e e e	
	1 2 3	468 352 C1 473 290 C91	BUTTON, HORN PLATE, HORN BASE, ASSY	20		MT-22055 RETAINER, STEERING COLUMN SEAL -SEE GROUP 16-
	3	373 522 R1	RING, RETAINER	21		SEAL, STEERING COLUMN -SEE GROUP 16-
	5	384 725 C1 473 143 C1	NUT, STEERING WHEEL MOUNTING SCREW, PAN-CR-REC-HD NO. 8-18 X 3/4 -RETAINER. SLIP RING MOUNTING3-	22 23	892 759 R1 489 571 C1	BOOT, FLEXIBLE COUPLING SHAFT, W/PIN, LOWER STRG COLUMN DRIVE
		384 725-C1 473 143 C1 469 902 C3 443 233 C1 473 376 C91	NOI, STEERING WHEEL MOUNTING SCREW, PAN-CR-REC-HD NO. 8-18 X 3/4 -RETAINER, SLIP RING MOUNTING3- WHEEL, W/PIN, STEERING, ASSEMBLY PIN, CANCELLING RETAINER, W/SLIP RING	22 23 24	892 759 R1 489 571 C1 270 288 C1 225 218 R1	BUTTON, FLEXIBLE COUPLING -2- WASHER, FLEXIBLE COUPLING -2-
	5 6 7	469 902 C3 443 233 473 376 C91 470 213 C91 159 927	SCREW, PAN-CR-REC-HD NO. 8-18 X 3/4 -RETAINER, SLIP RING MOUNTING3- WHEEL, W/PIN, STEERING, ASSEMBLY PIN, CANCELLING RETAINER, W/SLIP RING CONTACT, HORN BRUSH, ASSY SCREW, PAN-CR-REC-HD NO. 10-24 X 1/2 -2-	22 23		BUTTON, FLEXIBLE COUPLING -2-
	5 6 7 8	469 902 C3 443 233 473 376 C91 470 213 C91	SCREW, PAN-CR-REC-HD NO. 8-18 X 3/4 -RETAINER, SLIP RING MOUNTING3- WHEEL, W/PIN, STEERING, ASSEMBLY PIN, CANCELLING RETAINER, W/SLIP RING CONTACT, HORN BRUSH, ASSY SCREW, PAN-CR-REC-HD NO. 10-24 X 1/2	22 23 24 25 26	270 288 C1 225 218 R1 489 569 C91 584 021 C91 172 558 507 855 C91 24 842 R1	BUTTON, FLEXIBLE COUPLING -2- WASHER, FLEXIBLE COUPLING -2- SHELL, STEERING, ASSY CHASSIS BUILT PRIOR TO 8-11-81 CHASSIS BUILT 6-11-81 AND LATER PLUG, EXPANSION 1-1/4 CLAMP, STEERING COLUMN TUBE, ASSY BOLT, HEX-HD 3/8NC X 1-3/4
	5 6 7 8 9	469 902 C3 443 233 473 376 C91 470 213 C91 159 927	SCREW, PAN-CR-REC-HD NO. 8-18 X 3/4 -RETAINER, SLIP RING MOUNTING3- WHEEL, W/PIN, STEERING, ASSEMBLY PIN, CANCELLING RETAINER, W/SLIP RING CONTACT, HORN BRUSH, ASSY SCREW, PAN-CR-REC-HD NO. 10-24 X 1/2 -2- WASHER, PLAIN NO. 10 -2-	22 23 24 25 26	270 288 C1 225 218 R1 489 569 C91 584 021 C91 172 558 507 855 C91 24 842 R1 413 979 27 248 R1	BUTTON, FLEXIBLE COUPLING -2- WASHER, FLEXIBLE COUPLING -2- SHELL, STEERING, ASSY CHASSIS BUILT PRIOR TO 6-11-81 CHASSIS BUILT 6-11-81 AND LATER PLUG, EXPANSION 1-1/4 CLAMP, STEERING COLUMN TUBE, ASSY BOLT, MEX-HD 3/8NC X 1-3/4 NUT, HEX. LOCK 3/8NC BOLT, HEX-HD 1/4NF X 3/8 -2-
	5 6 7 8 9	469 902 C3 443 233 473 376 C91 470 213 C91 159 927 120 391 490 762 C1 21 766 R1 490 758 C2	SCREW, PAN-CR-REC-HD NO. 8-18 X 3/4 -RETAINER, SLIP RING MOUNTING3- WHEEL, W/PIN, STEERING, ASSEMBLY PIN, CANCELLING RETAINER, W/SLIP RING CONTACT, HORN BRUSH, ASSY SCREW, PAN-CR-REC-HD NO. 10-24 X 1/2 -2- WASHER, PLAIN NO. 10 -2- CABLE, HORN -MAKE LOCALLY- HOUSING, STEERING COLUMN SCREW, OV-HD NO. 10-24 X 1 TUBE, W/MOUNTING BRACKETS, BUSHINGS, STEFEING COLUMN SUPPORT	22 23 24 25 26 9	270 288 C1 225 218 R1 489 569 C91 584 021 C91 172 558 507 855 C91 24 842 R1 413 979	BUTTON, FLEXIBLE COUPLING -2- WASHER, FLEXIBLE COUPLING -2- SHELL, STEERING, ASSY CHASSIS BUILT PRIOR TO 6-11-81 CHASSIS BUILT 6-11-81 AND LATER PLUG, EXPANSION 1-1/4 CLAMP, STEERING COLUMN TUBE, ASSY BOLT, HEX-HD 3/8NC X 1-3/4 NUT, HEX. LOCK 3/8NC
	5 6 7 8 9 10 11	469 902 C3 443 233 473 376 C91 470 213 C91 159 927 120 391 490 762 C1 21 766 R1 490 758 C2 25 222 R1 24 840 R1 120 380 120 382	SCREW, PAN-CR-REC-HD NO. 8-18 X 3/4 -RETAINER, SLIP RING MOUNTING3- WHEEL, W/PIN, STEERING, ASSEMBLY PIN, CANCELLING RETAINER, W/SLIP RING CONTACT, HORN BRUSH, ASSY SCREW, PAN-CR-REC-HD NO. 10-24 X 1/2 -2- WASHER, PLAIN NO. 10 -2- CABLE, HORN -MAKE LOCALLY- HOUSING, STEERING COLUMN SCREW, OV-HD NO. 10-24 X 1 TUBE, W/MOUNTING BRACKETS, BUSHINGS, STEERING COLUMN SUPPORT BOLT, HEX-HD 1/4NC X 3/4 BOLT, HEX-HD 3/8NC X 1 -4- WASHER, LOCK 1/4 REGULAR WASHER, LOCK 3/8 REGULAR -4-	22 23 24 25 26 9 27	270 288 C1 225 218 R1 489 569 C91 584 021 C91 172 558 507 855 C91 24 842 R1 413 979 27 248 R1 227 110 R1	BUTTON, FLEXIBLE COUPLING -2- WASHER, FLEXIBLE COUPLING -2- SHELL, STEERING, ASSY CHASSIS BUILT PRIOR TO 6-11-81 CHASSIS BUILT 6-11-81 AND LATER PLUG, EXPANSION 1-1/4 CLAMP, STEERING COLUMN TUBE, ASSY BOLT, HEX-HD 3/8NC X 1-3/4 NUT, HEX-HD 3/8NC X 1-3/4 NUT, HEX-HD 1/4NF X 3/8 -2- WASHER, STAR LOCK -2-
	5 6 7 8 9 10 11	469 902 C3 443 233 473 376 C91 470 213 C91 159 927 120 391 490 762 C1 21 766 R1 490 758 C2 25 222 R1 24 840 R1 120 380	SCREW, PAN-CR-REC-HD NO. 8-18 X 3/4 -RETAINER, SLIP RING MOUNTING3- WHEEL, W/PIN, STEERING, ASSEMBLY PIN, CANCELLING RETAINER, W/SLIP RING CONTACT, HORN BRUSH, ASSY SCREW, PAN-CR-REC-HD NO. 10-24 X 1/2 -2- WASHER, PLAIN NO. 10 -2- CABLE, HORN -MAKE LOCALLY- HOUSING, STEERING COLUMN SCREW, OV-HD NO. 10-24 X 1 TUBE, W/MOUNTING BRACKETS, BUSHINGS, STEERING COLUMN SUPPORT BOLT, HEX-HD 1/4NC X 3/4 BOLT, HEX-HD 1/4NC X 3/4 BOLT, HEX-HD 3/8NC X 1 -4- WASHER, LOCK 3/8 REGULAR WASHER, STEERING COLUMN -NYLON- WASHER, ELAT SPECIAL HARDENED	22 23 24 25 26 9 27	270 288 C1 225 218 R1 489 569 C91 584 021 C91 172 558 507 855 C91 24 842 R1 413 979 27 248 R1 227 110 R1	BUTTON, FLEXIBLE COUPLING -2- WASHER, FLEXIBLE COUPLING -2- SHELL, STEERING, ASSY CHASSIS BUILT PRIOR TO 6-11-81 CHASSIS BUILT 6-11-81 AND LATER PLUG, EXPANSION 1-1/4 CLAMP, STEERING COLUMN TUBE, ASSY BOLT, HEX-HD 3/8NC X 1-3/4 NUT, HEX-HD 3/8NC X 1-3/4 NUT, HEX-HD 1/4NF X 3/8 -2- WASHER, STAR LOCK -2-
	5 67 8 9 10 11 12 13 14 15 16	469 902 C3 443 233 473 473 376 C91 470 213 C91 159 927 120 120 391 490 490 762 C1 21 766 R1 490 758 C2 25 222 R1 24 840 R1 120 380 120 468 796 C1 346 950 C1	SCREW, PAN-CR-REC-HD NO. 8-18 X 3/4 -RETAINER, SLIP RING MOUNTING3- WHEEL, W/PIN, STEERING, ASSEMBLY PIN, CANCELLING RETAINER, W/SLIP RING CONTACT, HORN BRUSH, ASSY SCREW, PAN-CR-REC-HD NO. 10-24 X 1/2 -2- WASHER, PLAIN NO. 10 -2- CABLE, HORN -MAKE LOCALLY- HOUSING, STEERING COLUMN SCREW, OV-HD NO. 10-24 X 1 TUBE, W/MOUNTING BRACKETS, BUSHINGS, STEERING COLUMN SUPPORT BOLT, HEX-HD 1/4NC X 3/4 BOLT, HEX-HD 1/4NC X 3/4 BOLT, HEX-HD 3/8NC X 1 -4- WASHER, LOCK 3/8 REGULAR WASHER, STEERING COLUMN -NYLON- WASHER, ELAT SPECIAL HARDENED	22 23 24 25 26 9 27	270 288 C1 225 218 R1 489 569 C91 584 021 C91 172 558 507 855 C91 24 842 R1 413 979 27 248 R1 227 110 R1	BUTTON, FLEXIBLE COUPLING -2- WASHER, FLEXIBLE COUPLING -2- SHELL, STEERING, ASSY CHASSIS BUILT PRIOR TO 6-11-81 CHASSIS BUILT 6-11-81 AND LATER PLUG, EXPANSION 1-1/4 CLAMP, STEERING COLUMN TUBE, ASSY BOLT, HEX-HD 3/8NC X 1-3/4 NUT, HEX-HD 3/8NC X 1-3/4 NUT, HEX-LOCK 3/8NC BOLT, HEX-HD 1/4NF X 3/8 -2- WASHER, STAR LOCK -2-
	5 67 8 9 10 11 12 13 14 15 16 17 18 19	469 902 C3 443 233 473 473 376 C91 470 213 C91 159 927 120 120 391 490 490 762 C1 21 766 R1 490 758 C2 25 222 R1 24 840 R1 120 382 468 466 796 C1 384 474 H 492 577 C91 892 738 B1	SCREW, PAN-CR-REC-HD NO. 8-18 X 3/4 -RETAINER, SLIP RING MOUNTING3- WHEEL, W/PIN, STEERING, ASSEMBLY PIN, CANCELLING RETAINER, W/SLIP RING CONTACT, HORN BRUSH, ASSY SCREW, PAN-CR-REC-HD NO. 10-24 X 1/2 -2- WASHER, PLAIN NO. 10 -2- CABLE, HORN -MAKE LOCALLY- HOUSING, STEERING COLUMN SCREW, OV-HD NO. 10-24 X 1 TUBE, W/MOUNTING BRACKETS, BUSHINGS, STEERING COLUMN SUPPORT BOLT, HEX-HD 1/4NC X 3/4 BOLT, HEX-HD 1/4NC X 3/4 BOLT, HEX-HD 3/8NC X 1 -4- WASHER, LOCK 1/4 REGULAR WASHER, STEERING COLUMN -NYLON- WASHER, STEERING COLUMN SHAFT SHAFT, W/UNIVERSAL JOINT, STRG COLUMN KIT, UNIVERSAL JOINT REPAIR U-BOLT, COLUMN SHAFT MOUNTING NUT, HEX. 3/8 REGULAR CLAMP, COLUMN SHAFT MOUNTING	22 23 24 25 26 9 27	270 288 C1 225 218 R1 489 569 C91 584 021 C91 172 558 507 855 C91 24 842 R1 413 979 27 248 R1 227 110 R1	BUTTON, FLEXIBLE COUPLING -2- WASHER, FLEXIBLE COUPLING -2- SHELL, STEERING, ASSY CHASSIS BUILT PRIOR TO 6-11-81 CHASSIS BUILT 6-11-81 AND LATER PLUG, EXPANSION 1-1/4 CLAMP, STEERING COLUMN TUBE, ASSY BOLT, HEX-HD 3/8NC X 1-3/4 NUT, HEX-HD 3/8NC X 1-3/4 NUT, HEX-HD 1/4NF X 3/8 -2- WASHER, STAR LOCK -2-

TM 5-4210-230-14&P-2

MT140 GROUP 05-STEERING GEAR

FIG. 05-010 PAGE NO. 22

AR MT 140 GROUP 05-STEERING GEAR

FIG. 05-017

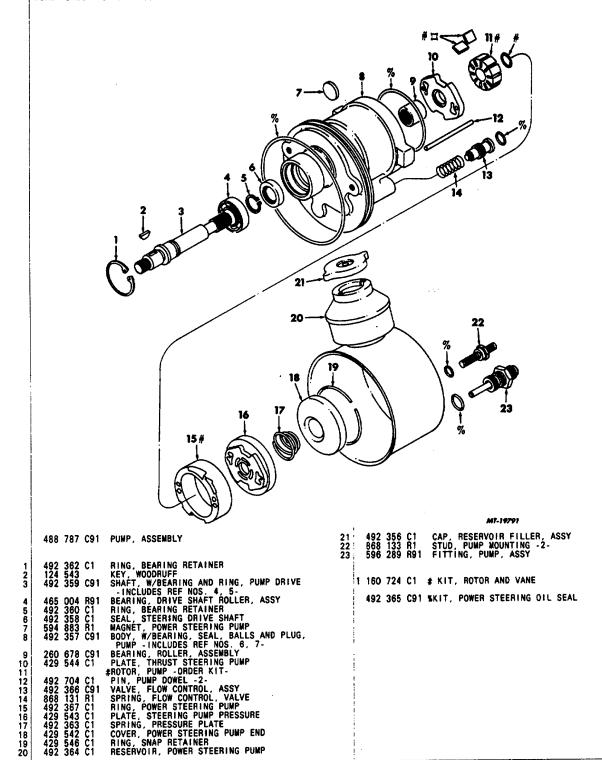
REF PART

DESCRIPTION

POWER STEERING PUMP ASSEMBLY

NO. NUMBER DESCRIPTION

FIG. 05-017 CONTINUED POWER STEERING PUMP ASSEMBLY



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FIG. 05-017 PAGE NO. 33

F PART . NUMBER	8	DESCRIPTION
FIG. 05	-018	
DF	AG LINK	
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•	3	
	UD	() a
м	1-18682	
		NUT, HEX. SLOTTED 7/8 -2-
	127 646 127 645	COLUMBUS AUTO TRW
	358 901 R1 137 214	NUT, HEX. SLOTTED 5/8 -2- PIN, COTTER 1/8 X 1-3/4 -2-
	137 204	PIN, COTTER 1/8 X 1-1/2 -2-
2*	110 373 R1 437 776 C1	SEAL, DUST COVER -2- Columbus Auto TRW
•	109 461	LUBRICATOR, 1/8 STRAIGHT -2-
4		LINK, W/NUTS AND SEALS, DRAG
	488 703 C91 480 645 C91	AXLE CODES 02064, 02078, 02081 AXLE CODES 02127, 02329 AXLE CODES 02120, 02329
	480 645 C91 488 703 C91	AXLE CODES 02139, 02339 EXCEPT FLOTATION TIRES FOR FLOTATION TIRES
· .		
		RIGHT HAND DRIVE
23	194 690 R1	SEAL, DUST COVER -AXLE CODE 021012-
3	109 454	LUBRICATOR, 1/4 STRAIGHT -2- LINK, W/NUTS AND SEALS, DRAG
	492 702 C91 492 930 C91	AXLE CODES 02078, 02081
	492 930 C91 492 080 C91	AXLE CODE 02101 AXLE CODE 02339
;		
1		

FIG. 05-018 PAGE NO. 34 REV. 4

TM 5-4210-230-14&P-2 MT 140 GROUP 05-STEERING GEAR

MT140 GROUP 05-STEERING GEAR REF PART REF PART NO. NUMBER DESCRIPTION NO. NUMBER DESCRIPTION FIG. 05-040 FIG. 05-040 POWER STEERING HOSE AND FITTINGS POWER STEERING HOSE AND FITTINGS 10 13 Ŀ 15 16 MT-22289 EXTENSION, CLIP -MAKE LOCALLY-BOLT, HEX-HD 5/16NC X 1-1/4 BOLT, HEX-HD 5/16NC X 1-1/2 NUT, HEX. 5/16NC WASHER, LOCK 5/16 REGULAR BELT, POWER STEERING PUMP -MATCHED SET-EXCEPT PTO CODE 12851 FOR PTO CODE 12851 63.0 LONG 63.5 LONG 1 15 25 751 R1 25 654 R1 25 520 R1 120 214 474 927 C91 477 284 C91 479 219 C91 365 215 C1 25 485 R1 25 519 R1 120 380 532 434 C1 88 798 C1 25 527 R1 25 710 R1 PULLEY, POWER STEERING PUMP NUT, LOCK 1/2NF WASHER, FLAT 1/2 CLAMP, DOUBLE HOSE BOLT, HEX-HD 1/4NC X 1-1/4 NUT, HEX. 1/4NC -2-WASHER, LOCK 1/4 REGULAR -2-BOLT, SPECIAL 1/4NC X 1-1/2 2 488 16 446 737 C1 24 839 R1 24 841 R1 25 709 R1 SUPPORT, POWER STEERING PUMP BOLT, HEX-HD 3/8NC X 3/4 -2-BOLT, HEX-HD 3/8NC X 1-1/2 WASHER, FLAT 3/8 HARDENED -2-3 494 155 C1 410 977 403 216 876 106 C1 HOSE, GEAR TO POWER BOOSTER UNIT, ASSY ELBOW, 90 DEGREE 3/4-18 X 3/4-16 CONNECTOR, 3/4-18 X 3/4-16 SEAL, O-RING -2-GEAR, POWER STEERING -SEE SEPARATE !LLUSTRATION-17 9 18 19 ğ 446 755 C1 488 822 C1 SPACER -W/PTO CODE 12851-RETAINER, W/WELD NUT 20 21 4 5 488 800 C1 24 840 R1 24 847 R1 413 979 BRACKET, W/BUSHING, POWER STEERING PUMP BOLT, HEX-HD 3/8NC X 1 BOLT, HEX-HD 3/8NC X 5 NUT, HEX. LOCK 3/8NC WASHER, FLAT 3/8 HARDENED -2-6 446 756 C1 24 843 R1 25 709 R1 SPACER, PUMP MOUNTING BOLT, HEX-HD 3/8NC X 2 WASHER, FLAT 3/8 HARDENED 22 9 25 709 R1 7 106 749 KEY, WOODRUFF 1/8 X 1/2 **\$PART NO. COVERS 1 FOOT OF BULK MATERIAL** PUMP, POWER STEERING -SEE SEPARATE ILLUSTRATION-BOLT, HEX-HD 3/8NC X 1 -3-WASHER, FLAT 3/8 HARDENED -3-8 24 840 R1 25 709 R1 494 156 C1 532 389 C1 274 085 R91 HOSE, PUMP TO GEAR, ASSY *HOSE, POWER BOOSTER UNIT TO RESERVOIR CLAMP, HOSE -2-10 11 CLAMP, HOSE -3-BOLT, HEX-HD 1/4NC X 3/4 -3-NUT, HEX. 1/4NC -3-WASHER, LOCK 1/4 REGULAR -3-101 983 R1 25 222 R1 25 519 R1 120 380 12 EXTENSION, CLIP -MAKE LOCALLY-EXTENSION, CLIP -MAKE LOCALLY-13 14 PRINTED IN UNITED STATES OF AMERICA

TM 5-4210-230-14&P-2

FIG. 05-040 PAGE NO. 57



TM 5-4210-230-14&P-2 MT140 GROUP 05-STEERING GEAR

DESCRIPTION

FIG. 05-041

REF PART

NO. NUMBER

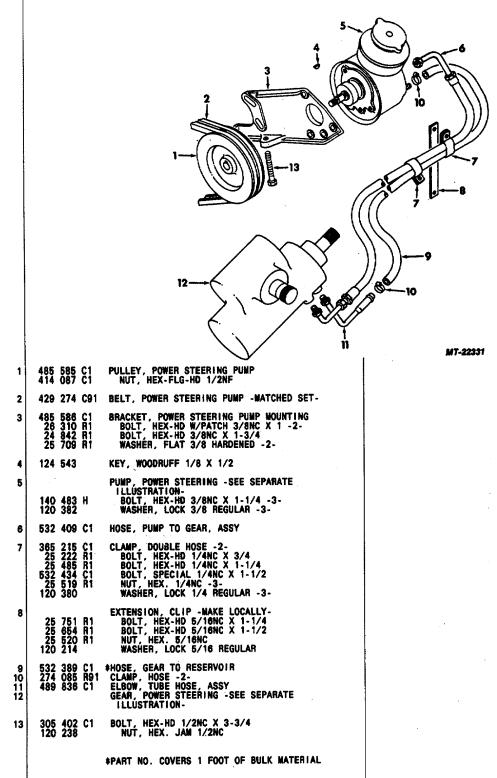
941

POWER STEERING HOSE AND FITTINGS

REF PART NO. NUMBER DESCRIPTION

FIG. 05-041 CONTINUED

POWER STEERING HOSE AND FITTINGS



REF PART REF PART NO. NUMBER DESCRIPTION NO. NUMBER DESCRIPTION FIG. 05-042 CONTINUED FIG. 05-042 POWER STEERING HOSE AND FITTINGS POWER STEERING HOSE AND FITTINGS 10 10 15 16 MT-22332 365 215 C1 25 485 R1 532 434 C1 25 519 R1 120 380 CLAMP, DOUBLE HOSE BOLT, HEX-HD 1/4NC X 1-1/4 BOLT, SPECIAL 1/4NC X 1-1/2 NUT, HEX. 1/4NC -2-WASHER, LOCK 1/4 REGULAR -2-PULLEY, POWER STEERING PUMP NUT, HEX-FLG-HD 1/2NF 1 488 688 C1 414 087 C1 14 534 311 R1 2 BELT, POWER STEERING PUMP -2-BRACKET, POWER STEERING PUMP MOUNTING BOLT, HEX-HD 3/8NC X 1-1/2 -3-WASHER, LOCK 3/8 REGULAR -3-WASHER, FLAT 3/8 HARDENED -3-488 654 C2 24 841 R1 120 382 25 709 R1 3 HOSE, GEAR TO POWER BOOSTER UNIT, ASSY HOSE, PUMP TO GEAR, ASSY GEAR, POWER STEERING -SEE SEPARATE 15 491 160 C1 532 402 C1 16 17 ILLUSTRATION-305 402 C1 114 505 BOLT, HEX-HD 1/2NC X 3-3/4 NUT, HEX. JAM 1/2NC 4 **\$PART NO. COVERS 1 FOOT OF BULK MATERIAL** 488 656 C2 24 850 R1 120 383 BRACKET, POWER STEERING PUMP MOUNTING BOLT, HEX-HD 7/18NC X 1-1/2 -3-WASHER, LOCK 7/18 REGULAR -3-5 124 543 KEY, WOODRUFF 1/8 X 1/2 6 PUMP, POWER STEERING -SEE SEPARATE ILLUSTRATION-BOLT, HEX-HD 3/8NC X 1 -3-WASHER, LOCK 3/8 REGULAR -3-7 24 840 R1 120 382 532 389 C1 \$HOSE, BOOSTER UNIT TO RESERVOIR 274 085 R91 CLAMP, HOSE -2-8 9 10

TM 5-4210-230-14&P-2

MT140 GROUP 05-STEERING GEAR

 10
 101
 983
 R1 25
 CLAMP, HOSE -3-BOLT, HEX-HD 1/4NC X 3/4 -3-NUT, HEX. 1/4NC -3-WASHER, LOCK 1/4 REGULAR -3

 11
 EXTENSION, CLIP -MAKE LOCALLY-EXTENSION, CLIP -MAKE LOCALLY-EXTENSION, CLIP -MAKE LOCALLY-BOLT, HEX-HD 5/16NC X 1-1/4 25

 13
 EXTENSION, CLIP -MAKE LOCALLY-BOLT, HEX-HD 5/16NC X 1-1/4 25

 14
 EXTENSION, CLIP -MAKE LOCALLY-BOLT, HEX-HD 5/16NC X 1-1/4 BOLT, HEX-HD 5/16NC X 1-1/2 120

 120
 214

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FIG.05-042 PAGE NO. 59

TM 5-4210-230-14&P-2 MT140 GROUP 05-STEERING GEAR

			0 0	RU	UP 05-STEERING GEAR					UP 05-STEERING GEAR
REF NO.					DESCRIPTION		F P/ 0. NI	ART Umbe	R	DESCRIPTION
	FIG.	05-0)43				FI	G. 0	5-0	43 CONTINUED
		POWER	R STI	EERIN	NG HOSE AND FITTINGS		POW	ER STI	EERI	NG HOSE AND FITTINGS
									-16	
	1			C91 C91 C91	BELT, POWER STEERING PUMP -MATCHED SET- EXCEPT PTO CODE 12851 FOR PTO CODE 12851 63.0 LONG 63.5 LONG	19	44 27 2	140 6 756 9 087 4 843 5 709	C1 R1 R1	3 MT-22339 SPACER, PUMP MOUNTING EXC DUAL AIR PUMPS FOR DUAL AIR PUMPS BOLT, HEX-HD 3/8NC X 2 WASHER, FLAT 3/8 HARDENED
	2	25	798 527 710	R1	PULLEY, POWER STEERING PUMP NUT, LOCK 1/2NF WASHER, FLAT 1/2					RIGHT HAND DRIVE
	3	24 24	737 839 841 709	R1 R1	SUPPORT, POWER STEERING PUMP BOLT, HEX-HD 3/8NC X 3/4 -2- BOLT, HEX-HD 3/8NC X 1-1/2 WASHER, FLAT 3/8 HARDENED -2-	9	49	7 476	C1	HOSE, PUMP TO GEAR, ASSY *PART NO. COVERS 1 FOOT OF BULK MATERIAL
	4 5	446 488	755 822	C1 C1	SPACER -W/PTO CODE 12851- Retainer, W/Weld Nut					
	6	24 24 9413	800 840 847 979 709	81 81	BRACKET, W/BUSHING, POWER STEERING PUMP BOLT, HEX-HD 3/8NC X 1 BOLT, HEX-HD 3/8NC X 5 NUT, HEX.LOCK 3/8NC WASHER, FLAT 3/8 HARDENED -2-					
	7	106	749		KEY, WOODRUFF 1/8 X 1/2					
	8	24 25	840 709	R1 R1	PUMP, POWER STEERING -SEE SEPARATE ILLUSTRATION- BOLT, HEX-HD 3/8NC X 1 -3- WASHER, FLAT 3/8 HARDENED -3-					
	9	494	156	C1	HOSE, PUMP TO GEAR, ASSY					
	10	25 25 25	215 222 485 519 380	81 81 81	CLAMP, DOUBLE HOSE -2- BOLT, HEX-HD 1/4NC X 3/4 BOLT, HEX-HD 1/4NC X 1-1/4 NUT, HEX. 1/4NC -3- WASHER, LOCK 1/4 REGULAR -3-				·	
	11	25 25 25 120	751 654 520 214	R1 R1 R1	EXTENSION, CLIP -MAKE LOCALLY- BOLT, HEX-HD 5/16NC X 1-1/4 BOLT, HEX-HD 5/16NC X 1-1/2 NUT, HEX.5/16NC WASHER, LOCK 5/16 REGULAR					
PRINT	16 17 18	274 864 9 409 876 9 410	455 287 106 977	R91 R1 C1	<pre>\$HOSE, GEAR TO RESERVOIR CLAMP, HOSE -2- ELBOW, 90 DEGREE 3/8NPT X 1/2 HOSE CONNECTOR, 3/4-16 X 3/8NPT SEAL, 0-RING -2- ELBOW, 90 DEGREE 3/4-16 X 3/4-16 GEAR, POWER STEERING -SEE SEPARATE ILLUSTRATION- OF AMERICA</pre>					

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FIG. 05-043 PAGE NO. 60

-230-14&P-2 _____

	PAR	т	00		UP 05-STEERING GEAR	REF	40 GROUP (
).	NUM				DESCRIPTION			DESCRIPTION
	FIG	. 05-0		ERII	NG HOSE AND FITTINGS		FIG. 05-044 C	ONTINUED DSE AND FITTINGS
							10 7-e	
		400	520			13-07 12-1 11-	14	8
	1			•	BELT, POWER STEERING PUMP -MATCHED SE Pulley, power steering pump			
	3		585 087 586		PULLEY, POWER STEERING PUMP NUT, HEX-FLG-HD 1/2NF BRACKET, POWER STEERING PUMP MOUNTING			
	3	26 24	310 842 709	R1 R1	BOLT, HEX-HD W/PATCH 3/8NC X 1 -2- BOLT, HEX-HD 3/8NC X 1-3/4 WASHER, FLAT 3/8 HARDENED -2-			
	4	: 124	543		KEY, WOODRUFF 1/8 X 1/2			
	5		483 382		PUMP, POWER STEERING -SEE SEPARATE ILLUSTRATION- BOLT, HEX-HD 3/8NC X 1-1/4 -3- WASHER, LOCK 3/8 REGULAR -3-			
	6	494	156	C1	HOSE, PUMP TO GEAR, ASSY	-		
	7	25 25 532	215 222 485 434 519 380	R1 R1 C1	CLAMP, DOUBLE HOSE -2- BOLT, HEX-HD 1/4NC X 3/4 BOLT, HEX-HD 1/4NC X 1-1/4 BOLT, SPECIAL 1/4NC X 1-1/2 NUT, HEX. 1/4NC X 1-1/2 WASHER, LOCK 1/4 REGULAR -3-			
	8	25 25	751 654 520 214	81 81	EXTENSION, CLIP -MAKE LOCALLY- BOLT, HEX-HD 5/16NC X 1-1/4 BOLT, HEX-HD 5/16NC X 1-1/2 NUT, HEX. 5/16NC WASHER, LOCK 5/16 REGULAR			
	9 10 11 12 13 14 15	864 9 409 9 410	389 085 455 287 977 106	R1	\$HOSE, GEAR TO RESERVOIR CLAMP, HOSE -2- ELBOW, 90 DEGREE 3/8NPT X 1/2 HOSE CONNECTOR, 3/4-16 X 3/8NPT ELBOW, 90 DEGREE 3/4-16 X 3/4-16 SEAL, 0-RING -2- GEAR, POWER STEERING -SEE SEPARATE ILLUSTRATION-			
	16		402	C1	BOLT, HEX-HD 1/2NC X 3-3/4 Nut, Hex, Jam 1/2NC			·
	16		238	CI	NUT, HEX. HD 1/2NC X 3-3/4 NUT, HEX. JAM 1/2NC			

FIG. 05-044 PAGE NO. 61



TM 5-4210-230-14&P-2 MT 140 GROUP 05-STEERING GEAR

		UP 05-STEERING GEAR	MT 140 GROUP 05-STEERING GEAR				
	IBER	DESCRIPTION	NO.		DESCRIPTION		
FIG	. 05-045			FIG. 05-04	15 CONTINUED		
	POWER STEERIN	G HOSE AND FITTINGS		POWER STEERIN	IG HOSE AND FITTINGS		
1	494 545 C1 414 087 C1	PULLEY, POWER STEERING PUMP NUT, HEX-FLG LOCK 1/2NF	16	17 365 215 C1 25 485 R1 532 434 C1	MT-22333 CLAMP, DOUBLE HOSE BOLT, HEX-HD 1/4NC X 1-1/4 BOLT, SPECIAL 1/4NC X 1-1/2		
2	480 083 C91	BELT, POWER STEERING PUMP -MATCHED SET-		532 434 C1 25 519 R1 120 380	BOLT, SPECIAL 1/4NC X 1-1/2 NUT, HEX. 1/4NC -2- WASHER, LOCK 1/4 REGULAR -2-		
3	689 362 C1 24 842 R1 25 522 R1 120 382 25 709 R1	BOLT, EYE 3/8NC Bolt, HEX-HD 3/8NC X 1-3/4 NUT, HEX. 3/8NC -2- Washer, Lock 3/8 Regular Washer, Flat 3/8 Hardened	17 18 19	491 160 C1 532 402 C1	HOSE, GEAR TO POWER BOOSTER UNIT, ASSY HOSE, PUNP TO GEAR, ASSY GEAR, POWER STEERING -SEE SEPARATE ILLUSTRATION-		
4	689 366 C1	SPACER, EYE BOLT			PART NO. COVERS 1 FOOT OF BULK WATERIAL		
5	492 039 C2 24 850 R1 120 383 25 846 R1	BRACKET, HYDRAULIC PUMP MOUNTING, ASSY Bolt, Hex-HD 7/10NC X 1-1/2 -2- Washer, Lock 7/16 Regular -2- Washer, Hardened -2-			WART NO. COVENS I FOOT OF BOEK MATCHING		
6	124 543	KEY, WOODRUFF 1/8 X 1/2					
7	24 840 R1 120 382	PUMP, POWER STEERING -SEE SEPARATE ILLUSTRATION- BOLT, HEX-HD 3/8NC X 1 -3- WASHER, LOCK 3/8 REGULAR -3-					
8	488 596 C1 25 501 R1 25 522 R1 120 382	SPACER, BRACKET MOUNTING BOLT, HEX-HD 3/8NC X 3-3/4 NUT, HEX. 3/8NC WASHER, LOCK 3/8 REGULAR					
9	491 594 C2 25 522 R1 120 382 25 709 R1	BRACKET, HYDRAULIC PUMP MOUNTING NUT, HEX. 3/8NC -2- Washer, Lock 3/8 Regular -2- Washer, Flat 3/8 Hardened -2-					
10 11		CLAMP, HOSE -2- #HOSE, BOOSTER UNIT TO RESERVOIR					
12		CLAMP, HOSE -3- BOLT, HEX-HD 1/4NC X 3/4 -3- NUT, HEX. 1/4NC -3- WASHER, LOCK 1/4 REGULAR -3-					
13 14		EXTENSION, CLIP - MAKE LOCALLY- EXTENSION, CLIP - MAKE LOCALLY-					
15	25 751 R1 25 654 R1 25 520 R1 120 214 UNITED STATES C	EXTENSION, CLIP - MAKE LOCALLY- Bolt, HEX-HD 5/16NC X 1-1/4 Bolt, HEX-HD 5/16NC X 1-1/2 NUT, HEX. 5/16NC Washer, Lock 5/16 Regular					

FIG. 05-045 PAGE NO. 62

	IV	11140 GRU	UP 05-31 EERING GEAR
REF NO.	PART NUME		DESCRIPTION
	FIG.	05-052	
		STEERING GEA	R
	42	489 761 C1 470 290 C1 414 085 C1 414 089 C1	ARW, STEERING GEAR EXCEPT, 2125, 2155, F2125 MODELS FOR 2125, 2155, F2125 MODELS BOLT, HEX-FLG-HD 5/8NF X 3-3/4 NUT, HEX-FLG LOCK 5/8NF
	43 44 45	487 357 C9 21 016 R1	
	46 47 48 49 50 51	500 690 C1 500 689 C1 487 364 C91 866 224 R1 346 902 R1 586 894 C91	<pre>#NUT, HEX. 1/2NF, SEALING SCREW, ADJUSTING SHAFT, STEERING GEAR OUTPUT, ASSY SCREW, ADJUSTING</pre>
		474 628 C1	*REINFORCEMENT, STEERING GEAR MOUNTING INNER -4X2 MODELS W/O CODE 01636- Except 2125, 2155, F2125 MODELS FOR 2125, 2155, F2125 MODELS -NOT USED-
	-	583 823 C91	*PART NOT ILLUSTRATED #KIT, OIL SEAL

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REV. 4

PAGE NO. 71

TM 5-4210-230-14&P-2 MT140 GROUP 05-STEERING GEAR

_		
RFF	PART	
NO	NUMBER	DESCRIPTION
NU.	NUMBER	DESCRIPTION

MT140 GROUP 05-STEERING GEAR	TM 5-4210-230-14&P-2 MT140-GROUP 05-STEERING GEAR
REF PART NO. NUMBER DESCRIPTION	REF PART NO. NUMBER DESCRIPTION
FIG. 05-053	FIG. 05-053 CONTINUED steering gear
	₩0 MT-22343-A
GEAR, STEERING, ASSY -W/O STEERING ARM- 491 010 C92 AXLE CODES 02064, 02078, 02127, 02139, 02329, 02339 494 824 C92 AXLE CODES 02061, 02109, 02118, 02309 414 085 C1 BOLT, HEX-FLG-HD 5/8NF X 3-3/4 -2- 414 086 C1 BOLT, HEX-FLG-HD 5/8NF X 4 -2- 491 036 C1 BOLT, HEX-FLG-HD 5/8NF X 6-1/2 481 795 C1 BOLT, HEX-FLG LOCK 5/8NF -3- 1 487 349 C1 BOLT, SIDE COVER -6- 2 124 934 NUT, SCREW ADJUSTING 3 435 693 C1 #PLUG, VENT 4 487 345 C91 COVER, W/BEARING, WASHERS, SEAL AND SNAP RING, HOUSING SIDE 5 487 320 C91 BEARING, ROLLER, ASSY 6 487 346 C1 #WASHER, BACK-UP 7 479 013 C1 #WASHER, BACK-UP 8 487 347 C1 #SEAL, 01L UPPER HOUSING COVER, ASSY 9 23 869 R1 RING, SNAP 10 487 348 C1 #GASKET, HOUSING SIDE COVER 11 487 322 C1 BEARING, ROLLER SINGLE 13 487 321 C1 SPRING, POWER STEERING 14 500 695 C91 PISTOM, W/RING AND SEAL PRINTED IN UNITED STATES OF AMERICA	15 312 663 C1 WASHER, THRUST -2- 16 568 142 R91 BEARING, THRUST 17 487 333 C1 #SEAL, OIL UPPER HOUSING COVER, ASSY 18 487 331 C1 WASHER, BACK-UP 19 327 316 R1 RING, SNAP 20 27 948 R1 #SEAL, OIL RING 21 500 697 C91 HOUSING, W/BALLS AND PIN, VALVE 22 487 340 C1 #SEAL, OIL STEERING GEAR HOUSING 23 VALVE, RELIEF, ASSY 500 683 C91 AXLE CODES 02064, 02078, 02127, 02139, 02329, 02339 500 683 C91 AXLE CODES 02081, 02109, 02118, 02309 24 887 656 C1 #SEAL, OIL RING 2500 686 C1 RING, BACK-UP 26 500 686 C1 SEAL, O-RING 27 24 864 R1 BOLT, HEX-HD 1/2NC X 2-1/8 -4- 28 8693 C91 SHAFT, STEERING GEAR ACTUATING, ASSY -WILL WORK FOR 487324C91- -WILL WORK FOR 487324C91- 30 487 327 C1 #SEAL, OIL RING -2- 31 343 903 R1 #SEAL, OIL RING -2- 32 487 325 C1 #SEAL, OIL RING -2- 32 487 325 C1 SEAL,

FIG. 05-053 PAGE NO. 72

TM 5-4210-230-14&P-2 MT140 GROUP 05- STEERING GEAR REF PART

N	/11140 GROU	JP 05- STEERING GEAR		MIT140 GROUP 05-STEERING GEAR				
REF PAR NO. NUM		DESCRIPTION	REF NO.	PART NUMBER DESCRIPTION				
	FIG. 05-053 CONTINUED							
	STEERING GEA	R						
34 33 33 33 34 34 44	5 27 947 A1 8 487 334 C1 7 487 351 C1 8 487 350 C1 9 22 275 A1	BEARING, ROLLER SINGLE #SEAL, OIL RING #RING, PISTON #SEAL, OUTPUT SHAFT, INNER #WASHER, BACK-UP #SEAL, OIL RING BOLT, HEX-HD 5/16NC X 15/16 -4-						
4	488 704 C1 489 666 C2 489 666 C2 489 666 C2 500 378 C1 489 666 C2 489 666 C2 489 666 C2 489 666 C2 489 666 C2 500 378 C1 470 292 C3 416 742 C1	ARN, STEERING GEAR AXLE CODES 02064, 02078, 02081 AXLE CODES 02109, 02118, 02309 AXLE CODE 02127 AXLE CODE 02139 EXC FLOTATION TIRES FOR FLOTATION TIRES AXLE CODES 02329, 02339 EXCEPT 2125, 2155, F2125 MODELS EXCEPT AXLE CODE 02339 FOR AXLE CODE 02339 EXCEPT FLOTATION TIRES FOR FLOTATION TIRES FOR FLOTATION TIRES FOR FLOTATION TIRES FOR 2125, 2155, F2125 MODELS BOLT, HEX-FLG-HD 3/4MF X 4						
		NUT, HEX-FLG LOCK 3/4NF						
42 43 44 46 46	487 356 C91 435 826 C1 487 320 C91	HOUSING, STEERING GEAR -NOT SERVICED SEPARATELY.						
47 48 50 51 52	487 342 C1 487 344 C91 866 224 R1 346 902 R1	<pre>#NUT, SEALING SCREW, ADJUSTING SHAFT, STEERING GEAR OUTPUT, ASSY SCREW, ADJUSTING RETAINER ADJUSTING SCREW</pre>						
	474 628 C1	*REINFORCEMENT, STEERING GEAR MOUNTING INNER -W/O FRAME EXTENSION CODE 01636-						
		RIGHT HAND DRIVE						
	492 823 C92 494 825 C92	GEAR, STEERING, ASSY -W/O STEERING ARM- Axle codes 02078, 02339 Axle codes 02081, 02101, 02109						
14 21 23	500 698 091	HOUSING, W/BALLS AND PIN, VALVE						
29	500 694 C91 586 692 C91	SHAFT, STRG GEAR ACTUATING, ASSY W/492823C91, 494825C91 STEERING GEARS W/492823C92, 494825C92 STEERING GEARS						
41	492 701 C1 492 896 C1 492 079 C1	ARM, STEERING GEAR AXLE CODES 02078, 02081 AXLE CODE 02101 AXLE CODES 02109, 02339	-					
52	583 825 C91	KIT, CAP AND BALL GUIDE						
	492 938 C1	*REINFORCEMENT, GEAR MOUNTING INNER AXLE CODES 02078, 02081, 02101, 02109						
		*PART NOT ILLUSTRATED						
	582 463 C91	#KIT, O∔L SEAL STEERING GEAR		· ·				

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TM 5-4210-230-14&P-2 MT140 GROUP 05- STEERING GEAR

REF NO.					DESCRIPTION		PART NUMBER		DESCRIPTION		
	FIG. 05-054 POWER STEERING HOSE AND FITTINGS						FIG. 05-054 CONTINUED POWER STEERING HOSE AND FITTINGS				
								9 10 10 11 2			
	1	474 479	927 219	C91 C91	BELT, POWER STEERING PUMP -MATCHED SET- Except PTO CODE 12851 For PTO CODE 12851	16	446 756 C1 279 087 R1	FOR	PUMP MOUNTING Dual Air Pumps Dual Air Pumps		
	2	488 25 25	798 527 710	C1 R1 R1	PULLEY, POWER STEERING PUMP NUT, LOCK 1/2NF WASHER, FLAT 1/2		24 843 R1 25 709 R1	WASHE	HEX-HD 3/8NC X 2 R, FLAT 3/8 HARDENED		
	3	24	737 839 841 709	R1 R1	SUPPORT, POWER STEERING PUMP BOLT, HEX-HD 3/8NC X 3/4 -2- BOLT, HEX-HD 3/8NC X 1-1/2 WASHER, FLAT 3/8 HARDENED -2-			PPAHI N	0. COVERS 1 FOOT OF BULK MATERIAL		
	4 5	488	755 822	C1.	SPACER -W/PTO CODE 12851- Retainer, W/Weld Nut		,				
	6	24 9 413	800 840 847 979 709	R1	BRACKET, W/BUSHING, POWER STEERING PUMP BOLT, HEX-HD 3/8NC X 1 BOLT, HEX-HD 3/8NC X 5 NUT, HEX.LOCK 3/8NC WASHER, FLAT 3/8 HARDENED -2-						
	7	106	749		KEY, WOODRUFF 1/8 X 1/2						
	8	24 25	840 709	R† R1	PUMP, POWER STEERING -SEE SEPARATE Illustration- Bolt, Hex-HD 3/8NC X 1 -3- Washer, Flat 3/8 Hardened -3-		•				
	9	532	402	C1	HOSE, PUMP TO GEAR, ASSY						
	10	25 532 25	215 222 485 434 519 380	81 C1 R1	CLAMP, DOUBLE HOSE2- BOLT, HEX-HD 1/4NC X 3/4 BOLT, HEX-HD 1/4NC X 1-1/4 BOLT, SPECIAL 1/4NC X 1-1/2 NUT, HEX. 1/4NC -3- WASHER, LOCK 1/4 REGULAR -3-						
	11	25 120	751 654 520 214	R1	EXTENSION, CLIP WAKE LOCALLY- BOLT, HEX-HD 5/16NC X 1-1/4 BOLT, HEX-HD 5/16NC X 1-1/2 NUT, HEX. 5/16NC WASHER, LOCK 5/16 REGULAR						
	12 13 14 15	532 274 489	389 085 836	C1 R91 C1	SHOSE, GEAR TO RESERVOIR CLAMP, HOSE -2- ELBOW, TUBE HOSE, ASSY GEAR, POWER STEEFING -SEE SEPARATE ILLUSTRATION-						

<u>MT-140</u>

GROUP 05-PROPELLER SHAFTS

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MT-140 GROUP 05-PROPE	ELLER SHAFTS			
		FIG NO	FICHE LOC	
ONLY CENTER BEARING BRACKETS AND COMPANION FI ARE LISTED IN THIS SECTION.	ANGES			
FOR REPLACEMENT OF PROPELLER SHAFT ASSEMBLIE: 10-DIGIT PART NUMBER ON YOUR LINE SETTING TICKET REFER TO THE PROPELLER SHAFT SECTION OF THE MT MT-90 PROPELLER SHAFT PROGRAM IS FOR LOCAL FAB OF PROPELLER TUBE ASSEMBLIES FROM COMPONENTS FROM THE PARTS DISTRIBUTION CENTERS. THE MT-90 A REFERENCE FOR COMPLETE FABRICATION SERVICE (10-DIGIT PROPELLER SHAFTS. U-JOINTS AND CENTER E	ÀND ĩ-90. THE RICATION S OBTAINED IS ALSO DF ALL IH			
NOTE: PROPELLER SHAFT ASSEMBLY REPLACEMENT IN REGULAR WAY -FABRICATED PROPELLER SHAFTS OBTAINED FROM THE PARTS DISTRIBUTION CENT	S- CAN BE			
CENTER BEARINGS REFER TO CENTER BEARING APPLICATION CHART IN I	VII-90.			
U-JOINTS REFER TO U-JOINT KIT SECTION IN MT-90.				

MT 140 GROUP 05-PROPELLER SHAFTS			ÞĪ4
	FIG NO	FICHE LOC	
MT 140 FLANGE, COMPANION AT FRONT DRIVING AALE AT TRANSFER CASE AT MAIN TRANSMISS ION AT CENIER BEARING AT REAR ALLE CODE 06721 CODE 06723 PROP SHAFT GUARD	FIG NO 06-001 06-002 05-003 06-004 06-006 06-005 06-007 06-008 00-009 06-010	FICHE LOC F03 F03 F04 F05 F06 F07 F07 F08 F09	<u>HİI</u>

O6-INDEX PAGE 2 REV. NO. 4

REF PART NO. NUMBER DESCRIPTION
FIG. 06-002 Flange -at transfer case-
FLANGE - AT TRANSPER CASE- FLANGE - AT TRANSPER CASE- CODE 13155 488 890 C1 FORWARD UNPUT REAR OUTPUT 488 890 C1 488 890 C1 1800 SERIES CODE 13188 494 524 C1 1480 SERIES CODE 13188 494 524 C1 FORWARD OUTPUT REAR OUTPUT 494 524 C1 494 524 C1 FORWARD OUTPUT REAR OUTPUT 494 524 C1 494 524 C1 FORWARD OUTPUT REAR OUTPUT 494 524 C1 19 089 R1 1600 SERIES 119 089 R1 200 990 R1 1550 SERIES 119 089 R1 200 990 R1 1500 SERIES 119 089 R1 1000 SERIES 119 089 R1 1600 SERIES 119 089 R1 204 138 R1 U-BOLT, TRUNNION BEARING -1480, 1550 SERIES FLANGE2- BOLT, TRUNNION -4- 52 334 R1 1400, 1850 SERIES 14800 SERIES FLANGE 125 788 R1 1700 SERIES FLANGE 126 788 R1 1700 SERIES FLANGE 127 788 R1 1700 SERIES FLANGE 128 825 R2 1700 SERIES FLANGE

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TM 5-4210-230-14&P-2

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FIG. 06-002 PAGE NO. 3

MT140 GROUP 06- PROPELLER SHAFTS

TM 5-4210-230-14&P-2 MT140 GROUP 06- PROPELLER SHAFTS

MT140 GROUP 06- PROPELLER SHAFTS REF PART NO. NUMBER

FIG. 06-004

TM 5-4210-230-14&P-2 MT140 GROUP 06- PROPELLER SHAFTS REF PART NO. NUMBER DESCRIPTION DESCRIPTION FIG. 06-005 FLANGE -AT REAR AXLE-FLANGE -AT AUXILIARY TRANSMISSION-

	FLANGE, COMPANION	FLANGE, COMPANION CODES 14029, 14030, 14039 200 991 R1 1480 SERIES 200 990 R1 1550 SERIES 119 089 R1 1600 SERIES 200 987 R1 1480 SERIES 201 783 R2 1550 SERIES 202 987 R1 1480 SERIES 201 783 R2 1550 SERIES 202 987 R1 1480 SERIES 201 783 R2 1550 SERIES 202 987 R1 1710 SERIES 201 783 R2 1550 SERIES 202 987 R1 1710 SERIES 204 209 R1 1710 SERIES 240 209 R1 1710 SERIES 240 209 R1 1710 SERIES 491 280 C2 1600 SERIES 491 287 C2 1710 SERIES 491 287 C2 1700 SERIES 491 287 C2 1700 SERIES 492 071 C2 1550 SERIES 489 703 C2 1600 SERIES 200 983 R1 1480 SERIES 376 609 C1 1480 SERIES 200 983 R1 1450, 1430 SERIES 201 784 R1 1500 SERIES 202 983 R1 1450, 142
010 116 81	INPUT	200 991 R1 1480 SERIES 200 990 R1 1550 SERIES
322 658 C1	1550 SERIES	119 089 R1 1600 SERIES CODES 14042 14044 14047
110 907 11	OUTPUT -1600 SERIES-	SQUARE CUT SPLINES
120 977. H1	O4036	200 507 ht 1460 SERIES 201 783 R2 1550 SERIES
3/4 563 01	O4036	240 209 R1 1710 SERIES
	CODES 13552, 13554 INPUT	491 290 C2 1480 SERIES
284 908 C1 484 321 C1	1550 SERIES 1600 SERIES	491 289 C2 1600 SERIES 491 288 C2 1600 SERIES
	OUTPUT EXCEPT PARKING BRAKE CODES 04009,	491 287 C2 1710 SERIES CODE 14057
484 321 <u>C1</u>	04036 1600 SERIES	492 0/1 C2 1550 SERIES 489 703 C2 1600 SERIES
979 591 R2 177 036 R11	1700 SERIES FOR PARKING BRAKE CODES 04009,	489 702 CT 1700 SERIES CODE 14058
	04036 - 1600, 1700 SERIES- CODE 13601	866 999 C1 1480 SERIES 887 551 R1 1550 SERIES
863 411 C1	INPUT 1550 SERIES	376 609 C1 1600 SERIES CODES 14186, 14192, 14199, 14292
369 915 C1 973 701 R1	1600 SERIES 1700 SERIES	200 983 R1 1450, 1480 SERIES 201 784 R1 1550 SERIES
369 915 C1	OUTPUT 1800 SERIES	376 608 C1 EXC CODE 14292.9203
973 701 R1	1700 SERIES	376 610 C1 FOR CODE 14292.9203 1710 SERIES
211 259 R1	ADAPTER, COMPANION FLANGE 1480 SERIES FLANGE	118 988 R1 EXC CODE 14292.9203 435 641 C91 FOR CODE 14292.9203 -W/SLINGER-
211 259 R1 256 727 C1	1550 SERIES FLANGE 1800 SERIES FLANGE	891 565 R1 CODE 14187 -1450 SERIES- CODE 14193
124 496 R1	EXCEPT PARKING BRAKE CODES 04009, 04036	527 038 C1 1600 SERIES 690 758 R1 1700 SERIES
229 642 R1	FOR PARKING BRAKE CODES 04009, 04036	CODE 14197 860 898 B1 1550 SERIES
987 099 R1	1700 SERIES FLANGE	376 610 C1 1600 SERIES CODE 14341
52 334 B1	BOLT, TRUNNION -4- 1480 SERIES FLANGE	FORWARD - REAR INPUT
52 334 R1 118 823 R1 25 769 R1	1600 SERIES FLANGE 1700 SERIES FLANGE	356 641 C1 1480 SERIES 356 642 C1 1550 SERIES
204 138 R1	U-BOLT, TRUNNION BEARING -1550 SERIES	359 135 C1 1600 SERIES 356 644 C1 1710 SERIES
	FLANGÉ2-	CODE 14057 492 071 C2 1550 SERIES 489 702 C1 1700 SERIES 489 702 C1 1700 SERIES 866 999 C1 1400 SERIES 376 609 C1 1800 SERIES 200 983 R1 1550 SERIES 201 784 R1 1550 SERIES 201 784 R1 1550 SERIES 376 608 C1 EXC CODE 14292 9203 376 610 C1 FOR CODE 14292 9203 376 610 C1 FOR CODE 14292 9203 435 641 C91 FOR CODE 14292 9203 435 641 C91 FOR CODE 14292 9203 -W/SLINGER- 891 565 R1 CODE<
865 849 B1	PLATE, COMPANION FLANGE LOCK -2- 1800 SERIES FLANGE	374 808 C1 1600, 1710 SERIES REAR-REAR - INPUT-
865 849 R1 118 825 R2	1700 SERIES FLANGE	873 412 R1 1480, 1550 SERIES 338 432 C1 1600, 1710 SERIES
		CODES 14351, 14355 FORWARD-REAR
		INPUT 356 641 C1 1480 SERIES
		356 642 C1 1550 SERIES 359 135 C1 1600 SERIES
		356 644 C1 1710 SERIES OUTPUT
		CODES 14351 14355 FORWARD-REAR INPUT 356 641 C1 1480 SERIES 356 642 C1 1550 SERIES 356 642 C1 1550 SERIES 356 642 C1 1550 SERIES 356 644 C1 1710 SERIES 374 808 C1 1600 SERIES 374 808 C1 1480 SERIES 493 468 C1 1480 SERIES 491 288 C2 1600 SERIES
		REAR-REAR - INPUT- 493 468 C1 1480 SERIES
		491 288 C2 1600 SERIES
1		

MT140 GROUP 06- PROPELLER SHAFTS

REF NO.	PART NUMBER	DESCRIPTION
	FIG. 06-005	CONTINUED
	FLANGE -AT RE	AR AXLE-
	492 071 C2	CODE 14472 Forward-Rear !NPUT 1550 Series
	492 071 C2 489 703 C2 489 702 C1 482 046 C1	1600 SERIES 1700 SERIES 1810 SERIES OUTPUT
	489 801 C1 489 800 C1	1600 SERIES 1700 SERIES REAR-REAR - INPUT-
	491 699 C2 491 288 C2 492 072 C1	1600 SERIES 1610 SERIES 1700 SERIES
	54 554 H	SLINGER, COMPANION FLANGE CODES 14029, 14030, 14039 CODES 14042 14044 14047
	157 550 R1	CODES 14042, 14044, 14047 SQUARE CUT SPLINE FLANGE INVOLUTE SPLINE FLANGE
	157 550 R1 491 586 C1 491 586 C1 94 195 R1	1480, 1550 SERIES FLANGE 1600, 1710 SERIES FLANGE CODES 14057, 14472 CODE 14058
	648 204 R1	CODES 14186, 14192, 14199, 14292 1450, 1480, 1550 SERIES FLANGE 1600 SERIES FLANGE
	648 204 R1 61 736 H	FOR CODE 14292.9203
	648 204 R1	1710 SERIES FLANGE EXC CODE 14292.9203 For Code 14292.9203 -FURNISHED WITH FLANGE-
	58 783 H 441 441 C1	CODE 14187 CODE 14193 CODE 14193
	77 197 R1 61 736 H	1550 SERIES FLANGE 1600 SERIES FLANGE CODE 14341
	157 550 R1 54 554 H	FORWARD-REAR - INPUT- REAR-REAR - INPUT- CODES 14351, 14355
	157 550 R1	FORWARD-REAR - INPUT- REAR-REAR
	157 550 R1 491 586 C1	1480 SERIES FLANGE 1600 SERIES FLANGE
	118 823 R1 25 769 R1	BOLT, TRUNNION -4- 1600 SERIES FLANGE 1700, 1710, 1810 SERIES FLANGE
	865 849 R1 118 825 R2	PLATE, COMPANION FLANGE LOCK -2- 1600 Series Flange 1700, 1710, 1810 Series Flange
	204 138 R1	U-BOLT, TRUNNION -1450, 1480, 1550 SERIES FLANGE2-

TM 5-4210-230-14&P-2 MT140 GROUP 06- PROPELLER SHAFTS

	PART NUMBER	DESCRIPTION
1	IG. 06-00	
F	LANGE -AT C	ENTER BEARING-
	918 846 R1	FLANGE, COMPANION 1480 SERIES
	921 799 R1 311 166 C1 283 360 C1	1600 SERIES 1600 SERIES
	283 360 C1 486 531 C1	1700 SERIES 1710 SERIES H D
	204 138 R1	U-BOLT, TRUNNION -1480, 1550 SERIES Flange-
	25 525 R1 120 383	NUT, HEX, 7/16NF -2- Washer, Lock 7/16 Regular -2-
	118 823 R1	BOLT, TRUNNION -4- 1800 Series Flange
	25 769 A1	1700 SERIES FLANGE
	865 849 R1 118 825 R2	PLATE, LOCK -2- 1600 SERIES FLANGE 1700 SERIES FLANGE
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FIG. 06-005 PAGE NO. 6

MT140 GROUP 06- PROPELLER SHAFTS

NO. PART ING. DESCRIPTION FIG. 06-007 FIG. 06-008 FIG. 06-007 EXPERT BEARING BRACKET BRACKET, CENTER BEARING ON FRAME- 444 685 C1 BRACKET, CENTER BEARING ON FRAME- 444 685 C1 BRACKET, CENTER BEARING ON FRAME- 444 685 C1 BRACKET, CENTER BEARING ON FRAME- 444 685 C1 BRACKET, CENTER BEARING ON FRAME- 444 685 C1 BRACKET, CENTER BEARING ON FRAME- 444 685 C1 BRACKET, CENTER BEARING ON FRAME- 444 685 C1 BRACKET, CENTER BEARING CONTENT STORE 444 685 C1 BRACKET, CENTER BEARING 444 685 C1 CONTENT STORE 444 685 C1 BRACKET, CENTER BEARING 444 685 C1 CONTENT STORE 444 685 C1 BRACKET, CENTER BEARING 444 685 C1 CONTENT STORE 444 685 C1 BRACKET, CENTER BEARING 444 685 C1 CONTENT STORE 444 685 C1 BRACKET, CENTER BEARING 444 685 C1 CONTENT STORE 444 685 C1 BRACKET, CENTER BEARING 444 685 C1 CONTENT STORE 444 685 C1 BRACKET, CENTER BEARING 444 685 C1 CONTENT STORE 444 685 C1 BRACKET, CENTER BEARING 444 685 C1 CONTENT STORE 444 685 C1 BRACKET, CENTER BEARING 444 685 C1 CONTENT STORE 444 685 C1 BRACKET, CENTER BEARING 444 685 C1 CONTENT STORE 444 685 C1 BRACKET, CENTER BEARING 444 685 C1 CONT	FIG. 06-007 FIG. 06-008 CENTER BEARING TOW FRAME- 444 656 C1 CODE 0671 620 644 656 C1 BACCET, CENTER BEARING - ON FRAME- 444 656 C1 444 656 C1 CODE 0671 620 644 656 C1 CODE 0671 620 644 656 C1 BACCET, CENTER BEARING 646 657 C1 444 656 C1 CODE 0671 620 644 646 C1 CODE 0671 620 644 646 C1 GOD 0671 620 644 646 C1 444 656 C1 CODE 0671 620 647 646 C1 CODE 0671 620 647 646 C1 GOD 0671 620 647 646 C1 444 646 C1 CODE 0671 620 647 647 C1 CODE 0671 620 647 647 C1 GOD 0671 620 648 647 C1 444 647 C1 CODE 0671 620 647 647 C1 CODE 0671 620 648 647 C1 GOD 0671 620 648 647 C1 444 647 C1 CODE 0671 620 648 647 C1 CODE 0671 620 648 647 C1 GOD 071 620 648 647 C1 GOD 071 620 648 647 C1 444 647 C1 CODE 0671 620 648 647 C1 CODE 0671 620 648 647 C1 GOD 071 620 648 647 C1 FIGT 0778 66A186 648 647 C1 444 647 C1 CODE 0671 620 648 647 C1 CODE 0671 620 648 647 C1 FIGT 0778 66A186 648 647 C1 FIGT 0778 66A186 648 647 C1 444 647 C1 CODE 0671 620 648 647 C1 CODE 0671 620 648 647 C1 FIGT 0778 66A186 648 647 C1 FIGT 0778 66A186 648 657 C1 444 647 C1 CODE 0671 620 648 657 C1 CODE 0671 620 648 657 C1 CODE		IP 06- PROPELLER SHAFTS			UP 06- PROPELLER SHAFTS
CENTER BEANING BRACKET CENTER BEANING - ON FRAME- 44 646 CT CODE 00711 5291 44 647 CT CODE 00711 5291 44 647 CT CODE 00711 5291 44 647 CT CODE 00711 5291 44 647 CT CODE 00711 5291 44 647 CT CODE 00711 5291 44 647 CT <	CENTER REARING BRACKET CENTER REARING - ON FRAME- 44 64 64 11 0000 00071 0000 44 660 C1 0000 0071 0000 44 660 C1 00000 0071 0000 44 660 C1 0000 0071 00000071 44 660 C1 00	REF PART NO. NUMBER	DESCRIPTION	REF NO.	PART NUMBER	DESCRIPTION
Decision automa automa Decision automa <thdecision automa<="" th=""> Deci</thdecision>	BARCET CATTER BRAING - ON FRAME- 444 645 C1 CODE 00721 529 444 645 C1 CODE 00721 529 444 645 C1 FIRT CERTS BRAING - ON FRAME- 444 645 C1 CODE 00721 529 444 645 C1 FIRT CERTS BRAING - ON FRAME- FIRT CERTS BRAING - ON FRAME- 444 645 C1 CODE 00721 529 444 645 C1 FIRT CERTS BRAING - ON FRAME- FIRT CERTS BRAING - ON FRAME- 444 645 C1 CODE 00721 529 444 645 C1 FIRT CERTS BRAING - ON FRAME- FIRT CERTS BRAING - ON FRAME- 444 645 C1 CODE 00721 529 444 645 C1 FIRT CERTS BRAING - ON FRAME- 444 645 C1 CODE 00721 530 444 645 C1 FIRT CERTS BRAING - ON FRAME- 444 645 C1 CODE 00721 6301 444 645 C1 FIRT CERTS BRAING - ON FRAME- 444 645 C1 CODE 00721 6302 444 645 C1 FIRT CERTS BRAING - ON FRAME- 444 645 C1 CODE 00721 6301 444 645 C1 FIRT CERTS BRAING - ON FRAME- 444 645 C1 CODE 00721 6301 444 645 C1 FIRT CERTS BRAING - ON FRAME- 444 645 C1 CODE 00721 6301 444 645 C1 FIRT CERTS BRAING - ON FRAME- 444 645 C1 CODE 0072	FIG. 06-007	FIG. 06-007			8
494 657 C1 CODE 06721.9366 494 658 C1 FIRST CENTER BEARING 484 974 C1 CODE 06721.9368 484 971 C1 SECOND CENTER BEARING 484 974 C1 CODE 06721.9369 484 971 C1 SECOND CENTER BEARING 484 974 C1 CODE 06721.9369 494 651 C1 FIRST CENTER BEARING 494 645 C1 FIRST CENTER BEARING CODE 06722.9278 494 645 C1 FIRST CENTER BEARING 497 645 C1 FIRST CENTER BEARING 494 645 C1 FIRST CENTER BEARING 494 645 C1 FIRST CENTER BEARING 494 646 C1 FIRST CENTER BEARING 494 640 C1 FIRST CENTER BEARING 494	494 657 C1 CODE 06721.9366 494 658 C1 FIRST CENTER BEARING 484 974 C1 CODE 06721.9368 484 971 C1 SECOND CENTER BEARING 484 974 C1 CODE 06721.9368 494 658 C1 FIRST CENTER BEARING 484 974 C1 CODE 06721.9369 494 651 C1 FIRST CENTER BEARING 494 651 C1 CODE 06721.9369 494 651 C1 FIRST CENTER BEARING 494 645 C1 FIRST CENTER BEARING CODE 06722.9278 494 645 C1 FIRST ENTER BEARING 494 646 C1 FIRST CENTER BEARING 494 640 C1 SECOND CENTER BEARING 494 640 C1 FIRST CENTER BEARING 494 644 C1	CENTER BEARI	NG BRACKET	c	ENTER BEARIN	IG BRACKET
494 657 C1 CODE 06721.9366 494 658 C1 FIRST CENTER BEARING 484 974 C1 CODE 06721.9368 484 971 C1 SECOND CENTER BEARING 484 974 C1 CODE 06721.9369 484 971 C1 SECOND CENTER BEARING 484 974 C1 CODE 06721.9369 494 651 C1 FIRST CENTER BEARING 494 645 C1 FIRST CENTER BEARING CODE 06722.9278 494 645 C1 FIRST CENTER BEARING 497 645 C1 FIRST CENTER BEARING 494 645 C1 FIRST CENTER BEARING 494 645 C1 FIRST CENTER BEARING 494 646 C1 FIRST CENTER BEARING 494 640 C1 FIRST CENTER BEARING 494	494 657 C1 CODE 06721.9366 494 658 C1 FIRST CENTER BEARING 484 974 C1 CODE 06721.9368 484 971 C1 SECOND CENTER BEARING 484 974 C1 CODE 06721.9368 494 658 C1 FIRST CENTER BEARING 484 974 C1 CODE 06721.9369 494 651 C1 FIRST CENTER BEARING 494 651 C1 CODE 06721.9369 494 651 C1 FIRST CENTER BEARING 494 645 C1 FIRST CENTER BEARING CODE 06722.9278 494 645 C1 FIRST ENTER BEARING 494 646 C1 FIRST CENTER BEARING 494 640 C1 SECOND CENTER BEARING 494 640 C1 FIRST CENTER BEARING 494 644 C1					
	PRINTED IN UNITED STATES OF AMERICA	494 649 C1 494 660 C1 494 660 C1 494 660 C1 494 662 C1 494 663 C1 494 663 C1 494 6642 C1 494 663 C1 494 664 C1 494 664 C1 494 664 C1 494 6667 C1 494 6667 C1 494 6667 C1 494 6667 C1 494 667 C1	CODE 06721.9290 CODE 06721.9293 CODE 06721.9296 CODE 06721.9297 CODE 06721.9298 CODE 06721.9298 CODE 06721.9300 CODE 06721.9301 CODE 06721.9303 CODE 06721.9305 CODE 06721.9307 CODE 06721.9309 CODE 06721.9315 CODE 06721.9315 CODE 06721.9316 CODE 06721.9318 CODE 06721.9318 CODE 06721.9319 CODE 06721.9320 CODE 06721.9320 CODE 06721.9323 CODE 06721.9323 CODE 06721.9323 CODE 06721.9323 CODE 06721.9323 CODE 06721.9323 CODE 06721.9325 CODE 06721.9335 CODE 06721.9335 CODE 06721.9335 CODE 06721.9335 CODE 06721.9336 CODE 06721.9335 CODE 06721.9338 CODE 06721.9338 CODE 06721.9338 CODE 06721.9335 CODE 06721.9335 CODE 06721.9336 CODE 06721.9336 CODE 06721.9338 CODE 06721.9338 CODE 06721.9338 CODE 06721.9338 CODE 06721.9338 CODE 06721.9336 CODE 06721.9336 CODE 06721.9355 CODE 06721.9355 CODE 06721.9356 CODE 06721.9356 CODE 06721.9356 CODE 06721.9356 CODE 06721.9356 CODE 06721.9356 CODE 06721.9364 CODE 06721.9364 CODE 06721.9364 CODE 06721.9364 CODE 06721.9366 CODE 06721.9368 CODE 06721.9368 CODE 06721.9368 CODE 06721.9369 CODE 06721.9364 CODE 06721.9366 CODE 06721.9369 CODE 06721.9369		494 658 C1 484 971 C1 494 651 C1 494 645 C1 484 957 C1 494 646 C1 494 646 C1 494 644 C1 484 958 C1 494 644 C1 485 162 C1 494 642 C1	CODE -06/22.9278 FIRST CENTER BEARING SECOND CENTER BEARING CODE 06722.9277 FIRST CENTER BEARING CODE 06722.9278 FIRST CENTER BEARING CODE 06722.9279 FIRST CENTER BEARING CODE 06722.9279 FIRST CENTER BEARING CODE 06722.9280 FIRST CENTER BEARING SECOND CENTER BEARING SECOND CENTER BEARING SECOND CENTER BEARING SECOND CENTER BEARING SECOND CENTER BEARING SECOND CENTER BEARING SECOND CENTER BEARING SECOND CENTER BEARING SECOND CENTER BEARING SECOND CENTER BEARING SECOND CENTER BEARING SECOND CENTER BEARING SECOND CENTER BEARING SECOND CENTER BEARING SECOND CENTER BEARING SECOND CENTER BEARING SECOND CENTER BEARING SECOND CENTER BEARING SECOND CENTER BEARING

TM 5-4210-230-14&P-2 MT140 GROUP 06- PROPELLER SHAFTS

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PAGE NO. 7

MT140 GROUP 06-PROPELLER SHAFTS

MI140	GROUP 06-PROPELLER S	SHAFIS M	1140 GROUP 0
REF PART NO. NUMBER	DESCRIPTION	REF NO.	
FIG. 06	6-008 CONTINUED		FIG. 06-009
CENTER	BEARING BRACKET	•	CENTER BEARING BE
494 6 485 1 494 6	62 C1 SECOND CENTER BEAR CODE 06722.9284	IÑG	8R 494 646 C1
494 6 484 9	CODE 06722.9285 FIRST CENTER BEARI	NG	484 957 Č1 484 962 C1 494 647 C1
494 6 485 8	46 C1 FIRST CENTER BEARI 77 C1 SECOND CENTER BEAR CODE 06722.9290	ING	484 958 C1 484 970 C1
484 9		ING NG	494 658 C1 484 967 C1 484 970 C1 494 858 C1
484 9 494 6 483 9	67 C1 SECOND CENTER BEAR CODE 06722.9295 159 C1 FIRST CENTER BEARI 173 C1 SECOND CENTER BEAR CODE 06722.9296	NG	484 965 C1 484 970 C1 494 643 C1
494 6 484 9	59 C1 FIRST CENTER BEARI 69 C1 SECOND CENTER BEAR CODE 06722.9297	ING	484 956 C1 494 640 C1 494 646 C1
494 6 494 6	IA4 C1 FIRST CENTER BEARI IA5 C1 SECOND CENTER BEAR CODE 06722.9298 IA3 C1 FIRST CENTER BEARI	ING NG	484 958 C1 484 961 C1 494 645 C1
494 6	IAS C1 SECOND CENTER BEAR CODE 06722.9299 Code 16722.9299 Code 1672.9299 Code 1672.92999 Code 1672.92999 Code 1672.9299 Code	NG	484 957 C1 485 162 C1
494 6	CODE 06722.9300 644 C1 FIRST CENTER BEARI 448 C1 SECOND CENTER BEAR CODE 06722.9301	ING	494 847 C1 484 957 C1 485 162 C1
484 9	157 C1 FIRST CENTER BEARI 174 C1 Second Center Bear Code 06722, 9302 173 C1 FIRST CENTER BEARI	ING	494 644 C1 484 957 C1 484 961 C1
494 6	557 C1 SECOND CENTER BEAR CODE 06722.9303 557 C1 FIRST CENTER BEARI 574 C1 <u>Second Center</u> Bear	NG	494 645 C1 485 161 C1 484 962 C1
494 6	CODE 06722.9304 973 C1 FIRST CENTER BEARI 557 C1 SECOND CENTER BEAR CODE 06722.9305	ING	494 643 C1 484 956 C1 485 162 C1
494 6	543 C1 FIRST CENTER BEARI 544 C1 Second Center Bear Code 06722.9306 674 C1 First Center Beari	ING	494 644 C1 485 161 C1 494 645 C1
484 9	557 C1 SECOND CENTER BEAR CODE 06722.9307 774 C1 FIRST CENTER BEARI 559 C1 SECOND CENTER BEAR	NG	494 646 C1 485 161 C1 494 641 C1
484 9	CODE 06722.9308 974 C1 FIRST CENTER BEARI 557 C1 SECOND CENTER BEAR CODE 08722.9309	NG	494 644 C1 484 957 C1 494 641 C1
494 6	974 C1 559 C1 CODE 06722.9347 547 C1 FIRST CENTER BEAR CODE 06722.9347 FIRST CENTER BEARI	ING	494 647 C1 484 957 C1 485 877 C1
	966 C1 SECOND CENTER BEAR		494 645 C1 484 957 C1 484 973 C1
			494 643 C1 485 161 C1 484 971 C1

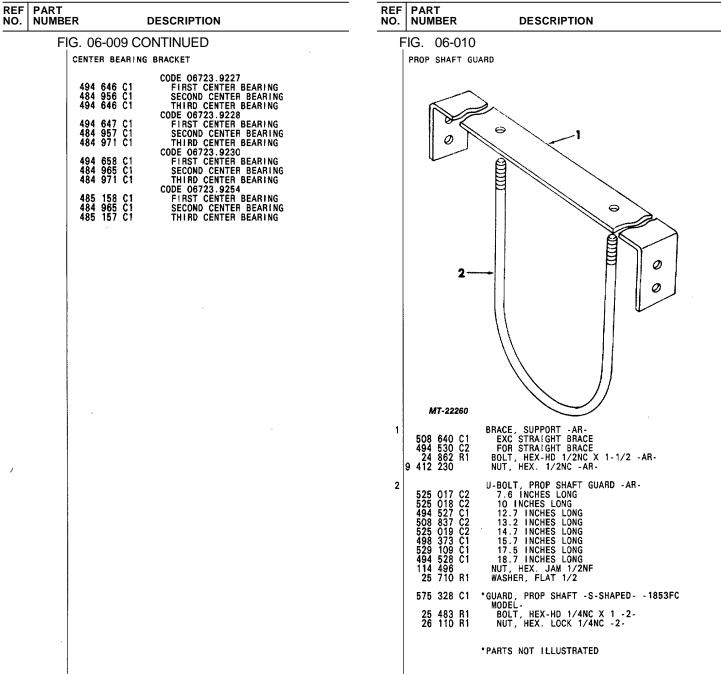
TM 5-4210-230-14&P-2 MT140 GROUP 06- PROPELLER SHAFTS

REF NO.	PART NUMBER	DESCRIPTION
:	IG. 06-009	
	CENTER BEARING	5 BRACKET
		BRACKET, CENTER BEARING -ON FRAME- CODE 06723.9207
Ì	494 848 C1 484 957 C1	FIRST CENTER BEARING SECOND CENTER BEARING
	484 962 C1 494 647 C1	THIRD CENTER BEARING CODE 06723.9208 FIRST CENTER BEARING
	484 958 C1 484 970 C1	SECOND CENTER BEARING THIRD CENTER BEARING
	494 658 C1	CODE 06723.9209 FIRST CENTER BEARING
	484 967 C1 484 970 C1	SECOND CENTER BEARING
	494 858 C1	CODE 06723.9210 FIRST CENTER BEARING
	484 965 C1 484 970 C1	SECOND CENTER BEARING THIRD CENTER BEARING CODE 06723.9211
	494 643 C1 484 956 C1	FIRST CENTER BEARING SECOND CENTER BEARING
	494 640 C1	THIRD CENTER BEARING CODE 06723.9212
	494 646 C1 484 958 C1	FIRST CENTER BEARING SECOND CENTER BEARING
	484 961 C1 494 645 C1	THIRD CENTER BEARING CODE 06723.9213 CENTER BEARING
	484 957 C1 485 162 C1	FIRST CENTER BEARING Second Center Bearing Third Center Bearing
	494 847 C1	CODE 06723.9214 FIRST CENTER BEARING
	484 957 C1 485 162 C1	SECOND CENTER BEARING THIRD CENTER BEARING
	494 644 C1 484 957 C1	CODE 06723.9215 FIRST CENTER BEARING
	484 961 C1	SECOND CENTER BEARING THIRD CENTER BEARING CODE 06723.9216
	494 645 C1 485 161 C1	FIRST CENTER BEARING SECOND CENTER BEARING
	484 962 C1	THIRD CENTER BEARING CODE 08723.0217
Ì	494 643 C1 484 956 C1	FIRST CENTER BEARING Second Center Bearing
	485 162 C1 494 644 C1	THIRD CENTER BEARING CODE 06723.9218 First center bearing
	485 161 C1 494 645 C1	SECOND CENTER BEARING
	494 646 C1	CODE 00723.9219 FIRST CENTER BEARING
	485 161 C1 494 641 C1	SECOND CENTER BEARING THIRD CENTER BEARING
	494 644 C1 484 957 C1	CODE 06723.9220 FIRST CENTER BEARING SECOND CENTER BEARING
	494 641 C1	THIRD CENTER BEARING CODE 06723.9221
	494 647 C1 484 957 C1	FIRST CENTER BEARING Second Center Bearing
	485 877 C1	THIRD CENTER BEARING CODE 00723.9223 CODE 00729.0729
	494 645 C1 484 957 C1 484 973 C1	FIRST CENTER BEARING Second Center Bearing Third Center Bearing
	494 643 C1	CODE 00723.9224 FIRST CENTER BEARING
	485 161 C1 484 971 C1	SECOND CENTER BEARING Third Center Bearing

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FIG. 06-008 PAGE NO. 8

MT140 GROUP 06- PROPELLER SHAFTS MT140 GROUP 06- PROPELLER SHAFTS



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FIG. 06-010 PAGE NO. 9

MT140 GROUP 06- PROPELLER SHAFTS						MT140 GROUP 06-PROPELLER				
REF NO.	PART NUME		DESCRIP	PTION		EF O.	PART NUMBER		DESCR	IPTION
	F	IG. 06-011				F	IG. 06-0	12		
		PARTS LIST	NOT USED				PARTS LIST	NOT USED		
										1. J. C.
					•					
								· .		
						•				

TM 5-4210-230-14&P-2 OPELLER SHAFTS

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FIG. 06-011 PAGE NO. 10

IT-140	GROUP 07-EXHAUST SYSTEM		1	
		FIG NO	FICHE LOC	
ALL EXHAUST S	YSTEM SERVICE PARTS SOLD BY IH ARE CERTIFIED			
TO COMPLY WIT	H APPLICABLE STATE EXHAUST SYSTEM CERTIFICATION			
	OR USE ON VEHICLES FOR WHICH THEY ARE LISTED.			
MUFFLER AND E				
3208 ENGIN	ORIZONTAL MUFFLER AND TAIL PIPE-			
	- BUILT PRIOR TO 8-15-80	07-004	G07	
	BUILT 8-15-80 AND LATER			
	1853 MODEL	07-018	H05	
	3 MODEL	07-017	H06	
9.0 LITER EN 4X2 MODE				
	L 1863FC MODEL	07-002	G04	
	3FC MODEL	07-023	H14	
4X4 MODE		07-003	G06	
D150, 170, 19				
4X2, 6X4 N		07.000		
	XILIARY TRANS CODE 13552 XILIARY TRANS CODE 13552	07-002	G04 G06	
4X4, 6X6 N		07-003	G06	
DT466, 400B	, DTI466BBB ENGINES			
4X2. 6X4 I	MODELS			
	3FC MODEL			
	UXILIARY TRANS CODE 13662	07-011	G19	
	UXILIARY TRANS CODE 13662 3FC MODELS	07-012	G21	
	T EXHAUST PIPE. MUFFLER AND MOUNTING	07-019	H10	
	IPE REAR	07-020	H11	
4X4, 6X6 N	10DELS	07-012	G21	
MV404, 446 EN				
4X2, 6X4 N		07.000	040	
	XILIARY TRANS CODE 13662 XILIARY TRANS CODE 13652	07-006	G10 G12	
4X4. 6X6 M		07-007	G12	
V345, V392 EN		07-001	G02	
V637 ENGINE		07-006	G09	
	7520 -HORIZONTAL MUFFLER AND			
3208 ENGINE	ELCREW CAB CODE 18196	07-008	G13	
	ELCREW CAB CODE 16196	07-016	H03	
9.0 LITER EN	IGINE			
	ELCREW CAB CODE 18196			
		07-009	G15	
	HT HAND DRIVE ELCREW CAB CODE 16196	07-018	HO8 H01	
D150, 170, 19				
EXC TRAV	ELCREW CAB CODE 16196	07-009	G16	
	ELCREW CAB CODE 16196	07-014	H01	
	BB, DT1466B ENGINES	07.040		
	AVELCREW CAB CODE 16196 AVELCREW CAB CODE 16196	07-010	G17 G22	
CODE 07510	AVELONEVV GAD CODE 10190		622	
	RAKE-WILLIAMS -DT466 ENGINE-	07-021	H12	
	RAKE SWITCH AND BRACKET	07-022	H13	
CODE 07633 -S	TAINLESS STEELSEE STANDARD CODE-			
		1	1	

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07-INDEX

MT140 GROUP 07- EXHAUST SYSTEM

REF PART DESCRIPTION

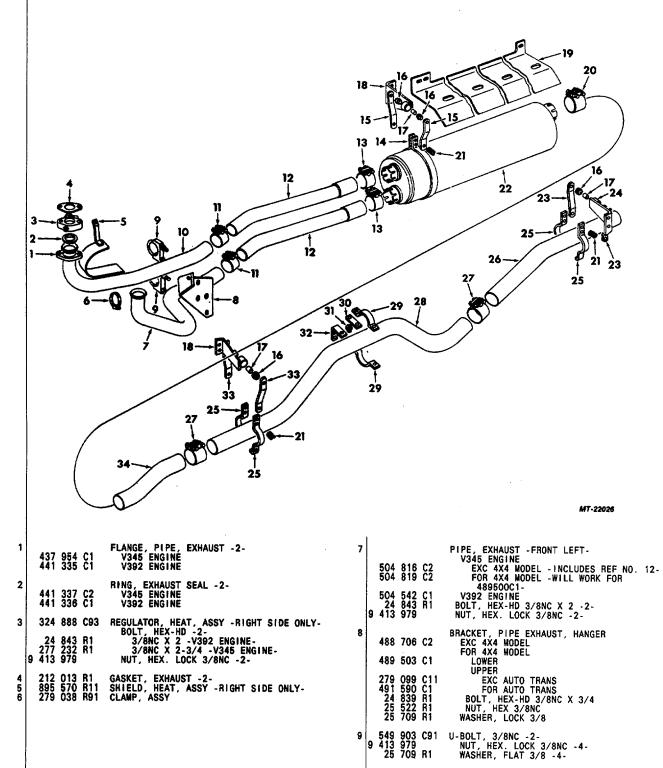
FIG. 07-001 MUFFLER, EXHAUST PIPE, TAIL PIPE

TM 5-4210-230-14&P-2 MT140 GROUP 07- EXHAUST SYSTEM

REF PART NO. NUMBER DESCRIPTION

FIG. 07-001 CONTINUED

MUFFLER, EXHAUST PIPE, TAIL PIPE



MT140 GROUP 07- EXHAUST SYSTEM

REF NO.	PAR NUM		ESCRIPTION
		FIG. 07-006 CO	_
	10	279 099 C11 L 24 843 R1 9 413 979 25 709 R1	INK, MUFFLER HANGER -AR- BOLT, HEX-HD 3/BNC X 2 -2- NUT, HEX. LOCK 3/8NC -2- WASHER, FLAT 3/8
	11 12		JSHING, HANGER -AR- PACER, HANGER -AR-
	13	481 731 C1 BF 414 051 C1 414 052 C1 414 053 C1 414 087 C1	AACKET, MUFFLER SUPPORT -2- BOLT, HEX-FLG-HD 1/2NF X 1-1/4 -AR- BOLT, HEX-FLG-HD 1/2NF X 1-1/2 -AR- BOLT, HEX-FLG-HD 1/2NF X 1-3/4 -AR- NUT, HEX-FLG- 1/2NF -2-
	14	S⊦ 500 788 C1 574 374 C1	HELD, MUFFLER, EXHAUST HEAT, ASSY EXC F1924 MODEL -WILL WORK FOR 492574C2- FOR F1924 MODEL
	15	U- 549 905 C91	BOLT, CLAMP EXC_1723, 1823 MODELS -WILL WORK FOR
		549 556 C91 9 413 981 N	877978892- FOR 1723, 1823 MODELS IUT, HEX. LOCK 7/16NC -2- IASHER, FLAT 7/16 -2-
	16	64 899 H SP	RING, TENSION - AR-
	17	483 005 C1 489 723 C1	IFFLER, ASSY EXC STAINLESS STEEL FOR STAINLESS STEEL W/ SINGLE AIR PUMP
	18	580 194 C1 Br	W/ DUAL AIR PUMP ACKET, TAIL PIPE SUPPORT -REAR2-
		482 171 C1 482 173 C1 482 173 C1 482 173 C1 24 840 R1 B	EXC TIRE CARRIER CODE 01553 CHASSIS BUILT PRIOR TO 11-27-78 CHASSIS BUILT 11-27-78 AND LATER FOR TIRE CARRIER CODE 01553 OLT, HEX-HD 3/8NC X 1 -2- UT, HEX. LOCK 3/8NC -2-
	19	24 840 R1	NK, REAR TAIL PIPE SUPPORT -AR- BOLT, HEX-HD 3/8NC X 1 -2- NUT, HEX. LOCK 3/8NC -2-
	20	140 483 H	AMP, TAIL PIPE -FRONT AND REAR -AR- BOLT, HEX-HD 3/8NC X 1-1/4 -2- NUT, HEX. LOCK 3/8NC -2-
	21	486 947 C1 486 949 C1	PE, REAR TAIL -1723, 1823 MODELS ONLY OR OTHER MODELS SEE REF. NO. 30- 152, 170, 193 WB -WILL WORK FOR 486940C1, 486941C1- 218, 236 WB -WILL WORK FOR 486942C1, 486943C1- 254, 276 WB -WILL WORK FOR 486944C1, 486945C1-
	22 23		UPLING, TAIL PIPE TO TAIL PIPE -2- PE, INTERMEDIATE TAIL
	24	140 483 H	AMP, INTERMEDIATE TAIL PIPE -2- BOLT, HEX-HD 3/8NC X 1-1/4 -2- NUT, HEX. LOCK 3/8NC -2-
	25		NK, INTERMEDIATE TAIL PIPE SUPPORT BOLT, HEX-HD 3/8NC X 1-1/2
	26	482 175 C1 BU	SHING, INTERMEDIATE TAIL PIPE ANGLE
	27	24 840 R1 I	GLE, SUPPORT -MAKE LOCALLY- BOLT, HEX-HD 3/8NC X 1 -2- NUT, HEX. LOCK 3/8NC -2- `
	28	414 051 C1 414 052 C1 414 053 C1 414 087 C1	ACKET, TAIL PIPE SUPPORT -AR- BOLT, HEX-FLG-HD 1/2NF X 1-1/4 -2- BOLT, HEX-FLG-HD 1/2NF X 1-1/2 -2- BOLT, HEX-FLG-HD 1/2NF X 1-3/4 -2- NUT, HEX. FLG 1/2NF -2-
PRINT	ED IN I	414 052 C1 414 053 C1 414 087 C1 JNITED STATES OF AI	NUT, HEX. FLG 1/2NF -2-

TM 5-4210-230-14&P-2 MT140 GROUP 07- EXHAUST SYSTEM

IVI I	WI1140 GROUP 07- EXHAUSI SISIEW							
	PAR NUN		ł	DESCRIPTION				
F	IG.	07-	006	CONTINUED				
	MUFFI	LER,	EXHA	UST AND TAIL PIPE				
29	140	843	H R1	LINK, FRONT TAIL PIPE -AR- BOLT, HEX-HD 3/8NC X 1-1/4 BOLT, HEX-HD 3/8NC X 2 NUT, HEX. LOCK 3/8NC -2-				
30	274 578 486 486 486 486	476 933 935	C1 C1 C1 C1 C1 C1 C1					
31	24 9 413	840 979	Rt	STRAP, MUFFLER -2- BOLT, HEX-HD 3/8NC X 1 -4- NUT, HEX. LOCK 3/8NC -4- WASHER, FLAT 3/8 -4-				

FIG. 07-006 PAGE NO. 13

MT140 GROUP 07- EXHAUST SYSTEM

TM 5-4210-230-14&P-2 MT140 GROUP 07- EXHAUST SYSTEM

	PART	
NO.	NUMBER	DESCRIPTION

_	IV	11140 GROU	JP 07-EXHAUST STSTEM		11140	G		PUT-EXHAUSI SYSTEM
F •	PAR NUM		DESCRIPTION	RE NC		RT MBE	R	DESCRIPTION
		FIG. 07-007			FIG.	07	-007	CONTINUED
		MUFFLER, EXHAU	ST AND TAIL PIPE		MUFFL	ER, I	EXHAU	ST AND TALL PIPE
		MUFFLER, EXHAU	ST AND TAIL PIPE					13
	1	483 989 C1 24 843 R1 9 413 979	FLANGE, PIPE EXHAUST -2- BOLT, HEX-HD 3/8NC X 2 -2- NUT, HEX. LOCK 3/8NC -2- PIPE, RIGHT FRONT EXHAUST	12	414 414 414	731 051 052 053 087	C1 C1 C1	BRACKET, MUFFLER SUPPORT -2- BOLT, HEX-FLG-HD 1/2NF X 1-1/4 -AR- BOLT, HEX-FLG-HD 1/2NF X 1-1/2 -AR- BOLT, HEX-FLG-HD 1/2NF X 1-3/4 -AR- NUT, HEX. FLG 1/2NF -2-
		485 490 C1 487 742 C1	EXC STAINLESS STEEL FOR STAINLESS STEEL	13				PIPE, TAIL EXC TRAVEL CREW CAB CODE 16196
	3	482 739 C91 489 737 C91	COUPLING, EXHAUST PIPE TO PIPE -3- EXC STAINLESS STEEL FOR STAINLESS STEEL BRACKET, EXHAUST PIPE		274	898 898 476 338	C1 C1	EXC MV446 ENGINE W/4X4 MODEL FOR MV446 ENGINE W/4X4 MODEL CHASSIS BUILT PRIOR TO 6-20-80 CHASSIS BUILT 8-20-80 AND LATER FOR TRAVEL CREW CAB CODE 16196
		485 488 C2 489 498 C2	EXC 13451 AUTOMATIC TRANS For 13451 Automatic Trans	14	549 9 413 25	905 981	C91	U-BOLT, CLAMP -WILL WORK FOR 877978R92- NUT, HEX. LOCK 7/18NC -2-
	5	485 491 C2 487 743 C2	PIPE, RIGHT INTERMEDIATE EXHAUST Except stainless steel For stainless steel	15		040		WASHER, FLAT 7/16 -2- MUFFLER, ASSY EXC STAINLESS STEEL
	6	489 397 C2 489 399 C2	PIPE, RIGHT REAR EXHAUST EXCEPT STAINLESS STEEL FOR STAINLESS STEEL			723		FOR STAINLESS STEEL W/ Single Air Pump W/ Dual Air Pump
	7	549 555 C91 489 738 C91	COUPLING, EXHAUST PIPE TO NUFFLER -2- EXC STAINLESS STEEL FOR STAINLESS STEEL	18	285 24 9 413	308 840 979	C2 R1	STRAP, NUFFLER -2- Bolt, Hex-MD 3/8NC X 1 Nut, Hex. Lock 3/8NC
	8 9	64 89 9 H	SPRING, TENSION -2- Link. Muffler Hanger	17	489	398 400	C1 C1	PIPE, LEFT REAR EXHAUST EXC STAINLESS STEEL FOR STAINLESS STEEL
	J	279 099 C11 265 066 C1	EXC TRAVEL CREW CAB CODE 16196 FRONT - 2- REAR -2- For Travel Crew CAB CODE 16196	18		904	C91	U-BOLT, SUPPORT -2- NUT, HEX. LOCK 5/16NC -2- WASHER, FLAT 5/16 -2-
		161 652 R1 255 501 C1 24 843 R1 9 413 979 25 709 R1	REAR -2- FRONT -2- BOLT, HEX-HD 3/8NC X 2 -2- NUT, HEX. LOCK 3/8NC -2- WASNER, FLAT 3/8	19	485	489 741	C1	PIPE, LEFT FRONT EXHAUST EXC STAINLESS STEEL FOR STAINLESS STEEL
	10 11	72 696 A1 150 554 R1	BUSHING, MUFFLER HANGER -4- Spacer, Muffler Hanger Bushing -2-					

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140 GROUP 08 - ELECTRICAL SYSTEM			
	FIG NO	FICHE LOC	
ALTERNATOR			
ASSEMBLY			
42 AMP -AC. CODE 08084-			
CHASSIS BUILT PRIOR TO 9-16-78 CHASSIS BUILT 9-16-78 AND LATER	08-001 08-057	105 K11	
61 AMP -AC. CODE 08132-	00-037		
CHASSIS BUILT PRIOR TO 9-15-78	08-001	105	
CHASSIS BUILT 9-15-78 AND LATER	08-057	K11	
65 AMP -AC, CODE 08133- 65 AMP -AC, CODE 08141-	08-003	107	
80 AMP -AC, CODE 08141- 80 AMP -AC, CODE 08134-	08-002 08-003	106 107	
86 AMP -AC, CODE 08142-	08-002	106	
105 AMP -AC, CODE 08143-	08-002	106	
145 AMP -AC, CODE 08158-	08-002	106	
MOUNTING 3208 ENGINE	08-010	112	
9.0 LITER ENGINE	00-010	112	
CODE 08084.9203	08-005	108	
CODES 08084.9205, 08132.9203	08-082	K14	
CODE 08133.9216 CODES 08132 0217 08122 0222 08124 0222 08141 0222	08-058	K12	
CODES 08133.9217 08133.9223 08134.9222, 08141.9222 08142.9222, 08143.9216, 08168.9212	08-059	K12	
CODE 08133.9218	08-060	K12	
CODE 08133.9219	08-061	K13	
D150I 170, 190 ENGINES			
CODES 08084, 08132	08-005 08-006	108 109	
CODES 08133 08134 DT466, 46688, T1466B ENGINES	08-008	109	
MV404, 446 ENGINES			
CODES 08084, 08132			
EXCEPT POWER-TAKE-OFF CODE 12851	08-004	108	
FOR POWER-TAKE-OFF CODE 12851 CODES 08133, 08134, 08141, 08142, 08143, 08158	08-040 08-041	J11 J11	
V345, V392 ENGINES	00-0-1		
CODES 08084, 08132	08-036	J07	
CODES 08133, 08134, 08141, 08142, 08143, 08158	08-036	J07	
V637 ENGINE EXCEPT CALIFORNIA CODE 12824	08-007	110	
FOR CALIFORNIA CODE 12824	08-008	111	
ANTILOCK HARNESS AND MODULE CONTROL	08-012	114	

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	FIG NO	FICHE LOC	ł
BATTERY BOX			
GASOLINE ENGINES			
STANDARD			
EXCEPT 2125, F2126 MODELS LHD			
EXCEPT CODES 15292, 16293	08-034	J08	
FOR CODES 15292, 15293	08-063	K14	
	08-037	J08	
FOR 21265 F2125 MODELS CODES 08741, 08742, 08781, 08782	08-013 08-037	l15 J08	
DIESEL ENGINES	00 001	0000	
1654, 1754, 1854, 1854-4X4. 1954, 1955 MODELS			
LHD EXCEPT CODES 08743, 08744, 08745, 08746, 08747			
EXCEPT CODES 06743, 06744, 06745, 06746, 06747 EXCEPT CODES 15292 16293	08-038	J09	
FOR CODES 15292. 15293	08-063	K14	
FOR CODES 08743 08744 08746, 08746, 08747			
EXCEPT CODES 15292, 15293	08-039	J10	
FOR CODES 15292, 15293 RHD	08-063 08-037	K14 J08	
1863, 18653FC MODELS -MAKE LOCALLY-	00-037	500	
F1954-6X4, F1954-6X6 MODELS			
EXCEPT CODES 15292 15293	08-039	J10	
FOR CODES 15292, 15293 2156 MODEL	08-063	K14	
BATTERY CABLES -SEE WIRING HARNESS-	00-013		
CIRCUIT BREAKERS -STANDARD AND CODES 086579, 08738-	08-014	l16	
CLIPS AND EXTENSIONS	08-042	J12	
COIL CONNECTORS AND TERMINALS	08-015	116	
CONNECTOR BODIES AND TERMINALS			
TYPE I -SEE ILLUSTRATION-FOR IDENTIFICATION-	08-016	17	
TYPE II -SEE ILLUSTRATION FOR IDENTIFICATION-	08-017	l18	
SOLDERLESS TERMINALS TYPE I -SEE ILLUSTRATION FOR IDENTIFICATION-	08-018	119	
TYPE II -SEE ILLUSTRATION FOR IDENTIFICATION-	08-065	K18	

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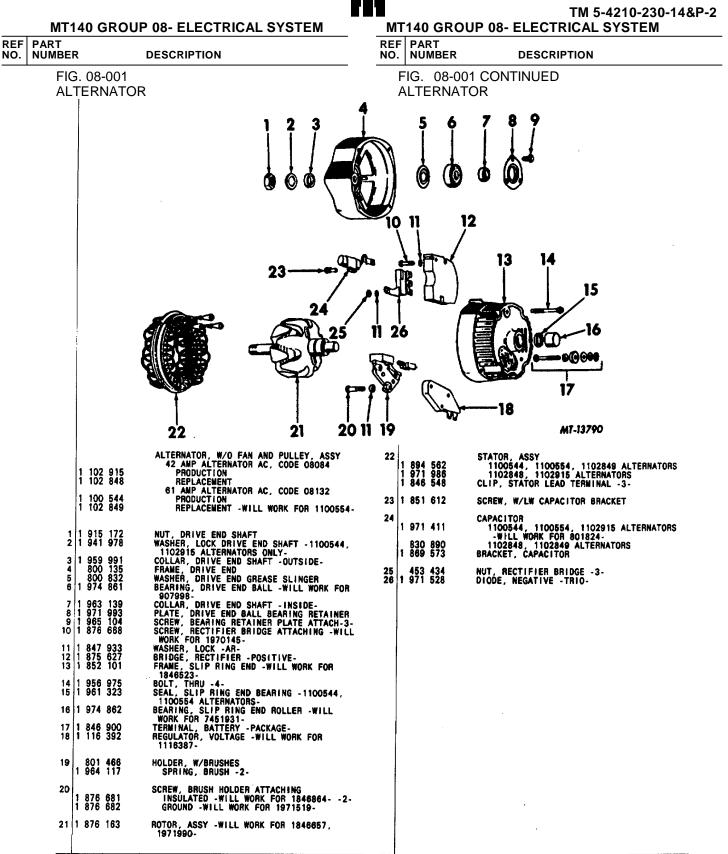
	FIG NO	FICHE LOC	
DISTRIBUTOR MV404 ENGINE			
ENGINE CODE			
12127 -2 BBL CARBURETOR-	08-058	K09	
12129 -4 BBL CARBURETOR-			
EXCEPT CALIFORNIA -CODE 12824-	08-020	I21	
FOR CALIFORNIA -CODE 12824-	08-056	K09	
MV446 ENGINE -CODE 12134-		104	
EXCEPT CALIFORNIA -CODE 12824- FOR CALIFORNIA -CODE 12824-	08-020	121	
V345, V392 ENGINES	08-068	K08	
CHASSIS BUILT PRIOR TO 8-4-81			
EXCEPT ELECTRONIC IGNITION CODE 08731 AND V392			
LOW COMPRESSION	08-054	K07	
FOR ELECTRONIC IGNITION CODE 08731	08-055	K08	
FOR V392 LOW COMPRESSION	08-04	K10	
CHASSIS BUILT 6-4-81 AND LATER -W/CODE 12826-	08-0655	K08	
V537 ENGINE NGINE SHUT-DOWN ACTUATOR AND MOWING -CODE 08808.9206-	08-019	120	
-SEE GROUP 12-			
NGINE SHUT-DOWN WARNING LIGHT AND BELL -CODES 08808, 08808, 08809-	08-008	K19	
NGINE SPEED SENSOR UNIT	08-021	122	
USE BOX			
AT REAR OF CAB	08-022	122	
AT INSTRUMENT PANEL OR COWL PANEL	08-014	l18	
IORN, MOUNTING AND RELAY	08-023	123	
NSTRUMENTS AND GAUGES	08-024	124	
UNCTION BLOCK	08-026	J01	
	1	1	
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MT-140	GROUP	08 - EL	ECTRICAL	SYSTEM

140 GROUP 08 - ELECTRICAL SYSTEM			
	FIG NO	FICHE LOC	
LIGHTS BACK-UP	00.000	105	
CARGO LIGHT	08-032 08-027	J05 J02	
CLEARANCE LIGHT -MIRROR MOUNTED-	08-027	J02	
DOME	08-028	J03	
FRONT AXLE WARNING	08-011	113	
HEADLIGHT	08-029	J03	
MARKER	08-030	J04	
PARKING -CODE 08615-	08-031	J04	
STOP AND TAIL			
ASSEMBLY	08-032	J05	
MOUNTING	08-033	J06	
TURN SIGNAL			
FRONT	08-031	J04	
REAR	08-032	J05	
GASOLINE ENGINES	08-045	J15	
MV404, 446 ENGINES V345, 392 ENGINES	06-045	515	
PRODUCTION	08-046	J17	
REPLACEMENT	08-046	J19	
V537 ENGINE	08-047	J20	
DIESEL ENGINES			
3208 ENGINE	08-049	J22	
9.0 LITER ENGINE			
EXCEPT 1853FC MODEL	08-050	J24	
FOR 18653FC MODEL	08-068	K22	
D150, D170, D190 ENGINES	08-060	J24	
DT466, 4e6B, DT1466B ENGINES			
EXC 1853FC MODEL	08-051	K02	
FOR 1853FC MODEL	08-067	K20	
SWITCHES			
EXCEPT TURN SIGNAL	08-043	J13	
	08-044	J14	
VIRING HARNESS GASOLINE ENGINES	08-052	K04	
DIESEL ENGINES	08-052	K06	
DIEGEE ENGINES	00-003	Ruo	
		1	
		1 1	

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FIG. 08-001

PAGE NO. 3

MT140 GROUP 08- ELECTRICAL SYSTEM REF PART NO. NUMBER DESCRIPTION

FIG. 08-002

TM 5-4210-230-14&P-2

	ALTERNATOR, W	/INTEGRAL REGULATOR	ALTERNATOR, W/INTEGRAL REGULATOR					
	67 () 50 ()-() 49() 48 MT-18415		23 					
	514 089 C91 513 303 C91 513 542 C91 527 890 C91	ALTERNATOR, W/O PULLEY CODE 08141 -85 ANP AC- CODE 08142 -85 AMP AC- CODE 08143 -105 AMP AC- FOR 521092C91- CODE 08158 -145 AMP AC-	28 29 30	120 217 120 391	SCREW, HEX-HD NO. 10-32 X 5-3/8 Washer, Lock No. 10 Regular Washer, Flat No. 10 Stator, Alternator, Assy			
1 2 3 4 5	461 064 C1	SCREW, TERMINAL WASHER, LOCK NO. 10 -4- NUT, HEX. 10-32 -AR- NUT, HEX. 1/4NC -AR- WASHER, PLAIN 1/4 X 3/4	31 32 33	461 449 C1 461 047 C1 466 293 C1 493 116 C1	513303C91 ALTERNATOR 513542C91, 521092C91 ALTERNATORS 514089C91 ALTERNATOR 527890C91 ALTERNATOR SCREW, RD-HD NO. 10-32 X 3/4 -2- WASHER, GUARD WASHER, INSULATING -2-			
6	461 044 C1 493 117 C1	HOLDER, BRUSH, ASSY 513303C91, 513542C91, 514089C91, 521092C91 Alternators 527890C91 Alternator	34 35 36	461 057 091	SCREW, HEX-HD TERMINAL 1/4NC -2- SCREW, HEX-HD NO. 6-32 -5- Rectifier, Negative, ASSY 513303c91, 513542c91, 514089C91,			
7 8 9 10 11	461 052 C1 461 054 C1 461 051 C1 461 041 C1	GASKET, BRUSH HOLDER DIODE, TRIO SCREW, PAN-HD 8/32 X 3/8 -4- GASKET, REGULATOR REGULATOR, ALTERNATOR, ASSY	37	493 118 C91	521092C91 ALTERNATORS 527890C91 ALTERNATOR Rectifier, W/Lead, Negative -Not Serviced Separately-			
12 13 14 15 16	461 045 C1	WASHER, PLAIN NO. 6 -4- WASHER, LOCK NO. 6 -SHAKEPROOF2- NUT, HEX. NO. 6-32 -2- SCREW, FIL-HO NO. 6-32 X 1/4 -2- BRUSH, ASSY -2-	38 39 40 41	461 061 C1 461 065 C1	BUSHING, INSULATION NEGATIVE 1/4 10 BUSHING, INSULATION NEGATIVE 1/4 10 Rectifier, W/LEAD, POSITIVE -NOT Serviced Separately- Rectifier, Positive, Assy			
17 18 19	460 684 C91 461 059 C1 463 118 C91 461 046 C91	RING, SLIP, ASSY Rotor, Assy	41	461 056 C91 493 119 C91 137 194	513303C91, 513542C91, 514089C91, 521092C91 Alternators 527890C91 Alternator			
	466 295 C91	527890C91 ALTERNATOR	43 44 45 46	461 048 C1 461 083 C1 461 062 C1	CLAMP, CAPACITOR CAPACITOR ASSY BUSHING, INSULATION POSITIVE 13/64 BUSHING, INSULATION POSITIVE 5/16 BUSHING, INSULATION POSITIVE 21/64			
20 21 22	461 058 C1 460 685 C91	RETAINER, BEARING BEARING, BALL, ASSY Screw, Fil-Hd NO. 10-32 X 7/18 -4-	47	461 066 C1 461 043 C1 461 060 C1	HOUSING, ALTERNATOR REAR, ASSY BUSHING, SLIDEABLE, REAR HOUSING NUT, ELASTIC STOP 5/16			

MT140 GROUP 08- ELECTRICAL SYSTEM

REF PART NO. NUMBER DESCRIPTION

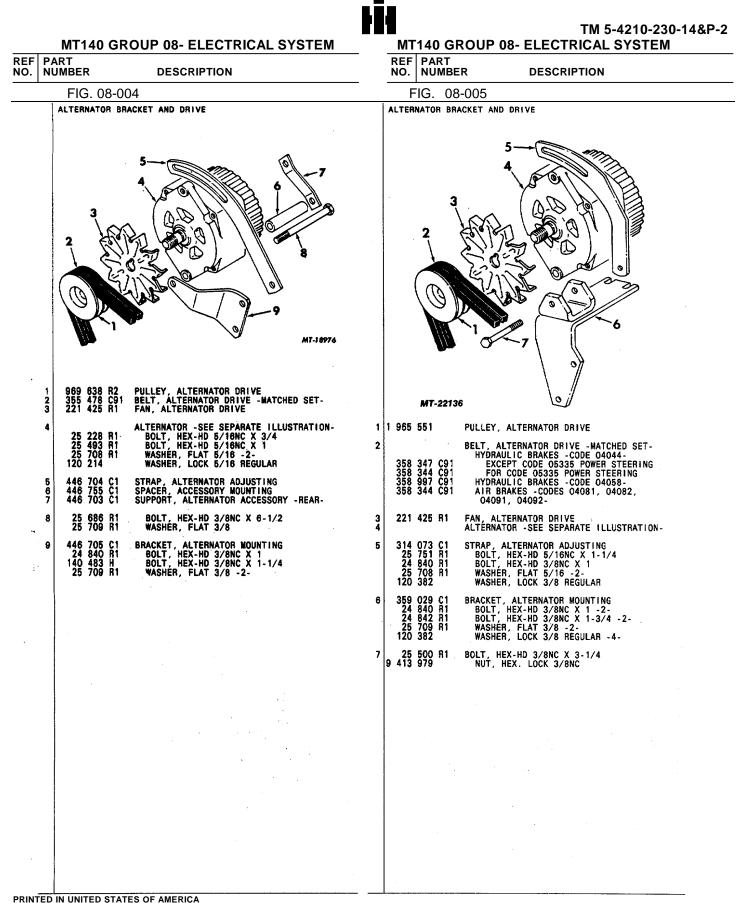
FIG. 08-002 CONTINUED ALTERNATOR, W/INTEGRAL REGULATOR

TM 5-4210-230-14&P-2 MT140 GROUP 08- ELECTRICAL SYSTEM

 MT140 GR0	OUP 08- ELECTRICAL SYSTEM	MT140 GROUP 08- ELECTRICAL SYSTEM	
PART NUMBER	DESCRIPTION	REF PART NO. NUMBER DESCRIPTION	
FIG. 08-00	-	FIG. 08-003 CONTINUED	
ALTERNATOR	I	ALTERNATOR	
	2 4		
_		7	
-0000			
31 2	32		
		27	
	30 29	- 6 26 25 9	
		10	
4	20 21 22	23 13	
	15		
	19		
MT-14135	4		
1 100 073	ALTERNATOR, W/INTEGRAL REGULATOR, ASSY 65 AMP -AC, CODE 08133- PRODUCTION -WILL WORK FOR 1100072-	17 1 970 384 COLLAR, DRIVE END SHAFT - INSIDE- 18 1 961 867 PLATE, DRIVE END BALL BEARING RETAINS	FR
1 100 080	REPLACEMENT 80_ANPAC, CODE 08134-	1 955 663 GASKET, BEARING RETAINER PLATE	
1 100 073 1 100 080	PRODUCTIÓN REPLACEMENT	19 132 839 SCREW, BEARING RETAINER PLATE -3- 453 435 WASHER, LOCK RETAINER PLATE SCREW	
	TERMINAL PACKAGE	9 411 396 SCREW, HEX-HD NO. 10NC X 3/8 -1100080 Alternator only -3- 9 419 634 Washer, Lock Retainer Plate Screw	
1 1 846 901 1 852 519	TERMINAL -PACKAGE- Battery Relay	9 419 634 WASHER, LOCK RETAINER PLATE SCREW - 20 801 816 RECTIFIER, BRIDGE	- 3 -
2	REGULATOR, VOLTAGE	801 815 CONNECTOR, BATTERY TERMINAL TO RECTIFIER BRIDGE	
1 876 388 1 116 389 1 852 043	1100072, 1100073 ALTERNATORS	1 851 612 SCREW, BATTERY TERMINAL CONNECTOR 1 852 032 CONNECTOR, RELAY TERMINAL TO RECTIFIE	ER
1 852 043 455 825 801 532	BRACKET, REGULATOR CONNECTOR BODY SCREW, BODY BRACKET MOUNTING CAP, VOLTAGE REGULATOR ADJUSTMENT	BRIDGE 1 970 227 CAP, RUBBER, RELAY TERMINAL COVER	
801 548 453 434	CONNECTOR, BODY REGULATOR NUT, REGULATOR STUD	21 1 847 933 WASHER, SPRING RECTIFIER BRIDGE SC -2 22 1 970 145 SCREW, RECTIFIER BRIDGE -2-	2-
3 1 847 933 4 1 971 519	WASHER, SPRING - AR-	23 1 851 612 SCREW, CAPACITOR LEAD ATTACH 24 801 824 CAPACITOR	
5 1 852 002	SCREW, BRUSH HOLDER -GROUND- BRUSH, HOLDER, ASSY ODING BRUSH VOLDER ASSY	26 1 851 812 SCREW, CAPACITOR BRACKET 26 1 869 573 BRACKET, CAPACITOR	
6 1 964 117 7 1 846 864 8 1 978 872	SPRING, BRUSH HOLDER, ASSY Screw, Brush Holder, Insulated2- Rotor Assy -Will Work for 1852040-	27 NUT, W/LOCK WASHER, RECTIFIER BRIDGE 1 851 808 1100072, 1100073 ALTERNATORS	-3-
9 801 828 10 801 818	ROTOR, ASSY -WILL WORK FOR 1852040- CLIP, STATOR LEAD TERMINAL -3- STATOR, ASSY	453 434 1100080 ALTERNATOR	
11 9 418 881	STATOR, ASSY Nut, drive end shaft	28 801 817 RECTIFIER -DIDDE TRIO-	
12 1 941 978 25 711	WASHER, LOCK DRIVE END SHAFT R1 WASHER, FLAT DRIVE END SHAFT	29 1 852 630 FRAME, SLIP RING END 1 968 990 BUSHING, SLIP RING END BEARING WELL 455 532 PIN, SLIP RING END DOWEL	
13 1 969 481 14 1 969 046	FAN, W/BAFFLE Collar, Drive end Shaft -outside-	1 969 056 PLUG, SLIP RING END BEARING WELL	
15 1 852 038	FRAME, DRIVE END	30 801 810 BOLT, THRU -4- 31 7 451 782 BEARING, SLIP RING END ROLLER	
1 969 070 1 955 660	DUST, SHIELD DRIVE END FRAME WASHER, FELT DRIVE END FRAME	32 1 961 323 SEAL, SLIP RING END BEARING	
16 907 940	BEARING, DRIVE END BALL		
			=

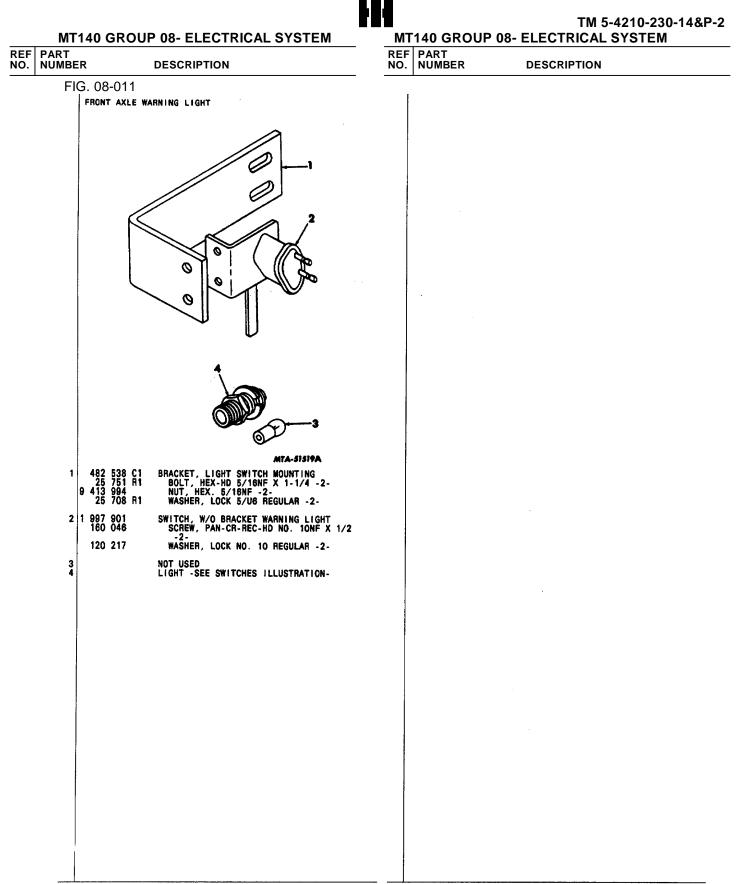
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FIG. 08-003 PAGE NO. 5



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FIG. 08-004



TM 5-4210-230-14&P-2 MT140 GROUP 08- ELECTRICAL SYSTEM

REF NO.			R			DESCRIPTION	REF NO.	PART NUMBER	DESCRIPTION
	F			8-0 .оск		ESS AND MODULE CONTROL			CONTINUED s and module control
								32 35-	MT-19184
	1		414	203 051 087	C1	BRACKET, CONTROL MODULE MOUNTING BOLT, HEX-FLG-HD 1/2NC X 1-1/4 -2- NUT, HEX-FLG 1/2NC -2-			Mi-17104
	2	9	25 413	088 493 994 708 214	C91 R1 R1	CONTROL, MONITOR MODULE BOLT, HEX-HD 5/18NC X 1 -3- NUT, HEX-LOCK 5/18NC -3- WASHER, FLAT 5/18 -3- WASHER, LOCK 5/U8 REGULAR -3-			
	3 4		442	498	C1	<pre>#CONDUIT, CONVOLUTED TUBING Housing, Terminal contact -see Connector Body Chart-</pre>			
	5		471	841	C91	HARNESS, ANTILOCK, ASSY -INCLUDES KEY NOS. 3 AND 4- EXC F1924 6X4, F1924 6X6, F1954 6X4, F1954 6X6, F2125 MODELS FOR F1924 6X4, F1924 6X8, F1954 6X4, F1954 6X6, F2125 MODELS			
					C91 C91	AIR VALVE REAR AXLE CABLE -CAB HARNESS TO CONTROL MODULE-	1		
			481 481 481 481 490 490 490 490 490 490 490	629 630 631 632 633 780 781 782 637 777 778	C91 C91 C91 C91 C91 C91 C91 C91 C91 C91	149 INCHES LONG 157 INCHES LONG 173 INCHES LONG 181 INCHES LONG 185 INCHES LONG 197 INCHES LONG 216 INCHES LONG 242 INCHES LONG 261 INCHES LONG 281 INCHES LONG 320 INCHES LONG 340 INCHES LONG 363 INCHES LONG			
						#PART NO. COVER 1 FOOT OF BULK MATL.			

	MT140 GROU	IP 08- ELECTRICAL SYSTEM	MT140 GROUP 08- ELECTRICAL SYSTEM					
REF NO.	PART NUMBER	DESCRIPTION	REF PART NO. NUMBER	DESCRIPTION				
	FIG. 08-013		FIG. 08-013 battery box					
		MT-19764						
		COVER, BATTERY BOX #BRACKET, HOOK NUT, HEX. NO. 10NC -2- SCREW, PAN-CR-REC-HD NO. 10NC X 1/2		NGLE, SUPPORT BRACKET -INNER- DLT, HOLD-DOWN -AR- NUT, HEX-LOCK 5/16NC -AR- WASHER, FLAT 5/16 -AR-				
	120 217 3 480 040 C2 476 347 C2 476 345 C2 24 840 81	-2- WASHER, LOCK NO. 10 REGULAR -2- Clamp, Battery Hold-Down, Assy 1 Battery 2 Battery 3 Battery 3 Dattery Bolt, Hex-HD 3/8NC X 1 -AR-	24 641 R1 406 313 C1	DOK, COVER HOLD-DOWN, ASSY RIVET, 3/16 X 1-1/2 NUT, CAP RACKET, COVER HOLD-DOWN HOOK BOLT, HEX-HD 5/16NC X 3/4 NUT, HEX-LOCK 5/16NC				
	24 840 R1 9 413 979 25 709 R1	NUT, HEX. LOCK 3/8NC -AR- Washer, Flat 3/8 -AR-		NGLE, SUPPORT BRACKET -OUTER-				
	4 475 126 C2 414 051 C1 414 087 C1 414 089 C1	BRACKET, BATTERY BOX REAR SUPPORT, ASSY BOLT, HEX-FLG-HD 1/2NF X 1-1/4 -AR- NUT, HEX-FLG 1/2NF -AR- NUT, HEX-FLG 5/8NF -AR-	491 668 C92 \$K	IT, COVER LATCH				
	5 476 349 C3 6 476 302 C1	TRAY, BATTERY BOX Anglé, air tank mounting -2-						
	7 474 998 C2 24 840 R1 414 051 C1 9 413 979 414 087 C1 25 709 R1	BRACKET, BATTERY BOX FRT SUPPORT, ASSY BOLT, HEX-HD 3/8NC X 1 -AR- BOLT, HEX-FLG-HD 1/2NF X 1-1/4 -AR- NUT, HEX-LOCK 3/8NC -AR- NUT, HEX-FLG-LOCK 1/2NF -AR- WASHER, FLAT 3/8 -AR-						
DDIN								

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TM 5-4210-230-14&P-2

TM 5-4210-230-14&P-2 MT140 GROUP 08- ELECTRICAL SYSTEM MT140 GROUP 08- ELECTRICAL SYSTEM REF PART REF PART NO. NUMBER DESCRIPTION NO. NUMBER DESCRIPTION FIG. 08-014 FIG. 08-015 FUSE BLOCK IGNITION COIL Q 0 0 0 0 Ø DE 0 3 4 MT-13509 371 822 C1 BRACKET, COIL MOUNTING -V345, V392 BAGLEE, CUIL WOOMTING -V345, V. BOLT, HEX-HD 5/16NC X 3/4 -2-NUT, HEX. 5/18NC WASNER, FLAT 5/16 -2-WASHER, LOCK 5/16 REGULAR -2-2 25 228 R1 413 994 25 708 R1 120 214 MT-14123 9 BLOCK, FUSE, ASSY EXCEPT FLAT BACK COWL FOR FLAT BACK COWL SCREW, PAN-CR-REC-HD 1/4NC X 2-1/4 -2-WASHER, LOCK 1/4 REGULAR -2-COVER, FUSE BLOCK FLAT BACK COWL CODE 16010 -SEE GROUP 16 INSTRUMENT PANEL-1853FC MODEL NUT, STAMPED 3/16 SELF THREADING-2-SCREW, PAN-CR-REC-HD NO. 18 X 3/4 -2-1 451 543 C1 486 728 C1 160 657 120 380 2 NOT SERVICED SEPARATELY COIL, W/BRACKET, IGNITION BOLT, HEX-HD 3/8NC X 3/4 -2-WASHER, FLAT 3/8 -2-WASHER, LOCK 3/8 REGULAR -2-191 455 R91 25 228 R1 25 708 R1 120 214 3 589 612 C1 390 493 C1 27 045 R1 299 410 C1 121 841 167 028 CLAMP, RESISTOR WASHER, LOCK NO. 8 REGULAR SCREW, TAP. PAN-CR-REC-HD- NO. 8-32 X . 2 . TERMINAL, FUSE 5/16433 169 C1 435 000 C1 OFFSET STRAIGHT 5 1 959 425 RESISTOR, IGNITION COIL 2 FUSE - AR-4 AMPERE SFE -PINK-3AG -PINK-5 AMPERE 147 682 426 336 131 220 C1 131 222 C1 9 5 AMPERE 10 AMPERE 15 AMPERE EXCEPT 1853FC MODEL FOR 1853FC MODEL 20 AMPERE EXCEPT 1853FC MODEL 20 AMPERE 30 AMPERE CIRCUIT BREAKER -AR-STANDARD -50 AMPERE-CODES 08579, 08738 4 AMPERE 10 AMPERE 15 AMPERE 20 AMPERE 30 AMPERE 30 AMPERE 30 AMPERE 30 AMPERE 30 AMPERE 30 AMPERE 30 AMPERE 30 AMPERE 426 333 509 080 C1 19 9 428 126 131 224 C1 9 426 331 54 872 R1 175 C1 994 C1 176 C1 177 C1 178 C1 263 433 436 433 433 433 167 SCREW, PAN-CR-REC-HD TAP 1/4NC X 3/4

REF PART NO. NUMBER

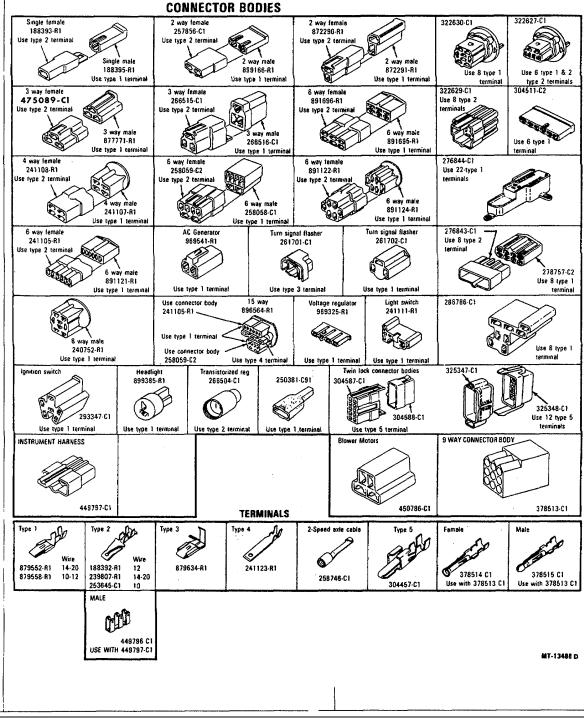
DESCRIPTION

FIG. 08-016 CONNECTOR BODIES AND TERMINALS

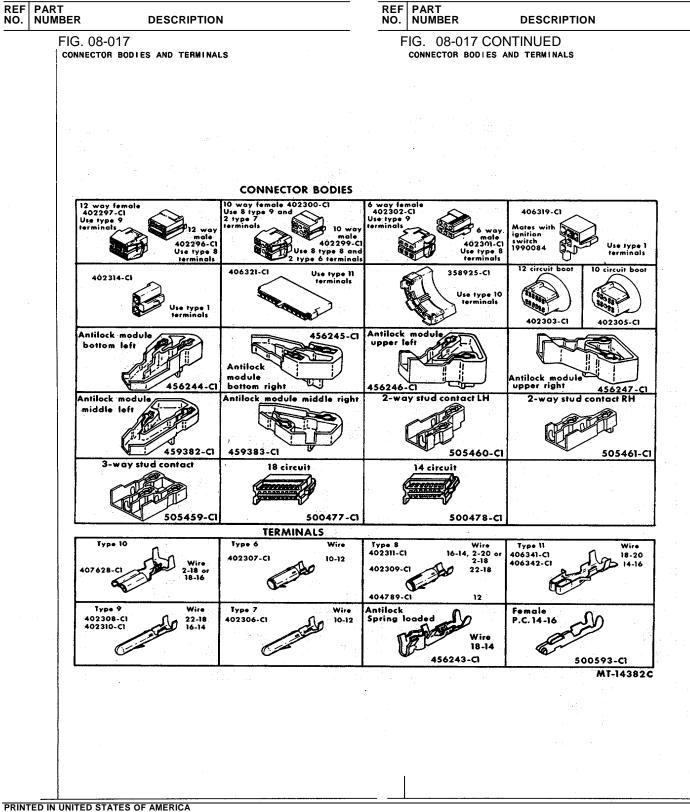
TM 5-4210-230-14&P-2 MT140 GROUP 08- ELECTRICAL SYSTEM

REF PART NO. NUMBER DESCRIPTION

FIG. 08-016 CONTINUED CONNECTOR BODIES AND TERMINALS







TM 5-4210-230-14&P-2

MT140 GROUP 08- ELECTRICAL SYSTEM



REF PART NO. NUMBER

DESCRIPTION

FIG. 08-018 | solderless terminals

TM 5-4210-230-14&P-2 MT140 GROUP 08- ELECTRICAL SYSTEM

REF PART NO. NUMBER

DESCRIPTION

FIG. 08-018

SOLDERLESS TERMINALS

SOLDERLESS TERMINALS

PRE INSUL		·····		
TERMINAL	WIRE SIZE	STUD SIZE	IH NUMBER	
	22-16 16-14 16-14 16-14 16-14 12-10 12-10 12-10 12-10 12-10	10 6 10 1/4 5/16 3/8 6 10 1/4 5/16 3/8	244 064 RI 54 771 R2 54 772 R2 54 773 R2 54 774 R2 54 775 R2 54 775 R2 54 776 R2 54 776 R2 54 778 R2 54 778 R2 54 778 R2 54 778 R2	
RING				
SPADE	16-14 16-14 12-10	8 10 10	56 955 R2 54 781 R2 54 782 R2	
C	16-14	10	244 059 RI	
ноок				
QUICK DISC	ONNECT	T		
TYPE		WIRE SIZE	IH NUMBER	
TERMINAL (NON-INSULATED)	No Contraction	16 -12 22-18	165 565 R1 165 563 R1	
TERMINAL, FLAG (NON-INSULATED)		165 566 R1		
ADAPTER (NON-INSULATED)	्रेस		238 101 R1	
BLADE (NON-INSULATED)	-To		165 567 R1	
TERMINAL (INSULATED)	2	22-16 16-14	238 100 R1 915 073 R1	

BUTT SPLIC	ES	
TYPE	WIRE SIZE	IH NUMBER
	22-16 16-14 12-10	915 046 R1 56 698 R1 56 699 R1
BUTT SPLICE		
CONNECTOR, BLADE		244 058 RI
		46 893 H
6 7		915 081 RI
CONNECTOR, CLOSED END		
BULLET AND PIN T	ERMIN	ALS
TERMINAL, BULLET		46 894 H
TERMINAL, BULLET		244 063 R1
TERMINAL PIN (INSULATED)		915 080 R1
IGNITION TERM	AINALS	
TERMINAL, PLUG,		103 232 H
TERMINAL, PLUG, ANGLE		84 319 H
TERMINAL, DISTRIBUTOR CAP		17 070 D

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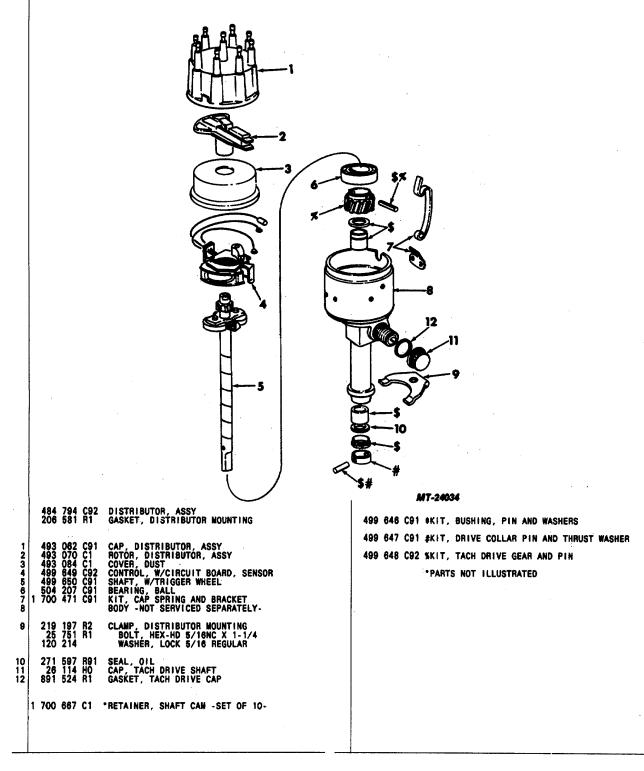
FIG. 08-018 PAGE NO. 17

MT140 GROUP 08- ELECTRICAL SYSTEM REF PART NO. NUMBER DESCRIPTION

DISTRIBUTOR . INTERGRAL MODULE.

FIG. 08-019

AL SYSTEM TH 5-4210-230-14&P-2 MT140 GROUP 08- ELECTRICAL SYSTEM REF PART NO. NUMBER DESCRIPTION FIG. 08-019 CONTINUED DISTRIBUTOR - INTERGRAL MODULE-



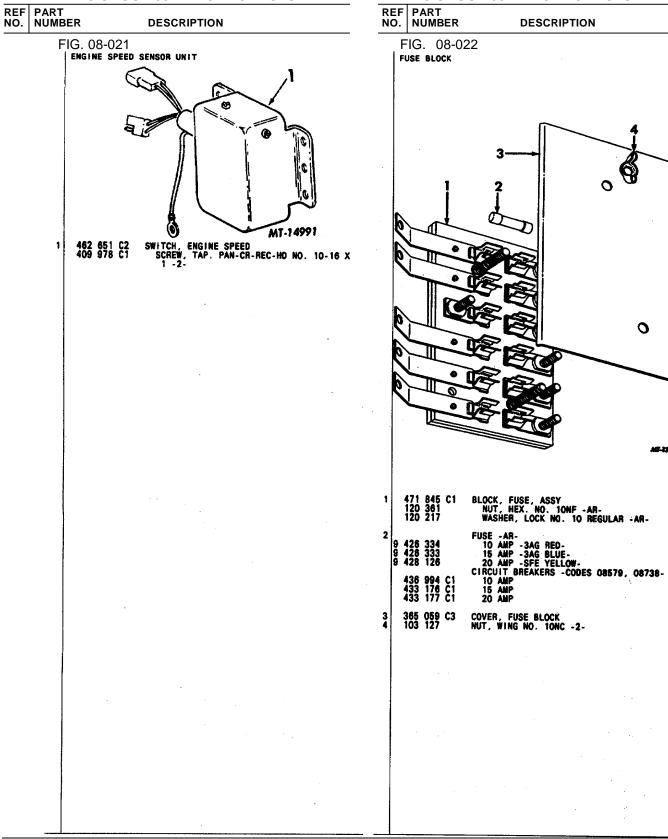
TM 5-4210-230-14&P-2 MT140 GROUP 08- ELECTRICAL SYSTEM

REF NO.	PART NUMBER	DESCRIPTION				
	FIG. 08-020 DISTRIBUTOR	- ELECTRONIC.				

REF PART NO. NUMBER DESCRIPTION

FIG. 08-020 CONTINUED DISTRIBUTOR -ELECTRONIC-

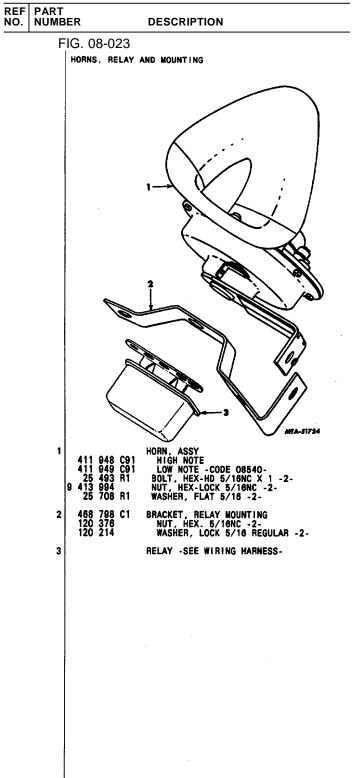
					23 24 25 26 27 27 20
	446 920 C92 446 921 C92 446 917 C92 446 918 C92 206 581 R1	MT 189418 DISTRIBUTOR, ASSY NV404 ENGINE PRODUCTION -ORDER 446921C92- SERVICE MV446 ENGINE PRODUCTION -ORDER 446921C92- SERVICE	23 24 25 26 27 28 29	269 798 C1 19 336 R1 446 808 C1 298 512 C1 19 336 R1 361 763 C1 362 878 C1	CLAMP, CAP -2- PIN, ROLL 1/8 X 11/16 -2- CLEANER, AIR GEAR, TACHOMETER DRIVE PIN, ROLL 1/8 X 11/18 GASKET, COVER PLATE COVER, TACH GEAR
1	206 581 R1 877 313 R92 413 225 C1	GASKET, DISTRIBUTOR MOUNTING CAP, ASSY BRACKET, DISTRIBUTOR CAP LOCATING	30	219 197 R2 25 751 R1 25 708 R1	CLAMP, DISTRIBUTOR MOUNTING BOLT, HEX-HD 5/10NC X 1-1/4 WASHER, FLAT 5/16 WASHER, FLAT 5/16
2 3 4 5 6 7 8 9 10 11	268 574 C95 453 591 C1 453 589 C1 877 303 R1 877 302 R1 460 728 C1 269 783 C1 453 587 C1	ROTOR, ASSY COVER, DUST, ASSY PLATE, LOWER WICK, SHAFT OIL RETAINER, SLEEVE SLEEVE, W/WHEEL, ASSY BUSHING, WEIGHT -2- SPRING, WEIGHT -2- SPRING, WEIGHT -SECONDARY- WEIGHT -NOT SERVICED SEPARATELY- WASHER -NOT SERVICED SEPARATELY-	31 32 33 34 35 36 37 38	120 214 269 806 C1 460 731 C1 364 437 R1 292 595 C1 298 511 C91 26 114 H0 269 781 C1	WASHER, LOCK 5/16 REGULAR BUSHING, DRIVE SHAFT LOWER GEAR, W/PIN AND WASHER, DRIVE PIN, GEAR BUSHING, TACHOMETER SHAFT SHAFT, W/GEAR, TACHOMETER DRIVE PLUG -NOT SERVICED SEPARATELY- CAP 7/8 FPT CLAMP -NOT SERVICED SEPARATELY- GASKET, CLAMP -2-
12 13	453 587 C1	SHAFT -NOT SERVICED SEPARATELY- Spring, Weight -primary-	39	27 219 R1 445 438	SCREW, FIL-HD NO. 10NC X 1- 1/4 NUT, SPEED NO. 10NC
14	472 171 C1 435 001 C1 193 257	CONTROL, VACUUM, ASSY 446917C92, 446918C92 DISTRIBUTORS 446920C92, 446921C92 DISTRIBUTORS SCREW, PAN-HD NO. 6NC X 1/4 -2-	40	55 049 R2 55 050 R1	WIRE, GOVERNOR SEAL SEAL, LEAD
15 18 17 18 19 20 21 22	269 787 C1 361 770 C1 473 632 C1 291 152 C1 269 786 C1 877 283 R1 877 284 R1	RETAINER, VACUUM CONTROL ROD SPRING, PLATE RETAINING PLATE, UPPER BUSHING, DRIVE SHAFT UPPER RETAINER, DRIVE SHAFT SEAL SEAL, DRIVE SHAFT -2- WASHER, SPACER, SHAFT SEAL -2- WASHER, SPRING, SHAFT SEAL	41 42 43 44 45	465 938 C91 291 170 C1 291 168 C1 291 167 C2 487 847 C91	HOUSING, W/VALVE, GOVERNOR PLATE, WEIGHT LOCK WEIGHT, GOVERNOR VALVE COUNTER PLUG, GOVERNOR VALVE CONTROL, DISTRIBUTOR SENSOR



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TM 5-4210-230-14&P-2 MT140 GROUP 08- ELECTRICAL SYSTEM

12042

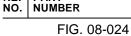


TM 5-4210-230-14&P-2 MT140 GROUP 08- ELECTRICAL SYSTEM

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REF NO.			र				DESCRIPTION			



TM 5-4210-230-14&P-2 MT140 GROUP 08- ELECTRICAL SYSTEM



REF PART

DESCRIPTION

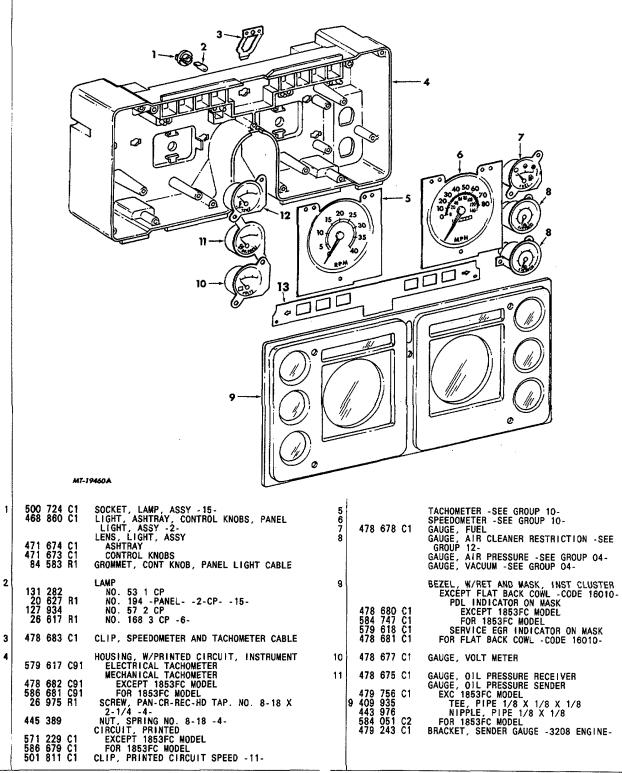
G. 08-024 INSTRUMENTS AND GAUGES

REF PART NO. NUMBER D

DESCRIPTION

FIG. 08-024

INSTRUMENTS AND GAUGES



MT140 GROUP 08- ELECTRICAL SYSTEM REF PART REF PART NO. NUMBER NO. NUMBER DESCRIPTION DESCRIPTION FIG. 08-024 FIG. 08-025 JUNCTION BLOCK -HARNESS-INSTRUMENTS AND GAUGES GAUGE, WATER TEMPERATURE RECEIVER GAUGE, WATER TEMPERATURE SENDER GASOLINE ENGINES MV404, 446 478 676 C1 12 0 479 757 C1 492 587 C1 479 758 C1 V345, 392 V537 V537 DIESEL ENGINES CHASSIS BUILT PRIOR TO 3-5-79 CHASSIS BUILT 3-5-79 AND LATER EXC 1853FC MODEL FOR 1853FC MODEL GAUGE, OIL TEMPERATURE RECEIVER ESCUTCHEON, OIL TEMP RECEIVER GAUGE -TRANSMISSION-DECAL. MAIN TRANSWISSION OIL TEMP GA 0 479 758 C1 495 706 C1 479 758 C1 486 091 C91 2 753 438 R1 DECAL, MAIN TRANSMISSION OIL TEMP GAUGE -CODE 13704-436 080 C1 GAUGE, OIL TEMPERATURE SENDER 537 805 C1 MASK, TELL TALE INDICATOR PDL INDICATOR EXCEPT 1853FC MODEL FOR 1853FC MODEL SERVICE EGR INDICATOR 1 13 0 501 922 C1 584 744 C1 504 433 C1 MT-1354! *GAUGE, AMMETER -CODE 16010-CHASSIS BUILT PRIOR TO 1-22-81 -125 AMP-COVER, JUNCTION BLOCK EXCEPT 1853FC MODEL EXCEPT FLAT BACK COWL -CODE 16010-FOR FLAT BACK COWL -CODE 16010-FOR 1853FC: MODEL SCREW, PAN-CR-REC-HD TAP. NO. 10-16 X 1/2 -2-EXTENSION, COVER -2-EXTENSION, COVER -2-EXCUTCHEON, JUNCTION BLOCK EXCEPT 1853FC MODEL EXCEPT FLAT BACK COWL -CODE 16010-FOR FLAT BACK COWL -CODE 16010-FOR 1853FC MODEL 470 845 C91 1 CHASSIS BUILT 1-22-81 AND LATER -150 571 712 C91 CHASSIS BUILT FLE ST. AMP AMP-*LAMP, AMMETER *BRACKET, AMMETER GAUGE MOUNTING -CODE 16010-NUT, HEX 1/4NF -4-WASHER, LOCK 1/4 -4-471 587 C1 364 991 C1 364 991 C1 24 392 R1 131 282 501 673 C1 118 623 120 380 365 054 C1 495 687 C1 488 705 C1 580 660 C2 RIGHT HAND DRIVE GAUGE, OIL PRESSURE RECEIVER GAUGE, WATER TEMPERATURE RECEIVER 507 700 C1 507 701 C1 11 12 LOCK, JUNCTION -AR-1 STUD -SEE WIRING HARNESS-3 STUD 4 STUD 5 STUD 8 STUD 12 STUD 2 BLOCK. 892 860 891 437 581 C1 369 228 C2 364 853 C2 364 853 C2 364 854 C2 364 854 C2 19 910 R1 26 110 R1 27 227 R1 120 380 505 812 C1 *PARTS NOT ILLUSTRATED 8 SIDD 12 STUD 16 STUD NUT, HEX-LOCK NO. 10NC -16-NUT, HEX. LOCK 1/4NC -4-SCREW, PAN-CR-REC-HD 1/4NC X 1-1/2 -4-WASHER, FLAT 1/4 -4-WASHER, LOCK 1/4 REGULAR -4-PANEL, JUNCTION BLOCK *BRACKET, JUNCTION BLOCK MOUNTING EXC FLAT BACK COWL -CODE 16010-FOR FLAT BACK COWL -CODE 16010-BOLT, HEX-HD 5/16NC X 3/4 -2-WASHER, LOCK 5-16 REGULAR -2-*PLATE, JUNCTION BLOCK MOUNTING -FOR TRAVELCREW CAB CODE 16196- -MAKE 471 586 C2 471 647 C1 25 228 R1 120 214 LOCALLY-SCREW, PAN-CR-REC-HD 1/4NC X 1-1/2-3-WASHER, FLAT 1/4 -3-*SPACER, JUNCTION BLOCK MTG PLATE -3-27 227 R1 25 707 R1 23 323 H *PARTS NOT ILLUSTRATED

TM 5-4210-230-14&P-2

MT140 GROUP 08- ELECTRICAL SYSTEM REF PART NO. NUMBER REF PART NO. NUMBER DESCRIPTION DESCRIPTION FIG. 08-026 FIG. 08-027 CLEARANCE LIGHT - NIRROR MOUNTED-CARGO LIGHT 2 G. 0 MT-19173 MT-19172 27 145 R1 SCREW, TAP. PAN-CR-REC-HD NO. 8-18 X 1-1/4 -2-459 270 C91 Light, CARGO, ASSY BULB, NO. 561 -PURCHASE LOCALLY- -2-471 364 C91 PAD, FLOOD LIGHT 1 2 464 958 C1 CONNECTOR, CABLE 1 TUBE, CABLE, ASSY SCREW, TAP. PAN-CR-REC-HD NO. 10-24 X 1/2 -4-475 155 C1 27 004 R1 2 475 159 C91 HARNESS, LIGHT, ASSY 441 735 C1 #CONDUIT, SPIRAL 475 157 C91 LIGHT, W/BRACKET, ASSY -2-3 4 5 **#PART NO. COVERS ONE FOOT OF BULK MATL** PRINTED IN UNITED STATES OF AMERICA

TM 5-4210-230-14&P-2

TM 5-4210-230-14&P-2 MT140 GROUP 08- ELECTRICAL SYSTEM MT140 GROUP 08- ELECTRICAL SYSTEM REF PART NO. NUMBER REF PART NO. NUMBER DESCRIPTION DESCRIPTION FIG. 08-028 FIG. 08-029 DOME LIGHT HEADLIGHT MT-13327 BASE, DOME LIGHT SCREW, PAN-CR-REC-HD TAP. NO. 6-20 X 3/4 -2-LENS, DOME LIGHT LAMP, 12 CANDLEPOWER TERMINAL, CLIP -2-463 179 C1 26 282 R1 12 446 C1 436 C1 853 C1 3 4 5 29A 294 300 SWITCH, DOOR JAM SCREW, TAP. NO. 10-16 X 5/8 -2-MT-14954 6 485 588 C1 27 198 R1 465 458 C91 HEADLIGHT, ASSY -CONSISTS OF KEY NOS. 5, 6 AND MOUNTING RING-NOT USED 7 HARNESS, HEADLIGHT -SEE WIRING HARNESS ILLUSTRATION-NOT USED 1 2 SPRING, HEADLIGHT -2-SCREW, FIL-CR-REC-HD 1/4NC X 3/4 -2-3 450 157 C2 160 541 SCREW, W/NUT, GROMMET, ASSY -2-LAMP, HEADLIGHT NO. 6014 465 940 C2 5 962 548 45 RETAINER, SEAL BEAM SCREW, RETAINER -3-466 857 C1 24 329 R1 6 BEZEL, HEADLIGHT -WILL WORK FOR 444038C1-SCREW, OV-CR-REC-HD NO. 10NC X 3/4-8-7 576 296 C1 473 147 C1 RIGHT HAND DRIVE 496 861 C91 HEADLIGHT, ASSY -CONSISTS OF KEY NOS. 5, 6 AND MOUNTING RING-LAMP, HEADLIGHT NO. 6112 5 5 956 009

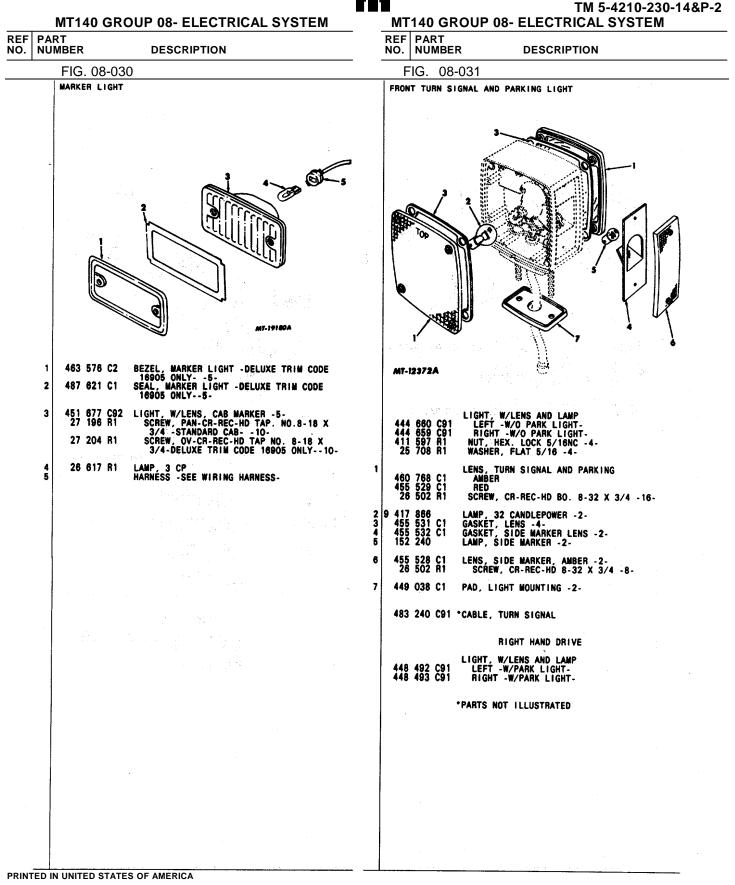


FIG. 08-030 PAGE NO. 26



TM 5-4210-230-14&P-2 MT140 GROUP 08- ELECTRICAL SYSTEM

REF PART NO. NUMBER DESCRIPTION

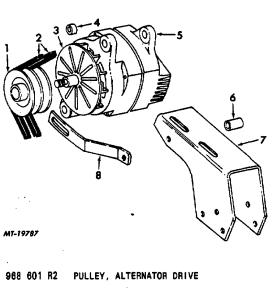
•	NU	M	BER			DESCRIPTION	
			FIG	. 08	3-03	5	
			-		R BRA	ACKET AND DRIVE	
			M7-19	9787		3 0 3	
	1	1	949 969	358 638	R2	PULLEY, ALTERNATOR DRIVE EXC CODES 04081, 04091, 12740, 16956 FOR CODES 04081, 04091, 12740, 16956	
	2 3 4		355 221 446	706 425 759	C91 R1 C1	BELT, ALTERNATOR DRIVE -MATCHED SET- FAN, ALTERNATOR DRIVE SPACER, ALTERNATOR MOUNTING	
	5	9	24 413 25	845 979 709	R1 R1	ALTERNATOR -SEE SEPARATE ILLUSTRATION- BOLT, HEX-HD 3/8NC X 4 NUT, HEX. LOCK 3/8NC WASHER, FLAT 3/8	
	6		446	758	C1	SPACER, ALTERNATOR ADJUSTING STRAP -3-	
	7		488 24 25	814 845 709	C1 R1 R1	BRACKET, ALTERNATOR MOUNTING BOLT, HEX-HD 3/8NC X 4 -2- WASHER, FLAT 3/8 -2-	
	8		488 25 25 25 25	810 493 784 708 709		STRAP, ALTERNATOR ADJUSTING BOLT, HEX-HD 5/16NC X 1 BOLT, HEX-HD 3/8NC X 4-1/4 WASHER, FLAT 5/16 -2- WASHER, FLAT 3/8	
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REF PART NO. NUMBER DESCRIPTION

FIG. 08-036

ALTERNATOR BRACKET AND DRIVE



2					BELT, ALTERNATOR DRIVE -MATCHED SET-
-				C91 C91	CODES 08133, 08134, 08141, 08142 CODES 08143, 08158
3			495		FAN, ALTERNATOR DRIVE CODE 08133 -SEE ALTERNATOR ASSEMBLY-
		221	425	n 1	CODES 08134, 08141, 08142, 08143 CODE 08158 -SEE ALTERNATOR ASSEMBLY-
4		488	811	C1	SPACER, ALTERNATOR MTG562 ID X 1 0D- .272 LONG
		488	813	C1	1.665 LONG
5			864		ALTERNATOR -SEE SEPARATE ILLUSTRATION- BOLT, HEX-HD 1/2NC X 2
	9	412	867 230		BOLT, HEX-HD 1/2NC X 3-1/2 NUT, HEX. LOCK 1/2NC -2-
		25	710	R1 (WASHER, FLAT 1/2 -4-
6		446	758	C1	SPACER, ALTERNATOR ADJUSTING STRAP -3-
7		488	845	Ř1 –	BRACKET, ALTERNATOR MOUNTING Bolt, HEX.HD 3/8NC X 4 -2-
		25	709		WASHER, FLAT 3/8 -2-
8		488 25	809 784	Ř1 –	STRAP, ALTERNATOR ADJUSTING BOLT, HEX-HD 3/8NC X 4-1/4
		25	861 709	R1	BOLT, HEX-HD 1/2NC X 1-1/4 Washer, Flat 3/8
		25	710	R 1	WASHER, FLAT 1/2
					·

	MT440.0				.4 4 0		TM 5-4210-230-14	&P-2
REF NO.	PART NUMBER	BROUP 08- ELECTRICAL SYSTEM DESCRIPTION		REF NO.	PAF		08- ELECTRICAL SYSTEM	
	FIG. 08-	-037		F	IG.	08-037	CONTINUED	
	BATTERY BOX			BATTERY				
			8	24 64 406 31	1 R1 3 C1	#HOOK, COV RIVET, NUT, CA	/ER HOLD-DOWN, ASSY 3/16 X 1-1/2 P	
			9	434 764 25 520 25 701	C1 R1 R1 R1	NUT, HE	D-DOWN -AR- X 5/16NC -AR- FLAT 5/16 -AR-	
			10	476 30	1 C1	ANGLE, SU	IPPORT BRACKET - INNER-	
			11	483 704 487 747 483 708 24 840	B C2 D R1 I C1 2 C1 B C1	EXCEP FOR C 6X4, 6X BOLT, HE BOLT, HE BOLT, HE BOLT, HE NUT, HEX	BATTERY BOX FRONT SUPT, ASSY 44 MODELS TT CODE 01924 60 MODELS EX-HD 3/8NC X 1 -2- XX-FLG-HD 1/2NF X 1-1/4 -4- EX-FLG-HD 1/2NF X 1-1/2 -AR- XX-FLG-HD 1/2NF X 1-3/4 -AR- L. LOCK 3/8NC -2- C-FLG-LOCK 1/2NF -AR-	
	1		12	483 702		EXCEP FOR C	PLASH 4 MODELS 7 CODE 07050 20DE 07050 -MAKE LOCALLY- 1, SPACER -MAKE LOCALLY- 6 MODELS	
	12		13	1	2 C1 R1 H	SHIELD, H BOLT, H BOLT, H NUT, HE NUT, HE WASHER,	IEAT IEX-HD 5/16NC X 1-1/4 -4- IEX-HD 3/8NC X 1-1/4 -4- IEX-HD 3/8NC X 1-1/4 -4- IEX-T5/16-4- FLAT 5/16 -4- FLAT 3/16 -4-	
	MT-19722					RI	GHT HAND DRIVE	
	1	COVER, BATTERY BOX EXC CODE 01924	3	480 040 480 001	C2 C1	CLAMP, BA W/ 1 BA W/ 2 BA	TTERY HOLD-DOWN, ASSY TTERY TTERIES	
	480 090 C2 476 348 C3 432 279 C2	4X2, 4X4 WODELS 6X4, 6X6 WODELS FOR CODE 01924	9	471.998	C1	BOLT, HOL	D-DOWN -AR-	
		#BRACKET, HOOK NUT, HEX. NO. 10NC -2- SCREW, PAN-CR-REC-HD NO. 10NC X 1/2		491 668	C92	#KIT, COVE	R LATCH	
	120 217	-2- WASHER, LOCK NO. 10 REGULAR -2-						
:	3 480 001 C1 476 347 C2 24 840 R1 9 413 979 25 709 R1	CLAMP, BATTERY HOLD-DOWN, ASSY 4X2, 4X4 MODELS 6X4, 6X6 MODESL BOLT, HEX-HD 3/8NC X 1 -3- NUT, HEX. LOCK 3/8NC -3- WASHER, FLAT 3/8 -3-					·	
	4 483 706 C1 487 749 C1 483 710 C1 414 054 C1 414 055 C1 414 087 C1	BRACKET, BATTERY BOX REAR SUPPORT, ASSY 4X2, 4X4 MODELS EXCEPT CODE 01924 FOR CODE 01924 8X4, 6X8 MODELS BOLT, HEX-FLG-HD 1/2NF X 2 -AR- BOLT, HEX-FLG-HD 1/2NF X 2-1/4 -AR- NUT, HEX-FLG-LOCK 1/2NF -AR-						
ļ	5 432 278 C7 476 349 C3	TRAY, BATTERY BOX 4x2, 4x4 Models 6x4, 8x6 Models Rivet						
	104 112 104 113 104 114	3/8 X 7/8 -AR- 3/8 X 1 -AR- 3/8 X 1-1/8 -AR-						
	476 000 00			1				

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476 303 C2 ANGLE, SUPPORT BRACKET - OUTER-

#BRACKET, COVER HOLD-DOWN HOOK BOLT, HEX-HD 5/16NC X 3/4 NUT, HEX. LOCK 5/16NC

FIG. 08-037

6 7

25 228 R1 9 413 994

PAGE NO. 30

TM 5-4210-230-14&P-2 MT140 GROUP 08- ELECTRICAL SYSTEM MT140 GROUP 08- ELECTRICAL SYSTEM REF PART NO. NUMBER REF PART DESCRIPTION NO. NUMBER DESCRIPTION FIG. 08-040 FIG. 08-041 ALTERNATOR BRACKET AND DRIVE ALTERNATOR BRACKET AND DRIVE ~) MT-22133 MT-22133 510 238 C91 BELT, ALTERNATOR DRIVE -MATCHED SET-963 803 PULLEY, ALTERNATOR DRIVE FAN -SEE ALTERNATOR ASSEMBLY-BELT, ALTERNATOR DRIVE -MATCHED SET-PULLEY, ALTERNATOR DRIVE FAN, ALTERNATOR DRIVE 446 937 C91 969 638 R2 221 425 R1 12 123 3 ALTERNATOR -SEE SEPARATE ILLUSTRATION-BOLT, HEX-HD 5/18NC X 1 BOLT, HEX-HD 3/8NC X 3-1/2 NUT, HEX. LOCK 3/8NC WASHER, FLAT 5/16 WASHER, FLAT 3/8 -2-ALTERNATOR -SEE SEPARATE ILLUSTRATION-BOLT, HEX-HD 1/2NC X 1-1/4 BOLT, HEX-HD 1/2NC X 6-1/2 NUT, HEX. LOCK 1/2NC WASHER, FLAT 1/2 -3-4 4 24 861 R1 25 296 R1 412 230 25 710 R1 493 R1 844 R1 979 708 R1 709 R1 25 24 413 25 25 9 ĝ STRAP, ALTERNATOR ADJUSTING BOLT, HEX-HD 3/8NC X 1 WASHER, FLAT 3/8 446 720 C1 24 840 R1 25 709 R1 5 STRAP, ALTERNATOR ADJUSTING BOLT, HEX-HD 3/8NC X 1 WASHER, FLAT 3/8 46 717 C2 24 840 R1 25 709 R1 5 BRACKET, ALTERNATOR AND COMPRESSOR SUPT BOLT, HEX-HD 3/8NC X 4 -2-BOLT, HEX-HD 3/8NC X 5-1/2 WASHER, FLAT 3/8 -3-446 722 C1 24 845 R1 25 684 R1 25 709 R1 6 BRACKET, ALTERNATOR AND COMPRESSOR SUPT BOLT, HEX-HD 3/8NC X 4 -2-BOLT, HEX-HD 3/8NC X 5-1/2 WASHER, FLAT 3/8 -3-722 C1 845 R1 684 R1 709 R1 8 446 24 25 25 446 721 C1 140 483 H 25 709 R1 BRACKET, ALTERNATOR MOUNTING BOLT, HEX-HD 3/8NC X 1-1/4 -3-WASHER, FLAT 3/8 -3-1 719 C2 483 H 709 R1 BRACKET, ALTERNATOR MOUNTING BOLT, HEX-HD 3/8NC X 1-1/4 -3-WASHER, FLAT 3/8 -3-7 140 PRINTED IN UNITED STATES OF AMERICA



TM 5-4210-230-14&P-2 MT140 GROUP 08- ELECTRICAL SYSTEM

REF PART NO. NUMBER

DESC

DESCRIPTION

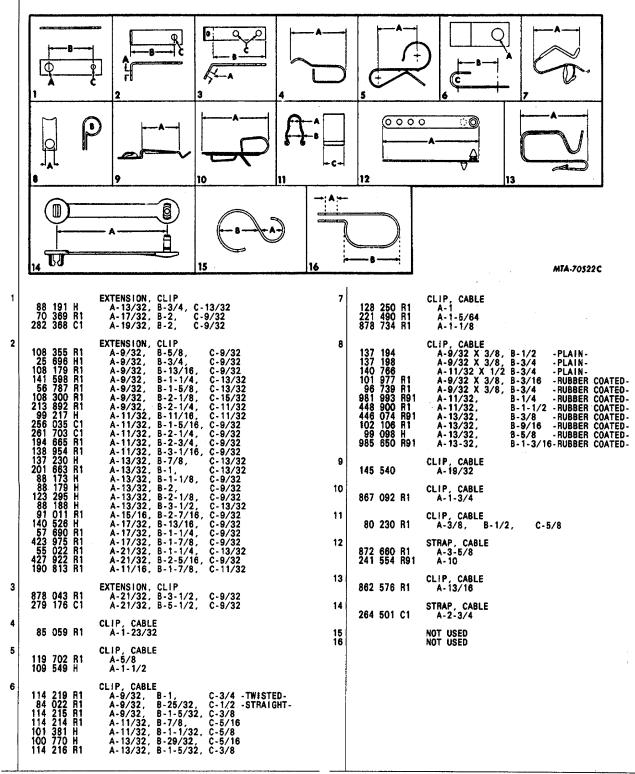
REF PART NO. NUMBER

DESCRIPTION

DESCR

FIG. 08-042 CLIPS EXTENSIONS AND STRAPS FIG. 08-042 CONTINUED

CLIPS EXTENSIONS AND STRAPS



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FIG. 08-042 PAGE NO. 34

TM 5-4210-230-14&P-2

MT140 GROUP 08- ELECTRICAL SYSTEM

	MI140 GRC	OUP 08- ELECTRICAL SYSTEM
	RT IMBER	DESCRIPTION
	FIG. 08-043	3
	SWITCHES	
	Ignition MT-12373	Light Dimmer Starter Fuel
1	429 047 C1	SWITCH, IGNITION STARTING EXCEPT 1853FC MODEL EXCEPT FLAT BACK COWL -CODE 16010-
	463 032 091	-W/O CYLINDER- For flat back cowl -code 16010- -W/Cylinder and 2 Keys-
	463 032 C91	FOR 1853FC MODEL -W/CYLINDER AND 2 KEYS-
	429 048 C1	CYLÍNDER, W/KEY, SWITCH Lock, Door
	474 621 C1 474 622 C1 992 995 C1	LEFT RIGHT ESCUTCHEON, SWITCH
2 3 4	440 421 C1	NUT, SWITCH MOUNTING Key -Make Locally-
4 5	393 442 C1 470 535 C1	SWITCH, LIGHT, ASSY BUSHING, LIGHT SWITCH -WILL WORK FOR 1957824.
6 7	469 859 C1	NOD, W/KNOB, LIGHT SWITCH NOT USED
8	452 187 C1 25 222 R1 26 110 R1 26 328 R1	SWITCH, DIMMER, ASSY BOLT, HEX-HD 1/4NC X 3/4 -2- NUT, HEX. LOCK 1/4NC -2- SCREW, PAN-CR-REC-HD TAP. 1/4-14 X 1/2 -2-
9 10	471 300 C1 468 113 C1	SWITCH, PUSH BUTTON ENGINE STARTING ESCUTCHEON, STARTER BUTTON
11	307 094 C91 217 555 R92 295 417 C91	SWITCH, ASSY BACK UP LIGHT -SEE STOP, TAIL AND BACK UP LIGHTS- CARGO LIGHT ENGINE STOP ETHER START EXHAUST BRAKE -MODEL 1853FCSEE
	295 417 C91 291 706 C91 295 417 C91 509 190 C1	GROUP 07- Fuel Pump -Submerged- Fuel Pump Selector Glow Plug Trailer Marker Light -Interrupt- -Will Work For 372373C91-
	470 249 C91 469 858 C1 363 423 C1	WINDSHIELD WIPER KNOB, W/S WIPER SWITCH NUT, W/S WIPER SWITCH MOUNTING
12	500 970 C1 468 111 C1	ESCUTCHEON CARGO LIGHT Choke Clearance, ID, CL LPS LIGHTS Chassis Built Prior To 8-29-80
	468 122 C1 579 635 C1 468 112 C1 468 120 C1 468 119 C1 468 114 C1	CHASSIS BUILT 8-29-80 AND LATER Ether Start Fuel Pump Primer Fuel Tank Selector Glow Plug
	468 115 C1	LIGHTS CHASSIS BUILT PRIOR TO 8-29-80 CHASSIS BUILT PRIOR TO 8-29-80
	579 631 C1 471 416 C1 471 418 C1	CHASSIS BUILT B- 29-80 AND LATER Light, Assy Engine Stop Front Axle

MT140 GROUP 08- ELECTRICAL SYSTEM REF PART NO. NUMBER DESCRIPTION

	FIG. 08-	043 CONTINUED	
	SWITCHES		
12	468 116 C1 468 123 C1 468 123 C1 468 110 C1 490 712 C1 579 633 C1 468 117 C1 579 634 C1 579 632 C1 470 214 C1	TWO SPEED AXLE VENT. WASHER WASHER/WIPER CHASSIS BUILT PRIOR TO 8-29-80 CHASSIS BUILT 8-29-80 AND LATER	
	132 244 R91	*SWITCH, OIL PRESSURE -FUEL PUMP SAFETY- *MODULATOR, THROTTLE DECELERATION SCREW, PAN-CR-REC-HD TAP NO. 10-16 X 1/2 -4- *SWITCH, WATER TEMPERATURE WARNING LIGHT	
	977 562 R91 509 048 C1	EXC 1853FC NODEL W/9 OL ENGINE FOR 1853FC NODEL W/9 OL ENGINE	
	356 079 C1 642 343 C1	*SWITCH, OIL PRESSURE WARNING LIGHT	

463 822 CO1 *SWITCH, THERMOSTAT, ETHER START -1853FC MODEL-

*PARTS NOT ILLUSTRATED

DESCRIPTION



TM 5-4210-230-14&P-2 MT140 GROUP 08- ELECTRICAL SYSTEM

REF PART NO. NUMBER

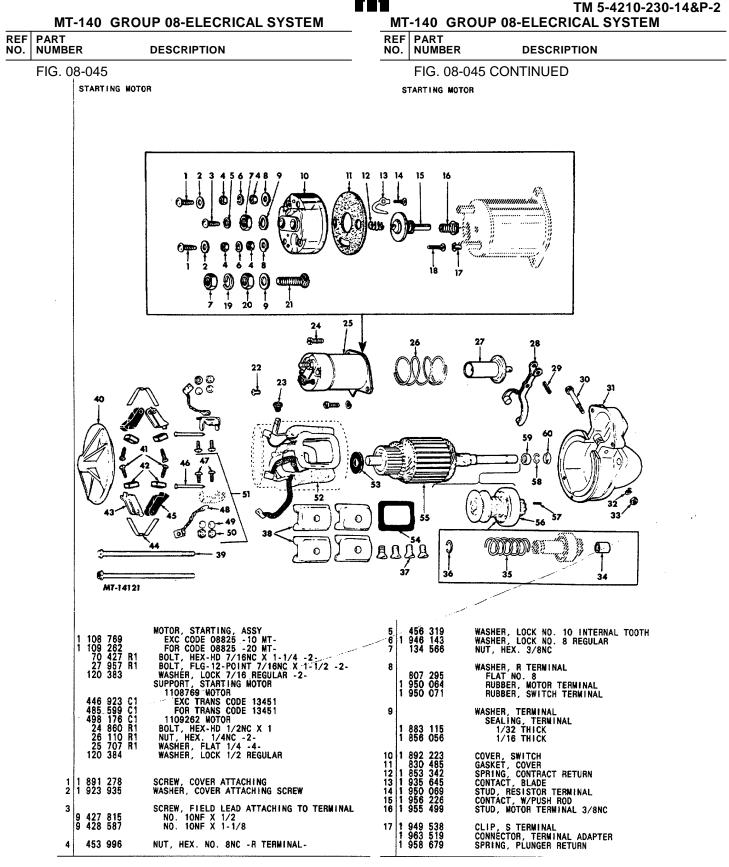
DESCRIPTION

REF PART NO. NUMBER FIG. 08-044 TURN SIGNAL SWITCH MT-19183 471 302 C93 27 328 R1 SWITCH, TURN SIGNAL, ASSY SCREW, PAN-CR-REC-HD NO. 8NF X 1/2-2-1 470 069 C1 FLASHER, TURN SIGNAL AND HAZARD LIGHT 2 HARNESS, TURN SIGNAL SWITCH Except 1853FC Model For 1853FC Model 3 471 531 C91 580 565 C92

TM 5-4210-230-14&P-2 MT-140 GROUP 08-ELECRICAL SYSTEM

MT-140 GROUP 08-ELECRICAL SYSTEM

F PART NUMBER	GROUP 08-ELECRICAL SYSTEM	PART NUMBER	P 08-ELECRICAL SYS	
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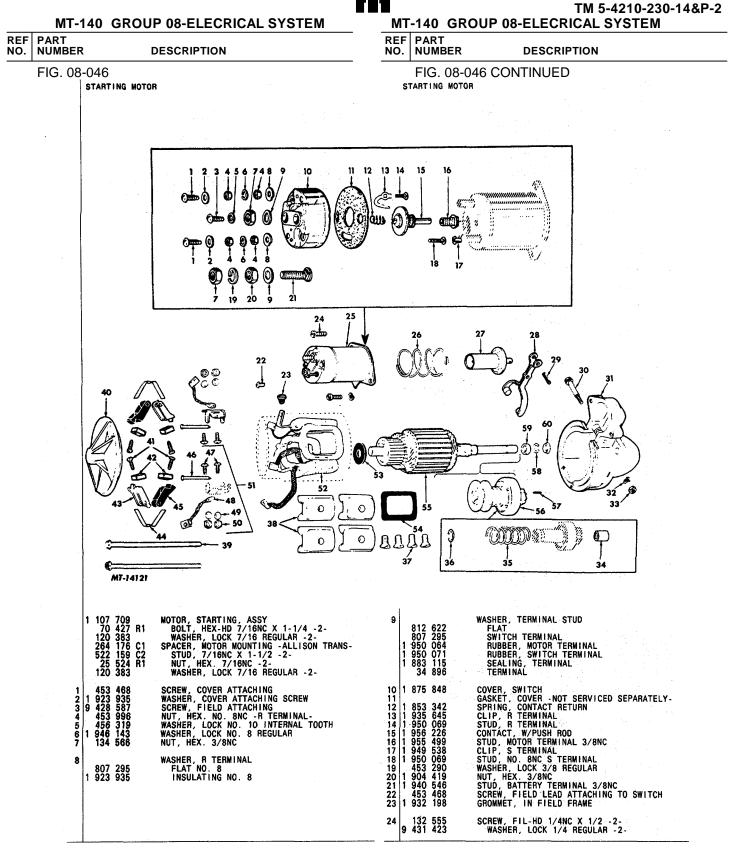


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FIG. 08-045 PAGE NO. 38

REF	PART		OUP 08-ELECRICAL SYSTEM
NO.	NUMB		DESCRIPTION
	FIG.	08-045 CO	
	10	STARTING MO	
	19 20	9 421 425 1 904 419 1 892 786	STUD, NO. 8NC SWITCH TERMINAL Washer, Lock 3/8 Regular Nut, Hex. 3/8NC Stud, Battery Terminal 3/8NC
	22	9 427 815 9 427 815 453 468	SCREW, FIELD LEAD ATTACHING 1108769 MOTOR 1109262 MOTOR TO SWITCH TO STUD
	23	1 846 097	GROMMET, LEAD
	24		SCREW, FIL-HD 1/4NC X 1/2 -2-
	25		WASHER, LOCK 1/4 REGULAR -2- SWITCH, SOLENOID, ASSY GASKET, SWITCH MOUNTING
		1 958 679	SPRING, PLUNGER RETURN
	27 28		PLUNGER, SOLENOIS SWITCH LEVER, SHAFT
	29	18 527 R1 1 894 321	PIN, SHAFT LEVER 1108769 MOTOR 1109262 Motor
	30	1 932 197	STUD, SHAFT LEVER
	.31	1 891 402 1 969 568 1 839 345 1 956 226	HOUSING, DRIVE END 1108769 MOTOR 1109262 MOTOR Bushing, Drive End -1108769 Motor- Contact, Assy, Solenoid -1109262 Motor-
	32 33 34 35 36	9 421 424 1 926 640 1 873 796 801 198 1 904 436	WASHER, LOCK 5/16 REGULAR NUT, HEX. 5/16NC BUSHING SPRING, MOTOR DRIVE RING, SNAP
	37	1 970 469 1 968 396	SCREW, POLE SHOE -4- 1108769 Motor 1109262 Motor
	38	810 601 1 931 129	SHOE, POLE 1108789 MOTOR 1109262 MOTOR
	39	1 941 111 1 939 970	BOLT, THRU -2- 1109769 MOTOR 1109262 MOTOR
	40	1 928 966 1 974 157	FRAME, COMMUTATOR END 1108769 Motor 1109262 Motor
	41	443 527 1 967 747	SCREW, BRUSH ATTACHING GROUND BRUSH -2- INSULATED BRUSH -2-
	43 44 45	1 906 945 1 940 477 1 926 622 1 926 618 1 966 923 274 738 1 960 864 453 435	BRUSH -4- HOLDER, BRUSH GROUND -2- SPRING, BRUSH -2- HOLDER, BRUSH INSULATED -2- PIN, SUPPORT ATTACHING -2- SCREW, TR-HD NO. 10NC X 1/2 -4- LEAD, BRUSH GROUND -2- WASHER, LOCK NO. 10 REGULAR -4-
	50	120 361 120 361 134 556	NUT, BRUSH HOLDER SUPPORT 1108769 MOTOR -4- 1109262 MOTOR BRUSH HOLDER SUPPORT -AR- STUD, TERMINAL -AR-
	51	1 928 015	KIT, BRUSH HOLDER SUPPORT -2-
		1 877 306 1 974 183	COFL, FFELD, ASSY 1108769 MOTOR 1109262 MOTOR
	53 54	818 265 1 927 853	WASHER, COMMUTATOR END SPRING INSULATION, FIELD COIL

N	ΛT	-14	0 (GRO	UP (08-E	LEC	RI	CAL	SY	STI	EΜ	
RE NC			RT MBE	ER		D	ESCF	RIP.	τιον				
	,	FI	G. 0	8-04	5 C(ONTI	NUE	D					
	5	STAR	FING	MOTOF	8								
55	1	891 950	404 307		ARMA 110 110	FURE , 08769 09262	ASSY MOTOF MOTOF						
56		800 952	026 410		110	08769	FOR, A MOTOR MOTOR	1	r				
57 58			593 022 021		PIN, Ring,	DOWEL	_ 3/16 /E END 31VE E	X	5/16 STON	STO	P SNA	P	
60	1	520	021								IUF		
	1	916 928	911 023		110	8769 9262	NOTOR MOTOR MOTOR						
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FIG. 08-046 PAGE NO. 40

	-140 GROU	P US-ELECRICAL STSTEM
REF PART NO. NUMBE	ER	DESCRIPTION
FIG. C	8-046 CONT	
28	5 1 114 458	SWITCH, SOLENOID, ASSY GASKET, SWITCH MOUNTING
26 27 28 29 30	7 1 941 113 8 1 932 205 9 18 527 R1	SPRING, PLUNGER RETURN PLUNGER, SOLENOID SWITCH LEVER, SHIFT PIN, SHIFT LEVER STUD, SHIFT LEVER
31	1 955 336 1 923 907	HOUSING, DRIVE END Bushind, drive End
33 34 35 36 37 38 39 40 41 42 43 44 45 48 49 50 51 52 55 55 56 57 58	1 923 904 1 923 196 31 904 436 7 1 968 398 9 939 970 91 929 9 939 970 91 928 966 1 967 747 1 906 945 1 966 945 1 926 622 1 926 618 1 926 605 1 926 605 1 120 361 1 926 015 1 928 015 1 926 605 1 120 361 1 926 805 1 926 605 1 928 015 1 928 15 1 928 15 1 927 853 1 927 853 1 935 851 1 935 853 1 935 853	WASHER, LOCK 5/16 REGULAR NUT, HEX. 5/16NC BUSHING SPRING, MOTOR DRIVE RING, SNAP SCREW, POLE SHOE SHOE, POLE BOLT, THRU FRAME, COMMUTATOR END SCREW, PAN-HD NO. BNC X 5/8 BRUSH -4- HOLDER, BRUSH GROUND -2- SPRING, PAN-HD NO. BNC X 5/8 BRUSH -4- HOLDER, BRUSH -2- HOLDER, BRUSH -2- H

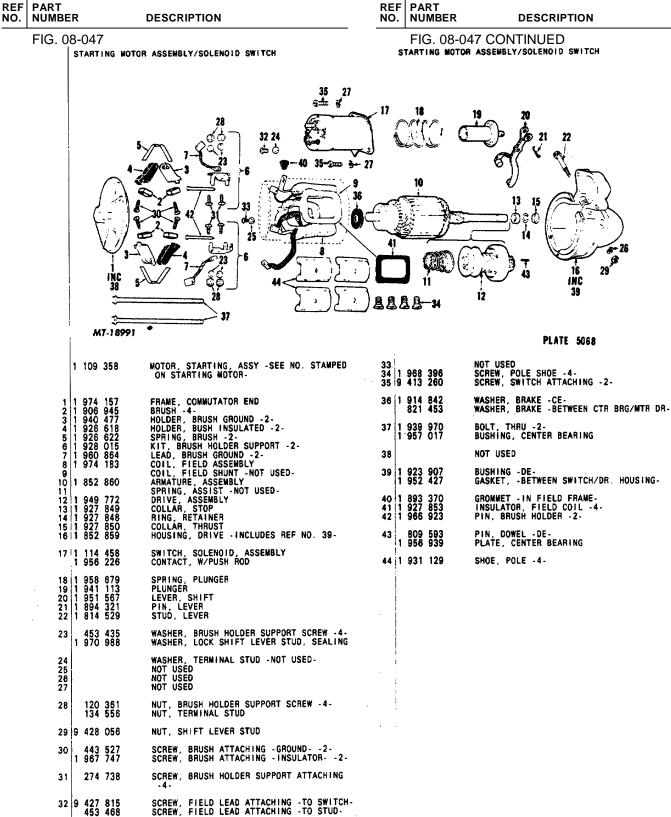
TM 5-4210-230-14&P-2 MT-140 GROUP 08-ELECRICAL SYSTEM

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	PART NUMBER	DESCRIPTION	

TM 5-4210-230-14&P-2 MT-140 GROUP 08-ELECRICAL SYSTEM





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427 815 453 468

32 9

FIG. 08-047 PAGE NO. 42

TM 5-4210-230-14&P-2 MT-140 GROUP 08-ELECRICAL SYSTEM

MT-140 GROUP 08-ELECRICAL SYSTEM

F PART . NUMBER	D GROUP 08-ELECRICAL SYSTEM		-140 GROUP 08-ELECRICAL SYSTEM PART NUMBER DESCRIPTION
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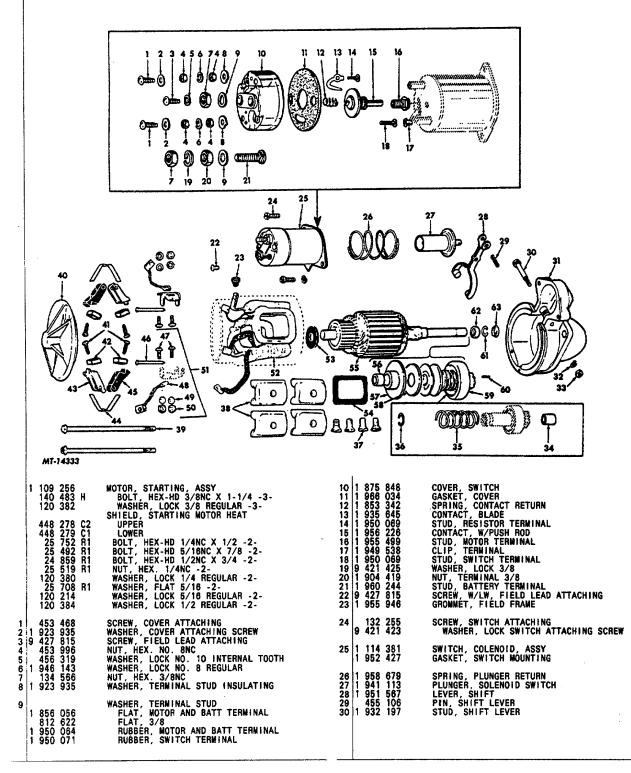
TM 5-4210-230-14&P-2 MT-140 GROUP 08-ELECRICAL SYSTEM

REF PART NO. NUMBER DESCRIPTION



REF PART NO. NUMBER DESCRIPTION

FIG. 08-048 CONTINUED STARTING MOTOR



REF PART NUMBER NO. DESCRIPTION FIG. 08-051 CONTINUED STARTING MOTOR HOUSING, W/BUSHING AND SEAL, LEVER BUSHING, LEVER HOUSING BUSHING, LEVER HOUSING GASKET, OIL RESERVOIR PLUG, LEVER HOSUING RESERVOIR PLUG, OIL RESERVOIR FELT PLUG, PIPE -11/32-SEAL, LEVER HOUSING OIL WICK, LEVER HOUSING OIL 41 951 069 951 069 894 637 923 484 933 111 417 501 955 303 427 882 918 047 916 439 9 1 9 1 WICK, LEVER HOUSING OIL LEVER, SHIFT O-RING, SHIFT LEVER SHAFT -15/64-NUT, PLUNGER ROD GUIDE ADJUSTING GASKET, LEVER HOUSING PLUG PLUG, LEVER HOUSING RING, SHIFT LEVER SHAFT SNAP O-RING, SHIFT LEVER SHAFT -1/2-SHAFT, SHIFT LEVER SHAFT -1/2-SHAFT, SHIFT LEVER SHAFT -1/2-SHAFT, SHIFT LEVER SHAFT -1/2-SHAFT, SHIFT LEVER SHAFT -1/2-SHAFT, SHIFT LEVER SHAFT -1/2-SHAFT, SHIFT LEVER SHAFT -1/2-SHAFT, SHIFT LEVER SHAFT -1/2-SHAFT, SHIFT LEVER SHAFT -1/2-SHAFT, SHIFT LEVER SHAFT -1/2-SHAFT, SHIFT LEVER SHAFT -1/2-SHAFT, SHIFT LEVER SHAFT -1/2-SHAFT, SHIFT LEVER SHAFT SNAP O-RING, SHIFT LEVER SHAFT -1/2-SHAFT, SHIFT LEVER SHAFT SNAP O-RING, SHIFT LEVER SHAFT SNAP O-R 42 1 945 484 43 1 894 642 44 9 412 305 45 1 964 857 46 1 945 356 47 9 415 235 48 1 894 643 91 948 529 50 1 945 476 51 1 911 644 52 1 914 649 53 9 421 423 54 1 894 213 55 56 57 58 812 410 1 894 240 800 153 945 490 801 208 59 60 61 60. 969 322 945 509 427 882 916 439 HOUSING, W/BUSHING, MOTOR DRIVE BUSHING, DRIVE HOUSING PLUG, PIPE -11/32-WICK, MOTOR DRIVE HOUSING 62 9 63 SCREW, MOTOR DRIVE HOUSING 5/16NC X 1-55/64 5/16NC X 1-1/2 -5-1 948 537 1 948 536 64 1 861 785 65 1 847 802 66 1 847 803 67 1 874 848 88 1 965 093 69 1 874 851 70 1 913 080 71 1 880 072 72 1 867 434 73 1 867 431 75 1 874 848 76 1 867 431 77 1 867 431 78 1 867 432 79 1 880 072 SPRING, BRUSH -4-PIN, BRUSH PLATE HOLDER -2-HOLDER, BRUSH -2-PLATE, BRUSH HOLDER SPACING -INSULATED-INSULATOR, BRUSH HOLDER PLATE, BRUSH HOLDER INSULATOR -2-PLATE, WSTUD, BRUSH HOLDER INSULATOR, BRUSH PLATE SCREW, W/WASHER, HOLDER GROUND -LONG-SCREW, W/WASHER, HOLDER GROUND -SHORT-PLATE, BRUSH HOLDER INSULATED-SHORT CONDUCTOR, BRUSH HOLDER INSULATED-SHORT SCREW, W/WASHER, HOLDER INSULATED-SHORT SCREW, W/WASHER, HOLDER INSULATED-LONG-PLATE, BRUSH HOLDER INSULATED-LONG-SCREW, W/WASHER, HOLDER INSULATED-LONG-PLATE, BRUSH, ASSY 951 073 933 111 417 501 955 303 427 882 861 791 916 439 FRAME, W/BUSHINGS, COMMUTATOR END GASKET, OIL RESERVOIR PLUG, EXPANSION PLUG, OIL RESERVOIR FELT PLUG, PIPE -11/32-WASHER, TERMINAL WICK, COMMUTATOR END OIL 80 1 9 1 9 1 1 WASHER, LOCK 1/4 SCREW, HEX-HD 1/4NF X 1 NUT, HEX. 1/4NC WASHER, LOCK 1/2 WASHER, FLAT 1/2 PACKAGE, TERM. STUD INSULATING BUSHING BRUSH, CRANKING MOTOR SCREW, BRUSH LEAD ATTACHING SCREW, BRUSH LEAD ATTACHING SCREW, W/WASHER, BRUSH PLATE ATTACHING CABLE, SWITCH TO MOTOR WASHER, COMMUTATOR END SPACE GASKET, INSPECTION PLUG PLUG, BRUSH INSPECTION ARMATURE, ASSY SHOE, POLE SCREW, W/WASHER, POLE SHOE ATTACHING INSULATOR, FIELD COIL -2 LONG-9 421 423 1 914 847 9 441 418 9 421 427 1 914 647 1 914 647 1 906 988 453 418 1 847 807 1 908 675 1 914 842 964 857 1 945 356 1 945 356 1 945 326 1 948 857 1 948 836 1 968 835 81 9 82 1 83 9 84 9 85 1 86 1 86 1 87 1 85 867 889 91 92 93 95 96 97

TM 5-4210-230-14&P-2 ROUP 08-ELECRICAL SYSTEM

REF NO.	PART NUMBER	DESCRIPTION
		51 CONTINUED
	STARTING MOTO	R
98 1	955 990	INSULATOR, FIELD COIL -2 HOLES-
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TM 5-4210-230-14&P-2 MT-140 GROUP 08-ELECRICAL SYSTEM

REF PART NO. NUMBER		DESCRIPTION	REF NO.		DESCRIPTION
FIG. 08-0		5, BATTERY CABLES AND WISC	,		CONTINUED BATTERY CABLES AND WISC
			2		MT-22213
1	182 633 C91 57 040 R91 70 736 R92	CABLE -DETERMINE GAUGE AND LENGTH, T USE CHARTS IN MT-90 FOR LOCAL FABRICATIONSEE CATALOG MT-90- CAB AND ENGINE GROUND 12-1/2 INCH LONG 22 INCH LONG 24 INCH LONG -WILL WORK FOR	'HEN 2	504 829 C91 571 846 C91	V345, V392 ENGINES EXC ELECTRONIC IGN -CODE 08731- W/O FLAT BACK COWL -CODE 16010- CHASSIS BUILT PRIOR TO 1-22-81 -WILL WORK FOR 493491C91- CHASSIS BUILT 1-22-81 AND
2	468 769 C92 509 119 C91	788146C91- HARNESS, ASSY CAB CHASSIS BUILT PRIOR TO 1-22-81 CHASSIS BUILT 1-22-81 AND LATER		493 490 C92 571 808 C91	LATER W/FLAT BACK COWL -CODE 16010- CHASSIS BUILT PRIOR TO 1-22-81 CHASSIS BUILT 1-22-81 AND LATER
	487 223 C1 480 686 C2 481 366 C1 163 303	GROMMET, CAB HARNESS 1.00 CENTER HOLE DIAMETER 1.10 CENTER HOLE DIAMETER RETAINER, CAB HARNESS GROMMET -2- SCREW, PAN-CR-REC-HD TAP. 1/4-1 X 1/2 -2- OLEADAGE (MARKER LIGUTS	4	504 827 C92	FOR ELECTRONIC IGN -CODE 08731- W/O FLAT BACK COWL -CODE 16010- CHASSIS BUILT PRIOR TO 1-22-81 -WILL WORK FOR 489680C91- CHASSIS BUILT 1-22-81 AND LATER -MAKE LOCALLY-
	470 184 C91 504 828 C92	CLEARANCE/MARKER LIGHTS ENGINE MV404, 446 ENGINES EXC AIR BRAKE CODES 04081, 040 EXC FLAT BACK COWL -CODE 160 CHASSIS BUILT PRIOR TO 1-22-81 -WILL WORK FOR	091 010-	489 679 C93 571 812 C91	W/FLAT BACK COWL -CODE 16010- CHASSIS BUILT PRIOR TO 1-22-81 CHASSIS BUILT 1-22-81 AND LATER V537 ENGINE
	488 581 C93	487721C91- CHASSIS BUILT 1-22-81 AND LATER -MAKE LOCALLY- FOR FLAT BACK COWL -CODE 16(CHASSIS BUILT PRIOR TO 1-22-81)10-	488 611 C93 571 644 C91 214 556 R1	CHASSIS BUILT PRIOR TO 1-22-81 CHASSIS BUILT 1-22-81 AND LATER EXHAUST GAS RECIRCULATION -MAKE LOCALLY- ADAPTER, HARNESS, TERMINAL FRONT END
	571 943 C91 504 828 C92	CHASSIS BUILT 1-22-81 AND LATER For Air Brake Codes 04081, 040 Chassis Built Prior To 1-22 -Will Work For 487721C91-	-81	499 543 C91	AMMETER -W/CODE 16010- CHASSIS BUILT PRIOR TO 1-22-81 CHASSIS BUILT 1-22-81 AND LATER -MAKE LOCALLY- DASH
	571 647 C91	CHASSIS BUILT 1-22-81 AND LA	ATER	504 453 C91 485 494 C92 488 073 C91 485 495 C92	EXC 2125, F2125 MODELS -WILL WORK For 488058C91- For 2125, F2125 Models Hood -HEADLIGHTS- Except 2125, F2125 Models For 2125, F2125 Models
				498 419 C91 504 989 C91 509 239 C91 499 540 C91	HY-POWER HYDRAULIC BRAKE -CODE 04044- EXCEPT FLAT BACK COWL -CODE 16010- CHASSIS BUILT PRIOR TO 2-6-79 CHASSIS BUILT 2-8-79 TO 1-22-81 CHASSIS BUILT 1-22-81 AND LATER FOR FLAT BACK COWL -CODE 16010- -WILL WORK FOR 498418C91-
				· · · · · · · · · · · · · · · · · · ·	

DFF		-140	0		JP U8-ELECRICAL SYSTEM
REF NO.	PART NUMBE	R			DESCRIPTION
	FIG. 0	,			ΓINUED
		WIRI	NG H	ARNE	SS, BATTERY CABLES AND MISC
	2	468	768	C91	CHASSIS BUILT 1-22-81 AND LATER
		571	577 983	C92 C91 C1 C91	CHASSIS BUILT 1-22-81 AND LATER SLEEVE, PROTECTIVE
		468 509		C92 C91	SUBMERGED, FUEL PUMP CHASSIS BUILT PRIOR TO 1-22-81
			425		TACHOMETER CHASSIS BUILT PRIOR TO 1-22-81
					CHASSIS BUILT 1-22-81 AND LATER -Make Locally- Cable, distributor to coil
			570		HOLLEY DISTRIBUTOR -WILL WORK FOR 371619094-
		1 700	506	CA 1	PRESTOLITE DISTRIBUTOR -WILL WORK FOR 497590C91, 1700505C91-
	3	472 1 700	021 690		SET, SPARK PLUG CABLE NV404, 446 ENGINES Holley Distributor Prestolite Distributor -Will Work
		497	5 6 8	C92	FOR 487829091- V345, V392 Engines -Will Work For
		497	569	C92	487809C91- V537 Eng]ne -Will Work For 491426C91-
	4 5 6 7				NOT SERVICED SEPARATELY Not serviced separately Not serviced separately Not serviced separately Not serviced separately
	8	RB N	12	Y	PLUG, SPARK -8- MV404, MV446 ENGINES -WILL WORK FOR HBN137- V345, 392 ENGINES
		RJ RJ RJ	6 10 6	Y	GASOLINE BELOW ENGINE SERIAL NO. 1521944 Engine Serial No. 1521945 and UP Propane
		ON	11	Y	V537 ENGINE PRODUCTION AND SEVERE SERVICE -WILL
		ON 103 500	12 225 194	H	WORK FOR RN11Y- Light Service Gasket, Spark Plug -Ar- Shield, Spark Plug -Canada Only-
	9	277 26 277	120 110 055 110 055 263	C91	RELAY HORN NUT, HEX-LOCK 1/4NC -2- Hydraulic brakes Nut, Hex. Lock 1/4NC -2- Marker Light Screw, Pan-HD-CR-Rec Tap. 1/4NC X
			186 798	C1 C1	SCREW, PAN-HD-CR-REC TAP. 1/4NC X 3/4 -2- Submerged, fuel pump Bracket, relay mounting Nut, Hex-Lock 5/18NC -2-
	10	385 571	628 950	C1 C1	BLOCK, JUNCTION SEAL, PROTECTOR -JUNCTION BLOCK-
	11				NOT USED
	12	500	124 889 613	C1 -	SWITCH, WAGNETIC -CODE 04044- CHASSIS BUILT PRIOR TO 12-19-78 CHASSIS BUILT 12-19-78 TO 1-22-81 CHASSIS BUILT 1-22-81 AND LATER
		491 299 27	433 410 188	C1 C1 R1	*CAPACITOR FEED -AT STARTING MOTOR- CLAMP -RUBBER DIPPED- SCREW, PAN-CR-TAP-HD NO. 8-32 X 3/8
		571	948	C1	*SEAL, PROTECTOR -TO GENERATOR-
		509	471	C 1	*INSULATOR, BATTERY TERMINAL -AR-

TM 5-4210-230-14&P-2 MT-140 GROUP 08-ELECRICAL SYSTEM

101.1		
REF NO.	PART NUMBER	DESCRIPTION
	FIG. 08-052 (
'	THING HANNESS, I	BATTERY CABLES AND MISC
		RIGHT HAND DRIVE
2		RNESS, ASSY CAB
	494 282 C92 509 105 C91	CHASSIS BUILT PRIOR TO 1-22-81 CHASSIS BUILT 1-22-81 AND LATER ENGINE
	495 665 C91	V345 ENGINE CHASSIS BUILT PRIOR TO 1-22-81
	571 579 C91	CHASSIS BUILT 1-22-81 AND LATER
	495 666 C91 571 645 C91	CHASSIS BUILT PRIOR TO 1-22-81 CHASSIS BUILT 1-22-81 AND LATER
		TACHOMETER, ELECTRIC W/GAS ENGINES -MAKE LOCALLY-

9 493 393 C1 BRACKET, RELAY MOUNTING

*PART NOT ILLUSTRATED



TM 5-4210-230-14&P-2 MT-140 GROUP 08-ELECRICAL SYSTEM

DESCRIPTION	REF PART
DESCRIPTION	NO. NUMBER DESCRIPTION
RNESS, BATTERY CABLES AND WISC	FIG. 08-053 CONTINUED WIRING HARNESS, BATTERY CABLES AND MISC
and the set	in the second se
CABLE - DETERMINE GAUGE AND LENGTH, THEN USE CHARTS IN MT-90 FOR LOCAL FABRICATION - SEE CATALOG MT-90- CAB AND ENGINE GROUND (21 12:1/2 INCH LONG (21 19:1/2 INCH LONG (22 19:2 INCH LONG (22 19:2 INCH LONG (22 19:2 INCH LONG (22 19:2 INCH LONG (22 19:2 INCH LONG (23 10.1 LONG - WILL WORK FOR 788146C91- 042 4: INCH LONG HARNESS, ASSY CAB EXC ENG SHUT-DOWN CODES 08806, 08808, 08809 (29 CHASSIS BUILT PRIOR TO 1-22.81 C91 CHASSIS BUILT PRIOR TO 1-22.81 C91 CHASSIS BUILT PRIOR TO 1-22.81 C91 CHASSIS BUILT PRIOR TO 1-22.81 C91 CHASSIS BUILT PRIOR TO 1-22.81 C93 FOR ENG SHUT-DOWN CODES 08806, 08808, 08809 ADAPTER, 1/8MPT C93 FOR ENG SHUT-DOWN CODES 08808, 08808, 08809 ADAPTER, 1/8MPT C91 CLEARANCE/MARKER LIGHTS ENGINE 203 ENGINE 203 ENGINE 203 ENGINE 203 CHASSIS BUILT PRIOR TO 1-22-81 C91 CLEARANCE/MARKER LIGHTS ENGINE 203 ENGINE 203 ENGINE 203 ENGINE 203 CHASSIS BUILT PRIOR TO 1-22-81 CHASSIS CMODEL C92 FOR FLAT BACK COWL - CODE 16010- C92 FOR FLAT BACK	Press 2 DT466, 4668, DT14668 ENGINES EXC 1853FC, 1955, 2155 MODELS EXC FLAT BACK COWL -CODE 16010- (1-22-81 -WILL WORK FOR #8669702- 571 792 C91 CHASSIS BUILT 71:00 T0 1-22-81 -WILL WORK FOR #8669702- 571 792 C91 CHASSIS BUILT 71:02-81 AND LATER FOR FLAT BACK COWL -CODE 16010- (22.81 BUILT 1-22-81 AND LATER FOR 1855 C MODEL FOR 18557C MODEL FOR 18557C MODEL FOR 18557C MODEL FOR 18557C MODEL FOR 18557C MODEL FOR 18557C MODEL FOR 18557C MODEL FOR 18557C MODEL FOR 18557C MODEL FOR 18557C MODEL FOR 18557C MODEL FOR 18557C MODEL FOR 18557C MODEL FOR 18557C MODEL FOR 18557C MODEL FOR 18557C MODEL FOR 18557C MODEL FOR 18557C MODEL FOR 1855 S00 885 C92 CHASSIS BUILT 1-22-81 AND LATER MAMETER, W/FLAT BACK COWL CODE MOD AND 1953FC MODEL CHASSIS BUILT 1-22-81 AND LATER MAMETER, M/FLAT BACK COWL CODE MOD AND 1953FC MODEL FOR 2155 MODEL MOD - HEADLIGHTS- MASHER, LOCK \$6 -2 OXH S04 453 C91 EXCEPT 2155 MODEL FOR 125 MODEL FOR 125 MODEL FOR 125 MODEL FOR 125 MODEL FOR 125 MODEL FOR 125 MODEL FOR 125 MODEL FOR 125 MODEL FOR 125 MODEL FOR 125 MODEL FOR 125 MODEL FOR 22-81 FOR 125 MODEL FOR 215 MODEL FOR 22-81 FOR 125 MODEL FOR 22-81 FOR 125 MODEL FOR 22-81 FOR 125 MODEL FOR 22-81 FOR 125 MODEL FOR 22-81 FOR 125 MODEL FOR 22-81 FOR 125 MODEL FOR 22-81 FOR 125 MODEL FOR 22-81 FOR 125 MODEL FOR 22-81 FOR 125 MODEL FOR 22-90 FOR 125 MODEL FOR 22-90 FOR 125 MODEL FOR 22-90 FOR 22-90 FOR 22-90 FOR 22-90 FOR 22-90 FOR 22-90 FOR 22-
	CABLE - DETERMINE GAUGE AND LENGTH. THEN USE CHARTS IN MT-90 FOR LOCAL FABRICATION SEE CATALOG MT-90- CAB AND ENGINE GROUND 22 12-1/2 INCH LONG 891 14 INCHES LONG 891 15 INCHES LONG 892 19 INCH LONG 788146C91- 042 42 INCH LONG -WILL WORK FOR 788146C91- 042 42 INCH LONG HARNESS. ASSY CAB EXC ENG SHUT-DOWN CODES 08806. 08808.08809 92 CHASSIS BUILT PRIOR TO 1-22-81 91 CHASSIS BUILT PRIOR TO 1-22-81 91 CHASSIS BUILT PRIOR TO 1-22-81 91 CHASSIS BUILT PRIOR TO 1-22-81 91 CHASSIS BUILT PRIOR TO 1-22-81 91 CHASSIS BUILT PRIOR TO 1-22-81 92 CHASSIS BUILT PRIOR TO 1-22-81 93 CAB ARNEES. ASSY CAB EXC ENG SHUT-DOWN CODES 08806. 08808.08809 ADAPTER. 1/8MPT 81 CONNECTOR, BODY X-SLEEVE 94 CONNECTOR, BODY X-SLEEVE 95 FOR ENG SHUT-DOWN CODES 08806. 08808.08809 ADAPTER. 1/8MPT 81 CONNECTOR, BODY X-SLEEVE 91 CLEARANCE/MARKER LIGHTS ENGINE 9208 ENGINE EXC FLAT BACK COWL -CODE 16010- 91 CLEARANCE/MARKER LIGHTS ENGINE 9208 ENGINE EXC FLAT BACK COWL -CODE 16010- 91 CLEARANCE/MARKER LIGHTS ENGINE 90 LITER ENGINE EXC FLAT BACK COWL -CODE 16010- 91 CHASSIS BUILT T1-22-81 AND LATER FOR FLAT BACK COWL -CODE 16010- 91 CHASSIS BUILT T1-22-81 AND LATER FOR FLAT BACK COWL -CODE 16010- 92 FOR FLAT BACK COWL -CODE 16010- 93 FOR FLAT BACK COWL -CODE 16010- 94 FLAT BACK COWL -CODE 16010- 95 FLAT BACK COWL -CODE 16010- 95 FOR FLAT BACK COWL -CODE 16010- 95 F

	FIG NO	FICHE LOC
FENDER EXTENSIONS -CODE 9586-	09-004	A07
GRILLE	03-004	707
STANDARD		
EXCEPT 2126, 2165, F2125 MODELS	09-005	A08
FOR 2126, 2155, F2125 MODELS	09-001	A06
CODE 09510	09-007	All
CODE 09572	09-003	A07
CODE 09573	09-005	AO8
HOOD		
STANDARD		
EXCEPT 2125, 2155, F2125 MODELS	09-006	A08
FOR 2125, 2155, F2125 MODELS	09-001	A05
CODE 09510	09-007	All
HOOD ORNAMENT, ASSY -DT466 ENGINE-	09-016	A17
SPLASH PANELS		
EXCEPT 2125, 21566, F2125 MODELS	09-000	AO1
FOR 2125, 2156, F2126 MODELS	09-008	A13
STEP AND MODESTY PANEL		
EXCEPT 2125, 2155, F2125 MODELS		
EXCEPT CODE 16196		
2 BATTERY	09-010	A14
1 OR 3 BATTERY	09-011	A16
FOR CODE 16196		
2 BATTERY	09-014	A16
1 OR 3 BAI IERY	09-013	A10
FOR 21265, 2155, F2125 MODELS	09-009	A14
STONE DEFLECTOR		
EXCEPT 2125, 2156, F2125 MODELS	09-012	A16
FOR 2126, 2165, F2126 MODELS	09-002	AOO
	1	
	1	

140 GROUP 09-FRONT SHEET METAL	FIG NO	FICHE LOC	
RESERVE FOR-FUTURE USE			

MT-140 GROUP 09-FRONT SHEET METAL

REF NO.	PA NU	RT MBER	DESCRIPTION
	FIC	G. 09-001 C	ONTINUED
		HOOD, GRILLE	AND SPLASH PANELS
	18	485 192 C1 485 193 C1 25 5222 R1 25 519 R1 26 707 R1 120 380	BRACKET, FENDER EXTENSION LEFT Right Bolt, Hex-HD 1/4NC X 3/4 -2- NUT, HEX 1/4 -2- WASHER, FLAT 1/4 -2- WASHER, LOCK 1/4 -2-
	19	449 744 C3	HOUSING, HEADLAMP -2-
	20	483 996 C2 25 751 R1 25 520 R1 25 708 R1 120 214	LEAF, HINGE TO CORE SUPPORT, ASSY -2- BOLT, HEX-HD 5/16NC X 1-1/4 -8- NUT, HEX. 5/16NC -8- WASHER, FLAT 5/16 -16- WASHER, LOCK 5/16 -8-
	21	483 997 C2 9 413 979 25 709 R1	LEAF, HOOD HINGE NUT, HEX. LOCK 3/8NC -6- WASHER, FLAT 3/8 -6-
	22	27 883 R1 25 846 R1 610 784 R1	PIN, HOOD HINGE 7/16 X 4 -2- WASHER, FLAT 7/16 -2- PIN, SPRING -2-
	23 24	462 457 C1 497 462 C1	NUT, CLINCH 1/4NC SEAL, AIR INTAKE
	25	468 622 C1 483 669 C1	PANEL, GRILLE SCREW, W/WASHER, PAN-CR-REC-HD 1/4NC X 3/4 -8-
	26	479 666 C1 27 217 R1	REFLECTOR, AMBER -2- Screw, Pan-cr-rec-hd No. 10-24 X 3/4 -2-
		19 910 R1 120 391	NUT, HEX. LOCK NO. 10-24 -2- Washer, Flat No. 10 -2- Spacer, deflector
		492 897 C1 492 898 C1	LEFT RIGHT
		500 271 C1 500 269 C1 500 274 C1 500 273 C1 500 270 C1 499 523 C1	<pre>#*CATCH, HOOD LATCH #*HANDLE, HOOD LATCH #*NUT, HOOD LATCH #*PIN, HOOD LATCH #*PIN, HOOD LATCH #*RETAINER, HOOD LATCH #*STRAP, HOOD LATCH</pre>
			#SEE PARTS LISTED ABOVE WITH #"
			*PARTS NOT ILLUSTRATED

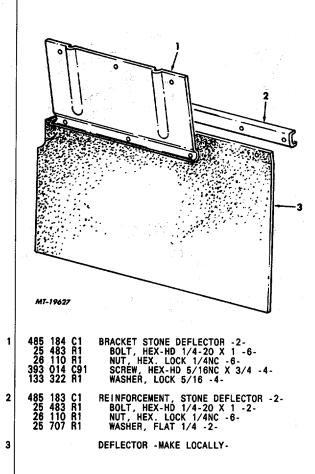
TM 5-4210-230-14&P-2

MT-140 GROUP 09-FRONT SHEET METAL REF PART NO. NUMBER

DESCRIPTION

FIG. 09-001 CONTINUED

STONE DEFLECTOR



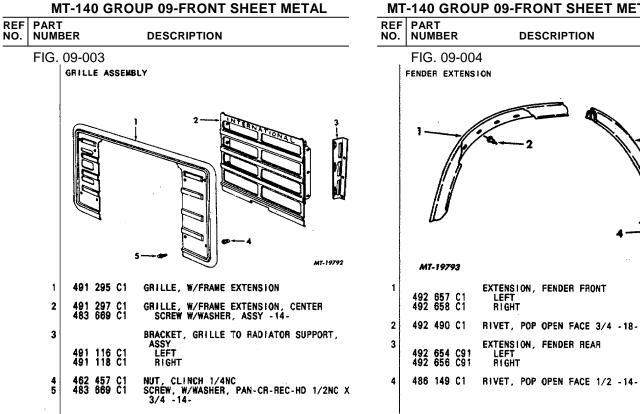
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FIG. 09-002 PAGE NO.

TM 5-4210-230-14&P-2 MT-140 GROUP 09-FRONT SHEET METAL

3



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6

FIG. 09-003 PAGE NO.



TM 5-4210-230-14&P-2 MT-140 GROUP 09-FRONT SHEET METAL

MT-140 GROUP 09-FRONT SHEET METAL

REF	PART		REF	PART	
NO.	NUMBER	DESCRIPTION	NO.	NUMBER	DESCRIPTION

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PAGE NO. 7

N	IT-140 GRC	UP 09-FRONT SHEET METAL	TM 5-4210-230-14&P-2 MT-140 GROUP 09-FRONT SHEET METAL
REF PAR NO. NUM		DESCRIPTION	REF PART NO. NUMBER DESCRIPTION
FIG.	09-005 Hood, Fenders	S AND GRILLE	FIG. 09-005 CONTINUED HOOD, FENDERS AND GRILLE
			<image/> <image/> <image/>
1 2 3		HOOD, TILT, ASSY INSULATOR, HOOD -9.0 LITER ENGINE- RETAINER, SPRING HOOD -LONG- RETAINER, SPRING HOOD -SHORTAR- CLAMP, SINGLE -10- BOX, HOOD GRAB HANDLE CABLE, HOOD, ASSY -2- 21.4 LONG	11 472 698 C1 GUIDE, HOOD LOCATOR -2- 393 014 C91 SCREW, HEX-HD 5/16NC X 3/4 -2- 133 322 R1 WASNER, LOCK 5/16NC -2- 12 472 697 C1 BUMPER, ASSY -2- 25 520 R1 NUT, HEX 5/16 -2- 120 214 WASNER, LOCK 5/16 -2- 13 BRACKET, HOOD LOCATOR
	500 827 C1 483 687 C1 500 828 C1 103 493	28.6 LONG SPRING, HOOD CABLE -2-	488 994 C1 LEFT 488 995 C1 Right 393 014 C91 Screw, Hex-HD 5/16NC X 3/4 -4-
4	549 899 R1 23 642 R1	PIN, ROD END -2- PIN, WIRE SPRING -2- PIN, ROD END -2-	25 520 ŘÍ NUT, HEX. 5/16NC -2- 25 708 ří Washer, Flat 5/16 -2- 120 214 Washer, Lock 5/16 -2-
6	549 899 R1 484 240 C2 25 220 R1 120 380	PIN, WIRE SPRING -2- Bracket, Hood Stop -2- Bolt, Hex-HD 1/ANC X 3/4 -4- Washer, Lock 1/4 -4-	14 PIN, HOOD LATCH 445 193 C1 CHASSIS BUILT PRIOR TO 9-4-78 CHASSIS BUILT 9-4-78 AND LATER 25 386 R1 PIN, COTTER 15
7 8	482 446 C1 484 623 C1	ANGLE. GRILLE MOUNTING -3- BRACKET, AIR INTAKE GRILLE MTG	15 BRACKET, HOOD LATCH 425 424 C2 CHASSIS BUILT PRIOR TO 9-4-78 \$ CHASSIS BUILT 9-4-78 AND LATER
9	456 322 C1 456 323 C1 163 162	GRILLE, AIR INTAKE EXCEPT CODE 16010 FOR CODE 16010 SCREW, TAP. PAN-CR-REC-HD NO. 8- 18 X 1/2 -3-	16 HOOK, HOOD LATCH 393 534 C1 CHASSIS BUILT PRIOR TO 9-4-78 # CHASSIS BUILT 9-4-78 AND LATER 17 CATCH, HOOD LATCH 406 887 C1 CHASSIS BUILT PRIOR TO 9-4-78
10		PLATE, TAPPING HOOD LOCATOR -2-	# CHASSIS BUILT 9-4-78 AND LATER
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TM 5-4210-230-14&P-2

8

FIG. 09-005 PAGE NO.

MT-140 GROUP 09-FRONT SHEET METAL

		VII-14	40 C	۶RC	OUP 09-FRONT SHEET METAL
REF NO.		IBER			DESCRIPTION
	FIG	. 09-0)05	CO	NTINUED
		HOOD ,	FEŅ	IDERS	AND GRILLE
	18				PANEL, FENDER EXTENSION, ASSY CODE 16010
			039		LEFT
			040		RIGHT CODE_16030
			334 335		LEFT Right
	19				BRACKET, FENDER EXTENSION -2-
		465	248	C1	CODE 16010 Code 16030 -Make Locally-
		393	014	C91	SCREW, HEX-HD 5/16NC X 3/4 -4-
	20		651 707		SEAL, FENDER EXTENSION -2- Washer, Flat 1/4 -6-
	21	449	744	C3	HOUSING, HEADLAMP -2-
	22	483	996 751	<u>C</u> 2	LEAF, HINGE TO CORE SUPPORT, ASSY -2-
		25	520	61 R1	BOLT, HEX-HD 5/16NC X 1-1/4 -8- NUT, HEX 5/16NC -8-
		25 120	708 214	R1	WASHER, FLAT 5/18 - 18- Washer, Lock 5/18 -8-
	23	483	997	C2	LEAF, HOOD HINGE -2-
		25	709	R1	WASHER, FLAT 3/8 -6-
	24	462	457	C1	NUT, CLINCH 1/4NC -8-
	25	27 25	883 846	R1 R1	PIN, HOOD HINGE 7/18 X 4 -2- Washer, Flat 7/18 -2-
		610	784	81	PIN, SPRING -2-
	26	488	099	C1	PANEL, GRILLE Standard -Steel-
		488	100	či	CODE 09573 - ALUMINUM-
	27	483	669	C1	SCREW, W/WASHER, PAN-CR-REC-HD 1/4NC X 3/4 -8-
	28 29	497	462	Ct	SEAL, AIR INTAKE Screen, Intake Grille -Make Locally-
		470	000	C1	
	30		666 217		REFLECTOR, AMBER -2- Screw, Pan-cr-rec-hd No. 10-24 X 3/4
			910		-2- NUT, HEX. LOCK NO. 10-24 -2-
			391		WASHER, FLAT NO. 10 -2- Spacer, reflector
			897 898		LEFT RIGHT
		500	270	C1	#*RETAINER, HOOD LATCH
		499	270 523 269 273	C1 C1	#*STRAP, HOOD LATCH #*HANDLE, HOOD LATCH
		500	273	Čİ	#"PIN, HOOD LATCH
		500	271	či	¥*NUT, HOOD LATCH ¥*CATCH, HOOD LATCH
					#SEE PARTS LISTED ABOVE WITH #"
		1			*PARTS NOT ILLUSTRATED

TM 5-4210-230-14&P-2 MT-140 GROUP 09-FRONT SHEET METAL

		PART		
NC	D.	NUMBER	DESCRIPTION	
	1			

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PAGE NO. 9

MT-140 GROUP 09-FRONT SHEET METAL



TM 5-4210-230-14&P-2 MT-140 GROUP 09-FRONT SHEET METAL

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N REF NO. PART NUMBER DESCRIP FIG. 09-006 CONTINUED SPLASH PANELS	TION
SPLASH PANELS	· · ·
a state and the state of the st	
7	
SH SHIELD, ASSY	
ASH PANEL -2- 10 5/18NC X 3/4 -8- CK 5/16 -8-	
PANEL HANGER	
ASH SHIELD MOUNTING D, 16196 HEX-HD 5/16NC X 3/4 -2- < 5/16 -2-	
H, ASSY JLIC BRAKES IND-OPEN END -3- TAKES IND-OPEN END -4- JUND-SPLASH GUARD -3208, D190, NV404, 446 ENGINES-	
SULATOR -18- TAINER -18-	
RING -2-	
	ATOR -18- INER -18- IG -2-

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FIG. 09-006 PAGE NO. 10



TM 5-4210-230-14&P-2 MT-140 GROUP 09-FRONT SHEET METAL

MT-140 GROUP 09-FRONT SHEET METAL

		UP U9-FRONT S							
REF PAI NO. NU	RT MBER	DESCRIPTION	REF NO.	PART NUMBER	DESCRIPTION				
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			Í						
	1		1						

	MT-1	40 G	ROU		Т МТ	-140 GRO	TM 5-4210-230-14&P-2 UP 09-FRONT SHEET METAL
	PART NUMBER			DESCRIPTION		PART	DESCRIPTION
1	FIG. 09-	007 DD AND	GRIL	LE		FIG. 09-00 hood and gr	7 CONTINUED
	37						
	5	94 234 80 629 80 630 80 628 80 562 99 398		u 1 ∎ 0 √	14	456 322 C1 456 323 C1 163 162	GRILLE, AIR INTAKE EXCEPT CODE 16010 FOR CODE 16010 SCREW, TAP. PAN-CR-REC-HD NO. 8-18 X 1/2 -3-
	2			CLAMP, SINGLE -12- DOOR, ACCESS	15 16	483 966 C2 472 698 C1	-,
	4	94 230 94 231	C1 C1	LEFT RIGHT		393 014 C9 133 322 R1	1 SCREW, HEX-HD 5/16NC X 3/4 -2-
	4	94 212 94 204 94 205 47 243	C1 C1	ROD, ACCESS DOOR PROP -2- BRACKET, ACCESS DOOR PROP LEFT Right Right Rivet, blind 3/18 steel -4-	17	472 697 C1 25 520 R1 25 708 R1 120 214	WASHER, LOCK 5/16 -2-
		29 057		NUT, PUSH-ON 5/16 -4-	10	488 994 C1 488 995 C1	BRACKET, HOOD LOCATOR LEFT RIGHT
		33 470 25 708 24 824	R1	BUMPER, HOOD STOP -WILL WORK FOR 256206C914- WASHER, FLAT 5/16 -8- NUT, JAM 5/16 -8-		393 014 C91 25 520 R1 25 708 R1 120 214	1 SCREW, HEX-HD 5/16NC X 3/4 -4- NUT, HEX. 5/16NC -2- Washer, Flat 5/16 -2- Washer, Lock 5/16 -2-
	7 4 8 4	82 585 83 687	C1 C1	STRIP, TRIM -2- CABLE, HOOD, ASSY	19	406 887 C1	CATCH, HOOD LATCH CHASSIS BUILT PRIOR TO 9-4-78 # CHASSIS BUILT 9-4-78 AND LATER
		38 082 49 899		PIN, ROD END -2- PIN, WIRE SPRING -2-	20	393 534 C1	HOOK, HOOD LATCH CHASSIS BUILT PRIOR TO 9-4-78
	10 5	23 642 49 899	R1 R1	PIN, ROD END -2- PIN, WIRE SPRING -2-	21		# CHASSIS BUILT 9-4-78 AND LATER PIN, HOOD LATCH
	11 4	84 240 25 222 20 380	C2 R1	BRACKET, HOOD STOP -2- BOLT, HEX-HD 1/4NC X 3/4 -4- WASHER, LOCK 1/4 -4-	22	445 193 C1 25 386 R1	# CHASSIS BUILT 9-4-78 AND LATER Pin, Cotter
PRINT	12 4 13 4 ED IN UNITE	82 446 84 623	C1	ANGLE, GRILLE MOUNTING -3- BRACKET, AIR INTAKE GRILLE MTG America	22	425 424 C2	BRACKET, HOOD LATCH Chassis Built Prior to 9-4-78 # Chassis Built 9-4-78 and later

H

FIG. 09-007 PAGE NO. 12

MT-140 GROUP 09-FRONT SHEET METAL

		-1	40 (GRC	OUP 09-FRONT SHEET METAL
		R			DESCRIPTION
F	ī				NTINUED
:	23 4	94 27 27 74	307 224 303 916	C1 R1 R1	HOOK, HOOD -4- Screw, Pan-cr-rec-hd 1/4nc X 3/4 -4- Washer, Lock 1/4 -4- Washer, Lock -4-
:			039 040		PANEL, FENDER EXTENSION, ASSY Code 16010 Left Right Codes 16030, 16196
	4	56 56	334 335	C1 C1	LEFT
:			248 014		BRACKET, FENDER EXTENSION CODE 16010 CODES 16030, 16196 -MAKE LOCALLY- SCREW, HEX-HD 5/16NC X 3/4 -4-
:		74	651 707	C1	SEAL, FENDER EXTENSION -2- WASHER, FLAT 1/4 -6-
	27 28				STRIP - MAKE LOCALLY- SEAL - MAKE LOCALLY-
:		25 25 25	996 751 520 708 214	R1 R1	LEAF, HINGE TO CORE SUPPORT, ASSY -2- BOLT, HEX-HD 5/16NC X 1-1/4 -8- NUT, HEX. 5/16NC -8- WASHER, FLAT 5/16 -16- WASHER, LOCK 5/16 -8-
:	30 4	83 25	997 709	C2 R1	LEAF, HOOD HINGE -2- WASHER, FLAT 3/8 -8-
	31 4	83	6 6 9	C1	SCREW, W/WASHER, PAN-CR-REC-HD 1/4NC X 3/4 -8-
;	32 4	88	099	C1	PANEL, GRILLE -STEEL-
;	33 6	25	833 846 784	R1	PIN, HOOD HINGE 7/18 X 4 -2- WASHER, FLAT 7/16 -2- PIN, SPRING -2-
	35 4	49	457 744 462	C3	NUT, CLINCH 1/4NC -8- Housing, Headlamp -2- Seal, Air Intake Screen -Wake Locally-
	38 4	106	887	C1	BRACKET, KEEPER -WILL WORK FOR 779017C14-
	4	193	415	C1	RIVET, BLIND 3/16 -4-
	39 4 40 4	194 183	306 930	C1 C1	BRACKET, HOOK ANCHOR -4- Box, Hood Grab Handle
			202 110		BRACKET, ACCESS DOOR, PROP TO HOOD -2- NUT, LOCK 1/4NC -4-
	42	194 194	215 216	C1 C1	SPRING, ACCESS DOOR Left Right
	43 4	179 27	666 217	C1 R1	REFLECTOR, AMBER -2- Screw, Pan-cr-rec-hd No. 10-24 X 3/4 -2-
			910 391	R1	NUT, HEX. LOCK NO. 10-24 -2- Washer, Flat No. 10 -2- Spacer, Reflector
		192 192	897 898	C1 C1	LEFT RIGHT
		499 500 500 500		C1 C1 C1 C1	**RETAINER, HOOD LATCH **STRAP, HOOD LATCH **HANDLE, HOOD LATCH **PIN, HOOD LATCH **PIN, HOOD LATCH **NUT, HOOD LATCH *CATCH, HOOD LATCH
					\$SEE PARTS LISTED ABOVE WITH \$"
					*PARTS NOT ILLUSTRATED

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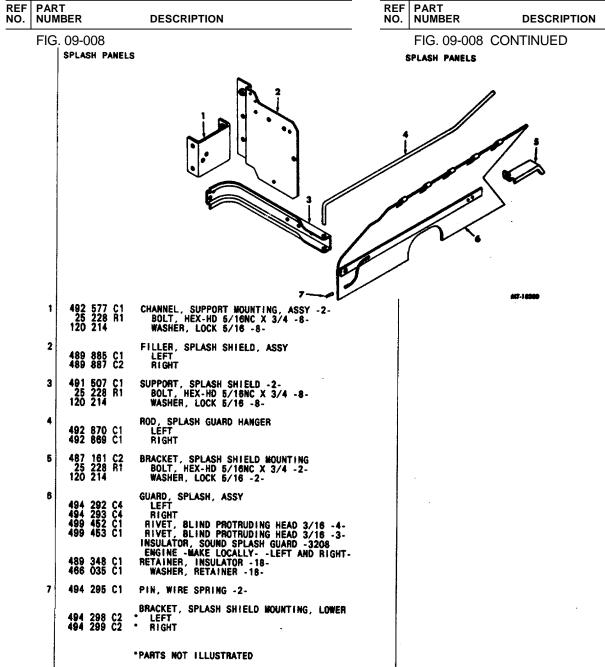
PAGE NO. 13

TM 5-4210-230-148P-2

		09-F	TM 5-4210-230-14&P- FRONT SHEET METAL					
F PART	BER	I	DESCRIP	TION				
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MT-140 GROUP 09-FRONT SHEET METAL

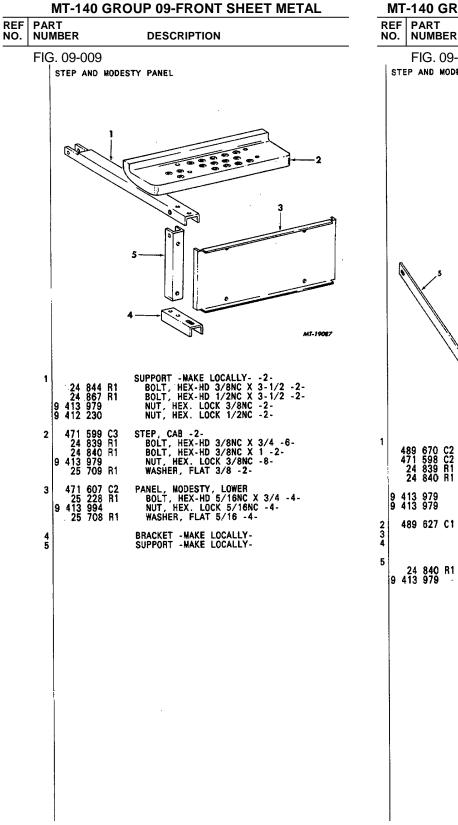


TM 5-4210-230-14&P-2

MT-140 GROUP 09-FRONT SHEET METAL

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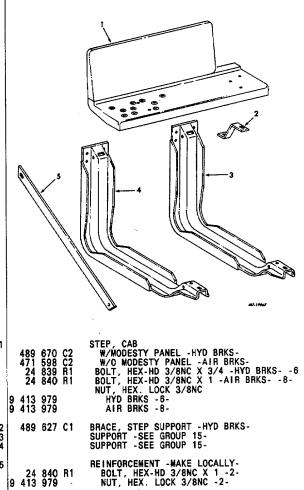
FIG. 09-008 PAGE NO. 14

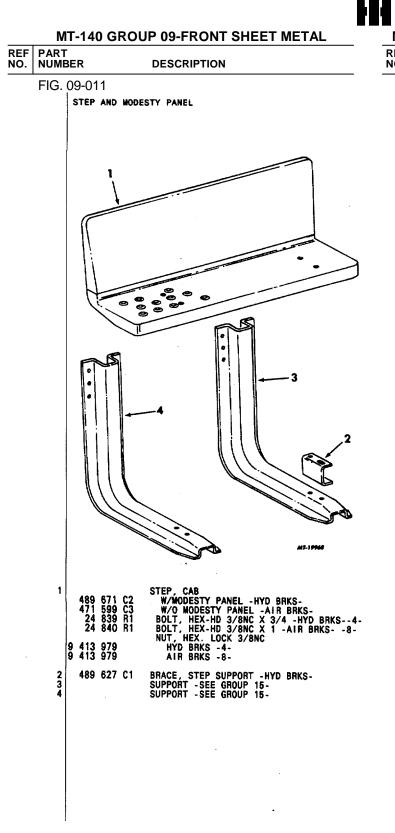


TM 5-4210-230-14&P-2 MT-140 GROUP 09-FRONT SHEET METAL

DESCRIPTION FIG. 09-010

STEP AND MODESTY PANEL





TM 5-4210-230-14&P-2 MT-140 GROUP 09-FRONT SHEET METAL

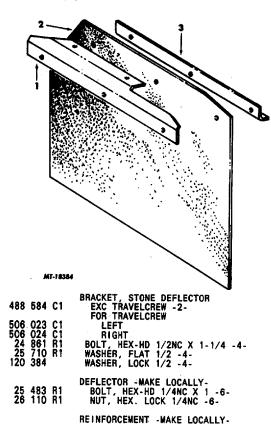
REF PART DESCRIPTION

STONE DEFLECTOR

1

2

3

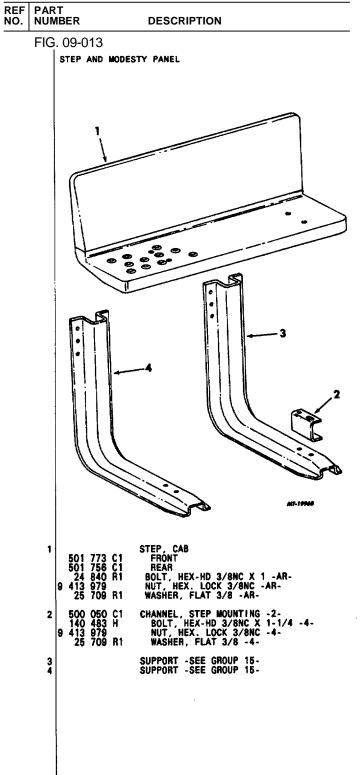


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FIG. 09-011 PAGE NO. 16

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MT-140 GROUP 09-FRONT SHEET METAL

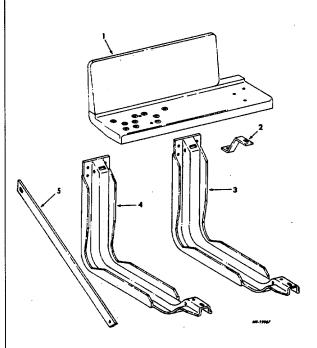


MT-140 GROUP 09-FRONT SHEET METAL

REF PART NO. NUMBER DESCRIPTION

FIG. 09-014

STEP AND MODESTY PANEL



9	501 471 24 24 413	598	C1 C2 R1 R1	REAR RIGHT SIDE MOUNTED-W/O MODESTY PANEL- BOLT, HEX-HD 3/BNC X 3/4 -AR- BOLT, HEX-HD 3/BNC X 1 -AR- NUT, HEX. LOCK 3/BNC -AR-
9	24 413	627 840 979 709	Ř1	BOLT, HEX-HD 3/8NC X 1 NUT, HEX. LOCK 3/8NC
	,			SUPPORT -SEE GROUP 15- Support -SEE group 15-
9		840 979		REINFORCEMENT -MAKE LOCALLY- Bolt, Hex-HD 3/8NC X 1 -AR- NUT, HEX. LOCK 3/8NC -AR-

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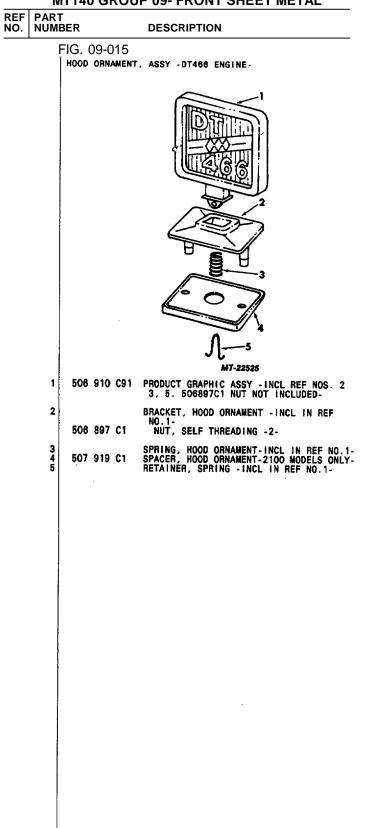
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MT140 GROUP 09- FRONT SHEET METAL



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TM 5-4210-230-14&P-2 MT140 GROUP 09- FRONT SHEET METAL

NO. NUMBER DESCRIPTION

	FIG NO	FICHE LOC
HOURMETER	10-020	B21
HUBODOMETER	10-021	B21
SPEEDOMETER AND DRIVE CABLE		
EXCEPT 1853FC MODEL EXCEPT AUX TRANS CODES 13636, 13652. 13664, 13001 AND		
TRANSFER CASE CODES 13155, 13188 W/O 2 SPEED REAR AXLE CODES 14186, 14187, 14192,		
14193, 14197, 14199 W/2 SPEED REAR AXLE CODES 1 4186, 14187, 14192,	10-005	B05
14193, 14197, 14199 FOR AUX TRANS CODES 13630, 13662, 13664, 13601	10-006 10-008	B07 B09
FOR TRANSFER CASE CODES 13155, 13188 FOR 1863FC MODEL	10-007 10-023	B08 B23
SPEEDOMETER DRIVE TIPS	10-001	B02
SPEEDOMETER DRIVEN GEARS AND ADAPTERS		
ADAPTERS, REFERENCE INDEX -COLUMN A- DRIVEN GEARS, REFERENCE INDEX -COLUMN 8-	10-009 10-009	B10 B10
CHARTS TRANSMISSION CODES		
13017, 13018	10-010	B11
13311, 13312	10-012	B13
13422	10-011	B12
13426	10-012	B13
13448	10-013	B14
13461, 13464. 13464	10-014	B16
13405	10-016	B16
134965, 13496. 13072, 13673, 13674	10-012	B13
13676, 13677. 13678	10-022	B22
13092, 13696. 13097, 13698, 13699	10-012	B13
AUX TRANS CODES		
13536, 13552. 13554	10-016	B17
13601 TRANSFER CASE CODES	10-017	B18
13155	10-018	B19
13188	10-019	B20
TACHOMETER		
EXCEPT 1853FC MODEL FOR 1863FC MODEL	10-002 10-024	B03 B23
TACHOMETER DRIVE ADAPTER -DT466, 466, DTI460BB ENGINES-		
EXCEPT 1853FC MODEL FOR 1853FC MODEL	10-003 10-024	B03 B23
	10-004	B04

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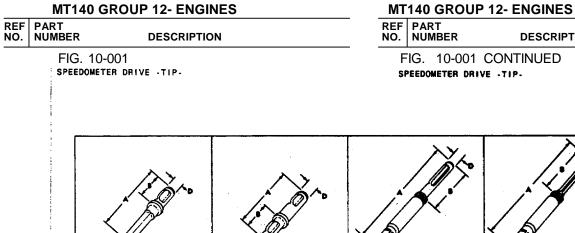
TOOLS, PLATES AND MISCELLANEOUS

10- INDEX PAGE

REV.4

B04

10-004



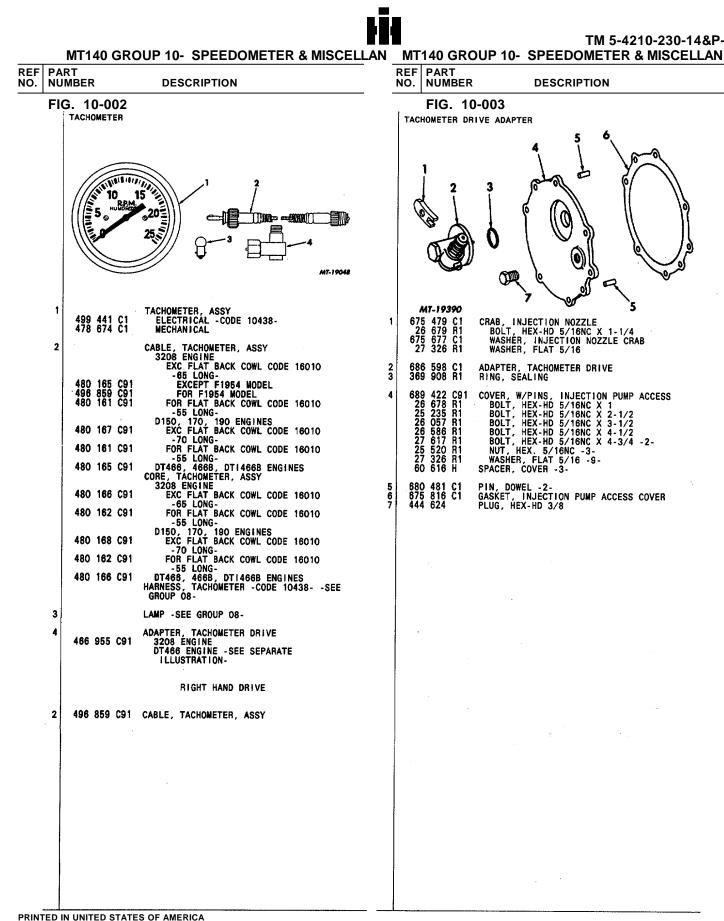
TM 5-4210-230-14&P-2

DESCRIPTION

FIG. 10-001 CONTINUED SPEEDOMETER DRIVE -TIP-

	TYPE 1		Түре 2			1177E 5		TYPE 6
	IVME 3	-Jeen and a second	TYPE 4	E.		11/10 7	e Jen v	73 TUPE 8
MT-13003							·	
					UMN			-
KEY	DESCR	IPTION	A	<u> </u>		D	IH PAR	T NUMBER
			ORIVE, spee	dometer (tip PE 1	1			
		······································	1.3/10	Ŷ	.124	.187	235	524 RI
			1-1/4	-1/2	.104	.172	212	564 R1
			1.1/4	172	.150	.172		444 81
			1-1/4		.183	.172	898	155 R1
				PE 2	1			
			1.3/10		.189	.189		<u>307 H</u>
			1-3/10	<u>i 1/2</u> 5/8	.187	<u>203</u> 187		<u>874 R1</u> 179 A1
				PE 3	1.106		8/0	
	<u> ·</u>		2	3/4	1/4	3/16	867	262 R91
				PE 4				
			2-1/4	and the second se	.104	.104	692	458 R1
				oating tips)	1			
			2.22	.91	.128	201		<u>358 Cl</u>
			2.22	<u>.91</u> .91	.128	.187 .153		359 C1 360 C1
			2.22	.91	.120	.153		227 CI
			2.22	.91	.108	.187		228 CI
			2.22	.91	.108	.205	364	915 CI
			TYPE 6 (I	oating tips)				
			2.22		.103	.104		517 CI
			2.22		.128	.104		361 CI
			2.22		.128	.150	343	362 CI
			4.23	oating tips) 1.75	.128	.150	242	364 C1
				pating tips)		1 .100 1		
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			4.50	2.00	.128	.205	343	363 CI

# TM 5-4210-230-14&P-2





# TM 5-4210-230-14&P-2

MT140 GROUP 10- SPEEDOMETER & MISCELLAN MT140 GROUP 10- SPEEDOMETER & MISCELLAN

REF PART	REF PART
NO. NUMBER DESCRIPTION	NO. NUMBER DESCRIPTION
FIG. 10-004	FIG. 10-004 Continued
TOOLS, PLATES AND MISCELLANEOUS	TOOLS, PLATES AND MISCELLANEOUS
	2 570 177 R1 DECAL, TRANSFER CASE CONTROL -13155, 13188 TRANSFER CASE CODES-
	582 968 C2 PLATE, NAME IH -1853FC MODELGRILLE LOWER LEFT HAND AREA:
2 754 371 R1 DECAL, COMPANY INDENTIFICATION	ORNAMENT, HOOD, ASSY -DT466 ENGINE- -SEE GROUP 09, FRONT END-
2 753 190 R1 DECAL, COUNTRY OF ORIGIN	TOOLS
DECAL, ENGINE DESIGNATION INSERT 488 060 C2 DIESEL 488 061 C2 GASOLINE 488 059 C2 IH DIESEL	HANDLE 459 828 C1 CAST WHEELS 459 840 C1 DISC WHEELS
DECAL, FUEL TANK	WRENCH, RIM NUT SOCKET 58 607 R1 CAST WHEELS
468 119 C1 L-SÉLECTOR-R 492 942 C1 RR-SELECT-FRT	DISC WHEELS 438 602 C1 REAR AXLE CODE 14029, 14030, 14187
DECAL, MODEL DESIGNATION	REAR AXLE CODE 14039, 14042, 14199, 14341- 439 502 C1
488       034       C2       1600         488       035       C2       1700         488       036       C2       1800         488       037       C2       1900         488       033       C2       2100	438 602 C1 W/O RR WHEEL CODE 29113 74 985 R1 W/RR WHEEL CODE 29113 74 985 R1 REAR AXLE CODE 14044, 14047, 14057, 14186, 14192, 14197, 14292, 14351, 14355, 14472
468 120 C1 DECAL, FUEL PUMP PRIMER	
421 197 C2 DECAL, SAFTEY CERTIFICATION	
435 654 C1 COVER, COMPLIANCE LABEL -PROTECTIVE-	
487 154 C1 DECAL, S SERIES 288 327 C1 CLIP, SPEED NUT	
DECAL, MAIN TRANSMISSION SHIFT 2 751 811 R3 13017, 13018, 13425 TRANS CODES 13311, 13312, 13672, 13673, 13674, 13676, 13676, 13696, 13697 TRANSMISSION CODES	
2 751 813 R3 PATTERN -ON HANDLE- 396 740 C2 INSTRUCTIONS -ABOVE DOOR- 421 136 C1 13422 TRANS CODE 13448 TRANS CODE	
2 751 814 R3 PATTERN -ON HANDLE- 396 771 C1 INSTRUCTIONS -ON ENGINE COVER- 13325, 13326, 13451, 13454 TRANS CODES	
PATTERN -SEE TRANSMISSION CONTROL- INSTRUCTIONS -ABOVE DOOR- 468 187 C1 EXC 2 OR 3 SPEED REAR AXLES 493 961 C2 FOR 2 OR 3 SPEED REAR AXLES 13464 TRANS CODE PATTERN -SEE TRANSMISSION CONTROL-	
INSTRUCTIONS 468 188 C1 EXC 2 OR 3 SPEED REAR AXLES 493 961 C2 FOR 2 OR 3 SPEED REAR AXLES 13465 TRANS CODE PATTERN -SEE TRANSMISSION CONTROL-	
(NSTRUCTIONS 468 189 C1 EXC 2 OR 3 SPEED REAR AXLES 493 961 C2 FOR 2 OR 3 SPEED REAR AXLES 13495, 13496, 13690, 13691, 13698, 13699 TRANSMISSION CODES	
2 751 162 R3 PATTERN - ON HANDLE- 396 740 C2 INSTRUCTIONS - ABOVE DOOR-	
DECAL, AUXILIARY TRANSMISSION SHIFT 2 750 CO6 R2 13536, 13552, 13554 AUX TRANS CODES 353 172 C1 13601 AUX TRANS CODE	

TM 5-4210-230-14&P-2 EDOMETER & MISCELLAN

# MT140 GROUP 10- SPEEDOMETER & MISCELLAN N

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/IT140 GROUP 10-	SPEEDOMET	FER & MISO

MT140 GROUP 10- SPEEDOMETER & MISCELLAN	
REF PART NO. NUMBER DESCRIPTION	REF PART NO. NUMBER DESCRIPTION
FIG. 10-006	FIG. 10-006 CONTINUED
	2 341 227 C91 TRANS CODES 13465, 13496-50 LONG- TRANS CODE 13495 341 227 C91 LHD -50 LONG- 341 223 C91 RHD -40 LONG- 341 223 C91 TRANS CODE 13699 -RHD - 40 LONG- V392 ENGINE
	SPEEDOMETER AND DRIVE CABLE           2         341 227 C91         TRANS CODES 13465, 13496-50 LONG- TRANS CODE 13495           341 223 C91         LHD -50 LONG- 341 223 C91         RHD -40 LONG- W392 ENGINE           341 225 C91         TRANS CODES 13017, 13454 EXC 1723, 1823 MODELS           341 225 C91         W/O CAB CODE 16010 -40 LONG- 341 223 C91           341 225 C91         W/O CAB CODE 16010 -40 LONG- 341 223 C91           341 225 C91         FOR 1723, 1823 MODELS           341 225 C91         FOR 1723, 1823 MODELS -40 LONG- 341 223 C91           341 225 C91         TRANS CODES 13266 -40 LONG- 341 225 C91           341 225 C91         TRANS CODES 13465, 13496-50 LONG- TRANS CODES 13465, 13496-50 LONG- TRANS CODES 13465, 13496-50 LONG- TRANS CODES 13465, 13496-50 LONG- TRANS CODES 13606, 13697           341 223 C91         W/O CAB CODE 16010 -45 LONG- 341 225 C91           341 225 C91         FOR 1723, 1823 MODELS 41 225 C91           341 225 C91         FOR 1723, 1823 MODELS 341 225 C91           341 225 C91         FOR 1723, 1823 MODELS 341 225 C91           341 225 C91         FOR 1723, 1823 MODELS           341 225 C91         FOR 1723, 1823 MODELS           341 225 C91         V537 ENGINE -55 LONG-
Ф—10 MTA-57463	EXC 1723, 1823 MODELS 341 223 C91 W/O CAB CODE 16010 -40 LONG- 341 225 C91 W/CAB CODE 16010 -45 LONG- 341 225 C91 FOR 1723, 1823 MODELS 341 229 C91 V537 ENGINE -55 LONG-
1 SPEEDOMETER, ASSY	3 CONDUIT -NOT SERVICED SEPARATELY-
571 227 C1 STANDARD -WILL WORK FOR 478672C1- 475 911 C1 METRIC -CODE 10427-	4 CABLE, SPEEDOMETER, ASSY FRONT
2 CORE, SPEEDOMETER, ASSY	480 147 C91 LHD -25 LONG- 480 157 C91 RHD -40 LONG- REAR
SPEEDOMETER, ASSY           571         227         C1         STANDARD -WILL WORK FOR 478672C1-           475         911         C1         METRIC -CODE 10427-           2         CORE, SPEEDOMETER, ASSY           FRONT         480         148         C91           480         148         C91         HD -25         LONG-           480         158         C91         RHD -40         LONG-           3208         FNGINE         3208         FNGINE	3208 ENGINE 341 234 C91 TRANS CODES 13495, 13496, 13698, 13699
3208 ENGINE 341 233 C91 TRANS CODES 13495, 13496, 13698, 13699 -65 LONG- TRANS CODES 13427, 13678, 13698	341 234 C91       3208 ENGINE         341 234 C91       TRANS CODES 13495, 13496, 13698, 13698         341 236 C91       TRANS CODES 13672, 13674, 13676, 13678         341 228 C91       EXC 2155 MODEL -50 LONG- 13678         341 228 C91       FOR 2155 MODEL -55 LONG- 9. CLITER, D150, D170, D190 ENGINES         341 224 C91       TRANS CODES 13495, 13699         341 226 C91       TRANS CODES 13496, 13676, 13678, 13699         341 226 C91       TRANS CODES 13496, 13676, 13678, 13699         341 226 C91       RHD -45 LONG- 13698 -55 LONG-         341 228 C91       TRANS CODES 13496, 13676, 13678, 13698         341 228 C91       TRANS CODES 13496, 13676, 13678, 13698         341 228 C91       TRANS CODES 13496, 13676, 13678, 13678, 13698 -55 LONG-         341 228 C91       TRANS CODES 13696, 13697-50 LONG-         341 228 C91       TRANS CODES 13696, 13697-50 LONG-         341 228 C91       TRANS CODES 13672, 13673, 13674, 13676, 13674, 13676, 13677, 13678 -65 LONG-         341 224 C91       TRANS CODES 13495, 13496, 13691, 13676, 13674, 13676, 13674, 13676, 13674, 13676, 13677, 13678 -65 LONG-         341 224 C91       TRANS CODES 13017, 13425, 13451 -40 LONG-         341 224 C91       TRANS CODES 13495, 13496, 13691, 13698, 13699 -55 LONG-         341 228 C91       TRANS CODES 13475, 13476, 13674, 13676, 13674, 13676, 13677, 13678 -50 LONG-
13678 341 227 C91 EXC 2155 MODEL -50 LONG- 341 229 C91 FOR 2155 MODEL -55 LONG-	341 228 C91 TRANS CODES 13673, 13677-50 LONG- 9.0 LITER, D150, D170, D190 ENGINES 341 224 C91 TRANS CODE 13017_40 LONG-
341 227 C91 TRANS CODES 13673, 13677-50 LONG- 9.0 LITER, D150, D170, D190 ENGINES	TRANS CODES 13495, 13699 341 230 C91 LHD -55 LONG-
341 223 C91 TRANS CODE 13017 -40 LONG- TRANS CODES 13495, 13699 341 229 C91 LHD -55 LONG-	341 226 C91 RHD -45 LONG- 341 230 C91 TRANS CODES 13496, 13676, 13678, 12600 EE LONG EE LONG-
341 225 C91 RHD -45 LONG- 341 229 C91 TRANS CODES 13496, 13676, 13678, 13698 -55 LONG-	TRANS CODES 13672, 13674 341 228 C91 EXC 2155 MODEL -50 LONG- 341 220 C91 EXC 2155 MODEL -50 LONG-
TRANS CODES 13672, 13674 341 227 C91 EXC 2155 MODEL -50 LONG-	341 228 C91 TRANS CODES 13696, 13697-50 LONG- DT466, 4668, DT14668 ENGINES
341         227         C91         EXC         2155         MODEL         50         LONG-           341         229         C91         FOR         2155         MODEL         -50         LONG-           341         227         C91         TRANS         CODES         13696,         13697-50         LONG-           341         227         C91         TRANS         CODES         13696,         13697-50         LONG-           D1466,         4688,         D14668         ENGINES         LONG-         LONG-         LONG-	341 232 C91 THANS CODE 13464 -60 LONG- 341 234 C91 TRANS CODES 13672, 13673, 13674, 13676, 13677, 13678 -65 LONG-
341 231 C91 TRANS CODE 13464 -60 LONG- 341 233 C91 TRANS CODES 13672, 13673, 13674, 13674 13672 13674 -65 LONG-	WV404 ENGINE 341 224 C91 TRANS CODES 13017, 13425, 13451
MV404 ENGINE 341 223 C91 TRANS CODES 13017, 13425, 13451	341 230 C91 TRANS CODES 13495, 13496, 13691, 13698, 13699 - 55 LONG-
-40 LONG- 341 229 C91 TRANS CODES 13495, 13498, 13691,	341 228 C91 TRANS CODES 13672, 13673, 13674, 13676, 13677, 13678 -50 LONG-
13698, 13699, -55 LONG- 341 227 C91 TRANS CODES 13672, 13673, 13674, 13676, 13677, 13678, -50 LONG-	MV446, 485 ENGINES 341 228 C91 TRANS CODES 13311, 13312, 13464, 13673, 13677, 13696, 13697 -50 LONG-
341 227 C91 TRANS CODES 13672, 13673, 13674, 13676, 13677, 13678 -50 LONG- WV446, 485 ENGINES 341 227 C91 TRANS CODES 13311, 13312, 13464, 13673, 13877, 13696, 13697 -50 LONG- 241 220 C91 TRANS CODES 13465, 13465	-50 LÓNG- 341 230 C91 TRANS CODES 13465, 13495, 13496, 13699 -55 LONG-
-50 LONG- 341 229 C91 TRANS CODES 13465, 13495, 13496, 13699 -55 LONG-	TRANS CODES 13672, 13674, 13676, 13678 341 228 C91 EXC 2125, F2125 MODELS-50 LONG-
TRANS CODES 13672, 13674, 13676, 13678	341         228         C91         EXC         2125         F2125         MODELS-50         LONG-           341         230         C91         FOR         2125         F2125         MODELS-55         LONG-           V345         ENGINE         TRANS         CODES         13017         13425
341 229 C91 FOR 2125, F2125 MODELS-55 LONG- V345 Engine	341 224 C91 LHD - 40 LONG- 345 250 C91 RHD - 50 LONG-
TRANS CODES 13017, 13425           341 223 C91         LHD -40 LONG-           345 250 C91         RHD -50 LONG-           341 223 C91         TRANS CODE 13226 -40 LONG-           341 225 C91         TRANS CODE 13451, 13696, 13697	41 226 C91 TRANS CODES 13451 13696 13697
-45 (ONG-	-45 LONG- TRANS CODE 13454 EXC 1723, 1823 MODELS 341 226 C91 W/O CAB CODE 16010 -45 LONG-
TRANS CODE 13454 EXC 1723, 1823 MODELS 341 225 C91 W/O CAB CODE 16010 -45 LONG- 341 223 C91 W/CAB CODE 16010 -40 LONG- 341 223 C91 FOR 1723, 1823 MODELS -40 LONG-	341 226 C91 W/O CAB CODE 16010 -45 LONG- 341 224 C91 W/CAB CODE 16010 -40 LONG- 341 224 C91 FOR 1723, 1823 WODELS -40 LONG- ,

TM 5-4210-230-14&P-2 **EEDOMETER & MISCELLAN** 

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 Ν	<b>/</b> T14	0 GI	ROL	JP 10- SPEEDOMETER & MISCELLA		<b>/</b> T14	0 G	RO	UP 10- SPEEDOMETER & MISCELL
PAR NUM				DESCRIPTION		EF P/ D. N			DESCRIPTION
FIG				ONTINUED ND DRIVE CABLE					-007 ND DRIVE CABLE
4	341	228 228	C91	TRANS CODES 13485, 13496-50 LONG- Trans Code 13495 LHD -50 Long-					
5 de 1	341 341	224 224	C91 C91	RHD40 LONG- TRANS CODE 13699 -RHD40 LONG- V392 Engine Trans Codes 13017, 13454 EXC 1723, 1823 Models					
	341 341 341 341	226 224 224 224 226 228	C91 C91 C91 C91	W/O CAB CODE 16010 -45 LONG- W/CAB CODE 16010 -40 LONG- FOR 1723, 1823 MODELS -40 LONG- TRANS CODE 13326 -40 LONG- TRANS CODES 13425, 13451-45 LONG- TRANS CODES 13465, 13496-50 LONG- TRANS CODES 13696, 13697 EXC 1723, 1823 MODELS W/O CAB CODE 16010 -40 LONG-				}- •	
	341 341	224 226 226 230	C91 C91	W/CAB CODE 16010 -45 LONG- For 1723, 1823 Models -45 Long- V537 Engine Gasket, speedometer Cable		MTA-	57463		
5	491 492	323 816	C1 C1	FRONT -3- REAR ADAPTER, SPEEDOWETER CABLE	1	571. 475	227 911	C1 C1	SPEEDOMETER, ASSY Standard -will work for 478672C1- Metric -code 10427-
Ŭ		259		FRONT REAR -SEE DRIVEN GEAR/ADAPTER CHART- BRACKET, TWO-SPEED ADAPTER	2				CORE, SPEEDOMETER, ASSY FRONT
	25 25	934 222 519 380		LHD RHD -MAKE LOCALLY- Bolt, Hex-HD 1/4NC X 3/4 -2- NUT, HEX. 1/4NC -2- Washer, Lock 1/4 Regular -2-			156 148		CHASSIS BUILT PRIOR TO 12-19-78 -95.42 LONG- CHASSIS BUILT 12-19-78 AND LATER -25.42 LONG- REAR
6 7 8 9	128	584 585	HX H	SLEEVE, DRIVEN GEAR SEAL, DRIVEN GEAR SLEEVE GEAR, DRIVEN -SEE DRIVEN GEAR AND ADAPTER CHART- BUSHING, DRIVEN GEAR -SEE GROUP 13-			269 251		TRANSFER CASE CODE 13155 CHASSIS BUILT PRIOR TO 12-19-78 -39.30 LONG- CHASSIS BUILT 12-19-78 AND LATER -109.30 LONG-
10	480 481	686 366	C2 C1	GROMMET, DASH Retainer, grommet		376	265 880 269	C91	TRANSFER CASE CODE 13188 EXC DT466, 466B, DT1466B ENGINES CHASSIS BUILT PRIOR TO 12-19-78 -29.30- CHASSIS BUILT 12-19-78 AND LATER -99.30 LONG- FOR DT466, 466B, DT1466B ENGINES CHASSIS BUILT PRIOR TO 12-19-78
							251		-39.30 LONG- CHASSIS BUILT 12-19-78 AND LATER -109.30 LONG-
					3				CONDUIT -NOT SERVICED SEPARATELY-
					4				CABLE, SPEEDOMETER, ASSY FRONT
							155 147		CHASSIS BUILT PRIOR TO 12-19-78 -95.00 LONG- CHASSIS BUILT 12-19-78 AND LATER -25.00 LONG- REAR
						341	270	C9 1	TRANSFER CASE CODE 13155 CHASSIS BUILT PRIOR TO 12-19-78 -40.00 LONG-
						345	252	C91	CHASSIS BUILT 12-19-78 AND LATER -110.00 LONG- TRANSFER CASE CODE 13188 EXC DT466, 4668, DT14668 ENGINES
						·	266		CHASSIS BUILT PRIOR TO 12-19-78 -30.00 LONG-
						376	881	C9 1	CHASSIS BUILT 12-19-78 AND Later -100.00 Long- For DT466, 4668, DT14668 Engines
						341	270	C9 1	CHASSIS BUILT PRIOR TO 12-19-78 -40.00 LONG-
							252		CHASSIS BUILT 12-19-78 AND Later -110.00 Long-
					5	मय ।	323	61	GASKET, SPEEDOMETER CABLE -2- ADAPTER -SEE DRIVEN GEAR AND ADAPTER CHART-
					6	128 892	584 787	HX R1	SLEEVE, DRIVEN GEAR TRANSFER CASE CODE 13155 TRANSFER CASE CODE 13188
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# TM 5-4210-230-14&P-2

MT140 GROUP 10- SPEEDOMETER & MISCELLAN MT140 GROUP 10- SPEEDOMETER & MISCELLAN

PART NUMB		P 10- SPEEDOMETER & MISCELLAN DESCRIPTION			т	UP 10- SPEEDOMETER & MISCEL DESCRIPTION
 FIG.	10-007 CC			FIG	. 10-	-008
		ND DRIVE CABLE		SPEEDON	IETER A	AND DRIVE CABLE
7 8	128 585 H	SEAL, DRIVEN GEAR SLEEVE -TRANSFER CASE CODE 13155 ONLY- GEAR, DRIVEN SEE DRIVEN GEAR AND ADAPTER CHART-				
9 10	480 686 C2	BUSHING, DRIVEN GEAR -SEE GROUP 13- Grommet, dash				
				Ŷ		
				MTA-574	63	
			1	571 22 475 91	7 C1	SPEEDOMETER, ASSY Standard -Will Work For 478672C1- Metric -Code 10427-
			2	480 15	6 C91	REAR
				341 26 345 24		-40 LONG-
				341 27		FOR DT466, 4668, DT14668 ENGINES -50 LONG- Aux Trans code 13554 -60 Long-
			3			CONDUIT -NOT SERVICED SEPARATELY-
			4	480 15	5 (91	CABLE, SPEEDOMETER, ASSY FRONT -95 Long- Rear
				341 27 345 25		-40 LONG-
				341 27 491 32	6 C91	FOR DT466, 4668, DT14668 ENGINES -50 LONG- AUX TRANS CODE 13554 -60 LONG- GASKET, SPEEDOMETER, ASSY
			5		•.••	ADAPTER -SEE DRIVEN GEAR AND ADAPTER CHART-
			6	68 06 128 58	8 R1 4 HX	SLEEVE, DRIVEN GEAR AUX TRANS CODES 13536, 13552, 13601 AUX TRANS CODE 13601
			7	128 58		SEAL, DRIVEN GEAR SLEEVE -TRANSFER CASE
			8			CODE 13601 ONLY- GEAR, DRIVEN -SEE DRIVEN GEAR AND Adapter Chart- Bushing, Driven Gear -see group 13-
			10	480 68	5 . C2	GROMMET, DASH
ĺ						
				,		
				[ <b>\$</b> *]		



REF NO.

# TM 5-4210-230-14&P-2

MT140 GROUP 10- SPEEDOMETER & MISCELLAN MT140 GROUP 10- SPEEDOMETER & MISCELLAN REF PART NO. NUMBER

DESCRIPTION

PART	
NUMBER	DESCRIPTION

FIG. 10-009

SPEEDOMETER DRIVEN GEARS AND ADAPTERS

FIG. 10-009 CONTINUED

SPEEDOMETER DRIVEN GEARS AND ADAPTERS

GULUMN	A — ADAPTER KITS	GULUM	N B — DRIVEN GEARS
KEY	IH PART NO.	KEY	IH PART NO.
1	*107 449 H	٨	78 904 H (14T)
2 3 4	*208 512 R91	B B	163 468 R1 (14T)
3	*208 513 R91	C C	203 233 R1 (14T)
4	*213 234 R91	D	239 040 R1 (14T)
5	492 724 C91	Ē	239 041 R1 (15T)
5 6 7	492 725 C91	F	239 042 R1 (16T) 230 042 R1 (17T)
8	492 726 C91 492 727 C91	G H	239 043 R1 (17T) 295 621 C1 (14T)
9	492 728 C91	J	338 977 C1 (13T)
10	492 729 C91	ĸ	338 978 C1 (14T)
ii ii	492 730 C91	ll î	338 979 C1 (15T)
12	492 731 C91	Ň	369 828 C1 (12T)
13	492 732 C91	N	421 415 C1 (17T)
- 14	492 733 C91	P	421 416 C1 (18T)
15	492 734 C91	Q	421 417 C1 (19T)
16	492 735 C91	R S	421 418 C1 (20T)
17	492 736 C91	N N N	503 064 C1 (17T)
18 19	492 737 C91 492 738 C91	T U	49 492 H (16T) 49 493 H (17T)
20	492 739 691	ll v	49 494 H (18T)
21	492 740 C91	•	
22	492 741 C91		
23	492 742 C91		
24	492 743 C91		
25	492 744 C91		
26	492 747 C91		
27 28	492 749 C91 492 750 C91		
20	492 751 C91	ll .	
30	492 752 C91		
31	492 753 C91		
32	492 754 C91		
33	492 755 C91		
34	492 756 C91		
35	492 757 C91		
36	492 758 C91		
37 38	492 759 C91 492 760 C91		
39	492 761 C91		
40	492 762 C91		
41	492 763 C91	-	
42	492 764 C91		
43	492 765 C91		
44	*973 736 R91		
98	No Adapter Used		
*Adapter Only			
KIT CONSISTS OF A	lapter. gasket. seal, and instruc	HON SNEEL	MT. 222208
		1	MT-222398

FIG. 10-009 PAGE NO. 10

TM 5-4210-230-14&P-2 MT140 GROUP 10- SPEEDOMETER & MISCELLAN

MT140 GROUP 10- SPEEDOMETER & MISCELLAN

ART

DESCRIPTION

FIG. 10-018

REF PART NO. NUMBER

DESCRIPTION

j. 10-018

SPEEDOMETER DRIVEN GEARS AND ADAPTERS

REF PART NO. NUMBER

FIG. 10-018 CONTINUED

SPEEDOMETER DRIVEN GEARS AND ADAPTERS

			riut					CASE C			ADAPT	<u>ENƏ</u>			
			HOV	N TO			_			_	NUMB	FRS			
Lo	cate the i	interse	ection	of the	applia	cabte :	tire siz	ze colur	nn and	rear ax	le ratio	line in tl	ne table t	ielow.	
			_							ntersec					
			For	the a	dapter	to us	e, 1001	c up the	numbe	er in Fig	jure 10- gure 10	9A.			
			FUI	เลย แเ	IACII Î			_							
						AUA	PIENS				, see ab	ove!			
									TIRE SI					I	
REAR	7.00	7.50	8.00	8.25	9.00	9.00		10.00	10.00	11.00	11.00	11.00	11.00	12.00	12.0
AXLE	×	X	X	X	X	X	X	X	X	X	X	X	X	X	X
RATIO	20	20	22.5	20	20	22.5	20	22	22.5	20	22	22.5	24.5	22.5	24.5
3.73 to 1	39B	408	40B	1B	418	18	418	438	41B	42B	43B	41B	438	428	438
4.10 to 1	36B 35B	37B 358	37B 36B	38B 37B	39B 38B	38B 37B	408 390	1B 40B	398 388	18	41B 1B	40B 39B	1B 408	18 408	418 18
4.33 to 1			_							39B				· · · · · · · · · · · · · · · · · · ·	
4.44 to 1 4.78 to 1	34B 32B	358	358 338	36B 34B	378 35B	36B 34B	38 <b>8</b> 368	39B 37B	37B 358	39B 37B	40B 38B	38B 36B	398 378	398 378	40B
4.70 to 1 4.88 to 1	31B	328	32B	33B	348	-33B	358	378	358	36B	300 38B	35B	378	378	386
5.05 to 1	30B	318	31B	328	33B	32B	358	36B	338	358	37B	35B	368	358	378
5.14 to 1	30B	308	318	318	338	31B	348	358	338	35B	37B 36B	34B	358	358	368
5.29 to 1	298	308	308	31B	328	31B	338	35B	328	34B	35B	33B	358	34B	358
5.38 to 1	29B	298	29B	308	318	30B	328	34B	318	33B	35B	33B	348	348	358
5.43 to 1	29B	298	298	30B	318	30B	328	348	31B	338	35B	32B	348	33B	358
5.57 to 1	28B	298	29B	29B	308	29B	318	33B	308	32B	34B	318	33B	32B	348
5.61 to 1	28B	28B	29B	29B	30B	29B	318	338	308	32B	34B	31B	33B	32B	348
5.83 to 1	278	278	28B	28B	29B	28B	308	31B	298	318	32B	308	318	31B	328
5.90 to 1	26B	278	27B	28B	29B	28B	308	318	2 <b>98</b>	318	32B	308	31B	31B	328
6.14 to 1	98B	268	26B	27B	28B	27B	298	30B	288	29B	31B	29B	30B	30B	318
6.17 to 1	<b>98</b> B	26B	26B	278	28B	278	298	30B	28B	29B	31B	29 <b>B</b>	30B	29B	316
<u>6.21 to 1</u>	<u>988</u>	26B	26B	278	28B	27B	298	30B	28 <b>B</b>	29B	31B	298	30B	298	<b>30</b> E
6.33 to 1	258	98B	98B	268	27B	26B	288	29B	27B	29B	30B	288	29B	29B	308
6.50 to 1	258	25B	988	988	26B	988	288	29B	268	28B	29B	28B	29B	28B	296
<u>6.57 to 1</u>	248	25B	25B	988	26B	98B	278	29B	268	28B	29B	27 <b>B</b>	29B	288	298
6.65 to 1	248	25B	25B	988	268	988	278	28B	26B	28B	29B	27 <b>B</b>	28B	28B	298
6.67 to 1 6.71 to 1	248 248	25B 24B	25B 258	988 988	268 268	988 988	278 278	28B 28B	268 268	28B 27B	29B 29B	27 <b>b</b> 27 <b>b</b>	28B 28B	28B 28B	298 298
7.17 to 1	240 22B	24D 23B	23B	900 248	208	900 24B	988	26B	206	26B	29B 27B	276 986	26B	26B	290
7.21 to 1	228	22B	23B	24B	258	248	988	268	258	988	27B	98B	26B	26B	276
7.60 to 1	22B 21B	22B 21B	23B 44B	24B 22B	208 238	228	908 24B	205 98B	238	908 25B	278 988	966 248	206 988	200 258	988
7.80 to 1	208	21B	21B	44B	22B	228	23B	25B	23B	24B	98B	248	25B	24B	988
B.17 to 1	188	19B	19B	21B	21B	218	228	248	448	238	24B	220	24B	23B	248
8.38 to 1	18B	188	19B	208	21B	208	228	238	21B	22B	24B	22B	23B	22B	248
8.86 to 1	16B	178	17B	188	19B	188	208	44B	19B	21B	22B	218	44B	218	228
8.87 to 1	16B	17B	17B	188	19B	188	20B	44B	19B	21B	22B	208	44B	21B	22B
9.77 to 1	14B	158	15B	158	16B	158	178	19B	168	18B	20B	178	19B	18B	208



#### TM 5-4210-230-14&P-2 MT140 GROUP 10- SPEEDOMETER & MISCELLAN

#### MT140 GROUP 10- SPEEDOMETER & MISCELLAN

DESCRIPTION

FIG. 10-019

1

REF PART NO. NUMBER

SPEEDOMETER DRIVEN GEARS AND ADAPTERS

REF PART NO. NUMBER

DESCRIPTION

FIG. 10-019 CONTINUED SPEEDOMETER DRIVEN GEARS AND ADAPTERS

			ze colum	in and re	ar axis ra	tio line in the ta	PART NUMBER	the number and	l letter at that inte	ersectio
		For the	ie adapti e driven	gear to	use, looi	c up the letter	n Figure 10-9A in Figure 10-9	8.		
-				ADAP	rers (F		imbers, see al	bove)		
REAR	7.50	8.00	8.25	9.00	9.00	TIRE SIZ	E 10.00	11.00	11.00	12.0
AXLE BATIO	x 20	8.00 X 22.5	8.25 X 20	8.00 X 20	9.00 X 22.5	X 20	X 22.5	X 20	× 22.5	22.
5.29 to 1	34\$	358	358	378	365	388	378	385	385	398
5.38 to 1	348	345	358	365	35S	378	365	38\$	37\$	385
6.14 to 1 6.17 to 1	30S 30S	30S 30S	31S 31S	328 328	318 318	338 338	328 328	34S 34S	338 338	338 348
6.67 to 1 7.17 to 1	28S 26S	28S 26S	29S 27S	30S 28S	29S 27S	31S 29S	30S 28S	31S 30S	31 S 29 S	323 305
									MT-	22249/
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							r			
							ï			
								• •		

TM 5-4210-230-14&P-2

PART NUMBER		DESCRIPTION	NO.	PART NUMBER	DESCRIPTION
FIG. 10				FIG. 10-	021
HOUF	METER		н	UBODOMETER	
		TOTAC HOURS			2
		MT-22104	i.	la la	
1		HOURMETER, ASSY EXC CODE 10503	1		HUBODOMETER, ASSY
	) 841 C91	EXC 9.0 LITER, D150, 170, 190, DT466, DT466B, DT1466B Engines		297 032 091	STANDARD TREAD 7.50 X 20, 8.00 X 22.5 TIRE SIZE MILES
	3 693 C1 ) 841 C91	FOR 9.0 LITER, D150, 170, 190, DT466, DT466B, DT1466B ENGINES FOR CODE 10503		497 805 C91 297 033 C91	KILOMETERS 8.25 X 20, 9.00 X 22.5 TIRE SIZE MILES
				297 033 C91 497 806 C91 297 034 C91	KILOMETERS 9.00 X 20, 10.00 X 22.5 TIRE SIZE MILES
				497 807 C91	KILOMETERS 10.00 X 20, 11.00 X 22.5 TIRE SIZE
				297 035 C91 497 808 C91	MILES KILOMETERS 10.00 X 22, 11.00 X 24.5 TIRE SIZE
				297 036 C91 497 809 C91	MILES KILOMETERS
				297 039 C91 497 810 C91	11.00 X 20, 12.00 X 22.5 TIRE SIZE MILES KILOMETERS
				297 037 C91 497 811 C91	11.00 X 22, 12.00 X 24.5 TIRE SIZE MILES KILOMETERS
	,	•		496 392 C91	HI TREAD 7.50 X 20, 8.00 X 22.5 TIRE SIZE
-		:		496 395 C91 244 537 C91 499 812 C91	8.25 X 20, 9.00 X 22.5 TIRE SIZE 9.00 X 20, 10.00 X 22.5 TIRE SIZE MILES
				499 812 C91 244 538 C91	KILOMETERS 10.00 X 20, 11.00 X 22.5 TIRE SIZE MILES
				97 813 C91 244 539 C91	KILDMETERS 10.00 X 22, 11.00 X 24.5 TIRE SIZE 11.00 X 20, 12.00 X 22.5 TIRE SIZE
				521 497 C91 197 814 C91	MILES KILOMETERS
				196 396 C91 197 815 C91	11.00 X 22, 12.00 X 24.5 TIRE SIZE MILES KILOMETERS
				196 391 C91 196 394 C91	LO TREAD 7.50 X 20, 8.00 X 22.5 TIRE SIZE 8.25 X 20, 9.00 X 22.5 TIRE SIZE
				196 393 C91	XHI TREAD 7.50 X 20, 8.00 X 22.5 TIRE SIZE
			Ę	49 971 C91 97 816 C91	9.00 X 20, 10.00 X 22.5 TIRE SIZE MILES KILOMETERS
				49 972 C91 97 234 C91 96 397 C91	10.00 X 20, 11.00 X 22.5 TIRE SIZE 10.00 X 22, 11.00 X 24.5 TIRE SIZE 11.00 X 22, 12.00 X 24.5 TIRE SIZE
			2		BRACKET, HUBODOMETER MOUNTING
			3	178 092 C1 184 188 C1	REAR AXLE CODE 14029, 14030, 14039, 14042, 14187, 14199, 14341 REAR AXLE CODE 14044, 14186, 14351
		• •		147. 126 C1	REAR AXLE CODE 14047, 14057, 14192, 14197, 14292, 14355, 14472 NUT, HEX. LOCK -2-
				85 548 R1 02 609 R1 14 496 20 384	NUI, HEX. LOCK -2- 5/8NC -W/378092C1 BRKT- 3/4NC -W/347126C1, 384188C1 BRKT- NUT, HEX. JAM 1/2NF WASHER, LOCK 1/2 REGULAR

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TM 5-4210-230-14&P-2 MT140 GROUP 10- SPEEDOMETER & MISCELLAN

#### MT140 GROUP 10- SPEEDOMETER & MISCELLAN

REF PART NO. NUMBER

DESCRIPTION

FIG. 10-022

REF PART NO. NUMBER

DESCRIPTION

SPEEDOMETER DRIVEN GEARS AND ADAPTERS

FIG.	10-0	22	CON		IUED
SPEEDOMET	ER DR	VEN (	GEARS	AND	ADAPTERS

			FIC				_				DAPTER				
									<u>676, 136</u>						
Lo	cate the i	ntaraa	HOV ation	V ID I of the	-IND C applie	BIVE	N GEAH	i anu a A colun	UAPIE	K PAKI	NUMBE	:KS line in th	no tahla t	wnlea	
LU	Gale the h	116196	GLIUIS	n uic No	appilo te the	numb	er and	letter :	at that i	ntersec	tion.	11115 101 0	IC 1801C 1	GIU <b>H</b> .	
			For	the ac	lapter	to use	e. lock	up the	number	r in Fig	ure 10-9	DA.	·		
			For t	<u>he dri</u>	vên gi	ear to	use, l	ook up	the lette	er in Fig	jure 10-	<u>98.</u>			
						ADA	PTERS				<u>, see ab</u>	ove)			
									TIRE SIZ			· · · · ·	· · ·		
REAR	7.00	7.50	8.00	8.25	9.00	9.00	10.00	10.00	10.00	11.00	11.00	11.00	11.00	12.00	12.00
AXLE	X	X	X	X	X	X	X	X	X	X	X	X	X	x 22.5	X 24.5
RATIO	20	20	22.5	20	20	22.5	20	22	22.5	20	22	22.5	24.5		
3.73 to 1	41T	43U	43U 41U	2U 42U	3U 43U	2U 42U	2T 42T	3T 2U	3U 43U	3T 2U	3T 3U	2T 42T	3T 2U	3T 2U	3T 3U
4.10 to 1 4.33 to 1	1U 40U	41U 1U	10	420 410	430	420 410	420	430	430	430	20	421 41T	2V	430	20
4.44 to 1	38T	400	400	10	410	10	420	430	410	420	2V	420	430	41T	43U
4.78 to 1	380	380	38U		400	390	10	410	400	410	420	10	410	410	420
4.88 to 1	370	380	38U	39U	400	39U	10	410	400	10	1T	10	42U	40T	410
5.05 to 1	36U	370	37U	38U	39U	38U	40U	10	390	40U	41U	400	10	10	·41U
5.14 to 1	350	360	36U	370	38U	37U	390	10	380	40U	10	39U	10	40U	10
5.29 to 1	350	<u>35U</u>	<u>36U</u>	37U	38U	37U	<b>39</b> U	40U	<u>38U</u>	39U	10	390	400	<u>38T</u>	400
5.38 to 1	34U	35U	35U	36U	37U	36U	- <b>38</b> U	38T	37U	39U	40U	380	38T	390	400
5.43 to 1	340	350	350	360	370	36U	380	390	370	390	400	380	390	39U 38U	40U 39U
5.57 to 1	330	340	340	350	360	350	370	38U	360	38U	390	37U	390		
5.61 to 1 5.83 to 1	33U 31U	34U 32U	34U 33U	35U 34U	36U 35U	35U 34U	37U 36U	38U 37U	36U 35U	38U 37U	39U 38U	37U 36U	38U 37U	38U 37U	39U   38U
5.90 to 1	310	320	320	330	350	330	350	370	350	360	380	360	370	370	380
6.14 to 1	300	310	310	320	330	32U	340	360	33U	350	370	340	360	350	370
6.17 to 1	300	310	310	320	33U	320	340	360	330	350	370	340	360	350	360
6.21 to 1	300	29T	310	310	33U	320	34U	350	330	350	360	34U	35U	35U	360
6.33 to 1	28T	300	30U	310	32U	310	34U	35U	32U	340	36U	34U	35U	35U	360
6.50 to 1	29U	28T	300	300	31U		330	34U	310	340	35U	33U	340	34U	350
6.57 to 1	29U	29Ľ	28T	300	<u>31U</u>	300	320	<u>34U</u>	310	<u>33U</u>	35U	320	340	330	<u>35U</u>
6.65 to 1	28U	290	290	300	310	30U	320	34U	310	330	340	320	340	330	340
6.67 to 1	280	290	290	300	310		320	330	310	330	34U 34U	32U 32U	34U 33U	33U 33U	34U 34U
6.71 to 1 7.17 to 1	28U 98T	29U 98T	29U 98T	30U 28U	31U 29U	30U 28U	31U 30U	33U 31U	31U 29U	32U 29T	340 32U	320	310	310	320
7.21 to 1	98T	98T	98T	280	290	280	300	310	290	300	320	300	310	310	320
7.60 to 1	980	980				98T		300	280	290	300	290	300	28T	300
7.80 to 1		980	980			260	280	290	98T	290	300	280	290	290	300
8.17 to 1	240	987	98V	98U	260	_	98T	280	26U	27U	29U	98T	28U	28U	290
8.38 to 1	230	240	98V	98V	980	98V	260	270	98U	98T	28U	260	27U	98T	280
8.86 to 1	22U		22U					260	98V	980	98T	25U	260	98U	98T
8.87 to 1	<u>20T</u>	220	221	_		_		260	98V	<u>98U</u>	98T	250	26U	98U	981
9.77 to 1	190	200	200	210	22U	210	230	98V	22U	23U	98V	230	98V	240	98V

140 GROUP 12-ENGINES	FIG NO	
	FIGINO	
IF A COMPLETELY TRIMMED IH ENGINE IS NEEDED, REFER TO MT-90 ENGINE SECTION FOR PART NUIBERS AVAILABLE. THIS APPLIES ONLY TO ASSEMBLIES CURRENTLY USED IN		
THIS APPLIES ONLY TO ASSEMBLIES CURRENTLY USED IN		
PRODUCTION.		
GUIDE TO UNITS IN GROUP 12 INDEX		
ENGINE APPLICATION CHART	PAGE 02	
ENGINE SERIES WITH CODES IDENTIFYING ENGINE SIZES	17/02 02	
AND TYPES	PAGE 03	
ENGINE UNITS	TAGE 03	
ACCELERATOR, CHOKE AND THROTTLE CONTROL AIR CLEANER	PAGE 04	
	PAGE 04	
AIR RESTRICTION GAUGE	PAGE 04	
CAMSHAFT AND RELATED PARTS	PAGE 05	
CARBURETOR	PAGE 05	
CHOKE CONTROL	PAGE 05	
COLD STARTING EQUIPMENT -ETHER-	PAGE 05	
CONNECTING RODS AND PISTONS	PAGE 06	
CRANKCASE AND RELATED PARTS	PAGE 05	
CRANKCASE VENTILATOR	PAGE 05	
CRANKSHAFT AND RELATED PARTS	PAGE 05	
CYLINDER HEAD AND RELATED PARTS	PAGE 06	
ELETRONIC GOVERNOR CONTROL	PAGE 06	
EMISSION AIR PUMP AND MOUNTING	PAGE 06	
ENGINE ACTUATOR AND MOUNL ING	PAGE 06	
ENGINE BLOCK HEATER	PAGE 06	
ENGINE DECONTRATER	PAGE 06	
ENGINE GASKET SETS	PAGE 00	
ENGINE BASKET SETS	PAGE 06	
ENGINE SHUT-DOWN CONTROL	PAGE 06	
EXHAUST GAS RECIRCULATION SWITCH	PAGE 06	
EXHAUST GAS RECIRCULATION VALVE	PAGE 06	
FAN, FAN MOUNTING	PAGE 07	
FAN BELT	PAGE 07	
FLYWHEEL AND HOUSING	PAGE 07	
FRONT ENGINE COVER AND RELATED PARTS	PAGE 07	
FRONT PT0 FLANGE	PAGE 07	
FUEL FILTER	PAGE 07	
FUEL INJECTION	PAGE 08	
FUEL PUMP	PAGE 08	
IDLER GEAR AND MOUNIING	PAGE 08A	
IDLER PULLEY AND MOUNTING	PAGE 08A	
INTERCOOLER -DTI466B ENGINE-	PAGE 08A	
MANIFOLDS	PAGE 08A	
OIL COOLER	PAGE 08B	
OIL FILLER AND CAP	PAGE 08B	
OIL FILTER	PAGE 08B	
OIL LEVER GAUGE	PAGE 08B	
	PAGE 09	
OIL PAN AND RELATED PARTS		
	PAGE 09	
PISTON AND RELATED PARTS	PAGE 09	
PULLEYS BELT	PAGE 09	
RADIATOR AND MOUNTING	PAGE 10	
RADIATOR SHUTTERS	PAGE 10	
THERMOSTAT	PAGE 10	
THROTTLE CONTROL -SEE ACCELERATOR-		
TURBOCHARGER -DT466, DT466B, DT1466B ENGINES	PAGE 10	
VACUUM HOSE INSTALLATION	PAGE 10	
WATER FILTER AND MOUNTING	PAGE 10	
WATER INLET	PAGE 10	
WATER OUTLET	PAGE 10	
	PAGE 10	
WATER PUMP		

#### MT-140 GROUP 12-ENGINES

/11-140	GROUP 12-ENGINES			· · ·	
			FIG NO	FICHE LOC	
ENGINE ASSEMBLIES 3208 ENGINE -SEE 9.0 LITER ENGINE D10, 170, 190 ENGII DT466, DT466B, DT MV404, MV440 ENG V345 ENGINE V392 ENGINE V537 ENGINE ENGINE APPLICA 1624 MODEL V345 ENGINE 1654 MODEL 9.0 LITER ENGINE 1723 MODEL MV404 % V345, V39 1724 MODEL MV404 \$%, V346, V3 1754 MODEL D150, D170, 9.0 LITI 1823. 1824 MODELS MV404 \$%, MV446 EI 1824-4X4 MODEL MV404 \$%, MV44, 1853 MODEL 3208, 0160, 170, 190 ENGINES 1853FC MODEL 9.0 LITER, 0T466, D 1854 MODEL 9.0 LITER, 0T466, D 1854 MODEL 3208, 0190, 9.0 LITE 1924 MODEL MV404 \$, MV446 EI F-1924, F-1924-6X6, 1 MV404 \$, MV440 EN 1954 MODEL 3208, 0.0 LITER, DT F-1954-6X6 MODEL 3208, 0.0 LITER, DT F-1954-6X6 MODEL 3208, 0.0 LITER, DT F-1954-6X6 MODEL 3208, 0.0 LITER, DT F-1954-6X6 MODEL 3208, 0.0 LITER, DT F-1954-6X6 MODEL 3208, 0.0 LITER, DT F-1954-6X6 MODEL 3208, 0.0 LITER, DT F-1954-6X6 MODEL 3208, 0.0 LITER, DT F-1954-6X6 MODEL 3208, 0.0 LITER, DT F-1954-6X6 MODEL DT466, 9.0 LITER, DT F-1954-6X6 MODEL 3208, 0.0 LITER, DT F-1954-6X6 MODEL 3208, 0.0 LITER, DT F-1954-6X6 MODEL 3208, 0.0 LITER, DT F-1954-6X6 MODEL 3208, 0.0 LITER, DT F-1954-6X6 MODEL 3208, 0.0 LITER, DT F-1954-6X6 MODEL 3208, 0.0 LITER, DT F-1954-6X6 MODEL 3208, 0.0 LITER, DT F-1954-6X6 MODEL 3208, 0.0 LITER, DT F-1954-6X6 MODEL 3208, 0.0 LITER, DT F-1954-6X6 MODEL 3208, 0.0 LITER, DT F-1954-6X6 MODEL 19655 2155 MODELS	S CATERPILLAR CATALOG- NES 1466B ENGINES SINES TION CHART 92 ENGINES 392 ENGINES ER, DT466, DT466B, DT1466B ENGINES ENGINES V345, V392 ENGINES 0, 9.0 LITER, DT466, DT466B, DT1466B 0, 9.0 LITER, DT466, DT466B, DT1466B T466B, DT1466B ENGINES ER, DT466, DT466B, DT1466B ENGINES NGINES 925 MODELS GINES 466, DT466B. DT1466B ENGINES DT466B, DT1466B ENGINES MGINES FR, DT466. DT466B, DT1466B ENGINES S 1466B ENGINES DT466B ENGINES	PAGE 13B PAGE 12 PAGE 14 PAGE 14 PAGE 14 PAGE 15	FIG NO	FICHE LOC	
% 4 BBL CARBURE IC	JK VV/IVIV4U4 ENGINE				
\$ 2 BBL CARBURETO	R W/MV404 ENGINE				
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# <u>NT-140</u>

# **GROUP 12-ENGINES**

NT-140	GROUP 12-ENGINES				P14
			FIG NO	FICHE LOC	
ENGIN	ES COMPRESSION -EXPORT ONLY-	CODES			
V3		12110			
	DARD COMPRESSION				
	OPANE -LPG-	40144			
	/346 /392	12l11 12121			
ſ	MV404	12131			
	MV404	12132			
	//V446 OLINE	12142			
	/345	12 12			
	/392	12122			
	MV404 -2 BBL CARBURETOR-	12127 12129			
	//V404 -4 BBL CARURETOR- //V446	12129			
	/537 -2 BBL CARBURETOR-	12139			
	/537 -4 BBL CARBURETOR-	12147			
DIES	EL 9.0 LITER IH -180 HP-	12222			
	9.0 LITER IH -165 HP-	12223			
ç	9.0 LITER IN -180 HP-	12224			
	0150 IH -150 HP- 0170 IH -170 HP-	12225 12228			
	D190 IH -190 HP-	12220			
	DT466B IH -180 HP-	12327			
	3208 CATERPILLAR -210 HP-	12407			
	DT466, DT466B IH -210 HP- DTI466B IN -210 HP-	12482 12499			
	3208 CATERPILLAR -175 HP-	12502			
3	3208 CATERPILLAR -210 HP-	12500			
	3208 CATERPILLAR -175 HP- DT466, DT466B IH -150 HP-	12507 12513			
	DT466B IH -190 HP-	12545			
3	3208 CATERPILLAR -200 HP-	12547			
	DT466B IH -180 HP-	12564			
	3208 CATERPILLAR -175 HP- 3208 CATERPILLAR -180 HP-	12597 12698			
· · · ·		12030			
	EFER TO PART INFORMATION LETTER PIL 81-12-	06 FOR			
ILPG	PARTS LISTINGS OF SERVICEABLE PARTS.				
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#### NT-140 GROUP 12-ENGINES

	FIG NO	FICHE LOC	
ACCELERATOR, CHOKE AND THROTTLE CONTROL	40.004	101	
3208 ENGINE 9.0 LITER ENGINE	12-001	A21	
LHD			
EXCEPT 1853FC MODEL	12-002	A22	
FOR 1853FC MOODEL	10 170	101	
UPPER CONTROLS LOWER CONTROLS	12-178	J01 J02	
RHD	12-144	H20	
D150, 170, 190 ENGINES	12-002	A22	
DT466, 466B DT1466B ENGINES	40.000	4.00	
EXC 1853FC MODELS FOR 1853FC MODELS	12-003	A23	
FRONT END	12-171	121	
ENGINE END	12-172	122	
MV404 ENGINE	40.004	404	
LHD RHD	12-004 12-101	A24 I13	
MV446 ENGINE	12-004	A24	
V345, V392 ENGINES			
LHD	12-005	B01	
RHD EXCEPT V392 ENGINE	12-161	13	
FOR V392 ENGINE	12-006	B01	
V537 ENGINE	12-107	F20	
AIR CLEANER			
ASSEMBLY DIESEL ENGINES			
EXCEPT 1853FC MODEL	12-007	B02	
FOR 1853FC MODEL	12-173	122	
GASOLINE ENGINES			
MV404, 446 ENGINES EXCEPT CALIFORNIA CODES 12824, 12826	12-009	B03	
FOR CALIFORNIA CODES 12824, 12825	12-009	ыла 115	
V345, V392 ENGINES	12 100		
EXCEPT CALIFORNIA CODES 12824, 12826	12-010	B04	
FOR CALIFORNIA CODES 12824, 12825 V537 ENGINES	12-153 12-008	l15 B03	
MOUNTING	12-000	B03	
DIESEL ENGINES			
EXC PRE-CLEANER CODE 12930	10.044	Doc	
3208 ENGINE 9.0 LITER ENGINE	12-011	B05	
EXCEPT 1853FC MODEL	12-012	B06	
FOR 1853FC MODEL			
MOUNTING	12-173	122	
PIPING D150, 170, 190 ENGINES	12-174	I23 B06	
DT466, 466B, DTI466B ENGINES	12-012	DUU	
EXC 1853FC MODEL	12-013	B07	
FOR 1853FC MODEL	40.470	100	
MOUNTING PIPING	12-173	l22 l23	
FOR PRE-CLEANER CODE 12930	12-174	12.5	
3208 ENGINE	12-122	G18	
0150, 170 190 ENGINES	12-120	G16	
DT466, 466B, DTI466B ENGINES GASOLINE ENGINES	12-121	G17	
MV404, 446 ENGINES			
EXCEPT CALIFORNIA CODES 12824, 12825	12-014	B08	
FOR CALIFORNIA CODES 12824. 12825	12-163	l15	
V345, V392 ENGINES EXCEPT CALIFORNIA CODES 12824, 12825	12-010	B04	
FOR CALIFORNIA CODES 12824, 12826	12-010	ыо4 I15	
V537 ENGINES	12-015	B09	
AIR RESTHICTION GAUGE AND HOSE -CODE 12091 AND 1853FC MODEL-	12-008	B02	
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<u>NT-140</u>

# GROUP 12-ENGINES

FIG NO         FIG NO         FICH LOC           CAMSHAFT AND RELATED PARTS 3200 ENGINE - SEE CATERPILLAR CATALOG 500 ENGINE - SEE CRANKASE AND RELATED PARTS- 101 TR. NORMERSHEE CREE CRANKASE AND RELATED PARTS- 1046, 172 ENGINES - SEE CRANKASE AND RELATED PARTS- 12-146         12-018         B10           M440, 400 ENGINES - SEE CRANKASE AND RELATED PARTS- 1746, 172 ENGINES - SEE CRANKASE AND RELATED PARTS- 12-146         12-018         B10           M440, 400 ENGINES - CORDINATION - CO	I-140	GROUP 12-ENGINES	1	1 1	
3208 ENGINE - SEE CATERPILIAR CATALOG- 9.0 LITER ENGINES - SEE CRANKCASE AND RELATED PARTS- DT466; DT4686, DT4686 ENGINES - SEE CRANKCASE AND RELATED PARTS- V345, V322 ENGINE - SEE CRANKCASE AND RELATED PARTS- V357 ENGINE - CARBURETOR         12-018         B10           MV404, 440 ENGINES - SEE CRANKCASE AND RELATED PARTS- V335, TENGINE - SEE CRANKCASE AND RELATED PARTS- V357 ENGINE - CODE 12750, 12800         12-021         G20           CARBURETOR - MORE CODE 12750, 12800         12-021         G20         E           EXCODE 12750, 12800         12-021         G20         E           FOR CODE 12750, 12800         12-021         G20         E           FOR CODE 12750         12-021         B12         E           FOR GOVERNOR CODE 12950         12-020         B18         E           FOR GOVERNOR CODE 12950         12-020         B18         E           V34 ENGINE         E00 ENTROR CODE 12950         12-021         B20           V34 ENGINE         E00 E12750         12-020         B18           FOR GOVERNOR CODE 12950         12-019         B15           V34 ENGINE         12-018         B12         12-019           V35 ENGINE         12-018         B12         12-019         B15           V34 ENGINE         12-018         B12         12-018         B12           V32			FIG NO	FICHE LOC	
V346, V392 ENGINES12-027V537 ENGINE12-017CRANKCASE VENILATOR12-017DT466, DT466B, DT1466B ENGINES12-0289.0 LITER ENGINE12-148CRANKSHAFT AND RELATED PARTS12-1483208 ENGINE - SEE CATERPILLAR CATALOG-12-1489.0 LITER ENGINE - SEE CRANKCASE AND RELATED PARTS-12-029DT466, DT466B, DT1466B ENGINES12-029C09MV404, MV446 ENGINES - SEE CRANKCASE AND RELATED PARTS-V345, V392 ENGINES - SEE CRANKCASE AND RELATED PARTS-	3208 ENGINE -SEE 0 9.0 LITER ENGINES D150, 170, 190 ENG DT466; DT466B, DTI MV404, 440 ENGINE V345, V392 ENGINE V345, V392 ENGINE V537 ENGINE CARBURETOR MV404 ENGINE ENGINE CODE 12 EXCEPT CODES FOR CODE 129 ENGINE CODE 12 FOR GOVERNO FOR GOVERNO FOR GOVERNO FOR GOVERNO V345 ENGINE EXC GOVERNOR FOR GOVERNO V345 ENGINE EXC GOVERNOR V392 ENGINE ENGINE CODE 12 FOR CODE 127 FOR CODE 129 CARBURETOR PIPING CHOKE CONIHOL MANUAL -SEE AC AUTOMATIC COLD STARTING EQU CONNECTING RO 3208 ENGINE -SEI 9.0 LITER ENGINE D150 170, 190 EN DT46, DT466B, DT MV404, MV446 ENGIN	ATED PARTS CATERPILLAR CATALOG- -SEE CRANKCASE AND RELATED PARTS- INES -SEE CRANKCASE AND RELATED PARTS- 466B ENGINES S -SEE CRANKCASE AND RELATED PARTS- S -SEE CRANKCASE AND RELATED PARTS- S -SEE CRANKCASE AND RELATED PARTS- 127 -2 BBL CARBURETOR- 50 129 -4 BBL CARBURETOR- 129 -4 BBL CARBURETOR- W/GOVERNOR R CODE 12750 R CODE 12950 R CODE 12950 CODE 12950 CODE 12950 139 -2 BBL CARBURETOR- 147 -4 BBL CARBURETOR- 147 -4 BBL CARBURETOR- 147 -4 BBL CARBURETOR- 147 -4 BBL CARBURETOR- 50 50 - SEE VACUUM HOSE INSTALLATION- CELERATOR- IPMENT -ETHER- DS AND PISTONS E CATERPILLAR CATALOG- SEE CRANKCASE AND RELATED PARTS- 1466B ENGINES ES -SEE CRANKCASE AND RELATED PARTS- 1466B ENGINES E CATERPILLAR CATALOG- IGINES STEE CRANKCASE AND RELATED PARTS- 1466B ENGINES	12-018 12-146 12-021 12-126 12-018 12-020 12-019 12-021 12-021 12-018 12-020 12-019 12-018 12-020 12-019 12-018 12-020 12-019 12-023 12-147 12-127 12-024 12-025	B10 H23 G20 G21 B12 B18 B15 B12 B15 B12 B15 B12 B15 B12 B15 B12 B15 B12 B15 B12 B15 B12 B15 B12 B15 B12 B15 B12 B15 B12 B12 B15 B12 B12 B12 B12 B12 B12 B12 B12 B12 B12	
V346, V392 ENGINES12-027V537 ENGINE12-017CRANKCASE VENILATOR12-017DT466, DT466B, DT1466B ENGINES12-0289.0 LITER ENGINE12-148CRANKSHAFT AND RELATED PARTS12-1483208 ENGINE - SEE CATERPILLAR CATALOG-12-1489.0 LITER ENGINE - SEE CRANKCASE AND RELATED PARTS-12-029DT466, DT466B, DT1466B ENGINES12-029C09MV404, MV446 ENGINES - SEE CRANKCASE AND RELATED PARTS-V345, V392 ENGINES - SEE CRANKCASE AND RELATED PARTS-	MANUAL -SEE AC AUTOMATIC COLD STARTING EQU CONNECTING RO 3208 ENGINE -SEI 9.0 LITER ENGINE D150 170, 190 ENG DT46, DT466B, DT MV404, MV446 ENGIN V345, V392 ENGIN V537 ENGINE CRANKCASE AND REI 3208 ENGINE -SEI 9.0 LITER ENGINE D150, 170, 190 EN DT466, DT466B, D	IIPMENT -ETHER- DS AND PISTONS E CATERPILLAR CATALOG- - SEE CRANKCASE AND RELATED PAR;U- GINES -SEE CRANKCASE AND RELATED PARTS- 1466B ENGINES ES -SEE CRANKCASE AND RELATED PARTS- IES -SEE CRANKCASE AND RELATED PARTS- LATED PARTS E CATERPILLAR CATALOG- IGINES ITI466B ENGINES	12-105 12-023 12-147 12-127 12-024 12-025	F18 B23 H24 G23 B24	
MV404, MV446 ENGINES -SEE CRANKCASE AND RELATED PARTS- V345, V392 ENGINES -SEE CRANKCASE AND RELATED PARTS-	V346, V392 ENGIN V537 ENGINE CRANKCASE VENILAT DT466, DT466B, D 9.0 LITER ENGINE CRANKSHAFT AND RE 3208 ENGINE -SEI 9.0 LITER ENGINE D150, 170, 190 EN	NES TOR ITI466B ENGINES ELATED PARTS E CATERPILLAR CATALOG- S-SEE CRANKCASE AND RELATED PARTS- IGINES -SEE CRANKCASE ANM RELATED PARTS-	12-027 12-017 12-028 12-148	B11 C08 I01	
	DT466, DT466B, D MV404, MV446 EN V345, V392 ENGIN	TI466B ENGINES GINES -SEE CRANKCASE AND RELATED PARTS-			

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#### NT-140 GROUP 12-ENGINES

1-140	GROUP 12-ENGINES	1	1	
		FIG NO	FICHE LOC	
CYLINDER HEAD	AND RELATED PARTS			
	SEE CATERPILLAR CATALOG-			
9.0 LITER ENGI		12-128	H01	
D150, 170, 190		12-030	C10	
	, DTI466B ENGINES	12-031	C12	
MV404, MV446		12-032	C13	
V345, V392 ENG	JINES	12-033	C15	
V537 ENGINE		12-034	C17	
	VERNOR CONTROL	12-054	D10	
	JMP AND MOUNTING	12-034	010	
MV404, MV446	ENGINES			
EXCEPT CAL		12-044	D02	
FOR CALIFOR				
RIGHT-SIDE	EMOUNTED	12-165	l16	
LEFT-SIDE				
	OMPRESSOR	12-166	l17	
W/AIR COM		12-167	l17	
V345, V392 ENG	JINES	40.045	Doo	
		12-045	D03	
HYDRAULIC E V537 ENGINE	DRAKES	12-119	G16 D04	
	HEATER -110 VOLT-	12-040	J03	
ENGINE DRIVE B		12-170	303	
	DRIVE BELTS -SEE ALTERNATOR MOUNTING-			
	TS -SEE FAN MOUNTING-			
ENGINE GASKET				
3208 ENGINE -	SEE CATERPILLAR CATALOG-			
9.0 LITER ENGI		12-129	H02	
D150, 170, 190 EN		12-036	C19	
DT466, DT466B D		12-037	C20	
MV404, MV446 EN		12-038	C21	
V345, V392 ENGI	NES	12-039 12-040	C22	
V537 ENGINE ENGINE MOUNTI		12-040	C23	
FRONT	NG			
EXC 9.0 LITE	R ENGINE	12-041	C24	
FOR 9.0 LITE		12-125	G20	
REAR			010	
	5, V392 ENGINES	12-047	D06	
FOR V345, V3				
	MATIC TRANS	12-042	D01	
	ATIC TRANS	12-043	D01	
		12-179	J04	
ENGINE SHUT-DO		12-180 12-049	J06 D06	
	ECIRCULATION SWITCH	12-049	I14	
EXHAUST GAS R	ECIRCULATION VALVE -GASOLINE ENGINES ONLY-	12-048	D06	
		12 010	200	
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# <u>NT-140</u>

#### GROUP 12-ENGINES

NT-140	GROUP 12-ENGINES			
		FIG NO	FICHE LOC	
FAN AND MO 3208 ENGIN FAN				
EXC VI	SCOUS FAN -STANDARD AND CODE 12944- SCOUS FAN -STANDARD AND CODE 12944-	12-057	D13	
W/AIR (	R CONUITIONER -CODE 18960- CONDITIONER -CODE 16966-	12-066 12-056	D11 D12	
	IG SCOUS FAN -STANDARD AND CODE 12944- R CONDITIONER -CODE 16956-	12-001	D11	
W/AIR ( FOR VI	CONDITIONER -CODE 16965- SCOUS FAN -STANDARD AND CODE 12944-	12-076	E09	
W/AIR ( 9.0 LITER E	R CONDITIONER -CODE 16956- CONDITIONER -CODE 16956- NGINE 190 ENGINES	12-055 12-068 12-131 12-078	D11 D12 H04 E12	
DT466, DT4 EXCEPT	66B, DTI466B ENGINES VISCOUS FAN -CODES 12482, 12944- COUS FAN -CODES 12482, 12944-	12-078	D13 E01	
MV404, MV4 EXCEPT I	146 ENGINES FRONT MOUNTED PT0 -CODE 12851-			
W/VISC FOR FR	SCOUS FAN DRIVE -CODE 12944- OUS FAN DRIVE -CODE 12944- RONT MOUNYED PT0 -CODE 12851-	12-106 12-068	F19 D13	
W/VISC V345, V392		12-059 12-058 12-062	D14 D13 D08	
	ENGINES -SEE WATER PUMP-	12-053	D09	
FAN AN	T DT466, 466, DTI466B, 9.0 LITER ENGINES -SEE ID MOUNTING-			
MOUNT	7466, 466, DTI466B ENGINES -SEE ALTERNATOR TING- D LITER ENGINE -SEE IDLER PULLEY AND MOUNTIING-			
FLYWHEEL A V345, V392 V537 ENGIN	ND HOUSING ENGINES	12-027 12-160	C06 102	
FRONT ENGI	NE COVER AND RELATED PARTS B, DT1466B ENGINES	12-060 12-151	D15 103	
FRONT MOUN	ITING PT0 FLANGE	12-090	F01	
	NGINE 90 ENGINES	12-062 12-132	D17 H06	
FOR 4X DT466, 466,	T 4X4 MODELS 4 MODELS DTI466B ENGINES	12-114 12-152 12-064	G08 I04 D18	
MV404, 446 INLINE SPIN-O		12-050 12-051	D07 D07	
V346, 392 E V537 ENGIN		12-108 12-163	F21 I01	

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#### **GROUP 12-ENGINES**

NI-140	GROUP 12-ENGINES			
		FIG NO	FICHE LOC	
FUEL INJECTION	CATERPILLAR CATALOG-			
9.0 LITER ENGINE				
DRIVE		12-130	H10	
GOVERNOR INJECTOR		12-137 12-133	H11 H05	
MOUNTING		12-130	H10	
PIPES		12-134	H05	
PUMP D150, 170 ENGINES		12-136	H05	
DRIVE		12-071	E06	
GOVERNOR		12-143	H18	
INJECTOR MOUNTING		12-085 12-072	D20 E06	
PIPES		-		
EXCEPT 4X4 M FOR 4X4 MODE		12-007 12-164	D22 106	
PUMP		12-058	D24	
D190 ENGINE				
DRIVE INJECTOR		12-071 12-065	E06 D20	
GOVERNOR		12-009	E02	
MOUNTING		12-072	E06	
PIPES EXCEPT 4X4 M		12-007	D22	
FOR 4X4 MODE		12-154	106	
		12-009	E02	
DT466, 466B, DTI46 ANEROID	0B ENGINES	12-070	E04	
DRIVE		12-064	D11	
GOVERNOR		12-070	E04	
HYDRAULIC HEAI	J	12-073 12-006	E07 D20	
LINKAGE			-	
	RH DRIVE 1853 MODELS	12-117 12-141	G13	
MOUNTING	RIVE, 1853 MODELS	12-004	H15 D18	
PIPES		12-064	D18	
PUMP HOUSING		12-116	G09	
SHUT-OFF BOWDEN WIRE		12-074	E08	
SOLENOID ELE		12-110	G12	
FUEL PUMP GASOLINE ENGINE	6			
MV404, 446 ENGI	S NES			
W/AIRLINE FUE	L FILTER	12-050	D07	
W/SPIN-ON FUE V345. V392 ENGI		12-051 12-108	D07 F21	
V537 ENGINE -SE		12-100	FZ1	
DIESEL ENGINES				
	E CATERPILLAR CATALOG-			
	E -SEE FIG. 12-134- IGINES -SEE FUEL INJECTION-			
	66B ENGINES -SEE FUEL INJECTION-			
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#### <u>NT-140</u>

## **GROUP 12-ENGINES**

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PIG NO         FICH LOC           3208 ENGINE 9.0 LITER RUGNE 9.0 LI	<u>NT-140</u>	GROUP 12-ENGINES		,,	
IDLER PULLEY AND MOUNTING         12-081         E16           3208 ENGINE         12-082         E17           9.0 LITER ENGINE         12-082         E17           D150, 170, 190 ENGINES         12-082         E17           MV404, ENGINES         12-082         E17           V537 ENGINES         12-082         E17           INTERCOOLER -DTI466B ENGINE-         12-083         E18           MANIFOLDS         12-083         E18           3208 ENGINE -SEE CATERPILLAR CATALOG-         9.0 LITER ENGINE         12-128           EXHAUST MANIFOLD         12-128         H01           INTAKE MANIFOLD AND CROSSOVER         12-142         H17           D150, 170, 190 ENGINES         12-030         C10           EXHAUST MANIFOLD         12-030         C10           INTAKE MANIFOLD         12-118         G14           D150, 170, 190 ENGINES         12-030         C10           EXHAUST MANIFOLD         12-118         G14           D1466, 466B, DTI466B ENGINES         12-084         E19           EXCEPT 1754 RH DRIVE MODEL         12-032         C13           FOR 1754 RH DRIVE MODEL         12-032         C13           V345, V392 ENGINES         12-033         C16 </th <th></th> <th></th> <th>FIG NO</th> <th>FICHE LOC</th> <th></th>			FIG NO	FICHE LOC	
3208 ENGINE       12-081       E16         9.0 LITER ENGINE       12-082       E17         D150, 170, 190 ENGINES       12-082       E17         MV404, ENGINES       12-077       E11         V537 ENGINES       12-082       E17         INTERCOOLER -DTI466B ENGINE-       12-082       E17         MANIFOLDS       12-083       E18         3208 ENGINE -SEE CATERPILLAR CATALOG-       12-083       E18         9.0 LITER ENGINE       12-128       H01         INTAKE MANIFOLD AND CROSSOVER       12-128       H01         INTAKE MANIFOLD AND CROSSOVER       12-142       H17         D150, 170, 190 ENGINES       12-030       C10         EXHAUST MANIFOLD       12-030       C10         INTAKE MANIFOLD       12-030       C10         INTAKE MANIFOLD       12-030       C10         INTAKE MANIFOLD       12-030       C10         INTAKE MANIFOLD       12-030       C10         INTAKE MANIFOLD       12-084       E19         FOR 1754 RH DRIVE MODEL       12-084       E19         FOR 1754 RH DRIVE MODEL       12-032       C13         W404, 446 ENGINES       12-033       C16					
9.0 LITER ENGINE       12-082       E17         D150, 170, 190 ENGINES       12-082       E17         MV404, ENGINES       12-077       E11         V537 ENGINES       12-082       E17         INTERCOOLER -DTI466B ENGINE-       12-083       E18         MANIFOLDS       12-083       E18         3208 ENGINE -SEE CATERPILLAR CATALOG-       12-128       H01         INTAKE MANIFOLD       12-128       H01         INTAKE MANIFOLD AND CROSSOVER       12-142       H17         D150, 170, 190 ENGINES       12-030       C10         EXHAUST MANIFOLD       12-030       C10         INTAKE MANIFOLD       12-118       G14         D150, 170, 190 ENGINES       12-084       E19         EXHAUST MANIFOLD       12-084       E19         FOR 1754 RH DRIVE MODEL       12-145       H22         MV404, 446 ENGINES       12-032       C13         W404, 446 ENGINES       12-032       C13         V345, V392 ENGINES       12-033       C16	IDLER PULLEY	AND MOUNTING			
D150, 170, 190 ENGINES       12-082       E17         MV404, ENGINES       12-077       E11         V537 ENGINES       12-082       E17         INTERCOOLER - DTI466B ENGINE-       12-082       E17         MANIFOLDS       12-083       E18         3208 ENGINE - SEE CATERPILLAR CATALOG-       12-128       H01         9.0 LITER ENGINE       12-128       H01         INTAKE MANIFOLD AND CROSSOVER       12-128       H01         INTAKE MANIFOLD AND CROSSOVER       12-142       H17         D150, 170, 190 ENGINES       12-030       C10         EXHAUST MANIFOLD       12-030       C10         INTAKE MANIFOLD       12-118       G14         D1466, 466B, DTI466B ENGINES       12-084       E19         EXCEPT 1754 RH DRIVE MODEL       12-084       E19         FOR 1754 RH DRIVE MODEL       12-032       C13         MV404, 446 ENGINES       12-032       C13         V345, V392 ENGINES       12-033       C16	3208 ENGINE		12-081	E16	
MV404, ENGINES       12-077       E11         V537 ENGINES       12-082       E17         INTERCOOLER -DTI466B ENGINE-       12-083       E18         MANIFOLDS       12-083       E18         3208 ENGINE -SEE CATERPILLAR CATALOG-       12-128       H01         9.0 LITER ENGINE       12-128       H01         EXHAUST MANIFOLD       12-128       H01         INTAKE MANIFOLD AND CROSSOVER       12-142       H17         D150, 170, 190 ENGINES       12-030       C10         EXHAUST MANIFOLD       12-030       C10         INTAKE MANIFOLD       12-118       G14         D150, 170, 190 ENGINES       12-084       E19         EXCEPT 1754 RH DRIVE MODEL       12-084       E19         FOR 1754 RH DRIVE MODEL       12-032       C13         MV404, 446 ENGINES       12-033       C16					
V537 ENGINES12-082E17INTERCOOLER -DTI466B ENGINE- MANIFOLDS12-083E183208 ENGINE -SEE CATERPILLAR CATALOG- 9.0 LITER ENGINE EXHAUST MANIFOLD12-128H01INTAKE MANIFOLD AND CROSSOVER12-142H17D150, 170, 190 ENGINES EXHAUST MANIFOLD12-030C10INTAKE MANIFOLD12-030C10INTAKE MANIFOLD12-118G14D1466, 466B, DTI466B ENGINES EXCEPT 1754 RH DRIVE MODEL12-084E19FOR 1754 RH DRIVE MODEL12-032C13V345, V392 ENGINES12-033C16	D150, 170, 19	00 ENGINES	12-082		
INTERCOOLER -DTI466B ENGINE- MANIFOLDS 3208 ENGINE -SEE CATERPILLAR CATALOG- 9.0 LITER ENGINE EXHAUST MANIFOLD INTAKE MANIFOLD AND CROSSOVER12-083E18D150, 170, 190 ENGINES EXHAUST MANIFOLD12-128H01H17125, 170, 190 ENGINES EXHAUST MANIFOLD12-030C10INTAKE MANIFOLD INTAKE MANIFOLD12-030C10INTAKE MANIFOLD12-118G14D1466, 466B, DTI466B ENGINES EXCEPT 1754 RH DRIVE MODEL12-084E19FOR 1754 RH DRIVE MODEL Y0404, 446 ENGINES12-032C13V345, V392 ENGINES12-033C16	MV404, ENGI	NES	12-077	E11	
MANIFOLDS 3208 ENGINE -SEE CATERPILLAR CATALOG- 9.0 LITER ENGINE EXHAUST MANIFOLD12-128H01INTAKE MANIFOLD AND CROSSOVER 1150, 170, 190 ENGINES EXHAUST MANIFOLD12-142H17D150, 170, 190 ENGINES EXHAUST MANIFOLD12-030C10INTAKE MANIFOLD INTAKE MANIFOLD12-030C10INTAKE MANIFOLD12-118G14DT466, 466B, DTI466B ENGINES EXCEPT 1754 RH DRIVE MODEL12-084E19FOR 1754 RH DRIVE MODEL MV404, 446 ENGINES V345, V392 ENGINES12-032C13V345, V392 ENGINES12-033C16	V537 ENGINE	ES	12-082		
3208 ENGINE -SEE CATERPILLAR CATALOG- 9.0 LITER ENGINE EXHAUST MANIFOLD12-128H01INTAKE MANIFOLD AND CROSSOVER12-142H17D150, 170, 190 ENGINES EXHAUST MANIFOLD12-030C10INTAKE MANIFOLD12-030C10INTAKE MANIFOLD12-118G14D1466, 466B, DTI466B ENGINES EXCEPT 1754 RH DRIVE MODEL12-084E19FOR 1754 RH DRIVE MODEL12-145H22MV404, 446 ENGINES V345, V392 ENGINES12-033C16	INTERCOOLER	-DTI466B ENGINE-	12-083	E18	
9.0 LITER ENGINE       12-128       H01         EXHAUST MANIFOLD       12-142       H17         D150, 170, 190 ENGINES       12-030       C10         EXHAUST MANIFOLD       12-030       C10         INTAKE MANIFOLD       12-118       G14         D1466, 466B, DTI466B ENGINES       12-084       E19         FOR 1754 RH DRIVE MODEL       12-145       H22         MV404, 446 ENGINES       12-032       C13         V345, V392 ENGINES       12-033       C16	MANIFOLDS				
EXHAUST MANIFOLD       12-128       H01         INTAKE MANIFOLD AND CROSSOVER       12-142       H17         D150, 170, 190 ENGINES       12-030       C10         EXHAUST MANIFOLD       12-030       C10         INTAKE MANIFOLD       12-118       G14         DT466, 466B, DT1466B ENGINES       12-084       E19         FOR 1754 RH DRIVE MODEL       12-145       H22         MV404, 446 ENGINES       12-032       C13         V345, V392 ENGINES       12-033       C16	3208 ENGINE	-SEE CATERPILLAR CATALOG-			
INTAKE MANIFOLD AND CROSSOVER       12-142       H17         D150, 170, 190 ENGINES       12-030       C10         EXHAUST MANIFOLD       12-030       C10         INTAKE MANIFOLD       12-118       G14         DT466, 466B, DT1466B ENGINES       12-084       E19         FOR 1754 RH DRIVE MODEL       12-145       H22         MV404, 446 ENGINES       12-032       C13         V345, V392 ENGINES       12-033       C16	9.0 LITER EN	GINE			
D150, 170, 190 ENGINES       12-030       C10         EXHAUST MANIFOLD       12-030       C10         INTAKE MANIFOLD       12-118       G14         DT466, 466B, DTI466B ENGINES       12-084       E19         FOR 1754 RH DRIVE MODEL       12-145       H22         MV404, 446 ENGINES       12-032       C13         V345, V392 ENGINES       12-033       C16	EXHAUST I	MANIFOLD	12-128	H01	
D150, 170, 190 ENGINES       12-030       C10         EXHAUST MANIFOLD       12-030       C10         INTAKE MANIFOLD       12-118       G14         DT466, 466B, DTI466B ENGINES       12-084       E19         FOR 1754 RH DRIVE MODEL       12-145       H22         MV404, 446 ENGINES       12-032       C13         V345, V392 ENGINES       12-033       C16	INTAKE MA	NIFOLD AND CROSSOVER	12-142	H17	
EXHAUST MANIFOLD       12-030       C10         INTAKE MANIFOLD       12-118       G14         DT466, 466B, DTI466B ENGINES       12-084       E19         EXCEPT 1754 RH DRIVE MODEL       12-145       H22         FOR 1754 RH DRIVE MODEL       12-032       C13         V345, V392 ENGINES       12-033       C16	D150, 170, 19	0 ENGINES			
DT466, 466B, DTI466B ENGINES       12-084       E19         EXCEPT 1754 RH DRIVE MODEL       12-084       E19         FOR 1754 RH DRIVE MODEL       12-145       H22         MV404, 446 ENGINES       12-032       C13         V345, V392 ENGINES       12-033       C16	EXHAUST I	MANIFOLD	12-030	C10	
EXCEPT 1754 RH DRIVE MODEL       12-084       E19         FOR 1754 RH DRIVE MODEL       12-145       H22         MV404, 446 ENGINES       12-032       C13         V345, V392 ENGINES       12-033       C16	INTAKE MA	NIFOLD	12-118	G14	
EXCEPT 1754 RH DRIVE MODEL       12-084       E19         FOR 1754 RH DRIVE MODEL       12-145       H22         MV404, 446 ENGINES       12-032       C13         V345, V392 ENGINES       12-033       C16	DT466, 466B,	DTI466B ENGINES			
FOR 1754 RH DRIVE MODEL       12-145       H22         MV404, 446 ENGINES       12-032       C13         V345, V392 ENGINES       12-033       C16	EXCEPT 17	754 RH DRIVE MODEL	12-084	E19	
MV404, 446 ENGINES         12-032         C13           V345, V392 ENGINES         12-033         C16	FOR 1754 F	RH DRIVE MODEL		H22	
V345, V392 ENGINES 12-033 C16	MV404, 446 F	NGINES		C13	
V\$37'ENGINE"	V345 V392 F	NGINES	12-033	Č16	
	V537 ENGINE			108	
		-	12 100		

#### **GROUP 12-ENGINES**

NT-140	GROUP 12-ENGINES				
			FIG NO	FICHE LOC	
OIL COOLER					
	NE -SEE CATERPILLAR CATALOG-				
9.0 LITER E			12-156	109	
D150, 170,	190 ENGINES		12-088	E23	
	B, DTI466B ENGINES 446 ENGINES		12-085 12-087	E20 E22	
V345, V392			12-087	E22 E21	
V537 ENGI			12-080	H03	
OIL FILLER A	ND CAP		12 100		
	NE -SEE CATERPILLAR CATALOG-				
9.0 LITER E	INGINE		12-128	H01	
	190 ENGINES		12-030	C10	
	B, DTI466B ENGINES		12-089	E24	
MV404, 446			12-032	C13	
V345, V392 V537 ENGI			12-033 12-034	C11 C17	
OIL FILTER			12-004		
STANDARD	)				
GASOLIN	IE ENGINES				
WV404	, 445 ENGINES				
	T OIL COOLER		12-113	G08	
			12-087	E22	
	/392 ENGINES		12-083	C17	
V537 E	NGINE IL COOLER		12-139	H14	
	COOLER		12-139	H14 H03	
DIESEL E			12-130	105	
3208 E	NGINE -SEE CATERPILLAR CATALOG-				
9.0 LIT	ER ENGINE		12-156	109	
D150, 1	170, 190 ENGINES		12-088	E23	
	466B, DTI466B ENGINES		12-091	F01	
AUXILIARY					
ASSEMB 12704	LY		12-124	G19	
12704			12-124	l12	
12814			12-100	G19	
MOUNTING	i de la construcción de la construcción de la construcción de la construcción de la construcción de la constru		12-022	B21	
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## **GROUP 12-ENGINES**

NT-140	GROUP 12-ENGINES			
		FIG NO	FICHE LOC	
OIL LEVEL GAU	IGE	-		
	-SEE CATERPILLAR CATALOG-			
9.0 LITER EN		12-094	F03	
D150, 170, 19	90 ENGINES	12-094	F03	
DT466, 466B	, DTI466B ENGINES	12-089	E24	
MV404, V446	ENGINES	12-020	C04	
V345, V392 E		12-027	C05	
V537 ENGINE		12-138	H13	
	ATOR COVER -9.0 LITER ENGINES-	12-164	116	
	RELATED PARTS			
	- SEE CATERPILLAR CATALOG-	10 107	<u> </u>	
9.0 LITER EN		12-127 12-024	G23 B24	
D150, 170, 19	, DTI466B ENGINES	12-024	E24	
MV404, MV44		12-005	C04	
V345, V392 E		12-027	C05	
V537 ENGINE		12-138	H13	
OIL PUMP	-	12 100		
	-SEE CATERPILLAR CATALOG-			
9.0 LITER EN	IGINE	12-157	110	
D150, 170, 19	00 ENGINES -SEE CRANKCASE AND RELATED PARTS-			
DT466, 466B,	, DTI466B ENGINES	12-095	F04	
MV404, MV44	6 ENGINES -SEE CRANKCASE AND RELATED PARTS-			
	NGINES -SEE CRANKCASE AND RELATED PARTS-			
V537 ENGINE		12-158	11	
	ELATED PARTS			
	- SEE CATERPILLAR CATALOG-	10 107	<u> </u>	
9.0 LITER EN		12-127 12-024	G23 B24	
D150, 170, 19	, DTI466B ENGINES	12-024	B23	
MV404, MV44		12-025	C04	
V345, V392 E		12-020	C04	
V537 ENGINE		12-147	H24	
PULLEYS BEL	- T -SEE GRP 04, HYDRAULIC PIUMP ASSY, MTG, HOSING-		1124	
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#### NT-140 GROUP 12-ENGINES

NT-140	GROUP 12-ENGINES			
		FIG NO	FICHE LOC	
RADIATOR ANI				
3208 ENGINE		12-098	F09	
9.0 LITER EN				
	353FC MODEL	12-110	G01	
FOR 1853F	C MODEL			
	OR AND MOUNTNG	12-008	l18	
	TION TANK AND MOUNTING	12-169	119	
	OR AND DEAERATION HOSE/PIPING	12-170	120	
D150, 170, 19		12-010	G01	
	6B, DTI466B ENGINES	1 40 400	500	
EXC 1853F		12-109	F22	
FOR 1853F		10.400	14.0	
	OR AND MOUNTING TION TANK AND MOUNIING	12-188	18  19	
	DR AND DEAREATION HOSE/PIPING	12-109	119	
MV404 ENGI		12-111	G04	
MV446 ENGI		12-112	G04 G06	
V345, V392 E		12-097	F07	
V537 ENGINE		12-096	F06	
RADIATOR SH	JIIERS -CODE 12801-			
ASSEMBLY		12-082	F02	
AIR CYLINDE	R	12-093	F03	
CONTROL		12-099	F11	
THERMOSTAT				
	-SEE CATERPILLAR CATALOG-			
	GINE -SEE WATER PUMP-		= 1 0	
D150, 170, 19		12-078	E12	
	6B, DTI466B ENGINES	12-100	F12	
MV404, MV44		12-101	F13	
V345, V392 E V537 ENGINE		12-033 12-159	C15 I12	
	- NTROL -SEE ACCELERATOR-	12-159	112	
	ER -DT466, DT466B, DTI466B ENGINES-			
ASSEMBLY		12-102	F14	
MOUNTING		12-103	F15	
	E INSTALLATION	12-104	F17	
	R AND MOUNIING -CODE 12821-	12-079	E14	
WATER INLET				
	-SEE CATERPILLAR CATALOG-			
	GINE -SEE WATER PUMP-	40.004	D0.4	
D150, 170, 19	6B, DTI466B ENGINES -SEE RADIATOR AND MTG.	12-024	B24	
MV404, MV44	00, DT14000 ENGINES -SEE RADIATOR AND WITG.	12-101	F13	
V3/5 V302 E	NGINES -SEE WATER PUMP-	12-101	FIS	
V537 ENGINE		12-159	l12	
WATER OUTLE		12 100		
	-SEE CATERPILLAR CATALOG-			
9.0 LITER EN	GINE -SEE WATER PUMP-			
	00 ENGINES -SEE WATER PUMP-			
	6B, DTI466B ENGINES -SEE WATER PUMP-			
MV404, MV44		12-101	F13	
	NGINES -SEE CYLINDER HEAD AND RELATED PARTS-	40.450	14.0	
		12-159	l12	
	-SEE CATERPILLAR CATALOG-			
9.0 LITER EN		12-140	H16	
D150, 170, 19		12-078	E12	
	6B, DTI466B ENGINES	12-100	F12	
MV404, MV44		12-106	F19	
V345, V392 E	INGINES	12-052	D05	
V537 ENGINE		12-080	E15	
	OFF VALVE -HEATER1853FC MODEL-			
9.0 LITER EN		12-140	H15	
	6B, DTI466B ENGINES	10.004	C10	
CYLINDER WATER PU		12-031	C12 F12	
WATER PU	/////	12-100		

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<u>NT-140</u>

#### **GROUP 12-ENGINES**

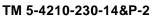
NI-140	GROUP 12-ENGINES	•		_
		FIG NO	FICHE LOC	
9.0	ENGINE ASSEMBLIES LITER DIESEL ENGINES-			
9.0 LITER ENGINE	E CODES 12222, 12223, 12224			
CONNECTING PINS. TIE BO BEARINGS, S PUMP DRIVE	NE CONSISTS OF KEY, GEAR BEARINGS AND REAR.COVER PLATE, B RODS W/CAPS AND BEARINGS, CRANKCASE W/P LTS, CRANKSHAFT W/GEAR, WEAR SLEEVES EALS, BEARING CAPS AND CAP SEALS, INJECTION GEAR OIL PUMP: BUSHING AND FLOAT, PISTONS RETAINERS, TAPPETS			
ENGINE, SKELET	ON, ASSERMLY -SEE NOTE- 170054	47C91		
AND TIMING I CYLINDER HE CYLINDER HE HEAD EXTEN NOZZLES AN TUBE, OIL PA	GINE, CRANKCASE FRONT COVER W/CRANKSHAFT NDICATOR, CRANKSHAFT PULLEY W/WEAR SLEEV EAD WIVALVES, GUIDES, SEATS, GASKETS EAD COVERS, OIL FILL CAP, GASKET, CYLINDER SIONS, IDLER ARM SUPPORT BRACKET, INJECTIOI D HOLDERS, CLAMPS, SEALS, OIL LEVEL GAUGE, AN N, PLUG AND GASKETS, PUSH RODS, ROCKER F, BRACKETS, TAPPET COVERS AND GASKETS, WA	YE, N AND		
ENGINE, STRIPPE	ED, ASSEMBLY -SEE NOTE- 170054	46C94		
ACCELERATOR AIR CLEANER A ALTERNATOR CRANKCASE VI FAN, FAN BELT FLYWHEEL, FL' FUEL FILTER AI FUEL LINE PIPII FUEL SUPPLY F IDLER PULLEY INJECTION PUN INJECTION PUN LEAKOFF LINES MANIFOLDS OIL COOLER, P OIL FILTER ANE OIL PAN INSUL STARTER MOTO TAPPET SOUNI THERMOSTAT WATER MANIFO WATER MANIFO	AND MOUNTING ENT AND PIPING S AND PULLEY YWHEEL HOUSING ND MOUNTING NG AND CONNECTIONS PUMP BEARING, ARM AND SPRING MP, HUB, ADAPTER, DRIVE COVER MP OIL PIPING AND CONNECTIONS S AND CONNECTIONS DIPING AND CONNECTIONS D BASE ATION COVERS OR AND HEAT SHIELD D COVER AND HOUSING			
-	L AND FLYWHEEL HOUSING ARE NOT INCLUDED V KELETON ENGINE. STRIPPED ENGINE ASSEMBLIES			

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#### NT-140 GROUP 12-ENGINES

	FIG NO	FICHE LOC	
ENGINE ASSEMBLIES AND TRIM -MV404, 446, V345, 392 ENGINES-			
MV404 GASOLINE ENGINE CODES 12127, 12129 MV446 GASOLINE ENGINE CODE 12134 V345 GASOLINE ENGINES STANDARD COMPRESSION -CODE 12112- LOW COMPRESSION -CODE 12110- -EXPORT ONLYSERVICE ENGINES NOT AVAILABLE- V345 LPG ENGINE -STAIARD COMPRESSIONCODE 12111- V392 GASOLINE ENGINE STANDARD COMPRESSION -CODE 12122- LOW COMPRESSION -CODE 12110EXPORT ONLY-			
SKELETON ENGINE CONSISTS OF CRANKCASE CRANKSHAFT W/GEAR AND BEARINGS, CONNECTING RODS W/BEARINGS, PISTONS W/PINS - AND RINGS, CAMSHAFT W/GEAR AND BEARINGS, OIL PUMP, OIL GAUGE TUBE, TAPPETS			
ENGINE, SKELETON, ASSY         446804C91           MV404 ENGINE         446614C93           MV446 ENGINE         446614C93           V345 ENGINE -CODES 12111, 12112-         368660C92           V392 ENGINE -CODE 12120-         483483C91           V392 ENGINE -CODE 12122-         441112C92			
STRIPPED ENGINES CONSISTS OF SKELETON ENGINE W/PULLEY HUB, CRANKCASE FRONT COVER, OIL PAN BREATHER CAP CYLINDER HEAD, VALVES, ROCKER ARMS, CYLINDER HEAD COVER, LIFTER RODS, TAPPET COVER, WATER PUMP AND SPARK PLUGS			
ENGINE STRIPPED, ASSEMBLY         446805C93           MV404 ENGINE         446616C93           V345 ENGINE -CODE 12412 ONLY-         368659C97           V392 ENGINE -CODE 12122 ONLY-         368659C97			
PARTS REGUIRED TO TRIM A STRIPPED ENGINE AIR CLEANER. MOUNTING AND CONNECTIONS CARBURETOR, MOUNTING, CONNECTIONS AND ACCELERATOR LINKA CRANKCASE VENT TUBE AND GASKET FLYWHEEL, FLYWHEEL HOUSING AND HAND HOLE COVER FUEL PUMP, MOUNTING AND CONNECTIONS GENERATOR, FAN, PULLEY, BRACKET, STRAP, REGULATOR AND FAN BELTS IDLER PULLEY IGNITION COIL, MOUNTING, CABLE, RESISTOR, SPARK PLUG CABLES AND BRACKETS MAIN DRIVE PULLEY AND PULLEY HUB SPACER MANIFOLD, GASKETS AND MOUNTING OIL FILTER, GASKET AND MOUNTING STARTING MOTOR THERMOSTAT, HOUSING, GASKET AND CONNECTION	AGE		
SEE NOTE			
* ENGINES NOT FURNISHED WITH DISTRIBUTOR ORDER AS REQUIRED			
NOTE: FLYWHEEL AND FLYWHEEL HOUSINGS ARE NOT INCLUDED WIT EITHER SKELETON ENGINE, STRIPPED ENGINE ASSEMBLIES	Н		

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MT14	GROUP	12- ENGINES		140 GR	OUP 12- E		5-4210-
REF PART			REF	PART			
NO. NUMBER FIG. 12-		ESCRIPTION	<u>NO.</u>		2-004 CON		
FIG. 12-		THROTTLE AND CHOKE CONTROL	ACC		THROTTLE AND CI	-	
1	480 488 C93	CABLE, CHOKE, ASSY			D-8 7 B 10 10 10 10 10 10 10 10 10 10	L CONTROL MTG.	- LOWER-
12	453 694 C1	CABLE, ACCELERATOR CONTROL	15 45	01 333 C1 25 653 R1 20 214	BRACKET, ACCE BOLT, HEX-H WASHER, LOC	L CONTROL MTG, D 5/16NC X 1/2 K 5/16 REG -2-	-LOWER- -2-
3	482 723 C1 118 623	CABLE, THROTTLE STOP, ASSY -W/ALLISON TRANSMISSION- NUT, HEX. 1/4NF	16		2-BARREL CA	L CONTROL MTG	
4 5	480 460 C2 480 471 C2	RETAINER, CABLE SLUG -AR- CABLE, HAND THROTTLE CONTROL, ASSY	49	01 768 C1 01 110 C3 07 847 C1 25 228 R1 13 994	FOR GOVER 4-BARREL CA	NOR -CODE 12950 NOR -CODE 12950 RBURETOR	)-
6	874 960 R1 26 667 R1 120 361 120 217 120 391	CLIP, CABLE HAND THROTTLE BOLT, PAN-HD NO. 10-24 X 3/4 NUT, HEX. NO. 10-24 WASHER, LOCK NO. 10 WASHER, FLAT NO. 10	9 4	25 228 R1 13 994 25 708 R1	NUT, HEX. LO WASHER, FLAT SPRING, THROT 2-BARBEL CA	5/16 -3- TLE RETURN RBURETOR	
7 8	472 280 C1 469 856 C1	NUT, FACE -2- KNOB, CONTROL, ASSY -2-	49	3 985 C1 56 227 C1	OUTER	GOVERNOR CODE	
9	482 601 C2 482 740 C1 490 690 C1 25 752 R1 26 222 R1 26 110 R1 25 707 R1	BRACKET, HAND THROTTLE EXC 1723, 1823 MODELS EXC ALLISON TRANSMISSION FOR ALLISON TRANSMISSION FOR 1723, 1823 MODELS BOLT, HEX-HD 1/4NC X 1/2 -AR- BOLT, HEX-HD 1/4NC X 3/4 -AR- NUT, HEX. LOCK 1/4NC -2- WASHER, FLAT 1/4 -2-	18 38	36 994 C1 36 994 C1 30 346 C1 30 567 C1 20 614 20 217	4-BARREL CA CLIP, RETURN BALL, STUD NUT, HEX. N WASHER, LOC	SPRING -2 BARR D. 10-32NC K NO. 10	EL CARB -
10	482 606 C1 27 218 R1 120 361 120 217	PEDAL, ACCELERATOR, ASSY SCREW, PAN-HD NO. 10-24 X 1 -2- NUT, HEX. NO. 10-24 -2- WASHER, LOCK NO. 10				3.	
11	496 834 C1 25 752 R1 120 380	BRACKET, PEDAL STOP -1723, 1823 MODEL BOLT, HEX-HD 1/4NC X 1/2 -2- WASHER, LOCK 1/4 -2-	Ş-			1993 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 -	
12	495 433 C1 495 398 C1	ROD, ACCELERATOR PEDAL, ASSY EXC 1723, 1823 WODELS FOR 1723, 1823 WODELS					
13	479 220 C1 110 668 R1	BUSHING, PIVOT -2- Ring, Retainer					
14	495 395 C1 25 751 R1 120 214 495 394 C1 25 228 R1 120 214	BRACKET, ACCELERATOR PEDAL, ASSY EXC 1723, 1823 MODELS BOLT, HEX-HD 5/16NC X 1-1/4 -3- WASHER, LOCK 5/16 REG -3- FOR 1723, 1823 MODELS BOLT, HEX-HD 5/16NC X 3/4 -2- WASHER, LOCK 5/16 REG -2-					

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FIG. 12-004 PAGE NO. 19 REV. 4

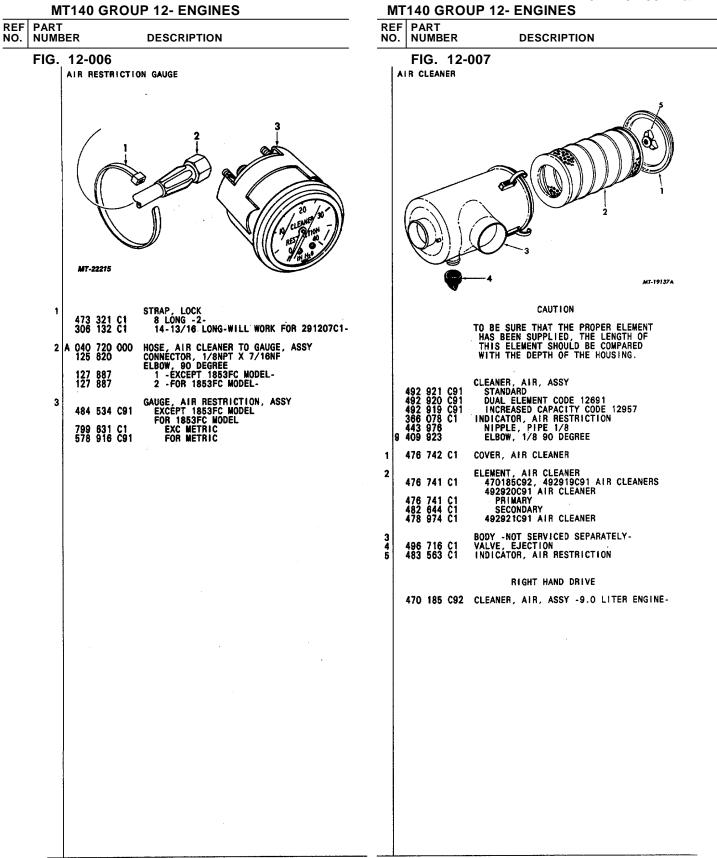


TM 5-4210-230-14&P-2

	MT140 GROUP 12- ENGINES				MT140 GROUP 12- ENGINES		
REF NO.	PART NUMBE	R	DESCRIPTION	RE NO		DESCRIPTION	
	FIG.	12-005 ACCELERATOR,	THROTTLE AND CHOKE CONTROL		-	-005 CONTINUED THROTTLE AND CHOKE CONTROL	
					3		
	1	480 488 C93	CABLE, CHOKE, ASSY	14		MT-22237	
	2	480 488 C93 453 694 C1 482 723 C1 118 823	CABLE, ACCELERATOR CONTROL Cable, Throttle Stop, Assy Nut, Hex. 1/4NF		495 395 C1	BRACKET, ACCELERATOR PEDAL, ASSY EXC 1723, 1823 MODELS V345, V392 ENGINES EXC CODE 18010	
	4	118 823 480 460 C2 480 471 C2	RETAINER, CABLE SLUG -AR-		495 395 C1 495 394 C1 25 228 R1 120 214	EXC CODE 18010 FOR CODE 18010 BOLT, HEX-HD 5/18NC X 3/4 -2- WASHER, LOCK 5/18 REGULAR -2-	
	6	874 960 R1 26 667 R1 120 361 120 217 120 391	CABLE, HAND THROTTLE CONTROL CLIP, HAND THROTTLE CABLE BOLT, PAN-HD NO. 10-24 X 3/4 NUT, HEX. NO. 10-24 WASHER, LOCK NO. 10 WASHER, FLAT NO. 10		495 394 C1 495 395 C1 495 394 C1 25 751 R1 120 214	FUH 1723, 1823 MODELS V345 ENGINE V392 ENGINE EXC CODE 16010 FOR CODE 16010 BOLT, HEX-HD 5/16NC X 1-1/4 -3-	
	7 8	472 280 C1 469 856 C1	NUT, FACE -2- KNOB, CONTROL, ASSY -2-	15	110 668 R1 500 761 C1	WÁSHÉR, LOCK 5/16 REGULAR -3- Ring, Retainer Bracket, accel control MTG -Lower-	
	9	482 601 C2 482 740 C1 490 690 C1 25 752 R1 25 222 R1 26 110 R1 25 707 R1	BRACKET, HAND THROTTLE EXC 1723, 1823 MODELS EXC ALLISON TRANSMISSION FOR ALLISON TRANSMISSION FOR 1723, 1823 MODELS BOLT, HEX-HD 1/4NC X 1/2 -AR- BOLT, HEX-HD 1/4NC X 3/4 -AR- NUT, HEX. LOCK 1/4NC -2- WASHER, FLAT 1/4 -2-	16	25 228 Ří 9 413 994 25 708 R1 501 768 C1 501 712 C1 25 228 R1 9 413 977 25 708 R1	BOLT, HEX-HD 5/16NC X 3/4 -2- NUT, HEX. 5/16NC -2- WASHER, FLAT 5/16NC -2- BRACKET, ACCEL CONTROL WTG -UPPER- V345 ENGINE V392 ENGINE BOLT, HEX-HD 5/16NC X 3/4 -2- NUT, HEX. LOCK 5/8NC -2- WASHER, FLAT 5/8 -2-	
	10	482 606 C1 27 218 R1 120 361 120 217	PEDAL, ACCELERATOR, ASSY SCREW, PAN-HD NO. 10-24 X 1 -2- NUT, HEX NO. 10-24 -2- WASHER, LOCK NO. 10 -2-	17	500 345 C2 451 979 C2 451 858 C2	BRACKET, RETURN SPRING ANCHOR EXC GOVERNOR CODE 12950 For Governor Code 12950 V345 Engine	
	11	496 834 C1 387 320 C1	BRACKET, PEDAL STOP V345 Engine V392 Engine -W/CODE 180101723, 1724 MODELS-	18		V392 ENGINE Spring, Throttle Return EXC 12950 Governor Code	
	12	495 433 C2 495 398 C1 495 398 C1 495 433 C2 495 398 C1	ROD, ACCELERATOR PEDAL, ASSY EXC 1723, 1823 MODELS V345, V392 ENGINES EXC CODE 16010 FOR CODE 16010 FOR 1723, 1823 MODELS V345 ENGINE V392 ENGINE EXC CODE 18010 FOR CODE 16010	19	493 985 C1 466 227 C1 189 733 R1 380 567 C1 120 361 120 217	INNER OUTER FOR 12950 GOVERNOR CODE BALL, STUD NUT, HEX. NO. 10-24 WASHER, LOCK NO. 10	
	13	479 220 C1	BUSHING, PIVOT -2-				

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FIG. 12-005 PAGE NO. 20



TM 5-4210-230-14&P-2

# TM 5-4210-230-14&P-2 MT140 GROUP 12- ENGINES MT140 GROUP 12- ENGINES REF PART REF PART NO. NUMBER DESCRIPTION NO. NUMBER DESCRIPTION FIG. 12-008 FIG. 12-009 AIR CLEANER AIR CLEANER <u>رني</u>) رية) 20 ×c 2-2 AT-18943 MT-18962 CAUTION CAUTION TO BE SURE THAT THE PROPER ELEMENT HAS BEEN SUPPLIED, THE LENGTH OF THIS ELEMENT SHOULD BE COMPARED WITH THE DEPTH OF THE HOUSING. TO BE SURE THAT THE PROPER ELEMENT HAS BEEN SUPPLIED, THE LENGTH OF THIS ELEMENT SHOULD BE COMPARED WITH THE DEPTH OF THE HOUSING. CLEANER, AIR, ASSY EXC OIL BATH CODE 12710 MV404 ENGINE 2 BARREL CARB CODE 12127 W/O GOVERNOR CODE 12950 -WILL WORK FOR 446911C92-W/GOVERNOR CODE 12950 -WILL WORK FOR 446829C92-4 BARREL CARB CODE 12129 -WILL WORK FOR 446829C92-WV446 ENGINE -WILL WORK FOR 446829C92-483 505 C91 CLEANER, AIR, ASSY 199 160 R2 CAP, AIR CLEANER 3/4 ELEMENT, AIR CLEANER THERMOSTAT, AIR CLEANER 466 400 C1 469 684 C1 12 1 700 826 C91 1 700 825 C91 1 700 825 C91 1 700 825 C91 MV448 ENGINE -WILL WORK FOR 446829092-FOR OIL BATH CODE 12710 CAP, AIR CLEANER 3/4 INDICATOR, AIR CLEANER -CODE 12887-COVER, AIR CLEANER -CODE 12887-WRAP, FOAM -CODE 12957-488 819 C91 199 160 R2 389 255 C1 500 162 C1 500 161 C1 ELEMENT, AIR CLEANER 446829092, 446911092, 1700825091, 1700826091 AIR CLEANERS 488819091 AIR CLEANER 1 446 661 C2 496 616 C1 THERMOSTAT, AIR CLEANER 446829092, 1700825091 AIR CLEANERS 446911092, 488819091, 1700826091 AIR CLEANERS 2 455 646 C1 469 884 C1

#### TM 5-4210-230-14&P-2

MT140 GROUP 12- ENGINES MT140 GROUP 12- ENGINES REF PART REF PART NO. NUMBER DESCRIPTION NO. NUMBER DESCRIPTION FIG. 12-012 FIG. 12-012 CONTINUED AIR CLEANER MOUNTING AND PIPING AIR CLEANER MOUNTING AND PIPING 877-23054 HOSE, PIPE TO ENGINE EXC 9.0 LITER ENGINE FOR 9.0 LITER ENGINE CLAMP, HOSE -2-BRACKET, AIR INTAKE BOLT, HEX-HD 5/16NC X 3/4 -4-WASHER, LOCK 5/16 REGULAR -4-11 483 532 C2 25 228 R1 120 214 1 302 779 R1 501 481 C1 327 094 R91 HOSE, BRACKET TO PIPE EXC 2155 MODEL FOR 2155 MODEL CLAMP, HOSE -2-2 319 119 C1 178 080 H1 371 677 R91 RIGHT HAND DRIVE PIPE, AIR INTAKE EXC 2155 MODEL FOR 2155 MODEL 3 BRACKET, AIR CLEANER MOUNTING 7 482 756 C1 482 757 C1 479 525 C3 479 520 C4 95 338 H RIGHT SPACER, SUPPORT HOSE, AIR CLEANER TO PIPE CLAMP, HOSE -2-4 319 119 C1 371 677 R91 HOSE, AIR CLEANER TO PIPE PIPE, AIR CLEANER HOSE, PIPE TO ENGINE 319 197 C1 494 533 C1 289 153 C1 STRAP, AIR CLEANER MOUNTING -2-EXC ETHER START CODE 12871 FOR ETHER START CODE 12871 W/BRACKET -SEE COLD STARTING EQUIPMENT - ETHER- ILLUSTRATION-W/O BRACKET BOLT, HEX-HD 3/8NC X 1-3/4 -2-BOLT, HEX-HD 3/8NC X 2-1/2 -2-BOLT, HEX-HD 3/8NC X 2-3/4 -2-NUT, HEX LOCK 3/8NC -2-WASHER, 3/8 FLAT -2-INSULATOR, AIR CLEANER MOUNTING STRAP -2-10 11 5 484 003 C2 484 003 C2 454 467 21 318 R1 277 232 R1 413 979 25 709 R1 583 956 C1 łg. -2-CLEANER, AIR, ASSY -SEE SEPARATE ILLUSTRATION-6 BRACKET, AIR CLEANER MOUNTING 7 BRACKET, AIR CLEANER MOUNTING LEFT RIGHT EXC AIR CLEANER CODES 12691, 12957 FOR AIR CLEANER CODES 12691, 12957 BOLT, MEX-HD 5/16NC X 3/4 -2-NUT, MEX. LOCK 5/18NC -AR-INSULATOR, AIR CLEANER MOUNTING BRACKET 482 736 C1 482 478 C1 482 737 C1 25 228 R1 413 994 583 957 C1 9 . 🤉 . HOSE, AIR CLEANER TO PIPE EXC 9.0 LITER ENGINE FOR 9.0 LITER ENGINE CLAMP, HOSE -2-8 469 753 C91 501 482 C1 327 094 R91 105 410 CAP, 1/8-27 NPT 9

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489 927 C1 501 483 C1

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PIPE, AIR CLEANER EXC 9.0 LITER ENGINE FOR 9.0 LITER ENGINE

FIG. 12-012 PAGE NO. 25 REV. 4

	PAR		UP 12- ENGINES	MT140 GROUP 12- ENGINES
0.	NUM		DESCRIPTION	NO. NUMBER DESCRIPTION
	FIG.	AIR CLEANER I	MOUNTING	FIG. 12-013 CONTINUED
		AIR CLEANER I		AIR CLEANER MOUNTING
	1	483 532 C2 25 228 R1 120 214	MT-22015 BRACKET, AIR INTAKE BOLT, HEX-HD 5/18NC X 3/4 -4- WASHER, LOCK 5/18 REG -4-	11 548 222 R1 ELBOW, 90 DEGREE HOSE 422 688 R91 CLAMP, HOSE -AT PIPE- 995 224 R1 CLAMP, HOSE -AT ENGINE TURBO
	2	319 119 C1 371 677 R91		
	3	482 756 C1 482 757 C1	PIPE, AIR INTAKE EXC 2155 MODEL For 2155 Model	
	4	319 119 C1 178 080 H1 371 677 R91	HOSE, HUMP EXC 2155 NODEL For 2155 Model Clamp, Hose -2-	
	5	484 003 C2	STRAP, AIR CLEANER -2- EXC ETHER START CODE 12871 FOR ETHER START CODE 12871 W/BRACKET -SEE COLD STARTING EOUNDMENT ETHER LILIUSTRATION	
		484 003 C2 277 232 R1 9 413 979 25 709 R1 583 956 C1	EQUIPMENT -ETHER- ILLUSTRATION- W/O BRACKET BOLT, HEX-HD 3/8NC X 2-3/4 -2- NUT, HEX. LOCK 3/8NC -2- WASHER, FLAT 3/8 -2- INSULATOR, AIR CLEANER WOUNTING STRAP -2-	
	6 7		CLEANER, AIR-SEE SEPARATE ILLUSTRATION- BRACKET, AIR CLEANER MOUNTING	
		482 736 C1 482 478 C1 482 737 C1 25 228 R1 9 413 994 583 957 C1	LEFT RIGHT EXC AIR CLEANER CODES 12691, 12957 FOR AIR CLEANER CODES 12691, 12957 BOLT, HEX-HD 5/18NC X 3/4 -2- NUT, HEX. LOCK 5/18NC -2- INSULATOR, AIR CLEANER MOUNTING BRACKET -2-	
	8	515 718 C1 327 094 R91 422 688 R91	HOSE, CLEANER OUTLET ELBOW CLAMP, HOSE -AT CLEANER- CLAMP, HOSE -AT PIPE-	
	9	105 410	CAP, 1/8 LOCKNUT	
	10	482 758 C1 482 759 C1	PIPE, ENGINE AIR INTAKE EXC 2155 MODEL FOR 2155 MODEL	

FIG. 12-013 PAGE NO. 26

#### MT140 GROUP 12-ENGINES



## TM 5-4210-230-14&P-2

		MT140 GRC	OUP 12-ENGINES	MT140 GROUP 12-ENGINES		
REF NO.	PAF NUM	RT MBER	DESCRIPTION	REF NO.	PART NUMBER	DESCRIPTION
	FIG. 12-014				FIG. 12-014	CONTINUED
		AIR CLEANER MOUNTING			IR CLEANER MOUN	TING
			MT-18568A	•		
	1	868 420 R1 468 250 C1	NUT, WING Gronmet, W/Washer			
	2	446 912 C2 401 063 C2 468 217 C2 491 470 C2	STUD, MOUNTING 5-1/2 LONG 5-23/32 LONG SCREW, WING TYPE MOUNTING 4-9/16 LONG 5-7/8 LONG			
	3 4 5	427 686 C1 440 296 C1 446 531 C1	#HOSE, AIR CLEANER 1/2 Arrestor, Flame Grommet			
	6	1 700 289 C1 1 700 288 C1 442 139 C1	GASKET, AIR CLEANER TO CARBURETOR 466829C92, 1700825C91 AIR CLEANERS -WILL WORK FOR 265174C1- 446911C92, 1700826C91 AIR CLEANERS -WILL WORK FOR 438400C1- ADAPTER, OIL BATH AIR CLEANER -CODE 12710-			· · · · · · · · · · · · · · · · · · ·
	7 8		HOSE, SHROUD TO AIR CLEANER Shroud, Wanifold, ASSY -SEE Cylinder Head illustration- *CAP, Tube -Will Work For 132754R2-		· · ·	
			≢PART NO. COVERS 1 FOOT OF BULK MATERIAL *PART NOT ILLUSTRATED		· .	

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FIG. 12-014 PAGE NO. 27 REV. 4

#### MT140 GROUP 12- ENGINES



#### TM 5-4210-230-14&P-2

REF PART NO. NUMBER

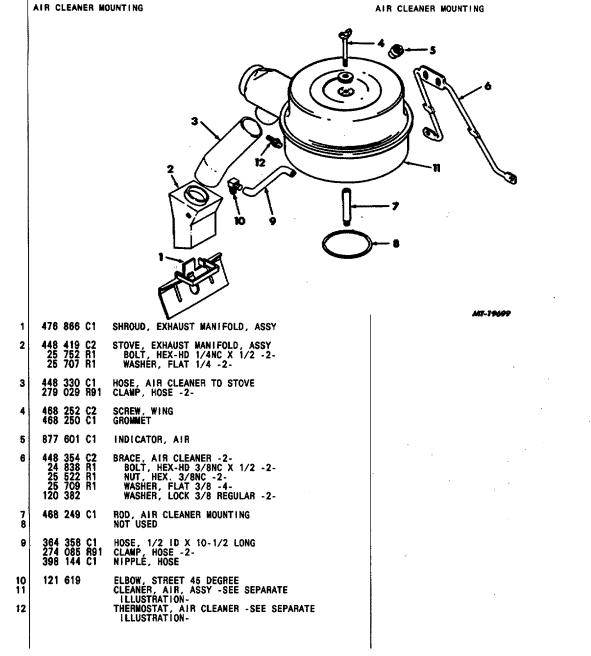
FIG. 12-015

DESCRIPTION

MT140 GROUP 12- ENGINES		
REF NO.	PART NUMBER	DESCRIPTION

FIG. 12-015 CONTINUED

AIR CLEANER MOUNTING



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FIG. 12-015 PAGE NO. 28 REV.4

## MT140 GROUP 12- ENGINES

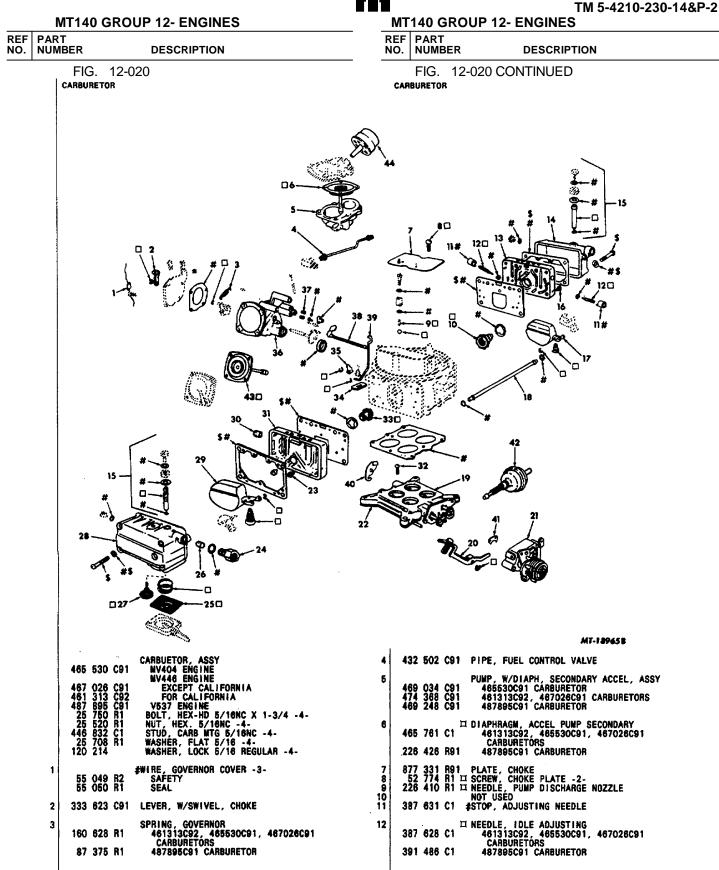
#### REF PART NO. NUMBER DESCRIPTION

	TM 5-4210-230-14&P-2
MT140 GROUP 12- ENGINE	ES

REF PART NO. NUMBER DESCRIPTION	
------------------------------------	--

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PAGE NO. 39



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FIG. 12-020 PAGE NO. 40

#### **MT140 GROUP 12- ENGINES**

#### REF PART NO. NUMBER DESCRIPTION

#### FIG. 12-020 CONTINUED

CARBURETOR

	CARBU	RETO	R	
13 14 15	391 680		C2 R92	BODY -NOT SERVICED SEPARATELY- Bowl, W/Plugs, Float -Secondary- Valve, Carb Fuel Inlet, Assy -2-
16	465	758	C1	JET, MAIN SECONDARY -2- 461313C92, 465530C91, 467026C91 CARBURETORS
	470	614	C1	487895C91 CARBURETOR
17 18 19	333 351	637 894	C91 C1	FLOAT, FUEL SECONDARY Tube, fuel level secondary Body -not serviced separately-
20	474 474	363 367	C91 C91	LEVER, ACCELERATOR PUMP, ASSY 465530C91 CARBURETOR 461313C92, 467026C91, 487895C91 Carburetors
21	472	159	C91	HOUSING, THROTTLE OPERATING SHAFT, ASSY
22				GASKET/PLATE, CARBURETOR MOUNTING MV404, 446 ENGINES
	446	942	C1	GASKET CARBURETOR INSULATING MANIFOLD TO PLATE
	446 446 446	795 794 793	C2 C3 C1	EXCEPT CALIFORNIA FOR CALIFORNIA PLATE, EGR DISTRIBUTION V537 ENGINE
	446	942	C1	GASKET Carburetor insulating -will Work for 457658C1-
		381 380		MANIFOLD TO PLATE PLATE, MANIFOLD COVER
23		758		JET, MAIN -PRIMARY- 465530C91, 467026C91, 487895C91 Carburetors
	459	341	C1	461313C92 CARBURETOR
24 25 26 27 28 29 30 31	243 226 413 465	439	R92□ R1 C1 □ C1	FITTING, FUEL INLET DIAPHRAGM, ACCELERATOR PUMP, ASSY -2- SCREEN, FUEL FILTER VALVE, ACCELERATOR PUMP CHECK BOWL, W/PLUGS, FLOAT -PRIMARY- FLOAT, FUEL PRIMARY NOT USED BODY -NOT SERVICED SEPARATELY-
32	226 226	369 451	R1 R1	SCREW, THROTTLE PLATE -4- Primary Secondary
33	470	620 624 458	C1 C1	VALVE, POWER JET -PRIMARY- 465530C91, 487895C91 CARBURETORS 467026C91 CARBURETOR 461313C92 CARBURETOR
34 35 36	226 333 453	414 624 650	R2 C91 C91	SEAL, CHOKE ROD LEVER, W/BUSHING, CHOKE ROD GOVERNOR, W/DIAPHRAGM, ASSY
37 38 39	331 333	041 661	C91 C1	NOT USED Shaft, W/Lever, Choke Rod, Choke
40	465	762	C1	LEVER, DIAPHRAGM, ASSY 461313C92, 465530C91, 467026C91
	333	664	C91	CARBURETORS 487895C91 CARBURETOR
41 42 43 44	474 469 226 446	364 004 426 808	C1 C1 R91¤ C1	CAM, ACCELERATOR PUMP OPERATING CHAMBER, VACUUM THROTTLE DIAPHRAGM, GOVERNOR, ASSY CLEANER, AIR -461313C92, 465530C91, 467026C91 CARBURETORS-

# MT140 GROUP 12- ENGINES

REF PART NO. NUMBER

FIG. 12-020 CONTINUED

CARBURETOR

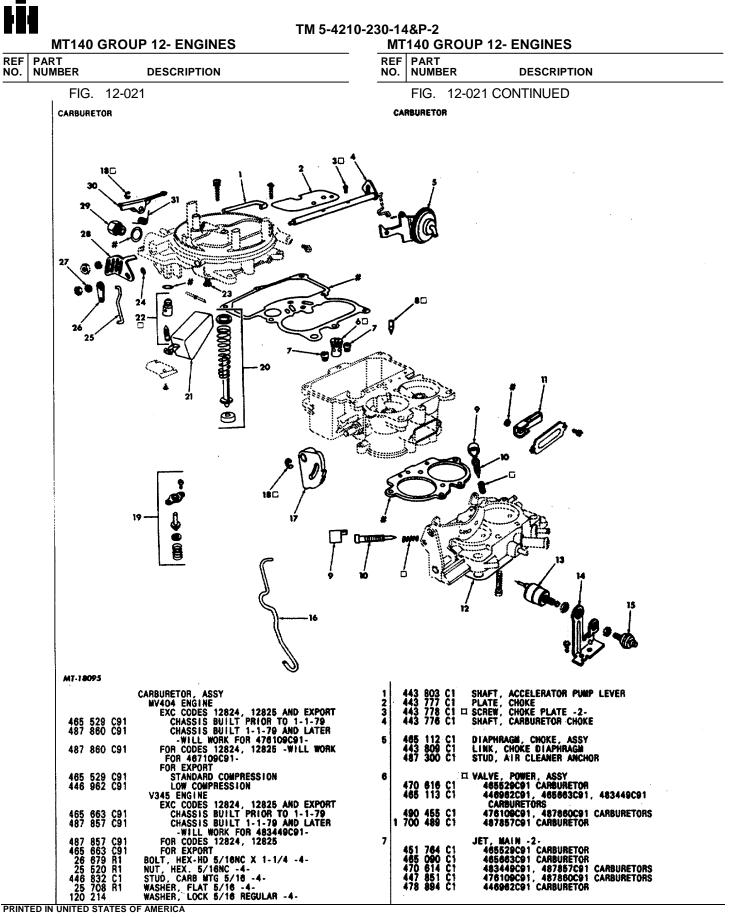
			#GASKET SET			
439	416	C95			467026091	
491	215	C91				
			IKIT, CARB R	EPAIR - INCLU	DES GASKET	SET
700	501	C92	465530C91	CARBURETOR		
700	502	C92	467026091	CARBURETOR		
700	503	C92	487895091	CARBURETOR		
700	545	C92	461313092	CARBURETOR		
	491	491 215	439 416 C95 491 215 C91	CARBURET 491 215 C91 487895C91	439         416         C95         461313C92, 465530C91, CARBURETORS           491         215         C91         487895C91         CARBURETOR	439 416 C95 461313C92, 465530C91, 467026C91 CARBURETORS 491 215 C91 487895C91 CARBURETOR □ KIT, CARB REPAIR -INCLUDES GASKET

DESCRIPTION

455 541 C92 \$KIT, FUEL BOWL FIX

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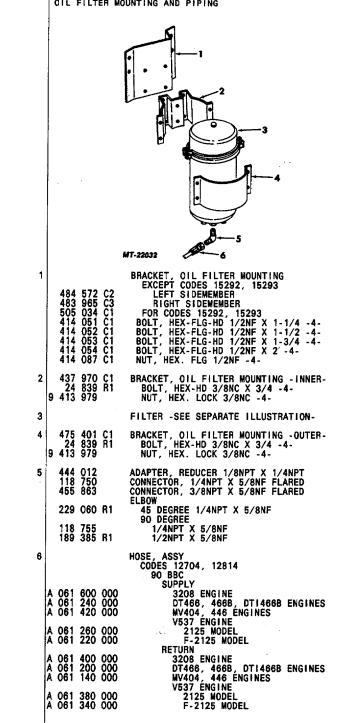
			+U C				NGI	NE3					_	- 11	. 18	14	U G	n
REF NO.		RT MBER			DES	CR	IPTIC	N						RE NC			ART JMB	EI
		FI	G.	12-	021 CC	NT	INU	ED								FI	G.	1
		CARB	URET	OR											0	лε	FILT	EF
	8 9	443 443	792 747	C1 C1	II NEEDLE STOP,	. D Í DL	ISCHA	ARGE N JUSTII	/ALVE Ng Nei	EDLE -	-2-							
	10	443	745	C1	□ NEEDLE 4469 476	62C	DLE / 91, 4 C91,	ADJUS1 465529 48786	FING 9C91, 30C91	-2- 46566 CARBL	33C91, JRETORS							
		465	089	C2	4834	49C	91, 4	87857	C91 (	CARBUR	RETORS							
	11	443	715	C1	JET, H	0T	IDLE	ASSY	- 4469	962C91	CARB-							
	12	446	943	C1	CA F	4 É RBU OR	NGINE RETOF 15135	INSU 18282 -	JLATI	NG -WI	LL WOR	K						
		446	799	C2		₩/T.				NCH EL	.ONGATE	D						
		446	800	C 1		₩/0		AND 3	8-1/4	INCH	ELONGA	TED						
			897 943			ATE		IFOLD	COVE	R								
	13 14	474	381	C1	NOT US BRACKE 44696	Τ, '	VACUU 1 CAR	IM CHA	MBER OR-	- EXCE	PT							
	15	469	004	C1		290	91, 4	76109	IOTTLE	MODU 48786	LATOR			1				
		470	782	C1	4656	630	ETORS 91, 4 ETORS	83449	C91,	48785	7C91					483	572 965	. (
	16 17 18	470	806 617 552	<u>C1</u> .	LINK, CAM, F I RETAIN LEVER	AST ER,	I DLE FAST	IDLE	CAM/	VENT	VALVE CARBS-					414 414 414	034 051 052 053 054	
	19 20	456	448	C93	NOT US KIT, A BODY	CCE	LERAT KET-	'OR PU	IMP - I	NCLUD	ES MAI	N		2		437	087 970	
	21		786 787		FLOAT, SHAFT,	CAI FL(	RBURE OAT	TOR,	ASSY						9	24 413	839 979	F
	22	443	785	C1 :	I VALVE,	FUI	EL IN	LET						3		475	40.1	,
	23	499	923	C1	PISTON	, P(	OWER	VALVE						4	9	- 24	401 839 979	F
	24 25 26 27 28 29 30	131 443	802 779 182 805 812	C1	NOT US ROD, F LEVER, WASHER LEVER, FITTIN	AST FAS , L( AC( G, F	ST ID DCK 3 Celer	LE /8 RE ATOR	PUMP	I				5		118 455 229	012 750 863 060	A
	31				NOT US	ËD										189	755 385	R
						RIC	знт н	AND D	RIVE					6				
		446	962	C91	CARBUR	ETOF	R, AS	SY -C	ODE 1	2127.5	9226-				A	061	600	0
		443	815	C93	#GASKET	SET	Г ['] , са	RBURE	TOR						A	061	240 420	0
		466	619 083	C91	4656	62C9	<b>31, 4</b>		C91 C	es ga: Arburi		ET-					260 220	
		490	457 456	C91	4834	4909	91, 4	87857	C91 C	ARBURI Arburi					A	061	400 200 140	0
	ļ				-												380 340	

#### TM 5-4210-230-14&P-2

12-022

ER MOUNTING AND PIPING

MT140 GROUP 12- ENGINES



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FIG. 12-022 PAGE NO. 43 REV.4

UP 12- ENG	GRO	0 G	[14	M	P 12- ENGINES	ROL	0 G	14	M		
DE	Г BER	ART JMB		REF IO.				ER	PART NUMBI		
022 CONTIN	12-	G.	FI			12-0	). ´	FIG			
UNTING AND PI	TER MO	ILTE	IL F	0	TING AND PIPING	ER MO	ILTE	11 F	0		
RETURN W/O OR 32				3	100 BBC 6 SUPPLY W/O FLAT BACK COWL -CODE 16010- OR TRAILER TOTER -CODE 01924-				6		
	0 000	090	060	A	3208 ENGINE Filter to Pipe						
	000 0	280	060	A	EXC TRAVELCREW CAB -CODE 16198- For Travelcrew CAB -code	000					
					PIPE TO ENGINE						
	000 0				EXC TRAVELCREW CAB -CODE 16196- Exc codes 15203 15203	000	~~~	081			
	0 000 00 0 000				16198- EXC CODES 15292, 15293 FOR CODES 15292, 15293 FOR TRAVELCREW CAB -CODE		660 080	061	Â		
9.					16198- 9.0 LITER, D150, 170, 190 ENG Filter to Pipe Exc Travel Crew Car -Code				ľ		
	000	090	060	A		000	090	060	A		
					16196- For travelcrew CAB -code 16196-						
	0 000	280 515	060 060	A	4X2 MODELS 4X4 MODELS	000	280 515	060 060	A		
					PIPE TO ENGINE				1		
	80 000	880	060	A	16196- EXC CODES 15292, 15293 FOR CODES 15292, 15293 FOR TRAVELOREW CAB -CODE	000	920	060	Ą		
	000 01	470	061	A	FOR CODES 15292, 15293 For travelcrew CAB -Code 16196-	000	090	061	Â		
	<b>30 000</b>	660	061	A	DT466, 4668, DT14668 ENGINES Filter to Pipe						
	30 - 000	880	060	A	EXC TRAVELCREW CAB -CODE 16196-	000	090	060	A		
ŧ	000	000	060		FOR TRAVELCREW CAB -CODE 16196-		100				
	000 000 000 000			1.	4X2 MODELS 4X4 Models Pipe to Engine	000					
	000 000			1.	EXC TRAVELCREW CAB -CODE 16196-						
W/ I OR					EXC CODES 15292, 15293 FOR CODES 15292, 15293	000	240 280	061	A		
3:	000 000	090	060	A	FOR TRAVELCREW CAB -CODE 18196- NV404, 448 Engines	000	120	061	A		
	000 000				FILTER TO PIPE EXC TRAVELCREW CAB -CODE	000	090	060	A		
9.	000 000				16196- For travelcrew CAB -code	000			1		
	30 000 70 000	360	061	A	16196- PIPE TO ENGINE W/FLAT BACK COWL -CODE 16010- TALLIED TOTED CODE 01004	000	880	060	A		
DI	000 000				TRAILER TOTER -CODE 01924- 3208 ENGINE						
	000.000	200	061	A	FILTER TO PIPE Pipe to engine	000	090	060	A		
HI	30 000 30 000	660 280	061 061	A	EXCEPT CODES 15292, 15293 FOR CODES 15292, 15293	000					
137 BBC Return 4x2 M	30 000	280	080		9.0 LITER, D150, 170, 190 ENG Filter to Pipe Pipe to Engine	000	090	060	A		
4X4 M(					EXCEPT CODES 15292, 15293 FOR CODES 15292, 15293	000					
CODE 12717	15 000 30 000	280	ŎĞŎ	Â	DT466, 466B, DT1466B ENGINES Filter to pipe	000					
SUPPLY EXC 1		~~~			PIPE TO ENGINE Exc codes 15292, 15293	000	240	061	A		
PIPI	000 000 000 000 000 000 000 000 000 00	880	060	A	FOR CODES 15292, 15293 MV404, 448 ENGINES	000	260 360	061 061	Â		
FOR 13 RETURN EXC 13		200	000	ſ							
FIL	000 000	090 740	060 060	A							
FOR 1	30 000	280	060	A							
<b>≇PIPE</b> , OIL A	<b>10 01</b>	003	990		AMERICA	ATES	STA			PRINTI	-
						1160	A	41 I E L			

### TM 5-4210-230-14&P-2 MT140 GROUP 12- ENGINES

<u> </u>	140		RUU	JF 12- ENGINES
	PA NU	RT MBE	ER	DESCRIPTION
	FI	G.	12-(	022 CONTINUED
0	IL F	ILTE	R MO	UNTING AND PIPING
				RETURN
				W/O FLAT BACK COWL -CODE 16010- OR TRAILER TOTER -CODE 01924- 3208 Engine
	060	090	000	FILTER TO PIPE EXC TRAVELCREW CAB -CODE
	060	280	000	16196- For travelcrew CAB -Code 16196-
				PIPE TO ENGINE EXC TRAVELCREW CAB -CODE
		320		16196- EXC CODES 15292, 15293
	061 061	660 320	000 000	FOR CODES 15292, 15293 FOR TRAVELCREW CAB -CODE
				16196- 9.0 LITER, D150, 170, 190, D1466, 4668, DT1466B ENGINES
	~~~			FILIER IU PIPE
١	000	090	000	EXC TRAVELCREW CAB -CODE 16196-
	080	280	000	FOR TRAVELCREW CAB -CODE 16196- 472 Model S
Ì	060	280 515	000	4X2 MODELS 4X4 MODELS PIPE TO ENGINE
				EXC TRAVELCREW CAB -CODE 16196-
١	060	880	000	EXC CODES 15292, 15293 FOR CODES 15292, 15293
l	061	470	000	9.0 LITER, D150, 170, 190 ENGINES
١	061	660	000	DT466, 466B, DT1466B ENGINES
١	060	880	000	FOR TRAVELCREW CAB -CODE 16196-
				MV404, 446 ENGINES FILTER TO PIPE
١	060	090	000	EXC TRAVELCREW CAB -CODE 16196-
١	060	280	000	FOR TRAVELCREW CAB -CODE 16196-
١	060	740	000	PIPE TO ENGINE W/ FLAT BACK COWL -CODE 16010-
				OR THAILER TOTEH -CODE 01924- 3208 ENGINE
		090		FILTER TO PIPE PIPE TO ENGINE
		400 250		EXC CODES 15292, 15293 FOR CODES 15292, 15293 9.0 LITER, D150, 170, 190 ENG
۱	060	090	000	FAITER TO PIPE
		360		PIPE TO ENGINE EXCEPT CODES 15292, 15293
		470 090		FOR CODES 15292, 15293 DT466, 466B, DT1466B ENGINES Filter to Pipe
		200		PIPE TO ENGINE EXCEPT CODES 15292, 15293
١	061	660 280	000	FOR CODES 15292, 15293 WV404, 446 ENGINES
•				137 BBC TRAVELCREW CAB - SUPPLY AND RETURN-
١	060	280	000	4X2 MODELS 4X4 MODELS
		515 280		W/O MV404, 446 ENGINES W/ MV404, 446 ENGINES
				CODE 12717 - MV404, 446 ENGINES- Supply
		090		EXC 137 BBC TRAVELCREW CAB Filter to pipe
		880 280		PIPE TO ENGINE For 137 BBC TRAVELCREW CAB
				RETURN EXC 137 BBC TRAVELCREW CAB
1	060		000	FILTER TO PIPE Pipe to Engine
1		280 063		FOR 137 BBC TRAVELCREW CAB
	990	003	ni	#PIPE, OIL ASSY, 3/8 OD

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ART IUMBER DESCRIPTION	REF PART NO. NUMBER DESCRIPTION
FIG. 12-022 CONTINUED	FIG. 12-023
OIL FILTER MOUNTING AND PIPING	CONNECTING RODS AND PISTONS
#PART NO. COVERS 1 FOOT OF BULK WATERIAL	
	MT-24007 1 326 874 R1 □ RETAINER, PISTON PIN -12- 2 670 675 C1 □ PIN, PISTON -6-
	2 670 675 C1 □ PIN, PISTON -6- 3 BEARING, CONNECTING ROD -6- 681 314 C1 STANDARD 681 315 C1 .010 U/S 687 382 C1 .020 U/S 681 316 C1 .030 U/S
	4 688 923 C91 ROD, CONNECTING, ASSY -6- 676 679 C2 BOLT, CONNECTING ROD -12- 675 006 C1 BUSHING, CONNECTING ROD -6-
	5 682 720 C1 II SLEEVE, CYLINDER
	☐ KIT, PISTON AND SLEEVE REPAIR -6- CODES 12482, 12513 684 290 C91 BELOW ENGINE SERIAL NO. 38089 687 432 C91 ENGINE SERIAL NOS. 38089 TO 74999 687 201 C91 ENGINE SERIAL NOS. 75000 TO 76440 687 433 C91 ENGINE SERIAL NO. 76440 AND UP CODES 12499, 12545, 12564 687 201 C91 ENGINE SERIAL NOS. 75000 TO 76440 687 433 C91 ENGINE SERIAL NO. 76440 AND UP 687 429 C91 \$SET, PISTON RING

TM 5-4210-230-14&P-2



TM 5-4210-230-14&P-2

	M	T140 G	ROU	P 12- ENGINES	M	T14	0 GR	OUF	IM 5-4210-230-14& P 12- ENGINES
REF PA NO. NU	RT MB	ER		DESCRIPTION	REI NO		ART JMBEF	R	DESCRIPTION
	1	FIG.	12-02	4			-	-	4 CONTINUED
			59	RELATED PARTS			-	-	23 29 30 31 32 24 29 30 31 32 25 28 29 30 31 32 26 27 28 29 30 31 32 26 27 28 29 30 31 32 26 27 28 29 30 31 32 26 27 28 29 30 31 32 26 27 28 34 35 35 27 70 33 34 35 27 76 33 34 35 27 76 33 34 35 29 30 31 32 39 20 38 39 30 34 37 38 39 40 44
	1 2 3 4 5 6 7 8 9 10 11 12 13	215 80 120 88 398 19 444 61 438 15 444 59 215 61 25 55 258 15 396 31 133 56 70 42 315 88 448 48 431 78	03 R1 88 R1 88 R1 70 90 45 R1 70 90 45 R1 5 R1 5 R1 5 R1 5 R1 7 C1 7 C1 7 C1 7 C1 7 C1 7 C1 7 C1 7 C	BOLT, HEX-HD 3/8NC X 1 -2- 2 -2- 2-1/2 -STD- 2-1/2 -NYLOCK2- 3 -2- WASHER, LOCK 3/8 REGULAR -9- INDICATOR, TIMING PLUG, PIPE 1/8 HEX-HD PLUG, PIPE 1/2 SQ-HD PLUG, PIPE 1/2 SQ-HD PLUG, PIPE 3/4 NUT, HEX. JAM 1 NF WASHER, FLAT 1 INCH HARDENED CAM, FUEL PUMP GEAR SET, FUEL INJECTION PUMP DRIVE, CAMSHAFT AND CRANKSHAFT GEARS FLANGE, THRUST BOLT, HEX-HD LOCK 3/8NC X 1/2 -2- CAMSHAFT, ASSY SPACER, CAMSHAFT KEY, WOODRUFF 3/18 X 5/8 BEARING, CAMSHAFT SECOND -ORDER BRG KIT- BEARING, CAMSHAFT THIRD -ORDER BRG KIT- BEARING, CAMSHAFT REAR -ORDER BRG KIT- BEARING SET, CAMSHAFT	15 16 17 18	14 1 17 400 444 432 427 355 255 281 465 465 465 465 465 465 465 465 465 465	3 156 2 244 5 947 6 18 7 217 0 056 0 056 5 592 5 593 5 593 5 594 7 217 0 056 5 593 5 594 7 218 0 094 465 465 465 468	R1 C91 C2 C1 C91 C91 C91 C91 C91 C91 C1 C1 R1 C93 C93 C93 C93 C93	CRANKCASE, W/BEARING CAPS, ASSY -INCLUDES REF. NOS. 12-22-23-24-26-27- 28-53-54-55-70 THRU 76- DOWEL, 7/18 X 3/4 -2- PIN, SLOTTED SPRING -4- PLUG, PIPE HEX-HD 1/4 -2- PLUG, PIPE HEX-HD 1/4 PLUG, PIPE SQ-SKT 4- PLUG, PIPE SQ-SKT 1/2 ROD, CONNECTING -8- BOLT, BEARING CAP -16- NUT, BEARING CAP -16- NUT, BEARING CAP -16- PISTON, W/PIN -8- STANDARD SIZE .020 OVERSIZE .030 OVERSIZE PIN, PISTON -8- BUSHING, PIN RING, PIN RETAINING RING SET, PISTON -8- STANDARD SIZE .020 OVERSIZE .020 OVERSIZE

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FIG. 12-024 PAGE NO. 46

	N	I140 GROUP 12- ENGINES
REF NO.	PAR NUM	
		FIG. 12-024 CONTINUED
		CRANKCASE AND RELATED PARTS
	20	BEARING, CONNECTING ROD -5- 417 575 C91 STANDARD 417 576 C91 .010 UNDERSIZE 417 577 C91 .020 UNDERSIZE 417 578 C91 .030 UNDERSIZE 321 169 C91 .040 UNDERSIZE
	21	133 575 R3 COVER, TAPPET, ASSY -2- 282 245 C1 SCREW, 5/16 SPECIAL -28-
	22 23 24 25 26 27	26 114 HO CAP, BEARING GRÈASE 891 524 R1 GASKET, GREASE BEARING CAP 283 053 C3 BUSHING, OIL PUMP SHAFT UPPER 133 577 R4 GASKET, TAPPET COVER -2- 133 452 R1 SLEEVE, ROCKER ARM BRKT BOLT -4- 258 168 C1 GASKET, COVER PLATE
	28	258 091 C2 PLATE, CAMSHAFT COVER 24 839 R1 BOLT, HEX-HD 3/8NC X 3/4 -3- 120 382 WASHER, LOCK 3/8 REGULAR -3-
	29	HOUSING, FLYWHEEL W/PLATES, ASSY 393 781 C21 EXC CODES 13017, 13451, 13454 443 416 C1 FOR CODE: 13017 483 458 C91 FOR CODE: 13017, 13454 24 341 R1 BOLT, HEX-HD 3/8MC X 1-1/2 -12- 25 311 R1 BOLT, HEX-HD 9/16MC X 1-5/8 -2- 26 318 R1 BOLT, HEX-HD 9/16MC X 2-1/4 -2- 25 327 R1 BULT, HEX-HD 9/16MC X 5-1/4 -2- 25 527 R1 NUT, HEX. 1/2NF -4- 120 384 WASHER, LOCK 1/2 -4- 26 610 R1 WASHER, FLAT 9/16 -6- COVER, FLYWHEEL HOUSING
		438 494 C1 4.64 LONG 483 461 C1 8.05 -W/483458C91 HOUSING- 25 752 R1 BOLT, HEX-HD 1/4NC X 1/2 120 380 WASHER, LOCK 1/4 REGULAR 17 158 R1 PIN, ROLL 1/2 X 1-1/4
	30	433 067 C92 %FLYWHEEL, W/GEAR 258 125 C1 %GEAR, FLYWHEEL RING
	31 32	18 265 R1 SPIN, DOWEL 414 052 C1 Sbolt, flywheel to crankshaft -7-
	33	299 573 C3 SHIELD, FLYWHEEL HOUSING BOLT, HEX-HD 1/4NC X 1/2 -2- WASHER, LOCK 1/4 REGULAR -2-
	34	GEAR -NOT SERVICED SEPARATELY- 17 047 R1 PIN, ROLL 5/32 X 7/8
	35 36 37 38 39 40 41 42 43	SHAFT -NOT SERVICED SEPARATELY- GEAR -NOT SERVICED SEPARATELY- 258 140 C1 GASKET, SPACER TO BODY PLATE -NOT SERVICED SEPARATELY- 258 138 C1 GASKET, OIL PUMP COVER 384 593 C1 RETAINER, SPRING -2- 243 019 R1 RING, SNAP -2- 283 757 C1 SPRING, RELIEF VALVE -2- 283 759 C1 VALVE, OIL PRESSURE RELIEF -2-
	44	25 234 R1 BOLT, HEX-HD 5/18NC X 2-1/4 -4- 120 214 WASHER, LOCK 5/16 REG -4-
	45	478 145 C91 PUMP, W/O FLOAT -INCLUDES REF. NOS. 34 THRU 45-
		140 483 H BOLT, HEX-HD 3/8NC X 1-1/4 -2- 120 382 WASHER, LOCK 3/8 REGULAR -2-
	46	NOT USED
	47	476 139 C2 FLOAT, OIL PUMP, ASSY 25 492 R1 BOLT, HEX-HD 3/8NC X 7/8 -2- 120 214 WASHER, LOCK 3/8 REGULAR -2- 479 687 C1 GASKET, FLOAT
	48	448 428 C1 GASKET, OIL PAN
PRINT	49 ED IN	PAN, 01L, ASSY 440 294 C92 EXCEPT 4X4 MODELS 494 377 C91 FOR 4X4 MODELS 282 245 C1 SCREW, PAN TO CRANKCASE -23- INITED STATES OF AMERICA

12-024

PAGE NO. 47

FIG.

	58	288 230 286 235	C2 C2	INSULATOR, ENGINE MOUNTING UPPER Lower
	59 80 81 62 63 64 65 66	300 845	R1 H C91 C91 C91 C93	NOT USED NUT, CRANKSHAFT PULLEY WASHER, CRANKSHAFT PULLEY PULLEY, W/DAMPER CRANKSHAFT, ASSY SLEEVE, CRANKSHAFT PULLEY WEAR SEAL, CRANKSHAFT FRONT OIL KEY, WOODRUFF 1/4 X 3/4 -2- CRANKSHAFT, W/BEARING, ASSY
	67	417 609 448 064	C1 C92	BEARING, CRANKSHAFT Bearing Hos. 1, 2, 4, 5 -4- Bearing No. 3
	68 69	141 280 339 965		DOWEL, 7/16 X 3/4 -2- Sleeve, crankshaft wear
	70	316 286 103 340	C1	BOLT, PISTON COOLING NOZZLE -8- WASHER, FLAT 5/18 -8-
	71 72 73 75 76 77 78 80 81 82 83 83	316 287 291 171 444 618 312 945 345 486 25 501 348 714	C1 C1 R1	NOZZLE, PISTON COOLING -8- PLUG, CUP PLUG, HEX-HD 1/4 PIPE -4- PLUG, EXPANSION -8- WASHER, CRANKCASE TIE BOLT -10- BOLT, CRANKCASE TIE -10- NOT USED NOT USED NOT USED NOT USED SASKET, FRONT COVER NOT USED NOT USED NOT USED NOT USED NOT USED NOT USED NOT USED NOT USED NOT USED WITH ALLISON TRANSMISSION FOR ALLISON TRANSMISSION, SEE GROUP 13
. 34				
	REV. 4	Ļ		

REF PART NO. NUMBER

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51

56

57

3 405 H

317 749 C92 258 122 C1 258 061 C1 258 180 C1

211 216 R1 359 787 C1 433 859 R1 296 849 C2

286 234 C2

445 096 113 933 H

TM 5-4210-230-14&P-2 MT140 GROUP 12- ENGINES

DESCRIPTION

SEAL, CRANKSHAFT REAR BEARING SEAL, REAR BEARING CAP -2-BOLT, BEARING CAP 9/16NC X 4-1/2 -10-WASHER, CAP BOLT -10-

RETAINER, LOWER INSULATOR SPACER, ENG FRONT MTG -MAKE LOCALLY-

BOLT, ENGINE FRONT MOUNTING -2-NUT, HEX. LOCK 1/2NC -2-WASHER, FLAT 1/2 -2-PLATE, MTG BOLT LOCKING

GASKET, OIL PAN DRAIN PLUG

PLUG, OIL PAN DRAIN STANDARD CODE 12781 -MAGNETIC-

FIG. 12-024 CONTINUED

CRANKCASE AND RELATED PARTS

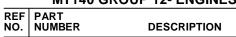
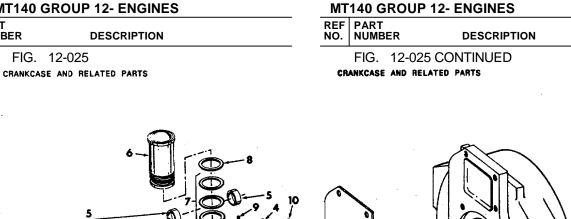


FIG. 12-025



TM 5-4210-230-14&P-2

		0 00	Image: Constraint of the second of the se
	684 751 C92 CRANKCASE, ASSY -INCLUDES REF. NOS. 1, 2, 3, 10 THRU 16- 7 911 T BALL, OIL JET COOLING TUBE -12- 9 409 949 PLUG, PIPE SQ.SOC 3/4NPT -2- 343 464 R1 TUBE, OIL JET COOLING -12-	19	HOUSING, FLYWHEEL 886 997 C91 EXCEPT 1853 MODEL 891 638 C91 FOR 1853 MODEL 25 278 R1 BOLT, HEX-HD 1/2NC X 1-7/8 -8- 886 999 C1 STUD, CRANKCASE HOUSING -4- 26 273 R1 WASHER, FLAT 1/2 -8-
1 2 3 4 5 6 7	327 412 R1 PLUG, CUP 13/16 -3- 680 483 C1 DOWEL, 3/8 X 7/8 -2- 23 623 R1 PLUG, CUP 1-1/4 -9- 684 902 C1 DOWEL, BUSHING -2- 680 117 C1 BEARING SET, CANSHAFT SLEEVE -SEE CONNECTING RODS AND PISTON- 680 086 C1 KIT, CYLINDER SLEEVE 0-RING -6- 680 333 C92 KIT, CYLINDER SLEEVE SHIM -AR-	20	686 999 C1 STUD, CHANKCASE HOUSING -4- 26 273 R1 WASHER, FLAT 1/2 -8- 686 702 C1 PLATE, HOUSING COVER 26 676 R1 BOLT, HEX-HD 5/10NC X 1 -2- 27 326 R1 WASHER, FLAT 5/10NC X 1 -2- 27 326 R1 WASHER, FLAT 5/10NC X 1 -2- 887 002 C1 INSERT, CRANKCASE -AR- 120 214 WASHER, LOCK 1/2 REGULAR -8- TUBE, OIL FILLER -SEE SEPARATE ILLUSTRATION- ILLUSTRATION-
8 9	617 256 C1 SCREW, SET 3 072 884 R1 BALL, STEEL	21 22	GAUGE, OIL LEVEL -SEE SEPARATE ILLUSTRATION- 673 761 C1 BRACKET, SUCTION PIPE SUPPORT
10 11 12 13 14 15 16 17 18	50 410 DÅ PLUG, HEX-SOC 1/8NPT -5- 682 444 C1 RING, CAMSHAFT SEAL REAR 680 484 C1 DOWEL, 1/2 X 1-1/8 -2- 444 624 PLUG, PIPE 680 243 C1 CAP, MAIN BEARING REAR 252 018 R1 WASHER, MAIN BEARING CAP BOLT -14- 685 187 C1 BOLT, MAIN BEARING CAP -14- 680 241 C1 CAP, MAIN BEARING FRONT AND INTER -6- 682 945 C1 GASKET, FLYWHEEL HOUSING		

NO. NUMBER DESCRIPTION N FIG. 12-025 CONTINUED CRANKCASE AND RELATED PARTS 444 150 *TEE_2PART OIL GALLERY: 444 161 *PLUG, PIPE -REAR OIL GALLERY: 444 612 *PLUG, JURE -REAR OIL GALLERY: 444 623 *PLUG, JURE -REAR OIL GALLERY: 444 624 *PLUG, JURE -REAR OIL GALLERY: 444 626 *PLUG, JURE -REAR OIL GALLERY: 690 196 C1 *COVER, BREATHER OPENING 690 196 C1 *COVER, BREATHER OPENING 72 72326 *WASHER, FLAT 5/18 -2. 110 800 T, NEXTHO 5/18 NC 1 -2. 73326 *WASHER, FLAT 5/18 -2. 190 231 C2 *GASKET, COVER *PARTS NOT ILLUSTRATED			OUP 12- ENGINES	
CRANKCASE AND RELATED PARTS 444 150 ***********************************			DESCRIPTION	
444 150 "TEE, 3/BMPT IN CRANKCASE LEFT SIDE -NOT USED FOR CODE 12499- 444 613 "PLUG, PIPE -REAR OIL GALLERY. 444 625 "PLUG, SIMPT -2- NOT USED FOR CODE 12499- 690 186 C1 "COVER, BREATHER OPENING 27 453 RT WASHER, FLAT B/18 -2- 116 120 WASHER, FLAT B/18 -2- 116 120 WASHER, COVER *PARTS NOT ILLUSTRATED *PARTS NOT ILLUSTRATED		1		
444 612 *PLUG, PIPE -REAR OIL GALLERY: *PLUG 320NPT -2- NOR CODE 124490- 600 166 C1 *COVER BREATHER DEENING 27 326 R1 *WASHER, LOCK 5/16 REGULAR -2- 600 231 C2 *GASKET, COVER *PARTS NOT ILLUSTRATED		ł.	*TEE, 3/8NPT IN CRANKCASE LEFT SIDE -NOT	
690 186 C1 *COVEN, BREATHER OPENING BUT, MEXIND 5/100 X 1 - 2- MASHER, COX 5/10 - 2 MASHER, COX 5/10 - 2 MASHER, COX FIB REGULAR - 2- 690 231 C2 *GASKET, COVER *PARTS NOT ILLUSTRATED		444 612		
690 231 C2 •GASKET, COVER •PARTS NOT ILLUSTRATED		444 625	*PLUG, PIPE -REAR OIL GALLERY- *PLUG, 3/8NPT -2NOT USED FOR CODE 12499-	
*PARTS NOT ILLUSTRATED		690 166 C1 25 493 R1 27 326 R1 116 120	*COVER, BREATHER OPENING BOLT, HEX-HD 5/18NC X 1 -2- Washer, Flat 5/18 -2- Washer, Lock 5/18 Regular -2-	
		690 231 C2	*GASKET, COVER	
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TM 5-4210-230-14&P-2

MT140 GROUP 12- ENGINES REF PART NUMBER DESCRIPTION

PAGE NO. 49



DESCRIPTION

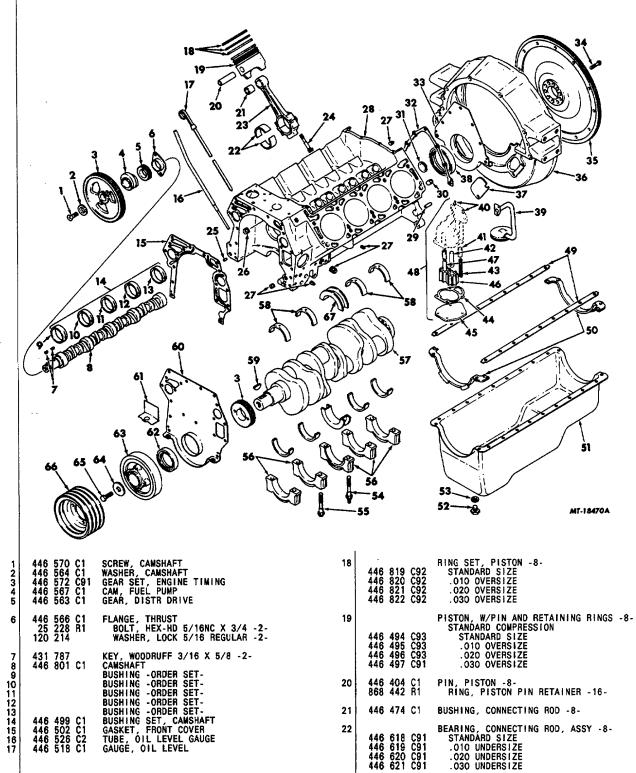
FIG. 12-026 CRANKCASE AND RELATED PARTS

T MT140 GROUP 12- ENGINES

REF PART NO. NUMBER DESCRIPTION

TM 5-4210-230-14&P-2

FIG. 12-026 CONTINUED CRANKCASE AND RELATED PARTS



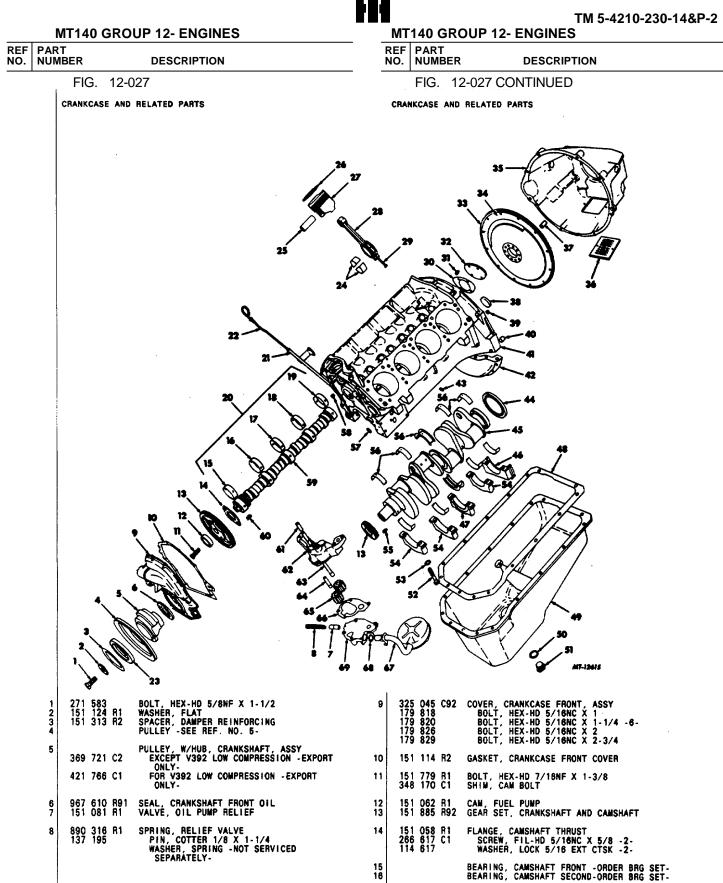
			0 G	RO	UP 12- ENGINES	_				
REF NO.	PAF	RT MBER			DESCRIPTION	_				
FIG. 12-026 CONTINUED										
		i	(CASI	E AND	RELATED PARTS					
	23	446	753 471		ROD, CONNECTING, ASSY -8INCLUDES REF. NOS. 21 AND 24- MV404 ENGINE MV446 ENGINE	4				
	24	446	472 473 166	C2	BOLT, ROD -16- NUT, HEX16- WASHER, HARD -16-	4: 5: 5				
	25		877 961		PIN, DOWEL -HARD4- 3/16 X 1/2 3/16 X 5/8	5				
	26	21	050	R1	PLUG, CUP 1/2 -2-	5				
	27	444 444 444	571 776 576 783 667		PLUG, PIPE SQ-HD 1/8NPTF -6- PLUG, DRAIN SQ-SOC-HD 1/4PTF-SAE -2- PLUG, PIPE SQ-HD 1/4NPTF -2- PLUG, DRAIN SQ-SOC-HD 3/8PTF-SAE -3- PLUG, PIPE SQ-SOC-HD 1/2NPTF	5				
	28		405 011		CRANKCASE, W/PLUGS AND BUSHING -INCLUDES KEY NOS. 9, 10, 11, 12, 13, 25, 26, 27, 29, 30, 31, 54, 55, 56- BALL, CHROWE 11/32 -DIPSTICK HOLE-	5				
	29 30 31 32	133 446	024 452 412 501	R1 C1	PIN, DOWEL HARD 3/8 X 1 -2- Dowel, Sleeve -4- Plug, Expansion 1-1/2 od -8- Gasket, Rear Cover	51				
	33		506 507		COVER, CRANKCASE REAR, ASSY BOLT, W/WASHER -7-	59				
	34	446	513	C2	BOLT, FLYWHEEL MOUNTING -10-	60				
	35		515 483		FLYWHEEL, W/RING GEAR GEAR, RING					
	36	120 443 25 120 120 483 24 505	863 384 416 841 527 382 384	C1 R1 R1 C1 C1	HOUSING, FLYWHEEL EXC TRANS CODES 13017, 13018, 13325, 13326, 13451, 13454 BOLT, HEX-HD 1/2NC X 1-3/4 -6- WASHER, LOCK 1/2 REG -6- FOR TRANS CODE 13017, 13018 BOLT, HEX-HD 3/8NC X 1-1/2 -12- NUT, HEX 1/2NF -4- WASHER, LOCK 3/8 -12- WASHER, LOCK 3/8 -12- WASHER, LOCK 1/2 -4- FOR TRANS CODES 13325, 13326 BOLT, HEX-HD 3/8NC X 1-1/2 -14- BOLT, HEX-HD J8NC X 1-1/2 -66 X 14.6 MM LONG -6- WASHER, FLAT 3/8 HARDENED -14-	61 63 64 65 66				
		483 27	993 896 341	C1 R1	FOR TRANS CODE 13451, 13454 BOLT, 12-POINT-FLG-HD 1/2NC X 4 -6- Washer, LOCK 1/2 -6-	67				
	37	446	599 507	ĊĨ	PLATE, ACCESS COVER BOLT, W/WASHER -2-					
	38		479		SEAL, OIL REAR					
	39	24 120	481 840 382 454	R1	TUBE, W/PICKUP BOLT, HEX-HD 3/8NC X 1 -2- WASHER, LOCK 3/8 REGULAR -2- GASKET, OIL PICKUP:MOUNTING					
	40 41 42 43 44	446	453 461 459	C1	PIN, DOWEL -NOT SERVICED SEPARATELY- VALVE, BY-PASS SHAFT, IDLER -NOT SERVICED SEPARATELY- SPRING, BY-PASS GASKET, OIL PUMP COVER					
	45	25 120	222 380	R1	COVER -NOT SERVICED SEPARATELY- BOLT, HEX-HD 1/4NC X 3/4 -4- WASHER, LOCK 1/4 REGULAR -4-					
	46 47				GEAR, OIL PUMP -NOT SERVICED SEPARATELY- SHAFT, W/GEAR -NOT SERVICED SEPARATELY- GEAR, OIL PUMP -NOT SERVICED SEPARATELY-					

TM 5-4210-230-14&P-2

	M٦	[14	0 G	RO	JP 12- ENGINES
	REF NO.	1 5 - 5	ART UME		DESCRIPTION
		F	IG.	12-	026 CONTINUED
	c	RAN	CAS	E AND	RELATED PARTS
4	B	446	455	C91	PUMP, OIL, ASSY -INCLUDES KEY NUMBERS 40 TO 47-
			493 214		BOLT, HEX-HD 5/16NC X 1 -2- WASHER, LOCK 5/16 REGULAR -2-
41 50			839 839		GASKET, LIQUID, 5 OZ. TUBE -AR- GASKET, LIQUID, 5 OZ. TUBE -AR-
5			658 507	C91 C1	PAN, OIL, ASSY -8 QUART- BOLT, W/WASHER -22-
5: 5:	3	393	671 670	C 1	PLUG, OIL DRAIN GASKET, OIL DRAIN PLUG
54		25	410 520 214	C1 R1	BOLT, BRG CAP -NO. 3 LEFT- NUT, HEX. 5/16NC WASHER, LOCK 5/16 REGULAR
51 51		446	409	C1	BOLT, BRG CAP -9- CAP, BRG -NOT SERVICED SEPARATELY-
57		446 446	802 561	C91 C91	CRANKSHAFT, W/BEARINGS -STANDARD SIZE- NV404 Engine NV446 Engine
58		446 446	548 549 550 551	C91 C91	BEARING, CRANKSHAFT, ASSY -NOS. 1-2-4-54- STANDARD SIZE .010 UNDERSIZE .020 UNDERSIZE .030 UNDERSIZE
59		103	909		KEY, WOODRUFF NO. 18-1/4 X 1-1/8
60			831 507		COVER, CRANKCASE FRONT, ASSY -WITH Timing indicator Bolt, W/Washer -5-
61					INDICATOR, TIM#NG -NOT SERVICED SEPARATELY-
62 63 64 65	1 1	446	508 509 124 873	C1	SEAL, OLL FRONT DAMPER, CRANNSHAFT VIBRATION WASHER, CRANNSHAFT BOLT, HEX-HD 5/8NC X 1-1/2
66	:		726		PULLEY, CRANKSHAFT
			725	-	W/O AIR PUMP, COMPRESSOR OR POWER Steering W(AIR DUMP, COMPRESSOR OR ROWER STRC
		24 120	840 382 729	81	W/AIR PUMP, COMPRESSOR OR POWER STRG BOLT, HEX-HD 3/8NC X 1 -4- WASHER, LOCK 3/8 REGULAR -4- SPACER, CRANKSHAFT PULLEY -W/446726C1 PULLEY-
67		146 146	552 553 554 555	C91 C91 C91 C91	BEARING, CRANKSHAFT, ASSY -NO. 3- STANDARD SIZE .010 UNDERSIZE .020 UNDERSIZE .030 UNDERSIZE
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FIG. 12-027 PAGE NO. 52

TM 5-4210-230-14&P-2

MT140 CROUP 12- ENGINES

MT140 C	ROUP 12- ENGINES		TM 5-4210-23 12- ENGINES	0-14&P-2
REF PART NO. NUMBER	DESCRIPTION	PART NUMBER	DESCRIPTION	
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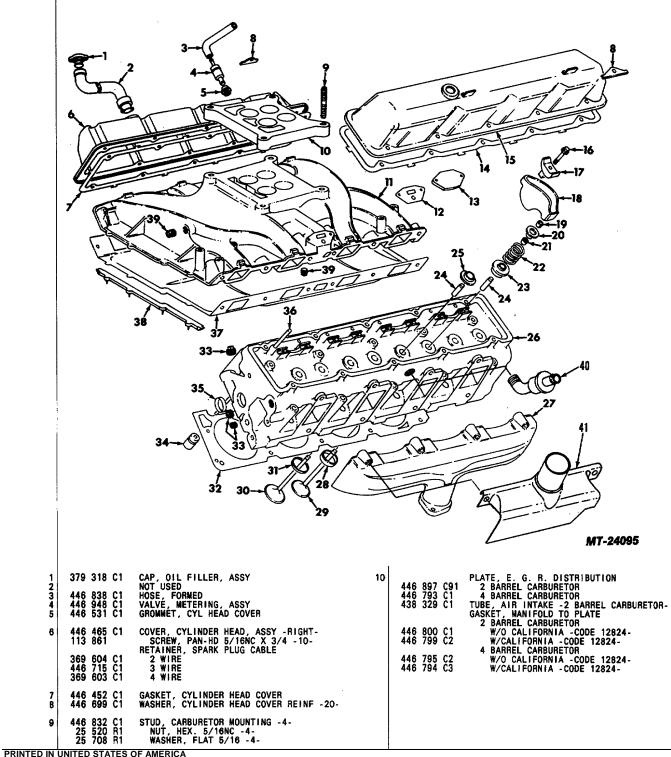
BER DESCRIPTION

FIG. 12-032 CYLINDER HEAD AND RELATED PARTS

TM 5-4210-230-14&P-2 MT140 GROUP 12- ENGINES

REF PART NO. NUMBER DESCRIPTION

FIG. 12-032 CONTINUED CYLINDER HEAD AND RELATED PARTS



REF NO.	PAF	RT MBER		DESCRIPTION
		FIG.	12-0	32 CONTINUED
		CYLINDER	HEAD	AND RELATED PARTS
	11	446 928 446 675 24 843 25 500 25 709	C92 R1 R1	MANIFOLD, INTAKE, ASSY -INCLUDES KEY NUMBERS 12, 13, 39- 2 BARREL CARBURETOR 4 BARREL CARBURETOR BOLT, HEX-HD 3/8NC X 2-8- BOLT, HEX-HD 3/8NC X 3-1/4 -4- WASHER, FLAT 3/8 -12- BRACKET, SPARK PLUG CABLE RETAINER
		505 982	C1	2 BARREL CARBURETOR W/O GOVERNOR -EXCEPT CODES 12750, 12950-
		446 904 1 700 670	C2 C1	W/GOVERNOR -CODES 12750, 12950- W/STURDY GOVERNOR -CODE 12789- 4 BARREL CARBURETOR
		446 904 1 700 670 24 839 120 382 446 919 446 601 156 241	C1 R1 C1	W/GOVERNOR -CODES 12750, 12950- W/STURDY GOVERNOR -CODE 12789- BOLT, HEX-HO 3/8NC X 3/4 WASHER, LOCK 3/8 REGULAR PLATE, CHOKE OPENING GASKET, CHOKE OPENING SCREW, FLAT-HD CR-REC 1/4NC X 1/2 -2-
	12	436 926	C1	GASKET, E. G. R. COVER PLATE
	13	25 492 438 380 120 214		PLATE -NOT SERVICED- BOLT, HEX-HD 3/8NC X 7/8 -2- SCREW, SPECIAL WASHER, LOCK 5/16 REGULAR -2-
	14	446 452	C1	GASKET, CYLINDER HEAD COVER -2-
	15	446 467 113 861	C1	COVER, CYLINDER HEAD, ASSY -LEFT- SCREW, PAN-HD 5/16NC X 3/4 -10- RETAINER, SPARK PLUG CABLE
		369 604 446 715 369 603	C1	2 WIRE 3 WIRE 4 WIRE
	16 17 18 19	446 422 446 419 446 446 41 339	C1	BOLT, ROCKER ARM -16- Post, Rocker Arm -16- Rocker, Arm -16- Key, Valve -32-
	20	446 580 446 850		CAP, VALVE SPRING RETAINER - 18- SEAL, VALVE SPRING CAP - 16-
	21 22 23 24 25	446 850 223 717 443 128 446 723 151 173	.C1	SEAL, OIL -16- SPRING, W/DAMPER, VALVE, ASSY -16- Rotator, Exhaust Valve -8- Guide, Valve -18- SEAT, INTAKE VALVE SPRING -8-
	26	446 849 1 700 666 17 136 476 107 151 341	C93 R1 C1	HEAD, W/VALVES -INCLUDES KEY NUMBERS 19 THRU 26, 28, 29, 30, 33, 35- EXCEPT CODES 12824, 12825 FOR CODES 12824, 12825 PIN, ROLL -LOCATING- 3/16 X 1/2 -2- BOLT, CYLINDER HEAD -20- WASHER, HARDENED -20-
	27	446 843 446 940 446 970	C1	MANIFOLD, EXHAUST -2- Gasket, Exhaust Manifold to Head Bolt, Hex-HD 3/8NC X 2-1/4 -18-
	28	446 856 446 857 446 858 446 859	C1 C1 C1	SEAT, EXHAUST VALVE -8- STANDARD .002 OVERSIZE .015 OVERSIZE .030 OVERSIZE
	29 30	446 854 488 428	C2 C1	VALVE, EXHAUST -8- VALVE, INTAKE -WILL WORK FOR 446418C1- -8-
	31	446 578 446 577	C1 C1	SEAT, INTAKE VALVE -AR- Standard .030 Oversize
	32	446 468		GASKET, CYLINDER HEAD
	33	446 947 438 159 446 946	C1	PLUG, PIPE 1/4 -4- PLUG, PIPE 1/2NPTF -6- PLUG, PIPE HEX-SOC-HD 1/2 -4-
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FIG. 12-032 PAGE NO. 61

TM 5-4210-230-14&P-2 MT140 GROUP 12- ENGINES

		_										
	REF 10.			ART UMB		DESCRIPTION						
	,		F	IG.	12-	032 CONTINUED						
	c	۲L	IN	IÐER	HEAD	AND RELATED PARTS						
34 35 36 37 38		44 37 44 44	966	277 569	C1 C1 C1	TAPPET, HYDRAULIC, ASSY -16- PLUG, EXPANSION 1-3/8 -2- ROD, VALVE LIFTER -16- Gasket, intake manifold, Assy SEAL, intake manifolds -2-						
39	9	44 40	5	686 947		PLUG, PIPE 3/8 SQUARE HEAD -2- PLUG, PIPE 3/4 SQUARE SOCKET -2-						
40 41		44 44	6	903 644	C1 C1	VALVE, AIR INJECTION -2- Shroud, Exhaust Manifold Heat						

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TM 5-4210-230-14&P-2

MT140 GROUP 12- ENGINES MT140 GROUP 12- ENGINES REF PART REF PART NO. NUMBER DESCRIPTION NO. NUMBER DESCRIPTION FIG. 12-033 FIG. 12-033 CONTINUED CYLINDER HEAD AND RELATED PARTS CYLINDER HEAD AND RELATED PARTS ന 47 J.O.D.1 22 26 39 31 37 34 33 MT-12613A MANIFOLD, EXHAUST -2-V345 ENGINE EXCEPT CODES 12824, 12825 FOR CODES 12824, 12825 V392 ENGINE BOLT, HEX-HD 3/8NC X 1-1/4 -2-BOLT, HEX-HD 3/8NC X 2 -4-BOLT, HEX-HD 3/8NC X 3 -V345 ENGINE-RETAINER, VALVE SPRING -16-Retainer, Lock -32-Gasket, Cylinder Head Cover -2-151 167 R3 41 339 D 151 193 R4 1 518 C12 222 C1 222 C1 483 H 843 R1 232 R1 8 323 309 309 140 24 COVER, CYLINDER HEAD, ASSY LEFT RIGHT 10 379 226 C3 379 228 C3 282 245 C1 277 SCREW, W/WASHER, RD-CR-REC-HD 5/16NC X 5/8 - 12--4-BOLT, HEX-HD 3/8NC X 3-1/4 -V392 ENGINE- -4-WASHER, LOCK -8-WASHER, FLAT -2-25 500 R1 BRACKET, SPARK PLUG CABLES 2 PRONG -4-4 PRONG -AR-FLOATING -AR-SNAP ON -AR-BRACKET, IGNITION CABLE -SINGLE HOLE-45 DEGREE BEND AT HOLE 90 DEGREE BEND AT HOLE 11 369 604 C1 159 689 R1 103 341 369 602 C1 369 603 C1 GASKET, EXHAUST MANIFOLD -2-2 216 533 R2 GUIDE, VALVE V345 ENGINE -16-V392 ENGINE INTAKE -8-EXHAUST -8-371 621 C1 371 620 C1 3 151 798 R1 \$SHAFT. ROCKER ARM -2- -ORDER KIT 488886C91-PLUG, SHAFT OIL GALLERY -4-\$SPRING, ROCKER ARM SHAFT -8-SPACER, ROCKER ARM -6-151.798 R1 874 913 R2 12

CAP, EXHAUST VALVE ROTATOR, ASSY -8-Spring, W/Damper, Valve -10-Seal, Valve Stew -16-443 128 C2 223 717 R11 111 024 R1 5 8

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REV.4

13 14 169 071 R1 133 645 R1 151 186 R1

 15 16	401 401 151		3 CONTINUED AND RELATED PARTS ARM, ROCKER, ASSY -8-
	401 151	064 C1 065 C1	ARM ROCKER ASSY .8.
16			INTAKE EXHAUST
	27	181 R1 647 R1 245 R1	BRACKET, ROCKER ARM SHAFT -10- BOLT, HEX-HD 5/16NC X 3-1/4 -10- BOLT, HEX-HD 5/16NC X 1/2 -8CYL HEAD PLUG-
	407	997 C1	WASHER, FLAT 5/16 -10-
17		173 R2	SEAT, INTAKE VALVE SPRING -8-
18	417 103	802 C1 868	OUTLET, ENGINE WATER LOWER PLUG, PIPE SQ-HD 1/2
19	151	241 R1	GASKET, OUTLET -2-
20	151	469 R2 777 R1	GASKET, INTAKE MANIFOLD -2- V345 ENGINE GASOLINE DEDANE LEC AND NATURAL CAC
	434 4 052		PROPANE -LPG AND NATURAL GAS- V392 Engine Except LPG and Natural Gas
~ ·	4 052	838 R1	FOR LPG AND NATURAL GAS
21	419 419 419	660 C1 661 C1 662 C1	THERMOSTAT 160 Degree 170 Degree 180 Degree
22 23 24	444 444 445	588	PLUG, PIPE SO-HD 1/4 PLUG, PIPE SO-HD 1/2 PLUG, PIPE SO-HD 3/8 -EXCEPT PROPANE-
25			MANIFOLD, INTAKE, ASSY V345 Engine
	449	535 C92	GASOLINE PROPANE - LPG AND NATURAL GAS-
	1 700 449 25 179 133	948 R92 250 C92 534 C91 752 R1 839 757 R1	CHASSIS BUILT PRIOR TO 6-17-81 CHASSIS BUILT 6-17-81 AND LATER V392 ENGINE BOLT, HEX-HD 1/4NC X 1/2 -2- BOLT, HEX-HD 3/8NC X 1-8- BOLT, HEX-HD 3/8NC X 1-1/4 -4-
	179 25		BOLT, HEX-HD 3/8NC X 1-1/2 -4- BOLT, HEX-HD 5/16NC X 7/8 -EXCEPT
	469 120	668 R1 214	PROPANE EGR COVER PLATE MOUNTING2- WASHER, FLAT 3/8 -EXCEPT PROPANE -16- WASHER, LOCK 5/16 -EXCEPT PROPANE EGR
	438 681	329 C1 258 R1	COVER PLATE2- TUBE, AIR INTAKE -EXCEPT PROPANE- PLUG, EXPANSION 1-1/8 -EXCEPT PROPANE-
26			HEAD, W/VALVES, CYLINDER -2-
	1 700 1 216 3	091 C92 765 C91 376 R93 214 C92	V345 ENGINE STANDARD COMPRESSION EXCEPT CODES>12824, 12825 FOR CODES 12824, 12825 LOW COMPRESSION PROPANE - LPG AND NATURAL GAS-
	444 472 1 701 179	768 C92 665 C92 222 C92 061 C91 833	V392 ENGINE STANDARD COMPRESSION LOW COMPRESSION LPG AND NATURAL GAS CODE 12825 BOLT, HEX-HD 3/8NC X 1/2 _AR_
	321 : 151	975 R1 219 C1 179 R1 245 R1	BOLT, HEX-HD 1/2NC X 2-7/8 -8- BOLT, HEX-HD 1/2NC X 4 -2- BOLT, HEX-HD 1/2NC X 4-1/2 -10- BOLT, HEX-HD 5/16NC X 1/2 -LOW COMPRESSION AND PROPANE ONLY8-
	23 20	815 C1 375 V 285 H 341 R1	SCREW, SET-HEX-SOC 1/2NF X 1 - 8- STUD, GEN MOUNTING BRACKET -AR- WASHER, FLAT -AR- WASHER, CYLINDER HEAD -20-
27	553 433 (407	838 C1 357 C1 933 C2 791 C1 045 C1 138 C1 693 C1	HOSE, WETERING VALVE FORMED \$ STRAIGHT CROSS CLAMP, HOSE -WILL WORK FOR 279025R91- ELBOW, 90 DEGREE CAP, VACUUM FITING 11/64 - 9/64 CAP, TUBE 5/32

TM 5-4210-230-14&P-2 **MT140 GROUP 12- ENGINES**

REF NO.	PART	
	NUMBER	R DESCRIPTION
c	-	2-033 CONTINUED IEAD AND RELATED PARTS
28	432 049 (379 445 (432 048 (C2 VALVE, METERING, ASSY -PCV- C1 Elbow, 90 degree C1 grommet, valve, ASSY -PCV-
29 30 31 32 33	379 277 (445 684 151 189 f 217 158 f 151 102 f	R92 TAPPET, VALVE, ASSY -16-
34	436 395 0 282 245 0 131 402 4	C91 COVER, VALVE TAPPET, ASSY C1 BOLT, TAPPET COVER -8- H WASHER, STEEL -8-
35	151 269 F	VALVE, INTAKE -8- R2 V345 ENGINE
	481 812 (352 177 (V392 ENGINE C1 EXCEPT LPG AND NATURAL GAS C2 FOR LPG AND NATURAL GAS
36		SEAT, INTAKE VALVE -8- V345 Engine
1	205 655 F 205 656 F	31 STANDARD SIZE 31 .030 OVERSIZE V392 ENGINE
	352 175 (352 176 (C1 STANDARD SIZE C1 .030 OVERSIZE
37	151 443 F 874 918 F	
38	379 093 0 379 094 0 379 095 0	1 .015 OVERSIZE 1 .030 OVERSIZE V392 ENGINE
		EXCEPT LPG AND NATURAL GAS 1 STANDARD SIZE 1 .015 OVERSIZE 1 .030 OVERSIZE
	427 996 0 427 997 0 427 998 0	C1 .015 OVERSIZE
39 į		HEAD, W/GUIDES CYLINDER -ORDER HEAD W/VALVES2-
40	465 572 0 434 524 0	
41	379 318 0	C1 CAP, OIL FILTER, ASSY
42	322 684 0	
	322 684 0 271 916 0 275 804 6 120 382 438 159	V392 ENGINE 2 STANDARD COMPRESSION 31 LOW COMPRESSION -W/438159 PLUG- 31 BOLT, HEX-HD 3/8NC X 3 -2- WASHER, LOCK 3/8 REGULAR -2- PLUG, PIPE SO-HD 1/2NPT
	436 926 C	1 *GASKET, COVER PLATE -AT EGR PLATE- -LPG AND NATURAL GAS-
	488 886 C	#PART NO. COVERS 1 FOOT OF BULK MATERIAL *PARTS NOT ILLUSTRATED *91 *KIT, ROCKER ARM SHAFT -2INCLUDES KEY NOS. 12, 13 AND BOLT 27245R1-



TM 5-4210-230-14&P-2

REF PART

REF PART NO. NUMBER DESCRIPTION NO. NUMBER DESCRIPTION FIG. 12-034 FIG. 12-034 CONTINUED CYLINDER HEAD AND RELATED PARTS CYLINDER HEAD AND RELATED PARTS -20 22 26 _ MT-24078_ COVER, CYLINDER HEAD, ASSY -LEFT-BOLT, COVER MTG 5/16NC X 5/8 -10-VALVE, CRANKCASE VENT METERING, ASSY HOSE, METERING VALVE -FORMED-CLAMP, HOSE -2-RETAINER, SPARK PLUG CABLE 2 PRONG -AR-4 PRONG -AR-FLOATING SMAP OW 448 252 C2 446 507 C1 379 317 C1 319 663 C1 995 218 R1 336 079 R91 CAP, OIL FILLER 1 6 296 481 C11 PIPE, OIL FILLER, ASSY 26 080 R1 BOLT, HEX-HD 1/4NF X 1/2 -4-328 680 C1 WASHER, FLAT 1/4 -4-2 3 282 009 C1 GASKET, OIL FILLER PIPE 369 604 C1 COVER, CYLINDER HEAD, ASSY -RIGHT-BOLT, COVER WTG 5/10NC X 5/8 -10-FLANGE, OIL FILLER PIPE RETAINER, SPARK PLUG CABLE 2 PRONG -AR-4 PRONG -AR-FLOATING SWAP ON 448 254 C2 446 507 C1 282 008 C1 369 602 C1 369 603 C1 4 SNAP ON ARM, ROCKER, ASSY -INTAKE AND EXHAUST--Cylinders 2, 3, 6 and 7- -8-Spacer, Rocker Arm -12-7 448 210 C1 369 604 C1 448 451 C1 8 369 602 C1 369 603 C1 448 244 C1 151 036 R1 151 341 R1 BRACKET, ROCKER SHAFT -8-BOLT, HEX-HD SPECIAL 1/2 X 3-1/16 WASHER, HARDENED SNAP ON 9 GASKET, CYLINDER HEAD COVER -2-259 057 C1 5 448 208 C1 ARM, ROCKER, ASSY -INTAKE AND EXHAUST--CYLINDERS 1, 4, 5 AND 8- -8-10

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FIG. 12-034 PAGE NO. 64



	M	T140	GF	ROU	P 12- I	ENGIN	ES				M	F140 G
REF NO.	PART NUME				DESC	RIPTION	l				REF NO.	
		FIG.	. 1	2-03	4 CON	TINUE	D					FIG.
		CYLIN	DER	HEAD	AND REL	ATED PA	RTS					DIVORCED
	11	151 25 120	245 038 222 380 341	R1 R1	BOLT Bolt Wash	T, ROCKE , HEX-HD , HEX-HD ER, LOCK ER, HARD	SPECIA 1/4NC 1/4 RE	L 1/2 : X 3/4	IL SUPPL X 3-1/16	Y2		
	12 13 14 15 16 17 18	448 60 448 448 317 443	071 206 437 456 455 365 128 196	C1 R1 C1 C1 C1 C11 C2	SHIELD SPRING ROTATO		E SPRIM 6- E/EXHAUS E/EXHAUS	IG - 16- It valv Ist val	E, ASSY VE, ASSY			
	20	24 448 120 115	645 840 140 382 712 588	R1 C1	COVER, BOLT Stud WASH Plug, Plug,	CYLINDE , HEX-HD , AIR CL ER, LOCK SQ-SOC 1 SQ-HD 1/	R HEAD 3/8NC EANER E 3/8 RE /2 PIPE 2 PIPE	REAR - X 1 -2 IRACE - GULAR -2- -2-	2- - 2- -4-			
	21	258	168	C1	GASKET	, COVER	-2-					
	22	454 20 151 444 115	409 993 665 341 782 712 788	R1	BOLT BOLT WASH PLUG, PLUG,	W/VALVES , HEX-HD , HEX-HD ER, HEAD PIPE SQ- PIPE SQ- PIPE HEX	1/2NC 1/2NC BOLT SOC-HD SOC-HD	X 3-1/ X 5-1/ 36- 3/8 -2 1/2	2 - 26 - 2 - 10 -		1 2 3	438 38 448 49 465 57 473 54 464 32 24 38
	23	448	219	C2	GUIDE,	INTAKE	VALVE -	STD OD	8-			432 54
	24		033 035		STAN	INTAKE V DARD SIZ OVERSIZ	E i	}-				432 04
	25 26	487	879 454	C1	VALVE,	INTAKE EXHAUST	-8-					
	27	379 379	089 090 091	C1 C1	SEAT, .002 .015	EXHAUST OVERS12 OVERS12 OVERS12	VALVE - Ce Ce	-8-				
	28	448	229	C2	GUIDE,	EXHAUST	VALVE	-STD 0	08-			
		NITED	QT 47			٨						

МТ	140 GROU	P 12- ENGINES
REF NO.	PART NUMBER	DESCRIPTION
	FIG. 12-03	35
	DIVORCED CHOK	CONTROL
1	438 380 C1	SCREW, FL-SOC-MEX-MD -2- CLIP, ROD END CLEVIS
2	438 380 C1 448 491 C1	
3	465 575 C1 473 549 C91 464 325 C1 24 388 R1 432 541	CONTROL, CHOKE MV404, 446 ENGINES V345 ENGINE COVER, CHOKE SCREW, TAP-PN-CR-REC-HD NO. 6-20 X 3/8 BUTTON, INSTRUMENT PANEL -V345 ENGINE-

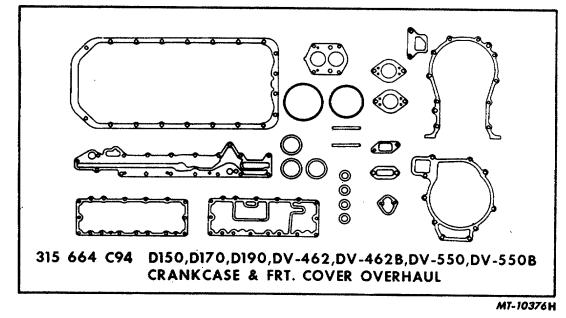
REF PART

NO. NUMBER



TM 5-4210-230-14&P-2

MT140 GROUP 12- ENGINES **REF** PART DESCRIPTION NO. NUMBER DESCRIPTION FIG. 12-036 FIG. 12-036 CONTINUED ENGINE GASKET SETS ENGINE GASKET SETS 000 00 00 0 Õ 00 315 662 C95 DV-462, DV-462B ENGINE UPPER D150, D170, D190, DV-550, DV-550B ENGINE UPPER 315 663 C96 BELOW ENGINE SERIAL NO. 53001 AND ENGINE SERIAL NOS. 53019 TO 53032 484 822 C92 ENGINE SERIAL NO. 53001 AND UP EXCEPT ENGINE SERIAL NOS. 53019 TO 53032

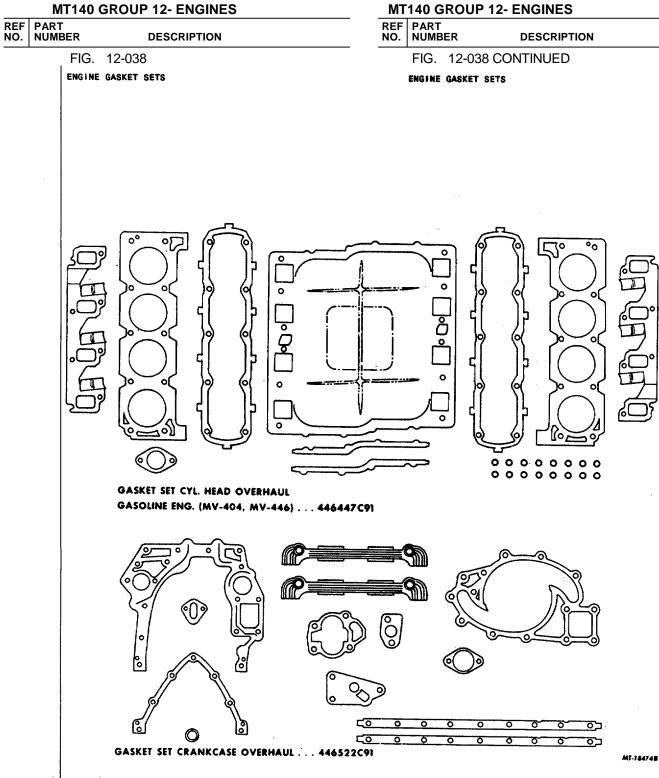


		T140 GROUP 12- ENGINES
REF NO.	PART NUME	
		FIG. 12-037 ENGINE GASKET SET
		674 399 C91 GASKET SET, CRANKCASE
		-CONSISTS OF-
		677 711 C1 BAFFLE, BREATHER 677 082 C2 □ GASKET, CRANKCASE FRONT COVER 675 813 C1 □ GASKET, CRANKCASE FRONT COVER 683 791 C1 □ GASKET, CRANKCASE FRONT PLATE 682 945 C1 GASKET, FLYWHEEL HOUSING 675 816 C1 □ GASKET, INJECTION PUMP ACCESS PLATE 674 754 C1 □ GASKET, INJECTION PUMP MOUNTING 675 609 C1 GASKET, INJECTION PUMP MTG ADAPTER 675 398 C1 GASKET, OIL FILTER BASE 671 827 C1 □ GASKET, OIL PAN 59 658 D GASKET, OIL PAN DRAIN PLUG 671 821 C1 □ GASKET, OIL PAN DRAIN PLUG 671 821 C1 □ GASKET, WATER INLET ELBOW 676 988 C1 □ GASKET, WATER PUMP BARING HOUSING 675 808 C1 □ GASKET, WATER PUMP HOUSING 676 808 C1 □ GASKET, WATER PUMP BARING HOUSING 675 808 C1 □ GASKET, WATER PUMP BARING HOUSING 676 808 C1 □ GASKET, SEGULATOR VALVE CAP 680 084 C92 GASKET SET, FRONT COVER 673 398 R2 O-RING, OIL COULER TUBE -4- 675 860 C1 □ O-RING, OIL PUMP HOUSING -2- 252 483 R1 □ RANG, SEALING 1 085 585 R1 □ PAMPHET, INSTALLATION 682 444 C1 RING, REAR CAMSHAFT SEAL 675 50 C1 □ COLER. MOUNTING -2-
		674 398 C95 GASKET SET, CYLINDER HEAD -CONSISTS OF-
		676 108 C2 GASKET, CYLINDER HEAD 688 928 C1 GASKET, EXHAUST MANIFOLD -6- 675 477 C1 GASKET, INJECTOR NOZZLE -6- 682 199 C1 GASKET, INTAKE MANIFOLD 673 341 C1 GASKET, INTAKE MANIFOLD ELBOW 675 384 C1 GASKET, THERMOSTAT HOUSING 670 073 C1 GASKET, TURBOCHARGER OIL DRAIN TUBE 253 660 R1 GASKET, TURBOCHARGER OIL DRAIN TUBE 675 109 C2 GASKET, TURBOCHARGER OIL INLET TUBE 675 109 C2 GASKET, TURBOCHARGER OIL INLET TUBE 675 109 C2 GASKET, VALVE COVER 682 810 C1 GROMMET, INJECTOR DUST SEAL -6- 677 903 C1 GASKET, TURBO OIL DRAIN 681 234 C1 SHIELD, OIL ROTATOR -12-
		680 084 C92□ GASKET SET, FRONT COVER -CONSISTS OF-
		686451C1RING, O'L PUMP HOUSING -2-675813C1GASKET, CRANKCASE FRONT COVER675808C1GASKET, CRANKCASE FRONT PLATE675812C1GASKET, CRANKCASE FRONT PLATE675816C1GASKET, CRANKCASE FRONT PLATE675816C1GASKET, INJECTION PUMP ACCESS PLATE252483R1RING, SEALING -4-671821C1GASKET, OIL PUMP INLET TUBE673396C1GASKET, OIL PAN671827C1GASKET, OIL PAN676988C1GASKET, WATER PUMP BEARING HOUSING677082C2GASKET, CRANKCASE FRONT COVER674754C1GASKET, O-RING PUMP HOUSING

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DESCRIPTION

REF PART NO. NUMBER



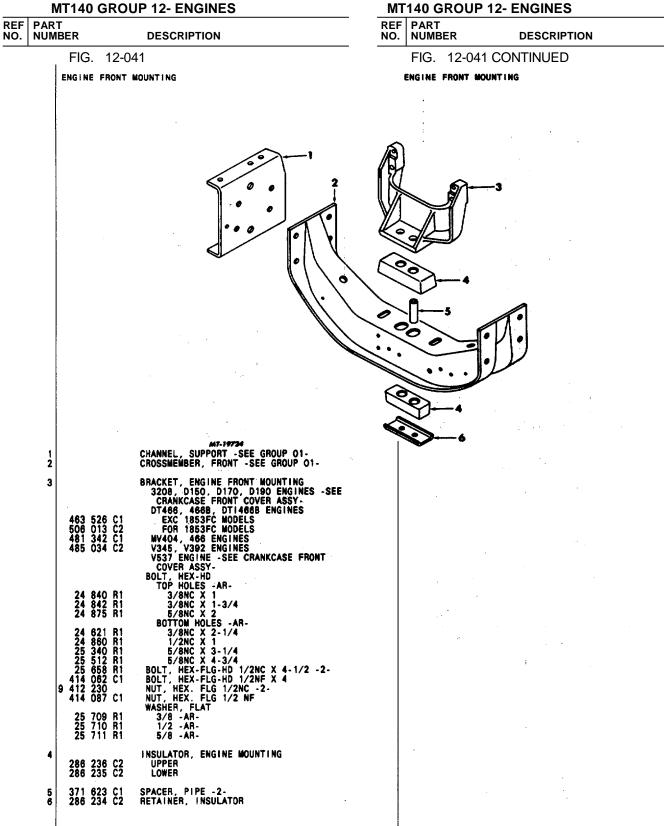
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FIG. 12-038 PAGE NO. 68

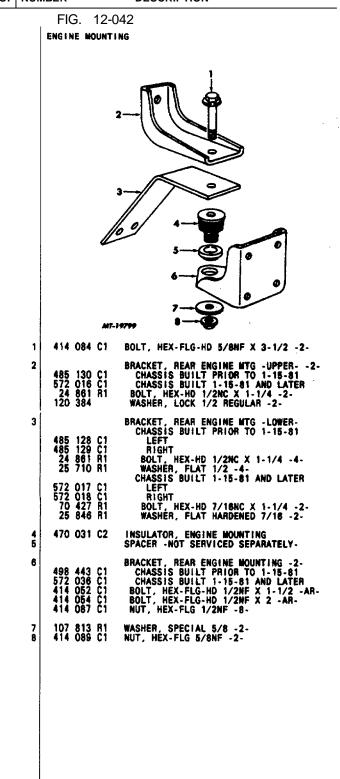


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DESCRIPTION

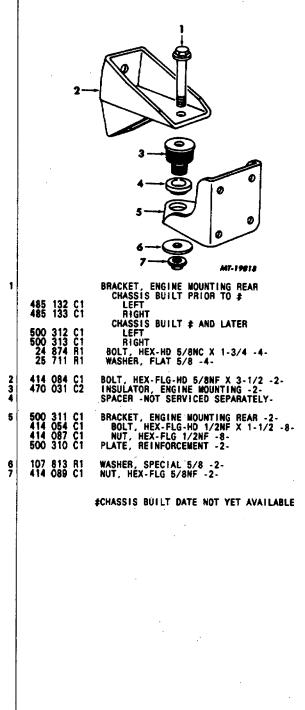


TM 5-4210-230-14&P-2 MT140 GROUP 12- ENGINES

PART NUMBER	DESCRIPTION

FIG. 12-043

ENGINE REAR MOUNTING



MT140 CROUR 12 ENGINES

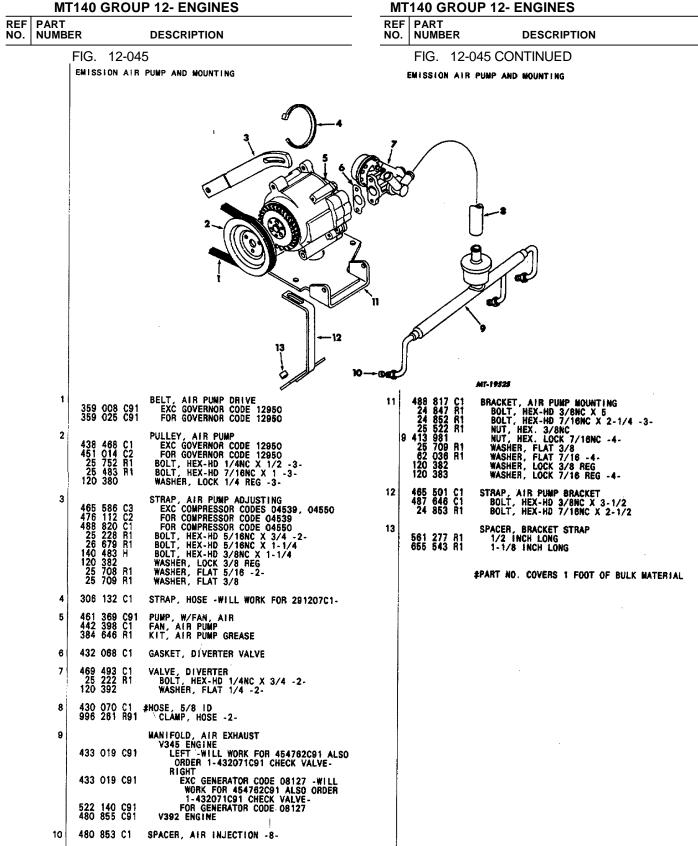


TM 5-4210-230-14&P-2

F PAR D. NUM					NO.	PART NUMBER	DESCRIPTION
	FIG) . 1	12-0	44		FIG. 12-0	044 CONTINUED
	EMIS	SION	AIR	PUMP AND MOUNTING	1	EMISSION AIR	PUMP AND MOUNTING
						5-	
1	446 446 446	792 778 749 750 840	C1 C2 C2		10	379 422 C1 270 094 C2 371 299 C91 465 246 C91	MT-18720 BELT, AIR PUMP DRIVE EXC POWER STRG CODES 05332, 05333, 05335, 05345, AIR COND CODE 16956 LEFT BANK MOUNTED AIR PUMP -54 INCHES LONG- RIGHT BANK MOUNTED AIR PUMP W/0 FRT MTD PTO -CODE 12851- -58 INCHES LONG- W/ FRT MTD PTO -CODE 12851- FOR POWER STRG CODES 05332, 05333, 05335 -74INCHES LONG-
2	120 461 24 9 413 25 442	382 369 847	C91 R1 R1 R1 R1 C1	WASHER, LOCK 3/8		427 825 C91 468 218 C1	FOR POWER STRG CODE 05345 FOR AIR COND CODE 16956 -31 INCHES LONG- #PART NO. COVERS 1 FOOT OF BULK MATERIA
3		068		GASKET, DIVERTER VALVE			
4	25	905	R1	VALVE, DIVERTER BOLT, HEX-HD 1/4NC X 3/4 -2-			
5 6 7	996 430	380 261 070 903	R9 1 C 1	WASHER, LOCK 1/4 REGULAR -2- CLAMP, HOSE -4- #HOSE, 5/8 ID VALVE, AIR INJECTOR -2-			
8	24 140 24 24 9 413 446	748 839 383 841 842 979 756 755	R1 H R1 R1 R1	BRACKET, AIR PUMP MOUNTING BOLT, HEX-HD 3/8NC X 3/4 BOLT, HEX-HD 3/8NC X 1-1/4 -2- BOLT, HEX-HD 3/8NC X 1-1/2 -2- BOLT, HEX-HD 3/8NC X 1-3/4 -2- BOLT, HEX-HD 3/8NC X 2 NUT, HEX.LOCK 3/8NC -2- SPACER, W/BRACKET -W/O POWER STRG- EXC AIR COND CODE 16956 FOR AIR COND CODE 16956			
9	446 25	739 752 380	C2 R1	PULLEY, AIR PUMP BOLT, HEX-HD 1/4NC X 1/2 -3- WASHER, LOCK 1/4 REGULAR -3-			



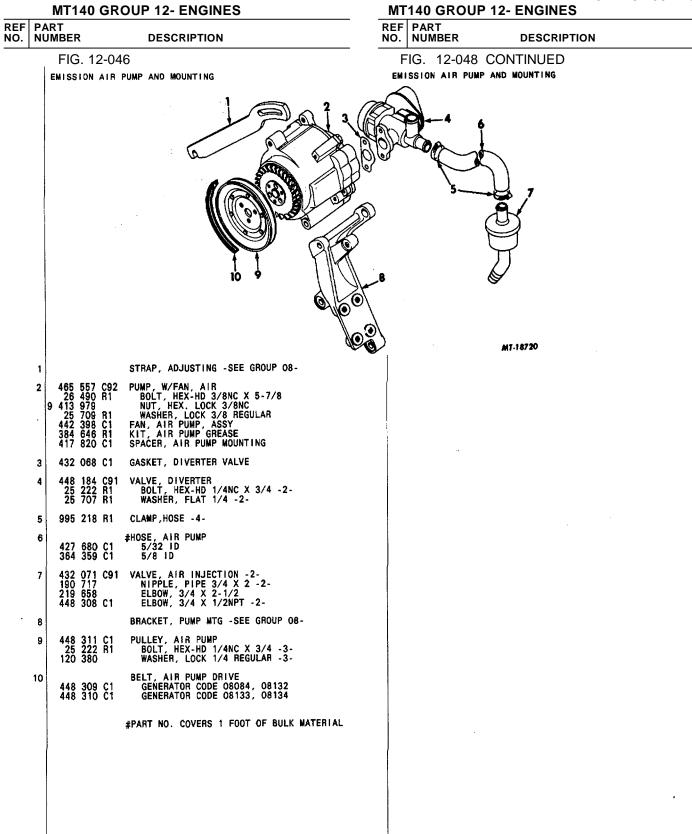
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FIG. 12-045 PAGE NO. 74

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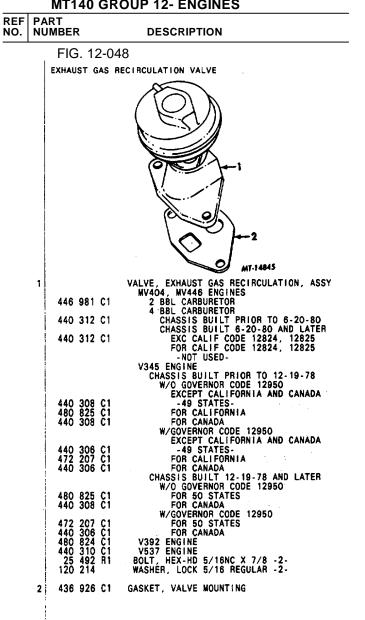


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FIG. 12-046

	M	IT140 GRO	UP 12- ENGINES
REF NO.	PAR1 NUMI		DESCRIPTION
	F	FIG. 12-047	
		ENGINE BEAN	MOUNTING
			$\mathbf{)}$
		0 0	
			0
		MT-19689	
	t		BRACKET, ENGINE REAR MOUNTING 3208 ENGINE
		479 377 C2 479 378 C2	LEFT Right D150, D170, D190 Engines
		479 389 C1 479 390 C1	LEFT Right 9.0 Liter Engines
		479 389 C1 479 390 C1	LEFT BIGHT
		479 375 C1 479 376 C1	DT466, 466B, DT1466B ENGINES EXC 1853FC MODELS LEFT RIGHT
		575 027 C1 575 028 C1	FOR 1853FC MODELS LEFT RIGHT
			SPACER, PLATE -MAKE LOCALLY- MV404, 446 Engines Left
		479 391 C1 479 392 C1	RIGHT V537 ENGINE LEFT
		479 389 C1 479 390 C1	RIGHT BOLT, HEX-HD
		24 862 R1 24 873 R1 414 085 C1 414 089 C1	1/2NC X 1-1/2 -AR- 5/8NC X 1-1/2 -AR- BOLT, HEX-FLG-HD 5/8NF X 3-3/4 -2-
		25 710 R1 25 711 R1	NUT, HEXFLG 5/8NF -2- WASHER, FLAT 1/2 -AR-
	2		5/8 -AR-
		479 237 C1 583 955 C1	INSULATOR, ENGINE MOUNTING -2- CHASSIS BUILT PRIOR TO 1-6-81 CHASSIS BUILT 1-6-81 AND LATER
		}	

		IT14	0 C	RC	OUF	9 12·	- E	NG	INE		M 5	5-4	210	-23	0-14	4&P	-2
	NC		UME	BER				DES	CRIP	PTI	ON						
		FIG		-			1T	INU	ED								
	3	479 414 414 414	387 052 053 087	C1 C1 C1 C1	BR	ACKET EXCEP BOL BOL NUT FOR 1 EXC	T T 853 DT	HEX- HEX- IEX-F IFC M 466	FLG-+ FLG-+ LG 1/ ODELS 4668	1D 1D 2N1 201	1/2N 1/2N F -8	F X F X -	1-1, 1-3,	(2 -) (4 -)	AR- AR-		
2		574 574 414 414 414 414	731 387 378 052 054 055 056 087	C1 C1 C1 C1 C1		FOR LI BOLT BOLT BOLT BOLT	DT EFT IGH	SID ITSI IEX-F IEX-F IEX-F IEX-F	4668 E DE LG-HD LG-HD LG-HD LG-HD) 1,) 1,) 1,) 1,	/2NF /2NF /2NF /2NF	XXXX	1-1/: 2 -Al	2 - Af 7-			
	4		276		٢	NUT, VASHE	Ht	X-FL	G 1/2	2NF	-AR	-					
2																	



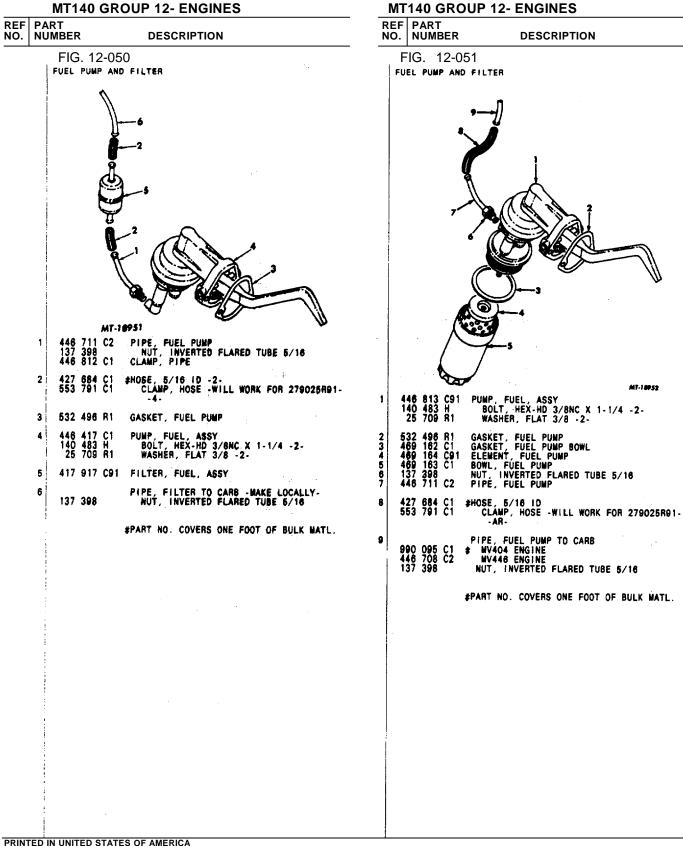
MT140 GROUP 12- ENGINES REF PART NO. NUMBER DESCRIPTION FIG. 12-049 ENGINE SHUTDOWN M 6 5 MT-22254 CABLE ENGINE SHUTDOWN, ASSY D150, 170, 190 ENGINES EXC 1853 MODEL OR CODE 18010 FOR 1853 MODEL OR CODE 16010 DT466, 4668, DT14668 ENGINES -WILL WORK FOR 317935C91-9.0 LITER ENGINE EXC 16010 CODE FOR 16010 CODE STRAP STAY 1 302 708 C91 324 877 C91 315 446 C91 302 709 C92 315 446 C91 386 170 C1 STRAP, STAY NUT, MOUNTING WASHER, LOCK 7/16 REG 363 423 C1 120 383 2 371 146 C1 370 782 C1 KNOB, ENGINE ENGINE SHUTDOWN SCREW, SET 3 SWIVEL, SHUTDOWN CABLE 9.0 LITER ENGINE D150, 170, 190 ENGINES D1466, 4668, D11466B ENGINES WASHER, FLAT 1/4 PIN, COTTER 1/16 X 3/4 4 109 420 R2 109 420 R2 396 388 R1 120 385 449 787 C1 STOP, CABLE SCREW, PAN-HD NO. 10-32 X 5/16 288 219 C1 436 747 5 CLIP, CABLE EXC 1853FC MODEL FOR 1853FC MODEL NUT, SPEED J TYPE 1/4NC WASHER, LOCK 1/4 REGULAR 6 299 398 C1 299 401 C1 79 993 R1 120 380 RIGHT HAND DRIVE CABLE, ENGINE SHUTDOWN, ASSY -9.0 LITER ENGINE-GROMMET, RUBBER 315 446 C91 1 117 960

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FIG. 12-049

REV. 4 PAGE NO. 77

TM 5-4210-230-14&P-2



TM 5-4210-230-14&P-2

MT-18952

DESCRIPTION

REV. 4 PAGE NO. 78

FIG. 12-050

REF PART NO. NUMBER DESCRIPTION FIG.12-052 FAN, FAN BELT AND WATER PUMP MT-10841 B FAN, ASSY BOLT, HEX-HD 5/16NC X 2 -AR-BOLT, HEX-HD 5/16NC X 2-1/4 -AR-WASHER, LOCK 5/16 REGULAR -AR-SPACER, FAN 1.06 INCHES THICK 1.34 INCHES THICK 1.50 INCHES THICK 420 163 C2 20 618 R1 25 234 R1 120 214 1 461 461 461 378 C1 383 C1 385 C1 PULLEY, FAN SINGLE BELT DUAL BELT FRONT REAR 2 389 720 C1 369 719 C1 369 720 C1 336 873 C1 120 214 151 415 R2 NEAR SCREW, PAN-CR-REC-HD 5/16NC X 3/4 -4-WASHER, LOCK 5/16 REGULAR -4-PULLEY, EMISSION AIR PUMP DRIVE -W/ HYDRAULIC BRAKES-SPACER, FAN PULLEY HUB, PULLEY 151 313 R2 461 260 C1 34 463 365 C91 %PUMP, W/GASKET, WATER, ASSY 25 492 R1 BOLT, HEX-HD 5/16NC X 7/8 -3-267 863 C1 BOLT, HEX-HD 5/16NC X 1-1/2 120 214 WASHER, LOCK 5/16 REGULAR -4-151 207 R1 SLINGER, WATER PUMP BEARING 73 296 R93 SEAL, ASSY 5 6 151 304 R1 &GASKET, WATER PUMP PIPE, WATER, ASSY -EVEN BANK-V345 ENGINE V392 ENGINE CLAMP -AT CVLINDER HEAD-BOLT, HEX-HD 3/8NC X 3/4 7 151 245 R91 434 526 C1 227 627 R2 179 837 8 356 005 R1 SEAL, WATER PIPE RING -4-BODY, WATER PUMP BELOW ENGINE SERIAL NO. 340916 Engine Serial NO. 340917 AND UP BOLT, HEX-HD 3/8NC X 3 -3-9 151 209 R2 700 126 C1 409 226 CLAMP, ADJUSTABLE -2-HOSE, BY-PASS -MOULDED-996 261 R91 897 554 R1 10 PLUG, PIPE SQ-HD 1/2 COUPLING, PIPE 1/2 NIPPLE, PIPE 1/2 ELBOW, 1/2 PIPE X 45 DEGREE 159 100 645 058 12 438 444 219 444 PIPE, WATER, ASSY -ODD BANK-V345 ENGINE V392 ENGINE CLAMP -AT CYLINDER HEAD- -2-BOLT, HEX-HD 3/8NC X 3/4 13 216 304 893 434 527 C1 227 627 82 179 837

TM 5-4210-230-14&P-2 MT140 GROUP 12- ENGINES

-	REF NO.	PART NUMBER	DESCRIPTION				
	FIG. 12-052 CONTINUED						

FAN, FAN BELT AND WATER PUMP

 14
 BELT, FAN - MATCHED SET-EXC ALTERNATOR CODES 08143, 08158 FOR ALTERNATOR CODES 08143, 08158

990 258 C91 %KIT, WATER PUMP REPAIR

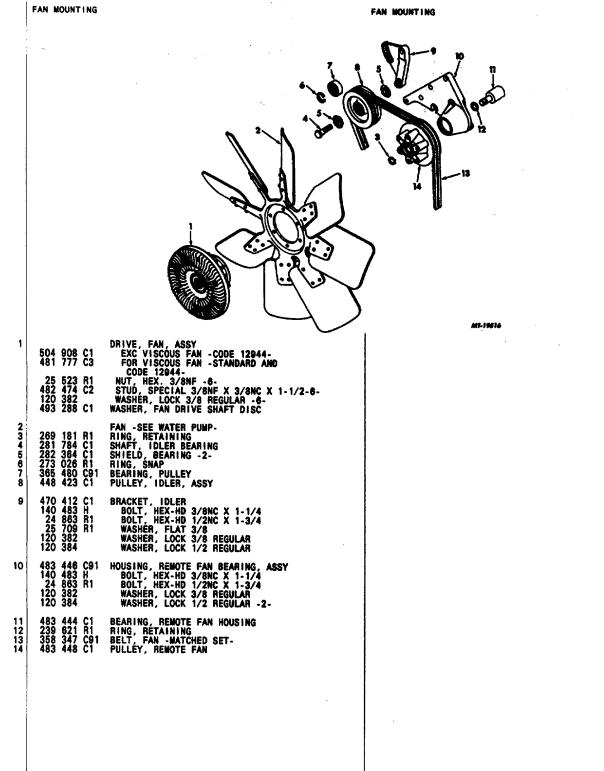
REF PART NO. NUMBER DESCRIPTION

FIG. 12-053

TM 5-4210-230-14&P-2 MT140 GROUP 12- ENGINES

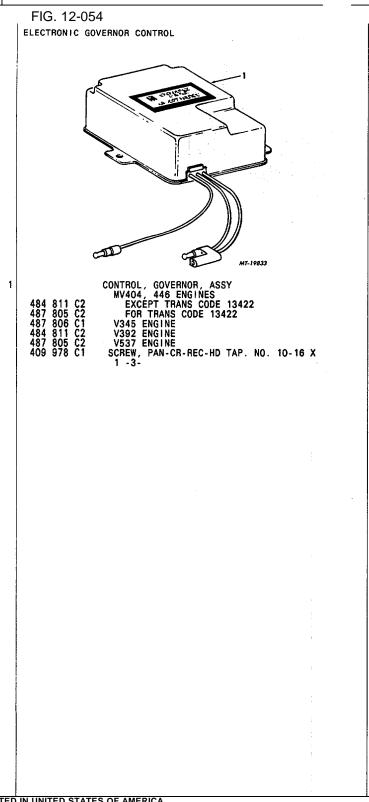
REF PART NO. NUMBER DESCRIPTION

FIG. 12-053 CONTINUED



R	EF IO.	PART NUMB

T IBER DESCRIPTION



MT140 GROUP 12- ENGINES

NO.	NUMBER	DES

DESCRIPTION

TM 5-4210-230-14&P-2



TM 5-4210-230-14&P-2

MT1	40 (GRC	OUP	12- ENGINES	М	140 GROUP	TM 5-4210-230 9 12- ENGINES
PART NUMBER	र		I	DESCRIPTION		PART NUMBER	DESCRIPTION
FIG	6. 12	-055	5		F	IG. 12-055	CONTINUED
	FAN	DRIVE	. BE	LT, BRACKET AND PULLEY		FAN DRIVE, BELT,	, BRACKET AND PULLEY
1	2	910 5523 382	R1	DRIVE, FAN, ASSY Nut, Hex. 3/8NF -6- Washer, Lcok 3/8 Regular -6-			MT-19772
2	9 41:	2 147 3 994 5 708		FAN, ASSY -WILL WORK FOR 492145C1- Nut, Hex. Lock 5/16NC -0- Washer, Flat 5/16 -8-			
3	48	2 474	C2	STUD, SPECIAL -6-			
4	48 14(12(1 468) 483) 382	C1 H	SPACER, FAN HUB BOLT, HEX-HD 3/8NC X 1-1/4 -6- WASHER, LOCK 3/8 REGULAR -6-			
5	48	466	C1	GASKET, FAN HUB SPACER			
6	67 2	1 164 1 874	C2 R1	WASHER, RETAINING BOLT, HEX-HD 5/8NC X 1-3/4			
7 8 9 10	62 48 35 67	1 256 1 467 5 707 4 176	C91 C1 C91 C91	BEARING, ROLLER, ASSY PULLEY, FAN HUB, ASSY V-BELT, MATCHED SET SEAL, OIL			
11	2	3 892 4 841 5 709 0 382	R1	BRACKET, FAN DRIVE BOLT, HEX-HD 3/8NC X 1-1/2 -4- WASHER, FLAT 3/8 -4- WASHER, LOCK 3/8 REGULAR -4-			
12	30		C1	BOLT, HEX-HD 1/2NC X 3-3/4 NUT, HEX. 1/2NC			
13		3 893 4 861 5 710		BRACKET, FAN MOUNTING BOLT, HEX-HD 1/2NC X 1-1/4 -4- WASHER, FLAT 1/2 -W/BOTTOM HOLES2-			
14	46 2 2	4 582 4 840 5 709 0 382	C1 R1 R1	BRACE, FAN BRACKET BOLT, HEX-HD 3/8NC X 1 -2- WASHER, FLAT 3/8 WASHER, LOCK 3/8 REGULAR -2-			

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FIG. 12-055

REF NO.



TM 5-4210-230-14&P-2 MT140 GROUP 12- ENGINES

F.F. PART NUMBER DESCRIPTION REF PART NO. Description FIG. 12-075 FAN BELT. BRACKET AND PULLEY FIG. 12-075 CONTINUED FAN BELT. BRACKET AND PULLEY FIG. 12-075 CONTINUED FAN BELT. BRACKET AND PULLEY 1 481 471 C1 PULLEY. FIG. 12-075 FIG. 12-075 CONTINUED FAN BELT. BRACKET AND PULLEY 1 481 471 C1 PULLEY. FIG. 12-075 CONTINUED FAN BELT. BRACKET AND PULLEY FIG. 12-075 CONTINUED FAN BELT. BRACKET AND PULLEY 1 481 471 C1 PULLEY. FREON COMPRESSOR DRIVE BOLT. HEX.HD 3/286 X 1.1/4 -6. FIG. 12-075 CONTINUED 2 481 486 C1 GASKET. FAN HUB PULLEY BOLT. HEX.HD 3/286 X 1.1/4 -6. FIG. 12-075 CONTINUED 2 481 486 C1 GASKET. FAN HUB PULLEY BOLT. HEX.HD 3/286 X 1.1/4 -6. FIG. 12-075 CONTINUED 3 146 26 C1 GASKET. FAN HUB PULLEY BOLT. HEX.HD 3/286 X 1.1/4 -6. FIG. 12-075 CONTINUED 3 461 462 C1 GASKET. FAN HUB PULLEY BOLT. HEX.HD 3/286 X 1.1/4 -6. FIG. 12-075 CONTINUED 461 462 C1 GASKET. FAN HUB PULLEY BOLT. HEX.HD 3/286 X 1.1/2 -4. FIG. 12-075 CONTINUED 5 461 465 C1 GASKET. FAN HUB CHAR -4. FIG. 12-075 CONTINUED 6 126 25 C1<	N	IT140 GROU	IP 12- ENGINES	MT140 GROUP 12- ENGINES
FAN BELT, BRACKET AND PULLEY FAN BELT, BRACKET AND PULLEY FAN BELT, BRACKET AND PULLEY FAN BELT, BRACKET AND PULLEY FAN BELT, BRACKET AND PULLEY FAN BELT, BRACKET AND PULLEY FAN BELT, BRACKET AND PULLEY FAN BELT, BRACKET AND PULLEY FAN BELT, BRACKET AND PULLEY FAN BELT, BRACKET AND PULLEY FAN BELT, BRACKET AND PULLEY FAN BELT, BRACKET AND PULLEY FAN BELT, BRACKET AND PULLEY FAN BELT, BRACKET AND PULLEY FAN FERT LOCK 3/8 REGULAR -6. FAN FERT FAN HUB FAN FERT FAN FILLEY FAN FERT FAN FILLEY FAN FERT LOCK 3/8 REGULAR -6. FAN FERT LOCK 3/8 REGULAR -4. FAN FERT FAN FILLEY FAN FERT FAN FILLEY FAN FERT FAN FILLY FAN FERT FAN FILLEY FAN FERT FAN FILLY FAN FERT FAN FILLEY FAN FERT FAN FILLEY <t< th=""><th></th><th></th><th>DESCRIPTION</th><th></th></t<>			DESCRIPTION	
1 481 471 C1 140 483 H BOLT, HEX-HD 3/8NC X 1-1/4 -6- 20 382 BOLT, HEX-HD 3/8NC X 1-1/4 -6- 20 382 2 481 466 C1 3671 164 C2 4621 256 C91 GASKET, FAN HUB PULLEY 3671 164 C2 4621 256 C91 BEARING, ROLLER, ASSY 5 481 467 C1 461 256 C91 PULLEY, FAN HUB 80LT, HEX-HD 5/8NC X 1-3/4 BOLT, HEX-HD 5/8NC X 1-3/4 6 355 707 C91 V-BELT, MATCHED SET 7 674 176 C91 SEAL, OIL 8 463 892 C1 48 841 R1 80LT, HEX-HD 3/8NC X 1-1/2 -4- 25 709 R1 BACKET, FAN DRIVE 80LT, HEX-HD 3/8 C X 1-1/2 -4- 25 709 R1 9 305 402 C1 305 402 C1 BOLT, HEX-HD 1/2NC X 3-3/4 80LT, HEX-HD 1/2NC X 3-3/4 9 305 402 C1 301, HEX-HD 1/2NC X 3-3/4 25 526 R1 NUT, HEX-HD 1/2NC X 1-1/4 -4- 25 710 R1 10 463 893 C2 463 893 C2 464 861 R1 80LT, HEX-HD 1/2NC X 1-1/4 -4- 25 710 R1 WASHER, FLAT 1/2 -W/BOTTOM HOLES2- 11 464 582 C1 464 582 C1 80LT, HEX-HD 3/8NC X 1 -2- 25 700 R1 WASHER, FLAT 3/8 -2-			CKET AND PULLEY	FAN BELT, BRACKET AND PULLEY
 4 621 256 C91 BEARING, ROLLER, ASSY 5 481 467 C1 PULLEY, FAN HUB 24 874 R1 BOLT, HEX-HD 5/8NC X 1-3/4 6 355 707 C91 V-BELT, MATCHED SET 7 674 176 C91 SEAL, OIL 8 463 892 C1 BRACKET, FAN DRIVE 24 841 R1 BOLT, HEX-HD 3/8NC X 1-1/2 -4- 25 709 R1 WASHER, FLAT 3/8 -4- 120 382 WASHER, FLAT 3/8 REGULAR -4- 9 305 402 C1 BOLT, HEX-HD 1/2NC X 3-3/4 25 526 R1 NUT, HEX. 1/2NC 10 463 893 C2 BRACKET, FAN MOUNTING 24 861 R1 BOLT, HEX-HD 1/2NC X 1-1/4 -4- 25 710 R1 WASHER, FLAT 1/2 -W/BOTTOM HOLES2- 11 464 582 C1 BRACE, FAN BRACKET 24 840 R1 BOLT, HEX-HD 3/8NC X 1 -2- 25 709 R1 WASHER, FLAT 3/8 -2- 	1	140 483 H	BOLT, HEX-HD 3/8NC X 1-1/4 -6-	MT-19375
24 874 R1 BOLT, HEX-HD 5/8NC X 1-3/4 6 355 707 C91 V-BELT, MATCHED SET 7 674 176 C91 SEAL, OIL 8 463 892 C1 BRACKET, FAN DRIVE 24 841 R1 BOLT, HEX-HD 3/8NC X 1-1/2 -4- 25 709 R1 WASHER, FLAT 3/8 -4- 120 382 WASHER, FLAT 3/8 -4- 120 382 WASHER, LOCK 3/3 REGULAR -4- 9 305 402 C1 BOLT, HEX-HD 1/2NC X 3-3/4 25 526 R1 NUT, HEX. 1/2NC 10 463 893 C2 BRACKET, FAN MOUNTING 24 861 R1 BOLT, HEX-HD 1/2NC X 1-1/4 -4- 25 710 R1 WASHER, FLAT 1/2 -W/BOTTOM HOLES2- 11 464 582 C1 BRACE, FAN BRACKET 24 840 R1 BOLT, HEX-HD 3/8NC X 1 -2- 11 464 582 C1 BRACE, FAN 3/8NC X 1 -2- 25 709 R1 WASHER, FLAT 3/8 -2- -2-	3	671 164 C2	GASKET, FAN HUB PULLEY WASHER, RETAINING BEARING, ROLLER, ASSY	
8 463 892 C1 BRACKET, FAN DRIVE 24 841 R1 BOLT, HEX-HD 3/8NC X 1-1/2 -4. 25 709 R1 WASHER, FLAT 3/8 -4. 120 382 WASHER, LOCK 3/8 REGULAR -4. 9 305 402 C1 8 MASHER, LOCK 3/8 REGULAR -4. 9 305 402 10 463 893 C2 11 80LT, HEX-HD 1/2NC X 1-1/4 -4- 25 710 R1 WASHER, FLAT 1/2 -W/BOTTOM HOLES2- 11 464 582 C1 BRACKET 24 840 R1 BOLT, HEX-HD 3/8NC X 1 -2- 11 464 582 C1 BRACKET 24 840 R1 BOLT, HEX-HD 3/8NC X 1 -2- 25 709 R1 BOLT, HEX-	5	481 467 C1 24 874 R1		
25 709 R1 WASHER, FLAT 3/8 -4- 120 382 WASHER, LOCK 3/8 REGULAR -4- 9 305 402 C1 BOLT, HEX-HD 1/2NC X 3-3/4 25 526 R1 NUT, HEX. 1/2NC 10 463 893 C2 BRACKET, FAN MOUNTING 24 861 R1 BOLT, HEX-HD 1/2NC X 1-1/4 -4- 25 710 R1 WASHER, FLAT 1/2 -W/BOTTOM HOLES2- 11 464 582 C1 BRACKET, FAN BRACKET 24 840 R1 BOLT, HEX-HD 3/8NC X 1 -2- 25 709 R1 WASHER, FLAT 3/8 -2-	6 7	355 707 C91 674 176 C91	V-BELT, MATCHED SET SEAL, OIL	
10 463 893 C2 BRACKET, FAN MOUNTING 24 861 R1 BOLT, HEX-HD 1/2NC X 1-1/4 -4- 25 710 R1 WASHER, FLAT 1/2 -W/BOTTOM HOLES2- 11 464 582 C1 BRACE, FAN BRACKET 24 840 R1 BOLT, HEX-HD 3/8NC X 1 -2- 25 709 R1 WASHER, FLAT 3/8 -2-	8	25 709 R1	BOLT, HEX-HD 3/8NC X 1-1/2 -4- WASHER, FLAT 3/8 -4-	
25 /10 H1 WASHER, FLAT 1/2 -W/BOTTOM HOLES2- 11 464 582 C1 BRACE, FAN BRACKET 24 840 R1 BOLT, HEX-HD 3/8NC X 1 -2- 25 709 R1 WASHER, FLAT 3/8 -2-	9	305 402 C1 25 526 R1	BOLT, HEX-HD 1/2NC X 3-3/4 NUT, HEX. 1/2NC	
25 709 R1 WASHER, FLAT 3/8 -2-	10	463 893 C2 24 861 R1 25 710 R1	BRACKET, FAN MOUNTING BOLT, HEX-HD 1/2NC X 1-1/4 -4- WASHER, FLAT 1/2 -W/BOTTOM HOLES-	-2-
	11	25 709 R1	BOLT, HEX-HD 3/8NC X 1 -2- WASHER, FLAT 3/8 -2-	
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TM 5-4210-230-14&P-2 MT140 GROUP 12- ENGINES

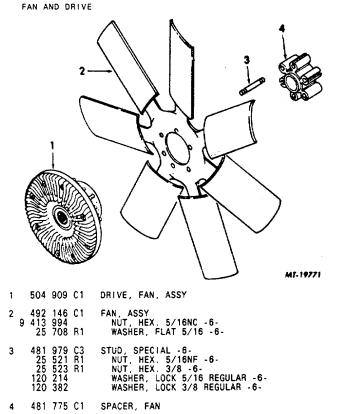
DESCRIPTION

MT140 GROUP 12- ENGINES

REF PART NO. NUMBER



FIG. 12-076



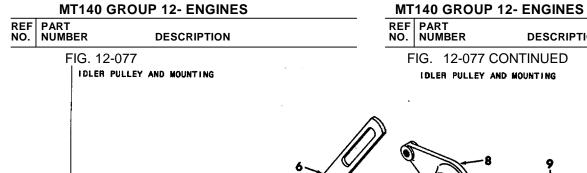
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FIG. 12-076

REV. 4 **PAGE NO. 106**

REF PART NO. NUMBER

.



1	9	281 412	784 230	C1	SHAFT, IDLER BEARING 1/2NC NUT, HEX. LOCK 1/2NC
2 3 4 5		273 485	026 603	C1 R1 C91 C91	RING, SNAP -2- PULLEY, IDLER, ASSY
6		448 24 24 25	712 840 841 709	C1 R1 R1 R1	STRAP, ADJUSTING BOLT, HEX-HD 3/8NC X 1 BOLT, HEX-HD 3/8NC X 1-1/2 WASHER, FLAT 3/8 -2-
7		446	755	C1	SPACER, STRAP MOUNTING
8		74	XAK	C1 R1 R1	BRACKET, IDLER PULLEY MOUNTING BOLT, HEX-HD 3/8NC X 4-1/2 NUT, HEX. LOCK 3/8NC WASHER, FLAT 3/8
9		446	756	C1	SPACER, SUPPORT MOUNTING
10		446 24 24 25	737 839 843 709	C1 R1 R1 R1	SUPPORT, IDLER MOUNTING BRACKET BOLT, HEX-HD 3/8NC X 3/4 BOLT, HEX-HD 3/8NC X 2 WASHER, FLAT 3/8 -2-
11		365	480	C91	BEARING, IDLER PULLEY, ASSY

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FIG. 12-077

REV. 4 **PAGE NO. 107**

TM 5-4210-230-14&P-2

DESCRIPTION

MT-22303

IDLER PULLEY AND MOUNTING

10

REF PART NO. NUMBER DESCRIPTION FIG. 12-078

FAN AND WATER PUMP

TM 5-4210-230-14&P-2 MT140 GROUP 12- ENGINES

REF PART NO. NUMBER DESCRIPTION

FIG. 12-078 CONTINUED FAN AND WATER PUMP

					МТ-24089
1	469 654 C1 25 492 R1 120 214	DRIVE, FAN BOLT, HEX-HD 5/16NC X 7/8 -4- WASHER, LOCK 5/16 REGULAR -4-	9 10	293 739 R1 277 106 C1	SEAL, O-RING -4- PIPE, WATER OUTLET TO FRONT COVER -2-
2	273 457 C91 364 624 C1 273 456 C91	FAN, ASSY D150 ENGINE -1.25 PITCH-WIDTH- D170, 190 ENGINES 1.71 PITCH-WIDTH 2.13 PITCH-WIDTH	11	314 069 C2 24 842 R1 120 382 445 673 103 868	OUTLET, WATER BOLT, HEX-HD 3/8NC X 1-3/4 -4- WASHER, LOCK 3/8 REGULAR -4- PLUG, PIPE 3/8 SQ-HD PLUG, PIPE 1/2 SQ-HD
3	283 097 C1	PULLEY, WATER PUMP	12 13	263 327 C2 319 340 C91	GASKET, WATER OUTLET THERMOSTAT, ASSY -2-
	25 493 R1 120 214	BOLT, HEX-HD 5/16NC X 1 -4- WASHER, LOCK 5/16 -4-	14	448 429 C1 24 841 R1 24 621 R1	OUTLET, WATER LEFT BOLT, HEX-HD 3/8NC X 1-1/2 -2-
4	283 579 C1 239 621 R1	HUB, PULLEY, ASSY Ring, Retaining		24 621 R1 120 382 20 969 R1	BOLT, HEX-HD 3/8NC X 2-1/4 WASHER, LOCK 3/8 REGULAR -3- Plug, Pipe SQ-HD 3/4
.5	297 359 C93 479 659 C91	PUMP, W/GASKET, WATER STANDARD -EXCEPT CODE 12940- DIFECT FAN DRIVE -FOR CODE 12940-	15	258 173 C1	GASKET, CROSS OVER PIPE TO CRANKCASE
	476 144 C1	DIRECT FAN DRIVE -FOR CODE 12940- Adapter, fan to water pump hub -W/479659C91 pump only-	16	263 326 C2 25 493 R1 277 232 R1 120 214	MANIFOLD, WATER PUMP TO CRANKCASE Bolt, HEX-HD 5/18NC X 1 -2- Bolt, HEX-HD 3/8NC X 2-3/4 -2-
6	258 169 C1	GASKET, PUMP BODY		120 382	BOLT, HEX-HD 3/8NC X 2-3/4 -2- Washer, Lock 5/18 Reg -2- Washer, Lock 3/8 Reg -2-
7	258 151 C11 140 483 H 21 318 R1 120 382 445 673 103 868	OUTLET, WATER RIGHT BOLT, HEX-HD 3/8NC X 1-1/4 BOLT, HEX-HD 3/8NC X 2-1/2 WASHER, LOCK 3/8 REGULAR -2- PLUG, PIPE 3/8 SQ-HD PLUG, SQ-HD PIPE 1/2	17 18	445 673 258 174 C1 298 629 C1	PLUG, PIPE 3/8 SQ HD GASKET, BODY OUTLET TO MANIFOLD GASKET, BODY TO FRONT COVER
8	258 168 C1	GASKET, WATER OUTLET -2-			

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FIG. 12-078

REV. 4 **PAGE NO. 108**



TM 5-4210-230-14&P-2

REF PART DESCRIPTION FIG. 12-100

WATER PUMP, THERMOSTAT AND FAN DRIVE

MT140 GROUP 12- ENGINES REF PART NO. NUMBER DESCRIPTION

FIG. 12-100 CONTINUED

WATER PUMP, THERMOSTAT AND FAN DRIVE

		MT-24009
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	685 155 C92 HOUSING, WATER PUMP BEARING, ASSY -INCLUDES KEY NOS. 8 THRU 19, 22, 23, 24- 140 483 H BOLT, HEX-HD 5/16NC X 1-1/4 -4- 24 844 R1 BOLT, HEX-HD 5/16NC X 3-1/2 -2- 24 842 R1 BOLT, HEX-HD 3/8NC x 1-3/4 -2- 25 522 H NUT, HEX-HD 3/8NC x 1-3/4 -2- 860 481 C1 PIN, DOWEL -2- 677 972 C92 VALVE, HEATER SHUT-OFF 864 445 R1 NIPPLE, HOSE 3/4 PIPE X 1 HOSE 413 729 C1 NIPPLE, HOSE 3/4 PIPE X 1 HOSE 877 972 C92 VALVE, HEATER SHUT-OFF 864 445 R1 NIPPLE, HOSE 3/4 PIPE X 1 HOSE 868 757 C29 VALVE, HEATER SHUT-OFF 868 886 C1 CLAMP, HOSE -2- 672 242 C1 HOSE, THERMOSTAT BY-PASS HOUSING 686 757 C2 HOUSING, THERMOSTAT 277 232 R1 BOLT, HEX-HD 3/8NC X 2-3/4 -2- 25 896 R1 WASHER, HARDENED 3/8 -2- 444 630 PLUG, 1/2NPT -2- 444 630 PLUG, 1/2NPT -2- 444 630 PLUG, 3/4NPT 615 175 C91 SEAL, THERMOSTAT 677 384 C1 GASKET, THERMOSTAT HOUSING 676 320 C1 IMPELER, WATER PUMP HOUSING 676 320 C1 MELER, WATER PUMP HOUSING 676 320 C1 MELER, WATER PUMP HOUSING 676 320 C1 MELER, WATER PUMP HOUSING 677 720 C91 SEAL, WATER PUMP HOUSING 676 320 C1 MPELLER, WATER PUMP -8-VANES- 84 432 C1 L SEAT, WATER PUMP BEARING -REAR GREASE- 684 432 C1 L SEAT, WATER PUMP BEARING -REAR GREASE- 685 153 C1 SHAFT, WATER PUMP BEARING -REAR GREASE- 685 153 C1 SHAFT, WATER PUMP BEARING -REAR GREASE- 685 153 C1 SHAFT, WATER PUMP BEARING -REAR GREASE- 685 153 C1 SHAFT, WATER PUMP BEARING -REAR GREASE- 685 153 C1 SHAFT, WATER PUMP BEARING -REAR GREASE- 685 153 C1 SHAFT, WATER PUMP BEARING -REAR GREASE- 685 153 C1 SHAFT, WATER PUMP BEARING -REAR GREASE- 685 153 C1 SHAFT, WATER PUMP BEARING -REAR GREASE- 685 153 C1 SHAFT, WATER PUMP BEARING -REAR GREASE- 685 153 C1 SHAFT, WATER PUMP BEARING -REAR GREASE- 685 153 C1 SHAFT, WATER PUMP BEARING -REAR GREASE- 685 153 C1 SHAFT, WATER PUMP BEARING -REAR GREASE- 685 153 C1 SHAFT, WATER PUMP BEARING -REAR GREASE- 685 153 C1 SHAFT, WATER PUMP BEARING -REAR GREASE- 687 143 C91 SEAL, WATER PUMP BEARING -FRONT GREASE- 673 308 C2 SLEEVE, WATER PUMP	20 SPACER, FAN -SEE FIG. 12-27- 21 689 344 C1 24 841 R1 115 093 689 420 C1 PULLEY, WATER PUMP BOLT, HEX-ND 3/8NC X 1-1/2 -6- WASHER, LOCK 3/8 REGULAR -6- 689 420 C1 22 218 404 685 157 C1 NUT, HEX. 3/ANF 685 157 C1 HUB, WATER PUMP PULLEY 677 856 C1 24 677 856 C1 HOUSING, WATER PUMP BEARING 687 366 C9111 PACKAGE, WATER PUMP COOLANT SEAL



TM 5-4210-230-14&P-2

REF	PART NUMBER	
NO.	NUMBER	DESCRIPTION

REF NO.	PAR NUM		
	1	CUTLET, ENGINE WATER 446 439 C1 EXC CODES 08806.9204, 12801 446 440 C1 FOR CODE 08806.9204 446 441 C1 FOR CODE 12801 25 493 R1 BOLT, HEX-HD 5/16NC X 1 -2- 120 214 WASHER, LOCK 5/16 REGULAR -2-	
	2	438 159 PLUG, PIPE SQ-HD 1/2NPTF 444 592 PLUG, PIPE SQ-HD 3/4 NPTF 444 592 PLUG, PIPE SQ-HD 3/4NPTF	
	3	446 443 C2 INLET, ENGINE WATER 20 618 R1 BOLT, HEX-HD 5/16NC X 2 -2- 25 708 R1 WASHER, FLAT 5/16 -2- 120 214 WASHER, LOCK 5/16 REGULAR -2-	
	4 5 6	446 448 C1 GASKET, WATER INLET 446 442 C1 GASKET, WATER OUTLET 446 437 C1 THERMOSTAT -180 DEGREE-	
		JNITED STATES OF AMERICA	

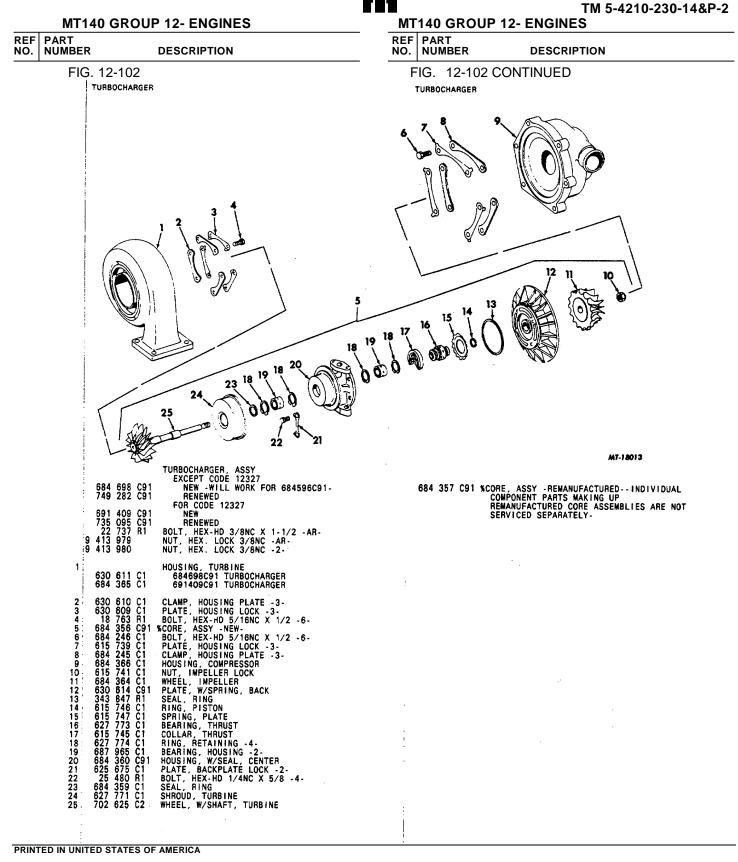


FIG. 12-102

REV. 4 PAGE NO. 135

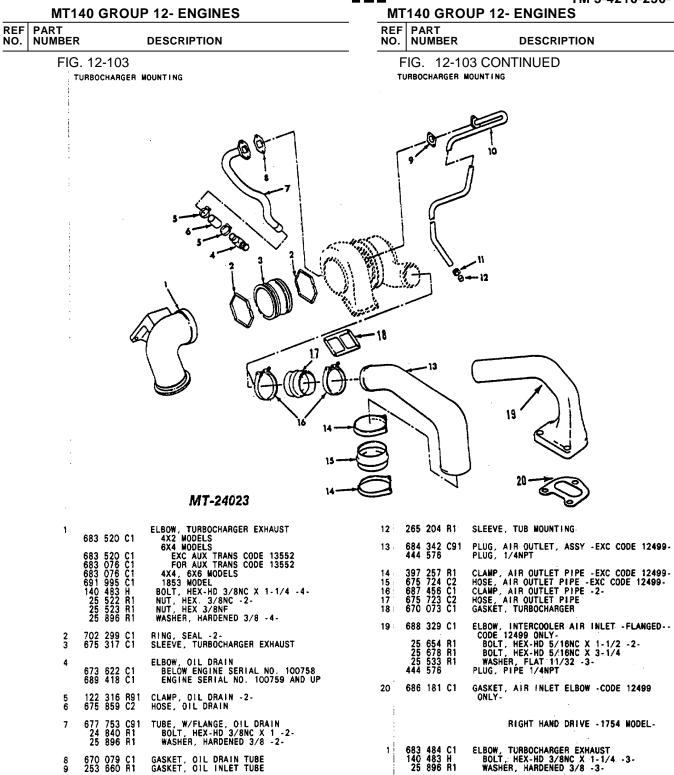
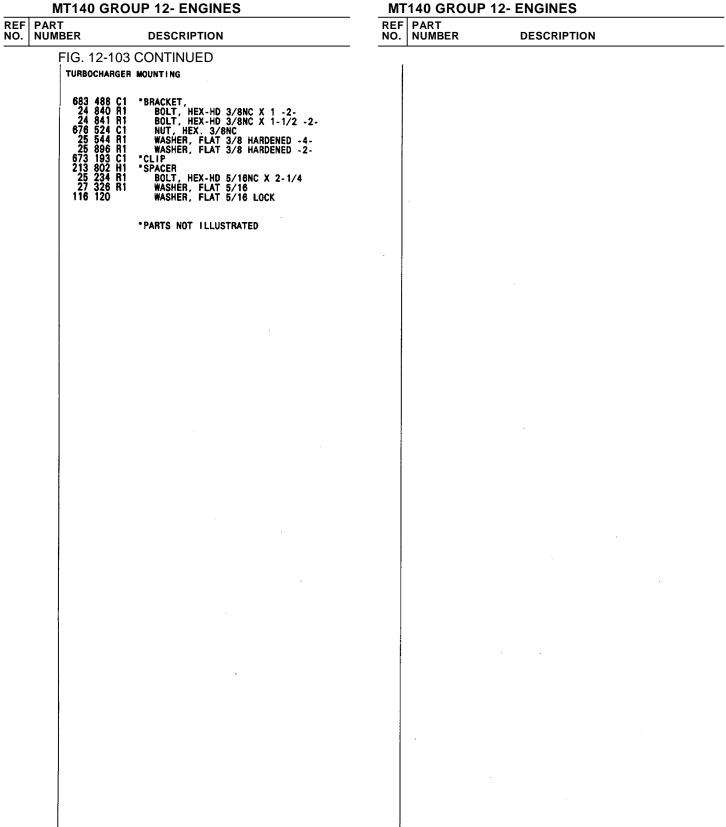


FIG. 12-103 CONTINUED

GASKET, OIL DRAIN TUBE GASKET, OIL INLET TUBE 670 079 C1 253 660 R1 8 9 675 781 C2 687 903 C1 683 103 C91 677 755 C91 TUBE, OIL INLET, ASSY -INCLUDES KEY 10 7 NOS. 11, 12-BOLT, HEX-HD 5/16NC X 1 -2-WASHER, HARDENED 5/16 -2-1Ŏ 25 493 R1 27 326 R1 13 676 165 C2 11 265 205 R1 NUT, TUBE MOUNTING PRINTED IN UNITED STATES OF AMERICA

FIG. 12-103

REV.4 **PAGE NO. 136** TUBE, W/FLANGE, OIL DRAIN GASKET, OIL DRAIN TUBE TUBE, OIL INLET, ASSY -INCLUDES KEY NOS 11, 12-PIPE, AIR OUTLET, ASSY -EXC CODE 12499--WILL WORK FOR 681960C91-



TM 5-4210-230-14&P-2



TM 5-4210-230-14&P-2

REF PART NO. NUMBER

DESCRIPTION

FIG. 12-104

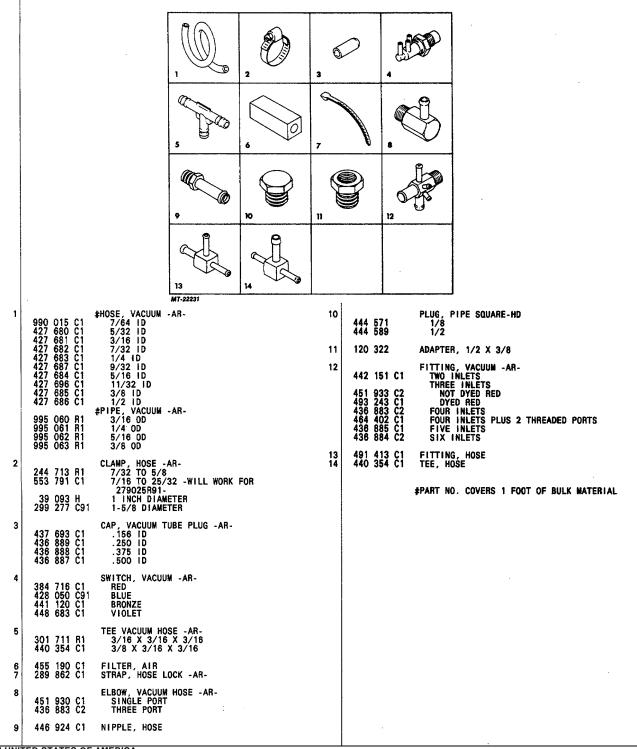
VACUUM HOSE/PIPE INSTALLATION

MT140 GROUP 12- ENGINES REF PART DESCRIPTION

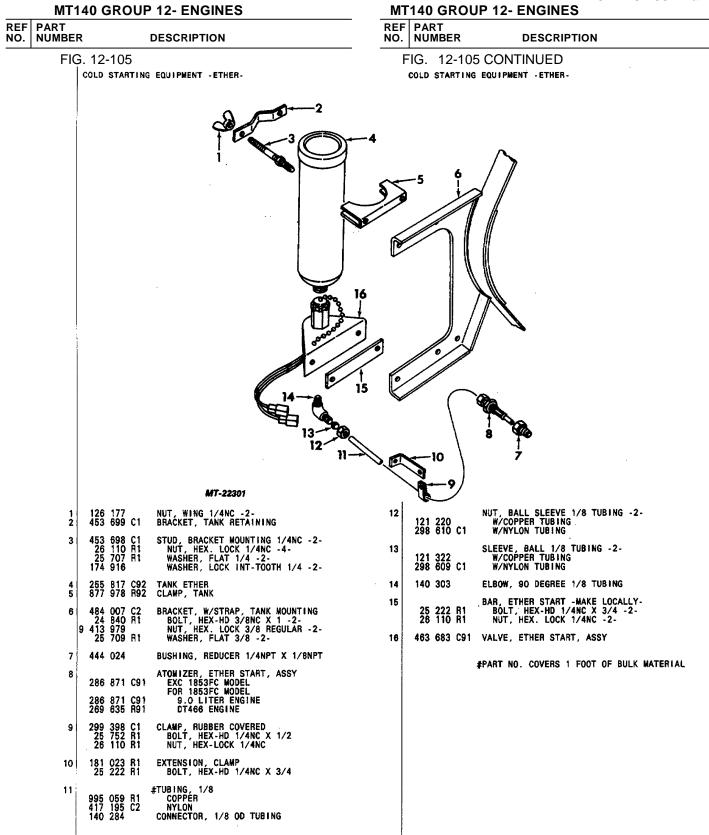
NO. NUMBER

FIG. 12-104 CONTINUED











MT140 GROUP 12- ENGINES MT140 GROUP 12- ENGINES REF PART REF PART NO. NUMBER NO. NUMBER DESCRIPTION DESCRIPTION FIG. 12-106 FIG. 12-106 CONTINUED WATER PUMP, FAN AND MOUNTING WATER PUMP, FAN AND MOUNTING MT-18934 FAN, ASSY EXC FRONT MTD PTO -CODE 12851-STANDARD COOLING EXC AUTO TRANS -CODES 13451, 13454, 13464, 13465-INCREASED COOLING -CODE 12740-FOR FRONT MTD PTO -CODE 12851-CHASSIS BUILT 5-25-78 AND LATER BOLT, HEX-HD 5/16MC X 3 -4-WASHER, FLAT 5/16 -4-1 446 851 C1 446 864 C1 446 851 C1 446 851 C1 446 864 C1 25 236 R1 25 708 R1 2 461 384 C1 SPACER, FAN PULLEY PULLEY, WATER PUMP SINGLE GROOVE -AIR COMPRESSOR-TWO GROOVE FOUR GROOVE BOLT, HEX-HD 5/16NC X 3/4 -4-WASHER, LOCK 5/16 REGULAR -4-3 446 733 C1 446 735 C1 446 745 C1 25 228 R1 120 214 BELT, FAN -WATCHED SET- -SEE ACCESSORY DRIVE-4
 446
 608
 C92
 PUMP, W/GASKET, WATER

 25
 654
 R1
 BOLT, HEX-HD
 5/16NC
 X 1-1/2
 -10

 26
 269
 R1
 BOLT, HEX-HD
 5/16NC
 X 2-3/4
 -4

 120
 214
 WASHER, LOCK
 5/16
 REGULAR
 -14

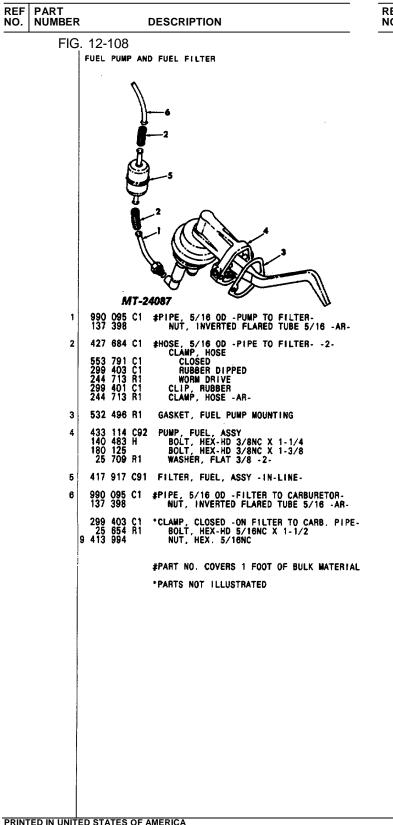
 438
 159
 PLUG, PIPE
 1/2NPT
 -SQUARE
 HEAD -2 5 6 446 431 C1 GASKET, WATER PUMP

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FIG. 12-106

	ART JMBEF	ર		DESCRIPTION	REF NO.	- PA	RT MBER	DESCRIPTION
	FIG	6. 12-107	7					107 CONTINUED
		ACCELERAT	OR,	THROTTLE AND CHOKE CONTROL		ACCEL	ERATOR	, THROTTLE AND CHOKE CONTROL
							2	
	1	480 488	C93	CABLE, CHOKE, ASSY	15	400		MT-19855 BRACKET, ACCEL CONTROL NTG - UPP
,	2	453 694 25 228 413 994 25 708	R1	CABLE, ACCELERATOR CONTROL BOLT, HEX-HD 5/16NC X 3/4 NUT, HEX. LOCK 5/16NC WASHER, FLAT 5/16	9	490 25 413	822 C1 821 C1 228 R1 994 708 R1	1 4 BARREL CARBURETOR 1 BOLT, HEX-HD 5/16NC X 3/4 -2- NUT, HEX. LOCK 5/16NC -2-
	3	482 723 118 623		CABLE, THROTTLE STOP, ASSY NUT, HEX. 1/4NF	16	492 506	069 C1 058 C1	BRACKET, ACCEL - INTERMEDIATE- 1 2 BARREL CARBURETOR 1 4 BARREL CARBURETOR
	4 5	480 460 480 471	C2 C2	<pre>#RETAINER, CABLE SLUG -AR- #CABLE, HAND THROTTLE CONTROL, ASSY</pre>	17	466	994 C1	SPRING, THROTTLE RETURN
	6	874 960 26 667 120 361 120 217	R1 R1	#CLIP, CABLE BOLT, HEX-HD NO. 10-24 X 3/4 NUT, HEX. LOCK NO. 10 WASHER, LOCK NO. 10	18	120	567 C1 614 217	1 BALL, STUD NUT, HEX. NO. 10-31 WASHER, LOCK NO. 32
	7 8	120 391 472 280 469 856	C1 C1	WASHER, FLAT NO. 10 #NUT, FACE -2- #KNOB, CONTROL, ASSY -2-				≱HAND THROTTLE CONTROL PARTS ARE FURNISHED UNDER CODE 12784
	9	482 601 482 740 25 752 25 222 26 110 25 707	81	<pre>#BRACKET, HAND THROTTLE EXC ALLISON TRANSMISSION FOR ALLISON TRANSMISSION BOLT, HEX-HD 1/4NC X 1/2 -AR- BOLT, HEX-HD 1/4NC X 3/4 -AR- NUT, HEX. LOCK 1/4NC -2- WASHER, FLAT 1/4 -2-</pre>				
	10	482 606 27 218 120 361 120 217	C1 R1	PEDAL, ACCELERATOR, ASSY SCREW, PAN-HD NO. 10-24 X 1 -2- NUT, HEX. NO. 10-24 -2- WASHER, LOCK NO. 10 -2-				
	11 12	479 220 495 433	C1 C1	BUSHING, PIVOT -2- ROD, ACCELERATOR PEDAL, ASSY				
	13	495 395 25 751 120 214 110 668	C1 R1	BRACKET, ACCELERATOR PEDAL BOLT, HEX-HD 5/16NC X 1-1/4 -3- WASHER, LOCK 5/16 -3- Ring, Retaining				
		490 820						

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TM 5-4210-230-14&P-2 MT140 GROUP 12- ENGINES

F PART NUMBER	DESCRIPTION	

MT140 GROUP 12- ENGINES

REF	PART	
NO.	PART NUMBER	DESCRIPTION

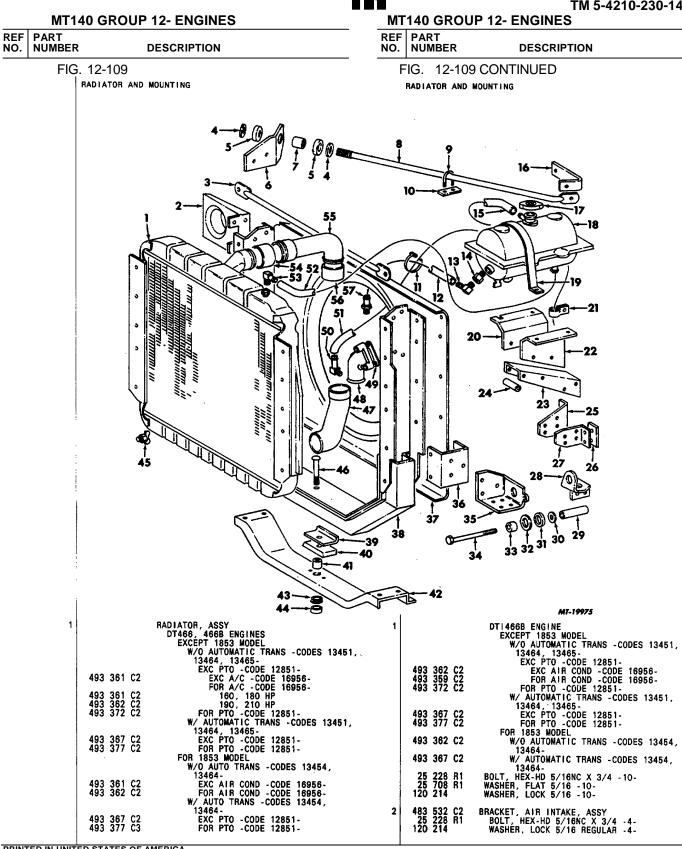
MT140 GROUP 12- ENGINES

PART NUMBER	DESCRIPTION	



REV. 4 PAGE NO. 143





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493 367 C2 493 377 C3

FIG. 12-109

REV.4 **PAGE NO. 144**

	MT140 GROUP 12- ENGINES							
REF NO.	PART NUMBE	R	DESCRIPTION					
	FI	G.12-109 C						
		RADIATOR AND						
	3	483 512 C1 25 493 R1 120 214	ROD, RADIATOR CORE SUPPORT BOLT, HEX-HD 5/16NC X 1 -2- WASHER, LOCK 5/16 REGULAR -2-					
	4 5	23 043 R1 299 341 C1	WASHER, FLAT 7/16 -4- INSULATOR, UPPER STAY ROD -4-					
	61	491 497 C3 491 499 C3	BRACKET, RADIATOR STAY ROD -FRONT- EXCEPT 2155 MODEL LEFT BIGHT					
		491 493 C3 491 495 C3 25 228 R1 25 520 R1 120 214	FOR 2155 MODEL LEFT RIGHT BOLT, HEX-HD 5/16NC X 3/4 -4- NUT, HEX. 5/16NC -4- WASHER, LOCK 5/16 REGULAR -4-					
	7	299 340 C1	SPACER, PIPE -2-					
	8	483 513 C2 25 228 R1 25 493 R1 25 520 R1 25 524 R1 120 214 120 383	ROD, RADIATOR STAY -UPPER2- BOLT, HEX-HD 5/16NC X 3/4 -2- BOLT, HEX-HD 5/16NC X 1 -2- NUT, HEX. 5/16NC -2- NUT, HEX. 7/16NC -4- WASHER, LOCK 5/16 REGULAR -2- WASHER, LOCK 7/16 REGULAR -2-					
	9	264 230 C1 25 520 R1 120 214	U-BOLT, STAY ROD NUT, HEX. 5/16NC -2- WASHER, LOCK 5/16 REGULAR -2-					
	10 11	264 231 C1 306 132 C1	PLATE, U-BOLT STRAP, HOSE RETAINER -ARWILL WORK FOR 291207C1-					
	12	382 997 C1 553 791 C1 512 343 C1 27 860 B1	#HOSE, DEAERATION -TANK TO THERMO HSG- EXC SILICONE CLAMP, HOSE -WILL WORK FOR 279025R91AR- FOR SILICONE CLAMP, HOSE -SILICONEAR-					
	13 14	482 731 C1 444 028	ELBOW, 90 DEGREE 1/4NPT X 1/4 OD ADAPTER, PIPE 3/8NPT X 1/4NPT -2-					
	15	427 698 C1 553 791 C1	#HOSE, TANK OVERFLOW CLAMP, HOSE -WILL WORK FOR 279025R91-					
	16	488 542 C2 25 520 R1 120 214	BRACKET, RADIATOR STAY ROD -REAR- W/ FLAT BACK COWL -CODE 160102- NUT, HEX. 5/16NC -4- WASHER, LOCK 5/16 REGULAR -4-					
	17 18	387 970 C1 483 129 C2	CAP, TANK FILL TANK, DEAERATION, ASSY					
	19	483 610 C1 25 485 R1 26 110 R1	STRAP, TANK MOUNTING -2- BOLT, HEX-HD 1/4NC X 1-1/4 -2- NUT, HEX. LOCK 1/4NC -2-					
	20	483 126 C1 24 845 R1 9 413 979	BRACKET, TANK MOUNTING -BIGHT- BOLT, HEX-HD 3/8NC X 4 -2- NUT, HEX. LOCK 3/8NC -2-					
	21 22	98 959 R1 483 125 C1	CLAMP, OVERFLOW HOSE BRACKET, TANK MOUNTING -LEFT-					
	23	483 124 C2 24 845 R1 9 413 979	CHANNEL, TANK SUPPORT Bolt, Hex-Hd 3/8NC X 4 -2- Nut, Hex. Lock 3/8NC -2-					
	24	465 593 R1	SPACER, PIPE 3/8 X 2-1/2 -4-					
	25	483 127 C2 25 493 R1 120 214	BRACKET, TANK SUPPORT -RIGHT- BOLT, HEX-HD 5/16NC X 1 -2- WASHER, LOCK 5/16 REGULAR -2-					
	26	489 055 C1	BAR, REINFORCEMENT					
_	27	483 128 C2 24 839 R1 120 382	BRACKET, TANK SUPPORT -LEFT- BOLT, HEX-HD 3/8NC X 3/4 -2- WASHER, LOCK 3/8 REGULAR -2-					

TM 5-4210-230-14&P-2

FIG. 12-109 CONTINUED RADIATOR AND WOUNTING BRACKET, LOWER RADIATOR STAY ROD -REAR- 483 918 C1 BRACKET, LOWER RADIATOR STAY ROD -REAR- 483 918 C1 143 052 C1 BOLT, HEX-FLG-HD 1/2NF X 1-1/2 -4- 414 053 C1 BOLT, HEX-FLG-HD 1/2NF X 1-3/4 -4- 414 053 C1 29 SPACEH -MAKE LOCALLY- 414 053 C1 WASHER, FLAT 5/8 -8- 51 455 651 C1 30 989 SPACEH -MAKE LOCALLY- 414 087 C1 WASHER, FLAT 1 NCH -2- 52 528 R1 31 27 955 R1 BOLT, HEX-HD 5/2NC X 10-1/2 -2- 42 528 R1 WASHER, LOCK 5/8 REGULAR -2- 42 578 R1 36 791 C2 EFT 433 792 C2 RIGHT 434 792 C2 BRACKET, LOWER RADIATOR STAY ROD -FRT- 435 792 C2 483 791 C2 EFT 433 791 C2 BRACKET, HOD JINGE, ASSY 483 791 C2 BRACKET, HOD JINGE, ASSY 483 791 C2 483 521 C1 LEFT 433 622 C1 RIGHT 724 880 C1 BRACKET, HOCK 3/8 REGULAR -8- 725 708 R1 483 523 C1 LEFT 433 622 C1 NOCK, HAX AS REGULAR -8- 720 726 708 R1 WASHER, LOCK 3/8 REGULAR -8- 720 726 708 R1 484 520 C1 SHOUD, FAN, ASSY 726 738 R1 WASHER, LOCK 5/18 REGULAR -9- 720 726 708 R1 484 522 C1 HOUD, FAN, ASSY 726 726 R1 WASHER, LOCK 5/18 REGULAR -9- 720 726 708 R1 49 412 20 C1 HOUD, FAN, ASSY 720 721 R1 NOLT, CAS -8 REGULAR -9- 720 726 70	REF NO.		RT MBE	R	DESCRIPTION
28 BRACKET, LOWER RADIATOR STAY ROD -REAR-LEFT 483 916 C1 RIGHT 414 052 C1 BOLT, HEX-FLG-HD 1/2NF X 1-3/4 -4- 414 057 C1 NUT, HEX-FLG-HD 1/2NF X 1-3/4 -4- 414 087 C1 NUT, HEX-FLG-HD 1/2NF X 1-3/4 -4- 414 087 C1 NUT, HEX-FLG T/2NF -4- 29 SPACER -MAKE LOCALLY- 31 459 591 C1 32 SPACER -MAKE LOCALLY- 33 SWRHE, FLAT 5/8 -8- 34 27 955 R1 15 BUT, HEX-HD 5/8NC X 10-1/2 -2- 25 528 R1 121 574 WASHER, LOCK 5/8 REGULAR -2- 26 528 R1 BUT, HEX-HD 3/8NC X 10-1/2 -2- 121 574 BOLT, HEX-HD 3/8NC X 10-1/4 -6- 483 791 C2 RIGHT 483 721 C1 RIGHT 483 521 C1 RIGHT 483 521 C1 RIGHT 483 521 C1 RIGHT 24 340 R1 BOLT, HEX-HD 3/8NC X 1 -8- 25 32 C1 RIGHT 485 200 C1 SHROUD, FAN, ASSY 25 493 R1 BOLT, HEX-HD 3/8NC X 1 -8- <td< td=""><td>ļ</td><td>FIG.</td><td>12</td><td>2-10</td><td>9 CONTINUED</td></td<>	ļ	FIG.	12	2-10	9 CONTINUED
483 916 C1 LEFT 483 916 C1 BGUT, HEX-FLG-HD 1/2NF X 1-3/4 -4- 414 052 C1 BOLT, HEX-FLG-HD 1/2NF X 1-3/4 -4- 414 057 C1 NUT, HEX-FLG-HD 1/2NF X 1-3/4 -4- 9 SPACER - WAKE LOCALLY- 91 100 999 94 MARER, FLD 7 / A. 31 455 551 C1 103 348 WASHER, FLD 7 / A. 33 95 R1 90 T, HEX-HD 5/8NC X 10-1/2 -2- 121 574 WUT, HEX-ND 5/8NC X 10-1/2 -2- 121 574 WUT, HEX-ND 5/8NC X 10-1/2 -2- 121 574 WASHER, LOCK 5/8 REGULAR -2- 255 81 BOLT, HEX-HD 3/8NC X 1-1/4 -6- 120 382 WASHER, LOCK 3/8 REGULAR -6- 120 382 WASHER, LOCK 3/8 REGULAR -6- 120 382 WASHER, LOCK 3/8 REGULAR -6- 120 382 WASHER, LOCK 3/8 REGULAR -8- 37 485 200 C1 SHROUD, FAN, ASSY 25 708 R1 WOLT, HEX-HD 3/8NC X 1 -8- 120 382 WASHER, LOCK 3/8 REGULAR -9- 38 483 533 C3 SUPPORT, RADIATOR CORE, ASSY 25 708 R1 WOLT, HEX-HD 3/8NC X 1 -9- 120 214 WASHER, LOCK 5/16 REGULAR -9-		RADIA	TOR	AND	
30 130 999 WASHER, FLAT 5/8 -8 31 455 951 C1 INSULATOR, STAY ROD -9. 33 WASHER, FLAT 1 INCH -2 34 SPACER - MAKE LOCALLY- 34 27 955 R1 BOLT, HEX-HD 5/8NC X 10-1/2 -2 121 574 WASHER, LOCK 5/8 REGULAR -2 35 BRACKET, LOWER RADIATOR STAY ROD -FRT- 483 791 C2 RIGHT 140 483 H BOLT, HEX-HD 3/8NC X 1-1/4 -6 120 382 WASHER, LOCK 3/8 REGULAR -6 36 BRACKET, HOOD HINGE, ASSY 483 523 C1 RIGHT 120 382 WASHER, LOCK 3/8 REGULAR -6 37 485 200 C1 38 633 533 C3 39 468 348 C1 19 25 708 R1 9 120 214 WASHER, LOCK 3/8 REGULAR -9 120 124 480 R1 9 125 C1 120 382 WASHER, COCK 3/8 REGULAR -9 120 382 WASHER, LOCK 3/16 REGULAR -9 120 382 WASHER, ILOCK 3/16 REGULAR -9 120 382 C1 FALRE, SPACER -W/ FRAME -9 120 214 <td< td=""><td>28</td><td>483 414 414</td><td>918 052 053</td><td>C1</td><td>LEFT RIGHT BOLT, HEX-FLG-HD 1/2NF X 1-1/2 -4- BOLT, HEX-FLG-HD 1/2NF X 1-3/4 -4-</td></td<>	28	483 414 414	918 052 053	C1	LEFT RIGHT BOLT, HEX-FLG-HD 1/2NF X 1-1/2 -4- BOLT, HEX-FLG-HD 1/2NF X 1-3/4 -4-
35 BRACKET, LOWER RADIATOR STAY ROD -FRT- LEFT RIGHT 483 791 C2 483 792 C2 RIGHT RIGHT BOLT, HEX-HD 3/BNC X 1-1/4 -6- WASHER, LOCK 3/8 REGULAR -6- 36 BRACKET, HOOD HINGE, ASSY 483 523 C1 20 382 483 521 C1 20 382 BRACKET, HOOD HINGE, ASSY 483 523 C1 80 C1 120 382 WASHER, LOCK 3/8 REGULAR -8- 120 382 37 245 200 C1 25 708 R1 9468 348 C1 PLATE, SPACER -W FRAME EXT CODE 01636- 10 471 478 C1 120 214 WASHER, LOCK 5/16 REGULAR -9- WASHER, LOCK 5/16 REGULAR -9- 120 214 38 483 533 C3 9468 348 C1 PLATE, SPACER -W FRAME EXT CODE 01636- 40 471 478 C1 41 477 704 R1 SPACER, TUBING 461 427 463 R1 42 468 349 C2 CROSSMEMBER, RADIATOR MOUNTING 471 477 C1 45 141 615 COCK, DRAIN 46 27 463 R1 9 412 230 NUT, HEX-LOCK 1/2NC 22 191 R1 WASHER, FLAT 1/2 47 48 921 2454 C2 9 412 200 NUT, HEX-HD 3/8NC X 2-3/4 -3- 25 709 R1 9 412 200 NUT, HEX-HD 3/8NC X 2-3/4 -3- 25 709 R1 9 412 200 NUT, HEX-HD 3/8NC X 2-3/4 -3- 25 709 R1 9 412 200 CLAWP, HOSE -AT ENGINE- 533 479 C1 9 412 707 71 <td>30 31 32</td> <td>459</td> <td>591</td> <td>C1</td> <td>WASHER, FLAT 5/8 -8- INSULATOR, STAY ROD -8- WASHER, FLAT 1 INCH -2-</td>	30 31 32	459	591	C1	WASHER, FLAT 5/8 -8- INSULATOR, STAY ROD -8- WASHER, FLAT 1 INCH -2-
483 791 C2 LEFT 483 792 C2 RIGHT 140 483 H BOLT, HEX-HD J8NC X 1-1/4 -6- 120 382 WASHER, LOCK 3/8 REGULAR -6- 386 BRACKET, HOOD HINGE, ASSY 483 523 C1 RIGHT 24 840 R1 BOLT, HEX-HD J8NC X 1 -8- 370 25 493 R1 BOLT, HEX-HD J7ILK X 1 -9- 25 493 R1 BOLT, HEX-HD J7ILK X 1 -9- 25 493 R1 WASHER, FLAT 5/16 -9- 200 214 WASHER, FLAT 5/16 -9- 200 214 WASHER, FLAT 5/16 -9- 200 214 WASHER, FLAT 5/16 -9- 200 214 WASHER, FLAT 5/16 -9- 200 214 WASHER, FLAT 5/16 -9- 200 214 WASHER, FLAT 5/16 -9- 200 214 WASHER, FLAT 5/06 -9- 468 348 C1 PLATE SPACER -W/ FRAME EXT CODE 01636- 411 470 TE THAT MASHER, FLAT 1/2 <td>34</td> <td>27 25 121</td> <td>955 528 574</td> <td>R1 R1</td> <td>NUT, HEX. 5/8NC -2-</td>	34	27 25 121	955 528 574	R1 R1	NUT, HEX. 5/8NC -2-
483 521 C1 LEFT 483 523 C1 RIGHT 24 840 R1 BOLT, HEX-HD 3/8NC X 1 -8. 120 382 WASHER, LOCK 3/8 REGULAR -8. 37 25 693 R1 BOLT, HEX-HD 5/1NC X 1 -9. 25 708 R1 BOLT, HEX-HD 5/1NC X 1 -9. 25 708 R1 WASHER, LOCK 5/16 REGULAR -9. 38 483 533 C3 SUPPORT, RADIATOR CORE, ASSY 9 468 348 C1 PLATE, SPACERWY FRAME EXT CODE 01636- 40 471 478 C1 INSULATOR, CORE SUPPORT 41 487 704 R1 SPACER, TUBING 42 68 349 C2 CROSSMEMBER, RADIATOR MOUNTING 43 471 475 C1 RETAINER, INSULATOR MOUNTING 447 1477 C1 INSULATOR, CORE SUPPORT 141 615 502 C4 R1 BOLT, CARRIAGE 1/2NC X 3-3/4 9 9 412 230 NUT, HEX-LOCK 1/2NC 2-3/4 9 412 230 NUT, HEX-LOCK 1/2NC 2-3/4 9 524 R1 CLAMP, HOSE -AT ENGINE- 270 627 81 9 612 C24 R1 CLAMP, HOSE -AT ENGINE- 270 709 R1 97 257 R1 CLAMP, HOSE -AT ENGINE - SILICONE- 270 709 R1 277 232 R1 BOLT, HEX-HD 3/8NC	35	483	792	C2	LEFT Right Bolt, Hex-HD 3/8NC X 1-1/4 -6-
120 214 WASHER, LOCK 5/16 REGULAR -9- 38 483 533 C3 SUPPORT, RADIATOR CORE, ASSY 39 468 348 C1 PLATE, SPACER -W/ FRAME EXT CODE 01636- 41 478 C1 INSULATOR, CORE SUPPORT 41 487 704 R1 SPACER, TUBING 42 468 349 C2 CROSSMEMBER, RADIATOR MOUNTING 43 471 477 C1 INSULATOR, CORE SUPPORT 44 471 477 C1 INSULATOR, CORE SUPPORT 45 141 615 COCK, DRAIN 46 27 463 R1 BOLT, CARRIAGE 1/2NC X 3-3/4 94 122 230 NUT, HEX-LOCK 1/2NC 3-3/4 94 122 230 NUT, HEX-LOCK 1/2NC 3-3/4 95 224 R1 CLAMP, HOSE -AT ENGINE- SILICONE 279 029 R91 CLAMP, HOSE -AT ENGINE- SILICONE- 273 392 R1 CLAMP, HOSE -AT ENGINE - SILICONE- 273 224 R1 BOLT, HEX-HD 3/8NC X 2-3/4 -3-<	36	483 24	840	C1 C1 R1	LEFT Right Bolt, Hex-HD 3/8NC X 18-
39 468 348 C1 PLATE, SPACER -W/ PHAME EXT CODE 01836- 141 40 471 478 C1 INSULATOR, CORE SUPPORT 41 487 704 R1 SPACER, TUBING 42 468 349 C2 CROSSMEMBER, RADIATOR MOUNTING 43 471 475 C1 RETAINER, INSULATOR 44 471 477 C1 INSULATOR, CORE SUPPORT 45 141 615 COCK, DRAIN 46 27 463 R1 BOLT, CARRIAGE 1/2NC X 3-3/4 9 412 230 NUT, HEX-LOCK 1/2NC 3-3/4 9 412 230 NUT, HEX-LOCK 1/2NC 3-3/4 9 412 230 NUT, HEX-LOCK 1/2NC 3-3/4 9 9412 230 NUT, HEX-LOCK 1/2NC 3-3/4 9 412 230 NUT, HEX-LOCK 1/2NC 3-3/4 9 9412 230 NUT, HEX-LOCK 1/2NC 3-3/4 9 12 230 NUT, HEX-LOCK 1/2NC 3-3/4 9 12 191 R1 WASHER, FLAT 1/2 100 141 615 29 C1 FOR SILLCONE -3 139 7 257 R1 CLAMP, HOSE -AT RADIATOR -SILLCONE-SILLCONE-SILLCONE <	37	485 25 25 120	200 493 708 214	C1 R1 R1	WASHER, FLAT 5/16 -9-
9 412 22 191 R1 masher, FLAT 1/2 47 HOSE, RADIATOR -LOWER- 486 129 C91 EXC SILICONE 995 224 R1 CLAMP, HOSE -AT ENGINE- 279 029 R91 CLAMP, HOSE -AT ENGINE- 533 479 C1 FOR SILICONE 537 257 R1 CLAMP, HOSE -AT ENGINE- 537 -SILICONE- 27 392 R1 CLAMP, HOSE -AT ENGINE- 537 -SILICONE- 537 -SILICONE- 27 -SILICONE	39 40 41 42 43 44	468 471 487 468 471 471	348 478 704 349 475 477	C1 R1 C2 C1	SPACER, TÚBING CROSSMEMBER, RADIATOR MOUNTING RETAINER, INSULATOR INSULATOR, CORE SUPPORT
486 129 C91 EXC SILICONE 995 224 R1 CLAMP, HOSE -AT ENGINE. 279 029 R91 CLAMP, HOSE -AT ENGINE. 397 257 R1 CLAMP, HOSE -AT ENGINESILICONE. 397 257 R1 CLAMP, HOSE -AT ENGINESILICONE. 27 392 R1 CLAMP, HOSE -AT ENGINESILICONE. 27 392 R1 CLAMP, HOSE -AT RADIATORSILICONE. 27 392 R1 CLAMP, HOSE -AT RADIATORSILICONE. 48 921 454 C2 ELBOW, WATER INLET 27 723 R1 BOLT, HEX-HD 3/8NC X 2-3/4 -3 444 140 TEE, 3/4NPT 444 444 140 TEE, 3/4NPT 444 49 673 396 C1 GASKET, WATER INLET ELBOW 413 729 C1 ELBOW, 90 DEGREE 3/4NPT X 1 OD 0D 51 #HOSE -TANK TO ENGINE- CLAMP, HOSE -2 311 164 C91 AT TANK 25 493 R1 BOLT, HEX-HD 5/16NC X 1 LOCALLY-		9 412	230		NUI, HEA-LUCK 1/2NC
277 232 R1 BOLT, HEX-HD 3/8NC X 2-3/4 -3- 25 709 R1 WASHER, FLAT 3/8 -3- 444 140 TEE, 3/4NPT 444 638 PLUG, 3/4NPT 49 673 396 C1 GASKET, WATER INLET ELBOW 50 413 729 C1 ELBOW, 90 DEGREE 3/4NPT X 1 0D 51 #HOSE -TANK TO ENGINE- 364 361 C1 EXC SILICONE CLAMP, HOSE -2- 311 164 C91 AT TANK EXTENSION, SPECIAL -MAKE LOCALLY- 25 493 R1 BOLT, HEX-HD 5/16NC X 1 25 751 R1 BOLT, HEX-HD 5/16NC X 1-1/4 X05 F20 R1 NUT, HEX 5/16NC 120 214 WASHER, LOCK 5/16 299 608 C1 AT ENGINE CLIP -MAKE LOCALLY- 25 222 R1 BOLT, HEX-HD 1/4NC X 3/4 -6- 25 349 C1 FOR SILICONE	47	995 279 533 397	224 029 479 257	R1 R91 C1 R1	EXC SILICONE CLAMP, HOSE -AT ENGINE- CLAMP, HOSE -AT RADIATOR- FOR SILICONE CLAMP, HOSE -AT ENGINESILICONE-
50 413 729 C1 ELBOW, 90 DEGREE 3/4NP1 X 1 00 51 #HOSE -TANK TO ENGINE- 364 361 C1 EXC SILICONE CLAMP, HOSE -2- 311 311 164 C91 AT TANK EXTENSION, SPECIAL -MAKE LOCALLY- 25 493 R1 BOLT, HEX-HD 5/16NC X 1 25 751 R1 BOLT, HEX-HD 5/16NC X 1-1/4 25 751 R1 BOLT, HEX 5/16NC 120 214 WASHER, LOCK 5/16 299 608 C1 AT ENGINE CLIP -MAKE LOCALLY- 25 222 R1 NUT, HEX. HD 1/4NC X 3/4 -6- 25 519 R1 NUT, HEX. 1/4NC -6- 202 340 WASHER, LOCK 1/4 -6- 512 349 C1 FOR SILLCONE	48	277 25 444	232 709 140	R1	BOLT, HEX-HD 3/8NC X 2-3/4 -3- WASHER, FLAT 3/8 -3- TEE, 3/4NPT
364 361 CLC SILICONE CLAMP, HOSE -2- 311 164 C91 AT TANK AT TANK 25 493 R1 BOLT, HEX-HD 5/16NC X 1 25 751 R1 BOLT, HEX-HD 5/16NC X 1-1/4 25 751 R1 BOLT, HEX-HD 5/16NC X 1-1/4 25 250 R1 NUT, HEX 5/16NC 120 214 WASHER, LOCK 5/16 299 608 C1 AT ENGINE 25 222 R1 BOLT, HEX-HD 1/4NC X 3/4 -6- 25 519 R1 NUT, HEX. 1/4NC -6- 20 380 WASHER, LOCK 1/4 -6- 512 349 C1 FOR SILLCONE		673 413	396 729	C1 C1	GASKET, WATER INLET ELBOW ELBOW, 90 DEGREE 3/4NPT X 1 OD
311 164 C91 AT TANK EXTENSION, SPECIAL -MAKE LOCALLY- 25 493 R1 BOLT, HEX-HD 5/16NC X 1 25 751 R1 BOLT, HEX-HD 5/16NC X 1-1/4 25 520 R1 NUT, HEX. 5/16NC 120 214 WASHER, LOCK 5/16 299 608 C1 AT ENGINE CLIP MAKE LOCALLY- 25 222 R1 BOLT, HEX-HD 1/4NC X 3/4 -6- 25 519 NUT, HEX. 1/4NC -6- 120 380 WASHER, LOCK 1/4 -6- 512 349 C1 FOR SILLCONE	51	364	361	C1	EXC SILICONE
LOCALLY- 25 493 R1 25 751 R1 25 751 R1 25 750 R1 120 214 29 608 C1 29 608 C1 25 222 R1 25 22 25 25 25 25 25 25 25 25 25 25 25 2		311	164	C91	AT TANK
25 519 R1 NUT, HEX. 1/4NC -6- 120 380 WASHER, LOCK 1/4 -6- 512 349 C1 FOR SILICONE 681 896 C1 CLAMP, HOSE -SILICONE2-		25 25 120 299	751 520 214 608	R1 R1 C1	LOCALLY- BOLT, HEX-HD 5/16NC X 1 BOLT, HEX-HD 5/16NC X 1-1/4 NUT, HEX. 5/16NC WASHER, LOCK 5/16 AT ENGINE CLIP-MAKE LOCALLY-
		512	519 380 349 896	R1 C1 C1	WASHER, LOCK 1/4 -6- For Silicone

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FIG. 12-109

REV. 4 PAGE NO. 145

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	M	<u>[140</u>	GR	OU	P 12- ENGINES	MT	<u>140 GRO</u>			
REF NO.	PART NUMB	ER			DESCRIPTION	REF NO.	PART NUMBER			
FIG. 12-109 CONTINUED										
RADIATOR AND MOUNTING										
	52	364 553	357 791	C1 C1	<pre>#HOSE, DEAERATION -TANK TO RADIATOR- EXC SILICONE CLAMP, HOSE -WILL WORK FOR 279025R91-</pre>					
		512 27	345 860	C1 R1	FOR SILICONE CLAMP, HOSE -SILICONE-					
	53	465	108	C1	ELBOW, 90 DEGREE HOSE CONN 3/8NPT X 3/8					
	54	995	088	R4	HOSE, RADIATOR -AT RADIATOR- CHASSIS BUILT PRIOR TO 3-6-81 # EXCEPT AIR CONDITIONING -CODE					
		279 571	794 029 967 223	R91 C1	16956- FOR AIR CONDITIONING -CODE 16956- CLAMP, HOSE -2- CHASSIS BUILT 3-6-81 AND LATER CLAMP, HOSE -2-					
	55	482	007	C1	PIPE, RADIATOR Chassis Built Prior to 3-6-81 Except Air Conditioning -code					
		485	795	C1	16956- FOR AIR CONDITIONING -CODE 16956- CHASSIS BUILT 3-6-81 AND LATER -NOT USED-					
	56		086 223		HOSE, RADIATOR -AT ENGINE- # CHASSIS BUILT PRIOR TO 3-6-81 CLAMP, HOSE -2- CHASSIS BUILT 3-6-81 AND LATER -NOT USED-					
	57	294	450	C1	NIPPLE, HOSE CONN 1/4NPT X 1 OD					
					#PART NO COVERS 1 FOOT OF BULK MATERIAL					
				(

TM 5-4210-230-14&P-2

	TM 5-4210-230-14&P-2 MT140 GROUP 12- ENGINES								
REF NO.	PART NUMBER	DESCRIPTION							
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FIG. 12-109

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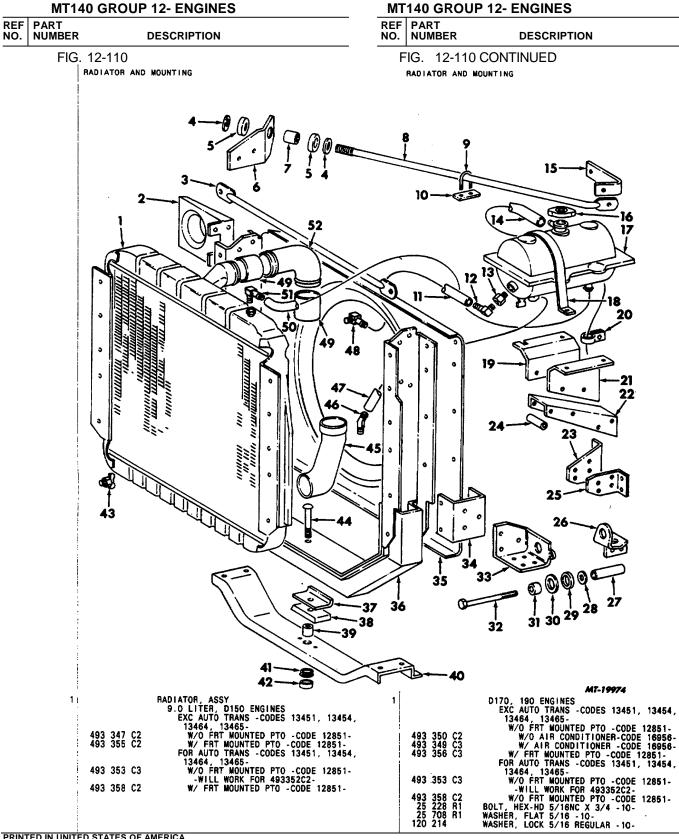


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REF PART NO. NUMBER DESCRIPTION	
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	MITTAU GROUP 12- ENGINES
REF	PART

NO.	NUMBER	DESCRIPTION



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493 358 C2

FIG. 12-110

REV.4 **PAGE NO. 148**

493 358 C2 25 228 R1 25 708 R1 120 214

TM 5-4210-230-14&P-2

		140 (JRU	50	P 12- ENGINES		
	PART NUMBE	R			DESCRIPTION	RE	
	FIC	-			ONTINUED MOUNTING		F R
							Ļ
	2	483 25 120	532 228 214	C2 R1	BRACKET, AIR INTAKE, ASSY BOLT, HEX-HD 5/16NC X 3/4 -4- WASHER, LOCK 5/16 REGULAR -4-	26	
	3		512 493 214		ROD, RADIATOR CORE SUPPORT BOLT, HEX-HD 5/16NC X 1 -2- WASHER, LOCK 5/16 REGULAR -2-		
	4 5	23 299	043 341	R1 C1	WASHER, FLAT 7/16 INSULATOR, UPPER STAY ROD -4-	27 28 29 30	
	6				BRACKET, RADIATOR STAY ROD -FRONT- EXCEPT 2155 MODEL	31	
		491 491	497 499	C3 C3	EXCEPT 2155 WODEL LEFT RIGHT FOR 2155 MODEL	32	
		491	493 495	C3	LEFT	33	
		25	228 520 214	R1	RIGHT Bolt, Hex-HD 5/16NC X 3/4 -4- Nut, Hex. 5/18NC -4- Washer, Lock 5/16 Regular -4-	33	
	7	299	340	C1	SPACER, PIPE -2-		
	8	483 25	513 228 493	C2 R1	ROD, RADIATOR STAY -UPPER2- Bolt, Hex-HD 5/16NC X 3/4 -2- Bolt, Hex-HD 5/16NC X 1 -2-	34	
		25	520	R1	NUI, HEX. 5/16NC -2-		
		120 120	524 214 383	п	NUT, HEX. 7/16NC -4- Washer, Lock 5/16 Regular -2- Washer, Lock 7/16 Regular -2-	35	
	9	25	230 520 214		U-BOLT, STAY ROD NUT, HEX. 5/16NC -2- WASHER, LOCK 5/16 REGULAR -2-		
	10	264	231	C1	PLATE, U-BOLT	36	
	11				#HOSE, DEAERATION TANK TO AIR COMPRESSOR	37 38	
	• •		997 791		OR THERMOSTAT HOUSING EXC SILICONE CLAMP, HOSE -WILL WORK FOR	39 40 41	
		512 27	343 860	C1 R1	279025R91AR- FOR SILICONE CLAMP, HOSE -SILICONE-	42 43 44	
	12 13	482 444	731 028	C1	ELBOW, 90 DEGREE 1/4NPT X 1/4 OD Adapter, 3/8NPT X 1/4NPT	**	9
	14		698 791		HOSE, OVERFLOW CLAMP, HOSE -WILL WORK FOR 279025R91-	45	
	15	488	542	C2	BRACKET, RADIATOR STAY ROD -REAR- W/ FLAT BACK COWL -CODE 160102-		
		120	520 214		NUT, HEX. 5/16NC -4- Washer, Lock 5/16 Regular -4-		
	16 17	387 483	970 129	C1 C2	CAP, TANK FILL TANK, DEAERATION, ASSY		
	18	25	610 485 110	R1	STRAP, TANK MOUNTING -2- Bolt, Hex-HD 1/4NC X 1-1/4 -2- NUT, HEX. LOCK 1/4NC -2-	46	
	19	483 24 9 413	126 845 979	R1	BRACKET, TANK MOUNTING -RIGHT- Bolt, Hex-HD 3/8NC X 4 -2- Nut, Hex. Lock 3/8NC -2-	47	
	20 21	98	959 125	R1	CLAMP, OVERFLOW HOSE BRACKET, TANK MOUNTING -LEFT-	48	
	22	483	124	. C2		49	
		24 9 413	845 979	R1	BOLT, HEX-HD 3/8NC X 4 -2- NUT, HEX. LOCK 3/8NC -2-		
	23	25	127 493 214	R1	BRACKET, TANK SUPPORT -RIGHT- BOLT, HEX-HD 5/16NC X 1 -2- Washer, Lock 5/16 Regular -2-		
	24	465	593	R1	SPACER, PIPE 3/8 X 2-1/2 -4-		
	25	24	128 839 382) R1	BRACKET, TANK SUPPORT -LEFT- Bolt, Hex-HD 3/8NC X 3/4 -2- Washer, Lock 3/8 Regular -2-		
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TM 5-4210-230-14&P-2

	M	T140 C	RO	TM 5-4210-230-14&P UP 12- ENGINES
	REF NO.			DESCRIPTION
	1			0 CONTINUED
	26	483 910 483 911 414 05 414 05 414 08	B C1 2 C1	BRACKET, LOWER RADIATOR STAY ROD -REAR- LEFT RIGHT BOLT, HEX-FLG-HD 1/2NF X 1-1/2 -4- BOLT, HEX-FLG-HD 1/2NF X 1-3/4 -4- NUT, HEX-FLG 1/2NF -4-
	27 28 29 30 31	130 999 459 59 103 34) C1	SPACER, PIPE -MAKE LOCALLY2- WASHER, FLAT 5/8 -8- INSULATOR, STAY ROD -8- WASHER, FLAT 1 INCH -2- SPACER, STAY ROD -MAKE LOCALLY4-
	32	27 95 25 52 121 57	5 R1 8 R1 4	BOLT, HEX-HD 5/8NC X 10-1/2 -2- NUT, HEX. 5/8NC -2- WASHER, LOCK 5/8 REGULAR -2-
	33	483 79 483 79 140 48 120 38	1 C2 2 C2 3 H 2	BRACKET, LOWER RADIATOR STAY ROD -FRT- LEFT Right BOLT, HEX-HD 3/8NC X 1-1/4 -6- WASHER, LOCK 3/8 REGULAR -6-
	34	483 52 483 52 24 84 120 38	D R1	BRACKET, HOOD HINGE, ASSY LEFT Right BOLT, HEX-HD 3/8NC X 1 -8- WASHER, LOCK 3/8 REGULAR -8-
	35	494 31 25 49	0 C1 8 C1 3 R1 8 R1 4	SHROUD, FAN ASSY D150, D170, D190 ENGINES 9.0 LITER ENGINES BOLT, HEX-HD 5/16NC X 1 -9- WASHER, FLAT 5/16 -9- WASHER, LOCK 5/16 REGULAR -9-
RESSOR	36 37 38 39 40 41 42 43	483 53 468 34 471 47 487 70 468 34 471 47 471 47 106 79	8 C1 4 R1 9 C2 5 C1 7 C1	SUPPORT, RADIATOR CORE, ASSY PLATE, SPACER -W/ FRAME EXT CODE 01636- INSULATOR, CORE SUPPORT SPACER, TUBING CROSSMEMBER, RADIATOR MOUNTING RETAINER, INSULATOR INSULATOR, CORE SUPPORT COCK, DRAIN
	44	27 46 412 23 22 19		BOLT, CARRIAGE 1/2NC X 3-3/4 NUT, HEX-LOCK 1/2NC WASHER, FLAT 1/2
25R91- ₩/	45		9 C1 9 R91	HOSE, RADIATOR -LOWER- D150, D170, D190 ENGINES EXC SILICONE 9.0 LITER ENGINE EXC SILICONE FOR SILICONE CLAMP, HOSE -2- EXC SILICONE FOR SILICONE
	46	864 45 413 72	4 R1 9 C1	ELBOW, 45 DEGREE 3/4NPT X 1 OD ELBOW, 90 DEGREE 3/4NPT X 1 OD
	47	364 36 311 16 512 34 681 89	1 C1 4 C91 9 C1 6 C1	<pre>#HOSE -TANK TO ENGINE- EXC SILICONE CLAMP, HOSE -2- FOR SILICONE CLAMP, HOSE -SILICONE2-</pre>
	48	875 65	7 R1	ELBOW, 90 DEGREE 1/8NPT X 1/4 0D
	49	995 08 297 02	9 R91	HOSE, RADIATOR 9.0 LITER ENGINE # CHASSIS BUILT PRIOR TO \$ -2- CLAMP, HOSE -4- CHASSIS BUILT \$ AND LATER
		571 96 571 96 297 02	3 C1 4 C1 9 R91	STANDARD W/SILICONE CLAMP, HOSE -2-
			8 R4 9 R91 9 C1 9 R91	D150, D170, D190 ENGINES # CHASSIS BUILT PRIOR TO \$ -2- CLAMP, HOSE -4- CHASSIS BUILT \$ AND LATER CLAMP, HOSE -2-

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FIG. 12-110

REV. 4 PAGE NO. 149

	M	T140	GR	ou	IP 12- ENGINES	MT	140 GROUP	12- ENGINES
REF NO.	PART NUME				DESCRIPTION	REF NO.		DESCRIPTIC
	50	364 553	TOR / 357 791	AND C1 C1	MOUNTING #HOSE, DEAERATION -TANK TO RADIATOR- EXC SILICONE CLAMP, HOSE -WILL WORK FOR 279025R91AR- FOR SILICONE			
	51	512 27 465			CLAMP, HOSE -SILICONEAR- Elbow, 90 degree 3/8NPT X 3/8 OD			
	52	494 485	287 (C 1	PIPE, RADIATOR CHÁSSIS BUILT PRIOR TO \$ 9.0 LITER ENGINE D150, D170, D190 ENGINES CHASSIS BUILT \$ AND LATER -NOT USED- -SEE REF. NO. 49-REPLACED & 3 PIECE DESIGN -PIPE AND 2 HOSES- WITH ONE PIECE HOSE DESIGN-			
					RIGHT HAND DRIVE			
	23 25	494 495	557 (368 (BRACKET, TANK SUPPORT -RIGHT- BRACKET, TANK SUPPORT -LEFT-			
					‡PART NO. COVERS 1 FT OF BULK MATERIAL ♦CHASSIS BUILD DATE NOT YET AVAILABLE			
PRIN	TED IN U	INITED S	TATE	s o	FAMERICA			

FIG. 12-110

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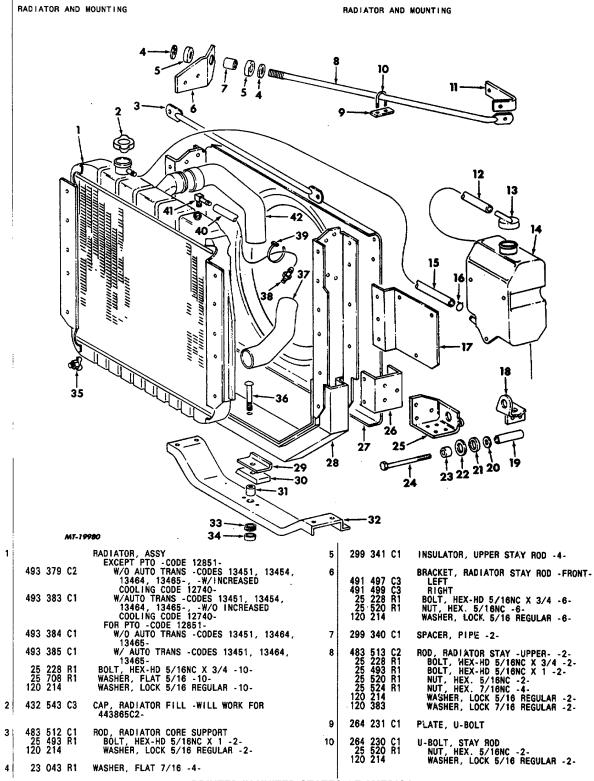
DESCRIPTION





DESCRIPTION

FIG. 12-111



MT140 GROUP 12- ENGINES

DESCRIPTION

REF PART NO. NUMBER

FIG.12-111

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FIG. 12-111 PAGE NO. 152

REF PART NO. NUMBER DESCRIPTION FIG. 12-111 RADIATOR AND MOUNTING 488 542 C2 BRACKET, RADIATOR STAY ROD -REAR- W/ FLAT BACK COWL -CODE 16010- -2-NUT, HEX. 5/16NC -4-WASHER, LOCK 5/16 -4-11 25 520 R1 120 214 #HOSE, TANK OVERFLOW CAP, RESERVOIR TANK 427 698 C1 437 702 C1 12 13 437 703 C1 25 222 R1 25 519 R1 25 707 R1 120 380 TANK, RESERVOIR BOLT, HEX-HD 1/4NC X 3/4 -3-NUT, HEX. 1/4NC -3-WASHER, FLAT 1/4 -3-WASHER, LOCK 1/4 REGULAR -3-14 #HOSE, RESERVOIR TANK TO RADIATOR CLAMP, HOSE -2-BRACKET, RESERVOIR MOUNTING 414 365 C1 244 713 R1 489 885 C1 15 16 17 BRACKET, LOWER RADIATOR STAY ROD -REAR-18 483 916 C1 483 918 C1 414 052 C1 414 053 C1 414 087 C1 LEFT RIGHT BOLT, HEX-FLG-HD 1/2NF X 1-1/2 -4-BOLT, HEX-FLG-HD 1/2NF X 1-3/4 -4-NUT, HEX-FLG 1/2NF -4-SPACER, PIPE -WAKE LOCALLY- -2-WASHER, FLAT 5/8 -8-INSULATOR, STAY ROD -8-WASHER, FLAT 1 INCH -2-SPACER, STAY ROD -MAKE LOCALLY- -4-130 999 459 591 C1 103 348 20 21 22 23 BOLT, HEX-HD 5/8NC X 10-1/2 -2-NUT, HEX. 5/8NC -2-WASHER, LOCK 5/8 REGULAR -2-27 955 R1 25 528 R1 121 574 24 BRACKET, LOWER RADIATOR STAY ROD - FRT-25 483 791 C2 483 792 C2 140 483 H 120 382 LEFT RIGHT BOLT, HEX-HD 3/8NC X 1-1/4 -6-WASHER, LOCK 3/8 REGULAR -6-BRACKET, HOOD HINGE, ASSY 26 MACKET, HOUS HILL, HU LEFT RIGHT BOLT, HEX-HD 3/8NC X 1 -8-WASHER, LOCK 3/8 REGULAR -8-483 521 C1 483 523 C1 24 840 R1 120 382 SHROUD, FAN EXC PTO -CODE 12851-FOR PTO -CODE 12851-BOLT, HEX-HD 5/16NC X 1 -9-WASHER, FLAT 5/16 -9-WASHER, LOCK 5/16 -9-27 491 585 C2 492 078 C1 25 493 R1 25 708 R1 120 214 SUPPORT, RADIATOR CORE, ASSY PLATE, SPACER -W/ FRAME EXT CODE 01636-INSULATOR, CORE SUPPORT SPACER, TUBING CROSSMEMBER, RADIATOR MOUNTING RETAINER, INSULATOR INSULATOR, CORE SUPPORT COCK DEALN 483 533 C3 468 348 C1 471 478 C1 487 704 R1 468 349 C2 471 475 C1 471 477 C1 141 615 28 29 30 31 32 33 34 35 COCK, DRAIN BOLT, CARRIAGE 1/2NC X 3-3/4 NUT, HEX-LOCK 1/2NC WASHER, FLAT 1/2 27 463 R1 412 230 22 191 R1 36 9 HOSE, LOWER RADIATOR, ASSY CLAMP, HOSE -2-484 077 C91 279 029 R91 37 ADAPTER, PIPE 1/2NPT X 3/8NPT ELBOW, 90 DEGREE 3/8NPT X 3/80D NIPPLE, HOSE CONN 3/8NPT X 3/8 HOSE 444 034 444 821 C1 400 718 C1 38 STRAP, CABLE LOCK 6.75 LONG 14-13/16 LONG 39 289 862 C1 306 132 C1 #HOSE, RADIATOR TANK TO ENGINE CLAMP, HOSE -WILL WORK FOR 279025R91--AR-364 357 C1 553 791 C1 40 465 108 C1 ELBOW, 90 DEGREE 3/8NPT X 3/81D HOSE 41

TM 5-4210-230-14&P-2

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MT140 GROUP 12- ENGINES REF PART NO. NUMBER DESCRIPTION FIG.12-111 RADIATOR AND MOUNTING HOSE, RADIATOR UPPER EXC SHUTTERS -CODE 12801-FOR SHUTTERS -CODE 12801- -WILL WORK FOR 484079C1-CLAMP, HOSE UPPER -AT RADIATOR-LOWER -AT ENGINE-42 484 078 C1 532 443 C91 279 029 R91 995 223 R1 #PART NO. COVERS 1 FOOT OF BULK MATL

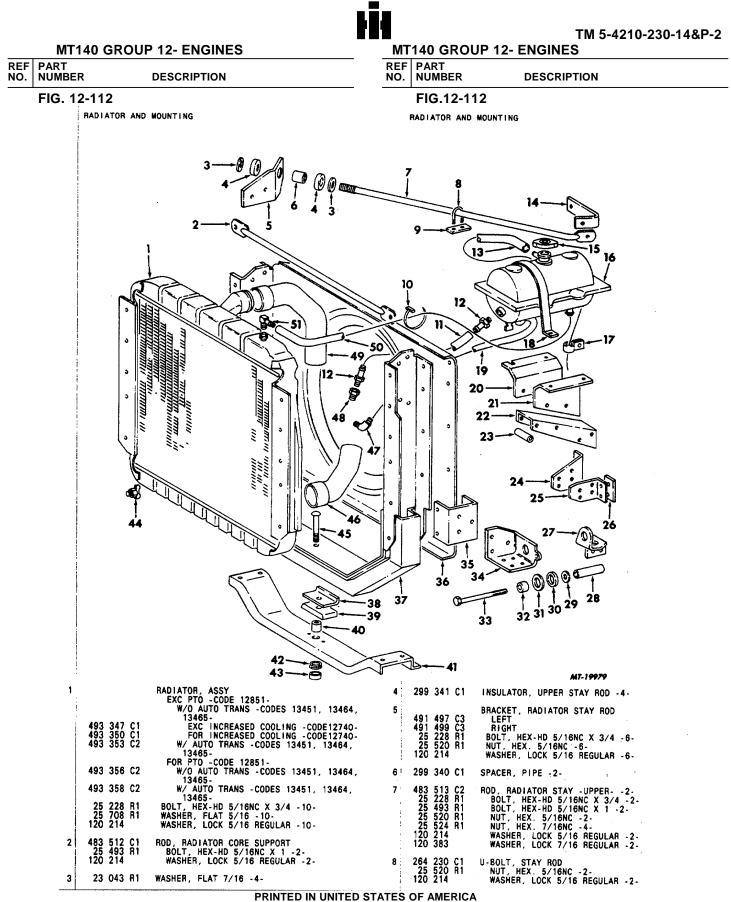


FIG. 12-112 PAGE NO. 154

REF PART NO. NUMBER		DESCRIPTION		PART NUMBER	DESCRIPTION
FIG. 12	-112 RADIATOR AND	MOUNTING	į	FIG.12-1 RADIATOR AND	
9 10 11	264 231 C1 289 862 C1 364 357 C1 553 791 C1	PLATE, U-BOLT STRAP, HOSE RETAINER #HOSE, COMPRESSOR OR SURGE TANK TO ENG CLAMP, HOSE -2-	39 40 41 42 43	471 478 C1 487 704 R1 468 349 C2 471 475 C1 471 477 C1 141 615	INSULATOR, CORE SUPPORT SPACER, TUBING CROSSMEMBER, RADIATOR MOUNTING RETAINER, INSULATOR INSULATOR, CORE SUPPORT
12 13 14	400 718 C1 427 698 C1 488 542 C2	BRACKET, RADIATOR STAY ROD -REAR- W/ FLAT BACK COWL -CODE 160102-		27 463 R1 412 230 22 191 R1	COCK, DRAIN BOLT, CARRIAGE 1/2NC X 3-3/4 NUT, HEX-LOCK 1/2NC WASHER, FLAT 1/2
15 16	25 520 R1 120 214 387 970 C1 483 129 C2	NUT, HEX. 5/16NC -4- Washer, Lock 5/16 Cap, Tank Fill Tank, Deaeration, Assy	46 47	484 077 C91 279 029 R91 864 454 R1 489 628 C1	HOSE, RADIATOR LOWER, ASSY CLAMP, HOSE -2- ELBOW, 45 DEGREE HOSE CONN X 3/4NPT FITTING, SPECIAL -W/WATER COOLED AIR
17	98 959 R1 483 610 C1 25 485 R1	CLAMP, OVERFLOW HOSE STRAP, TANK MOUNTING -2- Bolt, HEX-HD 1/4NC X 1-1/4 -2-		444 034 444 018	COMPRESSOR - BUSHING, REDUCER 1/2NPTF X 3/8NPTF -W/WATER COOLED AIR COMPRESSOR- ADAPTER, 3/4FPT X 1/2 MPT
19	26 110 R1 364 361 C1 311 164 C9	NUT, HEX-LOCK 1/4NC -2- #HOSE, TANK TO ENGINE WATER INLET 1 CLAMP, HOSE -2-	48 49	444 034 484 078 C1	ADAPTER, PIPE 1/2NPT X 3/8NPT Hose, Radiator Upper Clamp, Hose
20	483 126 C1 24 845 R1 9 413 979	BRACKET, TANK MOUNTING -RIGHT- BOLT, HEX-HD 3/8NC X 4 -2- NUT, HEX-LOCK 3/8NC -2-	50	279 029 R91 995 223 R1 364 357 C1	AT RADIATOR At Engine
21 22	483 125 C1 483 124 C2 24 845 R1	BRACKET, TANK MOUNTING -LEFT- CHANNEL, TANK SUPPORT BOLT, <u>HEX-HD 3/8NC X 4</u> -2-	9	364 357 C1 553 791 C1 299 565 C1 413 979	CLÂMP, HOSE -WILL WORK FOR 279025R91- -AR- CLIP, HOSE RETAINER NUT, HEX-LOCK 3/8NC
23	9 413 979 465 593 R1	NUT, HEX-LOCK 3/8NC -2- Spacer, 3/8 Pipe X 2-1/2 -4-	51	465 108 C1	ELBOW, 90 DEGREE 3/8NPT X 3/8 ID HOSE
24	483 127 C2 25 493 R1 120 214	WASHER, LOCK 5/16 REGULAR			#PART NO. COVERS ONE FOOT OF BULK MATL.
25	483 128 C2 24 839 R1 120 382	WASHER, LOCK 3/8 REGULAR -2-			
26 27	489 055 C1 483 916 C1 483 918 C1 414 052 C1 414 087 C1	BAR, REINFORCEMENT BRACKET, LOWER RADIATOR STAY ROD -REAR- LEFT Right BOLT, HEX-FLG-HD 1/2NF X 1-1/2 -4- NUT, HEX-FLG 1/2NF -4-			
28 29 30 31 32	130 999 459 591 C1 103 348	SPACER -MAKE LOCALLY- WASHER, FLAT 5/8 -8- Insulator, STAY Rod -8- WASHER, FLAT 1 INCH -2- Spacer -Make Locally-			
33	27 955 R1 25 528 R1 121 574	BOLT, HEX-HD 5/8NC X 10-1/2 -2- NUT, HEX. 5/8NC -2- WASHER, LOCK 5/8 REGULAR -2-			
34	483 791 C2 483 792 C2 140 483 H 120 382	BRACKET, LOWER RADIATOR STAY ROD -FRT- LEFT Right BOLT, HEX-HD 3/8NC X 1-1/4 -6- WASHER, LOCK 3/8 REGULAR -6-			
35	483 521 C1 483 523 C1 24 840 R1 120 382	BRACKET, HOOD HINGE, ASSY LEFT Right Bolt, Hex-HD 3/8NC X 1 -8- WASHER, LOCK 3/8 REGULAR -8-			
36	491 585 C2 492 078 C1 25 493 R1 25 708 R1 120 214	SHROUD, FAN, ASSY EXC PTO -CODE 12851- FOR PTO -CODE 12851- BOLT, HEX-HD 5/16NC X 1 -9- WASHER, FLAT 5/16 -9- WASHER, LOCK 5/16 REGULAR -9-			
37 38	483 533 C3 468 348 C1	SUPPORT, RADIATOR CORE, ASSY PLATE, SPACER			

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TM 5-4210-230-14&P-2 MT140 GROUP 12- ENGINES

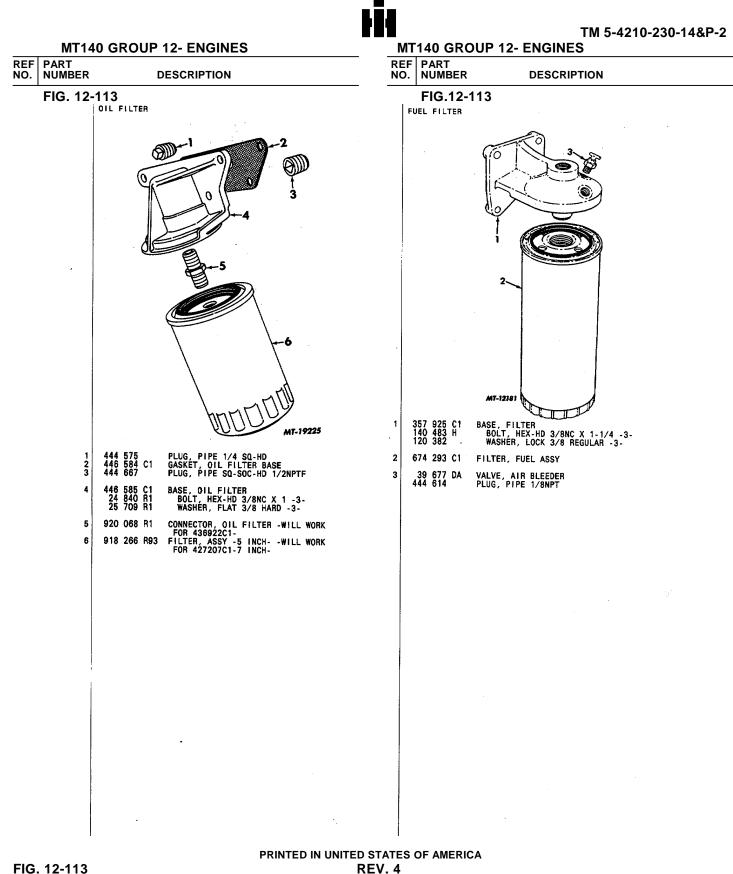
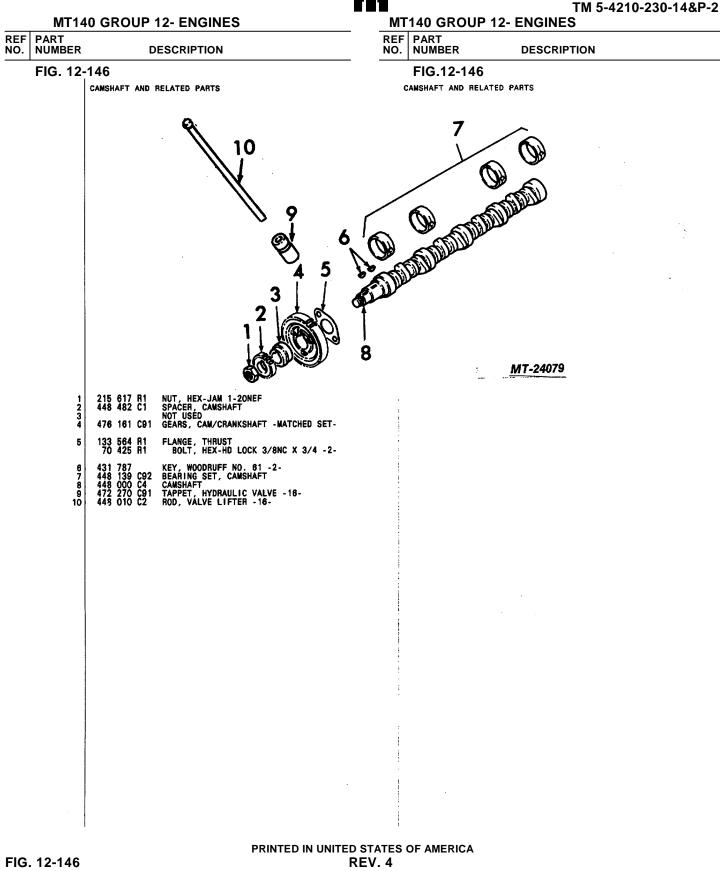
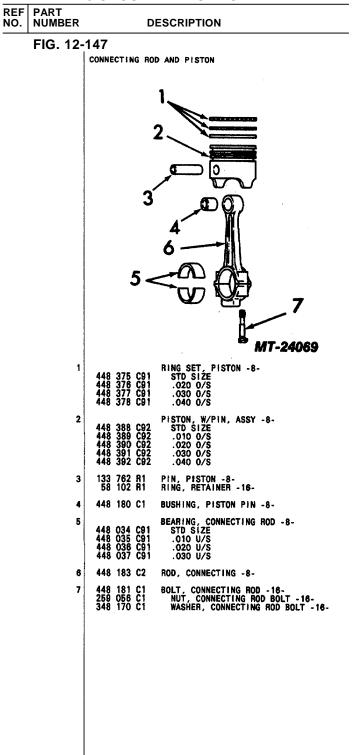


FIG. 12-113 PAGE NO. 156



PAGE NO.199

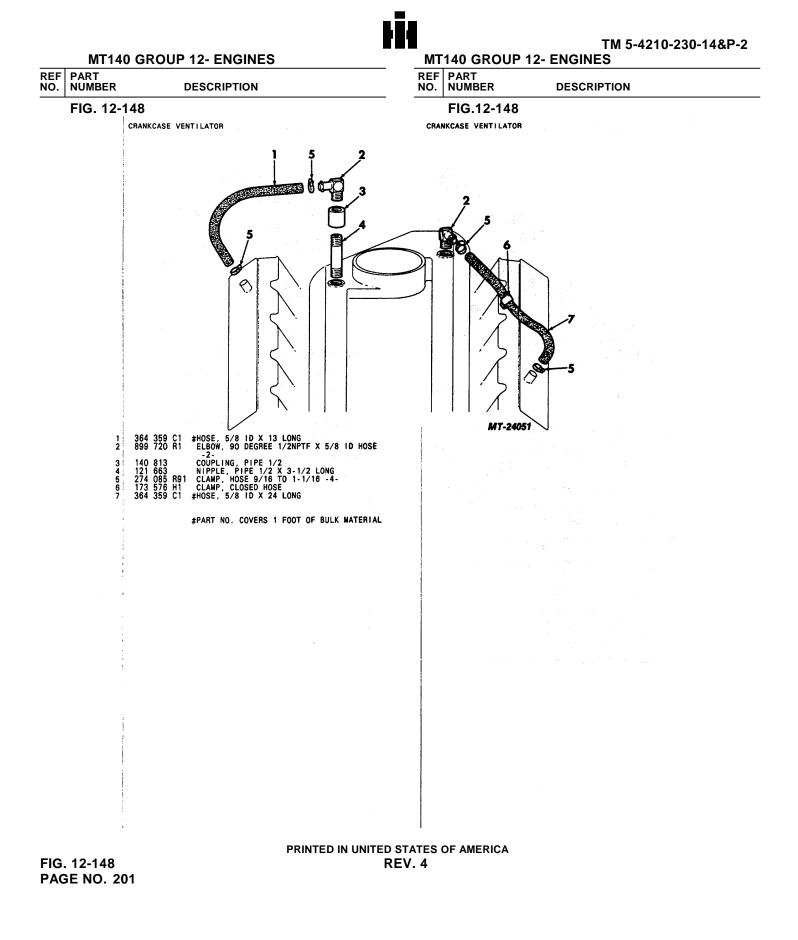


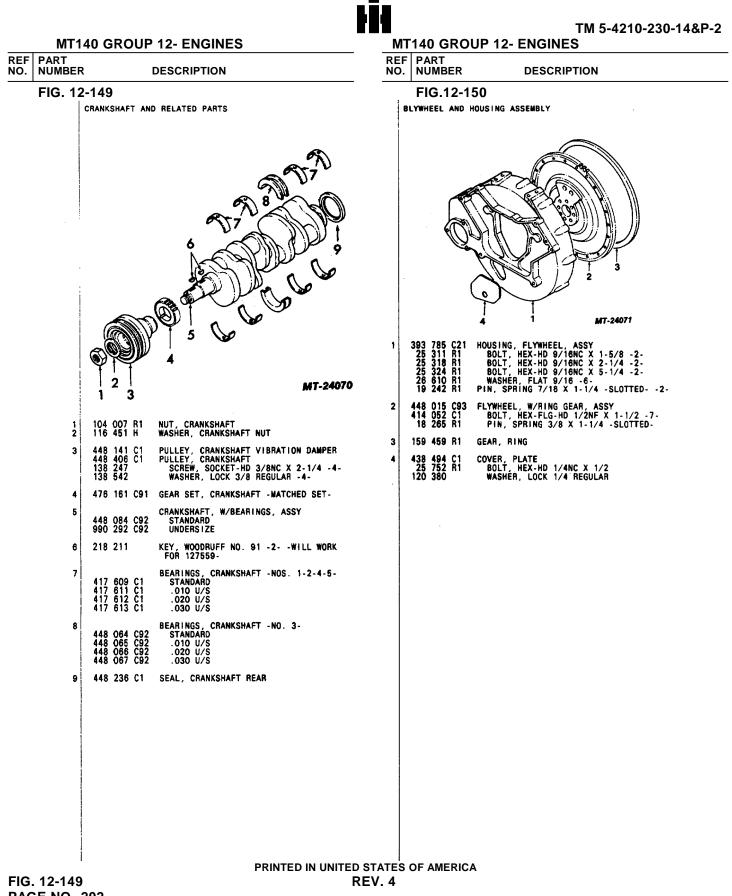
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TM 5-4210-230-14&P-2

МТ	MT140 GROUP 12- ENGINES REF PART NUMBER DESCRIPTION FIG 12-147									
		DESCRIPTION								
1	FIG.12-147									

FIG. 12-147 PAGE NO.200





PAGE NO. 202

	МТ	- 140 GROU	P 12- ENGINES		MT	140 GRO	UP 12-	ENGINE	TN Es
REF NO.	PART NUMBE	ER	DESCRIPTION			PART NUMBER		DESCRI	ΡΤΙΟ
	FIG. 1	12-161	ND THROTTLE CONTROL			FIG.12-1	-		
	23	305 911 C1 25 846 R1	BUSHING, PLASTIC WASHER, FLAT 7/16		E	XHAUST GAS R	ECIRCULA	TION SWITC	н
	24	496 867 C1 25 493 R1 25 520 R1 120 214 25 708 R1	ROD, CROSS SHAFT BOLT, HEX-HD 5/16NC X 1 -2- NUT, HEX 5/16NC -2- WASHER, LOCK 5/16 -2- WASHER, FLAT 5/16 -2-						
	25	496 809 C1 25 520 R1 25 708 R1 120 214	BRACKET, ACCELERATOR CROSS SHAFT NUT, HEX 5/16NC -2- WASHER, FLAT 5/16 -2- WASHER, LOCK 5/16 -2-						
	26	497 317 C1 497 793 C1 103 361	ROD, ACCELERATOR V345 Engine MV404 Engine Pin, Cotter 1/16 x 1/2				Ţ		Ŵ
	27	464 989 C1 120 614 380 567 C1 120 614 120 217	JOINT, ROD END NUT, HEX #10-32NF BALL, STUD NUT, HEX #10 WASHER, LOCK #10			501 651 C92			
	28	506 011 C1	SPRING, ACCELERATOR Manual Choke			299 277 C91	CLAMP,	EGR SWITCH	I
		493 985 C1 466 227 C1	AUTO CHOKE Inner Outer						
	29	500 345 C1 508 768 C1	BRACKET, SPRING V345 ENGINE Auto Choke Manual Choke NV404 Engine						
		500 346 C1 506 012 C1	FOR GOVERNOR -CODE 12950- FOR GOVERNOR -CODE 12950-						
								5	
FIC	│ . 12-16		PRINTED IN UN	ITED ST		OF AMERIC	A		
LIG.	. 12-10				. 4				

DESCRIPTION BER .12-162 GAS RECIRCULATION SWITCH MT-22395 1 C92 SWITCH, EMISSION, EGR 7 C91 CLAMP, EGR SWITCH

TM 5-4210-230-14&P-2

Hit

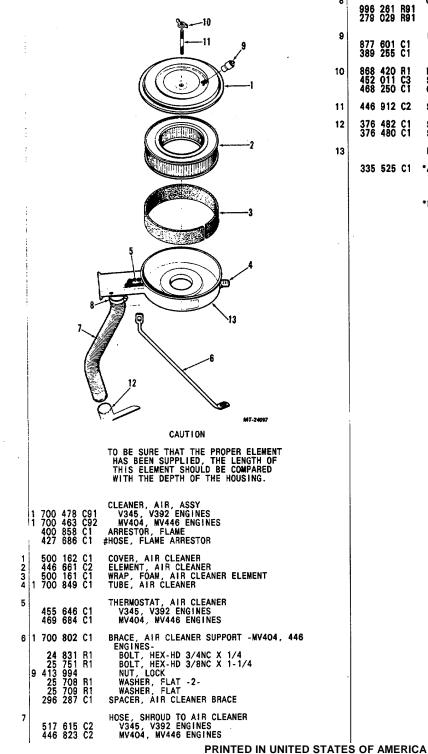
MT140 GROUP 12- ENGINES

DESCRIPTION

REF	PART
NO.	NUMBER

FIG. 12-163

AIR CLEANER AND MOUNTING



MT140 GROUP 12- ENGINES

		ART UMB	ER	DESCRIPTION				
8	996	281	R9 1	CLAMP, HOSE -AT AIR CLEANER- V345, V392 Engines				
9	877	601	CI	INDICATOR, RESTRICTION V345, V392 Engines				
10	452	011	C3	SCREW, WING TYPE -V345, V392 ENGINES-				
11	446	912	C2	STUD, MOUNTING				
12		482 480	C1 C1	SHROUD -V345, V392 ENGINES- Spacer, Shroud				
13				BODY, LOWER -NOT SERVICED SEPARATELY-				
	335	525	C1	*ADAPTER -V345, V392 ENGINES-				

*PART NOT ILLUSTRATED

FIG. 12-163 PAGE NO. 216 REV. 4

140 GROUP 13-TRANSMISSIONS		FIG NO	FICHE LOC	
VENOOR IDENTIFICATION-SEE PAGE 08				
GUIDE TO UNITS IN GROUP 13 INDEX				
MAIN TRANSMISSIONS	PAGE 02			
	PAGE 00			
TRANSFER CASE	PAGE 07			
PRINTED IN UNI		1		

MT-140 GROUP 13- TRANSMISSIONS

	FIG NO	FICHE LOC	
MAIN TRANSMISSIONS			
CODE 13017 -NP436-	40.004		
TRANSMISSION ASSEMBLY	13-001	A13	
TRANSMISSION CONTROL LEVER AND HOUSING	13-001	A13	
CODE 13018 -NPG436-			
TRANSMISSION ASSEMBLY	13-001	A13	
TRANSMISSION CONTROL LEVER AND HOUSING	13-001	A13	
TRANSMISSION OIL FILTER -CODE 13716-	13-002	A15	
CODE 13311 -282VHD-			
TRANSMISSION ASSEMBLY	13-073	D03	
TRANSMISSION CONTROL LEVER AND SHIFT BAR HOUSING			
ASSEMBLIES	13-074	D05	
CODE 13312 -285VHD-			
TRANSMISSION ASSEMBLY	13-073	D03	
TRANSMISSION CONTROL LEVER AND SHIFT BAR HOUSING			
ASSEMBLIES	13-074	DO5	
CODE 13325 -AT545-			
TRANSMISSION ASSEMBLY -SEE ALLISON CATALOG-			
TRANSMISSION CONTROL LEVER			
CAB CODE 16030	13-056	C13	
FLAT BACK COWL CODE 16010	13-066	C20	
TRANSMISSION MODULATOR VALVE AND MOUNTING			
3208 ENGINE	13-018	B05	
9.0 LITER ENGINE	13-018	806	
MV8 ENGINES	13-067	C14	
V345, V392 ENGINES	13-084	C19	
TRANSMISSION OIL COOLER PIPING			
EXC 9.0L ENGINE	13-084	D17	
FOR 9.0L ENGINE	13-085	D18	
TRANSMISSION OIL FILTER -CODE 13714-			
ASSEMBLY	13-068	C22	
MOUNTING AND HOSING	13-083	D18	
TRANSMISSION OIL LEVEL GAUGE AND FILLER CAP	10-000	010	
EXC 3208 ENGINE	13-020	BO8	
FOR 3208 ENGINE	13-020	B08	
TRANSMISSION TO ENGINE ADAPTER	13-077		
	43.076		
3208 ENGINE 9.0 LITER ENGINE	13-076	D06	
	13-021	B06	
MV8 ENGINES	13-022	807	
V346, V392 ENGINES	13-023	807	

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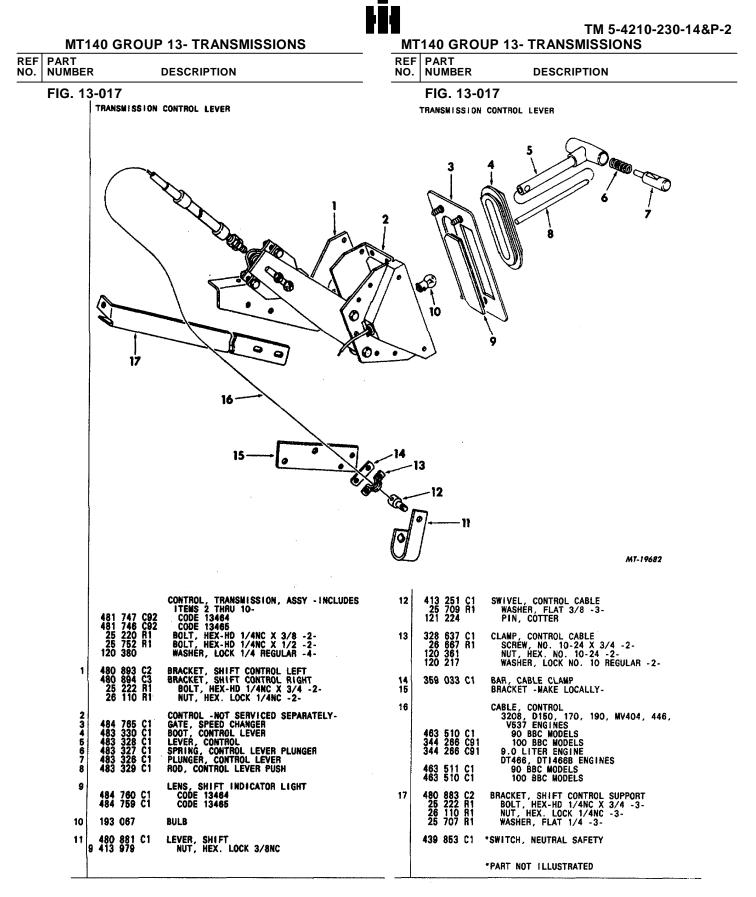
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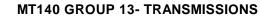
13-INDEX PAGE 2 H

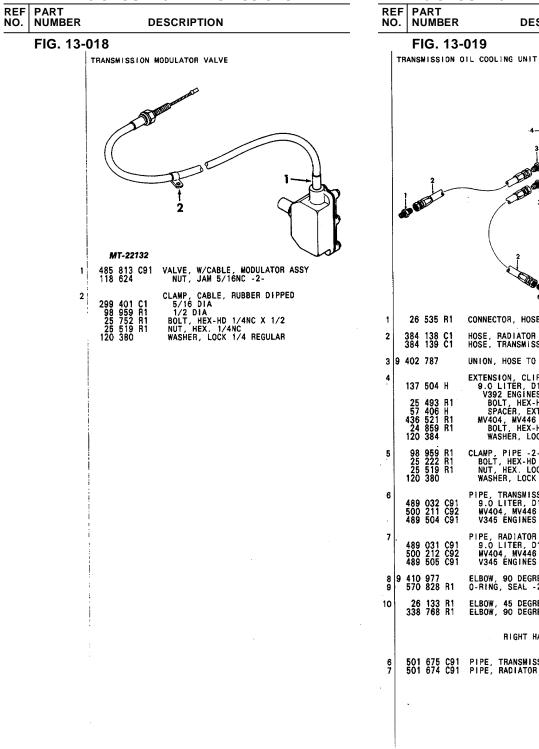
MT-140 GROUP 13- TRANSMISSIONS

	FIG NO	FICHE LOC	
TRANSFER CASE			
CODE 13155			
TRANSFER CASE ASSEMBLY	13-049	C08	
TRANSFER CASE MOUNTING	13-050	C09	
TRANSFER CASE AND POWER-TAKE-OFF CONTROLS	13-051	C10	
CODE 13188			
TRANSFER CASE ASSEMBLY	13-039	B23	
TRANSFER CASE CONTROLS			
D190, MV404, MV44B ENGINES	13-040	824	
DT4BB, DTI466B ENGINES	13-060	C16	
TRANSFER CASE MOUNTING	13-044	C04	

ÞĪł MT-140 GROUP 13- TRANSMISSIONS FIG NO FICHE LOC TRANSMISSION MODEL, CODE AND IDENTIFICATION MAIN TRANSMISSION NP435 13017 **4-SPEED W/RH PTO NIG435** 13018 4-SPEED W/LH PTO 282VHD 13311 **CLARK 5-SPEED** 285VHD 13312 CLARK 5-SPEED AT545 13325 ALLISON 4 SPEED W/PTO GEAR 13320 ALLISON 4 SPEED L/PTO GEAR AT545 **RT613** 13422 FULLER 13-SPEED RTBB13 13422 **FULLER 13-SPEED** NP4690 13425 NEW PROCESS 4-SPEED 1.66 **RT610** 13448 FULLER 10-SPEED **RT6610** 13448 FULLER 10-SPEED AT540 13451 **ALLISON 4-SPEED WIPTO GEAR** AT540 13454 ALLISON 4-SPEED LIPTO GEAR MT640 13464 ALLISON 4-SPEED MT650 13465 ALLISON 5-SPEED T495 13495 **IH DIRECT IN 6TH CONSTANT MESH** T498 13496 IH DIRECT IN 5TH CONSTANT MESH-1.22 IN 4TH-CM5062A 13672 SPICER 5-SPEED CM6052B 13673 SPICER 5-SPEED CM6262A 13674 **SPICER 5-SPEED** SPICER 5-SPEED CM6062A 13676 CM6052B 13677 SPICER 5-SPEED CM6053C 13678 SPICER 5-SPEED 285 V 13696 **CLARK 5-SPEED** 282 V 13697 **CLARK 5-SPEED** T698 13698 IH DIRECT IN 5TH CONSTANT MESH-1.41 IN 41H-T899 13699 IH DIRECT IN 5TH CONSTANT MESH-1.22 IN 4TH-AUXILIARY TRANSMISSIONS 7041 13536 SPICER 4-SPEED R8341CL 13552 **SPICER 4-SPEED** R8341L 13654 **SPICER 4-SPEED** 2A92 13601 FULLER 2-SPEED **TRANSFER CASE** T223H 13155 ROCKWELL STANDARD **TC33** 13188 FABCO L/PTO







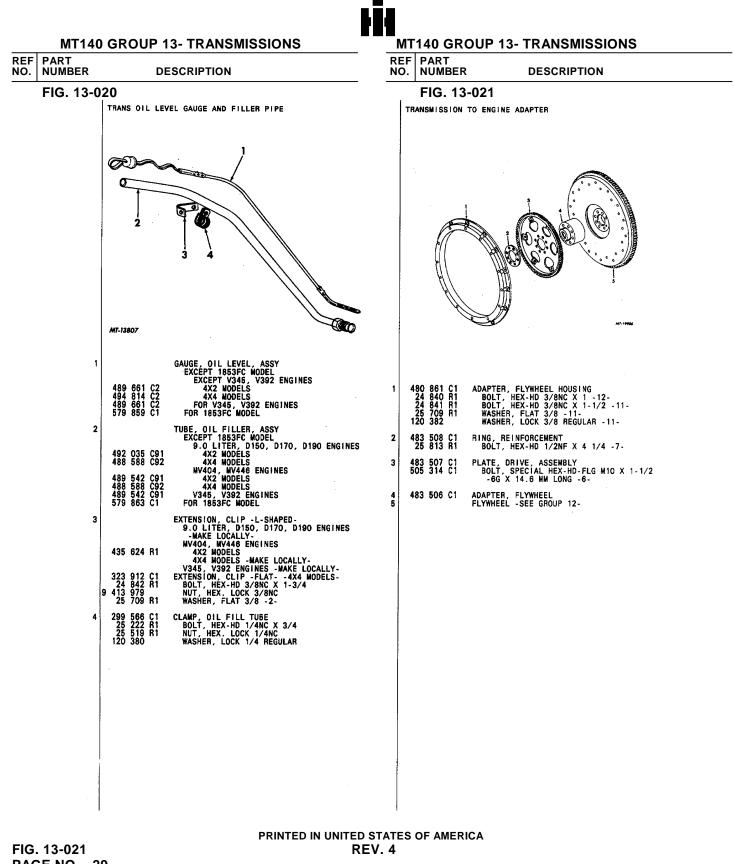
TM 5-4210-230-14&P-2 MT140 GROUP 13- TRANSMISSIONS

DESCRIPTION

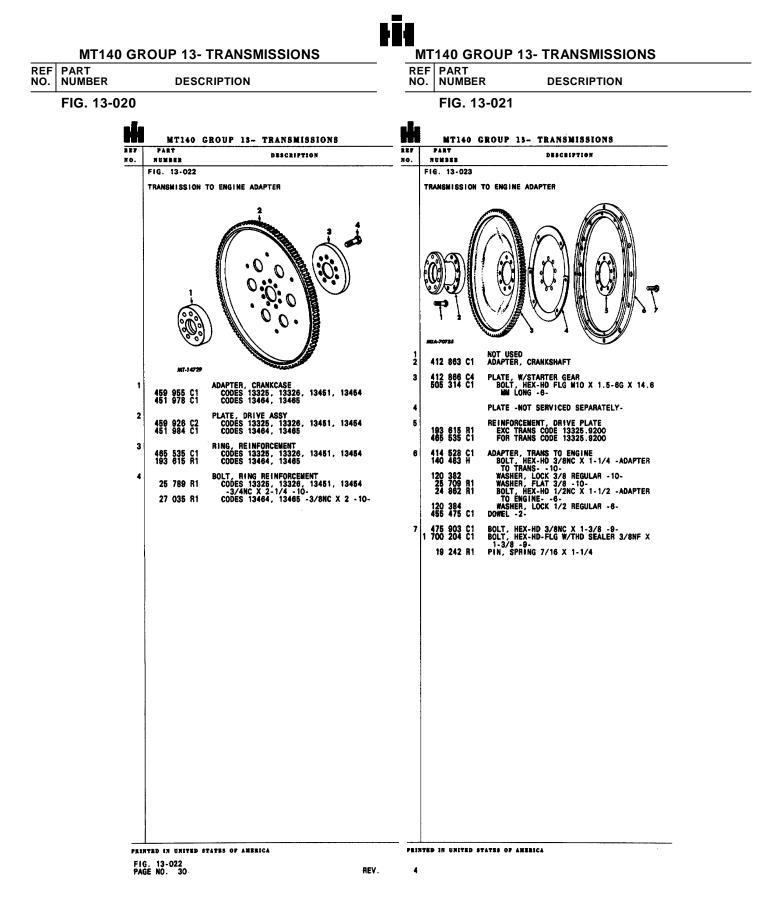
		1	2	4	ALTERN
1			535		CONNECTOR, HOSE 3/4NPT X 3/4
2		384 384	138 139	C1 C1	HOSE, RADIATOR TO TRANSMISSION, ASSY HOSE, TRANSMISSION TO RADIATOR, ASSY
3	9	402	787		UNION, HOSE TO PIPE 3/4 X 3/4 -2-
4			504		EXTENSION, CLIP 9.0 LITER, D150, D170, D190, V345, V392_ENGINES
		25 57 436 24 120	493 406 521 859 384	R1 H R1 R1	BOLT, HEX-HD 5/16NC X 1 SPACER, EXTENSION CLIP MV404, MV446 ENGINES BOLT, HEX-HD 1/2NC X 3/4 WASHER, LOCK 1/2 REGULAR
5		98 25 25 120	959 222 519 380	R1 R1 R1	CLAMP, PIPE -2- BOLT, HEX-HD 1/4NC X.3/4 NUT, HEX. LOCK 1/4NC WASHER, LOCK 1/4 REGULAR
6		489 500 489	032 211 504	C91 C92 C91	PIPE, TRANSMISSION TO RADIATOR, ASSY 9.0 LITER, D150, D170, D190 ENGINES MV404, MV446 ENGINES V345 ENGINES
7		500	031 212 505	C91 C92 C91	PIPE, RADIATOR TO TRANSMISSION, ASSY 9.0 LITER, D150, D170, D190 ENGINES MV404, MV446 ENGINES V345 ENGINES
8 9	9	410 570	977 828	R1	ELBOW, 90 DEGREE 3/4 X 3/4 -2- 0-RING, SEAL -2-
10		26 338	133 768	R1 R1	ELBOW, 45 DEGREE 3/4NPT X 3/4 ELBOW, 90 DEGREE 3/4NPT X 3/4
					RIGHT HAND DRIVE
6 7		501 501	675 674	C91 C91	PIPE, TRANSMISSION TO RADIATOR, ASSY PIPE, RADIATOR TO TRANSMISSION, ASSY
	1				

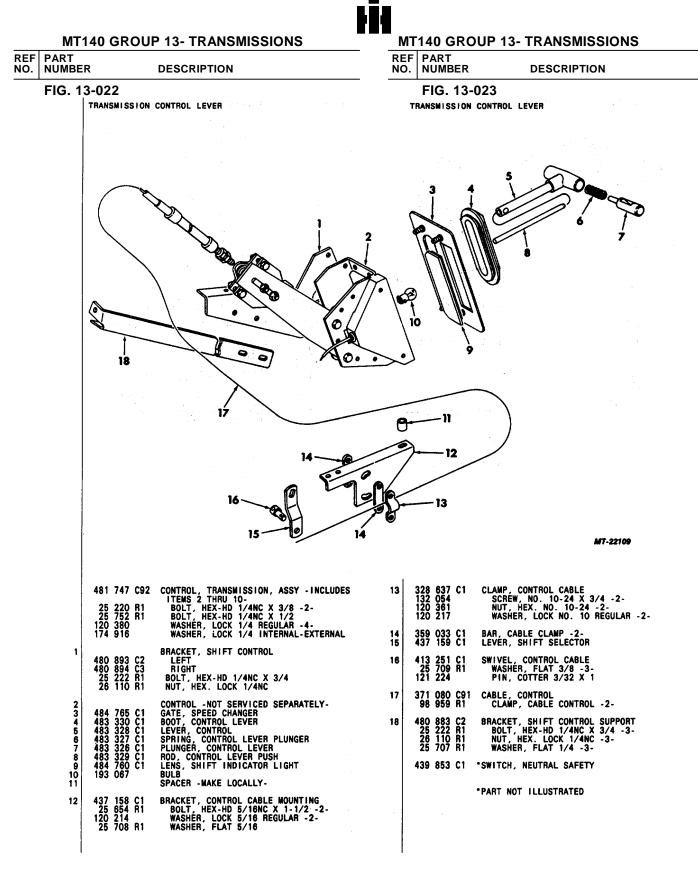
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FIG. 13-018 PAGE NO. 28



PAGE NO. 29





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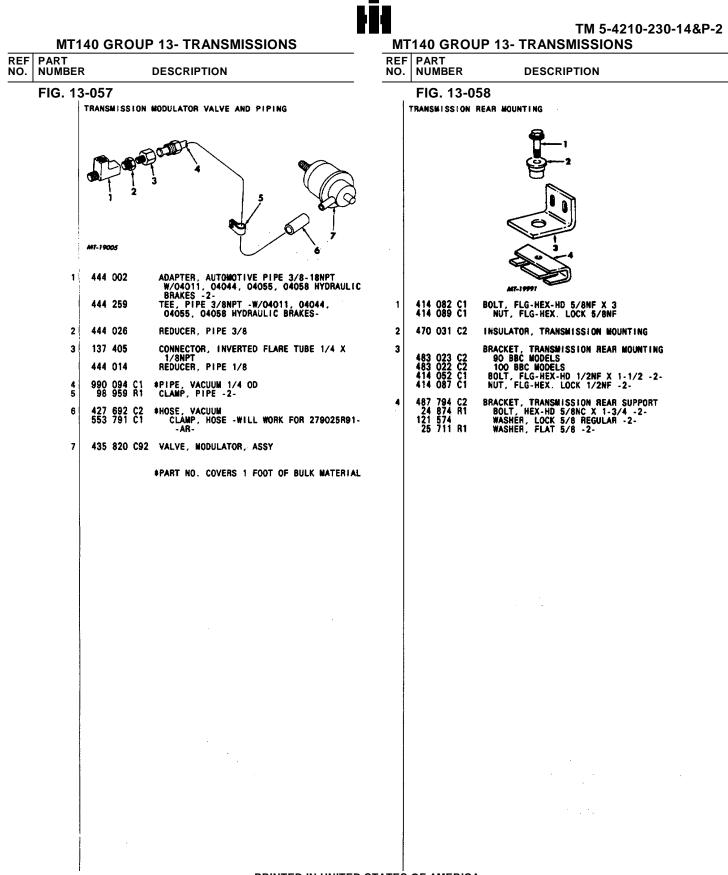
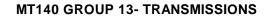


FIG. 13-057 PAGE NO. 64

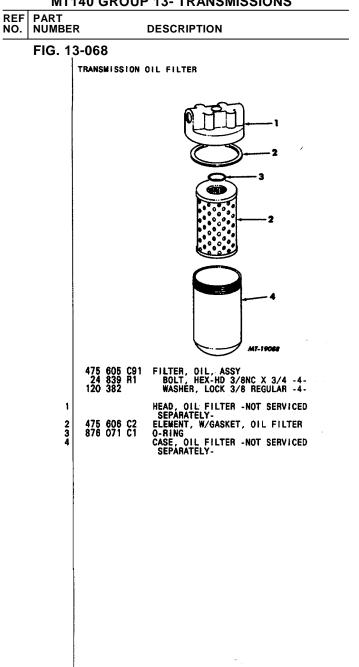




TM 5-4210-230-14&P-2 MT140 GROUP 13- TRANSMISSIONS

MT140 GROUP 13- TRANSMISSIONS	MT140 GROUP 13- TRANSMISSIONS
REF PART NO. NUMBER DESCRIPTION	REF PART NO. NUMBER DESCRIPTION
REF PART	NO. NUMBER DESCRIPTION FIG. 13-067 TRANS OIL FILLER GAUGE AND PIPE TRANS OIL FILLER GAUGE AND PIPE Image: State
8 406 381 C1 CLAMP, 15/18 -2- 9 323 912 C1 CLIP, EXTENSION 24 859 R1 BOLT, HEX-HD 1/2 X 3/4 120 384 WASHER, LOCK 1/2 REGULAR	EXC 1853FC MODEL 9.0 LITER, D150, 170, 190 ENGINES 480 890 C91 4X2 AND 6X4 MODELS 488 591 C91 4X4 AND 6X6 MODELS DT466, DT14666 ENGINES 499 417 C91 4X2 AND 6X4 MODELS 494 608 C2 4X4 AND 6X6 MODELS FOR 1853FC MODEL 529 303 C2 9.0 LITER ENGINE 589 668 C2 DT466 ENGINE
	5 EXTENSION, CLIP 9.0 LITER ENGINE 435 548 R1 4X2 AND 6X4 MODELS 323 912 C1 4X4 AND 6X6 MODELS 24 842 R1 BOLT, HEX-HD 3/8NC X 1-3/4 9 413 979 NUT, HEX. LOCK 3/8NC 25 709 R1 WASHER, FLAT 3/8 435 548 R1 D150, 170, 190 ENGINES D1466, DT1466B ENGINES DT4666, DT1466B ENGINES 198 754 R1 4X2 AND 6X4 MODELS 449 602 R1 4X4 AND 6X6 MODELS

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TM 5-4210-230-14&P-2 MT140 GROUP 13- TRANSMISSIONS

DESCRIPTION

REF PART NO. NUMBER FIG. 13-069

TRANS OIL FILTER MOUNTING AND HOSING

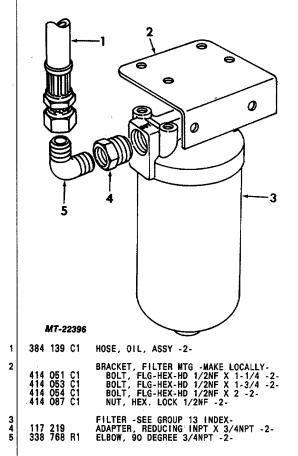


FIG. 13-068 PAGE NO. 72

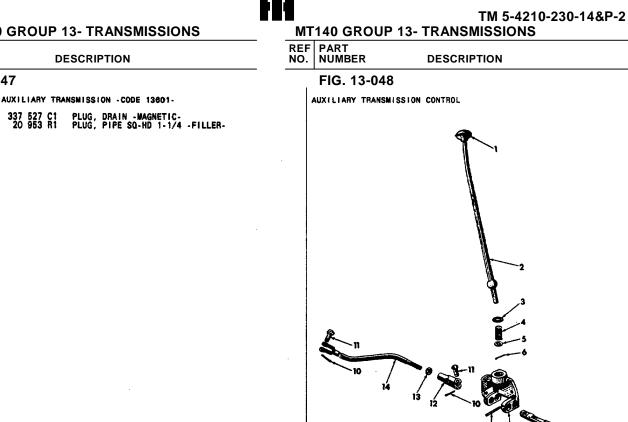
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MT140 GF	OUP 13- TRANSMISSIONS
ART JMBER	DESCRIPTION

REF PART NO. NUMBER

FIG. 13-047

51 52



MT-22033

123456

7

8 9

91 047 R1 445 831 R1

356 400 C1 24 840 R1 413 979 91 050 R1 103 321

HANDLE, CONTROL LEVER LEVER, CONTROL WASHER, CONTROL LEVER SPRING UPPER SPRING, CONTROL LEVER WASHER, CONTROL LEVER SPRING LOWER PIN, COTTER

ROD, SHIFT -FIRST AND SECOND-BAR, CONTROL

HOUSING, CONTROL LEVER BOLT, HEX-HD 3/8NC X 1 -3-NUT, HEX.LOCK 3/8NC -3-BOLT, CONTROL LEVER PIVOT WASHER, LOCK 3/8 REGULAR

PIN, SHIFT ROD SLIDE STOP PIN, COTTER 1/8 X 1 -2-PIN, ROD END 1/2 X 1-27/64 -2-YOKE, ADJUSTABLE NUT, HEX. JAM 1/2NC ROD, W/YOKE, CONTROL -FIRST AND SECOND-

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FIG. 13-047 PAGE NO. 57

DESCRIPTION



TM 5-4210-230-14&P-2 MT140 GROUP 13- TRANSMISSIONS

NO. NUMBER

REF PART

FIG. 13-049

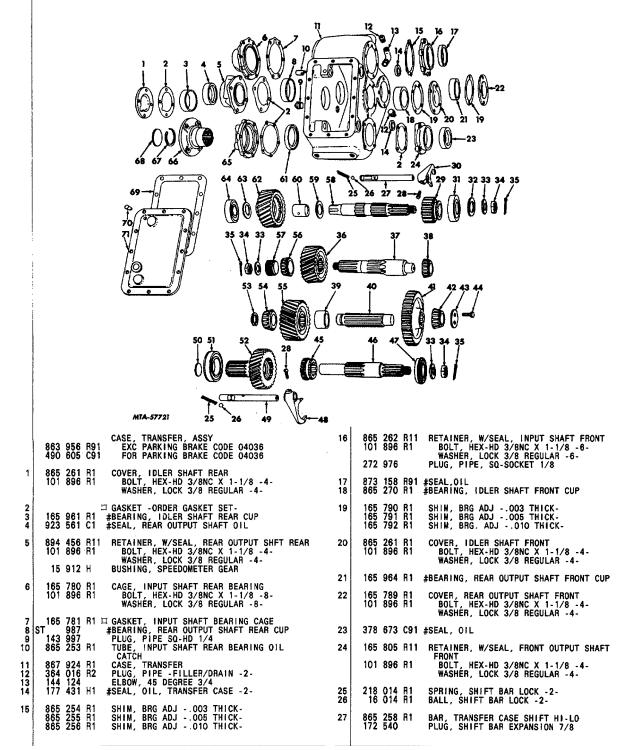
TRANSFER CASE ASSEMBLY -CODE 13155-

REF PART NO. NUMBER DE

DESCRIPTION

FIG. 13-049

TRANSFER CASE ASSEMBLY -CODE 13155-



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FIG. 13-049 PAGE NO. 58

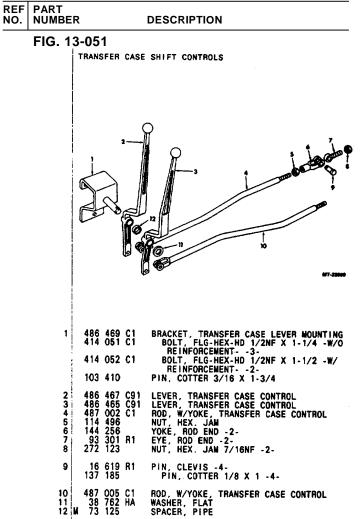
REF NO.	PART NUMB	ER		DESCRIPTION
	FIG.	13-049	9	
		TRANSF	ER CAS	E ASSEMBLY -CODE 13155-
	28 29 30 31 32 33 34 35 36 37 37 38	865 2 865 2 ST 2 165 7 104 0 165 8 165 8 165 9	29 R1 67 R1 59 R1 50 R1 50 R1 83 R1 578 H1 504 R1 502 R1 563 R91 966 R1	SCREW, SHIFT BAR FORK -2- GEAR, INPUT SHAFT SLIDING -10 SPLINES- FORK, SHIFT HI-LO #BEARING, INPUT SHAFT FRONT SHIM, BEARING ADJUSTING WASHER, SHAFT NUT -3- NUT, SHAFT -3- PIN, COTTER 1/8 X 1-1/2 -3- GEAR, REAR OUTPUT SHAFT SHAFT, REAR OUTPUT H #BEARING, REAR OUTPUT SHAFT FRONT CONE
	40 41 42 43	865 2 865 2 313 8	265 R1 268 R1 214 R91 251 R1	≵BEARING, REAR OUTPUT SHAFT FRONT CONE SPACER, IDLER GEAR SHAFT, IDLER SHAFT LOW-SPEED GEAR, IDLER SHAFT LOW-SPEED ≵BEARING, IDLER SHAFT FRONT CONE PLATE, IDLER SHAFT FRONT BEARING
	44	865 2	249 R1	BOLT, BEARING PLATE -2- WASHER, LOCK 3/8 REGULAR -2-
	45 46 47 48	165 8 ST 2	10 R1 11 R3 56 26 R1	CLUTCH, FRONT OUTPUT SHAFT SLIDING SHAFT, FRONT OUTPUT #BEARING, FRONT OUTPUT SHAFT FRONT CONE FORK, SHIFT
	49	165 8 172 5	56 R1	BAR, TRANSFER CASE SHIFT Plug, shift bar expansion 7/8
	50 51 52 53 54 55 56	165 8 865 2	266 309 R1 252 R1 360 R9 795 R1	PLUG, FRONT OUTPUT SHAFT GEAR EXPANSION #BEARING, FRONT OUTPUT SHAFT REAR CONE GEAR, FRONT OUTPUT SHAFT RING, IDLER SHAFT #BEARING, IDLER SHAFT REAR CONE GEAR, IDLER SHAFT #BEARING, REAR OUTPUT SHAFT REAR CONE
	57	206 3 196 5	333 R1 78 R1	GEAR, SEPPEDOMETER DRIVE SPACER, SPEEDOMETER GEAR
	58 59 60 61 62 63 64	165 7 165 7 399 7 865 2 165 7	266 R2 787 R1 786 R1 736 C9 269 R1 784 R1 237	
	65	388 9	807 R1 915 C1 896 R1	
	66	165 8	812 R1 916 C1 918 C1	FLANGE, BRAKE DRUM EXC PARKING BRAKE CODE 04038 FOR PARKING BRAKE CODE 04038 STUD, FLANGE W/04036 -6-
	67 68 69 70	865 2	814 R1 584 R1 257 R1 991 R9	RING, SHAFT SNAP Plug, brake drum flange II gasket, transfer case cover 1 breather, oil, assy
	71	865 2 101 8 141 2	260 R1 896 R1 242	COVER, TRANSFER CASE BOLT, HEX-HD 3/8NC X 1-1/8 -14- WASHER, LOCK 3/8 REGULAR -14- PIN, DOWEL -2-
		352 6	619 C9:	3 #KIT, TRANSMISSION BEARING AND SEAL
		167 3	301 R9	1□ #GASKET SET, TRANSFER CASE

TM 5-4210-230-14&P-2 MT140 GROUP 13- TRANSMISSIONS

FIG. 13-050 TRANSFER CASE MOUNTING Image: State of the state o			ART JMB	ER	DESCRIPTION
1 BRACKET, TRANSFER CASE TO CROSSMEMBER EXC HYD BRAKE CODES 04011, 04044, 04055, 04058 489 641 C1 FOR HYD BRAKE CODES 04011, 04044, 04055, 04058 24 873 R1 BOLT, HEX-HD 5/8NC X 1-1/2 -2- 121 574 WASHER, LOCK 5/8 REGULAR -2- 2 484 108 C1 CROSSMEMBER, TRANSFER CASE MOUNTING 24 873 R1 BOLT, HEX-HD 5/8NC X 1-1/2 -2- 9 412 231 NUT, HEX. LOCK 5/8 REGULAR -2- 121 574 WASHER, LOCK 5/8 REGULAR -2- 3 414 082 C1 BOLT, FLG-HEX-HD 5/8NF X 3 -4- 414 089 C1 NUT, FLG-HEX 5/8NF -4- 4 470 031 C2 INSULATOR, RUBBER 5 484 109 C1 BRACKET, TRANSFER CASE 414 076 C1 611 BOLT, FLG-HEX-HD 5/8NF X 1-1/2 -W/O REINFORCEMENT4- 414 077 C1 BOLT, FLG-HEX-HD 5/8NF X 1-3/4 -W/ REINFORCEMENT4-	т				
1 BRACKET, TRANSFER CASE TO CROSSMEMBER EXC HYD BRAKE CODES 04011, 04044, 04055, 04058 489 641 C1 FOR HYD BRAKE CODES 04011, 04044, 04055, 04058 24 873 R1 BOLT, HEX-HD 5/8NC X 1-1/2 -2- 121 574 WASHER, LOCK 5/8 REGULAR -2- 2 484 108 C1 CROSSMEMBER, TRANSFER CASE MOUNTING 24 873 R1 BOLT, HEX-HD 5/8NC X 1-1/2 -2- 9 412 231 NUT, HEX. LOCK 5/8 REGULAR -2- 121 574 WASHER, LOCK 5/8 REGULAR -2- 3 414 082 C1 BOLT, FLG-HEX-HD 5/8NF X 3 -4- 414 089 C1 NUT, FLG-HEX 5/8NF -4- 4 470 031 C2 INSULATOR, RUBBER 5 484 109 C1 BRACKET, TRANSFER CASE 414 076 C1 611 BOLT, FLG-HEX-HD 5/8NF X 1-1/2 -W/O REINFORCEMENT4- 414 077 C1 BOLT, FLG-HEX-HD 5/8NF X 1-3/4 -W/ REINFORCEMENT4-					
1 BRACKET, TRANSFER CASE TO CROSSMEMBER EXC HYD BRAKE CODES 04011, 04044, 04055, 04058 489 641 C1 FOR HYD BRAKE CODES 04011, 04044, 04055, 04058 24 873 R1 BOLT, HEX-HD 5/8NC X 1-1/2 -2- 121 574 WASHER, LOCK 5/8 REGULAR -2- 2 484 108 C1 CROSSMEMBER, TRANSFER CASE MOUNTING 24 873 R1 BOLT, HEX-HD 5/8NC X 1-1/2 -2- 9 412 231 NUT, HEX. LOCK 5/8 REGULAR -2- 121 574 WASHER, LOCK 5/8 REGULAR -2- 3 414 082 C1 BOLT, FLG-HEX-HD 5/8NF X 3 -4- 414 089 C1 NUT, FLG-HEX 5/8NF -4- 4 470 031 C2 INSULATOR, RUBBER 5 484 109 C1 BRACKET, TRANSFER CASE 414 076 C1 611 BOLT, FLG-HEX-HD 5/8NF X 1-1/2 -W/O REINFORCEMENT4- 414 077 C1 BOLT, FLG-HEX-HD 5/8NF X 1-3/4 -W/ REINFORCEMENT4-					
484 110 C1 EXC HYD BRAKE CODES 04011, 04044, 04055, 04058 489 641 C1 FOR HYD BRAKE CODES 04011, 04044, 04055, 04058 24 873 R1 BOLT, HEX-HD 5/8NC X 1-1/2 -2- 121 574 WASHER, LOCK 5/8 REGULAR -2- 2 484 108 C1 24 873 R1 BOLT, HEX-HD 5/8NC X 1-1/2 -2- 9 412 231 NUT, HEX. LOCK 5/8 REGULAR -2- 121 574 WASHER, LOCK 5/8 REGULAR -2- 3 414 082 C1 9412 231 NUT, FLG-HEX -HD 5/8NF X 3 -4- 414 089 C1 BOLT, FLG-HEX 5/8NF -4- 4 470 031 C2 INSULATOR, RUBBER 5 484 109 C1 BACKET, TRANSFER CASE 414 076 C1 BOLT, FLG-HEX-HD 5/8NF X 1-1/2 -W/O REINFORCEMENT- 4- 414 077 C1 BOLT, FLG-HEX-HD 5/8NF X 1-3/4 -W/ REINFORCEMENT- 4-	•				MT-22010
489 641 C1 FOR HYD BRAKE CODES 04011, 04044, 04055, 04058 24 873 R1 BOLT, HEX-HD 5/8NC X 1-1/2 -2- 121 574 WASHER, LOCK 5/8 REGULAR -2- 2 484 108 C1 24 873 R1 BOLT, HEX-HD 5/8NC X 1-1/2 -2- 9 412 231 NUT, HEX.LOCK 5/8 REGULAR -2- 121 574 WASHER, LOCK 5/8 REGULAR -2- 3 414 082 C1 9412 231 NUT, FLG-HEX-HD 5/8NF X 3 -4- 4 470 031 C2 108 C1 BOLT, FLG-HEX 5/8NF -4- 4 470 031 C2 108 DLT, FLG-HEX -D 5/8NF X 1 -1/2 -W/O 844 109 C1 80LT, FLG-HEX-HD 5/8NF X 1-1/2 -W/O 81MFORCEMENT4- 414 076 80LT, FLG-HEX-HD 5/8NF X 1-3/4 -W/ REINFORCEMENT4- 80LT, FLG-HEX-HD 5/8NF X 1-3/4 -W/	1	484	110	C1	EXC HYD BRAKE CODES 04011, 04044,
24 873 R1 BOLT, HEX-HD 5/8NC X 1-1/2 -2- WASHER, LOCK 5/8 REGULAR -2- 2 484 108 C1 CROSSMEMBER, TRANSFER CASE MOUNTING 24 24 873 R1 BOLT, HEX-HD 5/8NC X 1-1/2 -2- 9 412 231 NUT, HEX-HD 5/8NC X 1-1/2 -2- 121 574 NUT, HEX.LOCK 5/8 REGULAR -2- 3 414 082 C1 414 089 C1 NUT, FLG-HEX-HD 5/8NF X 3 -4- 4 470 031 C2 INSULATOR, RUBBER 5 484 109 C1 BACKET, TRANSFER CASE 80LT, FLG-HEX-HD 5/8NF X 1-1/2 -W/O REINFORCEMENT4- 414 076 C1 BOLT, FLG-HEX-HD 5/8NF X 1-3/4 -W/ REINFORCEMENT4-		489	641	Ct	FOR HYD BRAKE CODES 04011, 04044,
24 873 R1 BOLT, HEX-HD 5/8NC X 1-1/2 -2- 9 412 231 NUT, HEX. LOCK 5/8NC -2- 121 574 WASHER, LOCK 5/8 REGULAR -2- 3 414 082 C1 9 412 031 C1 9 412 031 C2 121 574 WASHER, LOCK 5/8 REGULAR -2- 3 414 082 C1 9 10 NUT, FLG-HEX-HD 5/8NF X 3 -4- 4 470 031 C2 1 NUT, FLG-HEX 5/8NF -4- 4 4 470 031 C2 1 NSULATOR, RUBBER 5 5 484 109 C1 BOLT, FLG-HEX-HD 5/8NF X 1-1/2 -W/0 REINFORCEMENT4- BOLT, FLG-HEX-HD 414 076 C1 BOLT, FLG-HEX-HD 5/8NF X 1-1/2 -W/0 REINFORCEMENT4- BOLT, FLG-HEX-HD REINFORCEMENT4- REINFORCEMENT4-		24 121	873 574	R1	BOLT, HEX-HD 5/8NC X 1-1/2 -2- WASHER, LOCK 5/8 REGULAR -2-
414 089 C1 NUT, FLG-HEX 5/8NF -4- 4 470 031 C2 INSULATOR, RUBBER 5 484 109 C1 BRACKET, TRANSFER CASE 414 076 C1 BOLT, FLG-HEX-HD 5/8NF X 1-1/2 -W/O REINFORCEMENT4- 414 077 C1 BOLT, FLG-HEX-HD 5/8NF X 1-3/4 -W/ REINFORCEMENT4-	-	24 412	873 231	C1 R1	BOLT, HEX-HD 5/8NC X 1-1/2 -2- Nut, HEX. Lock 5/8NC -2-
5 484 109 C1 BRACKET, TRANSFER CASE 414 076 C1 BOLT, FLG-HEX-HD 5/8NF X 1-1/2 -W/O REINFORCEMENT4- 414 077 C1 BOLT, FLG-HEX-HD 5/8NF X 1-3/4 -W/ REINFORCEMENT4-	Э			C1	
414 076 C1 BOLT, FLG-HEX-HD 5/8NF X 1-1/2 -W/O REINFORCEMENT4- 414 077 C1 BOLT, FLG-HEX-HD 5/8NF X 1-3/4 -W/ REINFORCEMENT4-		414 414	082 089	Čİ	NUL, FLU-HEA D/ONF -4-
414 077 C1 BOLT, FLG-HEX-HD 5/8NF X 1-3/4 -W/ REINFORCEMENT4-	3	414	089	C1	
	3 4	414 470 484	089 031 109	C1 C2 C1	INSULATOR, RUBBER BRACKET, TRANSFER CASE BOLT, FLG-HEX-HD 5/8NF X 1-1/2 -W/O
	3 4	414 470 484 414	089 031 109 076	C1 C2 C1 C1	INSULATOR, RUBBER BRACKET, TRANSFER CASE BOLT, FLG-HEX-HD 5/8NF X 1-1/2 -W/O REINFORCEMENT4- BOLT, FLG-HEX-HD 5/8NF X 1-3/4 -W/

6 107 813 R1 WASHER, FLAT 3/16 -4-

FIG. 13-050 PAGE NO. 59



TM 5-4210-230-14&P-2 MT140 GROUP 13- TRANSMISSIONS

REF	PART	
NO.	NUMBER	DESCRIPTION

FIG. 13-052

F

N

1

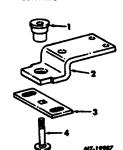
2

3

4

9

TRANSMISSION REAR MOUNTING



470 031 C2 INSULATOR, TRANSMISSION MOUNTING

- 483
 800
 C3
 BRACKET, TRANSMISSION SUPPORT

 414
 052
 C1
 BOLT, FLG-HEX-HD
 1/2NF X
 1-1/2

 414
 087
 C1
 NUT, FLG-HEX.LOCK
 1/2NF
 X
 1-1/2

 414
 087
 C1
 NUT, FLG-HEX.LOCK
 1/2NF
 X
 1-1/2

 414
 987
 B
 DLT, HEX-HD
 3/8NC
 X
 1-1/2

 413
 978
 NUT, HEX.LOCK
 3/8NC 2 2
- BAR, TRANSMISSION MOUNTING SUPPORT

 492 885 C1
 CODE 13422

 414 089 C1
 NUT, FLG-HEX. LOCK 5/8NF -2

 25 711 R1
 WASHER, FLAT 5/8 -2

 492 884 C1
 CODE 13465

 24 874 R1
 BOLT, HEX-HD 5/8NC X 1-3/4 -2

 121 574
 WASHER, LOCK 5/8 REGULAR -2

 25 711 R1
 WASHER, FLAT 5/8 -2

608 337 R1 BOLT, SQ-NECK CARRIAGE 5/8NC X 3 412 231 NUT, HEX. LOCK 5/8NC

	FIG NO	FICHE LOC
VENDOR IDENTIFICATION-SEE PAGE 04		
F AXLE ASSEMBLY IS REQUIRED, ORDER COMPONENTS-		
DIFFERENTIAL ASSEMBLY, AXLE HOUSING -OR I-BEAM-, ETC.		
F A COMPLETE AXLE INCLUDING BRAKES IS NEEDED, IT CAN		
BE ORDERED BY DESCRIPTION -SHOWING TRUCK MODEL AND		
CHASSIS SERIAL NUMBER- FROM THE REGIONAL OFFICE. THE		
REGIONAL OFFICE WILL THEN ORDER FROM THE FORT WAYNE		
PARTS DISTHIBUTION CENTER. THIS APPLIES ONLY TO ASSEM-		
BLIES CURRENTLY USED IN PRODUCTION.		
SINGLE REDUCTION AXLES		
CODE 14029 -IH 16500 LB	14-001	EO0
CODE 14030 -IH 15000 LB	14-002	E08
CODE 14039 -IH 17000 LB		
L/NO SPIN DIFF	14-003	E10
W/NO SPIN DIFF	14-033	G10
CODE 14042 -IH 17500 LB	14-004	E12
CODE 14044 -IH 18600 LB	14-006	E14
CODE 14047 -IH 22000 LB CODE 14057 -IH 23000 LB	14-006 14-007	E16 E18
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	FICHE LOC
14-008	E20
14-031	G07
14-009	E22
14-027	G05
14-010	E22
14-011	E23
14-031	G07
14-009	E22
14-027	G05
14-010	E22
14-012	F01
14-031	G07
14-009	E22
14-027	G05
14-010	E22
14-032	008
14-031	G07
14-009	E22
14-027	G05
14-010	E22
14-013	F03
14-031	G07
14-009	E22
14-027	G05 E22
14-010	<u> </u>
14-014	F05
14-014	G12
14-034	612
14-031	G07
	E22
	G05
-	E22
14 010	
14-015	F07
	14-009 14-027 14-010 14-015

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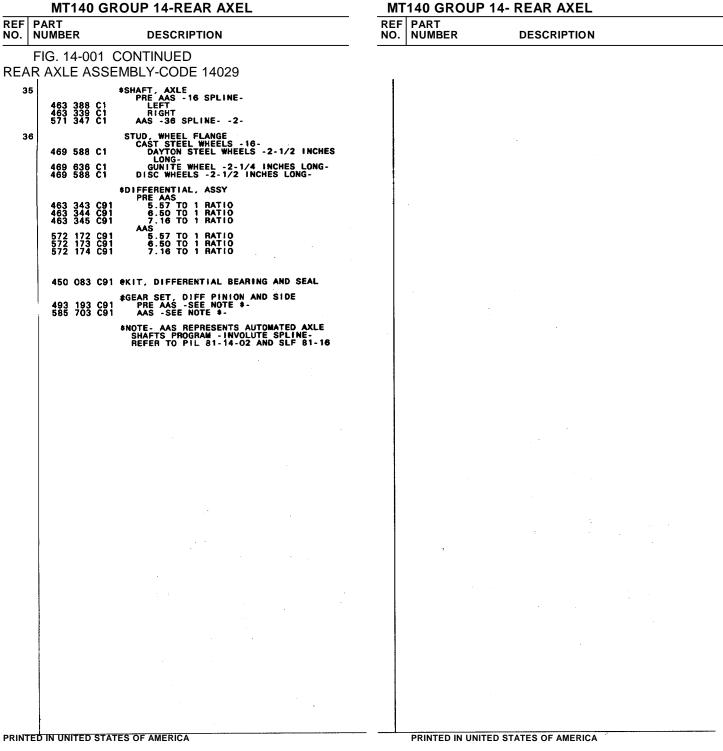
140	GROUP 14-REAR AXLE		
		FIG NO	FICHE LOC
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			ыi		TM 5-4210-230-14&P-2
MT14	40 GROUF	9 14-REAR AXEL		T140 GRO	UP 14- REAR AXEL
REF PART NO. NUMBER		DESCRIPTION	REF NO.	PART NUMBER	DESCRIPTION
 FIG. 14-	001			FIG. 14-0	01 CONTINUED
REAR AXLE	ASSEMBL	Y-CODE 14029		REAR AX	LE ASSEMBLY-CODE 14029
					$\begin{array}{c} 5 & 16 \\ 1 \\ 29 & 30 \\ 0 \\ 1 \\ 0 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ $
1	54 528 HA	12 13 MT-18841A ADJUSTER, DIFFERENTIAL BEARING -2-	12		PLUG, PIPE SQ-HD 3/4 -FILLER-
2	115 373 R92 80 290 R1 80 296 R1 120 384	CARRIER, W/CAPS, DIFFERENTIAL BOLT, CARRIER TO HSG -SHORT8- BOLT, CARRIER TO HSG -LONG6- WASHER, LOCK 1/2 REGULAR -14-	13 14 15 16	9 409 949 337 527 C1 19 632 R1 454 706 C1 1 <u>17 804</u> H	PLUG, PIPE SQ-HD 3/4 -DRAIN- NUT, HEX. LOCK 9/18 -16- OSEAL, PINION OIL NUT, COMPANION FLANGE
3	383 271 C91	@BEARING, PINION REAR		117 804 H 54 557 H 137 214	WASHER, COMPANION FLANGE NUT PIN, COTTER 1/8 X 1-3/4
4	68 906 R94 68 907 R94 68 908 R94 113 271 R1	GEAR SET, RING AND PINION 5.57 TO 1 RATIO -39-7 TEETH- 6.50 TO 1 RATIO -39-6 TEETH- 7.16 TO 1 RATIO -43-8 TEETH- RIVET, RING GEAR TO DIFF CASE -12-	17 18 19 20 21 22 22	103 407 116 163 H 68 924 R1 68 963 R1 5T 963 5T 2 007 A	PIN, COTTER 3/16 X 1 -2- LOCK, DIFFERENTIAL BRG ADJUSTER -2- BOLT, DIFF CARRIER BEARING CAP -4- @GASKET, DIFF TO HOUSING @BEARING, DIFFERENTIAL CASE CUP -2- @BEARING, DIFFERENTIAL CASE CONE -2- CASES, DIFFERENTIAL -TWO HALVES- #WASHER, DIFF SIDE GEAR THRUST -2- #WASHER, DIFF SIDE GEAR THRUST -2-
5 6 7	68 913 R2 68 914 R2 68 915 R2 68 916 R2 68 916 R2	 BEARING, PINION FRONT CONE -2- BEARING, PINION FRONT CUP -2- SPACER, PINION FRONT BEARING 622 THICK 623 THICK 634 THICK 634 THICK 	26 27 28	493 203 C91 86 233 H 241 278 R1 9 411 971 68 909 R1	CASES, DIFFERENTIAL -TWO HALVES- #WASHER, DIFF SIDE GEAR THRUST -2- #GEAR, DIFFERENTIAL SIDE #SPIDER, DIFFERENTIAL #WASHER, DIFFERENTIAL PINION -4- NUT, HEX. LOCK 1/2NF -8- CASE, DIFFERENTIAL -SEE REF NO.23- BOLT, DIFFERENTIAL -SEE REF.
	68 918 H2 68 919 R2 68 920 R2 68 921 R2 68 922 R2 68 923 R2	636 THICK 640 THICK 643 THICK 646 THICK 649 THICK 652 THICK	32 33	113 272 R1 968 936 R91	SCOOP, DIFFERENTIAL CASE OIL BOLT, HEX-HD 1/ANC X 1-1/4 WASHER, LOCK 1/4 MEDIUM BREATHER, AXLE HOUSING VENT
8 9 10	68 912 R1 68 905 R2 890 091 R1 68 929 R2 68 930 R2	SHIM, PINION BRG CAGE -LOWER- SHIM, PINION BRG CAGE -UPPER- SHIM, PINION BEARING CAGE005 THICK- SHIM, PINION BEARING CAGE010 THICK- SHIM, PINION BEARING CAGE032 THICK-	.	465 546 C91 499 989 C91 583 206 C91 472 852 C91	HOUSING, AXLE, ASSY ROUND HOUSING \$ SQUARE HOUSING PRE AAS AAS KIT, WELD STUD
11	454 713 C91 83 968 R1	CAGE, W/CUPS, PINION BEARING BOLT, CAGE TO CARRIER -6-			
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FIG. 14-001 PAGE NO. 6 REV. 4

MT140 GROUP 14-REAR AXEL



TM 5-4210-230-14&P-2

PAGE NO. 7

MT140 GROUP 14-REAR AXEL	TM 5-4210-230-14&P-2 MT140 GROUP 14- REAR AXEL
REF PART NO. NUMBER DESCRIPTION	REF PART NO. NUMBER DESCRIPTION
FIG. 14-002 REAR AXLE ASSEMBLY-CODE 14030	FIG. 14-002 CONTINUED REAR AXLE ASSEMLBY-CODE 14030
12 13 MT-18841A	35
1 54 528 HA ADJUSTER, DIFFERENTIAL BEARING 2- 2 69 016 R93 CARRIER, W/CAPS, DIFFERENTIAL BOLT, CARRIER TO HOUSING 80 305 R1 HEX-HD 7/16NF X 1-1/4 -6- 21 086 R1 HEX-HD 7/16NF X 1-3/4 -2- 80 293 R1 HEX-HD 7/16NF X 2-1/4 -2- 120 383 WASHER, LOCK 7/16 REGULAR -10-	10 683 264 R1 SHIM, PINION BEARING CAGE005 THICK- 52 748 HA SHIM, PINION BEARING CAGE010 THICK- 52 749 HA SHIM, PINION BEARING CAGE032 THICK- 11 454 711 CAGE, W/CUPS, PINION BEARING SHIM, PINION BEARING 11 454 711 CAGE, W/CUPS, PINION BEARING SHIM, PINION BEARING 584 255 C1 BOLT, HEX-HD 9/16NC X 1-1/2, W/PATCH -6-
3 69 023 R92 & BEARING, PINION REAR 4 GEAR SET, RING AND PINION 69 621 R93 5.29 TO 1 RATIO -37-7 TEETH- 69 622 R93 6.17 TO 1 RATIO -37-6 TEETH- 69 614 R93 6.77 TO 1 RATIO -37-6 TEETH- 69 614 R93 6.77 TO 1 RATIO -40-6 TEETH- 69 615 R93 7.17 TO 1 RATIO -43-6 TEETH- 69 017 R1 RIVET, RING GEAR TO DIFF CASE - 14-	12 586 045 C1 PLUG, PIPE SQ-HD 3/4 -FILLERWILL WORK FOR 9409949- 13 586 049 C1 PLUG, PIPE -MAGNETIC - DRAINWILL WORK FOR 337527C1- 14 19 632 R1 NUT, HEX. LOCK 9/16NF -16- 15 454 705 C1 &SEAL, PINION OIL 16 117 804 H NUT, COMPANION FLANGE 103 388 PIN, COTTER 1/8 X 1-3/4
5 306 276 C91 &BEARING, PINION FRONT CONE -2- 917 217 R1 &BEARING, PINION FRONT CUP -2- 7 SPACER, PINION FRONT BEARING 49 422 HA 516 THICK 49 412 HA 516 THICK 49 413 HA 519 THICK 49 414 HA 522 THICK 49 416 HA 522 THICK 49 416 HA 528 THICK 49 417 HA 531 THICK 49 418 HA 534 THICK 49 418 HA 539 THICK 49 420 HA 539 THICK 49 421 HA 543 THICK	17 103 407 PIN, COTTER 3/16 X 1 -2 18 116 163 H LOCK, DIFFERENTIAL BRG ADJUSTER -WILL WORK FOR 13875V2- WORK FOR 13875V2 19 69 018 R1 BOLT, DIFF CARRIER BEARING CAP -4 20 69 177 R1 &GASKET, DIFF TO HOUSING 21 ST 963 &BEARING, DIFFERENTIAL CASE CUP -2 22 ST 2 007 A &BEARING, DIFFERENTIAL CASE CONE -2 23 □ CASE, DIFFFLANGED HALF 24 86 233 H #WASHER, DIFF ERENTIAL SIDE -2 25 ±GEAR, DIFFERENTIAL SIDE -2 26 #SPIDER, DIFFERENTIAL SIDE -2 27 88 015 H #WASHER, DIFF PINION GEAR THRUST -4 28 45 057 □ NUT, HEX, LOCK 1/2NF -8 30 □ CASE DIFF - PIAIN HAUE 145 057
B 52 774 H SHIW, PINION BRG CAGE -LOWER- 9 52 773 HA SHIM, PINION BRG CAGE -UPPER-	32 83 394 R91 SCOOP, DIFFERENTIAL CASE OIL 25 752 R1 BOLT, HEX-HD 1/4NC X 1/2 180 020 BOLT, HEX-HD 1/4NC X 3/4 120 380 WASHER, LOCK 1/4 REGULAR
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FIG. 14-002 PAGE NO. 8

REV. 4

GROUP 15-FUEL TANKS	GROUP 15-FUEL TANKS				
	FIG NO	FICHE LOC			
FUEL PIPES					
BULK, NUMBER OF COPPER TUBING COVERS ONE FOOT LENGTH					
1/4 996061R1					
5/16 996062R1					
	45.004	110.4			
CLIPS AND EXTENSIONS	15-001	H04			
FITTINGS	15-002	H05			
FUEL FUMES FILTER AND MOUNTING					
CODE 15926	15-017	H17			
CODE 16927	15-016	H17			
FUEL PUMP -SUBMERGED IN TANK	15-014	H16			
FUEL TANKS					
CODE 15060	15-008	H10			
CODE 16130					
DIESEL	15-012	H14			
GASOLINE	15-003	H06			
CODE 16282					
30 GALLON TANK	15-003	H06			
48 GALLON TANK	15-010	H12			
CODE 16283	15-004	H06			
CODE 15284	15-009	H11			
CODE 16291	15-006	H07			
CODE 16292	15-006	H07			
CODE 16293	15-004	H06			
CODE 16294	15-010	H12			
CODE 15296	15-011	H13			
CODE 15296	15-013	H15			
CODE 15396	15-015	H16			
CODE 15397	15-020	H19			
CODE 15399	15-021	H20			
CODE 16819	15-006	H08			
CODE 16820	15-007	H09			
FUEL TANK SELECTOR VALVE					
M V404, 446, V345 ENGINES	15-018	H18			
V637 ENGINE	15-019	H18			
STEP AND MODESTY PANEL	15-022	H21			

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-140	GROUP 15-FUEL TANKS			
		FIG NO	FICHE LOC	
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REV. NO. 4 PAGE 1A

1T-140		G	ROUP 15-	FUEL TANKS			- HĪ4
					FIG NO	FICHE LOC	
CAPACITY	FUEL	LENGTH WID	IH DEPIF	PART NUMBER			
30 GAL	GASOLINE	38.4 19.	6 14.8	464762C91			
30 GAL 30 GAL	DIESEL	38.4 19.		484781C92			
32 GAL	GASOLINE	36.7 20.					
36 GAL	DIESEL	36.7 20.		690063C91			
45 GAL	GASOLINE	37 24.		475276C93 -W/STEP-			
48 GAL	GASOLINE	37 24.		47627BC93			
	0/.001.11			-W/O STEP-			
51 GAL	DIESEL	37 24.	2 15.12	476277C94 -W/STEP-			
54 GAL	DIESEL	37 24.		476278C94			
				-W/O STEP-			
57 GAL	GASOLINE	37 25.	27 18.27	476267C94 -LEFT-			
67 GAL	GASOLINE	37 26.		476288C96 -RIGHT-		1	
60 GAL	GASOLINE	66 20.		497992C92-EXC CAL-			
60 GAL	GASOLINE	66 20.		497993C92-FOR CAL-			
63 GAL	DIESEL	37 25.		475269C96 -LEFT-			
63 GAL	DIESEL	37 26.		476270C96 -RIGHT-			
65 GAL	DIESEL	66 20.		690064C91			
						1	
						1	
						1	
					ļ		

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REV. 4 PAGE 1B



DESCRIPTION

REF PART

NO. NUMBER

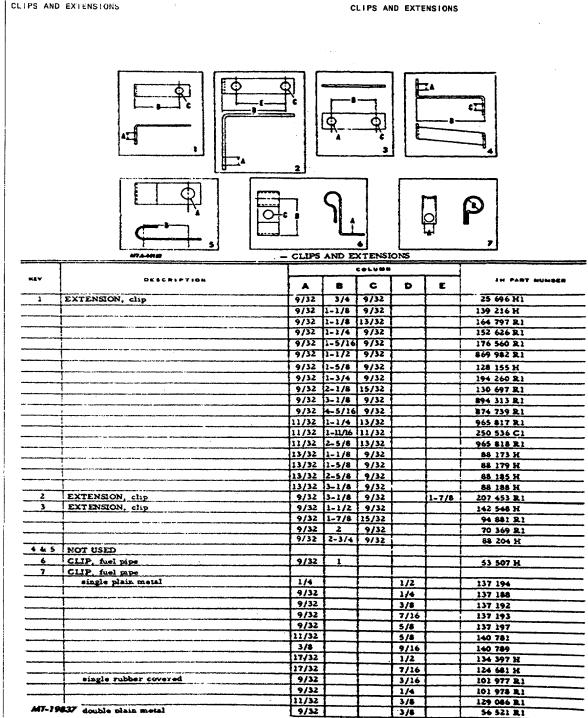
FIG. 15-001



TM 5-4210-230-14&P-2

REF PART NO. NUMBER DESCRIPTION

FIG. 15-001 CONTINUED CLIPS AND EXTENSIONS



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FIG. 15-001 PAGE NO. 2



MT140 GROUP 15-FUEL TANKS MT140 GROUP 15- FUEL TANKS REF PART REF PART NO. NUMBER DESCRIPTION NO. NUMBER DESCRIPTION FIG. 15-002 CONTINUED FIG. 15-002 FITTINGS FITTINGS 14 ELBOW, INVERTED FLARED TUBE 90 DEGREE **E** 50 ST. 250 539 C1 143 343 Ð 1/8 5/16 X 1/4NPT -MALE-PLUG, PIPE SQ-HD 1/4 -BRASS-1/4 -STEEL-3/8 -BRASS-1/2 -BRASS-3/4 -BRASS-3/4 -STEEL-3. 4. 1. 2. 15 112 578 103 878 112 304 113 176 113 177 16 845 R1 a de la compañía de Q 6 - C 6 7. 8. 5. <u>EIÓ</u> **&**-@ NOT USED NIPPLE, PIPE 1/8NPT X 1-3/8 ۲ 16 17 12. 10. n. 9. 192 041 CONNECTOR, INVERTED FLARED TUBE 5/16 X 1/8NPT () () 18 6.0 191 559 16. 15. 13. 14. NOT USED ADAPTER, HOSE 3/8-18 19 20 444 002 P City III CP ٩ 19. 20. 17. 18. MTA-70292 CONNECTOR, FLARED TUBE -MALE-1/4 X 7/16NPT 5/16 X 1/3NPT 3/8 X 1/4NPT 3/8 X 1/4NPT 1/2 X 3/8NPT 5/8 X 1/2NPT 5/8 FLARED TO 1/2 INVERTED FLARED 1 118 748 118 749 110 200 118 750 118 752 116 487 319 665 C1 UNION, FLARED TUBE 5/16 2 118 801 NUT, FLARED TUBE -SHORT-1/4 5/16 3/8 3 116 452 140 381 121 758 ELBOW, 90 DEGREE DOUBLE FLARED TUBE 4 118 811 118 812 232 640 R91 5/16 3/8 7/8 //s
ELBOW, 90 DEGREE FLARED TUBE
1/4 X 1/8NPT -WALE1/4 X 1/4NPT -WALE1/4 X 3/8NPT -WALE5/16 X 1/8NPT -MALE5/16 X 1/4NPT -MALE3/8 X 1/4NPT -MALE3/8 X 3/8NPT -WALE1/2 X 3/8NPT -WALE1/2 X 3/8NPT -WALE1/2 X 3/4NPT -WALE5/8 X 1/2NPT -WALE5/8 X 3/8NPT -WALE5/8 X 3/8NPT -WALE-118 753 28 420 H 425 122 R 118 755 162 135 R 118 755 162 135 R 118 757 300 892 R 300 892 R 300 892 R 109 429 162 135 R 5 NOT USED 6 TEE, FLARED TUBE, 3 WAY 5/16 7 118 806 118 807 3/8 NOT USED TEE, PIPE 1/8NPT -FEMALE-X 1/8NPT -MALE-X 1/8NPT -FEMALE-NOT USED NOT USED 8 9 444 253 10 11 12 TEE, 5/16 INVERTED FLARED TUBE 3 WAY 173 182 BUSHING, REDUCING 1/4 X 1/8 -BRASS-1/4 X 1/8 -STEEL-3/8 X 1/4 1/2 X 1/4 13 112 877 444 013 119 928 144 051

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FIG. 15-002 PAGE NO. 3

MT140 GROUP 15-FUEL TANKS



DESCRIPTION

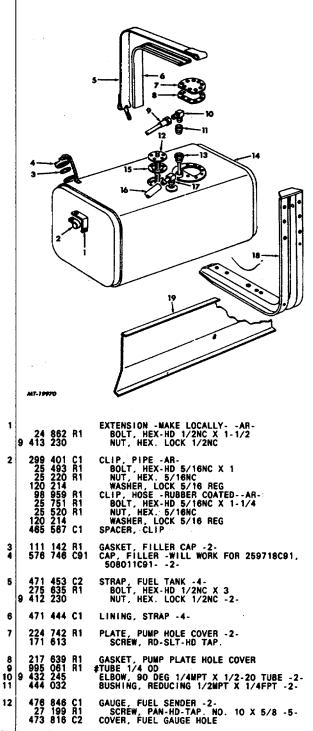
NUN	IDER			DESCRIPTION
FIG	. 15-(fuel		ANE	MOUNTING
	нг. 19		(
1	465	567	C1	SPACER, CLIP
2	98 25 25 120	959 751 520 214	R1 R1 R1	CLIP, RUBBER COATED BOLT, HEX-HD 5/16NC X 1-1/4 NUT, HEX. 5/16NC WASHER, LOCK 5/16
3	427 553	684 791	C1 C1	#HOSE, 5/16 1D CLAMP, HOSE -WILL WORK FOR 279025R91- -AR-
4 5 6 7	481 489 489 490	695 517 700 683	C1 C1 C1 C1	ELBOW, 90 DEGREE 1/4MPT X 1/2 HOSE OUTLET, FUEL GASKET, FUEL OUTLET CAP, FILLER
8	471 275 9 413	501 804 979	C1 R1	STRAP, FUEL TANK -2- Bolt, HEX-HD 3/8NC X 3 NUT, HEX. LOCK 3/8NC -2-
9 10 11	471 464 447	444 762 151	C91	LINING, STRAP -2- Tank, fuel, ASSY -30 Gallon- Breather, Ball Check, ASSY
12	473 26	817 627	C1 R1	GAUGE, FUEL SENDER Screw, Pan-CR-HD TAP. NO. 10-16 X 3/4 SST -5-
	336	024	C1	PLATE, FUEL SENDER GAUGE HOLE
13 14		253		GASKET, FUEL SENDER GAUGE EXTENSION, CLIP - MAKE LOCALLY-
15	9 412	862 230	ni	BOLT, HEX-HD 1/2NC X 1-1/2 NUT, HEX. LOCK 1/2NC Shield Heat Make Locally.
13	25 9413	228 994 708	81 81	SHIELD, HEAT -WAKE LOCALLY- BOLT, HEX-HD 5/16NC X 3/4 -4- NUT, HEX. LOCK 5/16NC -4- WASHER, FLAT 5/16 -4-
16	464 532 414 414 414	585 401 051 052 087	C1 C2 C1 C1 C1	SUPPORT, FUEL TANK FRONT REAR BOLT, HEX-FLG-HD 1/2NF X 1-1/4 -AR- BOLT, HEX-FLG-HD 1/2NF X 1-1/2 -AR- NUT, HEX-FLG 1/2NF -4-
				≱PART NO. COVERS 1 FOOT OF BULK MATERIAL

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MT140 GROUP 15- FUEL TANKS REF PART NO. NUMBER DESCRIPTION

FIG. 15-004

FUEL TANK AND MOUNTING



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FIG. 15-003 PAGE NO. 4 89

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MT-140

GROUP 16-CAB AND/OR BODIES

	AND/OR BODIES		
	FIG NO	FICHE LOC	
AIR CONDITIONER			
COMPRESSOR ASSY COMPRESSOR CLUTCH AND PUBLICY	18-018 18-017	124 J01	
COMPRESSOR DRIVE AND MOUNTING 3208 Engine	16-024	J05	
9.0 LITER ENGINE	18-045	J23	
MV404, MV446 ENGINES	16-034	J13 J06	
DT466, DT14688 ENGINES V345, V392 ENGINES	16-035	J14	
V537 ENGINE CONDENSER HOSE AND FITTINGS	16-025 16-031	308	
		J11	
APPLIQUES, HOOD AND CAB	16-047	К01	
ARM REST	18-005	111	·
ASH TRAY			
CODE 16010 CODES 16030, 16196	16-023	J05 113	
		113	
CAB ASSEMBLY FRAME			
CODE 16030	16-001	106	······
CODE 16196 SHELL	16-051	K06	
	16-002	108	
CAB INTERIOR	16-006	113	
CAE MOUNTING EXCEPT 2125 2155 E2125 MODELS			
EXCEPT 2125, 2155, F2125 MODELS EXC CODES 16010, 18196	18-013	122	·····
FOR CODE 16010 FOR CODE 16196	18-037	J15 K05	
FOR 2125, 2155, F2126 MODELS	18-003	110	
COWL ASSEMBLY			
CODE 16010	16-033	J13	
CODE 16030 CODE 16196	16-001	106 K06	
	10-051	NVO	
			······
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REV. NO. 4 PAGE 1

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MT-140

GROUP 16-CAB AND/OR BODIES

	FIG NO	FICHE LOC	
DOOR ASSEMBLY	18-005	111	
DUCTS, HEATER AND AIR CONTINIONER	5. Sec. 19		n an an trainin an t
W/O HEATER			
LHD RHD	16-030	J10	
CHASSIS BUILT PRIOR TO 8-5-81	16-030	<u></u>	
CHASSIS BUILT 8-5-81 AND LATER W/O AIR CONDITIONER	16-048	K02	
CHD RHD	16-030 16-048	J10 К02	
W/AIR CONDITIONER	16-041	Ĵ2Ô	
ENGINE AND TRANSMISSION COVERS			······
9.0 LITER, D150, D170, D190 ENGINES CODE 16010	16-021	J04	
CODES 16030, 16196	16-040	J19	
DT466, DT4668, DT14668 ENGINES			
CODE 16010	16-022 16-027	J04 J07	at inter
CODE 16030	10-027		
V345, V392, V537, MV404, MV448, 3208 ENGINES EXC 2100 MODEL			
LEFT HAND DRIVE EXC CODE 16196 - SEE TRANSMISSION COVERS-			
FOR CODE 16196	16-046		
RIGHT HAND DRIVE FOR 2100 MODELS	16-040	J19 J19	
FLOOR MATS	16-006	113	
GLOVE BOX -CODE 16010-	16-023	J05	
GRAB HANDLES	16-002	108	
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GROUP 16-CAB AND/OR BODIES

	FIG NO	FICHE LOC	
HEATER ASSEMBLY			
W/O AIR CONDITIONER W/AIR CONDITIONER	16-010	17 19	
HEATER AND AIR CONDITIONER CONTROLS	16-042	J21	
HOOK, COAT	16-002	108	
INSTRUMENT PANELS CODE 18010	16-023	105	· · · · · · · · · · · · · · · · · · ·
CODES 18030, 16196, 16905, 16956	16-023	J05	
RHD	16-049	K04	
NIRRORS, REAR VIEW STANDARD			
EXCEPT 1624, 1724, 1754 MODELS FOR 1624, 1724, 1754 MODELS	16-008	115 J01	
CODE 16865 CODE 16764, 16787	16-018 16-008 16-015	115 123	
	10-015	123	
PLATFORM, DRIVERS -1853FC MODELCODE 18015- INSTRUMENT PANEL AND COVER STEERING PLATFORM	16-053	<u>K09</u>	
STEERING PLAIFURM	10-002	K08	
· · · · · · · · · · · · · · · · · · ·			·
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REV. NO. 4 PAGE 1B 16-INDEX

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GROUP 16-CAB AND/OR BODIES

	FIG NO	FICHE LOC	
SEATS AND CUSHIONS DRIVER - INDIVIDUAL-			
STANDARD	16-012	121 J02	
CODE 16571 CODE 16587	16-038	J15	
CODE 16593	16-039 16-012	J17 121	
CODE 16747 CODE 16905			
BOSTROM WESTCOASTER	18-012	121	
EXCEPT CODE 16905.9204 -WESTCOASTER 1-	18-019	J02	
FOR CODE 16905.9204 -WESTCOASTER II- NATIONAL-CUSH-N-AIRE	18-038 18-039	J15 J17	
PASSENGER - CODES 16748, 16905-	18-012	121	
FULL WIDTH -STANDARD AND CODES 16601, 16905-	16-009	116	
SEAT BELTS -SEE SEAT ILLUSTRATION-			
STEERING COLUMN SEALS AND RETAINERS	10.010	100	
EXCEPT 2125, 2155, F2125 MODELS FOR 2125, 2155, F2125 MODELS	16-043	J22 J23	
	16-008	113	
SUN VISORS	10-000	113	
STAY HODS AND MTG, CAB	16-014	122	
TOOL BOX -CODE 16750-	16-029	JOB	
TRANSMISSION COVER -MV404, MV448, V345, V392, 3208 ENGINES-			
CODE 16010	16-020	J03 J14	
CODE 16030			
WINDSHIELD	16-002	108	
WINDSHIELD WASHERS	16-032	J12	
EXCEPT 2125, 2155, F2125 MODELS FOR 2125, 2155, F2125 MODELS	16-032	110	
WINDSHIELD WIPERS			
ELECTRIC	16-007	114	
AIR	16-028	JOB	
SERVICE CABS			
STANDARDIZED SERVICE CABS ARE SUPPLIED TO COVER A WIDE			
RANGE OF 1H TRUCKS, TO COMPLETELY EQUIP AND INSTALL	-		
THESE STANDARDIZED SERVICE CABS, IT MAY BE NECESSARY TO ADD SUCH ITEMS AS INSTRUMENT PANELS, FLOOR MATS,	+	ŀ	
SEATS, ETC. GENERALLY ITEMS CAN BE USED FROM THE OLD		·····	
CAB.			
THIS PLAN MAKES IT POSSIBLE TO PROVIDE PROMPT DELIVERY IN THAT IT REDUCES THE TOTAL NUMBER OF DIFFERENT CABS		T	
REQUIRED AND PERMITS CARRYING INVENTORY IN QUANTITY TO		ł	
MEET ANTICIPATED DEMANDS.	· · · · · · · · · · · · · · · · · · ·		
IF A COMPLETELY-TRIMMED CAB IS NEEDED -TO REPLACE ONE			
DESTROYED BY FIRE, FOR EXAMPLE-, IT CAN BE ORDERED BY DESCRIPTION -SHOWING TRUCK MODEL AND CHASSIS SERIAL	1		
NUMBER- FROM THE REGIONAL OFFICE. THE REGIONAL OFFICE		1	
WILL THEN ORDER FROM THE FORT WAYNE PARTS DISTRIBUTION CENTER. THIS APPLIES ONLY TO ASSEMBLIES CURRENTLY USED			
IN PRODUCTION.			
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REV. NO. 4 PAGE 2

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16-INDEX

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GROUP 16-CAB AND/OR BODIES

MT-140 GROUP 16-CAB AND/OR BO		1	
	FIG NO	FICHE LOC	
PARTS INCLUDED IN A SERVICE CAB			
ASH RECEIVER TRAY			
BRAKE VALVE MOUNTING PLATE FOR AIR BRAKES			
BRAKE VALVE MOUNIING PLATE FOR HYDRAULIC BRAKES			
CIGAR LIGHIER			
CLEARANCE LIGHTS			
CLUICH PEDAL AND LEVER			
COAT HOOK			
DASH INSULATORS			
DEFROSTER			
DOME LIGHT			
DOOR SEALS			
DOORS WITH GLASS, TRIM AND HARDWARE			
GRAB HANDLE			
HEATER AND AIR CONDITIONER CONTROLS			
HEATER AND AIR CONDITIONER DUCTS			
INSIHUMENT PANELS AND INSTRUMENTS			
RADIO WIRING HARNESS, SPEAKERS AND ANIENNA			
REAR WINDOW			
SPEEDOMETER AND TACHOMETER HEADS			
STEERING COLUMN HOUSING AND SUPPORT BRACKET			
STEERING COLUMN RETAINERS AND SEAL			
SUN VISORS			
SWITCHES			
DIMMER			
FLASHER			
HEADLIGHT			
HEATER			
KEY			
MAGNETIC			
MARKER LIGHT			
STARTER			
WINDSHIELD WASHER			
TRIM PANELS			
WINDSHIELD			
WINDSHIELD WASHERS			
WINDSHIELD WIPER MOTORS W/O ARMS AND BLADES			
WIRING HARNESS AND JUNCTION BLOCK			

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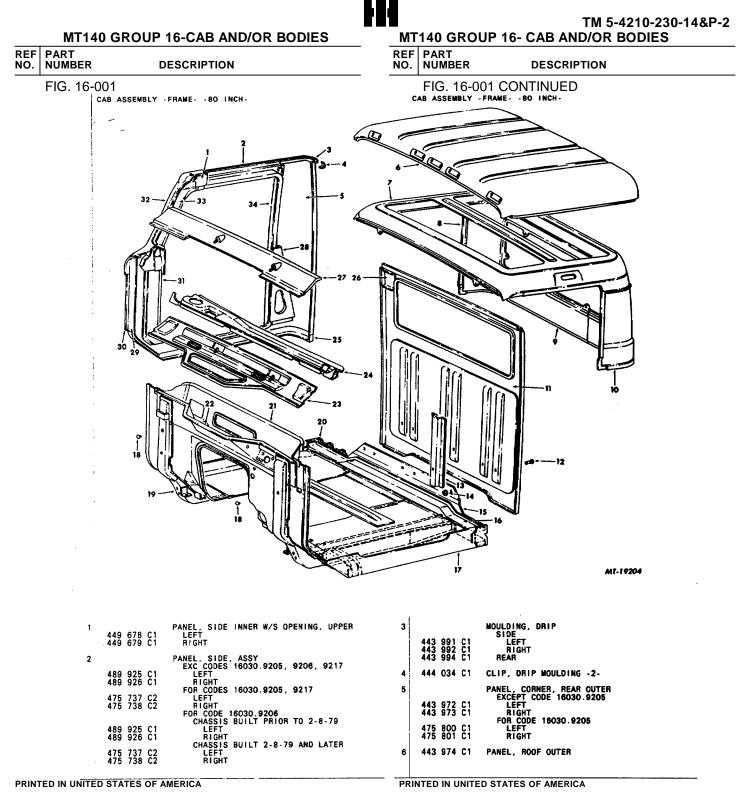


FIG. 16-001

REV. 4

PAGE NO. 4

MT140 GROUP 16-CAB AND/OR BODIES

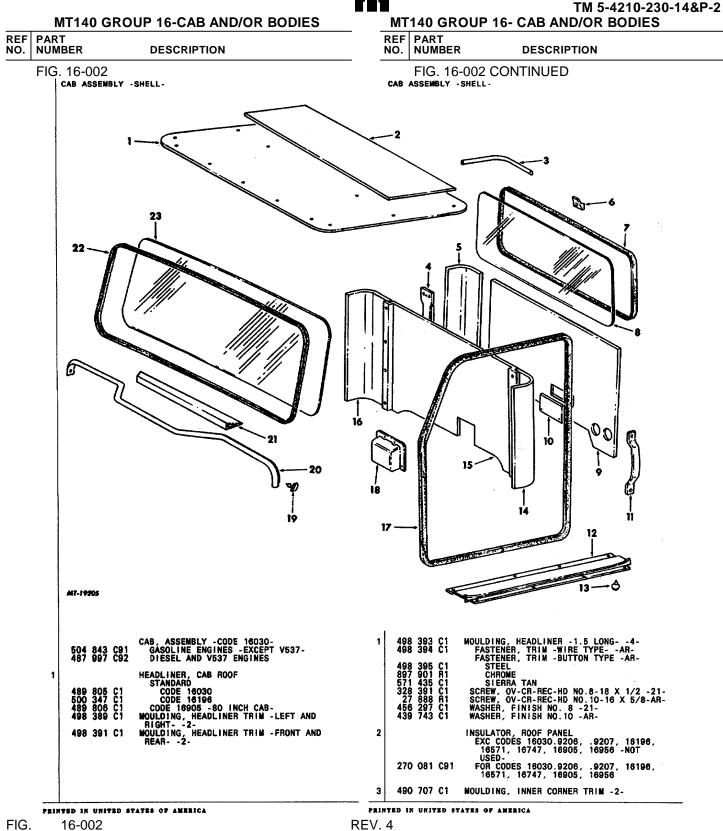
	MT1	40 GROUF	P 16-CAB AND/OR BODIES
REF IO.	PART NUMBEI	र	DESCRIPTION
	FIG. 16	5-001 CON CAB ASSEMBLY	FINUED
	7	498 387 C1 449 709 C2 466 776 C1	PANEL, ROOF INNER EXCEPT CODE 16030.9205 FOR CODE 16030.9205 COVER, AIR HORN VALVE OPENING -\/O AIR HORN-
	8 9 10	444 074 C1 444 068 C1 444 073 C1	PANEL, INNER CORNER, RIGHT PANEL, INNER BACK PANEL, INNER CORNER, LEFT
	11	472 629 C1 572 408 C1 408 941 C1	PANEL, OUTER BACK BRACKET, BRAKE HOSES SCREW, PAN-HD SELF DRILLING #10-16 X 3/4 -2-
	12 13	472 307 C1	RIVET, COLLAR -6- Retainer, back panel trim -see fig. 16-2, ref. no. 4-
	14 15 16 17 18 19 20	456 382 C1 489 497 C1 443 998 C1 444 044 C1 471 597 C1 444 045 C1	FASTENER, BACK PANEL, LOWER -6- Reinforcement, Rear Sill Sill, Rear Sill, Inner Side, Left Plug, Button -2- Underbody -Not Serviced Separately- Sill, Inner Side, Right
	21	490 893 C1 24 392 R1	PANEL -NOT SERVICED- COVER, CLUTCH ROD OPENING SCREW, TAP. PAN-CR-REC-HD NO. 10-16 X 1/2 -3-
	22 23 24	444 052 C1 444 042 C1 444 043 C1	PANEL, AIR INTAKE Panel, Cowl Top Inner Panel, Cowl Rear
	25	443 976 C1 443 977 C1	PANEL, ROCKER, SIDE OUTER LEFT Right
	26	466 739 C1	REINFORCEMENT, CORNER MUFFLER MOUNTING -Right side only-
	27	444 007 C1 27 195 R1	PANEL, COWL TOP INSERT SCREW, PAN-CR-REC-HD NO. 8-18 X 1/2 -4-
		27 204 R1	SCREW, OV-CR-REC-HD NO. 8-18 X 1/2-3-
	28		REINFORCEMENT -NOT SERVICED-
	29	489 877 C1 489 878 C1	PANEL, DASH FILLER LEFT RIGHT
	30	443 979 C2 443 980 C2	PANEL, COWL SIDE, OUTER LEFT RIGHT
	31	444 046 C1 444 047 C1	PANEL, INNER SIDE, LOWER LEFT Right
		444 039 C1 444 040 C1	PILLÁR, BODY HINGE LEFT Right
	32	443 987 C1 443 988 C1	PANEL, WINDSHIELD OPENING, SIDE, OUTER LEFT RIGHT
	33	449 684 C1 449 685 C1	PANEL, WINDSHIELD OPENING, SIDE, INNER LEFT Right
	34	444 026 C1 444 027 C1	FRAME, DOOR OPENING LEFT RIGHT
			RIGHT HAND DRIVE
	22 23 24 27	494 692 C1 494 715 C1 494 763 C1 494 855 C1	PANEL, AIR INTAKE Panel, Cowl Top Inner Panel, Cowl Rear Panel, Cowl Top Insert

TM 5-4210-230-14&P-2

D/OR BODIES	МТ	140 GROL	JP 16- CAB AND/OR BODIES	
	REF NO.	PART NUMBER	DESCRIPTION	
	1.			
IER 6030.9205 10.9205 I VALVE OPENING -W/O AIR NRNER, RIGHT ICK		496 380 C1 496 382 C1 25 493 R1 172 482 140 483 H 120 214 120 382	-FRAME80 INCH- *PLATE, ASSY MASTER CYLINDER_MTG HYDRAULIC BRAKES AIR BRAKES BOLT, HEX-HD 5/16NC X 1 -9- BOLT, HEX-HD 3/8NC X 3/4 -3- BOLT, HEX-HD 3/8NC X 1-1/4 -2- WASHER, LOCK 5/16 -9- WASHER, LOCK 3/8 -AR-	
NRNER, LEFT NCK HOSES NSELF DRILLING #10-16 X			*PARTS NOT ILLUSTRATED	
6- PANEL TRIM -SEE FIG. 4- PANEL, LOWER -6- REAR SILL				
E, LEFT Serviced Separately- E, Right				
ICED- IOD OPENING An-CR-REC-HD NO. 10-16 X				
KE INNER R				
SIDE OUTER				
CORNER MUFFLER MOUNTING				
INSERT -REC-HD NO. B-18 X 1/2				
REC-HD NO. 8-18 X 1/2-3- Not serviced-				
LER				
E, OUTER				
DE, LOWER				
NGE				
LD OPENING, SIDE, OUTER				
LD OPENING, SIDE, INNER				
NING				
ND DRIVE				

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FIG. 16-001 PAGE NO. 5 PRINTED IN UNITED STATES OF AMERICA



PAGE NO. 6

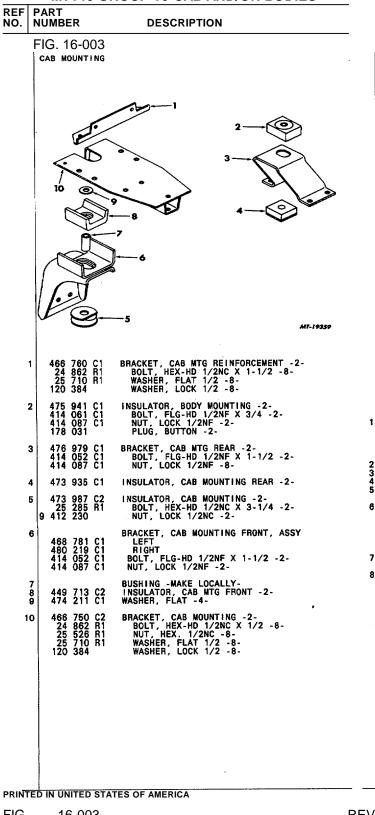
MT140 GROUP 16-CAB AND/OR BODIES

		OF 10-CAB AND/OR BODIES	MITHU GROUP TO- CAD AND/OR BODIES
REF PAR NO. NUN	T IBER	DESCRIPTION	REF PART NO. NUMBER DESCRIPTION
	. 16-002 CO	NTINUED	FIG. 16-002 CONTINUED
	4 482 557 C1 163 162	RETAINED BACK DANEL TRIM 2	15 PANEL, INNER TRIM, CENTER STANDARD 15 PANEL, INNER TRIM, CENTER STANDARD 16 STANDARD 17 EXC D190, DT466, DT466B, DT1466B, 3208 ENGINES -NOT USED- 489 688 C1 FOR D190, DT466, DT466B, DT1466B, 3208 ENGINES 18 GODES 16571, 16593, 16747, 16956, 16587 489 687 C1 EXCEPT THACTOR MODELS 489 688 C1 FOR TRACTOR MODELS 489 686 C1 W/TRAILER CONN 489 685 C1 W/O TRAILER CONN 489 685 C1 W/O TRAILER CONN 489 685 C1 W/D TRAILER CONN 489 685 C1 W/O TRAILER CONN CODE 16905.9204 CODE
Į	270 081 09	.9213, .9218, 16571, 16587, 16593, 16905, 16956	489 688 C1 FOR TRACTOR MODELS CODE 16905.9203 489 686 C1 W/TRAILER CONN 489 685 C1 W/O TRAILER CONN CODE 16905.9204 EXCEPT DT466, DT1466B, 3208 ENGINES -NOT USED- 489 686 C1 FOR DT466, DT1466B, 3208 ENGINES 328 391 C1 SCREW, 0V-CR-REC-HD NO. 8-18 X 1/2 -11
(412 567 C1 27 210 R1	HOOK, COAT SCREW, OV-CR-REC-HD NO. 10-16 X 1	489 686 C1 FOR DT466, DT1466B, 3208 ENGINES 328 391 C1 SCREW, OV-CR-REC-HD NO. 8-18 X 1/2 - 11 27 888 R1 SCREW, OV-CR-REC-HD NO. 10-18 X 5/8 -4- 456 297 C1 WASHER, FINISH NO. 8 CONTERSUNK -11- 439 743 C1 WASHER, FINISH NO. 10 -4-
1	495 419 C3	122.0 100000	TO PANEL, INNER IRIM, HIGH
\$	495 420 C1 270 081 C91	GLASS, REAR WINDOW INSULATOR, BACK PANEL, CENTER EXC CODES 16030.9206, .9212, .9213, .9218, 16571, 16587, 16593, 16747, 16905, 16956 -NOT USED-	EXC D190, DT466, DT466B, DT1466B, 3208 ENGINES -NOT USED- 489 690 C1 FOR D190, DT466, DT466B, DT1466B, 3208 ENGINES 489 690 C1 CODES 16571, 16587, 16593, 16747 CODES 16956 489 690 C1 CAB CODE 16030 501 856 C1 CAB CODE 16196 489 683 C1 CODE 16905
10		16905, 16956 Not USED	326 391 C1 SCREW, OV-CR-REC-HD NO. 8-18 X 1/2 -5- 27 888 R1 SCREW, OV-CR-REC-HD NO. 10-18 X 5/8-AR- 456 297 C1 WASHER, FINISH NO. 8 COUNTERSUNK -5- 420 742 C1 WASHER, FINISH NO. 8 COUNTERSUNK -5-
11	456 387 C1 27 244 R1 27 231 R1 27 304 R1	HANDLE, OUTSIDE GRAB -2- SCREW, OV-CR-REC-HD 5/10NC X 1 -4- SCREW, PAN-CR-REC-HD 5/10NC X 3/4 -4- WASHER, LOCK 5/16 -4-	439 743 C1 WASHER, FINISH NO. 10 -AR- 17 449 765 C1 TRIM, CAB DOOR OPENING -2- 18 489 724 C1 COVER, BRAKE VALVE -CODE 16905- 19 413 662 C1 FASTENER, HOOD LEDGE SEAL -AR-
12		PLATE, SCUFF -2- Screw, Pan-CR-REC-HD NO. 8-18 X 3/4	
	456 297 C1 27 306 R1	-18- WASHER, FINISH NO. 8 -8- WASHER, FLAT NO. 8 -8-	360 212 C1 CLIP, SEAL COWL 21 475 811 C92 SEAL, HOOD TO COWL, ASSY -WILL WORK FOR
15 14		3208 ENGINES CODES 16571, 16587, 16593, 16747 CODE 16956 CAB CODE 16030 CAB CODE 16030	23 443 995 C1 GLASS, WINDSHIELD RIGHT HAND DRIVE 2 270 081 C91 INSULATOR, ROOF PANEL -CODE 16030.9211-
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	16-002		REV. 4

TM 5-4210-230-14&P-2 MT140 GROUP 16- CAB AND/OR BODIES

PAGE NO. 7





TM 5-4210-230-14&P-2

-	MT	140	GR	OUP 16-	CAB AND/	OR BODIES
_	REF NO.	PAR NUN			DESCRIPTIO	ОМ
	WINDS	-	-	-004 HER 2		9 5
	MT-10175		•-			
1	485 172 25 120	207 455 520 214	C1 B1	BRACKET, W SCREW, T NUT, HEX WASHER,	ASHER BOTTLE AP. HEX-HD 5, . 5/16NC LOCK 5/16 -2	-NOT AS ILLUS- /16NC X 3/4 -
2 3 4 5		693 520 692 691		CAP, TUBE SEAL, O-RI BLOCK, JUN BLOCK, JUN	CHIUN -Z-	
8	990 289 144 299 172	016 862 226 401 455	C1 C1 C1	GROMMET, H	ER, 5/321D - ABLE LOCK OSE UM -W/DIESEL AP. HEX-HD 5.	
7		690		CAP, RESER		
8		885 222 110 707		WASHER,	W/PUMP AND X-HD 1/4NC X LOCK 1/4NC FLAT 1/4 -3-	
	295	417	C91	ONLY-	OVERS 1 FOOT	HER -W/AIR WIPERS BULK MATERIAL

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16-003 FIG. PAGE NO. 8 REV.4

MT140 GROUP 16-CAB AND/OR BODIES MT140 GROUP 16- CAB AND/OR BODIES MT140 GROUP 16- CAB AND/OR BODIES

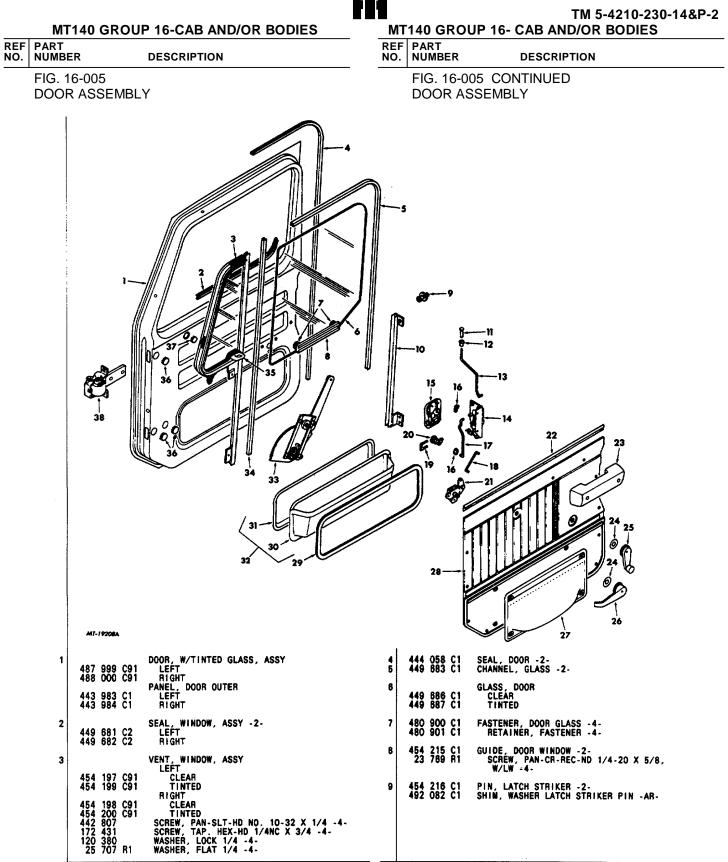
PART NUMBER	DESCRIPTION	REF NO.	PART NUMBER	DESCRIPTION

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REV. 4

PAGE NO. 9



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MT140 GROUP 16-CAB AND/OR BODIES

MT140 GROUP 16-CAB AND/OR BODIES				
	R	DESCRIPTION		
FIG. 16-005 CONTINUED				
DOOR ASSEMBLY				
10	466 753 C1 466 754 C1 444 075 C1 172 431 120 380 120 392	RETAINER, W/BRACKETS, GLASS RUN CHANNEL LEFT RIGHT RETAINER, GLASS RUN CHANNEL -2- SCREW, TAP. HEX.HD 1/4NC X 3/4 -6- WASHER, LOCK 1/4 REGULAR -6- WASHER, PLAIN 1/4 -8-		
11 12		KNOB, DOOR LOCK -2- Escutcheon, lock knob -2-		
13	484 299 C1 484 300 C1	ROD, REMOTE DOOR LOCK Left Right		
14	477 257 C92 477 258 C92	LATCH, DOOR, ASSY LEFT Right		
15	475 930 C91 428 075 C1	HANDLE, DOOR OUTER, ASSY -2- NUT, HEX. NO. 10-24, W/LW -8-		
16	482 755 C91	CLIP, ROD END -8-		
17	477 024 C2 477 025 C2	ROD, DOOR LOCK KEY CYLINDER Left Right		
18 19	477 023 C1 423 745 C1	ROD, REMOTE DOOR LOCK -2- Retainer, cylinder Housing Lock -2-		
20	474 621 C1 474 622 C1	LOCK, ASSY LEFT RIGHT		
21	449 768 C91 449 769 C91 191 983	CONTROL, REMOTE, ASSY Left Right Screw, Flat-Cr-Rec-HD 1/4NC X 5/8 -16-		
22	475 697 C1	RETAINER, DOOR TRIM PANEL -CODE 16905- -2-		
	163 162	SCREW, PAN-CR-REC-HD NO.8-18 X 18 -8-		
23	490 768 C91 490 769 C91 160 544	REST, ARM -2- Standard Code 16805 Screw, Pan-CR-REC-HD 1/4NC X 3/4 -4-		
24	286 578 C1	WASHER, DOOR INSIDE HANDLE -CODE 16905- -4-		
25	475 196 C1 286 565 C1	HANDLE, REGULATOR -2- SCREW, SOCKET, HEX-HD NO. 10-24 X 5/8 -2-		
26	454 252 C1 286 565 C1	HANDLE, DOOR REMOTE -2- Screw, Socket, Hex-HD NO. 10-24 X 5/8 -2-		
27	490 767 C1 328 391 C1	POCKET, MANIFEST -CODE 16905-2- SCREW, OV-CR-REC-HD NO. 8-18 X 1/2 -8-		
28	490 770 C1 490 771 C1 328 391 C1	PANEL, DOOR TRIM -CODE 169052- LEFT Right Screw, OV-CR-REC-HD NO. 8-18 X 1/2-14-		
29 30 31 32	449 680 C1 444 063 C1 466 717 C1	RETAINER, ACCESS DOOR -2- CASE -NOT SERVICED SEPARATELY- COVER, ACCESS DOOR INNER PANEL -2- CASE, DOOR DISPATCH, ASSY		
33	449 766 C91 449 767 C91 160 221	REGULATOR, WINDOW, ASSY LEFT RIGHT SCREW, PAN-CR-REC-ND NO. 12-24 X 1/2		
	125 774	-8- WASHER, LOCK -8-		
34 35 36	454 229 C1 162 300 R1 475 212 C1	CHANNEL, GLASS RUN HANDLE, VENTILATOR WINDOW LOCKING -2- PLUG, BUTTON -20-		

TM 5-4210-230-14&P-2

М	T140 GROUP 16- CAB AND/OR BODIES						
REF NO.	PART NUMBER	DESCRIPTION					
	FIG. 16-005 CONTINUED DOOR ASSEMBLY						
37	454 178	PLUG, BUTTON -2-					
38	475 340 C91 475 341 C91	HINGE, DOOR, ASSY UPPER LEFT RIGHT LOWER_					
	475 342 C91 475 343 C91 472 683 C1 393 014 C91 133 322 R1	LEFT RIGHT SCREW, SEMS 3/8-16 X 1-1/4 -8- SCREW, HEX-HD 5/16MC X 3/4 -12- WASHER, FLAT 11/32 X 1 X 3/16 -12- BRACKET, UPPER HINGE REINFORCEMENT					
	449 700 C1 449 701 C1	LEFT RIGHT					
	196 983 R92 163 162	BOX, ASH ASSY, REAR DOOR MOUNTED -CODE 16196- Screw, Pan-HD-CR, Self-Drill NO. 8-18 X 1/2 -3-					
		*PARTS NOT ILLUSTRATED					
	· .						
-							
	,						
-							

FIG. 16-005 PAGE NO. 11 PRINTED IN UNITED STATES OF AMERICA

	T BER		DESCRIPTION	REF NO.	PART NUMBE	R	DESCRIPTION
	16-006 cab inter	IOR		CAB I	FIG. 1	6-006	CONTINUED
						-1	
1	490 686 490 684 27 198 495 784 496 712	C91 R1 C1	VISOR, SUN -2- STANDARD AND CODES 16700, 16748 CODE 18905 SCREW, PAN-CR-REC-HD NO. 10-16 -3- SCREW, OV-CR-REC-HD NO. 10-32 X 3/4-3- PLUG, VISOR		702 C1 704 C1	COVER, STAN EX FO	INSTRUMENT PANEL, RIGHT DARD Cept code 16956 R code 16956 16905 Cept code 18956
2	456 328		CLIP, SUN VISOR SCREW, OV-CR-REC-HD NO.10-16 X 1/2-2-	490 27 456	703 C1 705 C1 120 R1 107 C1	FO	R CODE 16956 PAN-CR-REC-HD NO 8-32 X 3/8
3	490 700 490 701 467 583	C1 C1	COVER, INSTRUMENT PANEL, LEFT STANDARD CODE 18905 SCREW, TAP. PAN-CR-REC-HD NO. 8-18 X	27 445 120	069 R1 427 391	WASHE	, PAN-CR-REC-HD NO.10-16 X 1/2 OV-CR-REC-HD NO. 8-18 X 1 -2- Spring NO. 8-32 R, FLAT NO. 10 COVER TO REAR COWL -WILL WORK 43184C1- INSTRUMENT PANEL, ASSY
	24 392 452 885		1/2 -AR- SCREW, PAN-CR-REC-HD NO.10-16 X 1/2 -AR- SEAL, INSTRUMENT PANEL	489 451	489 C1 324 C1 392 R1	W/O W/AI	AIR CONDITIONER R CONDITIONER
4	479 027 452 588	C91	APPLIQUE, INSTRUMENT PANEL -CODE 16905- PANEL, DEFROSTER -2-		392 N1 391 944 C1	- AR- WASHE	, PAN-CR-REC-HD NO.10-16 X 1/2 R, Flat No. 10 -5- Instrument Panel Frame, Assy
	24 379 437 693	R1 -	SCREW, PAN-CR-REC-HD NO.8-18 X 1-2-9- CAP, TUBE -2-		606 C91 178 C1	OUTLET	ASSY -2- REGISTER
5	451 497 571 972	C1 C1	W/TRACTOR AND TRUCK W/4 WHEEL TRAILER	10 452	607 C91 178 C1	OUTLET	, CENTER, ASSY REGISTER
	24 379		APPLIQUE, HEATER PANEL -CODE 16905-	11		COVER, COVER,	TRANS-SEE SEPARATE ILLUSTRATION- ENG -SEE SEPARATE ILLUSTRATION-
	479 027 571 959	CI	W/TRUCK W/O 4 WHEEL TRLR CONNECTION W/TRACTOR AND TRUCK W/4 WHEEL TRAILER Connection				
6	481 384 27 573	C91 R1	TRAY, W/HOUSING, ASH, ASSY SCREW, OV-CR-REC-HD NO.6-20 X 1/2 -3-				

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FIG. 16-006

PAGE NO. 12

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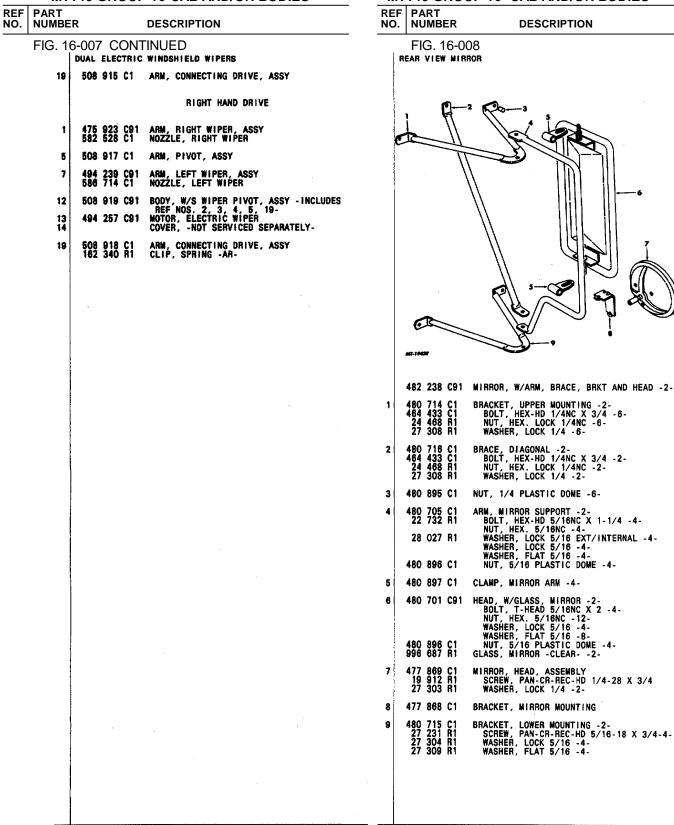
MT140 GROUP 16-CAB AND/OR BODIES

WIT 140 GROUP 10-CAB AND/OR BODIES	MITHO GROOP TO- CAB AND/OR BODIES
REF PART NO. NUMBER DESCRIPTION	REF PART NO. NUMBER DESCRIPTION
FIG. 16-006 CONTIUED	FIG. 16-007 DUAL ELECTRIC WINDSHIELD WIPERS
13 MAT, FLOOR CODE 16000.9203 489 930 C1 FRONT 489 484 C1 REAR CODE 16000.9204	
FRONT 492 608 C1 D150, D170, D190 ENGINES 489 360 C1 DT466, 4668, DTI4668 ENGINES 489 484 C1 REAR CODE 16000.9209	•
FRONT 492 608 C1 MV404, MV446, V537, 3208 ENGIN 489 360 C1 DT466, DT1466B ENGINES 489 484 C1 REAR	
CODE 16000.9215 505 298 C1 FRONT 501 881 C1 REAR 501 896 C1 INSULATOR, SOUND DEADENER, REAR CODE 16905.9203 FRONT	
492 609 C1 D150, D170, D190 ENGINES 489 361 C1 D1466, DT1466B ENGINES 489 931 C1 V345, V392, MV404, MV446, 3208	
ENGINES 489 485 C1 REAR -W/CODES 18571, 16593, 1674 18956- CODE 16905.9205 FORM	
FRONT 492 609 C1 V537, 3208 ENGINES 489 361 C1 D1466, DT1466B ENGINES 489 485 C1 REAR -V537 ENGINE- 435 292 C1 FASTENER, FLOOR MAT -AR-	
RIGHT HAND DRIVE	
7 494 757 C1 PANEL, CLUSTER 13 MAT, FLOOR CODE 18000.9211	
FRONT 497 357 C1 V345 ENGINE 497 358 C1 MV404, 9.0 LITER ENGINES 489 484 C1 REAR	AT-TOTING
#PART NO. COVERS 1 FOOT OF BULK MATER	NAL 1 475 924 C91 ARM, RIGHT WIPER, ASSY
	582 529 C1 NOZZLE, RIGHT WIPER 2 339 544 C1 NUT, CAP -2-
	3 138 542 WASHER, LOCK -2- 4 966 782 R1 DRIVER, KNURLED -2- 5 508 914 C1 ARM, Pivot, ASSY 6 148 194 R1 CLIP, WIPER BODY PIVOT
	7 475 923 C91 ARM, LEFT WIPER, ASSY 582 528 C1 NOZZLE, LEFT WIPER 494 729 C1 CLIP, LOCK -ON AUXILIARY ARM-
	8 475 925 C1 BLADE, WIPER, ASSY -2- 9 469 858 C1 KNOB, SWITCH, ASSY 10 363 423 C1 NUT, MOUNTING 11 470 249 C91 SWITCH, W/S WIPER, ASSY
	12 508 916 C91 BODY, W/S WIPER PIVOT, ASSY -INCLUDES REF NOS. 2, 3, 4, 5, 19- 25 752 R1 BOLT, HEX-HD 1/4NF X 1/2 -6- 120 380 WASHER, LOCK 1/4 REGULAR -6-
	13 471 496 C91 MOTOR, ELECTRIC WIPER 25 228 R1 BOLT, HEX-HD 4/16NC X 3/4 -3- 120 214 WASHER, LOCK 5/16 -3-
	14 571 276 C1 COVER, W/SPRING AND TERMINALS 26 000 R1 SCREW, HEX-HD NO. 8-32 X 3/8 -3- 131 015 WASHER, FLAT NO. 3 -3-
	15 GEAR -NOT SERVICED SEPARATELY- 16 MOTOR -NOT SERVICED SEPARATELY- 17 BRACKET -NOT SERVICED SEPARATELY- 18 491 673 C1
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TM 5-4210-230-14&P-2 MT140 GROUP 16- CAB AND/OR BODIES

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REV.4



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TM 5-4210-230-14&P-2 MT140 GROUP 16- CAB AND/OR BODIES



MT140	GROUI	P 16-CAB AND/OR BODIES		■ MT [.]	140 GR	٦ /OUP 16- CAB AND	M 5-4210-230-14&P-2 OR BODIES
REF PART NO. NUMBER		DESCRIPTION		REF	PART		
FIG. 16-00						6-009 CONTINUED	
FOLI	L WIDTH SE	AI	67	474	WIDTH SE 774 C1 842 C91	SCREW, TAP. HEX-HD 5/16N	IC X 1/2 -4-
		\bigwedge	8	244	845 R2 480 C1	BELT, SEAT -3- BOLT, SEAT BELT ANCHOR	
	ţ		9	449 393 120 133 115	739 C1 014 C91 214 322 R1 729		3/4 -AR- -3/18 -AR-
			10 11		846 C1 955 C91		AT RIGHT
) I			467 48 120 27	455 C1 913 K 384 576 R1	*HANDLE, SEAT BACK ADJUST SPACER, 1/2 X 3/4 WASHER, LOCK 1/4 NUT, CROWN 1/2NC	ER -CODE 16905-
						RIGHT HAND DRIVE	
· •			7 11	494 494	536 C1 552 C1	ADJUSTER, W/O HANDLE SEA ADJUSTER, W/HANDLE, SEAT	T LEFT Right
Ŕ						*PARTS NOT ILLUSTRATED	
,	∇	•					
489	9 896 C92 9 897 C91 0 663 C1 0 659 C1	CUSHION, SEAT, ASSY STANDARD AND CODES 16196, 16601 CODE 16905 COVER, SEAT, ASSY STANDARD AND CODES 16196, 16601 CODE 16905					
2	9 898 C91	CUSHION, BACK, ASSY STANDARD AND CODE 16601					
489 25 25 487	5 708 R1 7 657 C1	CODE 16196 FRONT SEAT REAR SEAT BOLT, HEX-HD 5/10NC X 1 -2- WASHER, FLAT 5/16 -2- WASHER, FLAT -PLASTIC2-					
467	9 899 C91 7 414 C1	CODE 16905 WASHER, SEAT BACK ADJUSTER LATCH ROD -2-					
467	7 462 C1 7 463 C1	PAWL, BACK CUSHION ADJUSTER -2- Spring, Seat Back Adjuster Left					
467	7 464 C1 7 428 C1	RIGHT SPACER, SEAT BACK ADJUSTER LATCH COVER, BACK, ASSY STANARD AND CODE 18801					
501 490	0 664 C1 1 461 C1 0 664 C1	STANDARD AND CODE 16601 Code 16196 Front Seat Rear Seat					
	0 660 C1 7 415 C1 6 578 C1	CODE 16905 SCREW, SHOULDER 5/18NC X 7/16 -2- WASHER, FLAT -PLASTIC2-					
4 467	7 879 C1 4 773 C1	BRACKET, FRONT SEAT ADJUSTER SUPPORT-2- SCREW, TAP. HEX-HD 1/4NC X 3/4 -8-					
1	7 880 C1	BRACKET, REAR SEAT ADJUSTER SUPPORT -2-					
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FIG. 16-009

PAGE NO. 15

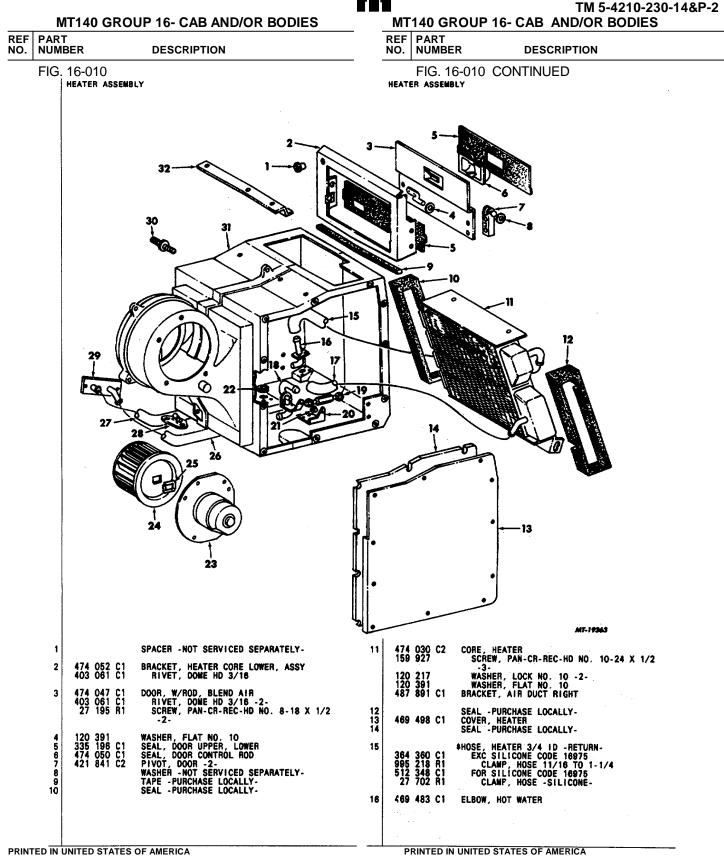


FIG. 16-010

PAGE NO. 16



TM 5-4210-230-14&P-2

MT140 GROUP 16-CAB AND/OR BODIES

	MI140 GROUP 16-CAB AND/OR BODIES MI140 GROUP 16- CAB AND/OR BODIES							
REF NO.	PAR NUN	RT DESCRIPTION			REF NO.			
	FIG	IG. 16-010 CONTINUED						
	17	364 359 (995 218 5 512 347 (27 702 5	Ř1 C1	<pre>\$HOSE, HEATER 5/8 ID -SUPPLY- EXC SILICONE CODE 18975 CLAMP, HOSE 11/18 TO 1-1/4 FOR SILICONE CODE 16975 CLAMP, HOSE -SILICONE-</pre>				
	18 19 20 21 22	474 072 (426 160 (479 667 (338 982 (468 307 (C1 C1 C1	VALVE, HEATER ROD, VALVE ASSY Bracket, Heater Valve Mounting Nut, Push Grommet, Special				
	23	469 455 (471 207 (C1 C91	MOTOR, HEATER Harness, Heater				
	24	465 502 (144 562 474 080 (491 431 (491 432 (C1 C1	WHEEL, BLOWER NUT, HEX. NO. 10-32 CLIP, BALANCE -AR- 4.0 GRAINS 7.3 GRAINS 11.7 GRAINS				
	25	469 453 (C 1	SPACER, BLOWER WHEEL				
	26	364 360 (995 218) 512 348 (27 702)	R1 C1	<pre>\$HOSE, HEATER 3/4 ID -RETURN- EXC SILICONE CODE 16975 CLAMP, HOSE 11/16 TO 1-1/4 FOR SILICONE CODE 16975 CLAMP, HOSE -SILICONE-</pre>				
	27	364 359 (995 218 512 347 (27 702	R1 -	<pre>\$HOSE, HEATER 5/8 [DSUPPLY- EXC SILICONE CODE 16975 CLAMP, HOSE 11/16 TO 1-1/4 FOR SILICONE CODE 16975 CLAMP, HOSE -SILICONE-</pre>				
	28	469 458 (C1	RESISTOR, ASSY				
	29	491 427 (24 390 i		SEAL, HEATER TUBES -WILL WORK FOR 489497C2- Screw, Pan-CR-Rec-Hd No. 10-16 X 1/2 -2-				
	30	454 184 (C1	STUD, DOUBLE END -4-				
	31	468 305 (403 061 (C91 C1	CASE, HEATER ASSY Rivet, dome HD 3/16				
	32	469 485 (C1	BRACKET, HEATER CORE UPPER				
		864 441 864 443 864 461 864 453 864 444	R1 R1 R1	*NIPPLE, HOSE 1/2NPT X 3/4 ID HOSE 3/4NPT X 5/8 ID HOSE 3/4NPT X 5/8 ID HOSE -90 DEGREE- 3/4NPT X 3/4 ID HOSE -45 DEGREE- 3/4NPT X 3/4 ID HOSE *ELBOW. HOSE				
		864 458 864 450 864 452 117 219 532 404 (R1 R1	1/2NPT X 5/8 ID HOSE 1/2NPT X 3/4 ID HOSE -45 DEGREE- 5/8NPT X 3/4 ID HOSE -45 DEGREE- *ADAPTER, PIPE REDUCER 1.ONPT X 3/4NPT *BRACKET, HOSE -AT COILV345, V392 ENGINES-				
				\$PART NO. COVERS 1 FOOT BULK MATERIAL				
				*PARTS NOT ILLUSTRATED				

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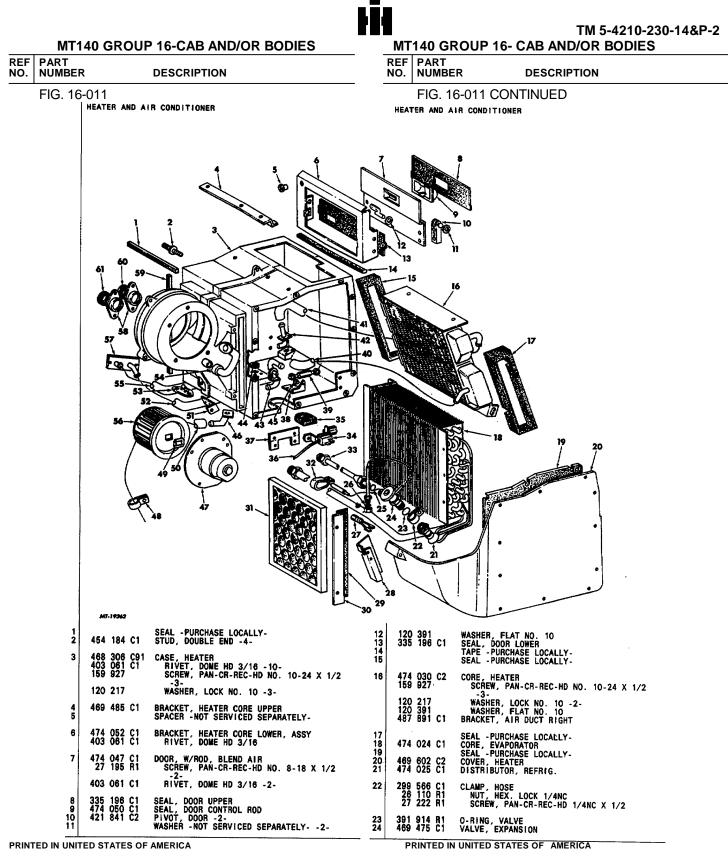


FIG. 16-011

PAGE NO. 18

		40 GROU	P 16- CAB AND/OR BODIES			OUP 16-	CAB AND/OR BODIE
		ર	DESCRIPTION				DESCRIPTION
NO.	PART NUMBEF FIG. 1 1 2 3 4 5 6 7 8	6-013 CAB MOUNTING 432 449 25 285 R1 474 211 C1 449 713 C2 468 781 C1 444 052 C1 414 052 C1 414 052 C1 414 087 C1 9 412 230 178 031	DESCRIPTION DESCR		F PART	-014 D MOUNTING MOUNTING S S S S S S S S S S S S S	DESCRIPTION
	8 9 10 11 12	178 031 25 507 R1 475 941 C1 477 525 C1 414 052 C1 414 087 C1 473 935 C1	PLUG, BUTTON -4- BOLT, HEX-HD 1/2NC X 3-3/4 -8- INSULATOR, BODY MOUNTING -2- BRACKET, CAB REAR MOUNTING -2- BOLT, FLG-HEX-HD 1/2NF X 1-1/2 -4 NUT, LOCK 1/2NF -4- INSULATOR, CAB REAR MOUNTING -2-	-			
]						

TM 5-4210-230-14&P-2 CAB AND/OR BODIES

TM 5-4210-230-14&P-2

MT140 GROUP 16- CAN AND/OR BODIES

REF NO.	PART NUMBE		DESCRIPTION
	FIG. 1	6-015 REAR VIEW WIF	ROR
		¢	
		C. C.	
		482 242 C91 490 845 C91 482 242 C91 490 845 C91	MIRROR, W/ARM, BRACE, BRKT AND HEAD -2- Code 16764 Code 16787 Code 169805 Except Canada For Canada
	1	482 199 C1 464 433 C1 24 468 R1 27 308 R1 480 895 C1	BRACKET, UPPER MOUNTING -2- BOLT, HEX-HD 1/4NC X 3/4 -4- NUT, HEX. LOCK 1/4NC -4- WASHER, LOCK 1/4 -4- NUT, 1/4 PLASTIC DOME -4-
	2	482 201 C1 464 433 C1 24 468 R1 27 308 R1 480 895 C1	BRACE, DIAGONAL -2- BOLT, HEX-HD 1/4NC X 3/4 -2- NUT, HEX. LOCK 1/4NC -2- WASHER, LOCK 1/4 -2- NUT, 1/4 PLASTIC DOME -2-
	3 4	482 205 C1 482 206 C1	RETAINER, SPRING -2- Spring, Arm Mounting -2-
	5	482 208 C1 464 433 C1 178 474	CAM, MIRROR ADJUSTMENT -2- BOLT, HEX-HD 1/4NC X 3/4 -4- NUT, HEX. 1/4NC -4- WASHER, FLAT 1/4 -4-
	6 7	482 207 C1 482 209 C1	WASHER, SPECIAL -2- STABILIZER, WIRROR CAM, ASSEMBLY -2-
	8	482 198 C2 490 830 C2	ARM, MIRROR SUPPORT -2- Code 16784 Code 16787 Bolt, Hex-HD 5/16NC X 1-3/8 -Bottom Mounting2- Bolt, Hex-HD 5/16NC X 1-5/8 -Top
		19 277 R1 27 309 R1	MOUNTING2- NUT, HEX. LOCK 5/16NC -4- WASHER, FLAT 5/16 -10-

MT140 GROUP 16- CAB AND/OR BODIES

		16- CAB AND/OR
REF NO.	PART NUMBER	DESCRIPTION

FIC	16-015 CONTINUED
FIG.	

REAR VIEW MIRROR

9 480 897 C1 CLAMP, MIRROR ARM -4-

10	480 706 C91 19 277 R1 138 486 27 309 R1 480 896 C1 411 826 C1	HEAD, W/GLASS, MIRROR -2- NUT, HEX. LOCK 5/16NC -12- WASHER, LOCK 5/16 -4- WASHER, FLAT 5/16 -8- NUT, 5/16 PLASTIC DOME -4- GLASS, MIRROR -CLEAR2-
----	--	---

11	27 2	31 R1	BRACKET, LOWER MOUNTING -2- SCREW, PAN-CR-REC-HD 5/16-18 X 3/4	- 4 -
	27 30	04 R1 09 R1	WASHER, LOCK 5/16 -4- Washer, Flat 5/16 -4-	

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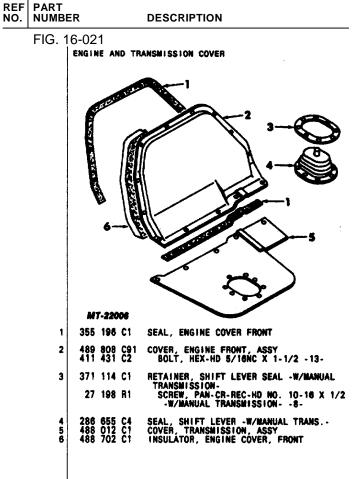
FIG. 16-015 PAGE NO. 22

REF	PART		
NO.	NUMBER		DESCRIPTION
	FIG. 16-0	019 CON	TINUED
	DR	VER SEAT	
	32 2 2: 33 5 34 2 35 5 36 37 38	35 060 R1 35 058 R91 67 834 R1 11 533 R1 67 833 R91 26 886 R1	STUD, W/HANDLE, ADJUSTING BUSHING, ADJUSTING STUD PIVOT BUSHING, ADJUSTING INSERT
	40 24	43 290 R91	ABSORBER, SHOCK, ASSY NUT, HEX. JAN 3/8NF -2- NUT, HEX. 3/8NF -2-
	42 2 43 2 44 2	43 291 81 43 289 891 11 539 81 43 298 81 43 296 81	BUMPER, SHOCK ABSORBER -RUBBER- BRACKET, SPRING SUPPORT, ASSY PIN, FRONT UPPER SPACER, SEAT MOUNTING -RUBBER- BOLT, SHOULDER
	46 2	43 293 R91	HANDLE, RELEASE, ASSY NUT, HEX. 5/16 WASHER, LOCK 5/16 REGULAR WASHER, 7/16 -2-
	48 24 49 50 24 51 3	43 297 R1 43 294 R91 17 176 R1 43 299 R1 73 523 R1 43 295 R1	LEVER, SEAT ADJ PIVOT, ASSY
	3	71 365 C1 25 493 R1 93 014 C91 25 520 R1 33 322 R1 25 708 R1	
	4 4 3	73 773 C2 93 839 C2 09 480 C1 44 096 C3 44 582 C1	STANDARD STANDARD CODES 16812, 16905 BOLT, SEAT BELT ANCHOR BOLT, SEAT BELT ANCHOR -CODE 16905- *COVER, SEAT BELT, FRONT -2-

*PARTS NOT ILLUSTRATED

TM 5-4210-230-14&P-2 MT140 GROUP 16- CAN AND/OR BODIES

REF NO.	PART NUMB	ER	DESCRIPTION				
	FIG. ²	16-020					
, Т	TRANSMISSION COVER						
		٩					
		м	7-22005				
1	371 114	C1 RET	AINER, SHIFT LEVER SEAL -W/MANUAL Ansmission only-				
	27 198	R1. S	CREW, PAN-CR-REC-HD NO. 10-16 X 1/2 -8-				
2	286 655		L, SHIFT LEVER -W/MANUAL ANSMISSION ONLY-				
3	488 008 411 431	C1 COV C2	ER, TRANSMISSION BOLT, HEX-HD 5/16NC X 1-1/2 -AR-				



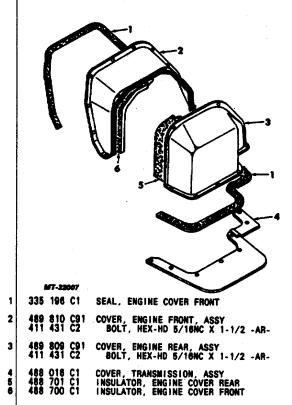
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MT140 GROUP	16- CAN AND OR BODIES

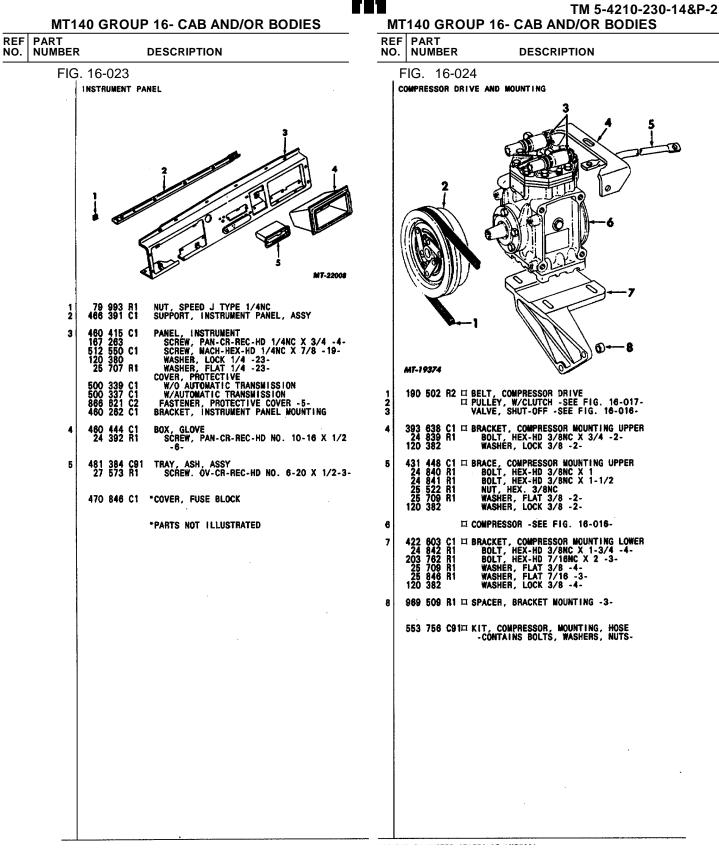
DESCRIPTION

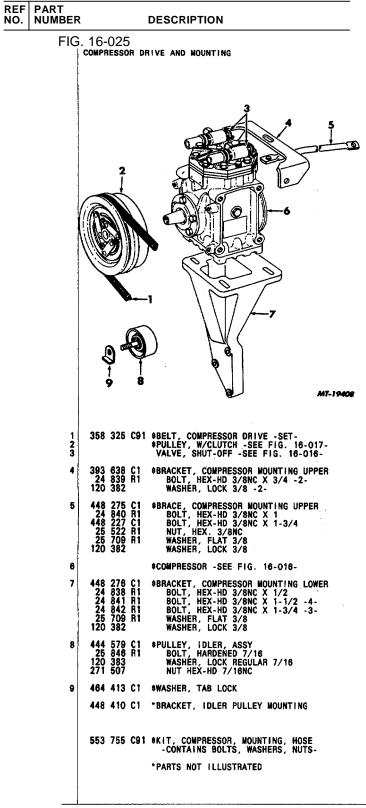
PART NUMBER

FIG. 16-022

ENGINE AND TRANSMISSION COVER







TM 5-4210-230-14&P-2 MT140 GROUP 16- CAB AND/OR BODIES

REF PART NO. NUMBER DESCRIPTION

FIG. 16-026 COMPRESSOR DRIVE AND MOUNTING

		Tatle		
1				COMPRESSOR -SEE FIG. 18-016-
2	68 2 12	4 840 5 709	R1	BRACKET, FREON COMPRESSOR MTG, ASSY BOLT, HEX-HD 3/8NC X 1 -4- WASHER, FLAT 3/8 -4- WASHER, LOCK 3/8 REGULAR -4-
3	2	F 202	C1 R1 R1 R1	BUSHING, COMPRESSOR BASE BOLT, HEX-HD 1/2NC X 5-1/2 NUT, HEX. 1/2NC WASHER, FLAT 1/2NC -2-
4	2 9 41	4 621 5 836 3 979 5 709	C1 R1 R1 R1	BASE, FREON COMPRESSOR BOLT, HEX-HD 3/8NC X 2-1/4 -2- BOLT, HEX-HD 9/18NC X 3-1/4 NUT, HEX. LOCK 3/8NC -2- WASHER, FLAT 3/8 -2- WASHER, LOCK 9/16
5	68 2 2 12	4 841 5 522 5 709	81 81	BRACE, FREON PUMP ADJ BOLT, HEX-HD 3/8NC X 1-1/2 -2- NUT, HEX. 3/8NC WASHER, FLAT 3/8 WASHER, LOCK 3/8
6	69 2 12	4 840 5 709	C1 R1 R1	<pre>BRACKET, FREON BRACE, ASSY BOLT, HEX-HD 3/8NC X 1 -2- WASHER, FLAT 3/8 -2- WASHER, LOCK 3/8 -2-</pre>
7	-13	3 758	R2	BELT, COMPRESSOR DRIVE PULLEY, W/CLUTCH -SEE FIG. 16-017-

MT1	40 GROUP	16- CAB AND/OR BODIES	MT	140 GRO
REF PART NO. NUMBER		DESCRIPTION	REF NO.	PART NUMBER
FIG	. 16-029 тоог вох	$\{i_i\}_{i=1}^{n-1} \in \mathbb{R}^{n-1}$		
			5 7	474 251 C1 472 399 C1
		1-CA		
7				
1 2 3 4 5 6 7 7 8 9 9 9 10 11 12	474 751 C1 323 888 C1 475 827 C1 162 257 R1 24 392 R1 120 391 67 422 H 131 885 131 044 481 380 C91 474 772 C1 869 543 R11	CUSHION, BACK -SEE SEPARATE ILLUS- CUSHION, SEAT -SEE SEPARATE ILLUS- CHANNEL -SEE SEPARATE ILLUSTRATION- CHANNEL -SEE SEPARATE ILLUSTRATION- PLATE -MAKE LOCALLY- BELT -SEE SEPARATE ILLUSTRATION- RISER, SEAT, ASSY BOLT, HEX-HD 5/16NC X 3/4 -4- BUMPER, TOOL BOX DOOR LOCK SCREW, PAN-CR-REC-HD NO. 10-18 X 1/2 -2- WASHER, FLAT NO. 10 -2- RETAINER, TOOL BOX DOOR KNOB SCREW, FIL-SL-HD NO. 6-32 X 5/16 WASHER, LOCK NO. 6 SPRING, DOOR ASSY DOOR, TOOL BOX ASSY KNOB, TOOL BOX DOOR		•

TM 5-4210-230-14&P-2 MT140 GROUP 16- CAB AND/OR BODIES

DESCRIPTION

FIG. 16-029 CONTINUED

		RIGHT HAND DRIVE
57	474 251 C1 PLA 472 399 C1 SCR	TE, SEAT RISER COVER EW, 5/16NC X 3/4 TAPTITE -4-
A CONTRACTOR		
2:		
MT-19354		
ATE ILLUS- ATE ILLUS- LUSTRATION- LUSTRATION- TRATION- 3/4 -4-		
OCK 0. 10-16 X 1/2 - - - - 32 X 5/16	•	

FIG. 16-029 PAGE NO. 33

	MT1	40 GRC	DUP	16- CAB AND/OR BODIES	M1 M1	[140 GRO	TM 5-4210-230-14&P-2 UP 16- CAB AND/OR BODIES
REF NO.	PART			DESCRIPTION	REF	PART	DESCRIPTION
	FIG	. 16-030 heater du				FIG. 16-03 Heater ducts	0 CONTINUED
		- John Lo					
		27			1		MT-22238
	1	501 107 501 074	C91 C1	DUCT, HEATER RIGHT, ASSY CHASSIS BUILT PRIOR TO 10-17-78 -NOT SERVICED SEPARATELY- CHASSIS BUILT 10-17-78 AND LATER DUCT, HEATER RIGHT -WILL WORK FOR 487803C1-	18	466 318 C92 571 724 C91 19 910 R1 120 391	DOOR, FRESH AIR, ASSY CHASSIS BUILT PRIOR TO 8-5-81 CHASSIS BUILT 8-5-81 AND LATER NUT, HEX. LOCK NO. 10 -2- WASHER, FLAT NO. 10 -2-
	2	501 040	C1	SEAL, HEATER TO DEFROSTER CHAMBER	19 20	466 313 C1 466 315 C1	RETAINER, DOOR ROD -2- ROD, DOOR AIR
	3	452 231 26 304 25 707	C1 R1	ROD, DOOR SCREW, PAN-CR-REC-HD NO. 10-16 X 3/4 WASHER, PLAIN 1/4 X 5/8		189 093 R1	NUT, PUSH-ON
	. 4	452 234 453 002		DOOR, DEFROSTER, ASSY	21 22	501 072 C1 469 502 C1	DUCT, LOWER CENTER -WILL WORK FOR 487894C1- SEAL, AIR INTAKE LOWER
	5 6 7	472 220		BRACKET, MOUNTING SEAL -MAKE LOCALLY- DUCT. UPPER	23	474 017 C1 19 910 R1	ROD, DUCT NUT, HEX. LOCK NO. 10
		403 061 25 520 120 214	ČĪ	RIVET, DOME HEAD 3/8 -6- NUT, HEX. 5/16NC -2-	24	120 391	WASHER, FLAT NO. 10 -2- TIP -NOT SERVICED-
	8	469 968 403 061		WASHER, LOCK 5/16 REGULAR -2- CLAMP, CABLE -2- RIVET, DOWE HEAD 3/8 -2-	25 26 27 28	239 870 R1 469 503 C1 469 512 C92	SPRING, DUCT DOOR PIVOT, DOOR -2- SEAL -PURCHASE LOCALLY-
	9	403 061		BAR, MOUNTING -MAKE LOCALLY- RIVET, DOME HEAD 3/8 -2-	28	474 039 C1 160 562	DOOR, ASSY -3- DUCT, AIR INTAKE SCREW, PAN-CR-REC-HD 1/4NC X 1 -3-
	10 11	476 141		SPACER - MAKE LOCALLY2- BRACKET, SPRING	30	25 707 R1 469 510 C1	WASHER, PLAIN 1/4 -3- SEAL, AIR INTAKE UPPER
	12	453 001 571 723		BRACKET, MOUNTING CHASSIS BUILT PRIOR TO 8-5-81	31		SEAL -MAKE LOCALLY-
	13			CHASSIS BUILT 8-5-81 AND LATER SPRING, FRESH AIR DOOR			RIGHT HAND DRIVE
	14 15 16	476 140 492 518 472 280 472 219	C1 C1	KNOB, ÁSSY Nut, control Control, vent, Assy	1		OMIT HEATER - INCL. REF. NOS. 5 THRU 20- PLATE, COVER HEATER CONTROL -MAKE LOCALLY-
	17	472 271 146 327	C1 R1	LINK, DOOR VENT CLIP, PEDAL LINK -2-			 COVER, AIR INTAKE OPENING, DASH -MAKE LOCALLY- SEAL, AIR OPENING -NOT SERVICED- PLATE, COVER HEATER HOSE OPENING -MAKE LOCALLY-

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TION	DESCRIPTIO	EF PART D. NUMBER			N	CRIPTIO	DES		PART NUMBER
. :		FIG. 16-03 condenser hose				INUED		16-030 EATER DUC	
					LUSTRATED	TS NOT I	•PA		
	and								
- d <i>n</i>	4-0	3							
Jol	PRE	R							
H									
	- 10								
	2000								
MT 18509	- sea	1							
MT-18599		101 051 00							
AOUNTING SNC X 3/4 -2-	CORE, CONDENSER BRACKET, RECEIVER MOUN BOLT, HEX-HD 5/16NC								
-2-	NUT, HEX 5/16NC NUT, LOCK 5/16NC -2- WASHER, FLAT WASHER, LOCK	483 527 C2 25 228 R1 25 520 R1 9 413 994 25 708 R1 120 214		7 					
NC X 1/2	CLAMP, HOSE BOLT, HEX-HD 1/4NC X				. 1.1. 1				
	NUT, HEX. 1/4NC WASHER, LOCK WASHER, FLAT								
ER TO EVAPORATOR	BOTTLE, RECEIVER DRIEF HOSE, RECEIVER DRIER T	454 613 C1	4						
3208, MV ENGINES	9.0 LITER ENGINE DT466, DT1466B, 3208 EXCEPT 2100 MODEL FOR 2100 MODEL	487 897 C91 487 897 C91 487 896 C91	4	ing the second sec					
	V345, V392 ENGINES V537 Engine	487 897 C91 487 896 C91	inter E	À					
1466B ENGINES 58 Engines	HOSE, COMPRESSOR TO CO EXCEPT DT466, DT1466 FOR DT466, DT1466B E STRAP, LOCK -WILL WORK	487 898 C91 487 899 C91	•						
:D-	SWITCH, PRESSURE J-BOLT -NOT SERVICED-	476 029 C1			*				
IC X 1/2	CLAMP, HOSE BOLT, HEX-HD 1/4NC X NUT, HEX. 1/4NC	25 752 R1 25 519 R1		194 1 4					
RECEIVER DRIER	WASHER, LOCK HOSE, CONDENSER TO REC	120 380				a shekara			
		- - -							

MT140 GROUP 16- CAB AND/OR BOD	IES	M٦	Г140 GRO	UP 16- CAB AND/OR BODI
REF PART NO. NUMBER DESCRIPTION		REF NO.	PART NUMBER	DESCRIPTION
FIG. 16-031 CONTINUED CONDENSER HOSE AND FITTINGS *HOSE, EVAPORATOR TO COMPRESS 446 997 C91 9.0 LITER ENGINE DT466, DT1466B ENGINES 487 903 C91 EXCEPT 2100 MODELS 487 902 C91 FOR 2100 MODELS 532 436 C91 700.0 MM - METRIC- 487 902 C91 1020.0 MM - METRIC- 487 901 C91 FOR 2100 MODELS 487 901 C91 V537 ENGINE 487 900 C91 MV ENGINES 487 902 C91 V345, V392 ENGINES *PARTS NOT ILLUSTRATED	SOR		FIG. 16-03 WINDSHIELD W	
		1 2 3 4 5 6	437 893 C1 875 520 C1 437 691 C1 437 692 C1 144 226 289 862 C1	CAP, TUBE SEAL, O-RING -4- BLOCK, JUNCTION -2- BLOCK, JUNCTION -2- GROMMET, HOSE STRAP, CABLE LOCK
		7	488 737 C1 172 455 120 214	BRACKET, WASHER BOTTLE Bolt, Hex-HD 5/16NC X 3/4 -2- Washer, Lock 5/16 -2-
	:	8 9 10 11	400 356 C1 404 619 C1 404 621 C1 404 620 C1	GASKET, CAP Filter, Tank Washer, Nylon
		12	394 120 C91 167 263 25 707 R1 120 380	TANK, W/PUMP, ASSY BOLT, HEX-HD 1/4NC X 3/4 -4- WASHER, FLAT 1/4 -4- WASHER, LOCK 1/4 MEDJUM -4-
		13 14	404 617 C1 404 618 C1	GROMMET, TANK PUMP, WASHER, ASSY
		15	990 016 C1 299 401 C1 172 455	HOSE, WASHER 5/321D -AR- CLIP, HOSE BOLT, HEX-HD 5/18NC X 3/4
		16	289 862 C1	STRAP, CABLE LOCK
				<pre>#PART NO. COVERS 1 FOOT BULK MATER</pre>
		<u>L</u> _		

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FIG. 16-031 PAGE NO. 36

TM 5-4210-230-14&P-2 MT140 GROUP 16- CAB AND/OR BODIES

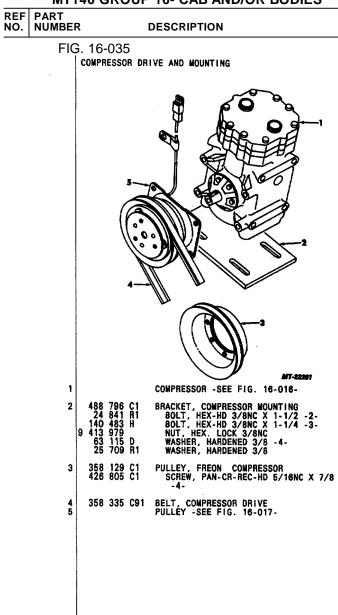
MT-32563

BULK MATERIAL

MT140 GROUP 16- CAB AND/OR BODIES	TM 5-4210-230-14 MT140 GROUP 16- CAB AND/OR BODIES
REF PART NO. NUMBER DESCRIPTION	REF PART NO. NUMBER DESCRIPTION
REF PART	REF PART

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TM 5-4210-230-14&P-2

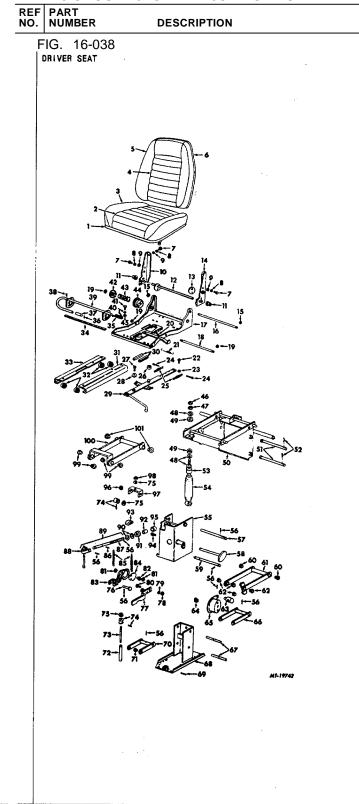


TM 5-4210-230-14&P-2 MT140 GROUP 16- CAB AND/OR BODIES

RE					
NO		_	MBI		DESCRIPTION
				6-03 100	36 COVER
			2		
			MT-2		No na na na na na na na na na na na na na
1			124		SEAL, TRANSFER CASE SHIFT LEVER
2		487 27	123 198	C1 R1	RETAINER, TRANSFER CASE SHIFT SEAL SCREW, TAP. PAN-CR-REC-HD NO. 10X16 X 1/2 -6-
3			114 198	• ·	RETAINER, TRANSWISSION SEAL -EXCEPT TRANS CODES 13422, 13448- SCREW, TAP. PAN-CR-REC-HD NO. 10-16 X 1/2 -8-
4		286	655	C4	SEAL, SHIFT LEVER - EXC TRANS CODES
5		179	056	R1	RETAINED TRANCHISCION SEAL W/TRANS
		27	198	R1	CODES 13422, 13438- SCREW, TAP. PAN-CR-REC-HD NO. 10-18 X 1/2 -4-
6		301	409	C1	SEAL, SHIFT LEVER -W/TRANS CODES 13422, 13448-
7		486 393 133	993 014 322	C1 C91 R1	COVER, TRANSMISSION SCREW, HEX-HD 5/16NC X 3/4 -9- WASHER, FLAT 5/16 -9-
8	9	25 413	228 977	R1	BAR -MAKE LOCALLY- Bolt, Hex-HD 5/18NC X 3/4 -4- NUT, HEX. LOCK 5/18NC -4-
		301 79 27	408 444 198	C1 R1 R1	*SEAL, AUXILIARY SHIFT LEVER *RETAINER, AUXILIARY SHIFT LEVER SEAL SCREW, TAP. PAN-CR-REC-HD NO. 10-16 X 1/2 -4-
					*PARTS NOT ILLUSTRATED

	MT14	40 GROUP	16- CAB AND/OR BODIES	МТ
REF NO.	PART NUMBER	D	ESCRIPTION	REF NO.
	FIG.	16-037 CAB MOUNTING		F
		MT-22198	©9 ⊗ 10	
	1	25 687 R1	BUTTON, PLUG -NOT SERVICED- Bolt, Hex-HD 1/2NC X 6 -2-	
	3	498 012 C1 24 862 R1 120 384	RETAINER, CAB MOUNTING Bolt, Hex-HD 1/2NC X 1-1/2 -4- Washer, Lock 1/2 Medium -4-	
	4	498 396 C1	INSULATOR, CAB FRONT MOUNTING -2-	
	5	498 507 C2 498 508 C2 414 053 C1	BRACKET, CAB FRONT MOUNTING, ASSY LEFT RIGHT BOLT, FLG-HEX-HD 1/2NF X 1-3/4 -2-	
	6 7 8 9 10 11	25 712 R1 457 953 C1 532 419 C1 120 390 9 412 230	WASHER, FLAT 13/16 ID X 1-1/2 OD -2- SPRING, CAB MOUNTING -2- SPACER, CAB MOUNTING -2- WASHER, FLAT 9/16 -2- NUT, LOCK 1/2 -2- SPACER -MAKE LOCALLY-	

TM 5-4210-230-14&P-2 T140 GROUP 16- CAB AND/OR BODIES



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FIG. 16-038 PAGE NO. 39 ŀĪł

REF PART NO. NUMBER DESCRIPTION FIG. 16-038 CONTINIUED DRIVER SEAT SEAT, W/FRAME, CUSHIONS, PEDESTAL CODE 16587 -CHESTNUT-CODE 16905 -SIERRA TAN-BOLT, HEX-HD 5/16NC X 1 -4-NUT, HEX. JAM 5/16NC -4-WASHER, LOCK 5/16 MEDIUM -4-WASHER, PLAIN 5/16 -4-PEDESTAL, W/SUSPENSION, ASSY -SIERRA GOLD-490 735 C91 490 736 C91 25 493 R1 25 520 R1 120 214 25 708 R1 501 297 C91 GOLD-501 304 C1 PAN, SEAT CUSHION 1 COVER, SEAT CHUSION CODE 16587 -CHESTNUT-CODE 16905 -SIERRA TAN-2 501 332 C1 501 333 C1 CUSHION, SEAT, ASSY CODE 16587 -CHESTNUT-CODE 16905 -SIERRA TAN-3 501 323 C91 501 324 C91 COVER, BACK CUSHION CODE 16587 -CHESTNUT-CODE 16905 -SIERRA TAN-4 501 350 C1 501 351 C1 CUSHION, BACK, ASSY CODE 16587 -CHESTNUT. CODE 16805 -SIERRA TAN-PAN, BACK CUSHION BOLT, HEX-HD 5/16NC X 3/4 -4-WASHER, JOCK 5/16 -4-WASHER, 34ID X. 690D X. 06 -4-BRACKET, BACK PIVOT -RIGHT-BUSHING -2-SHAFT, WCAM, ASSY CAW BRACKET, BACK PIVOT -LEFT-HING, SNAP -2-SHAFT PLATE AND LATCH, ASSY SHAFT, PIVOT #RING, SNAP -3-SPRING BOLT, 5/16NC X 5/8 NUT, HEX. 5/8NC *PIN, COTTER -2-BUMPER, RUBBER BOLT, F/16NC X 5/8 NUT, HEX. 5/8NC *PIN, COTTER -2-SHAFT, PIVOT #PIN, COTTER -2-BUMPER, RUBBER BOLT, HEX-HD 3/8NC X 1/2 #WASHER, .406 X 1-1/2 X .12 ADJUSTER, SEAT, ASSY STRIP, PLASTIC -2-CHANNEL, ROLLER BEARING -LEFT-BEARING, BOLLER 4-CHANNEL, ROLLER BEARING -RIGHT-BAR, LATCH SPRING *PIN, ROLL ADJUSTEN, SEAT, ASSY WASHER, LOCK 5/16 -6-BOLT, HEX-HD 5/16NC X 5/8 -6-KIT, END PLATE SPRING KNOB, ASSY WASHER, PLAIN 5/16 -6-NUT, HEX. JAM 3/8NF NUT, HEX. JAM 3/8NF NUT, HEX. JAM 3/8NF NUT, HEX. JAM 3/8NF NUT, HEX. JAM 3/8NF NUT, HEX. JAM 3/8NF NUT, HEX. JAM 3/8NF NUT, HEX. JAM 3/8NF NUT, HEX. JAM 3/8NF NUT, HEX. ANF -2-BUSHING, SPACING -RUBBER- -2-BUSHING, SPACING -RUBBER- -2-BUSHING, SPACING -RUBBER- -2-BUSHING, SPACING -RUBBER- -2-BUSHING, SPACING -RUBBER- -2-BRACKET, WCHESTRAINT ROD, REAR, ASSY MASHER, PLAIN 5/16 - 6-NUT, HEX. JAM 3/8NF NUT, HEX. JAM 3/8NF NUT, HEX. JAM 3/8NF NUT, HEX. AJAM 3/8NF NUT, HEX. CUSHION, BACK, ASSY CODE 18587 - CHESTNUT-CODE 18905 - SIERRA TAN-5 501 341 C91 501 342 C91 6 7 501 303 C1 89 501 299 C1 501 300 C1 501 302 C1 501 301 C1 501 298 C1 370 290 R1 501 305 C1 501 310 C91 501 309 C1 101123456789012345678901233333333444444444444490 501 311 C1 501 319 C1 153 946 334 126 C1 334 124 C1 501 318 C91 334 138 C1 501 316 C1 501 320 C1 501 317 C1 501 315 C1 501 312 C1 501 314 C1 501 313 C91 380 470 R1 180 075 501 306 C91 501 307 C1 501 308 C91 25 056 R1 226 886 R1 211 538 R1 19 464 R1 243 298 R1 243 290 R91 243 289 R91 17 176 R1 211 539 R1 235 060 R1 243 292 R1 211 319 R1 51 52 53 54 55 56 57 58 59 60

TM 5-4210-230-14&P-2 MT140 GROUP 16- CAB AND/OR BODIES

RE NO	F PART	DESCRIPTION
	FIG. 16-03	38 CONTINUED
	DRIVER SEAT	
61 62 63 64 65	211 318 R91 211 523 R1 567 836 R1 569 330 R1 211 526 R91	KEY NO. 60 AND 62- BUSHING, SEAT SPRING FRONT -4- PIN, SPRING ADJUSTING
66 67 68 69 70	211 524 R91 206 276 R1 235 055 R91 17 138 R1 235 056 R91	KEY NO. 64- ARM, VERTICAL ADJUSTING, ASSY -UPPER- PIN, SEAT ADJUSTING ARM CENTER -2- BASE, SEATING MOUNTING, ASSY PIN, ROLL 3/16 X 1/2
71 72 73 74	235 057 R1 235 053 R1 235 052 R1 416 787 C11	-INCLUDES KEY NO. 71- BUSHING, ADJUSTING ARM TUBE, VERTICAL ADJUSTING STUD, VERTICAL ADJUSTING GEAR, W/PIN, MITER -INCLUDES TWO GEARS AND TWO ROLL PINS- WASHER, THRUST -3- PIN. CLEVIS
75 76 77 78 79	206 281 R1 243 297 R1 243 293 R91	HANDLÉ, RELEASE, ASSY
80 81 82 83	243 296 R1 373 523 R1 243 295 R1 243 294 R91	WASHER, LOCK 5/16 REGUALR BOLT, SHOULDER Ring, SNAP -2- Bushing, Seat Adjusting Lever Lever, Seat Adjusting Pivot, Assy -Includes Key Ng. 82 And 84-
84 85 86 87 88	243 299 R1 142 251 235 059 R1	PLATE, WEAR -NOT SERVICED SEPARATELY- Spring, Tension -2- Pin, drive-lock Stud, Adjuster Handle, W/Bracket, Weight Adjustment,
89	235 058 R91	ASSY -NUT SERVICED SEPARATELY- STUD, W/HANDLE, ADJUSTING, ASSY
90 91 92 93	567 833 R91 211 533 R1 243 291 R1	BUSHING, ADJUSTING INSERT BUMPER, SHOCK ABSORBER -RUBBER-
94 95 96	567 834 R1	CAPSCRÉW, 3/8NC X 1 Bushing, Adjusting stud pivot Nut, Hex. 3/8NC
97 98	235 051 R1	BRACKET, VERTICAL ADJUSTER
99 100	211 523 R1 211 535 R91	BUSHING, SEAT SPRING FRONT -4- ARM, SEAT VERTICAL ADJUSTMENT, ASSY
101	211 319 R1	-UPPERINCLUDES KEY NO. 99 AND 101- Bushing, seat spring -2-
	471 365 C1 393 014 C91 133 322 R1	WASHER, FLAT 3/4 X 3/8 -5-
	473 773 C2 493 839 C2	*BELT, SEAT, ASSY CODE 16587 -CHESTNUT- CODE 16905 -SIERRA TAN- BOLT, SEAT BELT ANCHOR CODE 16587
	344 096 C3 409 048 C1 409 480 C1 444 582 C1	7/16NF X 1 -2- 1/2NC X 1 -2- CODE 18905 *COVER, SEAT BELT, FRONT -2-
		#PART NUMBER NOT YET AVAILABLE
		*PARTS NOT ILLUSTRATED
		• •

		GROUP 16- CAB AND/OR BODIES			16- CAB AND/OR BODIES	
REF NO.	PART NUMBER	DESCRIPTION	REF NO.	PART NUMBER	DESCRIPTION	
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TM 5-4210-230-14&P-2

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PAGE NO. 41

PART NUMBER	DESCRIPTION	REF PART NO. NUMBER	DESCRIPTION
FIG. 16-03		FIG. 16-039 C driver seat	ONTINUED
	M T-27122		
487 776 490 734 1 499 883 499 880 499 898 499 898	CUSHION, W/FRAME AND COVER, BACK C91 CODE 16593 -CHESTNUT- C91 CODE 16905 -SIERRA TAN- COVER, BACK CUSHION	8 337 104 C1 SPRI 9 469 102 C1 HAND NU	E, LOWER -NOT SERVICED SEPARATELY- SHOULDER PIVOT E, BACK -NOT SERVICED SEPARATELY- , SHOULDER SEAT NG, SEAT ADJUSTING RETURN NG, SEAT ADJUSTING HANDLE LE, SEAT BACK RELEASE T, 1/4NF -2- SHER, 3/16
2 499 888 499 885	CUSHION, W/COVER, SEAT	10 337 103 C1 BOLT NU	, SEAT ADJUSTING HANDLE T, 1/4NF RUBBER HANDLE

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PAGE NO. 42 FIG. 16-039 REV. 4

REF	PART	40 0			
NO.	NUMBER	ł			DESCRIPTION
	FIG	6. 16-0 Driver			ONTINUED
	14	469	103	C2	ADJUSTER, SEAT RIGHT BOLT, 5/16NC X 9/16 -2- NUT, HEX. 5/16NC -4-
	15	469	103	C2	ADJUSTER, W/HANDLE, SEAT LEFT Bolt, 5/16NC X 9/16 -2- Nut, Hex. 5/16NC -4-
	16 17 18	337 (091	C1	BUMPER, SEAT FRAME %SHAFT -2- %BEARING -8-
	19 20 21	544 9	968	R1	\$SLEEVE -8- Ring, Retaining -Code 165934- Not Used #Clip, Hose
	22	338.3	380	C1	SPRING, AIR NUT, HEX. 3/8NC STAMPED
	23 24	337 (337 (085 097	C1 C1	BOLT, SHOULDER -3- BRACKET, SEAT AIR SPRING
	25	997 1 244 3	161 324	R1 R91	<pre>\$HOSE, AIR -3- NIPPLE, AIR HOSE -2-</pre>
	26 27 28 29 30 31	397 1 337 0 337 0)87	C1 -	*SHAFT -2- NOT USED Absorber, Seat Shock Bushing, Shock Absorber Bushing, Air Spring -2- Bolt, Hex_HD 3/8NF_X 1-3/4 -2-
	32	337 1	110	C1	WIRE, SEAT ADJUSTER
	33		05 06		BRACKET, CUSHION ADJUSTING LEFT Bracket, Cushion Adjusting Right Screw, TR-HD 1/4-20 X 1 -4-
	34	385 5	i07	C1	HANDLE, SEAT CUSHION LEFT SCREW, PH-HD NO. 10 X 3/4 -3-
	35	496 6	94	C91	ABSORBER, SEAT MOUNTING, ASSY - INCLUDES ITEMS 36 AND 37-
	36 37	477 6 583 4			BEARING, BALL -4- KNOB, SEAT ADJUSTING HANDLE
		417 1	96	C2	*STUBE, NYLON -MANIFOLD FITTING TO SEAT-
		30 7 142 0 300 7 299 3 25 7 26 1 414 5	86 99 52 10 04	V H C1 C1 R1 R1 C1	-AR- NUT, CONNECTOR -2- SLEEVE, CONNECTOR -2- *CONNECTOR, 1/4 X 1/8 *CLIP, EXTENSION *CLAMP, HOSE 1/4 BOLT, HEX-HD 1/4NC X 1/2 NUT, LOCK 1/4 *INSERT, CONNECTOR TUBING -2-
		252 1 328 4	32 ·		*INSERT, CONNECTOR TUBING -2- *TEE, AIR SUPPLY -AT AIR MANIFOLD- *STOP, SEAT ANGLE - MAKE LOCALLY-
		473 7 493 8	73	C2	SCREW, TAP. HEX-HD 1/4-14 X 3/4 *BELT, SEAT CODE 16593 CODES 16812, 16905
		25 5 25 7	82 65 93 20 08 14 22	C1 C1 R1 R1 R1 R1	BOLT, SEAT BELT ANCHOR CODE 16593 7/16NF X 1 1/2NC X 1 CODES 16812, 16905 *COVER, SEAT BELT *BRACKÉT, SEAT PEDESTAL BOLT, HEX-HD 5/16NC X 1 -4- NUT, HEX.JAW 5/16NC -4- WASHER, PLAIN 5/16 MEDIUM -4- WASHER, FLAIN 5/16 MEDIUM -4- WASHER, FLAIN 3/4 X 3/8 -5- SCREW, HEX-HD 5/16NC X 3/4 -5-

TM 5-4210-230-14&P-2 MT140 GROUP 16- CAB AND/OR BODIES

REF NO.		DESCRIPTION
F	FIG. 16-03 DRIVER SEAT	9 CONTINUED
		<pre>\$PART NO. COVERS 1 FOOT OF BULK MATERIAL #PART NUMBER NOT AVAILABLE</pre>
	499 900 C91	<pre>%KIT, SHAFT CONSISTS OF 4-SHAFT AND LOCK TAB, ASSY 8-SLEEVES 8-BEARINGS 4-BOLT, HEX-HD 1/4NC X 5/8</pre>
		*PARTS NOT ILLUSTRATED
		&PARTS NOT KEYED ARE NOT SERVICED SEPARATELY
	v.	
	-	
		en de la constance de la constance de la constance de la constance de la constance de la constance de la consta

REF PART NO. NUMBER DESCRIPTION FIG. 16-040 ENGINE AND TRANSMISSION COVER 14 ----9 13 12 мŢ 1 INSULATOR -NOT SERVICED SEPARATEL COVER, ENGINE FRONT, ASSY CODE 16030 -CHESTNUT-CODE 16196 BROWN 2 493 434 C91 493 432 C91 493 433 C91 493 434 C91 493 435 C91 411 431 C2 25 708 R1 BURGUNDY CHESTNUT CODE 16905 -DARK SIERRA TAN-BOLT, HEX-HD 5/16NC X 1-1/2 -AH-WASHER, FLAT 5/16 -AR-RETAINER, SHIFT LEVER SEAL W/MAD TRANSMISSION 3 291 029 C1 SCREW, PAN-CR REC-HD NU 10 16 27 198 R1 - 6 -SEAL, SHIFT LEVER W/MANUAL TRANS 291 068 C2 4 RETAINER, TRANSFER CASE SHIFT SE SCREW, PAN-CR-REC-HD NO. 10 16 487 123 C1 27 198 R1 5 - 6 -487 124 C1 SEAL, TRANSFER CASE SHIFT 6 COVER, TRANSMISSION OPENING FROM BOLT, HEX-HD 5/16NC X 1 1-2 -8 RISER, ASSY 480 537 C1 411 432 C2 485 874 C1 7 SEAL, TRANSMISSION COVER -3 443 164 C1 8 RETAINER, SHIFT SEAL W/AUX THANS-SCREW, PAN-CR REC-F0 NO. 10-16 X 1/2 -4-79 444 R1 27 198 R1 9 SEAL, SHIFT LEVER WAUX TRANS COVER, TRANSMISSION REAR TAPE, SEALING -NOT SERVICED 301 408 C1 489 507 C1 10 11 12 REINFORCEMENT, CENTER CROSSMEMBER ASSY SCREW, HEX HD 5/16NC X 3/4 -3-WASHER, FLAT 3/4 X 3/8 -3-WASHER, FLAT 5/16 -3-473 961 C2 393 014 C91 133 322 R1 25 708 R1 13 TAPE, SEALING NOT SERVICED 335 196 C1 SEAL, ENGINE COVER FRONT 14 15

TM 5-4210-230-14&P-2

∎∎ 6	МТ	140 GRO	TM 5-4210-230-14&F UP 16- CAB AND/OR BODIES
	REF NO.	PART NUMBER	DESCRIPTION
	-		40 CONTINUED IANSMISSION COVER
			RIGHT HAND DRIVE
		497 313 C91 496 816 C1 496 459 C1	COVER, ENGINE FRONT, ASSY CHASSIS BUILT PRIOR TO 2-28-79 UPPER LOWER V345, V392 ENGINES V345, V392 ENGINES
		496 459 CT 501 666 C91	V345, V392 ENGINES 9.0 LITER, MV ENGINES CHASSIS BUILT 2-28-79 AND LATER UPPER LOWER
		501 655 C91 501 653 C91 996 998 R1	V345, V392 ENGINES 9.0 LITER, MV ENGINES # SEAL, ENGINE COVER
	3	179 056 R1 445 424 C1	RETAINER, LEVER SEAL -V345 ENGINE- NUT, SPEED #10 -4-
	4	301 409 C1	SEAL, SHIFT LEVER -V345 ENG-
0	7	497 381 C1 497 383 C1	COVER, TRANS. OPENING FRONT, ASSY V345, V392 ENGINES MV, 9.0 LITER ENGINES
<u> </u>	:		
\geq			#PART NO. COVERS 1 FOOT OF BULK MATER!AL
Second Second	1		
22291			
il.Y-			
1-			
NUAL			
5 X 1/2	:		
VS			
AL 5 X 1/2	-		
¥T, ASSY 8-			

EF PART O. NUMBER	DESCRIPTION	REF NO.	PART NUMBER	DESCRIPTION
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TM 5-4210-230-14&P-2 MT140 GROUP 16- CAB AND/OR BODIES

TM 5-4210-230-14&P-2 MT140 GROUP 16- CAB AND/OR BODIES MT140 GROUP 16- CAB AND/OR BODIES REF PART REF PART NO. NUMBER DESCRIPTION NO. NUMBER DESCRIPTION FIG. 16-041 CONTINUED FIG. 16-041 HEATER AND AIR CONDITIONER DUCTS HEATER AND AIR CONDITIONER DUCTS 36 Ô 31 10 12 -15 20 35 19 22 23 29 MT-19361 25 BAR, MOUNTING -MAKE LOCALLY-RIVET, DOME HD 3/16 -2-SEAL -MAKE LOCALLY-11 1 403 061 C1 DUCT, RIGHT, ASSY -INCLUDES REF. NO. 1 THRU 5-474 031 091 2 SEAL, DUCT -2-SEAL, DUCT END -PURCHASE LOCALLY- -5-SEAL, DUCT LEFT -HEATER-A/C ONLY- -2-SPRING, FRESH AIR DOOR 472 281 C1 12 472 224 C1 DUCT, RIGHT BRACKETS 13 14 15 472 281 C1 476 140 C1 AIR DUCT RIGHT -L-SHAPED- -MAKE LOCALLY-DEFROSTER CONTROL -S-SHAPED--MAKE BRACKET, MOUNTING CHASSIS BUILT PRIOR TO 8-5-81 CHASSIS BUILT 8-5-81 AND LATER 16 453 001 C1 571 723 C2 MOUNTING HEATER DUCT RIGHT -L-SHAPED--MAKE LOCALLY-RIVET, DOME HD 3/16 -6-BRACKET, SPRING SPACER, DOOR PIVOT -MAKE LOCALLY- -2-RETAINER, DOOR ROD -2-DUCT, LEFT -A/C ONLY-SUPPORT, LEFT DUCT -A/C ONLY- -MAKE LOCALLY-KNOB, ASSY NUT, CONTROL CONTROL, VENT, ASSY 476 141 C2 403 061 C1 17 18 19 20 21 SEAL -PURCHASE LOCALLY-466 313 C1 472 216 C1 3 ROD, DOOR SCREW, PAN-CR-REC-HD NO. 10-16 X 3/4 WASHER, PLAIN 1/4 X 5/8 452 231 C1 26 304 R1 25 707 R1 4 469 856 C1 472 280 C1 472 219 C1 22 23 24 452 234 C1 DOOR, DEFROSTER, ASSY 5 DUCT, LOWER CENTER, ASSY -INCLUDES REF NO. 7 THRU 13, 15 THRU 19, 26, 27, 29 THRU 35-6 474 034 C92 25 472 271 C1 146 327 B1 LINK, VENT DOOR CLIP, PEDAL LINK -2-472 272 C2 472 266 C1 DUCT, LOWER CENTER 26 ROD, DOOR CONTROL 453 005 C2 24 390 R1 26 304 R1 120 391 454 972 C1 874 960 R1 27 161 R1 472 280 C1 469 856 C1 DOOR, AIR DUCT SCREW, PAN-CR-REC-HD NO. 10-16 X 1/2 SCREW, PAN-CR-REC-HD NO. 10-16 X 3/4 WASHER, FLAT NO. 10 CONTROL, ASSY CLIP, WIRE CLIP, PEDAL LINK SCREW, PAN-CR-REC-HD NO. 10-24 X 3/8 NUT, CONTROL CABLE KNOB, ASSY 453 002 C1 BRACKET, MOUNTING SEAL - WAKE LOCALLY-27 78 DUCT, UPPER Rivet, Dome HD 3/16 -6-NUT, Hex. 5/16NC -2-Washer, Lock 5/16 Regular -2-472 220 C2 403 061 C1 25 520 R1 120 214 9 CLAMP, CABLE -2-RIVET, DOME HD 3/16 -2-469 968 C1 403 061 C1 10

REF PART REF PART NO. NUMBER DESCRIPTION NO. NUMBER DESCRIPTION FIG. 16-041 CONTINUED FIG. 16-042 FIG. 16-041 CONTINUED FIG. 16-042 HEATER AND AIR CONDITIONER DUCTS HEATER AND AIR CONDITIONER CONTROLS HOSE, AIR COND 3.00 ID X 2.5 LONG 28 426 233 C2 29 BRACKET, CONTROL CABLE RIVET, DOME HD 3/16 -2-466 314 C2 403 061 C1 466 315 C1 189 093 R1 ROD, DOOR AIR NUT, PUSH-ON 30 DOOR, FRESH AIR, ASSY CHASSIS BUILT PRIOR TO 8-5-81 CHASSIS BUILT 8-5-81 AND LATER NUT, HEX. LOCK NO. 10 -2-WASHER, FLAT NO. 10 -2-31 466 318 C92 571 724 C91 19 910 R1 120 391 ٢ 472 267 C1 26 304 R1 DOOR, DUCT 32 SCREW, PAN-CR-REC-HD NO. 10-16 X 3/4 120 391 WASHER, FLAT NO. 10 -3-TIP -NOT SERVICED-33 474 017 C1 19 910 R1 120 391 ROD, DUCT NUT, HEX. LOCK NO. 10 WASHER, FLAT NO. 10 34 SPRING, DUCT DOOR SEAL, AIR INTAKE LOWER SEAL, AIR INTAKE UPPER 239 870 R1 469 502 C1 469 510 C1 35 36 37 474 039 C1 160 562 25 707 R1 DUCT, AIR INTAKE SCREW, PAN-CR-REC-HD 1/4-20 X 1 -3-WASHER, PLAIN 1/4 -3-38 DOOR, ASSY -3-PIVOT, DOOR -2-SEAL, AIR INTAKE DUCT -PURCHASE LOCALLY-39 40 41 469 512 C92 469 503 C1 CLIP, SPRING LEVER RETAINER W/HEATER ONLY -2-W/HEATER-A/C -3-1 472 244 C1 472 244 C1 NUT, RETAINER W/HEATER ONLY -2-W/HEATER-A/C -3-2 472 236 C1 472 236 C1 CABLE, CONTROL ASSY -HEATER-A/C ONLY-SCREW, TAP. PAN-CR-REC-HD NO. 10-16 X 1/2 -3-3 474 101 C1 24 390 R1 146 327 R1 379 310 R1 472 238 C1 CLIP, PEDAL LINK -2-RING, RETAINING -HEATER-A/C ONLY-LEVER, A/C -HEATER-A/C ONLY-5 CABLE, CONTROL ASSY -HEATER ONLY-SCREW, TAP. PAN-CR-REC-HD NO. 10-16 X 1/2 7 474 099 C1 24 390 R1 472 237 C1 8 LEVER, HEATER SWITCH, FAN SCREW, TAP. PAN-CR-REC-HD NO. 10-16 X 1/2 -2-472 253 C1 24 392 R1 9 472 248 C1 10 SUPPORT, HEATER AND HEATER-A/C CONTROL MASK, LIGHT REFLECTOR W/HEATER ONLY W/HEATER-A/C 11 472 246 C1 472 247 C1 PLATE, LIGHT DIFFUSER W/HEATER ONLY W/HEATER-A/C 12 472 241 C1 472 242 C1

TM 5-4210-230-14&P-2 MT140 GROUP 16- CAB AND/OR BODIES

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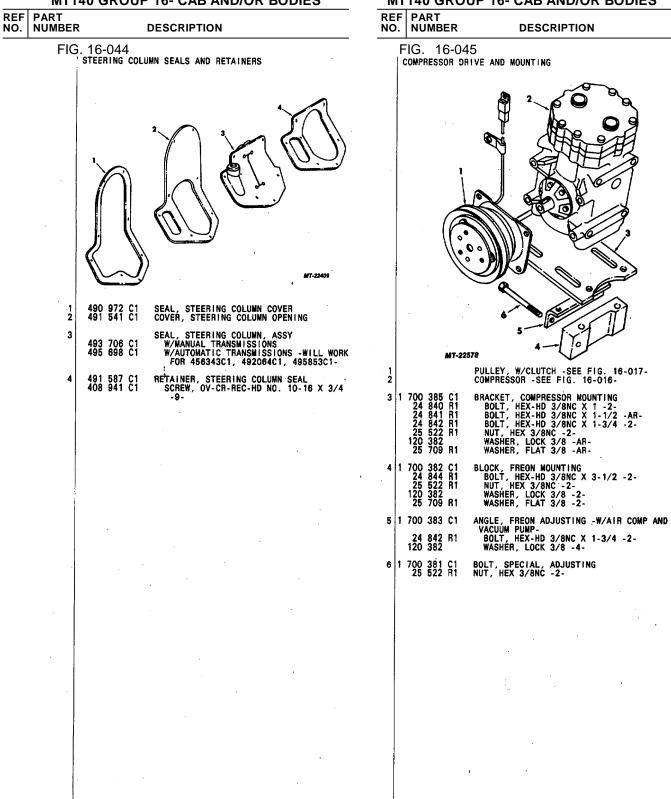
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FIG.

				1140 0100	
REF NO.	PART NUMBEF	DESCRIPTION		F PART NUMBER	DESCRIPTION
	FIG	16-042 CONTINUED HEATER AND AIR CONDITIONER CONTROLS	1	FIG. 16-0 Steering colu	043 UNN SEALS AND RETAINERS
	13	472 245 C2 BEZEL, CONTROL 24 379 R1 Screw, TAP. PAN-CR-REC-HD NO. 8-18 X 1/2 -4-			
	14	474 097 C1 CABLE, CONTROL ASSY 24 390 R1 SCREW, TAP. PAN-CR-REC-HD NO. 10-16 X 1/2			· ST
	15 16 17	474 087 C1 KNOB, CONTROL LEVER -AR- 472 239 C1 Lever, defrost 472 240 C1 PIN, control lever			
		RIGHT HAND DRIVE			
		496 067 C1 PLATE, LIGHT DIFFUSER			
					ut-23410
	1		1 2	490 972 C1 491 540 C1	SEAL, STEERING COLUMN COVER COVER, STEERING COLUMN OPENING -WILL WORK FOR 491539C1-
			3	495 699 C1 491 180 C3	SEÁL, STEERING COLUMN, ASSY -ADJUSTABL ColumnCode 05708- SEAL, STRG Column Boot -Fixed Column- -Standard-
			. 5	491 294 C1 328 388 C1	RETAINER, STEERING COLUMN SEAL SCREW, PAN-CR-REC-HD NO. 10-16 X 1/2
				408 941 C1	-5- Screw, OV-cr-Rec-HD NO. 10-18 X 3/4 -DIESEL ENGINES5-
					RIGHT HAND DRIVE
	,		4	491 180 C3 495 694 C1	SEAL, STRG COLUMN BOOT -FIXED COLUMN- -STANDARD- SEAL, STRG COLUMN -UNDER THE BOOT-
			5	495 693 C1 27 384 R1	RETAINER, STRG COLUMN SEAL SCREW, PAN-CR-REC-HD NO. 10-16 X 3/4 -5-

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TM 5-4210-230-14&P-2 MT140 GROUP 16- CAB AND/OR BODIES

REF PART NO. NUMBER REF PART NO. NUMBER DESCRIPTION DESCRIPTION FIG. 16-046 FIG. 16-046 CONTINUED COVER, ENGINE, TRANSMISSION COVER, ENGINE, TRANSMISSION 14 13 MT-22539 COVER, ENGINE, ASSY BOLT, HEX-HD 5/16NC X 1-1/2 -AR-505 834 C1 411 431 C2 1 RETAINER, SHIFT LEVER W/MANUAL TRANS MV8, 3208 ENGINES V345, V392 ENGINES 2 291 029 C1 505 353 C1 SEAL, SHIFT LEVER MV8, 3208 ENGINES V345, V392 ENGINES 3 291 068 C2 286 655 C4 RETAINER, TRANSFER CASE SHIFT SEAL SCREW, PAN-CR-REC-HD NO. 10-16 X 1/2 -8-487 123 C1 27 198 R1 4 487 124 C1 5 SEAL, TRANSFER CASE SHIFT COVER, TRANS OPEN FRONT -V345, 392 ENG-RISER, ASST 6 480 537 C1 485 874 C1 SEAL, TRANS COVER -AR-RETAINER, SHIFT SEAL -W/AUTO TRANS-SEAL, SHIFT LEVER -W/AUTO TRANS-COVER, TRANS REAR TAPE, SEALING -NOT SERVICED-996 998 R1 79 444 R1 301 408 C1 487 507 C1 7 89 10 REINFORCEMENT, CENTER CROSSMEMBER, ASSY SCREW, HEX-HD 5/18 X 3/4 -AR-WASHER, FLAT 3/4 X 3/8 -AR-12 473 961 C2 393 014 C91 133 322 R1 TAPE, SEALING -NOT SERVICED-SEAL, ENGINE COVER TO TRANS COVER 13 14 335 196 C1

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TM 5-4210-230-14&P-2 MT140 GROUP 16- CAB AND/OR BODIES

REF PART REF PART NO. NUMBER DESCRIPTION NO. NUMBER DESCRIPTION FIG. 16-047 FIG. 16-047 CONTINUED CAB AND HOOD APPLIQUES CAB AND HOOD APPLIQUES CODE 10714 -WINTER WHITE AND ACCENT BLUE-CAB APPLIQUES, CAB AND HOOD CODE 10704 -WINTER WHITE AND FIRE ORANGE-499 137 C1 499 138 C1 LEFT SIDE RIGHT SIDE HOOD 000 EXCEPT 2100, F2100 MODELS LEFT SIDE RIGHT SIDE FOR 2100, F2100 MODELS LEFT SIDE RIGHT SIDE CAB LEFT SIDE RIGHT SIDE 499 135 C1 499 136 C1 499 089 C1 499 090 C1 00D EXCEPT 2100, F2100 MODELS LEFT SIDE RIGHT SIDE FOR 2100, F2100 MODELS LEFT SIDE RIGHT SIDE 499 097 C1 499 098 C1 499 087 C1 499 088 C1 CODE 10715 -WINTER WHITE AND ACCENT 499 095 C1 499 096 C1 GREEN-CAB LEFT SIDE RIGHT SIDE 499 139 C1 499 140 C1 CODE 10707 -FLAME RED AND OMAHA RIGHI SIDE HOOD EXCEPT 2100, F2100 MODELS LEFT SIDE RIGHT SIDE FOR 2100, F2100 MODELS LEFT SIDE RIGHT SIDE ORANGE-LEFT SIDE RIGHT SIDE 499 141 C1 499 142 C1 499 091 C1 499 092 C1 RIGHI SIDE HOOD EXCEPT 2100, F2100 MODELS LEFT SIDE RIGHT SIDE FOR 2100, F2100 MODELS LEFT SIDE RIGHT SIDE 499 099 C1 499 100 C1 499 093 C1 499 094 C1 CODE 10716 -WINTER WHITE AND FIRE ORANGE-499 101 C1 499 102 C1 CAB LEFT SIDE RIGHT SIDE HOOD LEFT SIDE RIGHT SIDE 499 039 C1 499 040 C1 CODE 10708 -WINTER WHITE-CAB AB EXCEPT 2100, F2100 MODELS LEFT SIDE RIGHT SIDE FOR 2100, F2100 MODELS LEFT SIDE RIGHT SIDE 499 047 C1 499 048 C1 499 075 C1 499 076 C1 CODE 10717 - OMAHA ORANGE AND FLAME 499 103 C1 499 104 C1 RED-CAB HOOD LEFT SIDE RIGHT SIDE 499 045 C1 499 046 C1 DUD EXCEPT 2100, F2100 MODELS LEFT SIDE FOR 2100, F2100 MODELS LEFT SIDE RIGHT SIDE HOOD LEFT SIDE RIGHT SIDE 499 079 C1 499 080 C1 499 053 C1 499 054 C1 499 083 C1 499 084 C1 CODE 10718 -WINTER WHITE AND FIRE ORANGE-CODE 10709 - OMAHA ORANGE-DRANGE-CAB LEFT SIDE RIGHT SIDE HOOD EXCEPT 2100, F2100 MODELS LEFT SIDE RIGHT SIDE FOR 2100, F2100 MODELS LEFT SIDE RIGHT SIDE 499 127 C1 499 128 C1 AB EXCEPT 2100, F2100 MODELS LEFT SIDE RIGHT SIDE FOR 2100, F2100 MODELS LEFT SIDE RIGHT SIDE 499 077 C1 499 078 C1 499 047 C1 499 048 C1 499 105 C1 499 106 C1 HOOD 499 055 C1 499 056 C1 DOD EXCEPT 2100, F2100 MODELS LEFT SIDE RIGHT SIDE FOR 2100, F2100 MODELS LEFT SIDE RIGHT SIDE 499 081 C1 499 082 C1 CODE 10719 -WINTER WHITE AND ACCENT BLUE-CAB LEFT SIDE RIGHT SIDE 499 085 C1 499 086 C1 499 129 C1 499 130 C1 CODE 10712 -WINTER WHITE AND ACCENT HOOD EXCEPT 2100, F2100 MODELS LEFT SIDE BLUE-CAB 499 049 C1 499 050 C1 LEFT SIDE RIGHT SIDE RIGHT SIDE FOR 2100, F2100 MODELS LEFT SIDE RIGHT SIDE 499 041 C1 499 042 C1 HOOD LEFT SIDE RIGHT SIDE 499 057 C1 499 058 C1 499 049 C1 499 050 C1 CODE 10720 -WINTER WHITE AND ACCENT GREEN-CAB CODE 10713 -WINTER WHITE AND ACCENT GREEN-CAB LEFT SIDE RIGHT SIDE LEFT SIDE RIGHT SIDE 499 131 C1 499 132 C1 499 043 C1 499 044 C1 HOOD JOD EXCEPT 2100, F2100 MODELS LEFT SIDE RIGHT SIDE FOR 2100, F2100 MODELS LEFT SIDE RIGHT SIDE HOOD LEFT SIDE 499 051 C1 499 052 C1 499 051 C1 499 052 C1 RIGHT SIDE 499 059 C1 499 060 C1

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TM 5-4210-230-14&P-2 MT140 GROUP 16- CAB AND/OR BODIES

REF NO.	PART	_	DESCRIPTION
	-	16-047 CC cab and hood a	-
			CODE 10721 -OMAHA ORANGE AND FLAME Red- Cab
		499 133 C1 499 134 C1	LEFT SIDE Right Side Hood
		499 053 C1 499 054 C1	EXCEPT 2100, F2100 MODELS LEFT SIDE Right SIDE
		499 061 C1 499 062 C1	FOR 2100, F2100 MODELS Left side Right side
			CODE 10722 -WINTER WHITE AND CONCORD BLUE- CAB
		575 928 C1 575 929 C1	LEFT SIDE Right Side Hood
		575 916 C1 575 917 C1	LEFT SIDE RIGHT SIDE CODE 10723 -WINTER WHITE AND WOODBINE
		575 930 C1	GREEN- CAB LEFT SIDE
		575 931 C1 575 918 C1 575 919 C1	RIGHT SIDE Hood Left side
	1 ¹⁰ 4 44	575 919 C1	RIGHT SIDE CODE 10724 -WINTER WHITE AND CONCORD BLUE-
		575 904 C1 575 905 C1	CAB LEFT SIDE Right Side
		575 916 C1 575 917 C1	HOOD EXCEPT 2100, F2100 MODELS LEFT SIDE
		575 924 C1 575 925 C1	RIGHT SIDE For 2100, F2100 Models Left Side Right Side
			CODE 10725 -WINTER WHITE AND WOODBINE GREEN-
		575 906 C1 575 907 C1	CAB LEFT SIDE RIGHT SIDE HOOD
		575 918 C1 575 919 C1	EXCEPT 2100, F2100 WODELS LEFT SIDE RIGHT SIDE
		575 926 C1 575 927 C1	FOR 2100, F2100 MODELS LEFT SIDE RIGHT SIDE
			CODE 10726 -WINTER WHITE AND CONCORD BLUE- CAB
		576 158 C1 576 159 C1	LEFT SIDE Right Side Hood
		575 920 C1 575 921 C1	EXCEPT 2100, F2100 MODELS LEFT SIDE RIGHT SIDE EDE 2100 F2100 MODELS
		575 900 C1 575 901 C1	FOR 2100, F2100 MODELS LEFT SIDE Right side
			CODE 10727 -WINTER WHITE AND WOODBINE GREEN- CAB
		576 160 C1 576 161 C1	LEFT SIDE Right Side Hood Everet 2100 E2100 Hodels
		575 922 C1 575 923 C1	EXCEPT 2100, F2100 MODELS LEFT SIDE Right Side For 2100, F2100 Models
		575 902 C1 575 903 C1	LEFT SIDE RIGHT SIDE

TM 5-4210-230-14&P-2 MT140 GROUP 16- CAB AND/OR BODIES

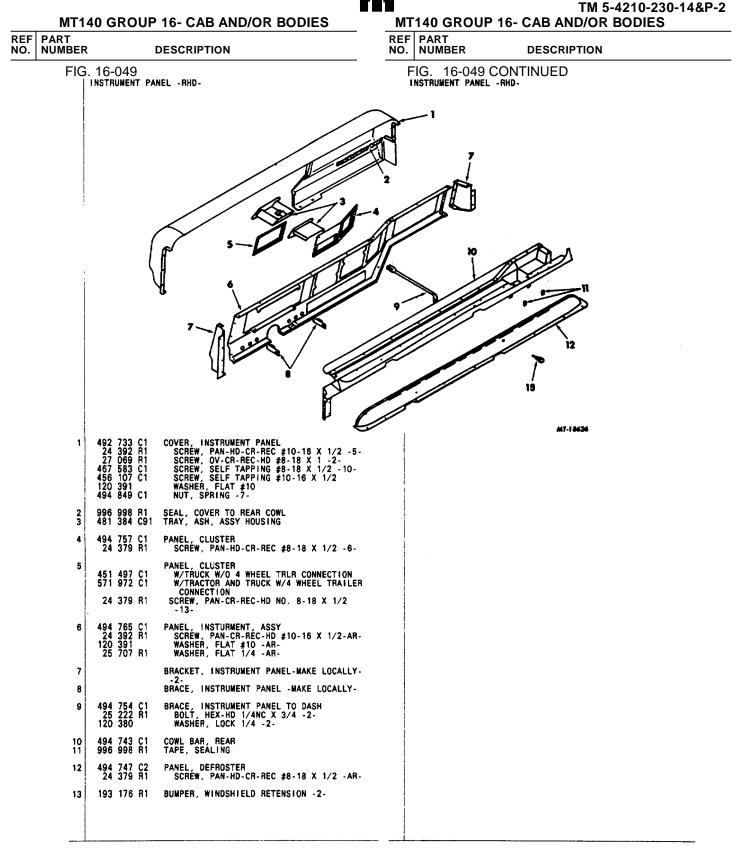
MIT40 GROUP 16- CAB AND/OR BODIES	
REF PART NO. NUMBER DESCRIPTION	
FIG. 16-048 HEATER DUCTS -RHD-	
1-2 J-2	
10 .	
D-13	
23	
20	
26 25 -24	
25	
MT-19101	
1 496 066 C3 BRACKET, SPRING	
453 002 C1 RIGHT 403 061 C1 RIVET, DOME HEAD 3/8 -AR-	
3 571 726 C1 DUCT, HEATER, CENTER UPPER 408 941 C1 SCREW, OV-CR-REC-HD NO. 10-16 X 3/4 25 520 R1 NUT HEX. 5/18NC	
3 571 726 C1 DUCT, HEATER, CENTER UPPER 408 941 C1 SCREW, OV-CR-REC-HD NO. 10-16 X 3/4 25 520 R1 NUT, HEX. 5/16NC 120 214 Washer, LOCK 5/16 Regular 120 391 Washer, Flat No. 10 189 093 R1 NUT, PUSH ON	
4 SEAL, TAPE -MAKE LOCALLY- 5 469 968 C1 CLAMP, CABLE 6 476 140 C1 SPRING, FRESH AIR DOOR 7 492 518 C1 KNOB, ASSY 8 472 280 C1 NUT, FACE 9 472 219 C1 CONTROL, ASSY	
8 472 280 C1 NUT, FACE 9 472 219 C1 CONTROL, ASSY	

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	MI14	40 GRO	UP	16- CAB AND/OR BODIES
REF NO.	PART NUMBER			DESCRIPTION
	FIG	. 16-048 Heater du		ONTINUED -RHD-
	10	472 271 146 327	C1 R1	LINK VENT DOOR CLIP, PEDAL LINK -3-
	11	571 729 496 056 466 313	C1	DOOR, FRESH AIR, ASSY Rod, Air Box Door Retainer, Door Rod -2-
	12	501 040	C1	SEAL, HEATER TO DEFROSTER
	13	501 076 403 061		BRACKET, CABLE MOUNTING RIVET, DOME HEAD 3/8 -AR-
	14 15	496 069 469 968	C2 C1	DUCT, HEATER Clamp, Cable
	16	403 061	C1	BAR, MOUNTING -MAKE LOCALLY- Rivet, dome Head 3/8 -AR-
	17 18 19 20 21 22 23 23 24 25	496 064 496 065 120 391 26 304 469 502 474 017 239 870	C1 C1 C1 C1	SEAL, TAPE -WAKE LOCALLY- DOOR, ASSY DEFROSTER ROD, DOOR DEFROSTER WASHER, FLAT ‡10 SCREW, PAN-HD-CR-REC ‡10-16 X 3/4 SEAL, AIR INTAKE LOSER ROD, DUCT TIP, -NOT SERVICED- SPRING, DUCT DOOR
	26	474 039 160 582 25 707	C1 R1	DUCT, AIR INTAKE Screw, Pan-cr-rec-hd 1/4nc X 1 -3- Washer, Plain 1/4 -3-
	27 28 29 30	469 503 469 512 469 510	C92	PIVOT, DOOR -2- SEAL, -PURCHASE LOCALLY- DOOR, ASSY -3- SEAL, AIR INTAKE UPPER
		24 379	R1	*PLATE, COVER HEATER CONTROL -NOT SERVICEDOWIT HEATER CODE 10777- SCREW, PAN-CR-REC-HD NO. 8-18 X 1/2 -4-
		24 392	R1	*PLATE, COVER HEATER HOSE OPENING -NOT SERVICEDOMIT HEATER CODE 10777- SCREW, PAN-CR-REC-HD NO. 10-16 X 1/2 -2-
				PARTS NOT ILLUSTRATED

TM 5-4210-230-14&P-2 MT140 GROUP 16- CAB AND/OR BODIES

REF NO.	PART NUMBER	DESCRIPTION	
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NUMBE	R	DESCRIPTION
FI	G. 16-050 CAB MOUNTING	
		МТ-27068
1	142 095 414 061 C1	PLUG, BUTTON -2- Bolt, Hex-HD 1/2NF X 3-3/4 -2-
	414 087 či	NUT, LOCK 1/2NF -2-
3	505 971 C1 505 973 C1 24 862 R1 25 654 R1 120 384 120 214	PLATE, CAB FRONT MOUNTING LEFT Right Bolt, Hex-HD 1/2NC X 1-1/2 -6- Bolt, Hex-HD 5/16NF X 1-1/2 -2- WASHER, LOCK 1/2 -6- WASHER, LOCK 5/16 -2-
4	505 969 C1	INSULATOR, CAB FRONT MOUNTING -2-
5	505 311 C1 505 312 C1 414 052 C1 414 053 C1 414 087 C1	BRACKET, CAB, FRONT MOUNTING LEFT Right BOLT, HEX-FLG-HD 1/2NF X 1-1/2 -8- BOLT, HEX-FLG-HD 1/2NF X 1-3/4 -AR- NUT, HEX. LOCK-FLG 1/2NF -AR-
6 7	473 987 C2	INSULATOR, CAB MOUNTING, LOWER -2- Spacer -Not Serviced-
8	24 869 R1 9 412 230	80LT, HEX-HD 1/2NC X 4-1/2 NUT, LOCK 1/2NC -2-
9 10 11 12	472 211 C1 501 901 C1 475 941 C1 473 935 C1	WASHER, FLAT -2- SPACER, CAB REAR MOUNTING -2- INSULATOR, BODY MOUNTING -2- INSULATOR, REAR CAB MOUNTING -2-

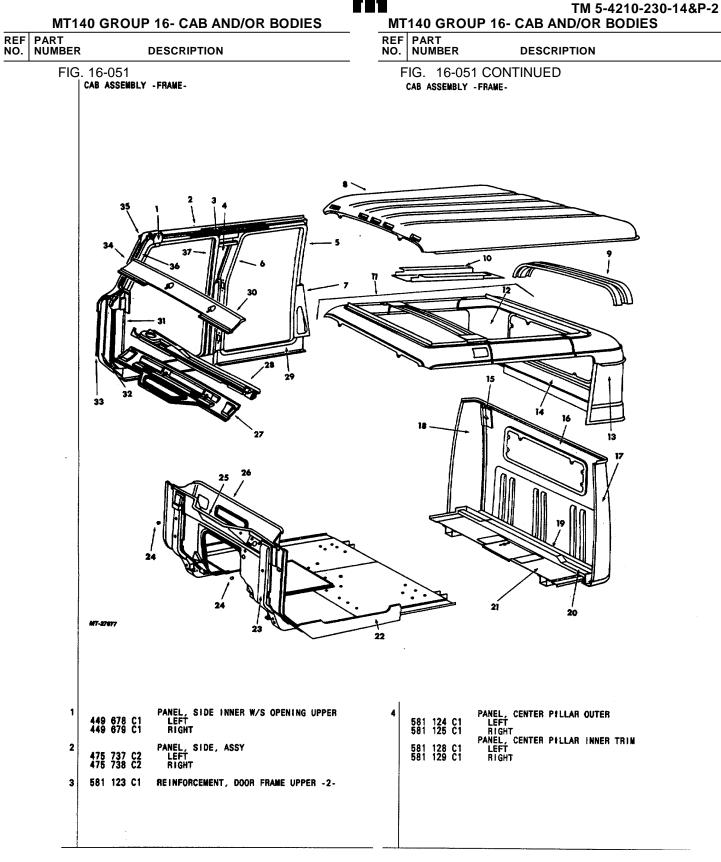
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REF PART NO. NUMBER DESCRIPTION

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PAGE NO. 55



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FIG. 16-051 PAGE NO. 56 SECTION IV

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NUMERIC	CAI	_ IN	DEX MT-140			NUME	ER	ICAL	INDEX MT-140		
PART NUMBER	SEC	PG	PART NUMBER	SBC	PG	PART NUMBER	SBC	PG	PART S NUMBER S	BC	PG
$ \begin{array}{c} \textbf{RJ} & \textbf{6} \\ \textbf{RJ} & \textbf{6} \\ \textbf{RJ} & \textbf{10} \\ \textbf{Y} \\ \textbf{ON} & \textbf{112} \\ \textbf{Y} \\ \textbf{ST} & \textbf{201} \\ \textbf{ST} & \textbf{205} \\ \textbf{A} \\ \textbf{ST} & \textbf{205} \\ \textbf{A} \\ \textbf{ST} & \textbf{205} \\ \textbf{A} \\ \textbf{ST} & \textbf{205} \\ \textbf{A} \\ \textbf{ST} & \textbf{205} \\ \textbf{A} \\ \textbf{ST} & \textbf{205} \\ \textbf{A} \\ \textbf{ST} & \textbf{205} \\ \textbf{A} \\ \textbf{ST} & \textbf{205} \\ \textbf{A} \\ \textbf{ST} \\ \textbf{205} \\ \textbf{A} \\ \textbf{ST} \\ \textbf{205} \\ \textbf{A} \\ \textbf{ST} \\ \textbf{205} \\ \textbf{A} \\ \textbf{ST} \\ \textbf{205} \\ \textbf{A} \\ \textbf{ST} \\ \textbf{205} \\ \textbf{A} \\ \textbf{ST} \\ \textbf{205} \\ \textbf{ST} \\ \textbf{200} \\ \textbf{205} \\ \textbf{ST} \\ \textbf{205} \\ \textbf{ST} \\ \textbf{205} \\ \textbf{ST} \\ \textbf{205} \\ \textbf{ST} \\ \textbf{205} \\ \textbf{ST} \\ \textbf{205} \\ \textbf{ST} \\ \textbf{205} \\ \textbf{ST} \\ \textbf{205} \\ \textbf{ST} \\ \textbf{205} \\ \textbf{ST} \\ \textbf{205} \\ \textbf{205} \\ \textbf{ST} \\ \textbf{205} \\ \textbf{ST} \\ \textbf{205} \\ \textbf{205} \\ \textbf{ST} \\ \textbf{205} \\ \textbf{205} \\ \textbf{ST} \\ \textbf{205} \\ \textbf{205} \\ \textbf{205} \\ \textbf{ST} \\ \textbf{205} \\$	$\begin{array}{c} 88888833344444443313333333446144414133433333333$	15 25 83 85 12 21 21 21 21 55 51 12	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 17 \\ 14 \\ 14 \\ 14 \\ 14 \\ 14 \\ 14 \\ 14 \\$	5; 79 1633 1925 4 6 8 8 100 339 6 4 121 339 6 4 122 233 31 211 222 33 332 77 4 355 77 4 355 200 6 322 34 4 8 527 77 7 7 7 8 5 57 77 7 7 7 7 7 8 5 6 5 7 7 7 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8	$ \begin{array}{c} \text{ST 2 092} \\ \text{ST 2 094} \\ \text{ST 2 094} \\ \text{ST 2 110} \\ \text{ST 2 110} \\ \text{ST 2 112} \\ \text{ST 2 112} \\ \text{ST 2 112} \\ \text{ST 2 112} \\ \text{ST 2 112} \\ \text{ST 2 112} \\ \text{ST 2 112} \\ \text{ST 2 112} \\ \text{ST 2 114} \\ \text{ST 2 114} \\ \text{ST 2 114} \\ \text{ST 2 114} \\ \text{ST 2 1161} \\ \text{ST 2 161} \\ \text{ST 2 161} \\ \text{ST 2 161} \\ \text{ST 2 161} \\ \text{ST 2 161} \\ \text{ST 2 161} \\ \text{ST 2 161} \\ \text{ST 2 162} \\ \text{ST 2 162} \\ \text{ST 2 162} \\ \text{ST 2 162} \\ \text{ST 2 2 162} \\ \text{ST 2 2 162} \\ \text{ST 2 2 162} \\ \text{ST 2 2 162} \\ \text{ST 2 2 162} \\ \text{ST 2 2 162} \\ \text{ST 2 2 162} \\ \text{ST 2 2 162} \\ \text{ST 2 2 162} \\ \text{ST 2 2 162} \\ \text{ST 2 2 162} \\ \text{ST 2 2 162} \\ \text{ST 2 2 162} \\ \text{ST 2 2 162} \\ \text{ST 3 3 405 H H} \\ \text{6 569 H} \\ \text{7 3 3 405 H} \\ \text{6 569 H} \\ \text{7 3 3 405 H} \\ \text{6 569 H} \\ \text{7 3 3 405 H} \\ \text{6 569 H} \\ \text{7 0 11 7 05 V} \\ \text{10 705 V} \\ 10 $	$\begin{array}{c} 144\\ 147\\ 177\\ 177\\ 177\\ 144\\ 144\\ 144\\$	$\begin{array}{c} 54\\ 47\\ 1173\\ 1883\\ 453\\ 112\\ 593\\ 453\\ 112\\ 15\\ 25\\ 393\\ 46\\ 567\\ 7885\\ 90\\ 67\\ 11\\ 6\\ 8\\ 11\\ 24\\ 8\\ 28\\ 22\\ 22\\ 73\\ 11\\ 6\\ 8\\ 11\\ 24\\ 8\\ 28\\ 22\\ 73\\ 11\\ 16\\ 28\\ 28\\ 27\\ 31\\ 16\\ 16\\ 16\\ 16\\ 16\\ 24\\ 16\\ 28\\ 28\\ 27\\ 31\\ 10\\ 16\\ 16\\ 16\\ 16\\ 16\\ 16\\ 16\\ 16\\ 16\\ 16$	13 156 H 13 249 D 13 273 D 13 273 D 13 277 DC 13 277 DC 13 303 D 13 363 D 13 363 D 13 363 D 13 363 D 13 363 D 13 363 D 13 361 VA 14 189 H 15 912 H 16 009 R1 16 002 R1 16 012 R1 16 012 R1 16 012 R1 16 012 R1 16 012 R1 16 012 R1 16 012 R1 16 016 R1 16 018 R1 16 024 R1 16 024 R1 16 023 R1 16 024 R1 16 024 R1 16 024 R1 16 023 R1 16 619 R1 16 619 R1 16 619 R1 16 623 R1 16 845 R1 16 845 R1 16 845 R1 16 845 R1 16 845 R1 16 845 R1 16 845 R1 16 845 R1 16 845 R1 16 845 R1 16 845 R1 16 845 R1 16 845 R1 16 845 R1 16 845 R1 16 845 R1 16 845 R1 16 845 R1 16 923 R91 17 016 R1 17 016 R1 17 024 R1 17 024 R1 17 025 R1 17 055 R1 17 055 R1	1777777433551333333333333333333333333322443333345333334533333335	$\begin{array}{c} 8985181282271251712448555123458244442248882249059393975733455456233455151574677883474718229442251288561288888881755456778838747188229848285514488561288888886186861288561288886188861$



NUMEF	RIC	AL I	NDEX MT-140			_ T		IUME	ERI	CAL	INDEX MT-140		
PART NUMBER	SEC	PG	PART NUMBER	SE	c	PG	PART NUMBER		SEC	PG	PART NUMBER	SEC	PG
17 136 R1 17 139 R1 17 139 R1 17 139 R1 17 158 R1 17 158 R1 17 158 R1 17 158 R1 17 158 R1 17 158 R1 17 176 R1 17 176 R1 17 176 R1 17 244 R1 17 244 R1 17 244 R1 17 244 R1 17 244 R1 17 272 R1 18 265 R1 19 232 R1 19 232 R1 19 232 R1 19 633 R1 19 633 R1 19 638 R1 19 638 R1 19 638 R1 19 638 R1 19 638	$\begin{array}{c} 13633422241443366666212223372222332445588844445484444444444444444444$	57 57 53 173 202 30 22 22 51 19 19 40	19 831 R1 19 858 R1 19 858 R1 19 858 R1 19 858 R1 19 858 R1 19 858 R1 19 910 R1 19 910 R1 19 910 R1 19 910 R1 19 910 R1 19 910 R1 19 910 R1 19 910 R1 19 910 R1 19 928 R1 19 921 R1 19 926 R1 20 015 R1 20 015 R1 20 015 R1 20 015 R1 20 015 R1 20 0171 R1 20 171 R1 20 171 R1 20 <t< td=""><td></td><td>3225444444445333289999666666632233333322112</td><td>$\begin{array}{c} 58380\\ 6140034465535884661\\ 812003436552\\ 8133447774991\\ 85185059\\ 814477744991\\ 85185059\\ 82230463175866\\ 82230463176489\\ 81491122120366335782\\ 823578212235782\\ 8859849011123170071331666\\ 8934322326535782235782\\ 8859849011123170071331666\\ 8934322326535782235782\\ 812122357822357822357\\ 81212235782235782235\\ 812122357822357\\ 8121223557822357\\ 8121223557822357\\ 8121223557822357\\ 8121223557822357\\ 8121223557822357\\ 8121223557822357\\ 8121223557822357\\ 8121223557822357\\ 8121223557822357\\ 8121223557822357\\ 8121223557822357\\ 812122355782257\\ 812122355782257\\ 812122355782257\\ 812122355782257\\ 812122355782257\\ 812122355782257\\ 812122355782257\\ 812122355782257\\ 812122355782257\\ 812122355782257\\ 812122355782257\\ 812122355782257\\ 812122355782257\\ 812122355782257\\ 812122355782257\\ 812122355782257\\ 812122355782257\\ 812122555782257\\ 812122555782257\\ 81212255578257\\ 8121225578257\\ 8121225578257\\ 81212255578257\\ 8121225578257\\ 8121225578257\\ 8121225578257\\ 8121225578257\\ 8121225578257\\ 8121225578257\\ 8121225578257\\ 8121225578257\\ 8121225578257\\ 8121225578257\\ 8121225578257\\ 8121225757257\\ 812122575725757257\\ 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R1 23 304 R1 23 642 R1 23 642 R1 23 642 R1 23 642 R1 23 642 R1 23 642 R1 23 642 R1 23 642 R1 23 642 R1 24 369 R1 24 369 R1 24 379 R1 24 379 R1 24 379 R1 24 379 R1 24 379 R1 24 379 R1 24 379 R1 24 379 R1 24 379 R1 24 383</td><td>$\begin{array}{c} 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\$</td><td>$\begin{array}{l} 126\\ 128\\ 130\\ 145\\ 130\\ 145\\ 152\\ 152\\ 133\\ 333\\ 34\\ 992\\ 147\\ 1156\\ 182\\ 333\\ 34\\ 992\\ 147\\ 1156\\ 182\\ 233\\ 333\\ 40\\ 992\\ 147\\ 1156\\ 182\\ 233\\ 333\\ 40\\ 992\\ 147\\ 1155\\ 162\\ 122\\ 122\\ 122\\ 122\\ 122\\ 122\\ 122$</td></td<></td></t<>		3225444444445333289999666666632233333322112	$\begin{array}{c} 58380\\ 6140034465535884661\\ 812003436552\\ 8133447774991\\ 85185059\\ 814477744991\\ 85185059\\ 82230463175866\\ 82230463176489\\ 81491122120366335782\\ 823578212235782\\ 8859849011123170071331666\\ 8934322326535782235782\\ 8859849011123170071331666\\ 8934322326535782235782\\ 812122357822357822357\\ 81212235782235782235\\ 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NUM	ERICA	_ INDEX MT-140	H	NUM	IERICAL INDEX	MT-140	
PART NUMBER	SEC PG	PART NUMBER	SEC PG	PART NUMBER	SEC PG	PART NUMBER	SEC PG
24 392 R1 24 392 R1 24 392 R1 24 392 R1 24 392 R1 24 392 R1 24 392 R1 24 392 R1 24 392 R1 24 392 R1 24 392 R1 24 392 R1 24 392 R1 24 392 R1 24 392 R1 24 392 R1 24 392 R1 24 392 R1 24 468 R1 24 468 R1 24 468 R1 24 4621 R1 24 621 R1 24 <t< td=""><td>$\begin{array}{cccccccccccccccccccccccccccccccccccc$</td><td>24 839 R1 24 839</td><td>$\begin{array}{cccccccccccccccccccccccccccccccccccc$</td><td>24 840 R1 24 <td< td=""><td>$\begin{array}{c} 4 & 149 \\ 4 & 156 \\ 4 & 156 \\ 4 & 156 \\ 4 & 161 \\ 4 & 163 \\ 4 & 168 \\ 4 & 168 \\ 4 & 168 \\ 4 & 168 \\ 4 & 168 \\ 4 & 168 \\ 4 & 168 \\ 4 & 168 \\ 4 & 182 \\ 4 & 182 \\ 4 & 182 \\ 4 & 184 \\ 4 & 182 \\ 4 & 184 \\ 4 & 188 \\ 4 & 198 \\ 5 & 12 \\ 5 & 5 \\ 5$</td><td>24 840 R1 24 <td< td=""><td>$\begin{array}{cccccccccccccccccccccccccccccccccccc$</td></td<></td></td<></td></t<>	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	24 839 R1 24 839	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	24 840 R1 24 <td< td=""><td>$\begin{array}{c} 4 & 149 \\ 4 & 156 \\ 4 & 156 \\ 4 & 156 \\ 4 & 161 \\ 4 & 163 \\ 4 & 168 \\ 4 & 168 \\ 4 & 168 \\ 4 & 168 \\ 4 & 168 \\ 4 & 168 \\ 4 & 168 \\ 4 & 168 \\ 4 & 182 \\ 4 & 182 \\ 4 & 182 \\ 4 & 184 \\ 4 & 182 \\ 4 & 184 \\ 4 & 188 \\ 4 & 198 \\ 5 & 12 \\ 5 & 5 \\ 5$</td><td>24 840 R1 24 <td< td=""><td>$\begin{array}{cccccccccccccccccccccccccccccccccccc$</td></td<></td></td<>	$ \begin{array}{c} 4 & 149 \\ 4 & 156 \\ 4 & 156 \\ 4 & 156 \\ 4 & 161 \\ 4 & 163 \\ 4 & 168 \\ 4 & 168 \\ 4 & 168 \\ 4 & 168 \\ 4 & 168 \\ 4 & 168 \\ 4 & 168 \\ 4 & 168 \\ 4 & 182 \\ 4 & 182 \\ 4 & 182 \\ 4 & 184 \\ 4 & 182 \\ 4 & 184 \\ 4 & 188 \\ 4 & 198 \\ 5 & 12 \\ 5 & 5 \\ 5$	24 840 R1 24 <td< td=""><td>$\begin{array}{cccccccccccccccccccccccccccccccccccc$</td></td<>	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$

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NUI	MER		INDEX MT-140				NUME	ERIO	CAL	INDEX MT-140		
PART NUMBER	SEC	PG	PART NUMBER	SEC	PG	PART NUMBER		SEC	PG	PART NUMBER	SEC	PG
24 840 R1 24 840	122222222222222222222222222222222222222	51 53 53 54 54	24 841 R1 24 <td< td=""><td>$\begin{smallmatrix} 5 & 5 \\ 5 & 5 \\ 5 & 7 \\ 7 & 7 \\ 7 & 7 \\ 7 & 8 \\ 8 \\ 8 \\ 1 \\ 1 \\ 2 \\ 1 \\ 2 \\ 1 \\ 2 \\ 1 \\ 2 \\ 1 \\ 2 \\ 1 \\ 2 \\ 2$</td><td>55607777788828445580004444393933522227788875788875788993746628992152259933577778888888888888811004443993324666455788875788875788892122223344675778888888888888881100044443993384558888666455788875788875788888666455788875788888866645578888866645578888866645578888866645577888888666455778888886664557888886664557788888866664557888886666455788888666645578888866664557888886666455788888666645578888866664557888866664557888866664557888866664557888866664557888886666666666</td><td>$\begin{array}{cccccccccccccccccccccccccccccccccccc$</td><td>RARIARRANA RARANA RARANA RARANA RARANA RARANA RARANA RAN</td><td>555555555555555555555555555555555555555</td><td>60 74 757 777 78 82 84 85 22 33 33 33 4 5 66 88 9 100 12 133 13 14</td><td>24$843$$R1$24<</td><td>12 12 12 12 12 12 12 12 12 12 12 12 12 1</td><td>$\begin{array}{c} 299\\ 299\\ 311\\ 322\\ 332\\ 335\\ 338\\ 399\\ 399\\ 422\\ 433\\ 355\\ 338\\ 399\\ 399\\ 422\\ 433\\ 355\\ 338\\ 399\\ 399\\ 422\\ 433\\ 355\\ 338\\ 399\\ 399\\ 422\\ 433\\ 339\\ 422\\ 433\\ 339\\ 422\\ 433\\ 339\\ 422\\ 433\\ 339\\ 399\\ 422\\ 433\\ 339\\ 422\\ 433\\ 339\\ 422\\ 433\\ 339\\ 422\\ 433\\ 339\\ 422\\ 433\\ 339\\ 422\\ 433\\ 339\\ 422\\ 433\\ 339\\ 422\\ 434\\ 435\\ 432\\ 222\\ 454\\ 111\\ 145\\ 155\\ 222\\ 434\\ 111\\ 145\\ 155\\ 222\\ 434\\ 111\\ 145\\ 155\\ 222\\ 434\\ 111\\ 145\\ 155\\ 222\\ 434\\ 112\\ 111\\ 145\\ 155\\ 222\\ 424\\ 112\\ 111\\ 145\\ 155\\ 170\\ 444\\ 115\\ 111\\ 111\\ 111\\ 111\\ 111\\ 111$</td></td<>	$\begin{smallmatrix} 5 & 5 \\ 5 & 5 \\ 5 & 7 \\ 7 & 7 \\ 7 & 7 \\ 7 & 8 \\ 8 \\ 8 \\ 1 \\ 1 \\ 2 \\ 1 \\ 2 \\ 1 \\ 2 \\ 1 \\ 2 \\ 1 \\ 2 \\ 1 \\ 2 \\ 2$	55607777788828445580004444393933522227788875788875788993746628992152259933577778888888888888811004443993324666455788875788875788892122223344675778888888888888881100044443993384558888666455788875788875788888666455788875788888866645578888866645578888866645578888866645577888888666455778888886664557888886664557788888866664557888886666455788888666645578888866664557888886666455788888666645578888866664557888866664557888866664557888866664557888866664557888886666666666	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	RARIARRANA RARANA RARANA RARANA RARANA RARANA RARANA RAN	555555555555555555555555555555555555555	60 74 757 777 78 82 84 85 22 33 33 33 4 5 66 88 9 100 12 133 13 14	24 843 $R1$ 24<	12 12 12 12 12 12 12 12 12 12 12 12 12 1	$\begin{array}{c} 299\\ 299\\ 311\\ 322\\ 332\\ 335\\ 338\\ 399\\ 399\\ 422\\ 433\\ 355\\ 338\\ 399\\ 399\\ 422\\ 433\\ 355\\ 338\\ 399\\ 399\\ 422\\ 433\\ 355\\ 338\\ 399\\ 399\\ 422\\ 433\\ 339\\ 422\\ 433\\ 339\\ 422\\ 433\\ 339\\ 422\\ 433\\ 339\\ 399\\ 422\\ 433\\ 339\\ 422\\ 433\\ 339\\ 422\\ 433\\ 339\\ 422\\ 433\\ 339\\ 422\\ 433\\ 339\\ 422\\ 433\\ 339\\ 422\\ 433\\ 339\\ 422\\ 434\\ 435\\ 432\\ 222\\ 454\\ 111\\ 145\\ 155\\ 222\\ 434\\ 111\\ 145\\ 155\\ 222\\ 434\\ 111\\ 145\\ 155\\ 222\\ 434\\ 111\\ 145\\ 155\\ 222\\ 434\\ 112\\ 111\\ 145\\ 155\\ 222\\ 424\\ 112\\ 111\\ 145\\ 155\\ 170\\ 444\\ 115\\ 111\\ 111\\ 111\\ 111\\ 111\\ 111$



NUM	ERI	CAL	INDEX MT-140			NUME	RIC	AL	INDEX MT-140		
PART NUMBER	8 EC	PG	PART NUMBER	SBC	PG	PART NUMBER	SEC	PG	PART NUMBER	SEC	PG
24 846 R1 24 846 R1 24 846 R1 24 846 R1 24 846 R1 24 846 R1 24 847 R1 24 848 R1 24 848 R1 24 848 R1 24 848 R1 24 848 R1 24 848 R1 24 849 R1 24 849 R1 24 849 R1 24 849 R1 24 849 R1 24 849 R1 24 849 R1 24 849 R1 24 849 R1 24 849 R1 24 840 R1 24 840 R1 24 840 R1 24 840 R1 24 840 R1 24 840 R1 24 850		37 123 123 123 145 55 56 67 40 40 40 43 40 43 40 43 40 43 40 43 40 40 43 40 40 40 40 40 40 40 40 40 40	24 861 81 24 861 81 24 861 81 24 861 81 24 861 81 24 861 81 24 861 81 24 861 81 24 861 81 24 861 81 24 861 81 24 861 81 24 861 81 24 861 81 24 861 81 24 861 81 24 861 81 24 862 81	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	58 31 57 177 28 14 18 20 177 28 14 18 20 177 28 14 18 20 177 28 14 18 20 127 28 14 18 20 21 13 50 62 62 62 62 62 62 62 62 62 62	24 862 R1 24 <td< td=""><td>333444444444444444677777882222355556666666444444888888822223334444444444444</td><td>32 34 87 200 24 72 96 102 29 60 61 61 175 176 62 63 175 176 63 175 176 63 175 176 63 175 176 63 175 177 19 60 21 175 175 175 175 175 175 175 175 175 17</td><td>24 884 R1 24 890 R1 24 890 R1 24 895 R1 24 895 R1 24 895 R1 24 895 R1 24 895 R1 24 895 R1 24 895 R1 24 895 R1 24 895 R1 24 895 R1 24 895 R1 24 895 R1 24 895 R1 24 895 R1 24 895 R1 24 895 R1 25 051 R1 25 056 R1 25 056 R1 25 220 R1 25 220 R1 25 220 R1 25 220 R1 25 220 R1 25 220 R1 25 220 R1 25 220 R1 25 220 R1 25 220 R1 25 220 R1 25 220 R1 25 220 R1</td><td></td><td>40 8 9 130 8 27</td></td<>	333444444444444444677777882222355556666666444444888888822223334444444444444	32 34 87 200 24 72 96 102 29 60 61 61 175 176 62 63 175 176 63 175 176 63 175 176 63 175 176 63 175 177 19 60 21 175 175 175 175 175 175 175 175 175 17	24 884 R1 24 890 R1 24 890 R1 24 895 R1 24 895 R1 24 895 R1 24 895 R1 24 895 R1 24 895 R1 24 895 R1 24 895 R1 24 895 R1 24 895 R1 24 895 R1 24 895 R1 24 895 R1 24 895 R1 24 895 R1 24 895 R1 25 051 R1 25 056 R1 25 056 R1 25 220 R1 25 220 R1 25 220 R1 25 220 R1 25 220 R1 25 220 R1 25 220 R1 25 220 R1 25 220 R1 25 220 R1 25 220 R1 25 220 R1 25 220 R1		40 8 9 130 8 27



	NUMERICA	LINDEX_MT-140		_		UMERIC	AL INDEX MT-140		
PART NUMBER	SEC PG	PART NUMBER	SEC	PG	PART NUMBER	SEC PG	PART NUMBER	SEC	PG
15 2222 R111 17 222 R11 18 1	4 99 4 100 4 104 4 105 4 105 4 105 4 105 4 105 4 105 4 105 4 105 4 105 4 105 4 120 4 121 4 129 4 130 4 131 4 132 4 134 4 134 4 136 4 136 4 136 4 136 4 136 4 136 4 136 4 136 4 136 4 136 4 136 4 136 4 136 4 136 4 136 4 136 4 136 4 136 4 136 4 160 4 150 4 150 4 150 4 150 4 150 4 150 4 150 4 165 4 165 4 165 4 166 4 165 4 165 4 165 4 165 5	25 222 R1 25 222	$\begin{array}{c} 7 \\ 8 \\ 8 \\ 8 \\ 9 \\ 9 \\ 9 \\ 9 \\ 9 \\ 9 \\ 9$	$\begin{array}{c} 41\\ 355\\ 55\\ 4\\ 52\\ 236\\ 6\\ 7\\ 7\\ 7\\ 5\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\$	25 228 R1 25 228	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	25 228 R1 25 <td< td=""><td>12 12 12 12 12 12 12 12 12 12 12 12 12 1</td><td>16 16 16 16 16 16</td></td<>	12 12 12 12 12 12 12 12 12 12 12 12 12 1	16 16 16 16 16 16



	NUM	Eł	RIC		MT-140				NU	JME	RIC	AL IND	ЕХ МТ-140		
PART NUMBER	SE	c	PG	PAB NUMBE		SBC	PC	PART NUMBER	·	SEC	PG		PART NUMBER	SEC	PG
25 228 R11 25 228 R11		777777777777777777777777777777777777777	$\begin{array}{c} 56 \\ 905 \\ 6905 \\ 6905 \\ 6894 \\ 7807 \\ 8079 \\ 23334 \\ 1796 \\ 0772 \\ 03334 \\ 1796 \\ 0772 \\ 03334 \\ 1796 \\ 0772 \\ 036 \\ 1112 \\ 1236 \\ 369 \\ 1122 \\ 136 \\ 369 \\ 1113 \\ 125$	$\begin{array}{c} 25 & 48 \\ 25 & 47 \\$	77 R1 36 R1 36 R1 308 R1 500 H	3299244444422244444445555569992234445555555555555555555555555555555	$\begin{array}{c} 19\\ 174\\ 8\\ 12\\ 101\\ 771\\ 722\\ 187\\ 79\\ 600\\ 47\\ 133\\ 153\\ 153\\ 153\\ 153\\ 153\\ 153\\ 153$	$\begin{array}{c} 255 & 4922\\$	R1 R1 R1 R1 R1 R1 R1 R1	12 12 12 12 12 12 12 12 12 12 12 12 12 1	$\begin{array}{r} 554\\ 554\\ 433\\ 377\\ 57\\ 57\\ 57\\ 57\\ 57\\ 57\\ 57\\ 57\\ 57\\ $		25 493 R1 25 <td< td=""><td>4</td><td></td></td<>	4	



N	UMERICAL IN	IDEX MT-140		NU	MERICAL IN	DEX MT-140	
PART NUMBER	SEC PG	PART NUMBER	SEC PG	PART NUMBER	SEC PG	PART NUMBER	SEC PO
25 519 R1 25 519	4 133 4 135 4 135 4 135 4 137 4 138 4 137 4 138 4 137 4 138 4 137 4 138 4 137 4 138 4 137 4 138 4 144 4 144 4 150 4 151 4 151 4 153 4 155 4 155 4 155 4 155 4 165 4 165 4 165 4 165 4 165 5 36 5 37 5 38 5 44 4 169 4 169 4 169 4 167 4 168 4 169 4 167 4 168 4 169 4 167 4 168 4 169 4 167 4 168 4 169 4 167 5 32 5 36 5	25 519 R1 25 520 R1 25 820 R1 25 820	5 75 5 78 5 78 5 80 5 83 5 83 5 83 5 83 5 84 5 91 12 123 9 12 123 9 12 123 9 12 123 9 12 123 12 125 5 8 9 10 12 123 12 125 12 2257 12 2257 12 2257 12 2257 12 2257 13 28 9 12 12 125 12 2257 12 2257 13 28 9 12 12 125 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	25 520 R1 20 R1 20 R1 20 R1 20 R1 20 R1 20 R1 20 R1 20 R	$ \begin{array}{c} 5 & 66 \\ 5 & 5 & 67 \\ 5 & 775 \\ 5 & 775 \\ 5 & 775 \\ 5 & 775 \\ 5 & 775 \\ 5 & 785 \\ 5 & 900 \\ 5 & 983 \\ 5 & 900 \\ 5 & 991 \\ 5 & 922 \\ 5 & 990 \\ 5 & 991 \\ 5 & 992 \\ 5 & 992 \\ 5 & 992 \\ 5 & 992 \\ 5 & 992 \\ 5 & 992 \\ 5 & 992 \\ 5 & 992 \\ 5 & 992 \\ 5 & 992 \\ 9 & 99 \\ 9 & 122 \\ 122$	25 520 R1 5520 R1 5520 R1 5520 R1 1 R1 1 R1 1 R1 1 R1 1 R1 1 R1 1 R1	1 2333334445C7 378599C001111111111111111111111111111111111

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	NUMERICAL	INDEX MT-140		NUN	IERICAL INDEX MT-140	J
PART NUMBER	SEC PC	PART NUMBER SE	C PG	PART S NUMBER S	EC PG PART NUMBER	SEC P
25552222 R R R R R R R R R R R R R R R R	1 8 60 1 8 60 1 8 61 1 8 61 1 8 61 1 8 61 1 2 28 1 12 28 1 12 74 1 12 14 12 133 12 136 1 12 177 12 178 12 177 12 184 12 197 12 204 12 204 12 204 12 204 12 204 12 204 12 204 16 49 16 49 16 49 16 49 16 49 16 49 16 49 16 49 16 49	25 544 R1 12 25 544 R1 12 25 544 R1 12 25 544 R1 12 25 546 R1 12 25 550 R1 12 25 550 R1 12 25 552 R1 5 25 552 R1 5 25 552 R1 5 25 552 R1 12 25 552 R1 5 25 552 R1 12 25 552 R1 12 25 553 R1 5 25 553 R1 5 25 553 R1 5 25 553 R1 5 25 553 R1 3 25 653 R1 4 25 653 R1 4 25 653 R1 4 25<	$\begin{array}{c} 28\\ 28\\ 87\\ 10\\ 87\\ 10\\ 87\\ 10\\ 87\\ 10\\ 87\\ 10\\ 12\\ 12\\ 44\\ 46\\ 7\\ 87\\ 10\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12$	25 654 R1 25 <td< td=""><td>2 136 25 708 R1 2 140 25 708 R1 3 140 25 708 R1 3 63 25 708 R1 3 63 25 708 R1 3 70 25 708 R1 3 94 25 708 R1 2 71 25 708 R1 2 71 25 708 R1 2 86 25 708 R1 2 86 25 708 R1 2 136 25 708 R1 2 86 25 708 R1 4 99 25 708 R1 2 164 25 708 R1 2 73 25 708 R1 2 73 25 708 R1</td><td>5 8 8 8 9 3 3 4</td></td<>	2 136 25 708 R1 2 140 25 708 R1 3 140 25 708 R1 3 63 25 708 R1 3 63 25 708 R1 3 70 25 708 R1 3 94 25 708 R1 2 71 25 708 R1 2 71 25 708 R1 2 86 25 708 R1 2 86 25 708 R1 2 136 25 708 R1 2 86 25 708 R1 4 99 25 708 R1 2 164 25 708 R1 2 73 25 708 R1 2 73 25 708 R1	5 8 8 8 9 3 3 4

PRINTED IN UNITED STATES OF AMERICA

N	UMERI	CAL	INDEX MT-140			NUMER	RIC	AL INDEX	MT-140		
PART NUMBER	SEC	PG	PART NUMBER	SEC	PG	PART S NUMBER	SEC	PG	PART NUMBER	SEC	PG
25 708 R 25 708 R	88888888888888888888888888888888888888	$\begin{array}{c} 28\\ 299\\ 300\\ 311\\ 312\\ 323\\ 32\\ 333\\ 32\\ 332\\ 332\\ $	25 708 R1 25 709 R1 25 709 R1 25 709	444444444444444444444444444444444444444	94 4 5 11 3 5 3 5 0 4 3 4 4 4 3 4 5 6 9 10 15 6 18 8 5 8 6 0 4 3 4 4 7 7 2 2 8 2 2 4 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	25 709 R1 25 709	5 5 5 5	43 44 44 45 46 46 47 47 47 47 47 47 47 47 47 47 47 47 48 48 48 48 48 48 48 48 48 48 48 48 56	25 709 R1 25 709	777777777777777777777777777777777777777	$\begin{array}{c} 100\\ 133\\ 147\\ 191\\ 223\\ 244\\ 279\\ 312\\ 235\\ 368\\ 399\\ 423\\ 6666\\ 67\\ 88\\ 899\\ 99\\ 133\\ 2299\\ 299\\ 290\\ 232\\ 233\\ 333\\ 333\\ 333\\ 333\\ 555\\ 600\\ 600\\ 611\\ 622\\ 25\\ 62\\ 59\\ 131\\ 177\\ 74\\ 75\\ 8\end{array}$



NUM	ERI	CAL	. INDEX мт-140			NUME	RI	CAL INDE	ЕХ МТ-140		
PART NUNBER	SEC	PG	PART NUMBER	SEC	PG	PART NUMBER	SBC	PG	PART NUMBER	SEC	PG
25 709 R1 25 709	$\begin{array}{c} 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\$	1777 178 182 184 184 184 205 209 216 208 209 2177 2177 2177 2177 218 218 218 218 218 2122 223 2255 2266 2277 299 306 399 306 399 433 639 701 715 755 755 7994 34 40 433 499 559 88 1477 178 179 299 306 309 300 701 715 755 759 799 434 409 300 701 715 755 759 799 434 409 300 701 715 755 759 799 434 409 709 716 717 717 717 717 717 717 717 717 717	25 710 R1 25 711 R1 25 711 R1 25 711 R1 25 711 R1 25 711 R1 25 711 R1	16 16 <td< td=""><td>61 61 61 61 63 63 68 71 72 76 82 83 87 71 72 76 82 83 87 105 82 83 87 105 88 88 88 88 88 88 80 80 80 80 80 80 80</td><td>25 711 R1 26 711 R1 25 712 R1 25 750 R1 25 750 R1 25 750 R1 25 750 R1 25 750 R1 25 750 R1 25 750 R1 25 750 R1 25 750 R1 25 750 R1 25 750 R1 25 750 R1 25 750 R1 25 750 R1 25 750 R1 25 750 R1 25 750 R1 25 750 R1 25 751 R1</td><td>444455558222233333333333334444444333334444444444</td><td>$\begin{array}{c} 32\\ 34\\ 191\\ 192\\ 192\\ 86\\ 96\\ 102\\ 5\\ 71\\ 72\\ 76\\ 8\\ 60\\ 601\\ 64\\ 855\\ 39\\ 43\\ 35\\ 521\\ 22\\ 28\\ 47\\ 49\\ 53\\ 39\\ 43\\ 35\\ 55\\ 77\\ 18\\ 95\\ 39\\ 43\\ 47\\ 49\\ 53\\ 55\\ 57\\ 17\\ 18\\ 95\\ 55\\ 57\\ 17\\ 18\\ 95\\ 55\\ 57\\ 17\\ 18\\ 95\\ 55\\ 57\\ 17\\ 18\\ 95\\ 55\\ 57\\ 17\\ 18\\ 95\\ 55\\ 57\\ 17\\ 18\\ 95\\ 55\\ 74\\ 6\\ 17\\ 18\\ 95\\ 55\\ 57\\ 17\\ 18\\ 95\\ 55\\ 74\\ 6\\ 17\\ 18\\ 95\\ 55\\ 74\\ 11\\ 15\\ 129\\ 130\\ 54\\ 115\\ 129\\ 130\\ 54\\ 115\\ 129\\ 130\\ 54\\ 115\\ 129\\ 130\\ 54\\ 115\\ 129\\ 130\\ 54\\ 115\\ 129\\ 130\\ 54\\ 115\\ 129\\ 130\\ 54\\ 115\\ 129\\ 91\\ 35\\ 56\\ 57\\ 17\\ 18\\ 95\\ 55\\ 74\\ 6\\ 48\\ 95\\ 91\\ 52\\ 68\\ 48\\ 95\\ 95\\ 91\\ 52\\ 68\\ 48\\ 95\\ 95\\ 91\\ 52\\ 52\\ 91\\ 52\\ 52\\ 91\\ 52\\ 52\\ 52\\ 52\\ 52\\ 52\\ 52\\ 52\\ 52\\ 52$</td><td>25 751 R1 25 751</td><td></td><td>200 54 88 91 115 141 145 181 198 214 216 60 4 4 10 26 4 93 180 194 16 17 7 17 18 180 199 199 199 199 199</td></td<>	61 61 61 61 63 63 68 71 72 76 82 83 87 71 72 76 82 83 87 105 82 83 87 105 88 88 88 88 88 88 80 80 80 80 80 80 80	25 711 R1 26 711 R1 25 712 R1 25 750 R1 25 750 R1 25 750 R1 25 750 R1 25 750 R1 25 750 R1 25 750 R1 25 750 R1 25 750 R1 25 750 R1 25 750 R1 25 750 R1 25 750 R1 25 750 R1 25 750 R1 25 750 R1 25 750 R1 25 750 R1 25 751 R1	444455558222233333333333334444444333334444444444	$\begin{array}{c} 32\\ 34\\ 191\\ 192\\ 192\\ 86\\ 96\\ 102\\ 5\\ 71\\ 72\\ 76\\ 8\\ 60\\ 601\\ 64\\ 855\\ 39\\ 43\\ 35\\ 521\\ 22\\ 28\\ 47\\ 49\\ 53\\ 39\\ 43\\ 35\\ 55\\ 77\\ 18\\ 95\\ 39\\ 43\\ 47\\ 49\\ 53\\ 55\\ 57\\ 17\\ 18\\ 95\\ 55\\ 57\\ 17\\ 18\\ 95\\ 55\\ 57\\ 17\\ 18\\ 95\\ 55\\ 57\\ 17\\ 18\\ 95\\ 55\\ 57\\ 17\\ 18\\ 95\\ 55\\ 57\\ 17\\ 18\\ 95\\ 55\\ 74\\ 6\\ 17\\ 18\\ 95\\ 55\\ 57\\ 17\\ 18\\ 95\\ 55\\ 74\\ 6\\ 17\\ 18\\ 95\\ 55\\ 74\\ 11\\ 15\\ 129\\ 130\\ 54\\ 115\\ 129\\ 130\\ 54\\ 115\\ 129\\ 130\\ 54\\ 115\\ 129\\ 130\\ 54\\ 115\\ 129\\ 130\\ 54\\ 115\\ 129\\ 130\\ 54\\ 115\\ 129\\ 130\\ 54\\ 115\\ 129\\ 91\\ 35\\ 56\\ 57\\ 17\\ 18\\ 95\\ 55\\ 74\\ 6\\ 48\\ 95\\ 91\\ 52\\ 68\\ 48\\ 95\\ 95\\ 91\\ 52\\ 68\\ 48\\ 95\\ 95\\ 91\\ 52\\ 52\\ 91\\ 52\\ 52\\ 91\\ 52\\ 52\\ 52\\ 52\\ 52\\ 52\\ 52\\ 52\\ 52\\ 52$	25 751 R1 25 751		200 54 88 91 115 141 145 181 198 214 216 60 4 4 10 26 4 93 180 194 16 17 7 17 18 180 199 199 199 199 199



NUIMI	EDIC	A 1	INDEX MT-140					~ ^ 1	MT 440	
PART NUMBER	SEC	PG	PART NUMBER	SEC	PG	PART	SE		 PART NUMBER	SEC PG
25 752 R1 25 <td< td=""><td>12121212121212333333333333445666666444458821234444444444444444444444444444444444</td><td>2023 2205 222222222222222222222222222222</td><td>25 846 R1 25 <td< td=""><td>$\begin{array}{c} 12\\ 13\\ 13\\ 13\\ 13\\ 13\\ 14\\ 16\\ 16\\ 6\\ 4\\ 4\\ 4\\ 4\\ 4\\ 4\\ 3\\ 4\\ 4\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12$</td><td>$\begin{array}{c} 121\\ 133\\ 136\\ 136\\ 136\\ 137\\ 179\\ 177\\ 174\\ 90\\ 231\\ 355\\ 137\\ 162\\ 135\\ 135\\ 135\\ 135\\ 162\\ 191\\ 191\\ 191\\ 191\\ 191\\ 191\\ 191\\ 19$</td><td>$\begin{array}{cccccccccccccccccccccccccccccccccccc$</td><td>R1 1 R1 <td< td=""><td>$\begin{array}{c} 177\\ 177\\ 122\\ 23\\ 396\\ 23\\ 38\\ 866\\ 67\\ 7\\ 22\\ 23\\ 38\\ 33\\ 33\\ 44\\ 44\\ 44\\ 44\\ 44\\ 44\\ 44\\ 44$</td><td>26 114 H0 26 114 H0 26 114 H0 26 114 H0 26 114 H0 26 113 R1 26 133 R1 26 133 R1 26 133 R1 26 133 R1 26 145 R1 26 244 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 260 R1 26 <td< td=""><td>$\begin{array}{cccccccccccccccccccccccccccccccccccc$</td></td<></td></td<></td></td<></td></td<>	12121212121212333333333333445666666444458821234444444444444444444444444444444444	2023 2205 222222222222222222222222222222	25 846 R1 25 <td< td=""><td>$\begin{array}{c} 12\\ 13\\ 13\\ 13\\ 13\\ 13\\ 14\\ 16\\ 16\\ 6\\ 4\\ 4\\ 4\\ 4\\ 4\\ 4\\ 3\\ 4\\ 4\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12$</td><td>$\begin{array}{c} 121\\ 133\\ 136\\ 136\\ 136\\ 137\\ 179\\ 177\\ 174\\ 90\\ 231\\ 355\\ 137\\ 162\\ 135\\ 135\\ 135\\ 135\\ 162\\ 191\\ 191\\ 191\\ 191\\ 191\\ 191\\ 191\\ 19$</td><td>$\begin{array}{cccccccccccccccccccccccccccccccccccc$</td><td>R1 1 R1 <td< td=""><td>$\begin{array}{c} 177\\ 177\\ 122\\ 23\\ 396\\ 23\\ 38\\ 866\\ 67\\ 7\\ 22\\ 23\\ 38\\ 33\\ 33\\ 44\\ 44\\ 44\\ 44\\ 44\\ 44\\ 44\\ 44$</td><td>26 114 H0 26 114 H0 26 114 H0 26 114 H0 26 114 H0 26 113 R1 26 133 R1 26 133 R1 26 133 R1 26 133 R1 26 145 R1 26 244 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 260 R1 26 <td< td=""><td>$\begin{array}{cccccccccccccccccccccccccccccccccccc$</td></td<></td></td<></td></td<>	$\begin{array}{c} 12\\ 13\\ 13\\ 13\\ 13\\ 13\\ 14\\ 16\\ 16\\ 6\\ 4\\ 4\\ 4\\ 4\\ 4\\ 4\\ 3\\ 4\\ 4\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12$	$\begin{array}{c} 121\\ 133\\ 136\\ 136\\ 136\\ 137\\ 179\\ 177\\ 174\\ 90\\ 231\\ 355\\ 137\\ 162\\ 135\\ 135\\ 135\\ 135\\ 162\\ 191\\ 191\\ 191\\ 191\\ 191\\ 191\\ 191\\ 19$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	R1 1 R1 <td< td=""><td>$\begin{array}{c} 177\\ 177\\ 122\\ 23\\ 396\\ 23\\ 38\\ 866\\ 67\\ 7\\ 22\\ 23\\ 38\\ 33\\ 33\\ 44\\ 44\\ 44\\ 44\\ 44\\ 44\\ 44\\ 44$</td><td>26 114 H0 26 114 H0 26 114 H0 26 114 H0 26 114 H0 26 113 R1 26 133 R1 26 133 R1 26 133 R1 26 133 R1 26 145 R1 26 244 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 260 R1 26 <td< td=""><td>$\begin{array}{cccccccccccccccccccccccccccccccccccc$</td></td<></td></td<>	$\begin{array}{c} 177\\ 177\\ 122\\ 23\\ 396\\ 23\\ 38\\ 866\\ 67\\ 7\\ 22\\ 23\\ 38\\ 33\\ 33\\ 44\\ 44\\ 44\\ 44\\ 44\\ 44\\ 44\\ 44$	26 114 H0 26 114 H0 26 114 H0 26 114 H0 26 114 H0 26 113 R1 26 133 R1 26 133 R1 26 133 R1 26 133 R1 26 145 R1 26 244 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 269 R1 26 260 R1 26 <td< td=""><td>$\begin{array}{cccccccccccccccccccccccccccccccccccc$</td></td<>	$\begin{array}{cccccccccccccccccccccccccccccccccccc$



NUME	RIC	AL	INDEX MT-140			NUMEI	RIC	AL INDE	Х МТ-140		
PART NUMBER	SEC 1	PG	PART NUMBER	SEC	PG	PART NUMBER	SEC	PG	PART NUMBER	SEC	PG
26 620 R1 26 627 R1 26 627 R1 26 667 R1 26 678 R1 26 678 R1 26 678 R1 26 678 R1 26 678 R1 26 678 R1 26 678 R1 26 678 R1 26 678 R1 26 679 R1 26 679 R1 26 679 R1 26 905	$\begin{array}{c} 15\\ 15\\ 8\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12$	14 12 54 12 24	27 216 R1 27 217 R1 27 217 R1 27 217 R1 27 218 R1 27 218 R1 27 218 R1 27 218 R1 27 218 R1 27 218 R1 27 218 R1 27 218 R1 27 218 R1 27 218 R1 27 218 R1 27 220 R1 27 222 R1 27 222 R1 27 222 R1 27 222 R1 27 222 R1 27 227 R1 27 227 R1 27 227 R1 27 221 R1 27 231 R1 27 231 R1 27 231 R1 27 231 R1 27 231 R1 27 231 R1 27 231 R1 27 231 R1 27 231 R1 27 231 R1	4 4 4 4 4 4 6 8 7 7 7 7 7 16 6 6 16 16 6 6 6 16 16 16 6 6 6	527923 56 52222223 33 38 444 50 5 5 5 1 22 1 33 36 3 1 1 1 1 1 1 2 4 9 6 1 2 2 5 1 5 1 22 1 3 3 38 38 4 4 4 50 5 5 5 5 1 2 2 1 3 3 3 3 6 3 1 1 1 1 1 1 1 2 4 9 6 1 2 2 5 1 5 1 2 2 1 3 3 3 8 8 4 4 4 50 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	5 27 231 R1 6 27 231 R1 9 27 245 R1 11 27 245 R1 12 245 R1 13 27 248 R1 231 27 248 R1 231 27 251 K 6 27 251 K 31 27 251 K 51 27 251 K 52 27 292 R1 61 27 293 R1 7 27 293 R1 7 27 293 R1 7 27 293 R1 7 27 298 R1 7 27 299 R1 1 27 299 R1 1 27 299 R1 1 27 303 R1 1 27 304 R1 7 27	166666225555552244244296777777777777777777777777777777	4 7 14 22 24 7 4 14 14 14 22 22 24 24 24 24 24 24 24 24 24 24 24	27 309 R1 27 309 R1 27 309 R1 27 309 R1 27 309 R1 27 309 R1 27 309 R1 27 309 R1 27 326 R1 27 326 R1 27 326 R1 27 326 R1 27 326 R1 27 326 R1 27 326 R1 27 326 R1 27 326 R1 27 326 R1 27 326 R1 27 326 R1 27 326 R1 27 326 R1 27 326 R1 27 328 R1 27 347 R1 27 347 R1 27 347 R1 27 347 R1 27 347 R1 27 347 R1 27 347 R1 27 347 R1 27 404 R1 27 404 R1 27 404 R1 27 404 R1 27 404 R1 27 404 R1 27 404 R1 27 403 R1 27 403 R1 27 463 R1 27 702	$\begin{array}{c} 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 13\\ 13\\ 16\\ 16\\ 16\\ 16\\ 16\\ 16\\ 16\\ 16\\ 16\\ 16$	49 86 115 120 124 124 127 136 137 198 228 336 172 233 342 24 336 172 339 422 474 75 84 27 131 1315 120 28 336 172 339 422 474 75 84 27 131 1315 120 28 336 172 839 422 474 75 84 27 1315 120 124 136 137 128 339 422 474 137 1315 120 28 336 137 128 339 422 474 137 1315 120 124 136 137 138 120 124 136 137 138 122 20 336 132 1315 120 124 137 138 122 20 336 132 1315 122 129 1315 123 139 122 129 1315 129 130 155 112 129 1311 136 139 131 136 139 131 136 139 131 136 139 131 136 139 131 1316 139 131 136 139 131 136 139 131 136 139 131 136 139 131 136 139 131 1316 139 131 136 139 131 1316 139 131 136 139 131 136 139 131 136 139 131 136 139 131 136 139 131 136 139 131 136 139 131 136 139 131 136 139 131 136 139 131 136 139 131 136 139 131 136 139 131 136 139 131 136 139 131 1316 139 131 136 139 131 136 139 131 136 139 131 136 139 131 136 139 131 1316 139 131 136 139 131 131 136 139 137 137 137 137 137 137 137 137 137 137

NUME		ЕХ МТ-140		NUMERICAL INDEX	MT-140	
PART NUMBER	SEC PG	PART NUMBER	SEC PG	PART SEC PC NUMBER SEC PC	PART NUMBER	SEC PG
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7



	NUMERI	CAL INDEX	MT-140	111	NUME		INDEX	MT-140	
PART NUMBER	SEC	PG	PART NUMBER	SEC PG	PART NUMBER	SEC PG		PART NUMBER	SEC PG
54 888 54 888 55 024 55 044 55 044 55 044 55 044 55 044 55 044 55 044 55 044 55 044 55 044 55 044 55 044 55 044 55 044 55 044 55 044 55 045 55 55 55 55 55 55 55 55 55 55 55 55 55 55	B HA 14 14 14 15 13 14 13 15 14 16 11 12 12 12 12 12 12 14 12 14 12 14 14 14 17 17 11 12 12 12 12 14 <td< td=""><td>$\begin{array}{r} 19\\ 33\\ 36\\ 40\\ 170\\ 31\\ 23\\ 23\\ 23\\ 18\\ 26\\ 28\\ 32\\ 49\\ 52\\ 55\\ 56\\ 62\\ 28\\ 62\\ 28\\ 62\\ 28\\ 62\\ 28\\ 62\\ 28\\ 62\\ 28\\ 62\\ 28\\ 62\\ 28\\ 62\\ 28\\ 62\\ 28\\ 62\\ 28\\ 62\\ 28\\ 62\\ 28\\ 62\\ 28\\ 62\\ 28\\ 62\\ 28\\ 62\\ 28\\ 62\\ 28\\ 62\\ 28\\ 30\\ 32\\ 34\\ 26\\ 27\\ 28\\ 30\\ 32\\ 34\\ 26\\ 27\\ 28\\ 30\\ 32\\ 34\\ 26\\ 27\\ 28\\ 30\\ 32\\ 34\\ 26\\ 27\\ 29\\ 30\\ 32\\ 34\\ 26\\ 27\\ 29\\ 30\\ 32\\ 34\\ 26\\ 27\\ 29\\ 30\\ 32\\ 34\\ 26\\ 27\\ 29\\ 30\\ 32\\ 34\\ 26 27\\ 29\\ 30\\ 32\\ 34\\ 26 27 29\\ 30\\ 32\\ 34\\ 26 27 29\\ 30\\ 32\\ 34\\ 46\\ 199\\ 22$</td><td>56 632 H 56 632 R1 56 642 R1 56 642 R1 56 642 R1 56 677 R2 56 677 R2 56 677 R1 57 039 R1 57 039 R1 57 040 R91 57 040 R91 57 040 R91 57 059 HX 57 304 R1 57 304 R1 57 304 R1 57 304 R1 57 304 R1 57 304 R1 57 304 R1 57 304 R1 57 304 R1 57 308 R1 57 308 R1 57 308 R1 57 308 R1 57 <</td><td>5 40 5 41 5 42 5 14 5 35 5 39 5 40 5 40 5 41 5 42 10 4</td><td>58960D59008H59008H59008H59008H59008H59008H59008H59008H59008H59008H59008H59137DB59137DB59137DB59150H59150H59150H59150H59137DB59150H59137DB59150H59137DB59150H59235R159235R159235R159235R159235R159235R159235R159235R159235R159235R159235R160001R9160001R9160001R9160001R9160001R9160001R9160001R9160001R9160001R9160001R9160001R9160365<!--</td--><td>13$53$1410142114301414143714381466135314684184135314641314331466133314661413142214403103183121324132513251325132513831325138313851325133513251385132513351444497411013241422151313241424138414261315132414561444441422131171418142215121617171718141422151316171718<</td><td></td><td>61 263 VA 61 263 VA 61 263 VA 61 564 R1 61 565 R1 61 566 R1 61 571 HX 61 571 H 61 736 H 61 736 H 61 736 R1 62 036 R1 62 036 R1 62 036 R1 62 270 D 62 322 R1 62 322 R1 62 322 R1 62 322 R1 62 322 R1 62 322 R1 62 385 C1 62 634 HEX 62 637 D 62 643 D 62 643 D 62 643 D 63 430 HB 63 436 H 63 437 H 63 438 H 63 439 H 63 439 H 63 439 H 63 439 H 63 439 H 64 355 H 64 389 H 64 389 H 64 889 H</td><td>$\begin{array}{cccccccccccccccccccccccccccccccccccc$</td></td></td<>	$ \begin{array}{r} 19\\ 33\\ 36\\ 40\\ 170\\ 31\\ 23\\ 23\\ 23\\ 18\\ 26\\ 28\\ 32\\ 49\\ 52\\ 55\\ 56\\ 62\\ 28\\ 62\\ 28\\ 62\\ 28\\ 62\\ 28\\ 62\\ 28\\ 62\\ 28\\ 62\\ 28\\ 62\\ 28\\ 62\\ 28\\ 62\\ 28\\ 62\\ 28\\ 62\\ 28\\ 62\\ 28\\ 62\\ 28\\ 62\\ 28\\ 62\\ 28\\ 62\\ 28\\ 62\\ 28\\ 62\\ 28\\ 30\\ 32\\ 34\\ 26\\ 27\\ 28\\ 30\\ 32\\ 34\\ 26\\ 27\\ 28\\ 30\\ 32\\ 34\\ 26\\ 27\\ 28\\ 30\\ 32\\ 34\\ 26\\ 27\\ 29\\ 30\\ 32\\ 34\\ 26\\ 27\\ 29\\ 30\\ 32\\ 34\\ 26\\ 27\\ 29\\ 30\\ 32\\ 34\\ 26\\ 27\\ 29\\ 30\\ 32\\ 34\\ 26 27\\ 29\\ 30\\ 32\\ 34\\ 26 27 29\\ 30\\ 32\\ 34\\ 26 27 29\\ 30\\ 32\\ 34\\ 46\\ 199\\ 22 $	56 632 H 56 632 R1 56 642 R1 56 642 R1 56 642 R1 56 677 R2 56 677 R2 56 677 R1 57 039 R1 57 039 R1 57 040 R91 57 040 R91 57 040 R91 57 059 HX 57 304 R1 57 304 R1 57 304 R1 57 304 R1 57 304 R1 57 304 R1 57 304 R1 57 304 R1 57 304 R1 57 308 R1 57 308 R1 57 308 R1 57 308 R1 57 <	5 40 5 41 5 42 5 14 5 35 5 39 5 40 5 40 5 41 5 42 10 4	58960D59008H59008H59008H59008H59008H59008H59008H59008H59008H59008H59008H59137DB59137DB59137DB59150H59150H59150H59150H59137DB59150H59137DB59150H59137DB59150H59235R159235R159235R159235R159235R159235R159235R159235R159235R159235R159235R160001R9160001R9160001R9160001R9160001R9160001R9160001R9160001R9160001R9160001R9160001R9160365 </td <td>13$53$1410142114301414143714381466135314684184135314641314331466133314661413142214403103183121324132513251325132513831325138313851325133513251385132513351444497411013241422151313241424138414261315132414561444441422131171418142215121617171718141422151316171718<</td> <td></td> <td>61 263 VA 61 263 VA 61 263 VA 61 564 R1 61 565 R1 61 566 R1 61 571 HX 61 571 H 61 736 H 61 736 H 61 736 R1 62 036 R1 62 036 R1 62 036 R1 62 270 D 62 322 R1 62 322 R1 62 322 R1 62 322 R1 62 322 R1 62 322 R1 62 385 C1 62 634 HEX 62 637 D 62 643 D 62 643 D 62 643 D 63 430 HB 63 436 H 63 437 H 63 438 H 63 439 H 63 439 H 63 439 H 63 439 H 63 439 H 64 355 H 64 389 H 64 389 H 64 889 H</td> <td>$\begin{array}{cccccccccccccccccccccccccccccccccccc$</td>	13 53 1410142114301414143714381466135314684184135314641314331466133314661413142214403103183121324132513251325132513831325138313851325133513251385132513351444497411013241422151313241424138414261315132414561444441422131171418142215121617171718141422151316171718<		61 263 VA 61 263 VA 61 263 VA 61 564 R1 61 565 R1 61 566 R1 61 571 HX 61 571 H 61 736 H 61 736 H 61 736 R1 62 036 R1 62 036 R1 62 036 R1 62 270 D 62 322 R1 62 322 R1 62 322 R1 62 322 R1 62 322 R1 62 322 R1 62 385 C1 62 634 HEX 62 637 D 62 643 D 62 643 D 62 643 D 63 430 HB 63 436 H 63 437 H 63 438 H 63 439 H 63 439 H 63 439 H 63 439 H 63 439 H 64 355 H 64 389 H 64 389 H 64 889 H	$\begin{array}{cccccccccccccccccccccccccccccccccccc$



1	NUME	RICA	LINDEX MT-140			NUM	ERI		INDEX MT-140		
PART NUMBER	NUMBER SEC PG NUMBER					PART NUMBBR	SEC	PG	PART NUMBER	SBC	PG
64 899 H 64 899 H 64 899 H 64 899 H 64 899 H 64 899 H 64 899 H 64 899 H 64 899 H 64 899 H 65 045 H 65 045 H 65 045 H 65 071 H 65 071 H 65 071 H 65 071 H 65 071 H 65 071 H 65 071 H 65 071 H 65 071 H 65 071 H 65 071 H 65 071 H 65 071 H 65 071 H 65 071 H	$\begin{array}{c} 7\\ 7\\ 7\\ 7\\ 7\\ 7\\ 7\\ 7\\ 7\\ 7\\ 7\\ 7\\ 7\\ $	$\begin{array}{c} 325\\ 338\\ 399\\ 392\\ 433\\ 389\\ 392\\ 433\\ 282\\ 155\\ 562\\ 990\\ 207\\ 331\\ 469\\ 990\\ 207\\ 331\\ 469\\ 990\\ 207\\ 331\\ 469\\ 990\\ 207\\ 331\\ 469\\ 990\\ 207\\ 331\\ 469\\ 990\\ 207\\ 331\\ 469\\ 990\\ 207\\ 331\\ 469\\ 990\\ 207\\ 331\\ 469\\ 990\\ 990\\ 990\\ 990\\ 990\\ 990\\ 990\\ 9$	69 015 R93 69 015 R93 69 016 R93 69 016 R93 69 017 R1 69 017 R1 69 018 R1 69 018 R1 69 019 R1 69 021 R93 69 021 R93 69 022 R93 69 022 R93 69 023 R92 69 023 R92 69 023 R92 69 104 HA 69 104 HA	$\begin{array}{c} 14\\ 14\\ 14\\ 14\\ 14\\ 14\\ 14\\ 14\\ 14\\ 14\\$	$\begin{smallmatrix} 60\\ 3595\\ 604\\ 604\\ 604\\ 604\\ 604\\ 604\\ 604\\ 804\\ 8484\\ 8584$	70 427 R1 70 427	444444444444444444444444444444444444444	899 462 172 1999 41 425 899 90 91 94 94 94 99 1133 1233 633 67 100 38 400 722 121 121 120 46 499 499 499	M 73 125	134441313131377777777777777777777777777	159 159 60 159 159 11 12 79 21 27



NUME	ERIC	CAL	INDEX MT-140			NUMER	RIC	AL INDEX	MT-140		
PART NUMBER	SEC	PG	PART NUMBER	SEC	PG	PART S NUMBER S	SEC	°C	PART NUMBER	SEC	PG
73 511 HA 74 393 R1 74 393 R1 74 393 R1 74 395 R1 74 985 R1 76 208 R91 77 013 R1 77 013 R1 77 013 R1 77 597 R1 77 597 R1 77 597 R1 77 597 R1 77 597 R1 77 597 R1 77 597 R1 77 597 R1 77 597 R1 77 59	$\begin{array}{c} 14\\ 14\\ 14\\ 14\\ 14\\ 14\\ 12\\ 10\\ 10\\ 4\\ 4\\ 4\\ 4\\ 4\\ 4\\ 4\\ 4\\ 4\\ 4\\ 4\\ 4\\ 4\\$	$\begin{array}{c} 282\\ 622\\ 589\\ 589\\ 588\\ 588\\ 588\\ 588\\ 588\\ 588$	83 155 H 83 155 H 83 155 H 83 156 H 83 156 H 83 156 H 83 156 H 83 156 H 83 156 H 83 156 H 83 156 H 83 156 H 83 156 H 83 156 H 83 257 R2 83 257 R2 83 257 R2 83 257 R2 83 257 R2 83 257 R2 83 257 R2 83 394 R91 83 817 HB 83 817 HB 83 817 HB 83 817 HB 83 817 HB		$\begin{array}{c} 8\\ 8\\ 123\\ 558\\ 30\\ 66\\ 66\\ 30\\ 66\\ 66\\ 30\\ 66\\ 66\\ 66\\ 66\\ 66\\ 66\\ 66\\ 66\\ 66\\ 6$	83 867 H 83 968 R1 83 968 R1 83 968 R1 83 968 R1 83 968 R1 83 968 R1 83 968 R1 83 968 R1 83 968 R1 83 968 R1 83 968 R1 83 968 R1 83 968 R1 83 968 R1 83 968 R1 83 968 R1 84 503 R1 84 513 R1 84 521 H 84 712 H 84 712 H 84 712 H 84 712 H 84 712 H 85 376 R91 85 376 R91 85 376<	$\begin{array}{c} 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 $	94 96 97 997 998 997 998 999 100 111 12 13 94 75 55 55 66 67 64 95 55 55 66 67 64 95 55 55 66 76 64 95 55 55 74 39 22 99 28 99 22 99 28 99 22 99 28 99 22 99 28 99 22 99 28 99 22 99 28 99 22 99 28 99 22 99 28 99 22 99 28 99 22 99 28 99 22 90 28 99 22 90 28 99 22 90 28 99 22 90 28 99 22 90 28 99 28 99 28 99 22 90 28 99 29 1 27 56 8 9 55 55 58 58 8 58 55 55 58 55 55 58 55 58 55 58 55 58 55 55	88 015 H 88 015 H 88 015 H 88 015 H 88 173 H 88 173 H 88 173 H 88 174 H 88 174 H 88 474 H 88 474 H 88 474 H 88 474 H 88 474 H 88 474 H 88 474 H 88 712 R91 88 712 R91 88 712 R91 88 712 R91 88 712 R91 88 712 R91 88 712 R91 88 712 R91 89 346 H 89 690 H 89 692 R91 91 047 R1 91 047 R1 91 047 R1 91 052 R1 91 052 R1 91 052 R1 91 052 R1 91 052 R91 91 082 R91 91 886 R91 92 558 H 93 300 R1 93 301 R95 93 93 931 R95 93 931 R95 94 195 R1 95	$\begin{array}{c} 14\\ 14\\ 14\\ 14\\ 8\\ 8\\ 8\\ 5\\ 5\\ 5\\ 5\\ 5\\ 5\\ 5\\ 5\\ 5\\ 5\\ 5\\ 5\\ 5\\$	569 1195 551 455 455 411 45 45 45 411 44 44 977 110 28 28 62 28 62 28 62 28 62 28 62 28 62 56 60 30 23 24



	NUMERIC	AL IND	ЕХ МТ-140			NUME	RIC	AL:	INDEX MT-140		
PAR NUMB		PG	PART NUMBER	SEC	PG	PART NUMBER	SEC	PG	PART NUMBER	SEC	PG
94 84 944 84 955 33 955 355 555 577 8 8 8 8 8 8 8 8 8 8 8 9 9 9 9 9 9 9 9	59 R1 4 59 R1 4 60 R1 4 60 R1 4 60 R1 4 60 R1 4 60 R1 4 60 R1 4 60 R1 4 62 R1 4 62 R1 4 62 R1 4 62 R1 4 62 R1 4 62 R1 4 62 R1 4 43 H 4 43 H 4 43 H 4 43 H 4 43 H 4 43 H 4 43 H 4 59 R1 13 99 R1 12 59 R1 12 59 R1 12 59 R1 13 5	$\begin{array}{c} 11\\ 21\\ 10\\ 159\\ 111\\ 12\\ 645\\ 159\\ 256\\ 5\\ 14\\ 159\\ 207\\ 77\\ 11\\ 20\\ 67\\ 77\\ 11\\ 20\\ 111\\ 10\\ 11\\ 20\\ 111\\ 10\\ 11\\ 10\\ 11\\ 10\\ 11\\ 10\\ 11\\ 10\\ 11\\ 10\\ 11\\ 10\\ 11\\ 10\\ 11\\ 155\\ 137\\ 155\\ 157\\ 137\\ 157\\ 157\\ 157\\ 157\\ 157\\ 157\\ 157\\ 15$	A040075000A040120000A040120000A040200000A040200000A040210000A040240000A040240000A040240000A040240000A040400000A040400000A040400000A040400000A040400000A040400000A040800000A040800000A040800000A040800000A040800000A060900000A060900000A060900000A060900000A060900000A060900000A060900000A060900000A060900000A060900000A060180000A060180000A060180000A060280000A060280000A060280000A060280000A060280000A060280000A060280000A060280000A060280000A060280000A060<	15	44 6 9 12 110 6 6 6 6 9 9 12 12 12 44 44 44 44 44 44 44 44 44 44 44 6 9 110 110 7 7 110 110 12 110 110 110 6 6 6 6 9 9 9 12 12 12 12 12 12 12 12 12 12 12 12 12	A060950000A061000000A061040000A061040000A061080000A061080000A061080000A061080000A061100000A061120000A061180000A061180000A061180000A061180000A061180000A061200000A061200000A061200000A061240000A061260000A061260000A061260000A061320000A061320000A061320000A061360000A061360000A061360000A061400000A061400000A061400000A061400000A061400000A061400000A061400000A061560000A061600000A061600000A061600000A061600000A061600000A061600000A061600000A061600000A061<	$\begin{array}{c} 5 \\ 5 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\$	$\begin{array}{c} 444\\ 433\\ 444\\ 177\\ 178\\ 188\\ 434\\ 444\\ 177\\ 18\\ 188\\ 444\\ 444\\ 444\\ 444\\ 444\\ 444\\$	A081 800 000 A081 800 000 A081 800 000 A081 800 000 A081 800 000 A081 800 000 A081 800 000 A081 800 000 A081 800 000 A00 660 R1 100 056 R1 100 070 R1 100 070 R1 100 070 R1 100 080 R92 100 101 R1 A100 640 000 A100 640 000 A100 640 000 A100 680 000 A100 680 000 A100 680 000 A100 680 000 A100 680 000 A100 680 000 A100 680 000 A100 680 <td>133555555555555555555555555555555555555</td> <td></td>	133555555555555555555555555555555555555	

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I	NUMER		INDEX MT-140			NUMERICA	LINDEX MT-140	
PART NUMBER	SEC	PG	PART NUMBER	SEC PC	PART NUMBER	SEC PG	PART NUMBER	SEC PG
103 323 103 323 103 323 103 323 103 323 103 323 103 323 103 323 103 323 103 323 103 323 103 323 103 323 103 323 103 324 103 325 103 325 103 325 103 325 103 325 103 325 103 325 103 325 103 325 103 325 103 325 103 340 103 340 103 340 103 348 103 348 103 348 103 348 103 361 103 362 103 3	12 12 12 12 12 12 12 12 12 12 12 12 12 1	$\begin{array}{c} 25\\ 56\\ 83\\ 83\\ 85\\ 29\\ 47\\ 163\\ 85\\ 29\\ 47\\ 19\\ 163\\ 62\\ 127\\ 1145\\ 153\\ 155\\ 227\\ 1145\\ 197\\ 214\\ 149\\ 197\\ 214\\ 125\\ 227\\ 197\\ 214\\ 121\\ 224\\ 124\\ 224\\ 198\\ 8\\ 122\\ 214\\ 4\\ 182\\ 124\\ 182\\ 226\\ 182\\ 182\\ 226\\ 182\\ 182\\ 226\\ 182\\ 182\\ 182\\ 182\\ 182\\ 182\\ 182\\ 182$	103 878 103 893 103 909 104 007 R1 104 007 R1 104 07 R1 104 078 H1 104 112 104 112 104 113 104 113 104 113 104 114 104 114 104 131 104 131 104 131 104 131 104 131 104 131 104 131 104 131 104 235 R1 104 236 R1	1 6 1 7 1 7 3 6 3 1 3 5 13 5 13 5 13 5 13 5 13 5 13 5 1	$\begin{array}{c} 104 & 249 \\ 104 & 251 \\ 104 & 251 \\ 104 & 251 \\ 104 & 272 \\ 104 & 272 \\ 104 & 272 \\ 104 & 272 \\ 104 & 272 \\ 104 & 272 \\ 104 & 272 \\ 104 & 272 \\ 105 & 410 \\ 105 & 410 \\ 105 & 410 \\ 105 & 410 \\ 105 & 410 \\ 105 & 410 \\ 105 & 416 \\ 105 & 456 \\ 105 & 456 \\ 105 & 456 \\ 105 & 456 \\ 105 & 456 \\ 105 & 456 \\ 105 & 456 \\ 105 & 456 \\ 105 & 503 \\$	$ \begin{array}{c} \textbf{R1} & \textbf{13} & \textbf{55} \\ \textbf{R1} & \textbf{13} & \textbf{55} \\ \textbf{R1} & \textbf{13} & \textbf{55} \\ \textbf{R1} & \textbf{13} & \textbf{55} \\ \textbf{R1} & \textbf{13} & \textbf{55} \\ \textbf{R1} & \textbf{13} & \textbf{55} \\ \textbf{R1} & \textbf{13} & \textbf{55} \\ \textbf{R1} & \textbf{13} & \textbf{55} \\ \textbf{R1} & \textbf{13} & \textbf{55} \\ \textbf{R1} & \textbf{13} & \textbf{55} \\ \textbf{R1} & \textbf{14} & \textbf{22} \\ \textbf{R1} & \textbf{14} & \textbf{22} \\ \textbf{R1} & \textbf{14} & \textbf{42} \\ \textbf{R1} & \textbf{14} & \textbf{42} \\ \textbf{R1} & \textbf{14} & \textbf{42} \\ \textbf{R1} & \textbf{14} & \textbf{42} \\ \textbf{R1} & \textbf{14} & \textbf{42} \\ \textbf{R1} & \textbf{14} & \textbf{42} \\ \textbf{R1} & \textbf{14} & \textbf{42} \\ \textbf{R1} & \textbf{14} & \textbf{42} \\ \textbf{R1} & \textbf{14} & \textbf{42} \\ \textbf{R1} & \textbf{14} & \textbf{42} \\ \textbf{R1} & \textbf{14} & \textbf{42} \\ \textbf{R1} & \textbf{14} & \textbf{42} \\ \textbf{R1} & \textbf{14} & \textbf{42} \\ \textbf{R1} & \textbf{14} & \textbf{42} \\ \textbf{R1} & \textbf{14} & \textbf{42} \\ \textbf{R1} & \textbf{14} & \textbf{42} \\ \textbf{R1} & \textbf{14} & \textbf{42} \\ \textbf{R1} & \textbf{14} & \textbf{42} \\ \textbf{R1} & \textbf{17} \\ \textbf{R1} & \textbf{17} \\ \textbf{R1} & \textbf{17} \\ \textbf{R1} & \textbf{17} \\ \textbf{R1} & \textbf{17} \\ \textbf{R1} & \textbf{17} \\ \textbf{R1} & \textbf{R1} \\ \textbf{R1} & \textbf{13} \\ \textbf{R1} \\ \textbf{R1} & \textbf{R1} \\ \textbf{R1} $	6 108 300 R1 6 108 326 H 6 108 336 H 6 108 336 H 6 108 336 H 6 108 336 H 6 108 630 G 6 108 630 G 6 108 630 G 6 108 635 R 7 108 635 G 9 109 389 R1 6 109 389 R1 6 109 393 R1 6 109 420 R2 9 109 454 9 109 454 9 109 460 5 109 460 5 109 460 5 109 460 6 109 461	$\begin{array}{cccccccccccccccccccccccccccccccccccc$

	AL II	NDEX MT-140			NUMER	ICAL INDEX	MT-140	
PART NUMBER SE	C PG	PART NUMBER	SEC	PG	PART NUMBER	SEC PG	PART NUMBER	SEC PG
110 668 R1 11 110 668 R1 11 110 668 R1 11 110 891 H 12 110 891 H 12 110 891 H 12 111 024 R1 12 111 024 R1 12 111 024 R1 12 111 024 R1 12 111 085 H 4 111 142 R1 15 111	$\begin{array}{c} 201\\ 1416\\ 211\\ 257\\ 1755\\ 1755\\ 1755\\ 1755\\ 1339\\ 1657\\ 1755\\ 11339\\ 1657\\ 111\\ 1339\\ 1657\\ 111\\ 123\\ 1417\\ 181\\ 202\\ 111\\ 1859\\ 1232\\ 11\\ 1899\\ 16\\ 336\\ 6\\ 1059\\ 6\\ 1059\\ 6\\ 11\\ 114\\ 76\\ 336\\ 6\\ 11\\ 114\\ 75\\ 155\\ 283\\ 6\\ 6\\ 11\\ 189\\ 1891\\ 16\\ 344\\ 34\\ 34\\ 34\\ 34\\ 34\\ 34\\ 34\\ 34\\ 3$	114 606 114 606 114 608	44444444444444444444444444444444444444	$\begin{array}{c} 45\\ 702\\ 724\\ 1006\\ 45\\ 1225\\ 68\\ 11222\\ 2225\\ 680\\ 1225\\ 680\\ 1225\\ 680\\ 1225\\ 680\\ 1225\\ 680\\ 1225\\ 22223\\ 2225\\ 680\\ 1225\\ 680\\ 1225\\ 22223\\ 22225\\ 680\\ 1225\\ 680\\ 1225\\ 22223\\ 22225\\ 680\\ 1225\\ 680\\ 1225\\ 22223\\ 22225\\ 680\\ 1225\\ 680\\ 1225\\ 222223\\ 320\\ 1222223\\ 320\\ 12222225\\ 680\\ 1225\\ 680\\ 1225\\ 680\\ 1225\\ 680\\ 1225\\ 222223\\ 320\\ 1222223\\ 320\\ 12222225\\ 680\\ 12222223\\ 120222223\\ 120222225\\ 680\\ 120222223\\ 120222223\\ 1202222225\\ 1202222223\\ 1202222225\\ 12022222225\\ 12022222222222222222222222222222222222$	115 093 115 093 115 093 115 093 115 109 115 109 115 109 115 109 115 109 115 703 115 703 115 703 115 703 115 703 115 712 115 712 115 712 115 712 115 712 115 712 115 729 115 729 115 729 115 729 115 729 115 729 115 729 115 729 115 729 115 729 116 120 116 120 116 120 116 163 116 120 116 1	12 52 4 179 12 54 12 114 12 114 12 12 12 12 12 12 12 133 12 191 12 131 12 191 12 114 67 65 13 67 13 67 13 67 13 67 12 65 13 67 13 67 14 66 15 15 16 200 12 54 12 54 12 159 12 124 12 120 12 124 12 121 12 122 12 121 12 122 12 122 12 122 13	118 755 118 755 118 755 118 755 118 755 118 755 118 755 118 757 118 757 118 757 118 757 118 757 118 801 118 801 118 801 118 801 118 801 118 801 118 801 118 811 118 811 118 823 118 823 118 823 118 823 118 823 118 823 118 823 118 825 118 825 118 825 118 825 118 825 118 825 118 825 118 8	$\begin{array}{c} 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 2 \\ 2$

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		IDEX MT-140			·····	LINDEX MT-140		·
PART NUMBER	SEC PC	PART NUNBER	SEC PG	PART NUMBER 120 214		120 214	SEC	PG 129
<pre>1 19 0.69 F1 119 0.69 F1 119 0.67 119 0.97 119 0.97 119 345 H 119 345 H 119 702 F1 119 702 F1 119 702 F1 119 702 F1 119 702 F1 120 123 120 124 120 214 120 /pre>	6 3 6 3 6 4 4C 4 43 4 42 14 43 14 43 14 43 14 43 14 43 15 3 4 20 13 34 4 20 13 34 4 20 13 34 4 20 13 34 4 20 13 34 4 20 13 34 4 20 13 34 4 40 4 41 4 41 4 41 4 42 4 42 4 43 4 44 4 44 4 42 4 43 4 44 4 44 4 42 4 43 4 44 4 44 4 42 4 42 4 42 4 43 4 44 4 42 4 43 4 44 4 44 4 45 4 77 4 966 4 97 4 989 4 997 4 989 4 997 4 997 4 998 4 997 4 998 4 997 4 998 4 999 4 100 4 110 4 110 4 110 4 111 4 112 4 123 4 123 4 129 4 120 4	120214<	4 4 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	120214<	8 14 8 14 8 14 8 14 8 21 8 23 8 23 8 23 8 28 8 28 8 28 8 28 8 28 8 28 8 28 8 28 8 28 8 28 8 28 9 3 9 3 9 9 9 9 9 9 10 9 11 12 12 13 9 14 9 14 11 12 12 13 13 9 14 12 12 13 12 14 12 16 12 12 12	$\begin{array}{c} 120 & 214 \\$	$\begin{array}{c} 122\\ 122\\ 122\\ 122\\ 122\\ 122\\ 122\\ 122$	$\begin{array}{c} 133\\ 133\\ 133\\ 133\\ 133\\ 133\\ 133\\ 133$

NUMERICAL INDEX MT-140

NUME	RIC	AL	INDEX MT-140	+ U		NUMER	RICA	L INDEX	MT-140		
PART NUMBER	SEC	PG	PART NUMBER		C PG	PART NUMBER	SEC	PG	PART NUMBER	SEC	PG
120 214 120 217 120	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	4 40 10 11 16 5 8 3 5 2 2 2 3 3 3 4 5 5 3 4 5 5 3 4 5 5 3 4 5 5 3 4 5 5 3 4 5 5 2 2 2 3 3 3 3 4 5 5 5 5 5 3 4 5 5 5 3 4 5 5 5 3 4 5 5 5 5 5 5 5 5 5 5 5 5 5	120 361 120 369 120 369 120 371 120 371 120 371 120 371 120 376 120 377 120 379 120 379	1 1 1 1 1 1 1 1 1 1 1 1 1 1	22222222222222222222222222222222222222	120 380 120 3	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	47 85 85 993 04 05 06 20 21 33 33 33 33 33 33 33 33 33 33 33 33 33	120 380 120 3	12 12 12 12 12 12 12 12 12 12 12 12 12 1	75 777 11991 123 162 153 162 164 173 164 173 164 173 164 173 197 197 205 209 221 1221 2225 225 227 166 177 171 197 127 197 197 197 197 197 197 197 197 197 19

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NUMERIC	CAL	INDEX MT-140			NUMER	RIC	AL INDE	ЕХ МТ-140			
PART NUMBER SEG	C PG	PART NUMBBR	SBC	PG	PART NUMBER	SEC	PG	PART NUMBER	SEC	P	C
120 382 120 3		120 382 120 3	44444444444444444444444444444444444444	$\begin{array}{c} 1112\\ 1112\\ 1112\\ 1112\\ 1112\\ 1114\\ 1114\\ 1114\\ 1114\\ 1114\\ 1122\\ 1222\\ 226\\ 280\\ 311\\ 326\\ 366\\ 367\\ 377\\ 388\\ 389\\ 501\\ 512\\ 522\\ 533\\ 545\\ 566\\ 666\\ 677\\ 777\\ 778\\ 788\\ 789\\ 799\\ 79\end{array}$	120 382 120 382 120 382 120 382 120 382 120 382 120 382 120 382 120 382 120 382 120 382 120 382 120 382 120 382	555555555555555555555555555555555555555	80 82 82 84 84 85 85 88 89 99 99 99 99 99 99 99 99 99 99 99	120 382 120 3	222222222222222222222222222222222222222	$\begin{array}{c} 8 \\ 9 \\ 9 \\ 9 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1$	22222255555688888899011133377799911377779991111155559999333555564442346677777888233489990000077333688

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NUMERIC	CAL	INDEX MT-140			NUME	RIC	CAL	INDEX MT-140
PART SEC	PG	PART NUMBER	SEC PO	•	PART NUMBER	SEC	PG	PART NUMBER SEC PC
PART NUMBER SEC 120 382 13 120	PC 1516 182255259 30839934233455656768927455779833835860 3509350 2269922900300 2299300	PART NUMBER 120 383	55555555555555555555555555555555555555	67801256923457896080046847213680592480260149985350	PART NUMBER 120 384	SEC 8 89910111111111111111111111111111111111	$\begin{array}{c} \textbf{PG} \\ \textbf{44} \\ \textbf{68} \\ \textbf{161} \\ \textbf{214} \\ \textbf{68} \\ \textbf{1214} \\ \textbf{68} \\ \textbf{12214} \\ \textbf{68} \\ \textbf{12214} \\ \textbf{168} \\ \textbf{1755} \\ \textbf{5772} \\ \textbf{28} \\ \textbf{30155} \\ \textbf{57772} \\ \textbf{28} \\ \textbf{30155} \\ \textbf{53355777916} \\ \textbf{66} \\ \textbf{66} \\ \textbf{88} \\ \textbf{1503558777916} \\ \textbf{6046688815587773916} \\ \textbf{604668881558777392228} \\ \textbf{20228} \\ \textbf{20228} \\ \textbf{20228} \\ \textbf{20228} \\ \textbf{20228} \\ \textbf{20228} \\ \textbf{20228} \\ \textbf{20228} \\ \textbf{20228} \\ \textbf{20228} \\ \textbf{2028} \\$	PART NUMBER SEC PC 120 396 13 84 120 401 4 100 120 437 14 33 A120 440 000 13 33 A120 450 000 13 77 120 522 15 31 120 522 15 31 120 525 16 22 120 614 12 14 120 614 12 14 120 614 12 215 120 614 12 215 120 614 12 211 120 614 12 211 120 614 13 22 120 614 13 24 120 898 4 144 120 898 4 144 120 898 4 166
120 382 16 120 382 16 120 382 16 120 382 16 120 382 16 120 382 16 120 382 16 120 382 16 120 382 16 120 383 4 120 383 4 120 383 4 120 383 4 120 383 4 120 383 4 120 383 4 120 383 4 120 383 4 120 383 4 120 383 4 120 383 4 120 383 4 120 383 4 120 383 4 120 383 4 120 383 4 120 383 4 120	30 30 30 49 49 38 40 40 41 42 43 44 44 45 90 91 93 94 49 98 0113 1131	120 383 120 384 120 3	16 311 22 22 23 333 333 333 66 66 60 66 112 124 112 144 112 144 112 144 112 144 112 144 112 144 112 156 115 156 115 156 112 144 112 156 112 156 112 156 112 156 112 144 112 156 113 156 114 144 115 156 112 144 114 144 115 156 114 144 114 144 114 144 114 144 115 156 114 144 114 144	048015678800224440236802257670			28 300 4 5 9 133 16 17 18 19 200 141 214 600 12 12 12 16 16 16 18 33 34 33 4 34	
120 383 4 120 383 4 120 383 4 120 383 4 120 383 4 120 383 4 120 383 4 120 383 4 120 383 4 120 383 4 120 383 4 120 383 4	144 145 157 168 169 170 180 180 194 31	120 384 120 384 120 384 120 384 120 384 120 384 120 384 120 384 120 384 120 384 120 384	4 16 4 16 4 17 4 17 4 17 4 17 4 18 4 20 8 2 8 3	1 4 5 6 8 2 0	120 391 120 391 120 392 120 392 120 392 120 395 120 395 120 395 120 395 120 395	16 16 12 12 16 14 14 14 14 14	54 54 74 164 11 28 30 62 66 15	121 574 8 4 121 574 12 12 121 574 12 12 121 574 12 13 121 574 12 13 121 574 12 14 121 574 12 14 121 574 12 14 121 574 12 14 121 574 12 15 121 574 12 15 121 574 12 15 121 574 13 13 121 574 13 3



NUME	RIC	AL	INDEX MT-140			NUMER	RIC	AL	INDEX MT-140	
PART NUMBER	SEC	PG	PART NUMBER	SEC	PG	PART SI NUMBER SI	EC	PG	PART NUMBER	SEC PG
121 574 121 613 C1 121 613 C1 121 613 C1 121 613 C1 121 613 C1 121 613 C1 121 613 C1 121 613 C1 121 613 C1 121 613 C1 121 841 121 841 121 841 121 841 122 316 R91 122 316 R91 122 316 R91 122 407 R1 123 725 R1 124 317 H 124 31	665355584422444444448444444444444444444444	$\begin{array}{c} 9339\\ 5590\\ 614\\ 665\\ 713\\ 51\\ 719\\ 12\\ 733\\ 599\\ 102\\ 78\\ 90\\ 12\\ 25\\ 55\\ 20\\ 4\\ 39\\ 22\\ 80\\ 612\\ 22\\ 18\\ 80\\ 64\\ 22\\ 79\\ 33\\ 34\\ 78\\ 90\\ 12\\ 23\\ 39\\ 12\\ 23\\ 39\\ 100\\ 49\\ 99\\ 99\\ 99\\ 99\\ 99\\ 99\\ 99\\ 99\\ 99$	124 543 124 549 124 549 124 551 124 551 124 553 124 553 124 553 124 556 124 633 R91 124 670 HA 124 761 R1 124 761 R1 124 761 R1 124 761 R1 124 805 R21 124 805 R21 124 805 R91 12	4 4 4 4 4 4 4 4 5 5 5 5 5 5 5 5 1 4 4 1 5 5 5 5	366 101 102 31 119 148 149 148 149 16 54 355 43 355 43 355 43 49 96 102 19 26 102 15 85 55 7 7 9 21 101 1101 101 102 119 148 148 149 102 102 119 148 148 149 107 107 102 119 148 148 149 107 107 107 107 107 107 107 107 107 107	125 947 126 121 126 121 126 121 126 121 126 127 126 402 126 402 126 402 126 402 126 402 126 402 126 404 126 404 126 404 126 404 126 404 126 404 126 404 127 537 127 537 127 537 127 548 127 548 127 548 127 548 127 548 127 548 127 7548 127 7548 127 7548 127 7548 128 044 128 <td>12444444444444444444444444444413332442284444444444</td> <td>9993339167802223324678023410112493355777991112232233223223223223223223223223223223</td> <td>131 028 R1 131 028 R1 131 028 R1 131 031 R91 131 031 R91 131 031 R91 131 031 R91 131 031 R91 131 031 R91 131 031 R91 131 031 R91</td> <td>$\begin{array}{cccccccccccccccccccccccccccccccccccc$</td>	12444444444444444444444444444413332442284444444444	9993339167802223324678023410112493355777991112232233223223223223223223223223223223	131 028 R1 131 028 R1 131 028 R1 131 031 R91 131 031 R91 131 031 R91 131 031 R91 131 031 R91 131 031 R91 131 031 R91 131 031 R91	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$

PART NUMBER			MT-140 PART NUMBER	SEC	PG			AL INDEX	MT-140 PART NUMBER	SEC	PG
131 032 R91 131 033 R1 131 044 131 131 046 131 131 046 131 131 046 131 131 046 131 131 200 131 131 200 131 131 200 131 131 200 131	$\begin{array}{c} 8 & 1 \\ 8 & 2 \\ 2 \\ 8 \\ 8 \\ 2 \\ 2 \\ 12 \\ 17 \\ 12 \\ 13 \\ 12 \\ 13 \\ 12 \\ 13 \\ 12 \\ 13 \\ 12 \\ 13 \\ 12 \\ 13 \\ 12 \\ 12$	848010234568111438612580319011111999044423343130854935793535705066666842342504582	133 322 R1 133 3452 R1 133 452 R1 133 452 R1 133 452 R1 133 452 R1 133 452 R1 133 452 R1 133 452 R1 133 544 R1 133 564 R1 133 575 R3 133 575 R3 133 575 R3 133 577 R4 133 577 R4 133 577 R4 133 577 R4 133 735 R1 133 735 R1 133 735 R1 133 735 R1 133 735 R1 133 735 R1 133 735 R1 133 735 R1 133 735 R1	$\begin{array}{c} 166\\ 122\\ 122\\ 122\\ 122\\ 122\\ 122\\ 122\\$	$\begin{array}{c} 111\\ 54\\ 39\\ 42\\ 38\\ 40\\ 44\\ 94\\ 226\\ 211\\ 1741144$ 17411411111111111111	137 185 137	444444444444444444444444444444444444444	146 147 148 149 149 150 151 150 151 153 155 166 167 168 169 167 168 169 170 1771 171 171 171 171 173 191 192 60 654 34 524 11 34 52 34 52 34 52 34 52 34 52 34 52 34 52 34 52 34 52 34 57 78 78 <t< td=""><td>138 036 138 086 138 2</td><td>4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4</td><td>$\begin{array}{c} 8\\ 16\\ 18\\ 51\\ 57\\ 57\\ 14\\ 18\\ 20\\ 21\\ 60\\ 62\\ 63\\ 174\\ 175\\ 67\\ 178\\ 121\\ 121\\ 121\\ 121\\ 121\\ 121\\ 121\\ 12$</td></t<>	138 036 138 086 138 2	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	$\begin{array}{c} 8\\ 16\\ 18\\ 51\\ 57\\ 57\\ 14\\ 18\\ 20\\ 21\\ 60\\ 62\\ 63\\ 174\\ 175\\ 67\\ 178\\ 121\\ 121\\ 121\\ 121\\ 121\\ 121\\ 121\\ 12$

NUMERICAL INDEX MT-140	NUMERICAL	INDEX	MT-140
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	PART		PART	SEC PG	PART SEC PG	PART	
•	NUMBER	· · · · · · · · · · · · · · · · · · ·	NUMBER	·····	NUMBER	NUMBER	SEC PG
	139 756 H 139 756 H 139 756 H 139 879 H 139 919 R1 139 919 R1 139 919 R1 140 143 H	4 123 5 79 5 80 4 39 7 5 7 9 7 34 1 3 12 139	140 483 H 140 483 H	12 62 12 74 12 78 12 78 12 78 12 80 12 80 12 80 12 82 12 83	141 260 12 173 141 292 H 4 28 141 292 H 4 30 141 292 H 4 32 141 292 H 4 34 141 292 H 4 34 141 598 R1 8 34 141 598 R1 12 127 141 615 12 129	145 422 82 145 540 146 005 81 146 005 81 146 005 81 146 006 81 146 006 81 146 006 81	17 14 8 34 13 39 13 43 13 75 13 39 13 43 13 75
	140 303 140 381 140 383 H 140 383 H 140 383 H 140 483 H	12 139 15 3 12 73 12 217 1 8	140 483 H 140 483 H 140 483 H 140 483 H 140 483 H	12 87 12 88 12 105 12 108 12 109 12 111	141 615 12 131 141 615 12 145 141 615 12 153 141 615 12 155 141 615 12 219 141 671 892 17 17	146 007 R1 146 007 R1 146 007 R1 146 008 R1 146 008 R1 146 008 R1	13 39 13 43 13 75 13 39 13 43 13 75
	140 483 H 140 483 H 140 483 H 140 483 H 140 483 H 140 483 H 140 483 H 140 483 H 140 483 H	4 36 4 40 4 41 4 43 4 44 4 87 4 92 4 96 4 100	140 483 H 140 483 H 140 483 H 140 483 H 140 483 H 140 483 H 140 483 H 140 483 H	12 116 12 120 12 127 12 127 12 131 12 133 12 133 12 136 12 136 12 142 12 145	141 966 H 16 32 142 064 H 16 32 142 064 H 16 43 142 095 16 55 142 122 R1 7 3 142 122 R1 7 13 142 127 R1 12 18 142 127 R1 12 162 142 127 R1 12 162 142 127 R1 12 164	146 327 R1 146 327 R1 146 327 R1 146 327 R1 146 327 R1 146 327 R1 146 327 R1 146 327 R1 146 327 R1 146 360 R1 147 682	12 174 12 174 16 34 16 46 16 46 16 47 16 53 13 56 8 14
	140 483 H 140 483 H 140 483 H 140 483 H 140 483 H 140 483 H 140 483 H 140 483 H 140 483 H	4 129 4 143 4 146 4 172 4 173 4 185 4 198 5 18 5 26	140 483 H 140 483 H 140 483 H 140 483 H 140 483 H 140 483 H 140 483 H 140 483 H 140 483 H 140 483 H	12 149 12 153 12 155 12 156 12 164 12 177 12 177 12 177 12 177	142 664 15 3 142 832 H1 4 101 142 832 H1 4 102 142 932 H1 4 102 142 932 H1 4 102 142 917 R1 4 25 142 918 R1 4 25 142 955 5 13 142 955 5 76 143 343 15 3 143 415 12 100	148 194 R1 148 194 R1 148 404 R1 148 689 R1 149 489 R1 150 554 R1 150 554 R1 150 554 R1 150 554 R1	16 13 16 32 12 209 16 26 11 3 7 3 7 4 7 6 7 6 7 8 7 8 7 10
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	140 483 H 140 483 H 140 483 H 140 483 H 140 483 H 140 483 H 140 483 H	7 39 7 39 7 39 7 43 7 43 8 6 8 8 8 8	140 483 H 140 526 H 140 766 140 813 140 928 R1 141 037 H 141 037 H	16 58 8 34 8 34 12 201 13 18 2 7 2 9 2 11	144 256 13 65 144 420 H 13 16 144 420 H 13 86 144 420 H 3 28 144 424 H 3 28 144 478 R92 14 20 144 478 R92 14 20 144 478 R92 14 26 144 478 R92 14 32 144 526 H1 4 180	151 036 R1 151 036 R1 151 036 R1 151 043 R21 151 043 R21 151 062 R1 151 065 R1 151 065 R1	12 53 12 64 12 65 12 53 12 52 12 52 12 53 12 53 12 53
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PART	MERIC	AL INDEX MT-140	SEC	PG	PART	NUME	1 11	LINDEX MT-140	SEC	P
NUMBER	12 62	<u>NUMBER</u> 157 490 R1	1.4	43	NUMBER 158 052 R	92 12	132	NUMBER	16	
151 207 R1 151 209 R2 151 241 R1 151 245 R91 151 269 R2 151 304 R1 151 313 R2 151 313 R2 151 313 R2 151 329 R12 151 329 R12 151 340 R1 151 341 R1 151 341 R1	$\begin{array}{c} 12\\ 79\\ 79\\ 79\\ 79\\ 79\\ 79\\ 79\\ 79\\ 79\\ 79$	157 518 R1 157 518 R1 157 518 R1 157 550 R1 157 550 R1 157 550 R1 157 550 R1 157 550 R1 157 550 R1 157 566 R1 157 566 R1 157 566 R1 157 566 R1 157 566 R1 157 567 R1 157 567 R1 157 567 R1 157 567 R1 157 567 R1 157 567 R1 157 567 R1 157 567 R1 157 567 R1 157 567 R1 157 567 R1 157 797 R1 157 797 R1 157 797 R1 157 797 R1 157 797 R1 158 028 R1 158 029 R1 158 029 R1 158 051 R92	$\begin{array}{c} 14 \\ 14 \\ 14 \\ 14 \\ 14 \\ 14 \\ 14 \\ 14 $	$\begin{array}{c} 533\\ 577\\ 115\\ 177\\ 477\\ 299\\ 333\\ 66\\ 66\\ 66\\ 66\\ 63\\ 155\\ 157\\ 157\\ 127\\ 299\\ 333\\ 66\\ 66\\ 66\\ 66\\ 66\\ 66\\ 66\\ 61\\ 33\\ 157\\ 15\\ 577\\ 7\\ 15\\ 58\\ 98\\ 15\\ 15\\ 15\\ 15\\ 15\\ 15\\ 15\\ 15\\ 15\\ 15$	158 532 Ri 158 532 Ri 158 532 Ri 158 532 Ri 158 532 Ri 158 532 Ri 158 532 Ri 158 532 Ri 158 761 R 159 657 Ri 159 601 Ri 159 601 Ri 159 601 Ri 159 601 Ri 159 601 Ri 159 601 Ri 159 601 Ri 159 689 Ri 159 927 159 159 927 159 159 927 159 159 927 159 159 927 159 159 927 159 159 927 159	91 44 91 44 91 44 91 44 91 11 12 92 44 122 24 124 24 124 124 24 1	$\begin{array}{c} 62\\ 175\\ 28\\ 241\\ 2027\\ 127\\ 28\\ 241\\ 2027\\ 127\\ 266\\ 202\\ 202\\ 202\\ 202\\ 202\\ 202\\ 202$	162 550 R91 163 162 163 162 163 162 163 162 163 162 163 162 163 162 163 163 163 303 163 303 163 303 164 285 165 780 165 780 165 780 165 780 165 780 165 780 165 780 165 780 165 780 165 790 165 790 165 791 165 792 165 791 165 792 165 793 165 794 165 795 165 796 165 791 165 804 165 804 1		

NUME	RICA	AL INDE)	(MT-140			NUMER	RIC		NDEX MT-140
PART NUMBER	SBC	PG	PART NUMBER	SEC	PG	PART NUMBER	SEC	PG	PART SEC PG
167 257 167 263 169 071 169 071 169 071 169 071 169 071 1613 171 171 131 171 613 171 613 171 807 172 531 172	$\begin{array}{c} 12 \\ 4 \\ 12 \\ 12 \\ 12 \\ 13 \\ 13 \\ 17 \\ 15 \\ 15 \\ 15 \\ 15 \\ 15 \\ 15 \\ 15$	24 53	177 036 R11 177 046 R31 177 434 R1 177 435 R1 177 443 R1 177 443 R1 177 443 R1 177 443 R1 177 444 R1 177 622 H1 177 623 H1 177 664 R1 177 665 R2 177 666 R1 177 666 R1 177 668 R1 177 673 R1 177 668 R1 177 678 R1 177 678 R1 177 692 R1 177 692 R1 177 692 R1 177 792 R21 178 031 178 177 792 R21 178 178 178	$ \begin{smallmatrix} 6 \\ 13 \\ 13 \\ 13 \\ 13 \\ 13 \\ 13 \\ 13 \\ $	$\begin{array}{c} 2263\\ 133\\ 155\\ 137\\ 155\\ 137\\ 102\\ 22\\ 100\\ 222\\ 222$	179 888 180 022 180 022 180 022 180 022 180 024 180 075 180 080 180 083 180 083 180 083 180 083 180 120 180 120 180 120 180 120 180 120 180 120 180 120 180 120 180 121 180 122 180 124 180 137 180 137 180 137 180 137 180 137 180 137 180 144 180 145 180 145 180 145 180	$\begin{array}{c} 134 \\ 88 \\ 146 \\ 128 \\ 833 \\ 1333 \\ 333 \\$	$\begin{array}{c} 83\\ 85\\ 142\\ 56\\ 856\\ 125\\ 255\\ 833\\ 866\\ 878\\ 855\\ 51\\ 135\\ 702\\ 144\\ 51\\ 10\\ 17\\ 139\\ 55\\ 939\\ 101\\ 101\\ 556\\ 13\\ 34\\ 43\\ 40\\ 39\\ 101\\ 101\\ 273\\ 656\\ 566\\ 13\\ 376\\ 76\\ 4\\ 4\\ 34\\ 35\\ 166\\ 13\\ 76\\ 656\\ 31\\ 376\\ 656\\ 31\\ 376\\ 78\\ 88\\ 78\\ 88\\ 39\\ 39\\ 39\\ 39\\ 39\\ 39\\ 39\\ 39\\ 39\\ 39$	183414R11439185062R1481185062R1481185062R112191185062R11311185062R11311185062R11311185507R21339185507R21339185507R21311185512R11311185512R11311185512R11311185512R11311185512R11311185542R11311185542R11317185542R113171866471348186923131718664713481869231317187884R11420187884R11420187884R11420187884R11420187884R11420187884R11420187884R11420187884R11420187884R11420187884R1 </td

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NUMER	ICAL INDE	MT-140		NUMER	ICAL INDEX	MT-140	
PART NUMBER	SEC PG	PART NUMBER	SEC PG	PART NUMBER	SEC PG	PART NUMBER	SEC PG
194 665 R1 194 690 R1 194 690 R1 194 691 R1 194 691 R1 195 456 R2 196 198 R91 196 263 R91 196 263 R91 196 264 R91 196 264 R91 196 578 R1 196 578 R1 196 977 R1 196 977 R1 196 933 R92 197 415 R1 198 292 R1 198 292 R1 198 292 R1 198 292 R1 198 292 R1 198 292 R1 198 292 R1 198 292 R1 198 292 R1 198 292 R1 198 292 R1 198 292 R1 198 292 R1 198 754 R1 199 150 R2 199 160 R2 199 160 R2	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	206 333 R1 206 581 R1 206 581 R1 206 581 R1 206 581 R1 206 581 R1 207 184 R1 207 184 R1 207 184 R1 207 185 R1 207 185 R1 207 185 R1 207 185 R1 207 185 R1 207 185 R1 207 185 R1 207 185 R1 207 438 R1 207 701 H1 208 646 R1 208 521 R1 208 521 R1 208 521 R1 208 626 R91 208 806 R1 208 806 R1 208 806 R1	$ \begin{array}{c} 3 & 59 \\ 88 \\ 88 \\ 88 \\ 88 \\ 88 \\ 44 \\ 42 \\ 227 \\ 282 \\ 211 \\ 101 \\ 12$	215 617 R1 215 664 R2 215 664 R2 215 604 R2 215 904 R91 216 114 R21 216 246 R2 216 304 R93 216 376 R93 216 376 R93 216 376 R93 217 019 R92 217 019 R92 217 020 R92 217 081 R1 217 081 R1 217 639 R1 217 639 R1 217 639 R1 217 639 R1 217 639 R1 217 639 R1 217 639 R1 217 639 R1 217 639 R1 217 639 R1 217 639 R1 217 639 R1 217 639 R1 217 639 R1 217 639 R1 217 83 R1 217 83 R1 217 639 R1 217 83 R1 218 214 219 197 R2 219	12 137 6 4 5 91 8 34 8 52 14 34 14 42 14 43 14 42 14 42 14 49 12 172 13 49 12 179 13 16 12 132 13 49 12 139 13 100 13 16 14 49 12 132 13 199 12 63 12 79 12 63 15 10 15 11 15 13 15 14 15 13 15 14 15 13 15 14 15 17 15 18 14 28 <	223 975 R1 224 565 R1 224 565 R1 224 565 R1 224 565 R1 224 565 R1 224 565 R1 224 742 R1 225 205 R92 225 217 R1 225 217 R1 225 217 R1 225 217 R1 225 218 R1 225 216 R1 226 265 R1 226 265 R1 226 265 R1 226 265 R1 226 369 R1 226 369 R1 226 404 R91 226 404 R91 226 406 R1 226 406 R1 226 406 R1 226 410 R1 <t< td=""><td>$\begin{array}{cccccccccccccccccccccccccccccccccccc$</td></t<>	$\begin{array}{cccccccccccccccccccccccccccccccccccc$

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NUME	RIC	AL I	NDEX	MT-140			NUMER		AL II	NDEX	MT-140		
PART NUMBER	SEC	PG		PART NUMBER	SEC	PC	 PART NUMBER	SEC	PG		PART NUMBER	SEC	PG
227 283 R3 227 285 R1 227 286 R1 227 286 R1 227 328 R11 227 322 R11 227 323 R11 227 323 R11 227 324 R1 227 324 R1 227 327 R1 227 327 R1 227 327 R1 227 327 R1 227 327 R1 227 327 R1 227 327 R1 227 327 R1 227 331 R1 227 331 R1 227 332 R1 227 332 R1 227 332 R1 227 332 R1 227 334 R2 227 334 R2 227 334 R2 227 351 R1 227 352 R1 227 352 R1 227 353 R1 227 355 R1 227 355 R1 227 355 R1 227 355 R1 227 355 R1 227 355 R1 227 355 R1 227 355 R1 227 356 R1 227 357 R1 227 358 R1 227 358 R1 227 358 R1 227 358 R1 227 359 R1 227 359 R1 227 359 R1 227 359 R1 227 359 R1 227 359 R1 227 418 R2 227 418 R2 227 418 R2 227 419 R2 227 419 R2 227 419 R2 227 419 R2 227 419 R2 227 419 R2 227 419 R2 227 419 R2 227 419 R2 227 419 R2 227 419 R2 227 419 R2 227 419 R2 227 419 R2 227 419 R2 227 419 R2 227 419 R2 227 410 R2 228 87 R1 228 87 R	$\begin{array}{c} 14 \\ 14 \\ 14 \\ 14 \\ 14 \\ 14 \\ 14 \\ 14 $	36 277 302 277 302 227 302 28 8 8 132 25 132 25 136 162 129 136 6 9 9 4 4 4 4 4 4 5 30 30 30		230 037 R93 230 037 R93 230 037 R93 230 037 R93 230 037 R93 230 185 R2 230 185 R2 230 186 R2 230 462 R91 230 777 R1 230 846 R91 231 170 R2 231 170 R2 231 170 R2 231 170 R2 231 170 R2 231 170 R2 231 170 R2 231 170 R2 231 040 R91 232 040 R91 232 040 R91 232 040 R91 232 040 R91 232 040 R91 233 007 R91 233 007 R91 233 007 R91 233 007 R91 233 009 R1 233 009 R1 233 009 R1 233 009 R1 233 009 R1 233 009 R1 233 009 R1 233 009 R1 233 009 R1 233 009 R1 233 009 R1 233 009 R1 233 009 R1 233 009 R1 233 009 R1 233 009 R1 233 009 R1 233 009 R1 233 010 R11 233 010 R11 233 040 R91 233 040 R91 233 040 R91 233 040 R91 233 047 R91 233 048 R1 233 049 R1 233 049 R1 233 049 R1 233 040 R1 233 050 R1 235 055 R91 235 055 R91 235 055 R91 235 055 R91 235 055 R91 235 055 R91 235 055 R91 235 055 R91 235 057 R1 235 057 R1 235 058 R91 235 058 R91 235 057 R1 235 058 R91 235 058 R91 235 058 R91 235 057 R1 235 058 R91 235 058 R91 235 058 R91 235 057 R1 235 058 R91 235 057 R1 235 058 R91 235 058 R91 235 057 R1 235 057 R1 235 058 R91 235 057 R1 235 057 R1 235 057 R1 235 057 R1 235 057 R1 235 057 R1 235 057 R1 235 057 R1 235 057 R1 235 058 R91 235 057 R1	$\begin{smallmatrix} 4 & 4 & 4 \\ 4 & 4 & 4 \\ 17 & 173 \\ 122 & 4 \\ 4 & 4 & 4 \\ 4 & 4 & 4 \\ 4 & 4 & 4$	$\begin{array}{c} 102\\ 117\\ 10\\ 117\\ 10\\ 117\\ 101\\ 117\\ 102\\ 117\\ 128\\ 101\\ 117\\ 128\\ 101\\ 117\\ 128\\ 101\\ 117\\ 128\\ 102\\ 102\\ 102\\ 102\\ 102\\ 102\\ 102\\ 102$	238 589 R1 238 589 R1 238 589 R1 238 610 R21 238 610 R21 238 610 R21 238 612 R3 238 612 R3 238 614 R92 238 614 R92 238 614 R92 238 614 R92 238 614 R92 238 614 R92 238 634 R1 238 640 R1 238 640 R1 238 640 R1 238 640 R1 238 641 R2 239 156 R1 239 156 R1 239 156 R1 239 158 R1 239 158 R1 239 158 R1 239 182 R2	$\begin{array}{c} 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 3 $	20 80 108 111 54 47 53 53 53 53 53 53 53 53 53 53 53 55 56 60 355 39 64 64 34 59 58 820 65 39 64 64 34 57 74		243 119 R1 243 210 R92 243 210 R92 243 210 R92 243 210 R92 243 210 R92 243 210 R92 243 210 R92 243 210 R92 243 210 R92 243 290 R91 243 290 R91 243 291 R1 243 293 R91 243 293 R91 243 293 R91 243 293 R91 243 294 R91 243 295 R1 243 296 R1 243 297 R1 243 296 R1 243 297 R1 243 298 R1 243 298 R1 243 297 R1 243 298 R1	$\begin{array}{c} 122\\ 12\\ 15\\ 16\\ 16\\ 16\\ 4\\ 4\\ 4\\ 4\\ 4\\ 4\\ 4\\ 4\\ 4\\ 4\\ 4\\ 4\\ 4\\$	$\begin{array}{c} 21\\ 21\\ 138\\ 142\\ 153\\ 181\\ 15\\ 20\\ 399\\ 90\\ 999\\ 909\\ 148\\ 582\\ 243\\ 677\\ 1120\\ 225\\ 837\\ 676\\ 1584\\ 148\\ 201\\ 158\\ 148\\ 201\\ 175\\ 636\\ 148\\ 201\\ 175\\ 636\\ 158\\ 148\\ 201\\ 175\\ 500\\ 52\\ 148\\ 100\\ 100\\ 100\\ 100\\ 100\\ 100\\ 100\\ 10$

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PART NUMBER	SEC	PG	PART NUMBER	SEC	PG	PART NUMBER	SEC	PG	PART NUMBER	SEC	PG
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175\\ 190\\ 211\\ 211\\ 102\\ 108\\ 212\\ 46\\ 30\\ 47\\ 175\\ 190\\ 212\\ 46\\ 30\\ 47\\ 175\\ 190\\ 212\\ 174\\ 175\\ 190\\ 212\\ 174\\ 175\\ 190\\ 212\\ 46\\ 30\\ 47\\ 175\\ 190\\ 212\\ 46\\ 30\\ 47\\ 175\\ 190\\ 212\\ 46\\ 30\\ 47\\ 175\\ 190\\ 212\\ 46\\ 30\\ 47\\ 175\\ 190\\ 212\\ 46\\ 30\\ 47\\ 175\\ 190\\ 212\\ 46\\ 30\\ 47\\ 175\\ 190\\ 212\\ 46\\ 30\\ 47\\ 175\\ 190\\ 212\\ 46\\ 30\\ 47\\ 175\\ 190\\ 212\\ 46\\ 30\\ 47\\ 175\\ 190\\ 212\\ 46\\ 30\\ 47\\ 175\\ 190\\ 212\\ 175\\ 190\\ 212\\ 46\\ 30\\ 47\\ 175\\ 190\\ 212\\ 175\\ 190\\ 212\\ 175\\ 190\\ 212\\ 46\\ 30\\ 47\\ 175\\ 175\\ 190\\ 212\\ 175\\ 190\\ 212\\ 175\\ 190\\ 212\\ 175\\ 190\\ 212\\ 175\\ 190\\ 212\\ 175\\ 190\\ 212\\ 175\\ 190\\ 212\\ 175\\ 190\\ 212\\ 175\\ 190\\ 212\\ 175\\ 190\\ 212\\ 175\\ 190\\ 212\\ 175\\ 190\\ 212\\ 175\\ 190\\ 212\\ 175\\ 190\\ 212\\ 175\\ 190\\ 212\\ 175\\ 190\\ 212\\ 175\\ 190\\ 212\\ 175\\ 190\\ 212\\ 175\\ 190\\ 212\\ 175\\ 175\\ 190\\ 212\\ 175\\ 190\\ 212\\ 175\\ 190\\ 212\\ 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td=""><td>$\begin{array}{c} 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\$</td><td>136 180 181 206 206 91 94 95 136 180 181 206 91 94 95 136 180 181 206 206 207 206 206 206 206 206 206 206 206 207 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 112 16 28 20 21 22 20 21 <</td><td>271 432 271 432 271 501 271 507 271 507 271 548 271 548 271 563 271 723 271 723 271 723 271 724 271 751 271 751 271 751 271 751 272 123 272 213 272 213 272 276 272 277 273 276 272 278 272 929 272 929 272 929 272 929 272 929 272 929 272 929 273 026 273 026 273 026 273 026 273 026 273 0</td><td>12</td><td>4455555555566666</td></tr<></td>	$\begin{array}{c} 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\$	$\begin{array}{c} 34\\ 34\\ 34\\ 34\\ 34\\ 34\\ 34\\ 34\\ 34\\ 34\\$	266 487 C92 266 487 C92 266 487 C92 266 487 C92 266 506 C1 266 615 C1 266 617 C1 266 782 C3 266 783 C91 266 783 C91 266 783 C91 266 783 C91 266 786 C3 266 783 C91 266 856 C92 266 856 C92 267 147 C91 267 359 C1 267 360 C1 267 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PART NUMBER	SEC	PG	PART NUMBER		SEC	PG	PART S NUMBER	BBC	PG	PART NUMBER	SEC	PG
274 085 R91 274 085 R91	12 15 15 12 12 12 12 12 12 12 12 12 12 12 12 12	$\begin{array}{c} 4\\ 4\\ 5\\ 6\\ 6\\ 7\\ 9\\ 10\\ 11\\ 13\\ 9\\ 4\\ 110\\ 111\\ 112\\ 10\\ 46\\ 63\\ 109\\ 113\\ 172\\ 4\\ 12\\ 132\\ 132\\ 132\\ 132\\ 55\\ 55\\ 55\\ 55\\ 58\\ 6\\ 108\\ 108\\ \end{array}$	277 232 277 232 277 232 277 232 277 232 277 232 277 232 277 232 277 232 278 085 278 085 278 338 278 728 279 026 279 026 279 026 279 026 279 026 279 026 279 026 279 026 279 026 279 026 279 027 279 028 279 029 279 029 279 029 279 029 279 029 279 029 279 029 279 029 279 029 279 029 279 0	11111111111111111111111111111111111111	12127121212121257714412124777712121212121212121212121212	114 34 117 47 132 132 132 114 91 53	280 886 C91 280 955 C1 281 681 C1 281 681 C1 281 685 C4 281 765 C4 281 784 C1 281 784 C1 281 784 C1 281 784 C1 281 811 C92 281 813 C92 281 813 C92 281 813 C92 281 814 C92 281 817 C95 282 008 C1	62222222222222222222222222222222222222	34 3 3 3 5 9 23 35 39 43 47 172 108 6 11 13 14 15 17 18 19 20 20 20 20 20 108 32 32 20 43 32 18 19 20 20 19 9 9 9 9 9 9 9 9 9 9 9 9 9	283 757 C1 283 759 C1 283 759 C1 283 759 C1 283 759 C1 283 824 C1 283 824 C1 283 871 C1 283 871 C1 283 871 C1 284 377 C2 284 377 C2 284 377 C2 284 377 C2 284 377 C2 284 377 C2 284 377 C2 284 377 C2 284 377 C2 284 377 C2 284 377 C2 284 377 C2 284 377 C2 284 377 C2 284 377 C2 284 377 C2 284 377 C2		$\begin{array}{c} 210\\ 211\\ 193\\ 193\\ 193\\ 193\\ 193\\ 193\\ 193\\ 1$

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NUME	ERI	CAL	INDEX MT-140			NUME	RIC	CAL	INDEX MT-140		
PART Number	SEC	PG	PART NUMBBR	SEC	PG	PART NUMBER	SEC	PG	PART NUMBBR	SEC	PG
288 327 C1 288 612 C91 288 905 C91 289 862 C1 289 862 C1 289 862 C1 289 862 C1 289 862 C1 289 862 C1 289 862 C1 289 862 C1 289 862 C1 289 862 C1 289 862 C1 289 862 C1 289 862 C1 289 862 C1 289 862 C1 289 862 C1 289 862 C1 289 862 C1 289 862 C1 290 308 C1 290 308 C1 290 309 C91 290 309 C91 290 309 C91 290 309 C1 291 029 C1 291 029 C1 291 068 C2 291 068 C2 291 167 C2 291 167 C2 291 168 C1 291 175 C92 291 175 C92 291 176 C92 291 176 C92 291 176 C92 291 176 C92 291 176 C92 291 176 C92 291 176 C92 291 177 C1 291 207 C1 291 207 C1 291 207 C1 291 207 C1 291 207 C1 291 207 C1 291 207 C1 291 207 C1 291 207 C1 291 207 C1 291 788 R1 291 782 C1 292 786 C2 292 746 C2 292 783 C1 292	$\begin{array}{c} 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\$	83 85 119 176 203 209 176 176 203 209 176 176 203 209 176 176 203 209 176 176 203 209 176 176 203 209 176 176 203 209 176 176 203 209 176 176 203 209 176 176 203 209 176 176 203 209 176 176 203 209 176 176 203 209 176 176 203 209 176 174 203 209 176 174 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td=""><td>$\begin{array}{c} 4 \\ 4 \\ 12 \\ 13 \\ 4 \\ 4 \\ 12 \\ 12 \\ 22 \\ 22 \\ 22 \\ 22 \\$</td><td>75 777 139 19 139 19 139 74 76 108 17 138 2155 126 128 1300 1455 126 128 1300 1455 126 128 1300 1455 126 128 1300 1455 126 128 1300 1455 126 128 1300 1455 126 128 1300 1455 126 128 1300 152 154 149 152 154 149 152 154 149 152 154 149 152 154 149 152 154 149 152 154 149 152 154 149 152 1300 131 155 149 152 1300 131 155 149 152 1300 131 155 149 152 1300 131 155 149 152 1300 131 155 149 152 1300 131 155 149 152 1300 131 155 149 152 1300 131 155 149 152 1300 131 155 149 152 1300 131 136 139 163 136 139 163 177 139 120 62 205 222 206 288 317 128 31 142 129 130 131 136 139 163 176 129 130 131 136 139 163 176 129 130 131 136 131 145 205 222 206 288 317 122 130 131 132 139 132 139 132 139 130 131 136 139 139 139 130 131 139 139 130 131 136 139 139 130 131 139 122 130 131 136 131 145 122 128 130 131 136 131 139 122 206 222 206 226 200 111 131 132 130 131 139 122 205 222 206 288 311 22 206 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0089\\ 135475\\ 12222\\ 1180\\ 0189\\ 12222\\ 2222\\ 23780\\ 0089\\ 135475\\ 12222\\ 1180\\ 0189\\ 12222\\ 2222\\ 23780\\ 0089\\ 135475\\ 12222\\ 1180\\ 0189\\ 0189\\ 018$</td></t<>	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	$\begin{array}{c} 15844\\ 104560\\ 1111133568\\ 0021\\ 1229\\ 01222\\ 2222\\ 23780\\ 0089\\ 1344751\\ 13568\\ 01222\\ 2222\\ 23780\\ 0089\\ 135475\\ 12222\\ 1180\\ 0189\\ 12222\\ 2222\\ 23780\\ 0089\\ 135475\\ 12222\\ 1180\\ 0189\\ 12222\\ 2222\\ 23780\\ 0089\\ 135475\\ 12222\\ 1180\\ 0189\\ 0189\\ 018$

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NUMERICAL INDEX MT-140

NUME	RIC	L INDEX MT-140			NUN	<i>l</i> er	ICAI	LINDEX MT-140		
PART SE NUMBER SE	C PG	PART NUMBER	SEC	PG	PART NUMBER	SEC	PG	PART NUMBER	SEC	PG
321 954 C1 1 321 954 C1 1 321 954 C1 1 321 954 C1 1 321 954 C1 1 321 954 C1 1 321 951 R91 1 321 981 R91 1 321 981 R91 1 321 981 R91 1 321 981 R91 1 322 292 C1 322 322 292 C1 1 322 292 C1 1 322 292 C1 1 322 292 C1 1 322 296 C1 322 322 296 C1 322 322 296 C1 1 322 296 C1 1 3222	33334333333333344444222224444444444444	$\begin{array}{c} 328 & 391 & C1 \\ 328 & 391 & C1 \\ 328 & 490 & C1 \\ 328 & 455 & C1 \\ 328 & 496 & C1 \\ 328 & 496 & C1 \\ 328 & 496 & C1 \\ 328 & 497 & C11 \\ 328 & 497 & C11 \\ 328 & 497 & C11 \\ 328 & 497 & C11 \\ 328 & 497 & C11 \\ 328 & 637 & C1 \\ 328 & 637 & C1 \\ 328 & 637 & C1 \\ 328 & 637 & C1 \\ 328 & 637 & C1 \\ 328 & 637 & C1 \\ 328 & 637 & C1 \\ 328 & 680 & C1 \\ 329 & 579 & C2 \\ 329 & 579 & C2 \\ 329 & 579 & C2 \\ 329 & 580 & C2 \\ 329 & 580 & C2 \\ 329 & 580 & C2 \\ 329 & 580 & C2 \\ 329 & 581 & C2 \\ 329 & 581 & C2 \\ 329 & 581 & C2 \\ 329 & 581 & C2 \\ 329 & 581 & C2 \\ 329 & 581 & C2 \\ 329 & 581 & C2 \\ 329 & 581 & C2 \\ 329 & 581 & C2 \\ 330 & 220 & C1 \\ 330 & 220 & C1 \\ 330 & 220 & C1 \\ 330 & 798 & C1 \\ 330 & 798 & C1 \\ 330 & 798 & C1 \\ 331 & 007 & C91 \\ 331 & 007 & C91 \\ 331 & 007 & C91 \\ 332 & 603 & C1 \\ 332 & 603 & C1 \\ 332 & 603 & C1 \\ 332 & 603 & C1 \\ 332 & 603 & C1 \\ 332 & 603 & C1 \\ 332 & 603 & C1 \\ 332 & 603 & C1 \\ 332 & 603 & C1 \\ 332 & 603 & C1 \\ 332 & 603 & C1 \\ 332 & 603 & C1 \\ 332 & 603 & C1 \\ 332 & 603 & C1 \\ 333 & 644 & C91 \\ 333 & 644 & C91 \\ 333 & 648 & C91 \\ 333 & 664 & C91 \\ 333 & 710 & R91 \\ 333 & 750 & R91 \\ 33$	12 12 12 13 13	$\begin{array}{c} 741\\ 1633\\ 1653\\ 556\\ 384\\ 553\\ 452\\ 35\\ 343\\ 557\\ 575\\ 1756\\ 7575\\ 1756\\ 360\\ 381\\ 377\\ 341\\ 377\\ 341\\ 378\\ 341\\ 377\\ 341\\ 378\\ 341\\ 377\\ 341\\ 378\\ 341\\ 378\\ 341\\ 378\\ 341\\ 378\\ 341\\ 378\\ 341\\ 378\\ 341\\ 378\\ 341\\ 378\\ 341\\ 378\\ 341\\ 378\\ 341\\ 378\\ 341\\ 378\\ 341\\ 378\\ 341\\ 378\\ 341\\ 378\\ 341\\ 378\\ 341\\ 381\\ 341\\ 378\\ 341\\ 381\\ 341\\ 378\\ 341\\ 381\\ 381\\ 381\\ 381\\ 381\\ 381\\ 381\\ 38$	337 527 C1 337 527 C1 337 527 C1 337 527 C1 337 527 C1 337 527 C1 337 527 C1 337 527 C1 337 527 C1 337 527 C1 337 527 C1 337 527 C1 337 527 C1 337 527 C1 337 527 C1 337 527 C1 337 711 C92 array}{c} 16\\ 16\\ 16\\ 16\\ 13\\ 13\\ 12\\ 12\\ 2\\ 4\\ 15\\ 15\\ 12\\ 2\\ 2\\ 4\\ 14\\ 14\\ 4\\ 4\\ 4\\ 4\\ 4\\ 4\\ 4\\ 4\\ 4\\ 4\\ 4\\ 4\\ 4$	89 45 7 91 156 64 179 19 143 442 443 442 443 442 443 442 443 442 443 442 443 442 443 442 443 442 443 442 443 442 443 442 443 442 443 442 443 442 443 442 443 442 443 442 443 455 553 39 157 385 664 667 1322 433 455 553 39 157 385 664 667 1322 433 455 555 555 555 555 555 555	341 228 C91 341 228 C91 341 228 C91 341 229 C91 341 229 C91 341 229 C91 341 229 C91 341 229 C91 341 229 C91 341 229 C91 341 229 C91	172121717444444444444444444444444444444	887777777777888877777777777777777777777	

NUME	RIC	AL I	NDEX MT-140			NUMER	RIC	AL INDE	ЕХ МТ-140		
PART NUMBER	SEC	PG	PART NUMBER	SEC	PG	PART NUMBER	SEC	PG	PART NUMBER	SEC	PG
341 230 C91 341 230 C91 341 230 C91 341 230 C91 341 230 C91 341 230 C91 341 230 C91 341 230 C91 341 230 C91 341 231 C91 341 231 C91 341 233 C91 341 233 C91 341 233 C91 341 233 C91 341 234 C91 341 266 C91 341 267 C91 341 268 C91 341 268 C91 341 268 C91 341 269 C91 341 269 C91 341 269 C91 341 269 C91		6600000000000000000000000000000000000	344 618 C21 344 639 C1 344 639 C1 344 639 C1 344 643 C1 344 643 C1 344 649 C1 344 649 C1 344 655 C1 344 655 C1 344 655 C1 344 661 C1 345 249 C91 345 249 C91 345 249 C91 345 249 C91 345 249 C91	$\begin{array}{c} 100\\ 100\\ 100\\ 100\\ 100\\ 100\\ 100\\ 100$	$\begin{array}{c} 6\\ 6\\ 9\\ 5\\ 5\\ 5\\ 6\\ 6\\ 6\\ 6\\ 6\\ 6\\ 6\\ 6\\ 6\\ 6\\ 6\\ 6\\ 6\\$	347 902 R1 347 902 R1 348 170 C1 348 170 C1 348 713 C1 348 713 C1 348 713 C1 348 713 C1 348 713 C1 348 714 C2 348 714 C2 348 714 C2 348 714 C2 348 856 C92 348 856 C92 348 861 C92 348 862 C92 348 862 C92 349 852 C1 349 852 C1 349 852 C1 349 852 C1 350 429 R1 350 429 R1 350 657 R1 350 667 R1 350 684 R1 350 684 R1 350 082	$ \begin{array}{c} 13\\ 13\\ 13\\ 13\\ 13\\ 13\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12$	14 17 18 180 171 12 14 30 173 251 73 97 103 22 49 21 11 14 21 11 14 21 11 14 21 84 14 21 84 14 21 11 14 21 84 14 21 84 14 21 84 190 203 20 175 121 16 86 58 117 16 86 58 117 16 <td>$\begin{array}{c} 351 & 082 & C11 \\ 351 & 894 & C1 \\ 351 & 894 & C1 \\ 352 & 175 & C1 \\ 352 & 175 & C1 \\ 352 & 175 & C1 \\ 352 & 177 & C2 \\ 352 & 236 & C1 \\ 352 & 236 & C1 \\ 352 & 236 & C1 \\ 352 & 619 & C93 \\ 352 & 662 & C1 \\ 352 & 663 & C1 \\ 353 & 172 & C1 \\ 353 & 746 & C92 \\ 353 & 747 & C92 \\ 353 & 748 & C92 \\ 353 & 748 & C92 \\ 353 & 751 & C92 \\ 353 & 751 & C92 \\ 353 & 755 & C92 \\ 353 & 755 & C92 \\ 353 & 755 & C92 \\ 353 & 756 & C92 \\ 353 & 756 & C92 \\ 353 & 756 & C92 \\ 353 & 756 & C92 \\ 353 & 757 & C92 \\ 353 & 757 & C92 \\ 353 & 756 & C92 \\ 353 & 757 & C92 \\ 353 & 776 & C92 \\ 353 & 776 & C92 \\ 353 & 776 & C92 \\ 353 & 776 & C92 \\ 353 & 776 & C92 \\ 353 & 776 & C92 \\ 353 & 777 & C92 \\ 353 & 777 & C92 \\ 353 & 777 & C92 \\ 353 & 776 & C92 \\ 353 & 777 & C92 \\ 353 & 777 & C92 \\ 353 & 777 & C92 \\ 353 & 777 & C92 \\ 353 & 777 & C92 \\ 353 & 777 & C92 \\ 353 & 777 & C92 \\ 353 & 894 & C92 \\ 353 & 894 & C92 \\ 353 & 895 & C92 \\ 353 & 901 & C92 \\ 353 & 902 & C92 \\ 353 & 902 & C92 \\ 353 & 903 & C22 \\ 353 & 938 & C1 \\ 354 & 027 & C91 \\ 354 & 027 & C91 \\ 354 & 027 & C91 \\ 354 & 027 & C91 \\ 354 & 027 & C91 \\ 354 & 030 & C91 \\ 355 & 438 & C1 \\ 355 & 438 & C1 \\ 355 & 438 & C1 \\ 355 & 438 & C1 \\ 355 & 438 & C1 \\ 355 & 438 & C1 \\ 355 & 438 & C1 \\ 355 & 438 & C1 \\ 355 & 438 & C1 \\ 355 & 5707 & C91 \\ 355 & 70$</td> <td>1224133440114444444444444444444444444444</td> <td>$\begin{array}{c} 86\\ 87\\ 41\\ 63\\ 63\\ 194\\ 202\\ 251\\ 597\\ 9\\ 47\\ 77\\ 77\\ 77\\ 27\\ 77\\ 27\\ 77\\ 27\\ 77\\ 299\\ 299$</td>	$\begin{array}{c} 351 & 082 & C11 \\ 351 & 894 & C1 \\ 351 & 894 & C1 \\ 352 & 175 & C1 \\ 352 & 175 & C1 \\ 352 & 175 & C1 \\ 352 & 177 & C2 \\ 352 & 236 & C1 \\ 352 & 236 & C1 \\ 352 & 236 & C1 \\ 352 & 619 & C93 \\ 352 & 662 & C1 \\ 352 & 663 & C1 \\ 353 & 172 & C1 \\ 353 & 746 & C92 \\ 353 & 747 & C92 \\ 353 & 748 & C92 \\ 353 & 748 & C92 \\ 353 & 751 & C92 \\ 353 & 751 & C92 \\ 353 & 755 & C92 \\ 353 & 755 & C92 \\ 353 & 755 & C92 \\ 353 & 756 & C92 \\ 353 & 756 & C92 \\ 353 & 756 & C92 \\ 353 & 756 & C92 \\ 353 & 757 & C92 \\ 353 & 757 & C92 \\ 353 & 756 & C92 \\ 353 & 757 & C92 \\ 353 & 776 & C92 \\ 353 & 776 & C92 \\ 353 & 776 & C92 \\ 353 & 776 & C92 \\ 353 & 776 & C92 \\ 353 & 776 & C92 \\ 353 & 777 & C92 \\ 353 & 777 & C92 \\ 353 & 777 & C92 \\ 353 & 776 & C92 \\ 353 & 777 & C92 \\ 353 & 777 & C92 \\ 353 & 777 & C92 \\ 353 & 777 & C92 \\ 353 & 777 & C92 \\ 353 & 777 & C92 \\ 353 & 777 & C92 \\ 353 & 894 & C92 \\ 353 & 894 & C92 \\ 353 & 895 & C92 \\ 353 & 901 & C92 \\ 353 & 902 & C92 \\ 353 & 902 & C92 \\ 353 & 903 & C22 \\ 353 & 938 & C1 \\ 354 & 027 & C91 \\ 354 & 027 & C91 \\ 354 & 027 & C91 \\ 354 & 027 & C91 \\ 354 & 027 & C91 \\ 354 & 030 & C91 \\ 355 & 438 & C1 \\ 355 & 438 & C1 \\ 355 & 438 & C1 \\ 355 & 438 & C1 \\ 355 & 438 & C1 \\ 355 & 438 & C1 \\ 355 & 438 & C1 \\ 355 & 438 & C1 \\ 355 & 438 & C1 \\ 355 & 5707 & C91 \\ 355 & 70$	1224133440114444444444444444444444444444	$\begin{array}{c} 86\\ 87\\ 41\\ 63\\ 63\\ 194\\ 202\\ 251\\ 597\\ 9\\ 47\\ 77\\ 77\\ 77\\ 27\\ 77\\ 27\\ 77\\ 27\\ 77\\ 299\\ 299$

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359 104 C1 359 104 C1	: 14	29 31	360 460 C1	14	46	360 470 C1 360 470 C1		17	364 357 C1	12 12 12	127

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PART	sec 122122 122122 1444444444444444444444	Pc 1555 1555 1555 221 225 40 41 42 43 44 97 98 999 1000 1100 1100 1111 121 131 1800 194 28 75 1177 201 111 1221 201 177 201 177 201 177 201 177 213 213 213 221 223 233 233 233 233 233 233 233 233 233 33 <td>PART NUMBER 365 215 C1 365 348 C91 365 348 C91 365 349 C91 365 349 C91 365 349 C91 365 349 C91 365 349 C91 365 464 C1 365 464 C1 365 464 C1 365 464 C1 365 460 C91 365 480 C91 365 480 C91 365 628 C1 366 347 C1 366 347 C1 366 350 C1 366 362 C1 366 862 C1 366 862 C1 366 862 C1 366 862 C1 366 862 C1 366 862 C1 366 862 C1 366 862 C1 366 862 C1 366 862 C1 366 862 C1 366 862 C1 367 008 C92 367 009 C92 367 009 C92 367 010 C92 <t< td=""><td>$\begin{array}{c} 5 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5$</td><td>$\begin{array}{c} 78\\ 79\\ 83\\ 84\\ 92\\ 55\\ 6\\ 6\\ 56\\ 556\\ 552\\ 89\\ 89\\ 89\\ 89\\ 89\\ 107\\ 112\\ 535\\ 211\\ 449\\ 44\\ 49\\ 44\\ 49\\ 53\\ 367\\ 77\\ 8\\ 637\\ 206\\ 229\\ 63\\ 299\\ 633\\$</td><td>PART NUMBER 367 865 C1 367 972 C92 368 269 R1 368 269 R1 368 269 R1 368 269 R1 369 135 C2 369 135 C2 369 136 C1 369 136 C1 369 136 C1 369 137 C1 369 138 C1 369 138 C1 369 139 C1 369 313 C1 369 331 C1 369 331 C1 369 332 C1</td><td>SEC 5122122122122122122122122122122122122122</td><td>PC 90 58 190 117 233 34 14 24 24 24 24 24 24 24 24 24 2</td><td>PART ARC PG</td></t<></td>	PART NUMBER 365 215 C1 365 348 C91 365 348 C91 365 349 C91 365 349 C91 365 349 C91 365 349 C91 365 349 C91 365 464 C1 365 464 C1 365 464 C1 365 464 C1 365 460 C91 365 480 C91 365 480 C91 365 628 C1 366 347 C1 366 347 C1 366 350 C1 366 362 C1 366 862 C1 366 862 C1 366 862 C1 366 862 C1 366 862 C1 366 862 C1 366 862 C1 366 862 C1 366 862 C1 366 862 C1 366 862 C1 366 862 C1 367 008 C92 367 009 C92 367 009 C92 367 010 C92 <t< td=""><td>$\begin{array}{c} 5 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5$</td><td>$\begin{array}{c} 78\\ 79\\ 83\\ 84\\ 92\\ 55\\ 6\\ 6\\ 56\\ 556\\ 552\\ 89\\ 89\\ 89\\ 89\\ 89\\ 107\\ 112\\ 535\\ 211\\ 449\\ 44\\ 49\\ 44\\ 49\\ 53\\ 367\\ 77\\ 8\\ 637\\ 206\\ 229\\ 63\\ 299\\ 633\\$</td><td>PART NUMBER 367 865 C1 367 972 C92 368 269 R1 368 269 R1 368 269 R1 368 269 R1 369 135 C2 369 135 C2 369 136 C1 369 136 C1 369 136 C1 369 137 C1 369 138 C1 369 138 C1 369 139 C1 369 313 C1 369 331 C1 369 331 C1 369 332 C1</td><td>SEC 5122122122122122122122122122122122122122</td><td>PC 90 58 190 117 233 34 14 24 24 24 24 24 24 24 24 24 2</td><td>PART ARC PG</td></t<>	$\begin{array}{c} 5 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5 \\ 5 $	$\begin{array}{c} 78\\ 79\\ 83\\ 84\\ 92\\ 55\\ 6\\ 6\\ 56\\ 556\\ 552\\ 89\\ 89\\ 89\\ 89\\ 89\\ 107\\ 112\\ 535\\ 211\\ 449\\ 44\\ 49\\ 44\\ 49\\ 53\\ 367\\ 77\\ 8\\ 637\\ 206\\ 229\\ 63\\ 299\\ 633\\$	PART NUMBER 367 865 C1 367 972 C92 368 269 R1 368 269 R1 368 269 R1 368 269 R1 369 135 C2 369 135 C2 369 136 C1 369 136 C1 369 136 C1 369 137 C1 369 138 C1 369 138 C1 369 139 C1 369 313 C1 369 331 C1 369 331 C1 369 332 C1	SEC 5122122122122122122122122122122122122122	PC 90 58 190 117 233 34 14 24 24 24 24 24 24 24 24 24 2	PART ARC PG

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NUMER	RICA	AL II	NDEX MT-140			NUME	RIC	AL:	INDEX MT-140		
PART NUMBER	SEC	PG	PART NUMBER	SEC	PG	PART NUMBER	SEC	PG	PART NUMBER	SEC PG	
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NUMERIC	AL INDE	(MT-140			NUMER	IC	AL I	NDEX MT-140		
PART SEC	PG	PART NUMBER	SEC	PG	PART NUMBER	SEC	PG	PART NUNBER	SEC	PG
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PART NUMBER	SEC	PC	PART NUMBER	SEC	PG	PART NUMBER	SEC	PG	PART NUMBER	SEC	PG
402 568 C1 402 856 R91 403 061 C1 404 282 C92	12 12 12 12 12 12 12 12 12 12 12	$\begin{array}{c} 15\\ 118\\ 155\\ 166\\ 178\\ 188\\ 994\\ 44666667\\ 233\\ 3466\\ 6667\\ 242\\ 244\\ 244\\ 244\\ 244\\ 244\\ 244\\ 24$	406 413 C1 406 414 C91 406 887 C1 406 987 C1 406 986 C1 406 987 C1 406 987 C1 406 987 C1 406 987 C1 407 002 C1 407 003 C91 407 004 C1 407 758 C1 407 758 C1 407 758 C1 407 837 C1	$\begin{array}{c}12\\12\\2\\8\\8\\8\\8\\9\\9\\9\\9\\12\\2\\2\\2\\2\\2\\2\\2\\2\\2\\2\\2\\2\\2\\2\\$	$\begin{array}{c} 96\\ 97\\ 198\\ 198\\ 195\\ 195\\ 195\\ 195\\ 195\\ 195\\ 195\\ 195$		12 12 12	$\begin{array}{c} 31\\ 31\\ 34\\ 50\\ 42\\ 22\\ 21\\ 38\\ 424\\ 7\\ 7\\ 82\\ 42\\ 82\\ 7\\ 82\\ 82\\ 7\\ 82\\ 82\\ 7\\ 82\\ 82\\ 7\\ 82\\ 82\\ 7\\ 82\\ 82\\ 7\\ 82\\ 82\\ 7\\ 82\\ 82\\ 7\\ 82\\ 82\\ 7\\ 82\\ 82\\ 7\\ 82\\ 82\\ 7\\ 82\\ 82\\ 7\\ 82\\ 82\\ 7\\ 82\\ 82\\ 7\\ 82\\ 82\\ 82\\ 82\\ 82\\ 82\\ 82\\ 82\\ 82\\ 82$	$\begin{array}{c} 414 & 051 & C1 \\ 414 & 052 & C1 \\$	77777777777777777777777777777777777777	3336422467779 111111155 1111111112222278822910 111111233333366444777

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PART NUMBER	SEC	PG	PART Number	SEC	PG	PART NUMBER	SEC	PG	PART NUMBER	SBC	PG
414 052 C1 414 053 C1 414 053 C1	12	14 24 30 31 32 36 33 729 1131 1459 153 185 53 553 554 554 554 17 18 29 8 417 18 29	414054C1414055C1414055C1414055C1414055C1414055C1414 </td <td>3333333333333444488882122223333333333333</td> <td>16 86 90 55 71 28 59 7 18 200 206 26</td> <td>414079C1414079C1414079C1414079C1414079C1414079C1414079C1414079C1414079C1414080C1414080C1414080C1414080C1414080C1414080C1414080C1414080C1414080C1414080C1414080C1414080C1414080C1414080C1414080C1414081C1414082C1414082C1414082C1414082C1414082C1414082C1414082C1414083C1414083C1414083C1414083C1414084C1414085C1414085C1414085C1414085C1414086C1414086C1414086C1414087C1414087C1414<!--</td--><td>333333555533335555555555555555555555555</td><td>20 20 20 26 26 26 26 26 26 26 26 26 26 26 26 26</td><td>414 087 C1 414 087 C1</td><td>12 12 12 12 12 12 12</td><td>2728877726867867866667988868897890042688889789004268868897890042688688978900426886889789004268868897890042686666790040000000000000000000000000000000</td></td>	3333333333333444488882122223333333333333	16 86 90 55 71 28 59 7 18 200 206 26	414079C1414079C1414079C1414079C1414079C1414079C1414079C1414079C1414079C1414080C1414080C1414080C1414080C1414080C1414080C1414080C1414080C1414080C1414080C1414080C1414080C1414080C1414080C1414080C1414081C1414082C1414082C1414082C1414082C1414082C1414082C1414082C1414083C1414083C1414083C1414083C1414084C1414085C1414085C1414085C1414085C1414086C1414086C1414086C1414087C1414087C1414 </td <td>333333555533335555555555555555555555555</td> <td>20 20 20 26 26 26 26 26 26 26 26 26 26 26 26 26</td> <td>414 087 C1 414 087 C1</td> <td>12 12 12 12 12 12 12</td> <td>2728877726867867866667988868897890042688889789004268868897890042688688978900426886889789004268868897890042686666790040000000000000000000000000000000</td>	333333555533335555555555555555555555555	20 20 20 26 26 26 26 26 26 26 26 26 26 26 26 26	414 087 C1 414 087 C1	12 12 12 12 12 12 12	2728877726867867866667988868897890042688889789004268868897890042688688978900426886889789004268868897890042686666790040000000000000000000000000000000

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PART NUMBER	SEC PG	PART NUMBER	SEC	PG	PART NUMBER	SEC	PG	PART NUMBER	SB	C PG
414 087 C1 414 087 C1	$ \begin{array}{c} 13 \\ 64 \\ 133 \\ 723 \\ 13 \\ 733 \\ 790 \\ 45 \\ 55 \\ 67 \\ 733 \\ 90 \\ 45 \\ 55 \\ 67 \\ 733 \\ 90 \\ 45 \\ 55 \\ 67 \\ 733 \\ 90 \\ 45 \\ 55 \\ 67 \\ 733 \\ 90 \\ 45 \\ 55 \\ 67 \\ 71 \\ 76 \\ 45 \\ 77 \\ 64 \\ 88 \\ 910 \\ 11 \\ 15 \\ 15 \\ 15 \\ 15 \\ 15 \\ 15 \\ $	414 089 $C1$ 414 090 $C1$ 414 365 $C1$ 414 365 $C1$ 414 504 $C1$ 414 504 $C1$ 414 505 $C1$ 414 506 $C1$ 414 506 $C1$ 414 506 $C1$ 414 506 $C1$ 414 506 $C1$ 414 508 $C1$ 414 508 $C1$ 414 508 $C1$ 416 508 $C1$ 416 508 $C1$ 416 528 $C1$ 416 528 $C1$ 416 528 $C1$ 416 528 $C1$ 416 528 $C1$ 416 528 $C1$ 416 542 $C1$ 416 542 $C1$ 416 743 $C1$ 416 743 $C1$ 416 743 $C1$ 416 743 $C1$ 416 743 $C1$ 416 743 $C1$ 416 743 $C1$ 416 743 $C1$ 416 743 $C1$ 416 743 $C1$ 416 743 $C1$ 416 743 $C1$ 416 743 $C1$ 416 743 $C1$ 416 743 $C1$ 417 196	$\begin{array}{c} 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 \\ 4 $	73 97 102 7 26 26 40 139 19 19 32 43 19 19 22 35 68 127 127 127 127 129 199 26 27 29 30 32 32 191 22 32 32 127 127 127 129 129 26 27 29 30 32 32 32 32	$\begin{array}{c} 417 & 611 & C1 \\ 417 & 612 & C1 \\ 417 & 613 & C1 \\ 417 & 613 & C1 \\ 417 & 708 & C91 \\ 417 & 700 & C4 \\ 417 & 800 & C2 \\ 417 & 802 & C1 \\ 417 & 802 & C1 \\ 417 & 802 & C1 \\ 417 & 802 & C1 \\ 417 & 820 & C1 \\ 417 & 820 & C1 \\ 417 & 858 & C92 \\ 417 & 858 & C92 \\ 417 & 858 & C92 \\ 417 & 858 & C92 \\ 417 & 917 & C91 \\ 418 & 917 & C91 \\ 418 & 917 & C91 \\ 418 & 397 & C91 \\ 418 & 397 & C91 \\ 418 & 397 & C91 \\ 418 & 397 & C91 \\ 418 & 397 & C91 \\ 418 & 397 & C91 \\ 418 & 397 & C91 \\ 418 & 397 & C91 \\ 418 & 397 & C91 \\ 418 & 397 & C91 \\ 418 & 397 & C91 \\ 418 & 536 & C1 \\ 418 & 536 & C1 \\ 418 & 536 & C1 \\ 418 & 536 & C1 \\ 418 & 536 & C1 \\ 418 & 536 & C1 \\ 418 & 536 & C1 \\ 418 & 544 & C11 \\ 418 & 543 & C11 \\ 418 & 544 & C11 \\ 418 & 545 & C1 \\ 418 & 554 & C1 \\ 418 & 555 & C1 \\ 418 & 556 & C1 \\ 418 & 556 & C1 \\ 418 & 556 & C1 \\ 418 & 556 & C1 \\ 418 & 556 & C1 \\ 418 & 556 & C1 \\ 418 & 556 & C1 \\ 418 & 556 & C1 \\ 418 & 556 & C1 \\ 418 & 556 & C1 \\ 418 & 556 & C1 \\ 418 & 556 & C1 \\ 418 & 556 & C1 \\ 418 & 556 & C1 \\ 418 & 566 & C91 \\ 418 & 566 & C91 \\ 418 & 566 & C91 \\ 418 & 566 & C91 \\ 419 & 109 & C1 \\ 419 & 131 & C1 \\ 419 & 131 & C1 \\ 419 & 131 & C1 \\ 419 & 132 & C1 \\ 419 & 168 & C91 \\ 419 & 660 & C1 \\ 419 & 660 & C1 \\ 419 & 660 & C1 \\ 419 & 660 & C1 \\ 419 & 660 & C1 \\ 419 & 660 & C1 \\ 419 & 660 & C1 \\ 419 & 660 & C1 \\ 419 & 660 & C1 \\ 419 & 660 & C1 \\ 419 & 660 & C1 \\ 419 & 660 & C1 \\ 419 & 660 & C1 \\ 419 & 933 & C92 \\ 419 & 933 & C92 \\ 419 & 933 & C92 \\ 419 & 933 & C92 \\ 419 & 936 & C92 \\ 419 & 937 & C92 \\ 419 &$	$\begin{array}{c} 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\$	209 78 142 205 17 18 13 141 15 18 19 20 20 21 <	419 938 $C91$ 419 939 $C1$ 419 939 $C1$ 419 940 $C1$ 419 940 $C1$ 419 940 $C1$ 419 940 $C1$ 419 942 $C1$ 419 942 $C1$ 419 942 $C1$ 419 942 $C1$ 419 944 $C1$ 419 944 $C1$ 419 945 $C1$ 419 946 $C1$ 419 946 $C1$ 419 946 $C1$ 419 946 $C1$ 419 946 $C1$ 419 946 $C1$ 419 946 $C1$ 419 946 $C1$ 419 955 $C1$ 419 955 $C1$ 419 955 $C1$ 419 955 $C1$ 419 955 $C1$ 419 955 $C1$ 419 955 $C1$ 419 956 $C1$ 419 957 $C1$ 419 956 $C1$ 419 966 $C1$ 419 966 $C1$ 419 966 $C1$ 419 966 $C1$ 419 966 $C1$ 419 966 $C1$ 419 966 $C1$ 419 966 $C1$ 419 966		1 1 3 3 6 3 6 3 6 3 6 3 6 3 6 3 6 3 6 3

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PART	ICAL INDEX MT-140	PART	·····	NDEX MT-140	1
NUMBER SEC	NUMBER	SEC PG NUMBER	SEC PG	NUMBER	SEC
422 688 R91 12 422 688 R91 12 422 688 R91 12 422 688 R91 12 422 688 R91 12 422 688 R91 12 422 688 R91 12 422 688 R91 12 422 688 R91 12 422 688 R91 12 422 688 R91 12 422 688 R91 12 422 688 R91 12 422 688 R91 12 422 801 R1 12 423 801 R1 12 423 215 R91 4 423 228 C1 12 423 228 C1 12	14 63 423 478 $C2$ 14 63 423 521 $C2$ 14 63 423 521 $C2$ 14 63 423 521 $C2$ 14 63 423 575 $R1$ 14 63 424 310 $C1$ 14 63 424 469 $C91$ 14 63 424 536 $C1$ 14 63 424 536 $C1$ 14 63 424 715 $C1$ 14 63 425 722 $C91$ 14 63 425 122 $R1$ 14 63 425 122 $R1$ 14 63 425 122 $R1$ 14 63 425 752 $C1$ 14 63 425 934 $C1$ 14 63 425 937 $C1$	1626427686C11626427686C11626427686C1412427687C14159427692C212187427692C212187427692C212187427692C212187427693C212186427696C11299427698C11299427698C112187427698C112187427698C112187427698C112187427698C112187427698C112187427698C112187427698C112187427698C112187427898C112187427884C112183427884C11466427884C11619427884C11638427996C11726427997C187428044C112113428044C112118428046C112119428 <td< td=""><td>$\begin{array}{c} 12\\ 2\\ 5\\ 2\\ 2\\ 5\\ 12\\ 2\\ 138\\ 122\\ 138\\ 122\\ 138\\ 122\\ 138\\ 138\\ 122\\ 138\\ 138\\ 138\\ 138\\ 138\\ 138\\ 138\\ 138$</td><td>$\begin{array}{c} 429 525 \text{ C1} \\ 429 527 \text{ C1} \\ 429 528 \text{ C1} \\ 429 528 \text{ C1} \\ 429 538 \text{ C1} \\ 429 543 \text{ C1} \\ 429 544 \text{ C1} \\ 429 544 \text{ C1} \\ 429 544 \text{ C1} \\ 429 544 \text{ C1} \\ 429 546 \text{ C1} \\ 429 547 \text{ C1} \\ 429 551 \text{ C1} \\ 429 553 \text{ C1} \\ 429 555 \text{ C1} \\ 429 555 \text{ C1} \\ 429 556 \text{ R2} \\ 429 556 \text{ R2} \\ 429 558 \text{ C2} \\ 429 758 \text{ C92} \\ 429 758 \text{ C92} \\ 429 758 \text{ C92} \\ 430 070 \text{ C1} \\ 430 070 \text{ C1} \\ 430 280 \text{ C70} \text{ C1} \\ 430 283 \text{ C1} \\ 430 359 \text{ C1} \\ 430 359 \text{ C1} \\ 430 359 \text{ C1} \\ 430 359 \text{ C1} \\ 430 359 \text{ C1} \\ 430 359 \text{ C1} \\ 430 360 \text{ C1} \\ 430 359 \text{ C1} \\ 430 360 \text{ C1} \\ 430 360 \text{ C1} \\ 430 360 \text{ C1} \\ 430 360 \text{ C1} \\ 430 608 \text{ C1} \\ 430 608 \text{ C1} \\ 430 608 \text{ C1} \\ 430 608 \text{ C1} \\ 430 608 \text{ C1} \\ 430 609 \text{ C1} \\ 430 609 \text{ C1} \\ 430 610 \text{ C1} \\ 430 612 \text{ C1} \\ 430 612 \text{ C1} \\ 430 612 \text{ C1} \\ 430 613 \text{ C1} \\ 430 613 \text{ C1} \\ 430 613 \text{ C1} \\ 430 615 \text{ C1} \\ 430 615 \text{ C1} \\ 430 615 \text{ C1} \\ 430 615 \text{ C1} \\ 430 618 \text{ C1} \\ 430 618 \text{ C1} \\ 430 618 \text{ C1} \\ 430 618 \text{ C1} \\ 430 618 \text{ C1} \\ 430 618 \text{ C1} \\ 430 618 \text{ C1} \\ 430 612 \text{ C1} \\ 430 622 \text{ C1} \\ 430 6$</td><td>33334554545444444444444444444444444444</td></td<>	$\begin{array}{c} 12\\ 2\\ 5\\ 2\\ 2\\ 5\\ 12\\ 2\\ 138\\ 122\\ 138\\ 122\\ 138\\ 122\\ 138\\ 138\\ 122\\ 138\\ 138\\ 138\\ 138\\ 138\\ 138\\ 138\\ 138$	$\begin{array}{c} 429 525 \text{ C1} \\ 429 527 \text{ C1} \\ 429 528 \text{ C1} \\ 429 528 \text{ C1} \\ 429 538 \text{ C1} \\ 429 543 \text{ C1} \\ 429 544 \text{ C1} \\ 429 544 \text{ C1} \\ 429 544 \text{ C1} \\ 429 544 \text{ C1} \\ 429 546 \text{ C1} \\ 429 547 \text{ C1} \\ 429 551 \text{ C1} \\ 429 553 \text{ C1} \\ 429 555 \text{ C1} \\ 429 555 \text{ C1} \\ 429 556 \text{ R2} \\ 429 556 \text{ R2} \\ 429 558 \text{ C2} \\ 429 758 \text{ C92} \\ 429 758 \text{ C92} \\ 429 758 \text{ C92} \\ 430 070 \text{ C1} \\ 430 070 \text{ C1} \\ 430 280 \text{ C70} \text{ C1} \\ 430 283 \text{ C1} \\ 430 359 \text{ C1} \\ 430 359 \text{ C1} \\ 430 359 \text{ C1} \\ 430 359 \text{ C1} \\ 430 359 \text{ C1} \\ 430 359 \text{ C1} \\ 430 360 \text{ C1} \\ 430 359 \text{ C1} \\ 430 360 \text{ C1} \\ 430 360 \text{ C1} \\ 430 360 \text{ C1} \\ 430 360 \text{ C1} \\ 430 608 \text{ C1} \\ 430 608 \text{ C1} \\ 430 608 \text{ C1} \\ 430 608 \text{ C1} \\ 430 608 \text{ C1} \\ 430 609 \text{ C1} \\ 430 609 \text{ C1} \\ 430 610 \text{ C1} \\ 430 612 \text{ C1} \\ 430 612 \text{ C1} \\ 430 612 \text{ C1} \\ 430 613 \text{ C1} \\ 430 613 \text{ C1} \\ 430 613 \text{ C1} \\ 430 615 \text{ C1} \\ 430 615 \text{ C1} \\ 430 615 \text{ C1} \\ 430 615 \text{ C1} \\ 430 618 \text{ C1} \\ 430 618 \text{ C1} \\ 430 618 \text{ C1} \\ 430 618 \text{ C1} \\ 430 618 \text{ C1} \\ 430 618 \text{ C1} \\ 430 618 \text{ C1} \\ 430 612 \text{ C1} \\ 430 622 \text{ C1} \\ 430 6$	33334554545444444444444444444444444444

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PART		INDEX MT-140	SEC	PG			AL IND	PART	SEC
NUMBER 35 430 625 C1 1 430 625 C1 1 430 626 C1 1 430 626 C1 1 430 626 C1 1 430 626 C1 1 430 627 C1 1	4 2 4 3 4 2 4 2 4 3	7 432 318 C1 3 432 318 C1 1 432 319 C1 7 432 319 C1 7 432 319 C1 3 432 320 C1	13 13 13 13 13 13 13	15 85 15 85 15 85	NUMBER 434 465 C93 434 466 C93 434 467 C93 434 467 C93 434 468 C93 434 468 C93	12 12 12 12 12 12	46 172 46 172 46 172	NUMBER 436 846 C92 436 847 C92 436 883 C2 436 883 C2 436 884 C2 436 885 C1	2 2 12 12 12 12 12
430 627 C1 1 430 627 C1 1 430 628 C1 1 430 628 C1 1 430 628 C1 1 430 628 C1 1 430 629 C1 1	4 2 4 3 4 2 4 2 4 3	7 432 322 C1 3 432 322 C1 1 432 324 C91	13 13 13 13 13	15 85 15 85 15 15	434 469 C93 434 469 C93 434 520 C1 434 524 C2 434 526 C1 434 526 C1 434 527 C1	12 12 12 12 12 12	46 172 63 63 79 79	436 887 C1 436 888 C1 436 889 C1 436 889 C1 436 897 C1 436 922 C1	12 12 12 15 13 12
430 629 C1 1 430 629 C1 1 430 630 C1 1 430 630 C1 1 430 630 C1 1 430 631 C1 1	4 2 4 3 4 2 4 2 4 3	7 432 328 C91 3 432 329 C1		86 16 86 16 86 15	434 764 C1 434 764 C1 434 764 C1 434 764 C1 434 764 C1 434 813 C1 434 813 C1	8 8 8 13 7	13 30 31 32 85 8	436 926 C1 436 926 C1 436 926 C1 436 957 R2 436 954 C1 436 994 C1	12 12 12 14 8 8
430 631 C1 1 430 631 C1 1 430 632 C1 1 430 632 C1 1 430 632 C1 1 430 633 C1 1	4 3 4 2 4 2 4 3	3 432 332 C1 1 432 332 C1	13 13 13 13 13 13	85 15 85 15 15	434 820 C1 434 820 C1 434 820 C1 434 955 C91 434 955 C91 435 000 C1	7 7 16 16 8	31 32 34 15 20 14	437 157 R1 437 157 R1 437 158 C1 437 158 C1 437 158 C1 437 159 C1	12 12 13 13 13 13
430 633 C1 1 430 633 C1 1 430 634 C1 1 430 634 C1 1 430 634 C1 1 430 634 C1 1	4 2 4 3 4 2 4 2 4 3	7 432 337 C1 3 432 338 C1 1 432 338 C1	13 13 13 13 13 13	85 15 85 15 85 15	435 001 C1 435 005 C1 435 005 C1 435 017 R1 435 184 C91 435 184 C91	8 4 12 16 4 4	19 185 110 37 97 99	437 159 C1 437 159 C1 437 184 C1 437 185 C1 437 185 C1 437 575 C3	13 13 13 13 13 13
430 635 C1 1 430 635 C1 1 430 636 C1 1 430 636 C1 1	4 2 3 4 3 4 4 3 4 4 3 4 4 3 4 4 3 4 4 3 4 4 3 4 4 3 4 4 3 4 4 3 4 4 4 3 4	7 432 340 C1 3 432 341 C1 1 432 341 C1 7 432 343 C1 3 432 343 C1 3 432 343 C1 3 432 343 C1 3 432 343 C1 3 432 344 C1	13 13 13 13 13 13	85 15 85 15 85 15	435 184 C91 435 218 C1 435 219 C1 435 219 C1 435 219 C1 435 220 C1 435 220 C1	12 13 13 13 13 13	107 16 15 85 15 85	437 581 C1 437 691 C1 437 691 C1 437 692 C1 437 692 C1 437 692 C1	8 16 16 16 16 16
430 637 C1 1 430 637 C1 1 430 638 C1 1 430 638 C1 1 430 638 C1 1	4 3 3 3 4 4 4 3 3 4 4 4 3 3 4 4 4 3 4 4 4 3 4	7 432 344 C1 3 432 345 C1 1 432 345 C1 7 432 399 C91 3 432 442 C91	13 13 13 13 13 16 16	85 15 85 23 16	435 292 C1 435 333 C1 435 345 C1 435 548 R1 435 548 R1 435 624 R1	16 13 5 13 13	13 21 40 71 71	437 693 C1 437 693 C1 437 693 C1 437 693 C1 437 702 C1 437 702 C1	12 16 16 16 12 12
430 639 C1 1 430 639 C1 1 430 950 C2 431 194 C91 1 431 194 C91 1	4 3 4 3 4 3 4 3 4 3 4 3 4 3 4 3 4 3 4 3	7 432 443 C92 3 432 449 4 432 502 C91 1 432 502 C91 1 432 502 C91 1 432 541	2 13 16 1 12	16 21 37 40 65	435 641 C91 435 654 C1 435 693 C1 435 693 C1 435 693 C1	6 10 5 5 5	29 5 4 24 70 72	437 703 C1 437 703 C1 437 774 C1 437 774 C1 437 774 C1 437 774 C1	12 12 5 5 5
431 448 C1 1 431 606 R1 431 606 R1 431 606 R1 431 606 R1	6 2 4 4 4 1 4 1 4 1	9 432 543 C3 4 432 648 C1 0 432 648 C1 1 432 705 C9 2 432 705 C9	12 13 13 13	152 15 85 13 76	435 693 C1 435 820 C92 435 820 C92 435 820 C92 435 820 C92 435 820 C92	5 13 13 13 5	96 102 31 64 69 25	437 774 C1 437 776 C1 437 776 C1 437 850 C91 437 897 C1 437 954 C1 437 954 C1	2 5 8 5 7
431 756 C1 1 431 757 C1 1 431 760 C2 1 431 760 C1 1 431 762 C1 1	6 6 6 6	3 432 732 C92 3 432 732 C92 3 432 748 C92 3 432 748 C92 3 432 748 C92 3 432 748 C92 3 432 826 C1 3 433 019 C92	2 13 1 13 1 13 1 13	86 25 83 85	435 826 C1 435 826 C1 435 826 C1 435 826 C1 435 860 C1 435 901 R1 435 901 R1	5 5 5 5 5 4 4	73 97 103 70 106 142	437 957 R91 437 970 C1 438 027 C91 438 158 C1 438 159 438 159 438 159	8 12 12 12 12 12
431 764 C1 1 431 787 1 431 787 1 431 787 1 431 787 1 431 787 1	12 5 2 5 2 1	3 433 019 C9 3 433 019 C9 6 433 019 C9 0 433 045 C1 4 433 067 C92 2 433 067 C92	1 12 1 12 2 12 2 12 2 12	74 164 164 63 47 173	435 901 R1 435 901 R1 436 080 C1 436 267 C91 436 395 C91 436 521 C1	4 8 13 12 4	63 160	438 159 438 159 438 159 438 159 438 159 438 159 438 159	12 12 12 12 12 12 12
432 045 C2 432 048 C1 1 432 049 C2 1 432 055 C92 432 055 C92	4 1:	3 433 169 C1 3 433 175 C1 3 433 176 C1 4 433 176 C1 3 433 176 C1 4 433 176 C1 3 433 177 C1	2 12 8	142 14 14 14 20 14	436 521 81 436 521 81 436 604 C1 436 604 C1 436 604 C1 436 604 C1 436 747	13 13 4 4 4 12	35 53 188 77	438 159 438 159 438 159 438 159 438 159 438 159 438 286 C1	12 12 12 12 12 12 5
432 055 C92 432 055 C92 432 055 C92 432 055 C92 432 055 C92 1 432 068 C1 1	5 5 12 12	7 433 178 C1 8 433 201 C1 4 433 351 C1 3 433 659 R1 4 433 668 C1	8 13 12 12 13	35	436 747 436 747 436 747 436 747 436 747 436 768 C92 436 768 C92	12 12 12 12	196 214 222 226 63 53	438 286 C1 438 286 C1 438 297 C1 438 297 C1 438 297 C1 438 298 C1	5 6 6
432 068 C1 1 432 068 C1 1 432 071 C91 1 432 091 C92 1 432 278 C7	12 12 12 12 12 8	5 433 761 C1 14 433 972 C1 15 433 972 C1 15 433 977 C1 13 434 265 C1 10 434 265 C1	8 12 12 12	55 187 33 170	436 784 C1 436 784 C1 436 788 C2 436 788 C2 436 788 C2 436 801 C1 436 836 C92	12 13 13 13 13 13 13	53 37 37 37 37 37 36 9	438 329 C1 438 329 C1 438 329 C1 438 380 C1 438 380 C1 438 468 C1 438 468 C1	12 12 12 12 12 12 12 12
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- 2 -

PRINTED IN UNITED STATES OF AMERICA

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- 2 -

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460 578 C1 460 578 C1	1	1524 191926 3433756 139134444444444444444444444444444444444	$\begin{array}{c} 462 & 816 & C1 \\ 462 & 818 & C91 \\ 463 & 032 & C91 \\ 463 & 032 & C91 \\ 463 & 032 & C91 \\ 463 & 157 & C92 \\ 463 & 158 & C92 \\ 463 & 158 & C92 \\ 463 & 39 & C1 \\ 463 & 339 & C1 \\ 463 & 344 & C91 \\ 463 & 344 & C91 \\ 463 & 344 & C91 \\ 463 & 346 & C1 \\ 463 & 346 & C1 \\ 463 & 346 & C1 \\ 463 & 346 & C1 \\ 463 & 346 & C1 \\ 463 & 365 & C91 \\ 463 & 365 & C91 \\ 463 & 365 & C91 \\ 463 & 365 & C91 \\ 463 & 365 & C91 \\ 463 & 365 & C91 \\ 463 & 365 & C91 \\ 463 & 365 & C91 \\ 463 & 365 & C91 \\ 463 & 365 & C91 \\ 463 & 365 & C91 \\ 463 & 365 & C91 \\ 463 & 365 & C91 \\ 463 & 365 & C91 \\ 463 & 365 & C91 \\ 463 & 365 & C91 \\ 463 & 420 & C2 \\ 463 & 420 & C2 \\ 463 & 420 & C2 \\ 463 & 422 & C2 \\ 463 & 426 & C2 \\ 463 & 426 & C2 \\ 463 & 426 & C2 \\ 463 & 426 & C2 \\ 463 & 426 & C2 \\ 463 & 426 & C2 \\ 463 & 426 & C2 \\ 463 & 426 & C2 \\ 463 & 426 & C2 \\ 463 & 426 & C2 \\ 463 & 426 & C2 \\ 463 & 426 & C2 \\ 463 & 426 & C2 \\ 463 & 426 & C2 \\ 463 & 510 & C1 \\ 463 & 510 & C1 \\ 463 & 510 & C1 \\ 463 & 571 & C2 \\ 463 & 571 & C2 \\ 463 & 571 & C2 \\ 463 & 571 & C2 \\ 463 & 571 & C2 \\ 463 & 571 & C2 \\ 463 & 571 & C2 \\ 463 & 571 & C2 \\ 463 & 571 & C2 \\ 463 & 571 & C2 \\ 463 & 571 & C2 \\ 463 & 571 & C2 \\ 463 & 571 & C2 \\ 463 & 571 & C2 \\ 463 & 571 & C2 \\ 463 & 571 & C2 \\ 463 & 571 & C2 \\ 463 & 571 & C2 \\ 463 & 576 & C1 \\ 463 & 576 & C1 \\ 463 & 576 & C1 \\ 463 & 576 & C1 \\ 463 & 576 & C1 \\ 463 & 576 & C2 \\ 463 & 57$		3223344 32334 35574 37035554 4442 810555247777 34248977555554 55554 5555227227177 34248977555554 555554 55555277227177 34248977555554 555552772272177	463582C1463683C91463814C1463814C1463892C1463892C1463892C1463893C2463893C2463893C2463893C2463893C2463893C2464222C1464222C1464244C2464244C2464244C2464244C2464244C2464244C2464244C2464244C2464244C2464244C2464244C2464325C1464389C2464432C1464433C1464433C1464433C1464433C1464434C1464434C1464434C1464434C1464434C1464434C1464434C1464434C1464434C1464434C1464434C1464434C1464434C1464<	5 12 12 12 12	$\begin{array}{c} 300\\ 204\\ 1422\\ 222\\ 244\\ 247\\ 177\\ 199\\ 211\\ 226\\ 222\\ 244\\ 247\\ 177\\ 99\\ 231\\ 366\\ 837\\ 105\\ 419\\ 282\\ 628\\ 226\\ 124\\ 46\\ 366\\ 366\\ 577\\ 432\\ 336\\ 577\\ 432\\ 336\\ 577\\ 432\\ 336\\ 577\\ 432\\ 337\\ 170\end{array}$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$

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471 350 C1 471 364 C91 471 365 C1 471 365 C1 471 365 C1 471 365 C1 471 376 C1 471 398 C91 471 409 C1 471 409 C1 471 410 C1 471 411 C1 471 412 C2 471 412 C2 471 412 C2 471 412 C2 471 412 C2 471 412 C1 471 416 C1 471 416 C1 471 444 C1 471 444 C1 471 444 C1 471 444 C1 471 444 C1 471 444 C1 471 444 C1 <tr< td=""><td>3 8 166 163 3 3 7 7 7 7 7 7 7 7 7 7 8 8 155 155 155 155 155 155 155 155 155</td><td>26 24 27 40 43 18 21 22 17 19 21 17 19 21 17 19 21 17 19 21 35 35 35 5 6 6 7 8</td><td>471 471 471 471 471 471 471 471 471 471</td><td>531 C91 569 C2 569 C2 569 C2 586 C2 587 C1 597 C1 597 C1 598 C2 598 C2 598 C2 599 C3 607 C2 627 C91 630 C1 631 C1 631 C1 634 C2 634 C2 635 C2</td><td>1588333388866699999811111111111</td><td>$\begin{array}{c} 18\\ 10\\ 36\\ 11\\ 13\\ 52\\ 23\\ 57\\ 15\\ 15\\ 67\\ 67\\ 67\\ 67\\ 67\\ 67\\ 67\\ 67\\ 67\\ 67$</td><td>472 241 C1 472 242 C1 472 244 C1 472 244 C1 472 245 C2 472 246 C1 472 246 C1 472 247 C1 472 253 C1 472 266 C1 472 266 C1 472 271 C1 472 271 C1 472 271 C1 472 271 C1 472 272 C2 472 274 C1 472 274 C1 472 278 C1 472 280 C1 472 280 C1</td><td>$\begin{array}{c} 166\\ 166\\ 166\\ 166\\ 166\\ 166\\ 166\\ 166$</td><td>48 47 47 47 47 47 47 47 47 47 47 47 47 47</td><td></td><td>472 701 C1 472 702 C1 472 702 C1 472 852 C91</td><td>$\begin{array}{c} 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 14 \\ 14 \\ 14 \\ 14 \\$</td><td>6666691124680223325833925562</td></tr<>	3 8 166 163 3 3 7 7 7 7 7 7 7 7 7 7 8 8 155 155 155 155 155 155 155 155 155	26 24 27 40 43 18 21 22 17 19 21 17 19 21 17 19 21 17 19 21 35 35 35 5 6 6 7 8	471 471 471 471 471 471 471 471 471 471	531 C91 569 C2 569 C2 569 C2 586 C2 587 C1 597 C1 597 C1 598 C2 598 C2 598 C2 599 C3 607 C2 627 C91 630 C1 631 C1 631 C1 634 C2 634 C2 635 C2	1588333388866699999811111111111	$\begin{array}{c} 18\\ 10\\ 36\\ 11\\ 13\\ 52\\ 23\\ 57\\ 15\\ 15\\ 67\\ 67\\ 67\\ 67\\ 67\\ 67\\ 67\\ 67\\ 67\\ 67$	472 241 C1 472 242 C1 472 244 C1 472 244 C1 472 245 C2 472 246 C1 472 246 C1 472 247 C1 472 253 C1 472 266 C1 472 266 C1 472 271 C1 472 271 C1 472 271 C1 472 271 C1 472 272 C2 472 274 C1 472 274 C1 472 278 C1 472 280 C1 472 280 C1	$\begin{array}{c} 166\\ 166\\ 166\\ 166\\ 166\\ 166\\ 166\\ 166$	48 47 47 47 47 47 47 47 47 47 47 47 47 47		472 701 C1 472 702 C1 472 702 C1 472 852 C91	$\begin{array}{c} 3 \\ 3 \\ 3 \\ 3 \\ 3 \\ 14 \\ 14 \\ 14 \\ 14 \\$	6666691124680223325833925562
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482 175 C1 482 198 C2 482 198 C2 482 200 C1 482 200 C1 482 206 C1 482 207 C1 482 208 C1 482 208 C1 482 228 C9 482 228 C1 482 283 C1 482 285 C1 482 285 C1 482 286 C1 482 286 C1 482 286 C1 482 286 C1 482 2805 C1 482 205 C1 482 300 C1 482 303 C1 482 305 C1 482 306 C1 482 307 C1 482 338 C9 482 338 C9	166 1	$\begin{array}{c} 35\\ 222\\ 222\\ 222\\ 222\\ 222\\ 222\\ 222\\ $		482 386 C1 482 386 C1 482 386 C1 482 386 C1 482 386 C1 482 386 C1 482 432 C91 482 433 C91 482 433 C91 482 436 C91 482 436 C1 482 436 C1 482 436 C1 482 446 C1 482 474 C2 482 474 C2 482 474 C2 482 478 C1 482 478 C1 482 478 C1 482 478 C1 482 478 C1 482 478 C1 482 512 C1 482 512 C1 482 512 C1 482 512 C1 482 512 C1 482 512 C1 482 512 C1 482 512 C1 482 512 C1 482 512 C1 482 601 C2 482 601 C2 482 601 C2 482 601 C2 482 601 C2 482 606 C1 482 606 C1 482 606 C1 482 606 C1 482 <td>555555144444499992222222222444444481469222222222222222222222222222222222222</td> <td>$\begin{array}{c} 3590\\ 442\\ 37777777\\ 11777\\ 2\\ 4\\ 822\\ 26567\\ 0\\ 1167\\ 8\\ 8\\ 2\\ 2\\ 5\\ 9\\ 2\\ 3\\ 5\\ 9\\ 2\\ 3\\ 5\\ 9\\ 2\\ 3\\ 5\\ 9\\ 2\\ 3\\ 5\\ 9\\ 2\\ 3\\ 3\\ 9\\ 2\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\$</td> <td>482 633 C91 482 634 C1 482 687 C1 482 717 C1 482 723 C1 482 723 C1 482 723 C1 482 723 C1 482 723 C1 482 723 C1 482 723 C1 482 723 C1 482 723 C1 482 725 C1 482 726 C1 482 726 C1 482 728 C1 482 728 C1 482 730 C1 482 730 C1 482 730 C1 482 731 C1 482 731 C1 482 736 C1 482 737 C1 482 737 C1 482 737 C1</td> <td>12 12 12 12 12 12 12 12 12 12 12 12 12 1</td> <td>$\begin{array}{c} 3524126667789071189014429949994999499265656425666724996778901112222666666668885313333331575757575757575757575757575757$</td> <td>482 874 C91 482 884 C91 482 888 C91 482 898 C91 482 992 C1 482 997 C1 483 005 C1 483 005 C1 483 007 C2 1 483 007 C2 1 483 007 C2 1 483 007 C2 1 483 007 C2 1 483 007 C2 1 483 023 C2 1 483 023 C2 1 483 024 C2 1 483 057 C92 1 483 058 C1 1 483 057 C92 1 483 057 C92 1 483 056 C1 1 483 057 C1 1 483 085</td> <td>$\begin{array}{cccccccccccccccccccccccccccccccccccc$</td>	555555144444499992222222222444444481469222222222222222222222222222222222222	$\begin{array}{c} 3590\\ 442\\ 37777777\\ 11777\\ 2\\ 4\\ 822\\ 26567\\ 0\\ 1167\\ 8\\ 8\\ 2\\ 2\\ 5\\ 9\\ 2\\ 3\\ 5\\ 9\\ 2\\ 3\\ 5\\ 9\\ 2\\ 3\\ 5\\ 9\\ 2\\ 3\\ 5\\ 9\\ 2\\ 3\\ 3\\ 9\\ 2\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\ 3\\$	482 633 C91 482 634 C1 482 687 C1 482 717 C1 482 723 C1 482 723 C1 482 723 C1 482 723 C1 482 723 C1 482 723 C1 482 723 C1 482 723 C1 482 723 C1 482 725 C1 482 726 C1 482 726 C1 482 728 C1 482 728 C1 482 730 C1 482 730 C1 482 730 C1 482 731 C1 482 731 C1 482 736 C1 482 737 C1 482 737 C1 482 737 C1	12 12 12 12 12 12 12 12 12 12 12 12 12 1	$\begin{array}{c} 3524126667789071189014429949994999499265656425666724996778901112222666666668885313333331575757575757575757575757575757$	482 874 C91 482 884 C91 482 888 C91 482 898 C91 482 992 C1 482 997 C1 483 005 C1 483 005 C1 483 007 C2 1 483 007 C2 1 483 007 C2 1 483 007 C2 1 483 007 C2 1 483 007 C2 1 483 023 C2 1 483 023 C2 1 483 024 C2 1 483 057 C92 1 483 058 C1 1 483 057 C92 1 483 057 C92 1 483 056 C1 1 483 057 C1 1 483 085	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$

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NUMERICAL INDEX MT-140



NUMERICAL INDEX MT-140

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PART Number	SEC PG	PART NUMBER	SEC	PG	PART NUMBER	SEC	PG	PART NUMBER	SEC	PG
487 704 R1 487 704 R1 487 704 R1 487 704 R1 487 704 R1 487 704 R1 487 731 C91 487 738 C1 487 730 C1 487 730 C1 487 740 C1 487 740 C1 487 740 C1 487 740 C1 487 747 C1 487 749 C1 487 749 C1 487 750 C1 487 750 C1 487 750 C91 487 761 C91 487 762 C91 487 784 C1 487 784 C1 487 785 C1	12 145 12 149 12 153 12 153 12 155 12 155 12 155 12 219 11 17 11 19 7 12 7 12 7 12 7 12 7 14 7 14 7 14 7 14 8 30 8 31 6 4 6 4 11 19 11 19 12 30 8 30 8 31 6 4 6 4 11 19 11 16 12 32 13 64 14 11 15 53 5 55 12 32	487 891 C1 487 895 C91 487 896 C91 487 896 C91 487 897 C91 487 897 C91 487 897 C91 487 897 C91 487 898 C91 487 897 C91 487 890 C91 487 890 C91 487 900 C91 487 902 C91 487 902 C91 487 902 C91 487 902 C91 487 902 C91 487 902 C91 487 902 C91 487 903 C92 487 907 C1 487 907 C1 488 016 C1 488 016 C1 488 036 C2 488 037 C92 <td>16226666666666666667774666660000000000000</td> <td>161 105 140 147 156 182 54 39 43 75 83 145</td> <td>488$497$$C2$$488$$498$$C2$$488$$499$$C2$$488$$500$$C2$$488$$500$$C2$$488$$500$$C2$$488$$500$$C2$$488$$500$$C2$$488$$502$$C1$$488$$502$$C1$$488$$502$$C1$$488$$502$$C1$$488$$502$$C1$$488$$502$$C1$$488$$502$$C1$$488$$502$$C1$$488$$502$$C2$$488$$502$$C2$$488$$502$$C1$$488$$522$$C2$$488$$522$$C2$$488$$522$$C2$$488$$522$$C2$$488$$522$$C2$$488$$522$$C1$$488$$526$$C1$$488$$526$$C1$$488$$527$$C1$$488$$531$$C2$$488$$532$$C1$$488$$532$$C1$$488$$532$$C1$$488$$532$$C1$$488$$532$$C1$$488$$532$$C1$$488$$542$$C2$$488$$542$$C2$$488$$542$$C2$$488$$542$$C2$$488$$542$$C2$$488$$542$</td> <td>444444444444444444444444444444444444444</td> <td>$\begin{array}{c} 130\\ 105\\ 131\\ 105\\ 131\\ 105\\ 106\\ 142\\ 160\\ 142\\ 160\\ 142\\ 161\\ 182\\ 168\\ 160\\ 142\\ 161\\ 182\\ 168\\ 150\\ 1627\\ 135\\ 153\\ 155\\ 135\\ 155\\ 135\\ 1657\\ 138\\ 165\\ 166\\ 60\\ 128\\ 131\\ 155\\ 93\\ 98\\ 116\\ 29\\ 98\\ 116\\ 29\\ 255\\ 71\\ 152\\ 56\\ 65\\ 89\\ 255\\ \end{array}$</td> <td>488 656 C2 488 657 C2 488 657 C2 488 657 C2 488 657 C2 488 657 C2 488 657 C2 488 657 C2 488 657 C2 488 657 C2 488 657 C2 488 673 C91 488 688 C1 488 690 C1 488 700 C1 488 700 C1 488 700 C1 488 700 C1 488 700 C1 488 700 C1 <</td> <td>4 4 8 2 2 8 8 8 4 5 5 4 8 4 8 6 6 6 6 5 5 5 8 7 7 7 5 5 5 6 9 9 5 5 5 3 3 3 5 5 5 5 4 5 5 5 5 4 5 5 5 5</td> <td>$\begin{array}{c} 884511222288823191825222334333222338477860099779334446784446784434784434784234478232423121250775477025077527752$</td>	16226666666666666667774666660000000000000	161 105 140 147 156 182 54 39 43 75 83 145	488 497 $C2$ 488 498 $C2$ 488 499 $C2$ 488 500 $C2$ 488 500 $C2$ 488 500 $C2$ 488 500 $C2$ 488 500 $C2$ 488 502 $C1$ 488 502 $C1$ 488 502 $C1$ 488 502 $C1$ 488 502 $C1$ 488 502 $C1$ 488 502 $C1$ 488 502 $C1$ 488 502 $C2$ 488 502 $C2$ 488 502 $C1$ 488 522 $C2$ 488 522 $C2$ 488 522 $C2$ 488 522 $C2$ 488 522 $C2$ 488 522 $C1$ 488 526 $C1$ 488 526 $C1$ 488 527 $C1$ 488 531 $C2$ 488 532 $C1$ 488 532 $C1$ 488 532 $C1$ 488 532 $C1$ 488 532 $C1$ 488 532 $C1$ 488 542 $C2$ 488 542 $C2$ 488 542 $C2$ 488 542 $C2$ 488 542 $C2$ 488 542	444444444444444444444444444444444444444	$\begin{array}{c} 130\\ 105\\ 131\\ 105\\ 131\\ 105\\ 106\\ 142\\ 160\\ 142\\ 160\\ 142\\ 161\\ 182\\ 168\\ 160\\ 142\\ 161\\ 182\\ 168\\ 150\\ 1627\\ 135\\ 153\\ 155\\ 135\\ 155\\ 135\\ 1657\\ 138\\ 165\\ 166\\ 60\\ 128\\ 131\\ 155\\ 93\\ 98\\ 116\\ 29\\ 98\\ 116\\ 29\\ 255\\ 71\\ 152\\ 56\\ 65\\ 89\\ 255\\ \end{array}$	488 656 C2 488 657 C2 488 657 C2 488 657 C2 488 657 C2 488 657 C2 488 657 C2 488 657 C2 488 657 C2 488 657 C2 488 657 C2 488 673 C91 488 688 C1 488 690 C1 488 700 C1 488 700 C1 488 700 C1 488 700 C1 488 700 C1 488 700 C1 <	4 4 8 2 2 8 8 8 4 5 5 4 8 4 8 6 6 6 6 5 5 5 8 7 7 7 5 5 5 6 9 9 5 5 5 3 3 3 5 5 5 5 4 5 5 5 5 4 5 5 5 5	$\begin{array}{c} 884511222288823191825222334333222338477860099779334446784446784434784434784234478232423121250775477025077527752$

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NUMERIC	AL INDEX	MT-140			NUME	RIC	AL	INDEX MT-140	
PART SEC	PG	PART NUMBER	SEC	PG	PART NUMBER	SEC	PG	PART NUMBER	SEC
489 878 $C1$ 16 489 885 $C1$ 9 489 885 $C1$ 12 489 885 $C1$ 12 489 885 $C1$ 12 489 887 $C2$ 9 489 887 $C2$ 9 489 887 $C2$ 9 489 887 $C2$ 9 489 887 $C2$ 9 489 897 $C91$ 16 489 897 $C91$ 16 489 906 $C92$ 16 489 906 $C92$ 16 489 906 $C92$ 16 489 906 $C92$ 16 489 906 $C92$ 16 489 906 $C92$ 16 489 906 $C92$ 16 489 906 $C92$ 16 489 906 $C92$ 16 489 906 $C92$ 16 489 906 $C92$ 16 489 906 $C92$ 16 489 906 $C92$ 16 489 906 $C92$ 16 489 906 $C1$ 12 489 925 $C1$ 12 489 926 $C1$ 12 489 927 $C1$ 12 489 928 $C1$ 12 489 945 $C1$ 12 490	$\begin{array}{c} 57\\ 10\\ 14\\ 129\\ 153\\ 15\\ 15\\ 15\\ 15\\ 15\\ 15\\ 20\\ 20\\ 20\\ 20\\ 20\\ 20\\ 20\\ 20\\ 20\\ 20$	490 695 C91 490 700 C1 490 703 C1 490 703 C1 490 703 C1 490 705 C1 490 705 C1 490 705 C1 490 705 C1 490 712 C1 490 734 C91 490 735 C2 490 751 C2 490 758 C2 490 758 C2 490 762 C1 490 762 C1 490 762 C1 490 762 C1 490 762 C1 490 762 C1 490 776 C92 490 776 C92 490 778 C92 490 781 C91 490 782 C91 490 783 C91	31666666666866664455555555555555555555555	$\begin{array}{c} 9222\\ 12222224\\ 1222222222222222222222222$	91 147 C1 91 148 C1 91 148 C1 91 158 C1 91 158 C1 91 158 C1 91 158 C1 91 160 C1 91 160 C1 91 160 C1 91 160 C1 91 160 C1 91 160 C1 91 160 C1 91 179 C2 91 180 C3 91 195 C1 91 195 C1 91 195 C1 91 195 C1 91 196 C1 91 196 C1 91 207 C1 91 207 C1 91 207 C1 91 207 C1 91 217 C1 91 223 C91 91 223 C91 91 223 C91 91 223 C91 91 223 C91 91 223 C91 91 223 C1	12 12 12 12 12 12	$\begin{array}{c} 114\\ 1146\\ 637\\ 45922\\ 66355\\ 666\\ 124\\ 120\\ 668\\ 124\\ 120\\ 668\\ 124\\ 120\\ 668\\ 124\\ 120\\ 668\\ 124\\ 120\\ 668\\ 124\\ 120\\ 668\\ 124\\ 120\\ 668\\ 124\\ 120\\ 668\\ 124\\ 120\\ 668\\ 124\\ 120\\ 668\\ 124\\ 120\\ 120\\ 123\\ 120\\ 120\\ 120\\ 120\\ 120\\ 120\\ 120\\ 120$	492 217 C91 492 218 C1 492 283 C1 492 283 C1 492 283 C1 492 283 C1 492 283 C1 492 356 C1 492 356 C1 492 359 C91 492 359 C91 492 360 C1	$\begin{array}{c}1\\1\\1\\2\\1\\1\\2\\1\\2\\2\\1\\2\\2\\1\\2\\2\\1\\2$

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NUMERICAL INDEX MT-140

NUMERICAL INDEX MT-140

		MI-14U					INDEX			
PART NUMBER	SEC PG	PART NUMBER	SEC PG		PART MBER	SEC P	6	PART NUMBER	SEC	PG
$\begin{array}{c} 492 & 363 & C1 \\ 492 & 364 & C1 \\ 492 & 366 & C91 \\ 492 & 367 & C1 \\ 492 & 367 & C1 \\ 492 & 409 & C91 \\ 492 & 409 & C91 \\ 492 & 409 & C91 \\ 492 & 409 & C1 \\ 492 & 507 & C91 \\ 492 & 507 & C91 \\ 492 & 510 & C1 \\ 492 & 513 & C1 \\ 492 & 513 & C1 \\ 492 & 513 & C1 \\ 492 & 513 & C1 \\ 492 & 513 & C1 \\ 492 & 518 & C1 \\ 492 & 536 & C1 \\ 492 & 536 & C1 \\ 492 & 536 & C1 \\ 492 & 536 & C1 \\ 492 & 536 & C1 \\ 492 & 536 & C1 \\ 492 & 536 & C1 \\ 492 & 536 & C1 \\ 492 & 536 & C1 \\ 492 & 536 & C1 \\ 492 & 565 & C1 \\ 492 & 608 & C1 \\ 492 & 608 & C1 \\ 492 & 803 & C91 \\ 492 & 803 & C91 \\ 492 & 803 & C91 \\ 492 & 803 & C91 \\ 492 & 803 & C91 \\ 492 & 804 & C1 \\ 492 & 805 & C1 \\ 492 & 805 & C1 \\ 492 & 806 & C1 \\ 492 & 806 & C1 \\ 492 & 806 & C1 \\ 492 & 806 & C1 \\ 492 & 806 & C1 \\ 492 & 806 & C1 \\ 492 & 806 & C1 \\ 492 & 806 & C1 \\ 492 & 806 & C1 \\ 492 & 806 & C1 \\ 492 & 806 & C1 \\ 492 & 806 & C1 \\ 492 & 806 & C1 \\ 492 & 807 & C91 \\ 492 & 807 & C91 \\ 492 & 807 & C91 \\ 492 & 807 & C91 \\ 492 & 807 & C91 \\ 492 & 807 & C91 \\ 492 & 807 & C91 \\ 492 & 807 & C91 \\ 492 & 807 & C91 \\ 492 & 807 & C91 \\ 492 & 807 & C91 \\ 492 & 807 & C91 \\ 492 & 807 $	$\begin{array}{c} 5 & 33 \\ 5 & 33 \\ 5 & 33 \\ 5 & 33 \\ 5 & 33 \\ 4 & 129 \\ 9 & 155 \\ 4 & 129 \\ 9 & 155 \\ 4 & 83 \\ 3 & 3 & 3 \\ 3 & 3 & 3 \\ 3 & 3 & 3 \\ 3 & 3 &$	492817C1492818C1492818C1492819C91492822C91492823C92492823C92492823C92492825C1492870C1492876C1492884C1492884C1492885C1492885C1492885C1492895C1492897C1492896C1492897C1492898C1492898C1492898C1492938C1492938C1492938C1492938C1492938C1492938C1492938C1492938C1492938C1492936C91493062C91493062C91493063C91493065C91493065C91493066C91493067C1493066C91493067C1493066C91493067C1493067C1493066C91 <td>8 55 5 56 5 56 5 55 5 55 5 55 5 55 5 55</td> <td>4 493 4 493 4 493 4 493 5 493 4 493 5 493 4 493 4 493 4 493 4 493 4 493 4 493 4 493 4 493 4 493 4 493 4 493 4 493 5 493 6 493 9 493 4 493 4 493 4 493 4 493 5 493 5 493 6 493 1 493 4 493 4 493 5 493 5 493 5 493 6 493 7 493 <td>096 C91 096 C91 096 C91 096 C91 115 C91 115 C91 115 C91 115 C91 115 C91 115 C91 117 C1 118 C91 130 C91 132 C1 133 C91 134 C91 135 C91 136 C91 142 C91 144 C91 144 C91 144 C91 145 C91 194 C91 194 C91 195 C91 196 C91 197</td><td>244455588885555555555555555555555555555</td><td>26 32 82 54 48 219 26 48</td><td>493 350 C2 493 353 C3 493 353 C3 493 355 C2 493 355 C2 493 356 C2 493 356 C2 493 356 C2 493 358 C2 493 358 C2 493 361 C2 493 361 C2 493 362 C2 493 362 C2 493 362 C2 493 362 C2 493 362 C2 493 362 C2 493 362 C2 493 362 C2 493 362 C2 493 362 C2 493 362 C2 493 362 C2 493 367 C2 493 367 C2 493 377 C2</td><td>122 122 122 122 122 122 122 122 122 122</td><td>$\begin{array}{c} 148\\ 148\\ 148\\ 148\\ 154\\ 148\\ 148\\ 148\\ 148\\ 148\\ 148\\ 148\\ 14$</td></td>	8 55 5 56 5 56 5 55 5 55 5 55 5 55 5 55	4 493 4 493 4 493 4 493 5 493 4 493 5 493 4 493 4 493 4 493 4 493 4 493 4 493 4 493 4 493 4 493 4 493 4 493 4 493 5 493 6 493 9 493 4 493 4 493 4 493 4 493 5 493 5 493 6 493 1 493 4 493 4 493 5 493 5 493 5 493 6 493 7 493 <td>096 C91 096 C91 096 C91 096 C91 115 C91 115 C91 115 C91 115 C91 115 C91 115 C91 117 C1 118 C91 130 C91 132 C1 133 C91 134 C91 135 C91 136 C91 142 C91 144 C91 144 C91 144 C91 145 C91 194 C91 194 C91 195 C91 196 C91 197</td> <td>244455588885555555555555555555555555555</td> <td>26 32 82 54 48 219 26 48</td> <td>493 350 C2 493 353 C3 493 353 C3 493 355 C2 493 355 C2 493 356 C2 493 356 C2 493 356 C2 493 358 C2 493 358 C2 493 361 C2 493 361 C2 493 362 C2 493 362 C2 493 362 C2 493 362 C2 493 362 C2 493 362 C2 493 362 C2 493 362 C2 493 362 C2 493 362 C2 493 362 C2 493 362 C2 493 367 C2 493 367 C2 493 377 C2</td> <td>122 122 122 122 122 122 122 122 122 122</td> <td>$\begin{array}{c} 148\\ 148\\ 148\\ 148\\ 154\\ 148\\ 148\\ 148\\ 148\\ 148\\ 148\\ 148\\ 14$</td>	096 C91 096 C91 096 C91 096 C91 115 C91 115 C91 115 C91 115 C91 115 C91 115 C91 117 C1 118 C91 130 C91 132 C1 133 C91 134 C91 135 C91 136 C91 142 C91 144 C91 144 C91 144 C91 145 C91 194 C91 194 C91 195 C91 196 C91 197	244455588885555555555555555555555555555	26 32 82 54 48 219 26 48	493 350 C2 493 353 C3 493 353 C3 493 355 C2 493 355 C2 493 356 C2 493 356 C2 493 356 C2 493 358 C2 493 358 C2 493 361 C2 493 361 C2 493 362 C2 493 362 C2 493 362 C2 493 362 C2 493 362 C2 493 362 C2 493 362 C2 493 362 C2 493 362 C2 493 362 C2 493 362 C2 493 362 C2 493 367 C2 493 367 C2 493 377 C2	122 122 122 122 122 122 122 122 122 122	$\begin{array}{c} 148\\ 148\\ 148\\ 148\\ 154\\ 148\\ 148\\ 148\\ 148\\ 148\\ 148\\ 148\\ 14$

PART NUMBER	SEC	- 	INDEX MT-140	SEC	PG	PAPT	<u> </u>	AL INDEX	PART NUMBER	SEC	PG
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NUME	RICAL INDEX	MT-140		NUMER	ICA		Х МТ-140	
PART NUMBER	SEC PG	PART NUMBER	SEC PG	PART NUMBER	SEC	PG	PART NUMBER	SEC P
495 215 C1 495 218 C92 495 218 C92 495 218 C92 495 218 C92 495 218 C92 495 218 C92 495 218 C92 495 236 C1 495 350 C91 495 350 C91 495 350 C91 495 350 C91 495 350 C91 495 350 C91 495 350 C91 495 350 C91 495 350 C91 495 350 C91 495 350 C1 495 364 C1 495 394 C1 495 394 C1 495 394 C1 495 395 C1 495 395 C1 495 396 C1	13 89 13 89 13 89 13 39 13 39 13 39 13 39 13 39 13 39 13 7 2 9 4 106 4 129 4 130 4 133 3 10 3 10 3 10 3 10 3 10 3 12 4 163 3 10 3 12 12 16 12 17 12 18 12 19 12 20 12 16 12 16 12 16 12 10 12 12 12 10 12 10	495882C1495882C1495887C1495998C1496037C1496037C1496037C1496037C1496037C1496037C1496037C1496066C1496066C1496066C2496067C1496069C2496073C2496067C1496112C91496113C91496113C91496123C91496124C91496126C91496127C91496139C1496143C91496144C1496145C1496146C1496146C1496146C1496147C1496202C91496203C91496345C1496392C91496394C91496395C91496395C91496395C91496395C91496395C91496395C91496455C1496455C1	11 12 11 17 11 17 2 9 4 124 5 44 5 44 5 44 5 48 16 53 16 52 16 53 16 53 16 53 12 27 13 90 13 90 13 90 13 90 13 90 13 90 13 90 13 90 13 89 13 89 13 89 13 89 13 89 13 89 13 89 13 89 13 89 13 89 13 49 13 49 13 21 10 21	496 658 C1 496 658 C1 496 659 C1 496 659 C1 496 660 C1 496 661 C1	13 13 13 13 13 13 13 13 13 13 13 13	$\begin{array}{c} 78\\ 68\\ 787\\ 677\\ 67$	496 674 C91 496 675 C1 496 675 C1 496 676 C1 496 676 C1 496 677 C1 496 677 C1 496 677 C1 496 678 C1 496 678 C1 496 678 C1 496 678 C1 496 678 C1 496 678 C1 496 678 C1 496 800 C1 496 820 C1 496 820 C1 496 820 C1 496 834 C1 496 834 C1 496 834 C1 496 859 C91 496 866 C1 496 861 C91 496 864 C1 497 317 C1 <t< td=""><td>$\begin{array}{c} 3 \\ 3 \\ 7 \\ 7 \\ 7 \\ 7 \\ 7 \\ 7 \\ 7 \\ 7 \\$</td></t<>	$\begin{array}{c} 3 \\ 3 \\ 7 \\ 7 \\ 7 \\ 7 \\ 7 \\ 7 \\ 7 \\ 7 \\$

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NUMERIC	MT-140			NUMERIO	СА	L IN	IDEX мт-140			
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497 520 C1 497 521 C91 497 568 C92 497 569 C92 497 583 C1 11 497 583 C1 11 497 583 C1 11 497 584 C1 11 497 586 C11 11 497 586 C11 11 497 601 C1 11 497 601 C1 11 497 601 C1 11 497 630 C1 11 497 647 C91 11 497 650 C91 11 497 651 C91 11 497 652 C91 11 497 655 C91 11 497 695 C92 1 497 695 C92 1	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	498 053 C91 498 054 C91 498 061 C1 498 062 C1 498 063 C1 498 063 C1 498 064 C1 498 066 C91 498 066 C91 498 066 C91 498 071 C1 498 097 C1 498 097 C1 498 097 C1 498 103 C91 498 103 C91 498 104 C91 498 105 C91 498 107 C91 498 107 C91 498 107 C91 498 107 C91 498 107 C91 498 107 C91 498 107 C91 498 107 C91 498 107 C91	$\begin{array}{c} 17\\ 17\\ 14\\ 4\\ 4\\ 4\\ 4\\ 4\\ 4\\ 4\\ 4\\ 4\\ 4\\ 4\\ 4\\ 4$	147 156 53 67 79 39 36 47 65 78 68 68 78 68 78 68 78 68 78 68 78 68 78 68 78 68 78 68 78 68 78 68 78 68 78 68 78 67 78 67 78 67 79 79 79 79 79 79 79 79 79 79 79 79 79	499 040 $C1$ 499 042 $C1$ 499 044 $C1$ 499 045 $C1$ 499 045 $C1$ 499 046 $C1$ 499 047 $C1$ 499 048 $C1$ 499 048 $C1$ 499 048 $C1$ 499 048 $C1$ 499 049 $C1$ 499 050 $C1$ 499 050 $C1$ 499 055 $C1$ 499 053 $C1$ 499 053 $C1$ 499 055 $C1$ 499 056 $C1$ 499 056 $C1$ 499 056 $C1$ 499 056 $C1$ 499 056 $C1$ 499 056 $C1$ 499 057 $C1$ 499 056 $C1$ 499 077 $C1$ 499 077 $C1$ 499 082 $C1$ 499 082 $C1$ 499 086 $C1$ 499 086 $C1$ 499 086 $C1$ 499 086 $C1$ 499 086 $C1$ 499 086 $C1$ 499 086 $C1$ 499 086 $C1$ 499 086 $C1$ 499 086 $C1$ 499 086	996666666666666666666666666666666666666	511 511 551 551 551 551 551 551 551 551	499 923 C1 499 924 C91 499 925 C91 499 925 C1 499 926 C1 499 928 C1 499 930 C91 499 930 C91 499 930 C91 499 930 C91 499 930 C91 499 931 C91 499 932 C91 499 932 C91 499 993 C91 500 016 C1 500 016 C1 500 016 C1 500 016 C1	753340999967999998888887777778888888855544444444444	57 64 57 57 6 9 24 11 12 30 35 38 17

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NUME PART NUMBER		INDEX	MT-140 Part Number	SEC	PG	NUMERIC PART NUMBER			MT-140 Part Number	SEC PG
503 083 C1 503 084 C1 503 086 C91 503 087 C1 503 087 C1 503 087 C1 503 088 C2 503 098 C1 503 090 C1 503 092 C91 503 094 C91 503 095 C91 503 098 C91 503 098 C91 503 098 C91 503 100 C91		555555555555555555555555555555555555555	504 548 C1 504 581 C1 504 581 C1 504 581 C1 504 581 C1 504 581 C1 504 581 C1 504 581 C1 504 581 C1 504 581 C1 504 581 C1 504 589 C1 504 736 C92 504 738 C92 504 810 C91 504 816 C2 504 818 C2	84444444444444444444444444444444444444	63 104 105 129 130 131 136 139 163 43 46 57 23 3	505 298 C1 505 308 C2 505 309 C2 505 310 C1 505 312 C1 505 314 C1 505 314 C1 505 314 C1 505 314 C1 505 315 C1 505 321 C1 505 324 C1 505 335 C1 505 638 C1 505 639 C1		43999555199008000004	507 810 C91 507 810 C91 507 810 C91 507 810 C91 507 810 C91 507 810 C91 507 835 C91 507 835 C91 507 836 C91 507 836 C91 507 855 C91 507 855 C91 507 905 C91 507 907 C1 507 913 C1 507 923 C1	5 14 5 35 5 39 5 40 5 42 2 12 2 16 5 21 2 12 2 16 5 21 5 22 14 55 5 94 9 18 4 187 4 198
503 102 C1 503 140 C91 503 153 C91 503 607 C91 504 131 C1 504 207 C91 504 208 C1 504 209 C1 504 210 C1 504 212 C1 504 212 C1 504 213 C1 504 215 C1 504 216 C1 504 217 C1 504 218 C1	4 19 13 9 14 9 13 4 13 4 13 4 13 4 13 4 13 4 13 4 13 4	9 7 4 4 7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	504 818 C2 504 819 C2 504 821 C2 504 827 C92 504 828 C92 504 828 C92 504 829 C91 504 838 C91 504 839 C91 504 840 C91 504 840 C91 504 842 C1 504 843 C91 504 868 C1 504 869 C1 504 870 C1	77788888444444 16222	3 52 522 522 107 107 107 107 107 107 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	505 641 C1 505 646 C91 505 647 C4 505 647 C91 505 657 C92 505 657 C92 505 657 C92 505 657 C92 505 657 C92 505 657 C92 505 675 C1 505 676 C1 505 678 C1 505 678 C1 505 679 C1	3412255555555533333333333333333333333333	0 4 2 6 9 9 4 5 9 9 0 1 2 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	507 966 C1 507 976 C1 507 977 C1 507 978 C1 508 053 C1 508 053 C1 508 053 C1 508 054 C1 508 054 C1 508 054 C1 508 054 C1 508 109 C1 508 100 C1 508 526 C1 508 545 C91	4 198 5 98 12 225 12 225 12 225 13 38 13 42 13 74 13 74 13 38 13 42 13 74 13 38 13 42 13 74 13 38 13 42 13 74 13 38 13 42 13 74 13 38 13 42 13 74 13 38 13 42 13 74 13 75 17 300 13 76
504 220 C1 504 221 C91 504 221 C91 504 221 C91 504 221 C91 504 222 C1 504 223 C1 504 223 C1 504 224 C1 504 225 C1 504 225 C1 504 226 C1 504 226 C1 504 227 C1 504 227 C1 504 228 C1 504 229 C1	13 - 13 <td< td=""><td>8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9</td><td>504 879 C1 504 879 C1 504 880 C1 504 880 C1 504 901 C1 504 902 C2 504 903 C2 504 905 C1 504 908 C1 504 909 C1 504 910 C1 504 934 C1 504 934 C1 504 938 C1 504 955 C1 504 958 C91 504 960 C91</td><td>122221666666222222222777</td><td>196 196 196 196 196 196 196 196 196 196</td><td>505 812 C1 505 812 C1 505 834 C1 505 969 C1 505 973 C1 505 982 C1 505 987 C5 505 997 C5 506 003 C91 506 012 C1 506 013 C2 506 018 C93 506 023 C1 506 024 C1 506 029 C1 506 029 C1 506 029 C1 506 028 C1</td><td>866666662558222244499922244499922244449992224444999222444499922244449992224444999224449992224444992244499922244449444444</td><td>3 8 0 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5</td><td>508 546 C91 508 547 C91 508 558 C91 508 556 C91 508 557 C91 508 640 C1 508 640 C1 508 649 C1 508 649 C1 508 650 C1 508 650 C1 508 671 C91 508 761 C1 508 761 C1 508 765 C91 508 785 C91 508 785 C91</td><td>13 76 13 76 13 76 13 76 13 76 13 76 13 76 13 89 13 89 6 9 7 38 7 39 13 71 12 223 12 223 12 215 4 134 4 142 4 144 4 143</td></td<>	8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	504 879 C1 504 879 C1 504 880 C1 504 880 C1 504 901 C1 504 902 C2 504 903 C2 504 905 C1 504 908 C1 504 909 C1 504 910 C1 504 934 C1 504 934 C1 504 938 C1 504 955 C1 504 958 C91 504 960 C91	122221666666222222222777	196 196 196 196 196 196 196 196 196 196	505 812 C1 505 812 C1 505 834 C1 505 969 C1 505 973 C1 505 982 C1 505 987 C5 505 997 C5 506 003 C91 506 012 C1 506 013 C2 506 018 C93 506 023 C1 506 024 C1 506 029 C1 506 029 C1 506 029 C1 506 028 C1	866666662558222244499922244499922244449992224444999222444499922244449992224444999224449992224444992244499922244449444444	3 8 0 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	508 546 C91 508 547 C91 508 558 C91 508 556 C91 508 557 C91 508 640 C1 508 640 C1 508 649 C1 508 649 C1 508 650 C1 508 650 C1 508 671 C91 508 761 C1 508 761 C1 508 765 C91 508 785 C91 508 785 C91	13 76 13 76 13 76 13 76 13 76 13 76 13 76 13 89 13 89 6 9 7 38 7 39 13 71 12 223 12 223 12 215 4 134 4 142 4 144 4 143
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504 248 C1 504 249 C1 504 250 C1 504 251 C1 504 252 C1 504 253 C1 504 253 C1 504 266 C91 504 266 C91 504 453 C91 504 453 C91 504 463 C1 504 466 C1 504 542 C1 504 547 C1	13 13 13 13 13 13 13 14 8 8 8 13	19 19 19 19 19 19 23 52 23 52 24 26 35 22 33	505 099 C1 505 100 C1 505 100 C1 505 100 C1 505 100 C1 505 100 C1 505 100 C1 505 102 C1 505 103 C1 505 159 C91 505 234 C1 505 245 C3 505 294 C1 505 294 C1	13 13 13 13 13 13 13 13 13 13 13 13 13 1	6	507 655 C91 507 655 C91 507 656 C1 507 656 C1 507 656 C1 507 700 C1 7 507 700 C1 7 507 768 R1 7 507 782 C1 7 507 792 C1 7 507 793 C1 8 507 809 C91 8 507 809 C91 8 507 809 C91 9 507 809 C91 9 507 809 C91 9 507 809 C91 9 507 809 C91 9 507 809 C91	4348825555555555555	28 22 99 44 33 33 99 55 55 55 44 45 59 90 00	508 785 C91 508 785 C91 508 785 C91 508 787 C91 508 789 C1 508 789 C1 508 790 C1 508 792 C1 508 792 C1 508 793 C91 508 793 C91 508 794 C91 508 794 C91 508 794 C91 508 794 C91 508 794 C91 508 797 C91	4 171 4 172 4 173 11 21 5 89 5 89 5 89 7 4 7 6 7 32 7 34 7 35

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508 797 C91 508 797 C91 508 797 C91 508 797 C91 508 799 C1 508 799 C1 508 799 C1 508 800 C1 508 800 C1 508 800 C1 508 800 C1 508 801 C1 508 801 C1 508 801 C1 508 802 C1 508 802 C1 508 802 C1 508 802 C1 508 804 C1 508 836 C1 508 836 C1 508 849 C91 508 856 C1 508 856 C1 508 816 C1	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	509 238 $C91$ 509 239 $C91$ 509 239 $C91$ 509 391 $C1$ 509 404 $C2$ 509 404 $C2$ 509 404 $C2$ 509 471 $C1$ 500 471 $C1$ 510 238 $C91$ 511 343 $C1$ 511 343 $C1$ 511 343 $C1$ 511 343 $C1$ 511 343 $C1$ 511 343 $C1$ 511 343 $C1$ 511 343 $C1$ 511 343 $C1$ 512 343 $C1$ 512 345 $C1$ 512 345 $C1$ 512 347 $C1$ 512 347 $C1$ 512 348 $C1$ 512 348 $C1$ 512 349 $C1$ 512 349 $C1$ 512 349 $C1$ 512 349 $C1$ 513 613 $C1$ 513 613 $C1$ 513 613 $C1$ 515 718 $C1$ 516 302 $C1$ 516 302 $C1$ 516 302 $C1$ 516 302 $C1$ 516 302 $C1$ 523 445 $C1$ 523 445 <	12 12 12 16 16 16 16 16 16 16 16 16 16 16 16 16	$\begin{array}{c} 5524\\ 855\\ 533\\ 11\\ 555\\ 559\\ 94459\\ 1111460\\ 1799\\ 1114499\\ 984\\ 477\\ 84664462\\ 12223\\ 21666514\\ 4077777777777\\ 1112277\\ 4489999400\\ 1122254\\ 000\\ 100\\ 100\\ 100\\ 100\\ 100\\ 100\\ 10$	529 208 R1 529 208 R1 529 660 C1 529 660 C1 529 693 C1 529 693 C1 529 693 C1 529 693 C1 529 693 C1 529 693 C1 530 874 R1 531 316 C1 531 317 C91 532 389 C1 532 389 C1 532 389 C1 532 389 C1 532 389 C1 532 389 C1 532 389 C1 532 389 C1 532 389 C1 532 389 C1 532 389 C1 532 389 C1 532 389 C1 532 389 C1	7773222444443523533445555555555555555555	$\begin{array}{c} 29\\ 300\\ 711\\ 2223\\ 101\\ 101\\ 102\\ 1223\\ 100\\ 2207\\ 866\\ 228\\ 1200\\ 1211\\ 2207\\ 866\\ 228\\ 1200\\ 1211\\ 2207\\ 866\\ 228\\ 1200\\ 1211\\ 2207\\ 866\\ 228\\ 1200\\ 1211\\ 2207\\ 866\\ 228\\ 1200\\ 1211\\ 2207\\ 866\\ 228\\ 1200\\ 1211\\ 2207\\ 866\\ 228\\ 1200\\ 1211\\ 2207\\ 866\\ 228\\ 1200\\ 1211\\ 2207\\ 866\\ 228\\ 1200\\ 1211\\ 2207\\ 866\\ 228\\ 1200\\ 1211\\ 2207\\ 866\\ 228\\ 1200\\ 1211\\ 2207\\ 866\\ 312\\ 312\\ 367\\ 312\\ 367\\ 312\\ 367\\ 312\\ 367\\ 312\\ 367\\ 312\\ 366\\ 312\\ 312\\ 366\\ 312\\ 366\\ 312\\ 366\\ 312\\ 366\\ 312\\ 312\\ 366\\ 312\\ 312\\ 312\\ 312\\ 312\\ 312\\ 312\\ 312$	532 434 C1 533 436 C91 533 436 C1 533 496 R1 533 496 R1 533 496 R1 533 496 R1 533 496 R1 533 496 R1 533 496 R1 533 496 R1 533 496 R1 533 496 R1 533 496 C1 533 495 R1 533 895 R1 533 895 R1 533 895 R1 533 896 C91 533 896 C91 533 896 C91 533 896 C1 534 696 C1 534 696 C1 536 806 C1 536 806 C1 536 807 C1 536 807 C1 537 805 C1 538 808 C2 538 808 C1 538 808 C	12283333122221778822882245555277755131213134778844	$\begin{array}{c} 261\\ 33267\\ 333344467\\ 44890\\ 555555555555555555555555555555555555$

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PART NUMBER SEC	PG	PART NUMBER	SEC	PG	PART NUMBER	SEC	PG	PART NUMBER	SEC	PG
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\\ 588 & 290 & C91 \\ 588 & 976 & C91 \\ 588 & 994 & C91 \\ 588 & 994 & C91 \\ 588 & 995 & C91 \\ 588 & 995 & C91 \\ 588 & 995 & C91 \\ 588 & 997 & C91 \\ 588 & 997 & C91 \\ 588 & 997 & C91 \\ 588 & 997 & C91 \\ 588 & 997 & C91 \\ 589 & 612 & C1 \\ 589 & 666 & C2 \\ 589 & 618 & C1 \\ 589 & 666 & C2 \\ 589 & 618 & C1 \\ 590 & 053 & C91 \\ 590 & 053 & C91 \\ 590 & 110 & C1 \\ 590 & 173 & C91 \\ 590 & 173 & C91 \\ 590 & 173 & C91 \\ 590 & 173 & C91 \\ 590 & 174 & C91 \\ 590 & 173 & C91 \\ 590 & 646 & C91 \\ 590 & 646 & C91 \\ 590 & 647 & C91 \\ 590 & 648 & C91 \\ 590 & 648 & C91 \\ 590 & 648 & C91 \\ 590 & 648 & C91 \\ 590 & 648 & C91 \\ 590 & 648 & C91 \\ 590 & 648 & C91 \\ 590 & 648 & C91 \\ 590 & 648 & C91 \\ 590 & 648 & C91 \\ 590 & 648 & C91 \\ 590 & 648 & C91 \\ 591 & 137 & C91 \\ 591 & 137 & C91 \\ 591 & 138 & C91 \\ 591 & 137 & C91 \\ 592 & 366 & C11 \\ 606 & 337 & R1 \\ 600 & 337 & R1 \\ 600 & 337 & R1 \\ 600 & 337 & R1 \\ 600 & 337 & R1 \\ 600 & 337 & R1 \\ 600 & 337 & R1 \\ 600 & 337 & R1 \\ 600 & 337 & R1 \\ 600 & 337 & R1 \\ 600 & 337 & R1 \\ 600 & 337 & R1 \\ 600 & 337 & R1 \\ 600 & 3$</td><td>144444444444444444444444444444444444444</td><td>$\begin{array}{c} 71\\ 84\\ 42\\ 17\\ 18\\ 67\\ 67\\ 76\\ 30\\ 34\\ 28\\ 34\\ 34\\ 25\\ 25\\ 25\\ 28\\ 94\\ 23\\ 34\\ 34\\ 25\\ 25\\ 25\\ 28\\ 94\\ 23\\ 34\\ 34\\ 34\\ 34\\ 34\\ 34\\ 34\\ 34\\ 34\\ 3$</td><td>615$116$$C1$$615$$175$$C91$$615$$676$$C1$$615$$676$$C1$$615$$739$$C1$$615$$746$$C1$$615$$746$$C1$$615$$746$$C1$$615$$746$$C1$$615$$746$$C1$$615$$746$$C1$$615$$746$$C1$$615$$746$$C1$$617$$605$$R1$$617$$605$$R1$$617$$605$$R1$$617$$605$$R1$$617$$605$$R1$$617$$605$$R1$$621$$256$$C91$$621$$256$$C91$$625$$565$$C1$$625$$565$$C1$$625$$565$$C1$$625$$625$$C1$$625$$627$$C1$$625$$627$$C1$$625$$627$$C1$$625$$627$$C1$$625$$627$$C1$$625$$742$$C91$$625$$742$$C91$$625$$742$$C91$$627$$773$$C1$$627$$773$$C1$$627$$773$$C1$$630$$203$$C91$$630$$203$$C91$$630$$204$$C1$$630$$204$$C1$$630$$408$<!--</td--><td>$\begin{array}{c}122\\133\\222\\122\\222\\222\\222\\222\\222\\222\\$</td><td>997 1875 1911 1389 997 1355 1355 1355 1355 1355 1355 1355 135</td></td></tr<>	144444555555555555555555555555555555555	46 17 19 22 22 102 73 96 102 24 70 72 24 70 72 24 70 72 24 70 72 24 70 72 24 70 72 24 70 72 24 70 72 24 70 24 70 24 70 24 70 24 70 24 70 24 70 24 70 24 70 24 70 24 70 24 70 24 70 24 70 70 70 70 70 24 70 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173 & C91 \\ 590 & 174 & C91 \\ 590 & 173 & C91 \\ 590 & 646 & C91 \\ 590 & 646 & C91 \\ 590 & 647 & C91 \\ 590 & 648 & C91 \\ 590 & 648 & C91 \\ 590 & 648 & C91 \\ 590 & 648 & C91 \\ 590 & 648 & C91 \\ 590 & 648 & C91 \\ 590 & 648 & C91 \\ 590 & 648 & C91 \\ 590 & 648 & C91 \\ 590 & 648 & C91 \\ 590 & 648 & C91 \\ 590 & 648 & C91 \\ 591 & 137 & C91 \\ 591 & 137 & C91 \\ 591 & 138 & C91 \\ 591 & 137 & C91 \\ 592 & 366 & C11 \\ 606 & 337 & R1 \\ 600 & 337 & R1 \\ 600 & 337 & R1 \\ 600 & 337 & R1 \\ 600 & 337 & R1 \\ 600 & 337 & R1 \\ 600 & 337 & R1 \\ 600 & 337 & R1 \\ 600 & 337 & R1 \\ 600 & 337 & R1 \\ 600 & 337 & R1 \\ 600 & 337 & R1 \\ 600 & 337 & R1 \\ 600 & 3$	144444444444444444444444444444444444444	$\begin{array}{c} 71\\ 84\\ 42\\ 17\\ 18\\ 67\\ 67\\ 76\\ 30\\ 34\\ 28\\ 34\\ 34\\ 25\\ 25\\ 25\\ 28\\ 94\\ 23\\ 34\\ 34\\ 25\\ 25\\ 25\\ 28\\ 94\\ 23\\ 34\\ 34\\ 34\\ 34\\ 34\\ 34\\ 34\\ 34\\ 34\\ 3$	615 116 $C1$ 615 175 $C91$ 615 676 $C1$ 615 676 $C1$ 615 739 $C1$ 615 746 $C1$ 615 746 $C1$ 615 746 $C1$ 615 746 $C1$ 615 746 $C1$ 615 746 $C1$ 615 746 $C1$ 615 746 $C1$ 617 605 $R1$ 617 605 $R1$ 617 605 $R1$ 617 605 $R1$ 617 605 $R1$ 617 605 $R1$ 621 256 $C91$ 621 256 $C91$ 625 565 $C1$ 625 565 $C1$ 625 565 $C1$ 625 625 $C1$ 625 627 $C1$ 625 627 $C1$ 625 627 $C1$ 625 627 $C1$ 625 627 $C1$ 625 742 $C91$ 625 742 $C91$ 625 742 $C91$ 627 773 $C1$ 627 773 $C1$ 627 773 $C1$ 630 203 $C91$ 630 203 $C91$ 630 204 $C1$ 630 204 $C1$ 630 408 </td <td>$\begin{array}{c}122\\133\\222\\122\\222\\222\\222\\222\\222\\222\\$</td> <td>997 1875 1911 1389 997 1355 1355 1355 1355 1355 1355 1355 135</td>	$\begin{array}{c}122\\133\\222\\122\\222\\222\\222\\222\\222\\222\\$	997 1875 1911 1389 997 1355 1355 1355 1355 1355 1355 1355 135

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NUME	RIC	AL I	NDEX MT-140				NUMER	RIC	AL II	NDEX	MT-140		
PART NUMBER	SEC	PG	PART NUMBER	SEC	P	G	PART Number	SEC	PG		PART NUMBER	SEC	PG
646 516 R1 648 204 R1 648 204 R1 652 934 C1 655 543 R1 660 433 R1 660 433 R1 660 433 R1 660 433 R1 670 079 C1 670 079 C1 670 079 C1 670 879 C1 670 879 C1 670 879 C1 670 879 C1 670 879 C1 670 879 C1 670 879 C1 670 879 C1 670 879 C1 670 879 C1 670 879 C1 671 164 C2 671 164 C2 671 164 C2 671 164 C2	$\begin{array}{c} 122\\ 1222\\ $	94 110 111 156 204 67 181 159 159 159 159 159 159 159 159 159	674 757 C1 674 758 C1 674 758 C1 674 760 C1 674 761 C1 674 763 C1 674 768 C1 674 768 C1 674 768 C1 674 768 C1 674 776 C2 674 775 C2 674 776 C2 674 777 C2 674 778 C2 674 778 C2 674 783 C1 674 783 C1 674 784 C1 674 785 C1 674 783 C1 674 784 C1 674 795 C1 674 796 C1 674 797 C1 674 793 C1 674 807 C1	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		59 50 51 52 59 50 51 51 51 51 51 51 51 51 51 51 51 52 59 59 59 59 59 59 59 59 59 59 59 59 59 59 59 59	674 946 C1 674 948 C2 674 949 C2 674 974 C1 675 046 C2 675 105 C1 675 046 C2 675 109 C2 675 109 C2 675 364 C1 675 364 C1 675 364 C1 675 364 C1 675 364 C1 675 364 C1 675 364 C1 675 364 C1 675 364 C1 675 398 C1 675 412 C1 675 413 C1 675 413 C1 675 413 C1 675 616 C1 675 617 C1 675 613 C1 675 613 C1	12 12 12 12 12 12 12 12 12 12 12 12 12 1	$\begin{array}{c} 11033\\1031\\1011\\458\\558\\676\\135\\547\\12\\558\\887\\67\\12\\55\\58\\88\\7\\23\\12\\55\\58\\88\\7\\23\\12\\29\\29\\86\\7\\7\\13\\67\\7\\13\\86\\7\\68\\67\\7\\68\\37\\7\\67\\68\\37\\7\\68\\55\\12\\12\\12\\19\\99\\11\\13\\37\\90\\9\\45\\8\\19\\91\\15\\15\\15\\15\\15\\15\\15\\15\\15\\15\\15\\15\\15$		677 082 C2 677 7082 C2 677 129 C1 677 129 C1 677 129 C1 677 143 C91 677 143 C91 677 143 C91 677 743 C1 677 743 C1 677 7323 C1 677 628 C1 677 628 C1 677 690 C1 677 692 C1 677 755 C91 677 755 C91 677 755 C91 677 756 C91 678 755 C91 678 554 C91 678 554 C91 678 554 C91 680 084 C92 680 084 C92 680 084 C1 680 239 C92	$\begin{array}{c} 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\$	178 178 101 159 33 37 41 170 33 133

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PART NUMBER	SEC PG	AL INDEX MT-140	SEC	PG	PART NUMBER	RIC SEC	1 1	NDEX MT-140 Part NUMBER	SEC P
680 483 C1 680 484 C1 680 618 R91 681 165 R2 681 165 R2 681 180 R1 681 180 R1 681 180 R1 681 180 R1 681 180 R1 681 180 R1 681 180 R1 681 180 R1 681 234 C1 681 234 C1 681 293 C1 681 293 C1 681 293 C1 681 294 C1 681 295 C1 681 296 C1 681 315 C1 681 436 C1 681 436 C1 681 436 C1 681 436 C1 681 436 C1	$\begin{array}{c} 12 \\ 4 \\ 4 \\ 8 \\ 13 \\ 13 \\ 13 \\ 4 \\ 12 \\ 12 \\ 12 \\ 20 \\ 12 \\ 12 \\ 20 \\ 12 \\ 12$	206 683 118 $R92$ 206 683 119 $R92$ 209 683 264 $R1$ 58 683 264 $R1$ 58 683 264 $R1$ 67 683 494 $C1$ 159 683 488 $C1$ 101 683 520 $C1$ 101 683 520 $C1$ 101 683 564 $C91$ 101 683 791 $C1$ 45 683 815 $C1$ 45 683 961 $C91$ 101 684 034 $C1$ 159 684 034 $C1$ 160 684 079 $C92$ 180 684 034 $C1$ 160 684 108 $C1$ 160 684 034 $C1$ 160 684 036 $C1$ 160 684 108 $C1$ 160 684 230 $C1$ 100 684 306 $C1$ 100 684 306 $C1$ 100 684 309 $C1$ 100 684 323 $C1$ 100 684 323 $C1$ 100 684 320 $C94$ 100 684 320 $C91$ 100 684 320 $C91$ 100 684 320 $C91$ 100 684 320 <td< td=""><td>122 122 122 122 122 122 122 122 122 122</td><td>16 866 1355 159 1600 1609 1030 1010 1011 1031 1011 1031 1011 1035 1355 135</td><td>687 061 C91 687 108 C1 687 157 C91 687 157 C91 687 201 C91 687 201 C91 687 214 C1 687 253 C1 687 253 C1 687 254 C92 687 255 C1 687 391 C1 687 391 C1 687 394 C1 687 429 C91 687 422 C91 687 433 C91 687 433 C91 687 456 C1 687 456 C1 687 456 C1</td><td>122 122 122 122 122 122 122 122 122 122</td><td>$\begin{array}{c} 1866\\ 48\\ 103\\ 90\\ 90\\ 90\\ 90\\ 90\\ 90\\ 90\\ 90\\ 90\\ 90$</td><td>$\begin{array}{c} 689 \ 358 \ C1 \\ 689 \ 359 \ C1 \\ 689 \ 359 \ C1 \\ 689 \ 359 \ C1 \\ 689 \ 359 \ C1 \\ 689 \ 359 \ C1 \\ 689 \ 359 \ C1 \\ 689 \ 359 \ C1 \\ 689 \ 352 \ C1 \\ 689 \ 362 \ C1 \\ 689 \ 362 \ C1 \\ 689 \ 362 \ C1 \\ 689 \ 362 \ C1 \\ 689 \ 362 \ C1 \\ 689 \ 362 \ C1 \\ 689 \ 364 \ C1 \\ 689 \ 364 \ C1 \\ 689 \ 364 \ C1 \\ 689 \ 365 \ C1 \\ 689 \ 365 \ C1 \\ 689 \ 365 \ C1 \\ 689 \ 365 \ C1 \\ 689 \ 365 \ C1 \\ 689 \ 365 \ C1 \\ 689 \ 365 \ C1 \\ 689 \ 365 \ C1 \\ 689 \ 365 \ C1 \\ 689 \ 365 \ C1 \\ 689 \ 365 \ C1 \\ 689 \ 365 \ C1 \\ 689 \ 365 \ C1 \\ 689 \ 365 \ C1 \\ 689 \ 366 \ C1 \ C1 \\ 689 \ 366 \ C1 \ C1 \ C1 \ C1 \ C1 \ C1 \ C1 \$</td><td>$\begin{array}{c} 13\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12$</td></td<>	122 122 122 122 122 122 122 122 122 122	16 866 1355 159 1600 1609 1030 1010 1011 1031 1011 1031 1011 1035 1355 135	687 061 C91 687 108 C1 687 157 C91 687 157 C91 687 201 C91 687 201 C91 687 214 C1 687 253 C1 687 253 C1 687 254 C92 687 255 C1 687 391 C1 687 391 C1 687 394 C1 687 429 C91 687 422 C91 687 433 C91 687 433 C91 687 456 C1 687 456 C1 687 456 C1	122 122 122 122 122 122 122 122 122 122	$\begin{array}{c} 1866\\ 48\\ 103\\ 90\\ 90\\ 90\\ 90\\ 90\\ 90\\ 90\\ 90\\ 90\\ 90$	$\begin{array}{c} 689 \ 358 \ C1 \\ 689 \ 359 \ C1 \\ 689 \ 359 \ C1 \\ 689 \ 359 \ C1 \\ 689 \ 359 \ C1 \\ 689 \ 359 \ C1 \\ 689 \ 359 \ C1 \\ 689 \ 359 \ C1 \\ 689 \ 352 \ C1 \\ 689 \ 362 \ C1 \\ 689 \ 362 \ C1 \\ 689 \ 362 \ C1 \\ 689 \ 362 \ C1 \\ 689 \ 362 \ C1 \\ 689 \ 362 \ C1 \\ 689 \ 364 \ C1 \\ 689 \ 364 \ C1 \\ 689 \ 364 \ C1 \\ 689 \ 365 \ C1 \\ 689 \ 365 \ C1 \\ 689 \ 365 \ C1 \\ 689 \ 365 \ C1 \\ 689 \ 365 \ C1 \\ 689 \ 365 \ C1 \\ 689 \ 365 \ C1 \\ 689 \ 365 \ C1 \\ 689 \ 365 \ C1 \\ 689 \ 365 \ C1 \\ 689 \ 365 \ C1 \\ 689 \ 365 \ C1 \\ 689 \ 365 \ C1 \\ 689 \ 365 \ C1 \\ 689 \ 366 \ C1 \ C1 \\ 689 \ 366 \ C1 \ C1 \ C1 \ C1 \ C1 \ C1 \ C1 \ $	$\begin{array}{c} 13\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12$

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NUME		AL INDEX	MT-140			NUMER		EX MT140		
PART NUMBER	SEC	PG	PART NUMBER	SEC PC	PART Number	SEC	PG	PART NUMBER	SEC	PG
689 422 C91 689 432 C92 689 443 C91 689 443 C91 689 443 C91 689 644 C91 689 644 C91 689 645 C91 689 646 C91 689 647 C91 690 0667 C91 690 073 C1 690 073 C1 690 073 C1 690 073 C1 690 350 C1 690 350 C1 690 350 C1 690 350 C1 690 352 C1 690 350 C1	455555122222244222222222222222222222222		691 859 R1 691 876 C91 691 877 C91 691 995 C1 691 995 C1 697 165 R11 697 165 R11 697 226 R1 697 228 R1 697 426 R1 697 426 R1 697 426 R1 697 519 R92 697 520 R92 697 520 R92 697 520 R92 697 520 R92 697 520 R92 697 520 R92 697 520 R92 697 520 R92 697 520 R92 697 520 R92 697 520 R92 697 520 R92	$ \begin{array}{c} 6 \\ 3 \\ 12 \\ 58 \\ 7 \\ 2 \\ 58 \\ 7 \\ 3 \\ 3 \\ 9 \\ 14 \\ 57 \\ 13 \\ 56 \\ 12 \\ 159 \\ 12 \\ 15 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10$	764 471 766 082 771 723 771 723 777 857 781 564 781 565 782 080 782 736 789 248 789 248 789 234 799 631 800 026 800 026 800 026 800 065 800 065 800 053 800 153 800 153 800 153 800 153 801 177 801 077 801 077 801 177 801 177 801 177 801 177 801 177 801 177 801 177 801	C1 77 C92 177 C91 172 C91 177 C91 172 C91 177 C91 172 C91 177 C91 172 C91 172 C91 177 C91 172	32 34 73 27 27 27 27 27 27 27 27 27 27	861 443 R94 861 444 R93 862 576 R91 862 576 R91 863 411 C1 863 411 C1 863 437 R91 863 453 R32 863 823 R32 863 823 R32 863 823 R32 863 823 R32 863 843 360 R1 864 360 R1 864 360 R1 864 360 R1 864 360 R1 864 360 R1 864 437 R1 864 437 R1 864 437 R1 864 437 R1 864 438 R1 864 439 R1 864 439 R1 864 439 R1 864 439 <t< td=""><td>4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4</td><td>41 42 43 44 100 57 83 98 113 17 97 99</td></t<>	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	41 42 43 44 100 57 83 98 113 17 97 99



NUMERICAL INDEX MT140

	RIC	AL	INDEX WIT-140				RIC		INDEX MI140			-
PART NUMBER	SEC	PG	PART NUMBER	SEC	PG	PART NUMBER	9 B C	PG	PART NUMBER	SEC	PG	
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NUMERICAL INDEX MT140

		INDEX MT-140			RICAL	INDEX	MT140	
PART NUMBER SI	BC PG	PART NUMBER	SEC PG	PART NUMBER	SEC PG		PART NUMBER	SEC PG
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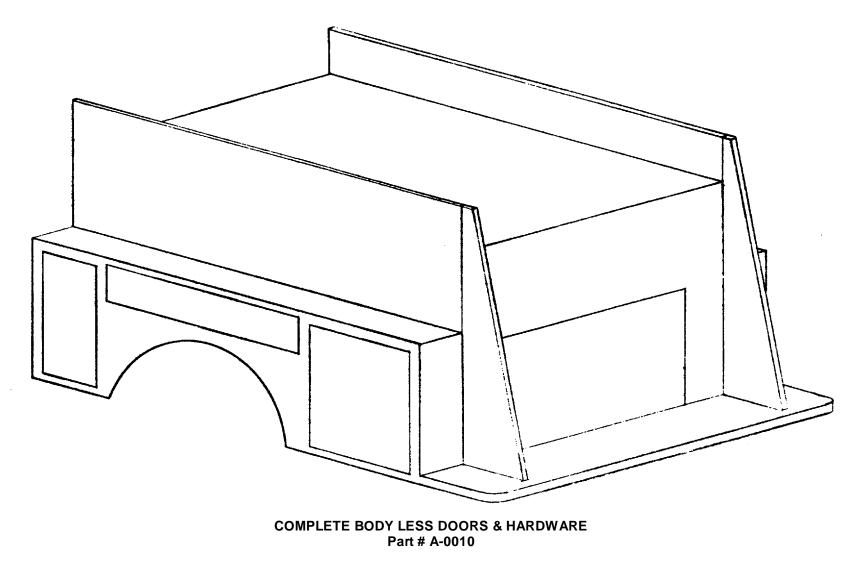
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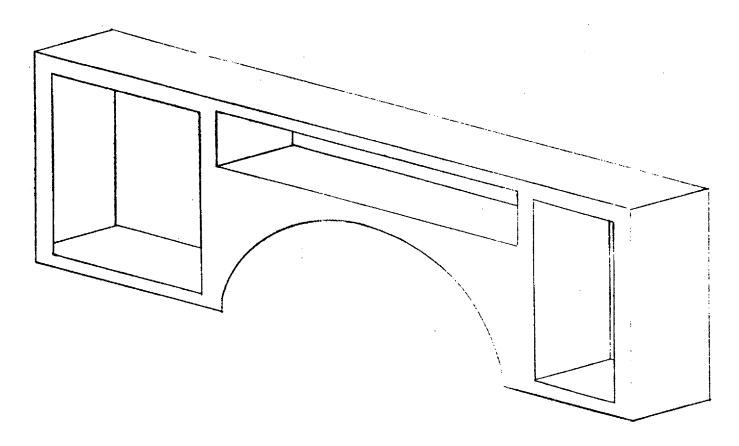
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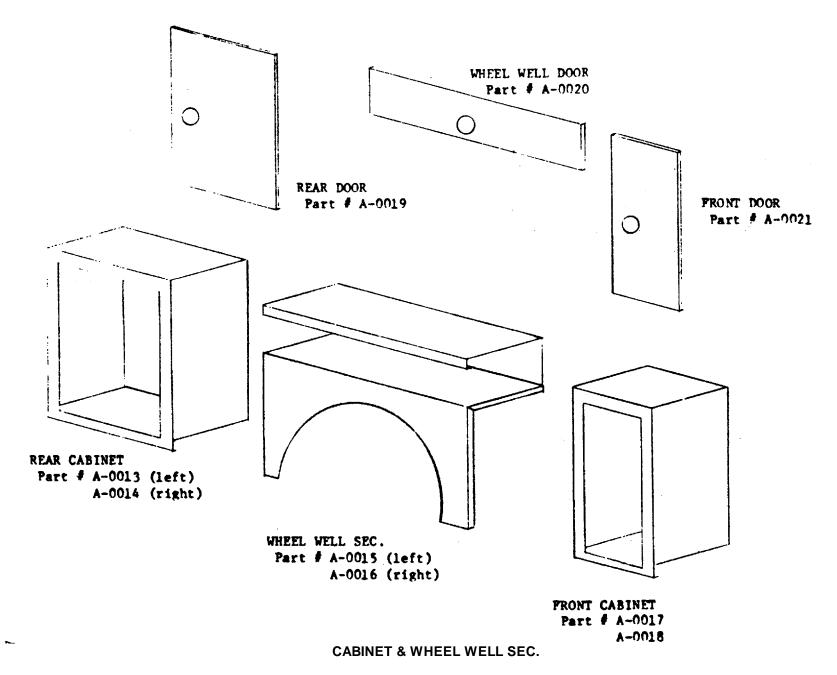
ALMONT WELDING WORKS, INC. PARTS LIST



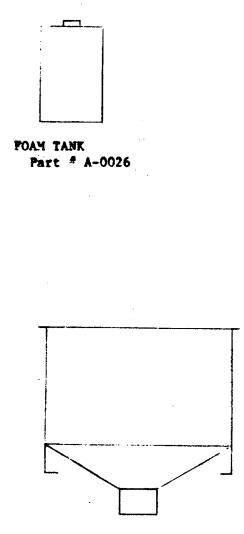


COMPLETE CABINET SIDE LESS DOORS & HARDWARE

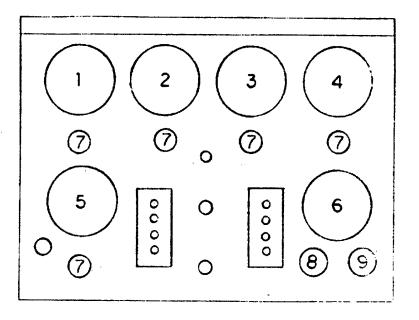
Part # A001 (left side) A-0012 (right side)



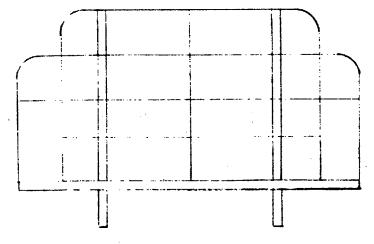




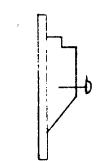
WATER TANK Part # A-0025

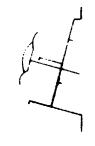


- 1-5 MARSE COMB. GAGES Part # 1-APE-24360-BPJ-001
- 6 S W TACH. Part # 82150
- 7 DARLEY VALVE Part # L978
- 8 WATER TEMP. GAGE Part # 82307 Sender 280ED
- 9 OIL PRESTRE GAGE Part # 82304 Sender 279A Light Sender D364L



BRUSHGARD Part # A-0022



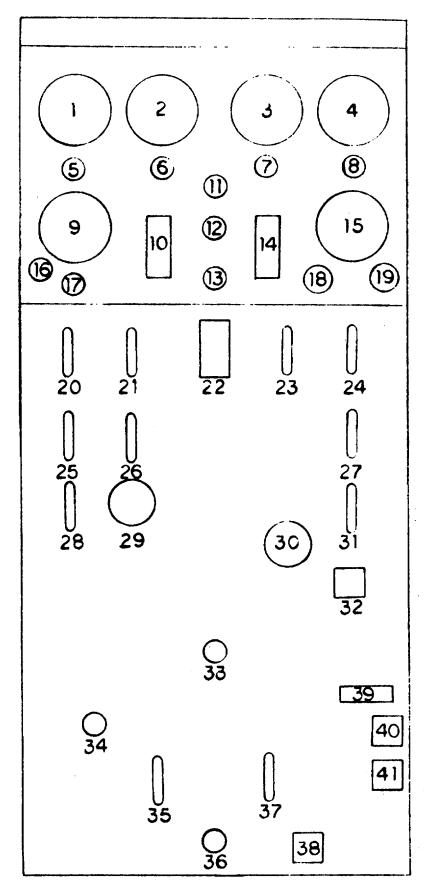


LADDER BRK. Part # A-0023

HOSE LAY Part # A-0924

- 1. Pressure Gauge ·
- #1 Discharge Gauge .
- 3. #1 Crosslay Gauge
- #2 Crosslay Gauge 4.
- 5-8. Gauge Dampers
- Vacuum Gauge 9.
- 10. Foam Level Gauge
- 11. Low Oil Pressure Indicator
- 12. Panel Light Switch
- 13. Pump Compartment Light Switch
- 14. Water Level Gauge
- 15. Tachometer
- 16. Throttle
- 17. Damper for Vacuum Gauge
- 18. Oil Pressure Gauge
- 19. Water Temperature
- 20. #1 Crosslay
- 21. #2 Crosslay
- Pressure Relief Valve
- 23. Water to Proportioner Valve
- 24. Tank to Pump Valve
- 25. Tank Fill Valve
- 26. Hose Reel Valve
- 27. Auxilary Suction Valve
- 28. #1 Discharge Valve
- 29. #1 Discharge Valve
- 30. Suction Manifold
- 31. Suction Manifold Valve
- 32. Pump Primer
- 33. #1 Discharge Drain
- 34. Engine Cooler
- 35. Pump Flush Valve
- Proportioner Control
 Foam to Proportioner Valve
- 38. Pump Drain

- 39. Test Gauge Panel
- 40. Battery #1 Charge Connection
- 41. Battery #2 Charge Connection



GAUGE & PUMP PANEL

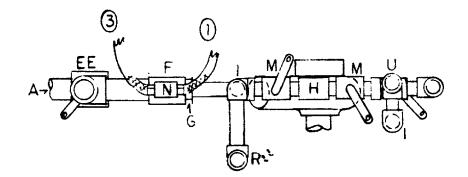
PRESSURE SIDE OF PUMP

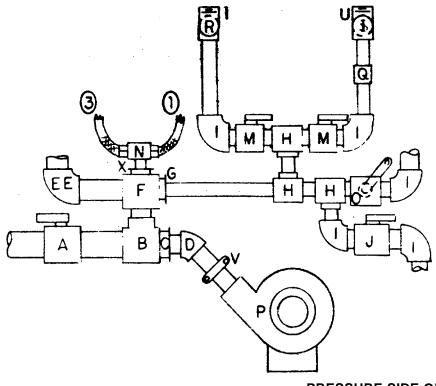
A - 2 1/2" Discharge Valve B - 2 1/2" Tee C - 2 1/2" - 2 Bushing D - 450 Elbow EE - 900 Elbow (Pressure to Relief Valve) F - 2 1/2" Cross G - 2 1/2" - 1 1/2" Bushing H - 1 1/2" Tee I - 1 1/2" - 900 Elbow J - Hose Reel Valve M - Cross Lay Valves N.- 1 1/2" Tee O - Tank Fill Valve P - Pump 250 GPM Q - 45° Elbow R,U - Discharge Elbow V - Victaulic Couplings

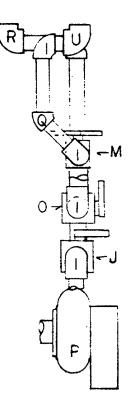
Note

1. Pressure Line to Eductor

3. Pressure Line to Foam Metering Valve







PRESSURE SIDE OF PUMP

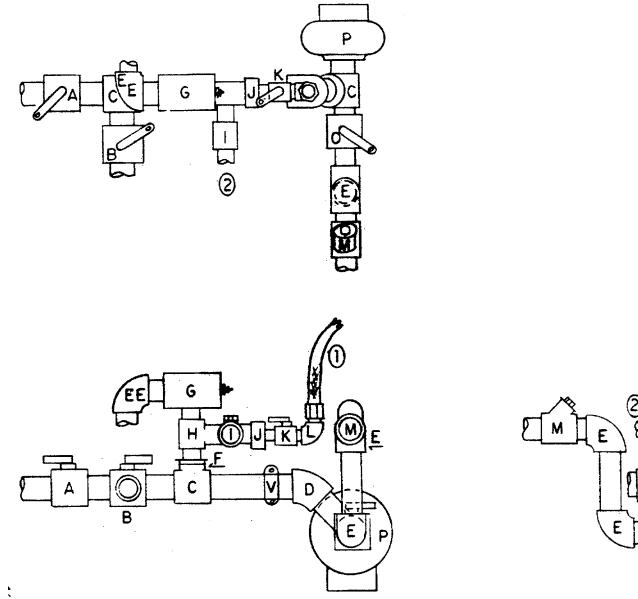
SUCTION SIDE OF PUMP

A - Suction Inlet Valve (left side) B - Suction Inlet Valve (rear) C - 3" Tee D - 3" - 450 Elbow E - 3" - 900 Elbow F - 3" to 2 1/2" Bushing G - Relief Valve From Pressure Side of Pump H - 2 1/2" Tee I - Check Valve
J - Eductor
K - Water to Eductor Valve (1 1/2")
L - 1 1/2" Elbow
M - Tank to Pump Check Valve
O - Tank to Pump Valve
P - Pump 250 GPM
V - Victualic Couplings

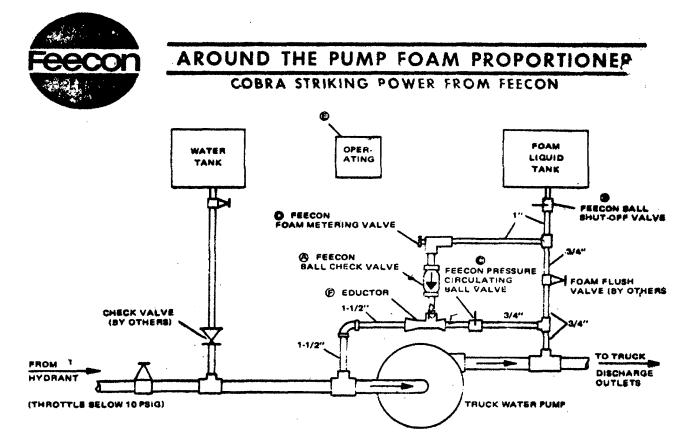
Note:

All Suction Piping is 3"

- 1. Pressure Lint to Eductor
- 2. Line From Foam Metering Valve



SUCTION SIDE OF PUMP INCLUDING RELIEF VALVE AND FOAM EDUCTOR



SCHEMATIC SHOWING THE FEECON AROUND-THE-PUMP PROPORTIONER

BILL OF MATERIAL						
ITEM	QUANTITY	DESCRIPTION				
Ø	1	1" Ball Check Valve				
B	1	1" Ball Valve				
C	1	%'' Ball Valve				
O	. 1	1" Metering Valve				
Ē	1	Instruction Plate				
Ē	1	Eductor				

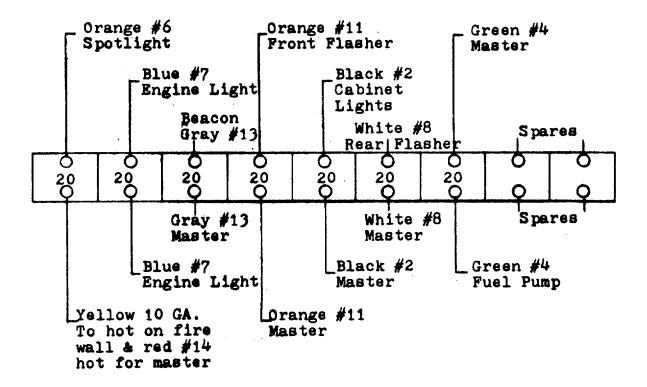
The Feecon Around The-Pump Proportioner

The Feecon Around The Pump-Proportioner, an economical foam proportioning system, is best juited for city, municipal and rural fire trucks where fire fighting foam is required to aid the fire fighter in combating hazards involving flammable liquid such as gasoline, oil, and similar hazardous liquids found in every day use in chemical, industrial plants, and small airports. The Feecon Around-The-Pump-Proportioner is designed to supply 400 gallons of water with a nominal 3% solution of Cobra 3 low expansion foam liquid. This is enough fire fighting capacity to supply one Feecon high capacity handline nozzles (total capacity 400 GPM). The Feecon Around-The-Pump-Proportioner can also be used to proportion Feecon A3F aqueous film forming foam liquid in capacities up to 200 GPM of foam solution. Easy to operate and maintain, the Feecon Around-The-Pump Proportioner offers the fire fighter that extra punch for combating difficult flammable liquid fires.

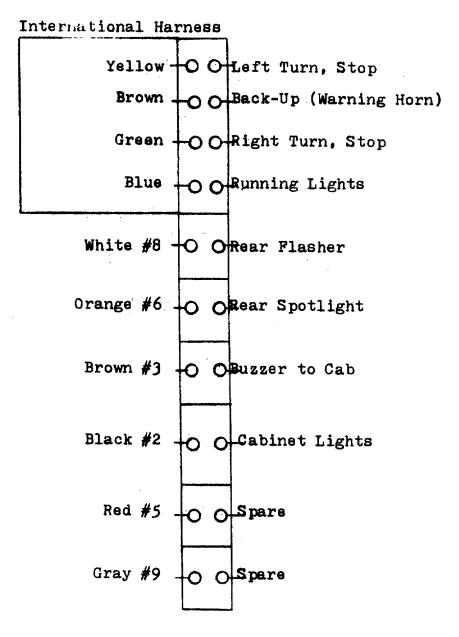


1 WALKUP DRIVE, WESTBORO, MASS. 01581 (617) 368-9137 TWX 710-390-0737





Engine Wiring Blue #16 Water Temperature Sender Yellow #1 Oil Pressure Sender White #12 Tachometer



Rear Junction Block

¹⁵

A.W.W. #	DISCRIPTION	MANUFACTER	MANUFACTER
		NAME	PART #
A-0025	LIGHT BAR	DIETZ	7-90101
A-0026	CLEAR LENS (LIGHT BAR)	"	77-79002
A-0027	SPOTLIGHT w/FLASHER	UNITY	10300 V
A-0028	RED WARNING LIGHTS (FRONT).	DIETZ	9-51204
A-0029	"""""`(ŔÉAR)	UNITY	300R
A-0030	ELECTRONIC SIREN w/P.A,	FEDERAL	PA20A
A-0031	BACKUP ALARM	PRECO	LDA-50
A-0032	SWITCH MOUNT	FEDERAL	SW-70
A-0033	ROCKER SWITCH	"	SW-6
A-0034	MICERPHONE (P.A.)	п	MNC
A-0035	FLASHER	WELDON	9150
A-0036	CIRUIT BREAKERS	VELVAC	59L-amprage
A-0037	ELEC; FUEL PUMP	S.W.	235-A
A-0038	MASTER BAT. SWITCH	COLE HERSEE	M705
A-0039	J-BLOCK BOX	BERG	2002
A-0040	CIRCUIT BREAKER BOX	"	21411
A-0041	UNDER HOOD AND PUMP COMP.LIGHT	SIGNAL STAT	9363 W
A-0042	CABINET LIGHT SWITEH	COLE HERSEE	9003
A-0043	" " SOCKET	"	2609
A-0044	DECK BUZZER SWITCH	11	90030
A-0045	" "	"	4099
A-0046	HOSE REEL REWIND SWITCH		9231
A-0047	LOW OIL INDIC.LIGHT	н	PC-36-RC
A-0048	STOP & TAIL LIGHT	WELDON	3-1010-0300
A-0049	BACKUP LIGHT	"	1-1010-0320
A-0050	LIC. PLATE LIGHT	ARROW	437-08-332
A-0051	MARKER LIGHT	"	050-04-222
A-0052	RED REFLECTORS	"	217-00-210
A-0053	DECK LIGHTS	UNITY	AG
A-0054	FOAM LEVEL GAUGE	M.C.PROD.	16.5 DEEP
A-0055	WATER " "	"	30 BEEP
A-0056	PUMP 250 G.P.M.	HALE	CBP-4 ENG.ROT.
A-0057	P.T.O.	CHELSEA	260-AAHP-W3xD
A-0058	P.T.O SHAFT	JOINT CLUCHT & GEAR	
A-0059	RELEIF VALVE	HALE	P25
A-0060	PRIMER	HALE	SMV-12
A-0061	AUX. HEAT EXCHANGER	"	EKE
A-0062	FOAM PROPORTIONER	FEECON CO.	HCAP-1.5
A-0063	1" FOAM " VALVES	AKRON	7810
A-0064	2.5"DISCHARGE VALVES	AKRON	3825
A-0065	3" SUCTION	"	830
A-066	3" Tank to Pump Valves	"	7830
A-0067	1 1/2" CROSSLAY VALVES	ELKHART	289IKKD
A-0068	I 1/2" TANK FILL VALVES	"	2891KKD
A-0069	1 1/2" REEL HOSE VLAVES	"	2891KKD
A-0070	3-2 1/2" ADP. FOR SUCTION HOSE	AKRON	338
A-0071	2 1/2" PLUG w/CHAIN	"	347
A-0072	2 1/2"-2 1/2" ADP. FORE DISCHARGE ELKH	ART	418-S
A-0073	2 1/2-1 1/2"	"	A-327
A-0074	1 a/2" CAP w/CHAIN	"	310
A-0075	90° MATTYDALE ELBOW	"	348
A-0076	45° Elbow	"	105
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A-0077	3/4" DRAINS (DISCHARGE)	AKRON	7
A-0078	TEST PANEL	n	44
A-0079	3" CHECK VALVE	GRINNEL	3310
A-0080	3" vICTAULIC	M.P.	STYLE 90
A-0081	2"	II	11 33
A-0082	2 1/2" "	"	66 66
A-0083	"T" PULL HANDLES	AKRON	1489
A-0084	HOSE REEL	HANNAY	EPF-28-23-24.
A-0085	3" HARD SUCTION HOSE	GOODRICH	3" x 8'-21/2"
A-0086	1" BOOSTER HOSE	"	1' x 50' (800 l
A-0087	HARD SUCTION HOLD DOWN CLAMP	UNV. FIRE. APP.	4 x 4 1/2" Dou,
A-0088	LADDER BRK. CLAMPS	ELKHART	775-7
A-0089		AKRON	601
A-0090	20' 2 SEC. LADDER	DUO SAFTEY	1000-A
A-0091	10' FOLDING (ATTIC) LADDER	"	585-A
A-0092	HOSE REEL NOZZLE 1"	AKRON	1708
A-0093		HANSON	92-C
A-0094	CROSS LAY ROLLERS	HANNAY	B-7" ve.
			B-2 1/2" Horz.
A-0095	SPARK ARESTER	WALKER	21580
A-0096	FOLD STEP	POLAR	900
A-0097		VALVAC	69023
A-0098		BELL	224V
A-0099	BAT. CHARGER OUTLET	HUBBEL	5552-B
A-Q100	" " PLUG	"	9758VY

SECTION V

VENDOR TECHNICAL MANUALS



INSTALLATION AND SERVICE INSTRUCTIONS

MODEL PA-20A INTERCEPTOR ELECTRONIC SIREN SERIES 2E

NOTICE

SIRENS - STATE OF CALIFORNIA

If this PA20A electronic siren is to be operated within the State of California, the Hi-Lo Signal must be disabled. The following modification must be performed by the installer to insure compliance with the California Highway Patrol siren certification program on PA20A sirens installed after July 1st, 1978.

- 1. Disconnect power connector and slide siren out of case (refer to paragraph 7-2.A. in this manual).
- 2. Locate resistor R14 on printed circuit board (see Figures 10 and 11 of this manual).
- 3. Solder a one inch piece of 24 GA. wire across R14, so that R14 is shorted out of circuit.
- 4. Reinstall siren into case and re-connect power connector.
- 5. Turn on power and set SELECTOR switch to HI-LO. Modification is correct if no siren sound is emitted.

Warranty

The Federal Signal Corporation warrants each of its new electronic sirens to be free from defective material and workmanship for a period of one year from date of purchase. Federal Signal Corporation will remedy any defect which under normal installation and operation discloses such defect; provided the unit is delivered, transportation prepaid by owner, to our factory for examination and such examination reveals that in our judgment a defect in material and/or workmanship exists. In all cases, Federal Signal Corporation will be sole judge of what constitutes defective material and workmanship.

Defects of workmanship and material under this warranty will be corrected at no cost to you for labor and material.

This warranty does not extend to any electronic siren which has been subjected to abuse, misuse; improper installation or violation of any instructions supplied by us, nor extended to units which have been serviced or modified at any facility other than our factory.

This warranty takes precedence over all other warranties expressed or implied and no representative or other person is authorized to assume for Federal Signal Corporation any other liability in connection with the sale of our electronic sirens.

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FEDERAL SIGNAL CORPORATION

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SECTION I GENERAL DESCRIPTION



Figure 1. Model PA-20A (Interceptor) Electronic Siren.

The FEDERAL Model PA-20A (Interceptor) Electronic Siren is a precision built, compact, solid-state unit of advanced design. The unit provides three distinct siren sounds plus provisions for public address, manual siren operation and the amplification of radio messages. The Interceptor ordinarily comes equipped for use with a 12 VDC power source (positive or negative grounded system). Any 75 watt commercial speaker (11-ohm impedance) may be used with the PA-20A. Your FEDERAL dealer has a full line of speakers that can be used with the PA-20A. By use of an auxiliary switch, such as a horn ring or foot switch, the unit can be operated manually. The unit can still be operated manually by depressing the SIREN button, after the auxiliary switch is installed. The microphone plug-in convenience of the PA-20A allows the user to utilize the vehicle's two way radio microphone, or an independent microphone. Other features of the PA-20A include:

• Output isolation transformer to reduce the hazard of shorting the output transistors caused by instantaneous shortcircuits across the load, i. e. rubbing of speaker coil.

- Blocking transistor to increase thermal stability.
- Blocking diode to prevent damage to the unit if the power leads are reversed.

• Silicon transistors for maximum reliability. * Constructed to facilitate servicing.

SECTION II SPECIFICATIONS

Input Voltage	10 VDC to 14.6 VDC
Standby Current	500 mA maximum (MANUAL position)
Operating Current	6 amperes (WAIL position, 1 speaker) 10 amperes (WAIL position, 2 speakers)
Operating Temperature	30°C to + 65°C
Frequency Range	500 Hz to 1400 Hz
Cycle Rate	Wail - 10 cycles/ minute Yelp - 180 cycles/minute Hi-Lo- 45 cycles/ minute
Voltage Output (13.6 VDC input)	40 Vpp (11-ohm resistive load) 38 Vpp (5.5 ohm resistive load)
Audio Distortion	Less than 10% from 300 Hz to 3000 Hz at output power levels of 1/10 watt to 25 watts
Auxiliary switch leakage resistance	10K ohms, minimum
Size Net Weight	
Shipping Weight	6 pounds

NOTE

The following parameters were obtained with the radio input potentiometer (R30) and GAIN control set at maximum. The voltages shown are needed to obtain the maximum sine wave output of 17 volts RMS.

Radio Input	Impedance, 1800 ohms Voltage, 0.55V RMS
Carbon Microphone Input	Impedance, 3500 ohms Voltage, 0.15V RMS
Magnetic Microphone Input	Impedance, 20K ohms Voltage, 0.03V RMS

SECTION III

INSTALLATION

3-1. UNPACKING.

After unpacking the Model PA-20A, examine it for damage that may have occurred in transit. If the equipment has been damaged, file a claim immediately with the carrier stating the extent of the damage. Carefully check all envelopes, shipping labels and tags before removing or destroying them. The radio interconnecting cable, if ordered, is packed in a separate carton. The packing carton in which the electronic siren is packed contains:

- A. Model PA-20A Electronic Siren.
- B. Mounting bracket.
- C. Envelope containing mounting hardware.
- D. Power Cable

3-2. MOUNTING BRACKET.

The electronic siren comes equipped with a swinging bracket which enables it to be mounted in a variety of positions (see figure 2). Positioning the bracket above the unit allows mounting to the underside of the dash. Positioning the bracket below the unit will permit mounting above the dash or on any horizontal surface. The unit should be mounted in a position that is both comfortable and convenient to the operator. After determining the mounting position, proceed as follows: CAUTION: The unit must be installed in an adequately ventilated area. Never install in the path of air flow from heater ducts.

- A. Use the mounting bracket as a template and mark two positioning holes.
- B. Drill two '-inch mounting holes.

C. Mount the bracket with the ;-20 x 3/4 hexagon head machine screws, 41 20 hexagon nuts and 4-inch split lock washers as shown in figure 3.

3-3. ELECTRONIC SIREN TO MOUNTING BRACKET.

The height of the unit above or below a surface may be adjusted by selecting a set of mounting holes in the bracket. Mount the unit to the bracket with the two $4-20 \times 5/16$ hexagon head machine screws as shown in figure 3. The unit may be tilted to any convenient position.

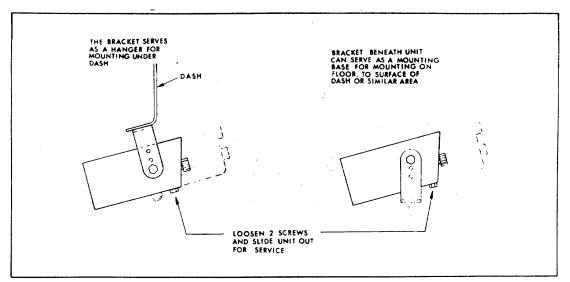


Figure 2. Positioning Unit in Mounting Bracket.

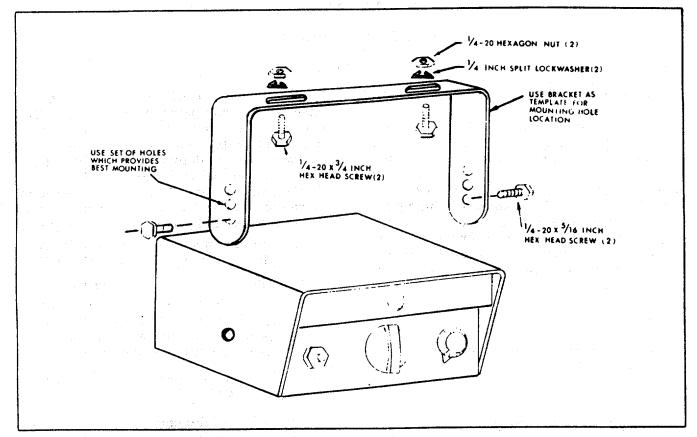


Figure 3. Installation of Mounting Bracket.

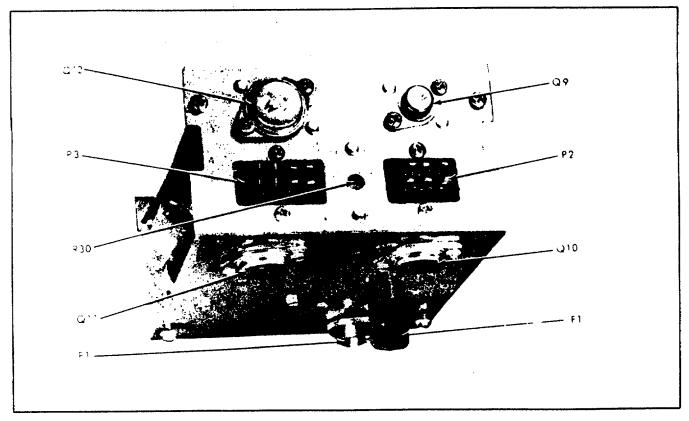


Figure 4. Rear View of Electronic Siren.

3-4. POWER CABLE INSTALLATION.

The power cable included in the amplifier carton is equipped with an eight prong plug that mates with the connector (P3) on the rear of the electronic siren (see figure 4). The various wires on the connector must be connected as described below.

A. Speaker.

The unit is designed to operate with one 11-ohm impedance speaker, or two 11-ohm impedance speakers connected in parallel.

Speakers are not included as part of the electronic siren. FEDERAL speakers are weatherproof and may be installed in any convenient location; on the roof, fender, behind the grille, etc. Any special mounting instructions applicable to the model of speaker you have selected will be found in the speaker carton. The 12-inch two conductor zip cord (P3, pins 5 and 6) should be connected to the speaker leads. Either wire may be connected to either speaker lead, since polarity is not a factor when using a single speaker. It is recommended that the wire splices be soldered and insulated with tape. If soldering equipment is not available, use the two nuts furnished with the speaker.

When two speakers are used, it is necessary to connect the speakers in parallel and in-phase for optimum performance. This can be accomplished by connecting the two speaker leads marked "1" to the same power cable lead, and the two speaker leads marked "2" to the other power cable lead (see figure 5).

B. Connection to Power Source.

The electronic siren will operate in vehicles having either a negative or positive grounded system. Take care to insure battery charging voltage does not exceed 14.6 VDC at any time. Operating power can be obtained by making connections directly at the battery terminal, or to the hot side of the ignition switch. Determine the type of vehicle ground system, and perform the applicable procedure described below. When the negative terminal of the battery is connected to the vehicle frame, the vehicle has a negative grounded system. When the positive battery terminal is connected to the vehicle frame, the vehicle has a positive grounded system.

1. Negative Ground Installation.

Connect the red lead (P3, pin 1) to the positive (hot) side of the battery terminal or ignition switch. Connect the black lead (P3, pin 2) to the vehicle frame (see figure 6). When making connections directly to the battery terminal, proceed as follows:

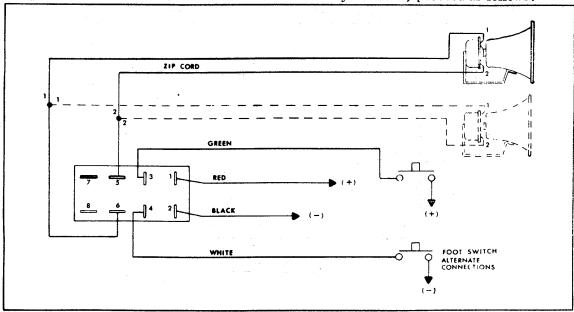


Figure 5. Power Cable Connections - Foot Switch Control.

- a. Drill a 1/2-inch hole through the firewall on the battery side of the vehicle.
- b. Place a grommet in the newly drilled hole.
- c. Feed the black and red leads through the grommet and connect as previously described.

NOTE

To protect the wire when connected to the battery terminal, use an in-line fuseholder and 20ampere fuse (not supplied). The fuseholder should be installed as close to the battery as practical.

2. Positive Ground Installation. Connect the black lead to the negative (hot) side of the battery terminal or ignition switch. Connect the red lead to the vehicle frame.

C. Foot Switch.

A foot switch is provided to allow foot control of the siren in addition to the control provided by the front panel SIREN button. Find a convenient mounting position on the vehicle floorboard and proceed as follows: 1. Use the foot switch as a template and mark two positioning holes on the floorboard.

2. Drill two 0.128 diameter (#30) holes into the floorboard at the positioning marks.

3. Connect one terminal of the foot switch to the green lead (P3, pin 3), and the other terminal to the positive (hot) side of the battery terminal (negative grounded systems). As an alternate method, connect one terminal of the foot switch to the white lead (P3, pin 4) and the other terminal to the vehicle frame or other good ground point (see figure 5).

- 4. Mount the foot switch to the floorboard with the two #8 x 3/4 round head screws (supplied).
- D. Horn Switch.

Included with the electronic siren is a SPDT switch (toggle switch) which when properly installed, allows the user to activate the siren by depressing the horn button. When installing the horn switch in a vehicle with a negative ground system with a grounded horn ring, connect as shown in figure 6. See figure 7 when installing the horn switch in a positive ground vehicle with a grounded horn ring, or in a negative ground vehicle with an ungrounded horn ring. Locate a convenient mounting position for the toggle switch (supplied) and proceed as follows:

1. Drill a 1/2-inch diameter hole into the dash at the selected mounting location. Take care not to damage wires located behind the dash when drilling.

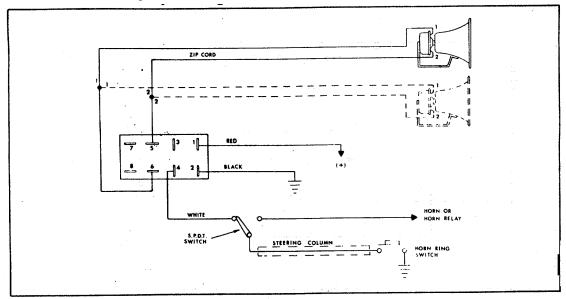


Figure 6. Power Cable Connections Horn-Ring Control (negative ground vehicle with grounded horn ring).

2. Connect a length of wire from one terminal of the toggle switch to the horn or horn relay. A screw terminal is usually provided on the horn relay. If a screw terminal is not provided, connect the wire to the lead that connects to the horn relay.

3. Connect the other terminal of the toggle switch to the white lead (P3, pin 4), if the vehicle has a negative ground system with a grounded horn ring (see figure 6). When the vehicle has a positive ground system with a grounded horn ring or a negative ground system with an ungrounded horn ring, connect this terminal of the toggle switch to the green lead (P3, pin 3) (see figure 7).

4. Connect the center terminal of the toggle switch to the horn ring switch as shown in figure 6 or 7.

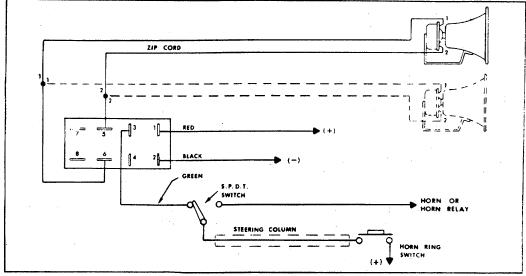
5. Place the hexagon nut on the threaded porton of the toggle switch. Insert the threaded portion of the toggle switch through the hole in the dash and secure with the knurled nut.

3-5. RADIO INTERCONNECTING CABLE.

The radio interconnecting cable has a six prong connector that plugs into P2 at the rear of the electronic siren. After installation of the cable, the electronic siren has the provision to broadcast two-way radio messages over the loudspeaker. Also, the two-way radio microphone can be used to take advantage of the electronic siren's public address feature. Refer to the instruction sheet furnished with the radio interconnecting cable for proper connection.

3-6. MICROPHONE CONNECTION.

The electronic siren's public address feature can be utilized after the connection of a microphone. The two-way radio microphone can be used after the connections described in paragraph 3-5 have been made. The electronic siren has a receptacle at the bottom of the unit which is used to interconnect a separate microphone. The unit will operate with a magnetic, controlled magnetic (noise canceling), carbon or transistorized magnetic microphone. A slide switch (S3) located just inside the chassis, in the front and to the left of the pilot lamp (see figure 10), must be set according to the type of microphone used. When at controlled magnetic microphone is used, set the switch to the position marked "M". If a carbon or transistorized microphone is used, set the switch to the position marked "C".





(positive ground vehicle with grounded horn ring or negative ground vehicle with ungrounded horn ring).

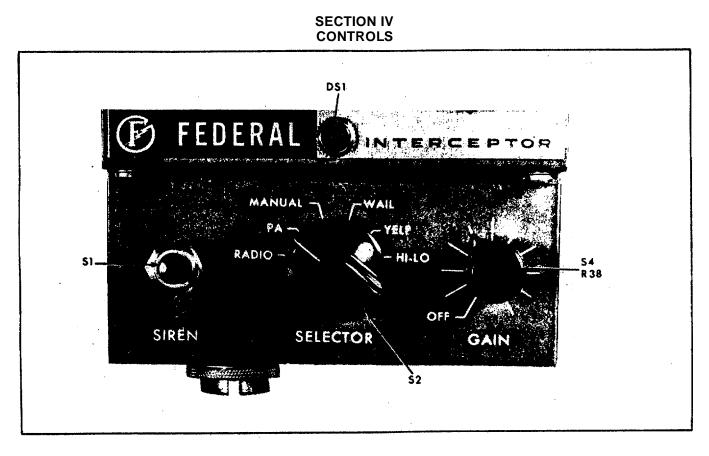


Figure 8. Front Panel View.

All controls utilized during normal operation of the electronic siren are located on the front panel (see figure 8).

4-1. GAIN CONTROL.

The GAIN control is used to turn the electronic siren on and off. Also, it is used to control the volume when the electronic siren is used for public address or radio amplification. Clockwise rotation of this knob turns the unit on. Further rotation increases voice volume in the public address or radio-amplification mode. The GAIN control does not control the volume of the siren.

Radial lines around the knob can be used for setting the volume to a predetermined level. The maximum clockwise setting of the control will be determined, in most cases, by the point at which feedback or "squeal" occurs. This will depend upon the microphone gain, open windows, speaker placement, proximity of reflecting surfaces (buildings or other vehicles), etc. Adjust the GAIN control to a position just below the point at which feedback occurs.

4-2. SIREN BUTTON.

The SIREN button, located on the left-hand side of the front panel, is used to activate the siren when the SELECTOR switch is in the MANUAL position.

4-3. SELECTOR SWITCH.

The SELECTOR switch is a six position rotary switch used to select the mode of operation. If a common microphone is used for the electronic siren and two-way radio, the switch will disconnect the microphone from the radio's transmitter section only when the switch is set to P. A. The following are positions on the SELECTOR switch:

A. <u>RADIO</u>.

In this position, incoming radio messages are amplified by the electronic siren. Volume can be controlled by the GAIN control. The radio volume may be adjusted to match the P.A. volume by means of the resistor control located on the rear panel of the electronic siren (see figure 4).

В <u>Р.А.</u>

In this position the electronic siren may be used as a public address system. Volume is controlled by the GAIN control. This is the only position in which the microphone is disconnected from the two-way radio's transmitter, if a common microphone is used for both the electronic siren and two-way radio.

C. <u>MANUAL.</u>

In this position it is possible to operate the siren by depressing the front panel SIREN button. The siren can also be activated by means of an auxiliary switch, such as a foot switch or horn ring button. Operation will be similar to that of a conventional electro-mechanical siren.

D. WAIL.

In this position the siren will produce a continuous "wailing" sound, up or down in frequency.

E. <u>YELP</u>.

In this position a continuous rapid "warbled' tone is generated.

F. <u>HI-LO</u>.

In this position a two-tone sound will be heard. This distinctive tone may be reserved for an)y special indication or situation.

SECTION V OPERATION

5-1. TURNING THE UNIT ON OR OFF.

To turn the unit on, rotate the GAIN control clockwise until a click is heard.

The pilot lamp will illuminate. To turn the unit off, rotate the GAIN control fully counter-clockwise.

5-2. RADIO OR PA OPERATION.

Set the SELECTOR switch to RADIO or PA. Adjust the GAIN control to a position just below the point at which feedback occurs. When maximum volume in the P. A.

position is required, hold the microphone close to your lips and speak in a loud voice.

The radial lines around the GAIN control can be used for pre-setting the level.

5-3. WAIL, YELP OR HI-LO OPERATION.

Set the SELECTOR switch to the desired siren position.

5-4. MANUAL SIREN OPERATION.

Set the SELECTOR switch to the MANUAL position. Depress the SIREN button or, if connected, activate the auxiliary switch.

To activate the siren from the horn ring switch, the toggle switch must be in the on position.

9

SECTION VI THEORY OF OPERATION

6-1. GENERAL.

The major circuitry consists of a wailyelp timing oscillator, hi-lo timing oscillator, sweep oscillator, microphone pre-amp lifier, emitter follower, driver amplifier, and output amplifier. See figure 11.

6-2. WAIL YELP TIMING OSCILLATOR.

In the WAIL or YELP position, Q1 and Q2 function as a timing oscillator. The output of the timing oscillator determines the frequency of operation of the sweep oscillator (Q5 and Q6). Initially, assume SELECTOR switch set to WAIL and Q1 on, C3 charges through R4 and the emitter-collector junction of Q1. When C3 is sufficiently charged, Q1 cuts off which turns on Q2. C3 discharges through R10. The charge and discharge of C3 determines the repetition rate (10 cycles/minute) in the WAIL mode. In the ELP mode, C4 has a similar function as C3. The repetition rate in the YELP mode in approximately 180 cycles/minute. An RC network (C6, R12 in WAIL and C5, R11 in YELP) develops a slowly rising and falling voltage having a triangular shape. This rising and falling voltage is applied to the sweep oscillator and determines the frequency of operation.

With the SELECTOR switch set to MANUAL, Q1 and Q2 no longer function as a timing oscillator. When a positive source is connected through an auxiliary switch to P3, pin 3 or when S1 is depressed, Q2 turns on and allows C6 to charge. While C6 charges, the sweep oscillator frequency increases.

After releasing S1 or the auxilliary switch, Q2 turns off and C6 discharges through R12 causing the sweep oscillator frequency to decrease. The circuit will function in a similar manner when a negative source is connected through an auxiliary switch to P3 pin 4.

6-3. HI-LO TIMING OSCILLATOR.

The HI-LO timing oscillator functions only when the SELECTOR switch is set to the HI-LO position. When

the switch is set to HI-LO, C7 charges through the basemitter junction of Q3. When C7 charge voltage reaches the trip point of Q4, it immediately discharges through the anodecathode junction of Q4. The charge and discharge of C7 causes a rising and falling voltage, with a repetition rate of approximately 45 cycles,/minute, which turns Q3 on and off. A square wave at the Q3 collector turns CR2 on and off. When CR2 is not conducting the low tone is generated, and when CR2 conducts (R15 in parallel with R13) the high frequency tone is generated. The square wave at the junction of R13 and R14 is applied to the sweep oscillator.

6-4. SWEEP OSCILLATOR.

The rising and falling voltages from the timing oscillators is applied to the junction of R24 and R25. The voltage at this point determines the bias voltage at Q5 and Q6, which function as an astable multivibrator. CR4 andCR5 are used to set the DC bias of the transistors. The output of the sweep oscillator is a series of square waves, frequency determined (500 Hz to 1400 Hz) by the bias voltage. This frequency increases when the bias voltage increases and decreases when the bias voltage decreases.

6-5. MICROPHONE PRE-AMP.

The microphone pre-amplifier is used only when S3 is set to the "M" position (magnetic microphone) and the SELECTOR switch is set to PA. The signal from a magnetic microphone is applied through S3 to the base of Q7. The low level signal is amplified by Q7, flows through S3, S2G and the GAIN control to the base of Q8.

6-6. EMITTER FOLLOWER AND DRIVER.

An output from the sweep oscillator, microphone preamplifier, carbon or transistorized microphone, or twoway radio is applied to the base of Q8. Transistor Q8 functions as an emitter follower.

10

providing a high input and low output impedance. The output of Q8 is applied to the driver (Q9) amplified and transformer coupled to the output stage.

6-7. OUTPUT AMPLIFIER.

Transistor Q10 and Q11 operate as a Class B, pushpull amplifier. The output of the amplifier is transformer coupled to the speaker. Transistor Q12 and diode CR6 provide protection should the power leads be reversed. Q12, along with resistors R46 through R49 help in preventing thermal runaway.

SECTION VII SERVICE AND MAINTENANCE

7-1. SERVICE AND REPAIR.

Most of the component electronic parts used in the Interceptor are standard items that can be obtained from any radio or electronics supply shop.

To aid the repairman in isolating a malfunction and locating components, a top chassis view (figure 9), rear chassis view (figure 4), component location diagram (figure 10), and schematic diagram (figure 11) are provided. Any competent radio repairman or electronic technician should have no difficulty in tracing and correcting a malfunction, should any occur. When servicing the Interceptor, the voltage chart (table 1) and troubleshooting chart (table 2) can be useful in isolating a malfunction. For emergency replacement of any of the small components, care must be used when soldering. Heat easily impairs transistors, capacitors and circuit boards. It is therefore advisable to use longnose pliers or a similar heat sink on the lead being soldered.

When replacing output transistors, insure that a matched pair is used. Replace only with Federal part number 125B403 or Motorola 2N1560. Other transistors will burn-out after a very short time. Also, use heat sink compound on both sides of the mica. Insure that the mica is installed properly. Improper installation of mica could cause a short-circuit. Securely tighten transistor mounting screws.

NOTE

Most cases of defective output transistors are caused by a defective speaker (short-circuited voice coil). Make certain that the speaker is not defective prior to installing the repaired Interceptor. The factory can and will service your equipment or assist you with technical problems, should any arise, that cannot be handled satisfactorily and promptly locally.

Communications and shipments should be addressed to: Customer Service Dept.

Federal Signal Corporation 136th and Western Avenue Blue Island, Illinois 60406

If any unit is returned for adjustment or repair, it can be accepted only if we are notified by letter or phone in advance of its arrival. Such notice should clearly indicate the service requested and give all pertinent information regarding nature of malfunction and, if possible, its cause.

7-2. MAINTENANCE.

A. Removal from Mounting Bracket.

When removing the Interceptor from the mounting bracket, loosen the two hexagon head screws on the underside of the unit, near the front edge (see figure 2). It is not necessary to remove the mounting bracket from location or the siren case from the bracket. Disconnect all plug-in connectors. Slide the entire chassis and control panel out of the case.

B. Removal of Circuit Board.

The board is attached to the chassis by four Phillipshead screws. Removing these screws permits the board to be pivoted out of the chassis without breaking any of the electrical connections, and allowing ample access to all components.

C. Symmetry Adjustment.

The symmetry of the output waveform has been preadjusted at the factory and will not ordinarily require readjustment unless Q5 or Q6 have been replaced. To perform the symmetry adjustment, proceed as follows:

- 1. Remove the speaker leads connected between, pins5 and 6. Connect an 11-ohm load across ins 5 and 6.
- 2. Connect an oscilloscope across pins 5 and 6.
- 3. Set the SELECTOR switch to WAIL, YELP OR HI-LO. Adjust R21 for a perfect square wave on the oscilloscope.

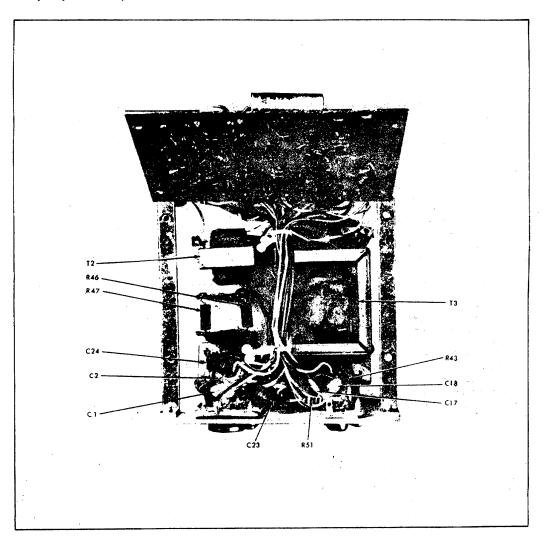
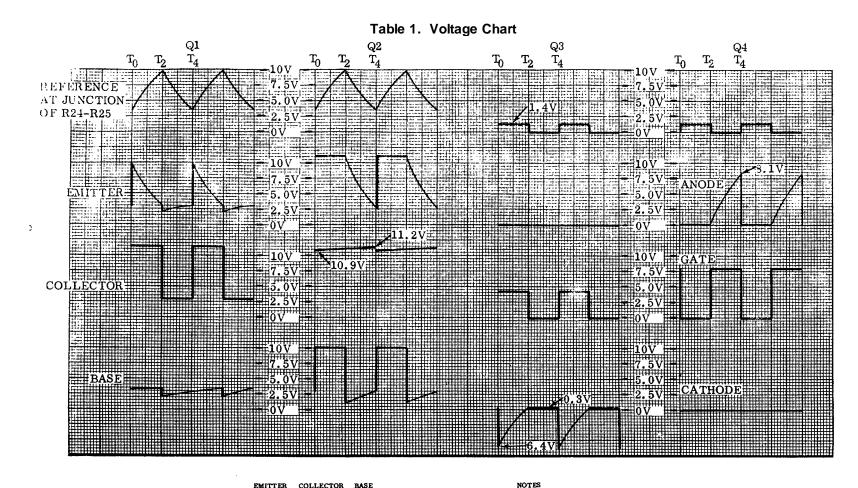


Figure 9. Top Chassis View.

12



	EMITTER	COLLECTOR	BASE	NOTES
ୟୁଟ	1.7 VDC	3.7 VDC	1.6 VDC	1. GROUND CHASSIS TO B- BEFORE ATTEMPTING TO TAKE ANY MEASUREMENTS.
ୟ	1.6 VDC	3.7 VDC	1.5 VDC	2. ALL MEASUREMENTS MADE WITH NEGATIVE LEAD OF OSCILLOSCOPE OR VTVM CONNECTED TO NEGATIVE POWER LEAD.
Q7	0.48 VDC	9.3 VDC	1.09 VDC	3. Q1.2.5 AND 6 MEASUREMENTS TAKEN WITH SELECTOR SWITCH SET TO WAIL.
Q8	1.28 VDC	12.6 VDC	1.8 VDC	
	0.05 VAC	0.0 VAC	0.5 VAC	Q3 AND Q4 MEASUREMENTS TAKEN WITH SELECTOR SWITCH SET TO HI-LO.
Q9	1.28 VDC 0.05 VAC	12.3 VDC 2.9 VAC	0.65 VDC 0.05 VAC	 Q7 THROUGH Q12 DC MEASUREMENTS TAKEN WITH SELECTOR SWITCH SET TO RADIO AND NO SIGNAL INFU'T.
Q10	13.2 VDC 0.14 VAC	0.0 VDC 7.4 VAC	13.0 VDC 0.32 VAC	 Q8 THROUGH Q12 AC MEASUREMENTS TAKEN WITH SELECTOR SWITCH SET TO RADIO WITH AN INPUT SIGNAL OF 1 VRMS AT 1 KHz- GAIN CONTROL SET AT APPROXIMATE MID-POINT.
Q11	13.2 VDC	0.0 VDC	13.0 VDC	
	0.18 VAC	7.4 VAC	0.4 VAC	
Q12	13.6 VDC	13.6 VDC	13.2 VDC	
	0.0 VAC	0.0 VAC	0.0 VAC	、

Table 2. Troubleshooting Chart.

<u>TROUBLE</u>

Fuse blows.

No siren in any position. Radio and P. A. function normally.

No siren. Unit "chirps" in YELP position.

Little or no volume in all positions.

Low output in all positions.

Little or no volume in RADIO position. P.A. is OK.

Little or no output when magnetic microphone is used.

No output from carbon or transistorized microphone.

No HI-LO. All other tones OK.

No radio or P. A. Siren tones OK.

Steady tone in all siren positions except MANUAL and HI-LO.

WAIL tone falls only. Manual tone only when SIREN button is held (does not coast down, but stops immediately when SIREN button is released).

WAIL tone rises to steady tone and holds. All other tones $\ensuremath{\mathsf{OK}}$.

YELP tone falls only. All other tones OK.

Steady tone in YELP position. All other tones OK.

In MANUAL position, siren emits a steady or intermittent tone even though auxiliary switch (horn ring or foot) is not operated.

Excessive noise in P.A. position only.

Buzz in loudspeaker when engine or radio is operated.

Short siren blast in MANUAL position. Sometimes heard when vehicle is being started.

Frequency of siren affected by flashing lights.

PROBABLE CAUSE

One or more output transistors (Q10, Q11) defective and/or defective blocking transistor Q12.

Open capacitor C15.

Open capacitor C6 or C7

Defective loudspeaker.

Defective transistor Q10, (11, or Q12.

Improper adjustment of R30.

Microphone transfer switch in "C" position. Open capacitor C11. Defective microphone.

Microphone transfer switch in "M" position.

Defective transistor Q3 or Q4.

Open capacitor C13 or C14.

Defective resistor R3 or R5.

Open capacitor C6.

Open capacitor C3.

Open capacitor C5.

Open capacitor C4.

Defective transistor Q5 or Q6. Electrical leakage at auxiliary switch due to dirt or moisture. (Switch resistance should not be less than 10K ohms.) Short-circuit in microphone. There should be an open circuit between pin 2 and shell of microphone plug.

Open capacitor C20.

Defective capacitor C8 and/or defective diode CR3.

Voltage drop in power lead. Connect amplifier directly to battery terminal.

SCHEMATIC SYMBOL	DESCRIPTION	PART NUMBER	SCHEMATIC SYMBOL	DESCRIPTION	PART NUMBER
	* RESISTORS			CAPACITORS	
R1,28 R2,11,12	1.5K ohm 27K ohm, 5%	100A220 100A244	C1,2,21 Ceramic Disc	0.01 UF	107A223
R3 R4	10K ohm, 5% 39K ohm, 5%	100A257 100A260	C3,6 Tantalum	82 UF, 10V	107A624
R5 R6	18K ohm, 5% 470 ohm	100A258 100A255	C4,5 Tantalum	4.7 UF, 15V	107A678
R7,29 R8, 35	1K ohm 150 ohm	100A233 100A238	C7 Tantalum	3.9UF	107A642
R9 R10	8.2K, 5% 100K ohm, 5%	100A233 100A262	C8,19,20 Electrolytic	250 UF, 15V	108A107
R13 R14 R15,33 R16	100K ohm 10K ohm 27K ohm 330K ohm	100A222 100A207 100A254 100A212	C9,10 C11,22 C12,17 Ceramic Disc	0. 0068 ITF ,Mylar 0.47 U.F Mylar 0.005 U F,	107A413 107B405 107A211
R17 R18	150K ohm 3.3K ohm	100A226 100A209	C13,14 Tantalum	10 UF, 10V	107A634
R19,23,31 34, 52	4.7K ohm	100A224	C15 C18	0.1 U F, Mylar 0.05 UF	107A406 107A214
R20,22 R21	2.7K ohm, 5% 5K ohm,	100A256 105A204 potentiometer	Ceramic Disc C23 C24	0.22 UF, Mylar 0.47 UF1, Mylar	107A414 107A405
R24, 25 R26,27 R30	68K ohm, 5% 22K ohm, 5% 500 ohm,	100A261 100A259 105A212	CR1,2,3,4	DIODES T151	115B101
R32,37	270K ohm	100A227	CR6	1 Amp. Rectifier	1136101
R36	22K ohm	100A208		TRANSFORMERS	
R38	50K ohm,	106A105 potentiometer	T1 T2	Transformer Driver Transf.	120B123 120B125
R41 R42 R43	680 ohm 10 ohm 1 8K ohm 1/2 wott	100A231 100A251 100A339	Т3	Output Transf. SWITCHES	120B124
R44 R45	1.8K ohm, 1/2 watt 120 ohm,5%,2 watt 1.0 ohm, 1 watt	103A105 103A101	S1 S2	Pushbutton, SIRIN Rotary, SELECTOR	122A117 122B140
R46,47 R50 R51	0.05 ohm, 5 watt 220 ohm 3.3K ohm;1/2watt	103A208 100A219 100A340	S3 S4	Slide ON-OFF, Part of R38 MISCELLANEOUS	122B119 106A105
	* Unless otherwise spec all RESISTORS are in o it 10%, 4 watt. TRANSISTORS		P1 P2 P3 F1 DS1	Microphone connector 6-Pin Jones Plug 8-Pin Jones Plug Fuse, 15 ampere, 3AG Pilot lamp, #53	139b134 140A113 140A114 148A107 149B101
Q1,2,3,5,6, 7,8 Q4	2N2925 D131TI, PUT	125C119 125C310	551	Fuseholder Knob, Volume Control Knob, Function Switch	143A106 141A102 141A103
Q9 Q10,11	RCA 40316, Driver 1 2N1560,(Motorola 12	125B410		Pilot lamp holder and jewel	147A104
only) Q12	Blocking	125B406		Terminal strip Circuit Board (with parts installed).	229A115 200D389
		1	15		

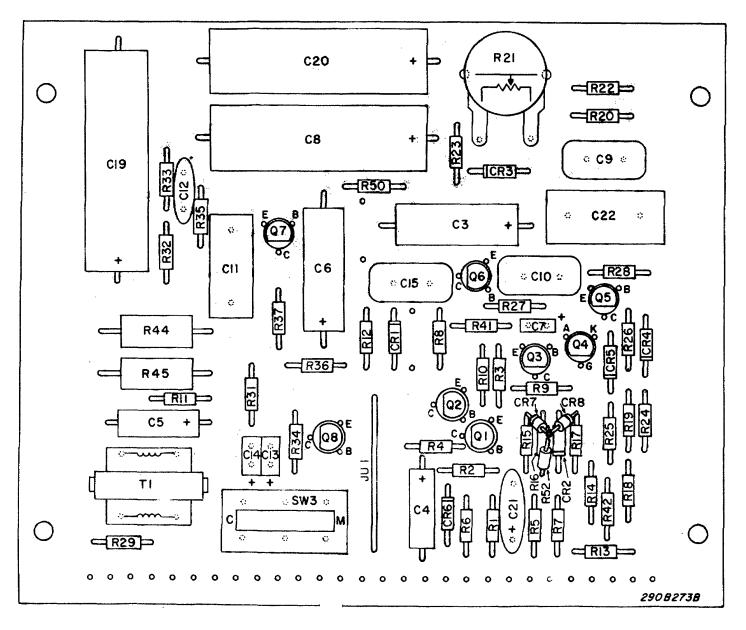


Figure 10. Component Location Diagram.

16

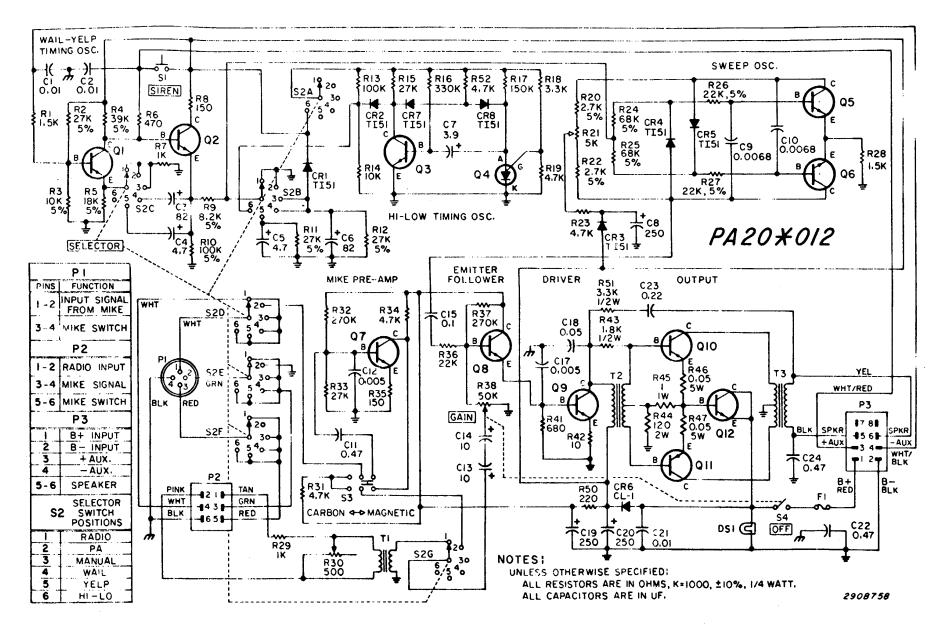


Figure 11. Schematic Diagram



FIRE PUMPER INSTALLATION FOR LIQUID LEVEL FLUIDMETER

- STEP 1

330 East Jericho Tpke. Smithtown, NY 11787 USA (516) 979-6333 (212) 362-8565 Toley: 64-7034

Telex: 64-7034 () e 0 STEP 4 FOUR LIGHT **STEPS** COMPLETERS PANELS INDICATING BOX (EP) 1. BULB Drill 11/2" (38mm) hole in top of æ water tank. RED 2. Insert sensor thru newly drilled LENS hole in top of tank and using р (¹ sensor head as a template, transfer 15 drill and tap (4) 1/4" (6mm) screws. After tapping, firmly screw down sensor and route cable to REEW back of meter panel. 3. Using bezel plate as a template, mark off holes on meter panel and WIRES FROM BOTTOM OF BOX drill (4) 3/4" (19mm) holes and (2) 3/16" (5mm) holes. Then sandwich together as shown with furnished STEP 5 BEZEL mounting screws. PLATE

- **4.** Plug molded connectors together.
- 5. Splice yellow wire to ignition or hot line as very last step.

11-FOOT EXTENSION CABLES FURNISHED ON REQUEST.

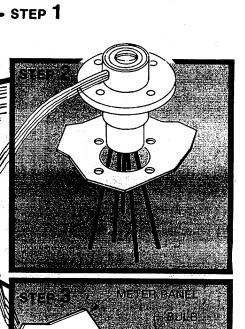
CHECK ALL GAGES DAILY FOR PROPER OPERATION.

IF THIS UNIT IS TO BE USED ON A FIBERGLAS OR CHASSIS ISOLATED TANK, A GROUND WIRE IS NEEDED FROM THE SENSOR HEAD TO THE READOUT BOX AND TRUCK CHASSIS.



FIRE PUMPER INSTALLATION FOR FOAN FLUIDNETER

330 East Jericho Tpke. Smithtown, NY 11787 USA (516) 979-6333 (212) 362-8565 Telex: 64-7034



PLATE

AMBER Enig

STEPS

- Cut a 2½" (64mm) hole in top of foam tank.
- Insert sensor thru hole in top of foam tank and using sensor flange as a template, transfer drill and tap (4) 1/4" (6mm) screws. After tapping, firmly screw down sensor and route toward back of meter panel. Grasp probes for insertion thru hole and allow to flare in tank.
- **3.** Using bezel plate as a template, mark off holes on meter panel and drill (4) 3/4" (19mm) holes and (2) 3/16" (5mm) holes. Then sandwich together as shown with furnished mounting screws.
- 4. Plug molded connectors together.
- 5. Splice yellow wire to ignition or hot line as very last step.

11-FOOT EXTENSION CABLES FURNISHED ON REQUEST.

CHECK ALL GAGES DAILY FOR PROPER OPERATION.

FOUR LIGHT INDICATING BOX

0.0

STEP 4

Q

STEP 5

BOTTOM OF BOX

FLUIDMETER & FOAM FLUIDMETER TROUBLE SHOOTING INSTRUCTIONS

This unit consists of a water tank sensor and an electronic light indicating box. The sensor mounts on top of the water tank, extending down into the water. Upon making contact with the water (assuming the unit is connected to the truck battery source or ignition) the indicating lights of the box, which is mounted on the meter panel, will light bright red. The water in the truck tank is used as a media for making and breaking the circuit. As the water drains from the tank, the lights will go out one at a time, from FULL to 1/4. When the water level drops below the 1/4 level, all the lights will be out. Should any malfunction occur in the unit, it will probably happen in the light indicating box. The probable reason for a light failure would be the burning out of a light bulb, or at worst, one of the circuits shorting out. The MC Fluidmeter can be checked out on the truck, fully installed, in the following manner:

IF THE UNIT DOES NOT FUNCTION AT ALL AFTER INSTALLATION

- (1) Be sure the unit is the proper ground system (negative or positive).
- (2) Be sure the yellow wire has a good connection with a battery power line or ignition.
- (3) Be sure the light indicating box is well grounded to the truck.

IF ONE OR SOME OF THE INDICATING LIGHTS ARE OUT WHEN THEY SHOULD BE ON

- (4) Bulb Check turn off ignition and unscrew the lens over the faulty light. Remove the bulb by pressing in and turning counter-clockwise. Clean back of bulb by rubbing briskly on a cloth. Replace bulb and turn ignition on. If light remains out, replace with one of the unit's operative bulbs. If the light goes on, your unit needs a new bulb. Replace with the same type and number only, or damage will be done to the circuitry. We will supply same on request.
- (5) Indicating Light Box Check(type with molded connectors) with ignition on and assuming all bulbs are good, disconnect molded plugs. Take the plug from the four light box only and temporarily insert a wire, one at a time, from the (FULL)Blue-Yellow, (3/4)Solid Blue, (1/2)Blue-Black, (1/4)Blue-Light Blue, wife terminal in plug, to box or truck ground. If the faulty light remains out, you most likely have a burned out circuit. Unscrew the box only from the meter panel, leave the sensor in the tank, and send the unit to us for repair.
- (6) Sensor Check if after doing the above check, the faulty light should come on, then you have trouble with the sensor possibly a severed wire to the sensor due to installation. Locate the trouble and splice the severed wire. With water in the truck, try the unit in its normal working operation. If the light is still out, ship the sensor to us for repair.

- (7) "Cleanable" Sensor the lights will dim or go out in the event oil from dirty draft water or crustaceous buildup due to hard water condition, occurs over a period of time. Cleaning of the sensor to alleviate the above conditions can be performed ONLY if your MC Fluidmeter has a "Cleanable" sensor. This will be indicated to you by a tag near the molded connectors on your unit. Do NOT attempt to disassemble a standard unit for cleaning. (See "Cleanable" Sensor instruction sheet).
- (8) Disconnect the plug from the box to sensor wire. Using an OHM Meter (truck must have a full tank of water) perform a continuity check from the sensor wire nylon plug terminals only, to chassis ground. You should register an approximate 10 to 15K OHM resistance reading on the meter, if not remove the sensor and take it apart for cleaning (see "Cleanable" Sensor #7). If you do not have a "Cleanable" sensor, contact MC Products for cleaning.

IF ONE OR MORE THE INDICATING LIGHTS ARE ON WHEN THEY SHOULD BE OUT

- (9) With ignition on, disconnect molded plugs. If any light stays on, the trouble is in the circuit. Send the box, ONLY, to us for repair.
- (10) If after doing the above and the lights stay out as they should, then reconnect. Should one of the lights remain on while the tank is empty, (with ignition on) indicates that a wire may be bared and laying against a metal surface. After locating the wire, insulate it with tape and you should have no trouble thereafter.

ERRATIC FUNCTIONING OF INDICATOR LIGHTS

- (11) Unscrew colored lens from front panel and place finger on bulb tip in a gyrating rotary motion. If light goes out and then comes on, the bulb socket must be replaced.
- (12) With unit on, reach in back of panel to blue cable at connectors with both hands and wiggle. If lights act erratically, the pin connections are loose and must be respliced.
- (13) If above is OK, then wiggle wire at each exit of light box and tank sensor, return the component to MC Products if this is the problem.

FOAM GAUGE PROBLEMS

(14) All the above procedures apply to any foam units. These units employ an additional single ground wire due to ungrounded Fibre Glass tanks used for this media. This ground wire should be checked if all lights should be come inoperative at the same time.

<u>IMPORTANT</u> OPENING THE FOUR-LIGHT INDICATING BOX WILL VOID GUARANTEE. IF TANK PRESERVATIVE IS USED, USE A GOOD COMMERCIAL TANK SAVER ONLY OR GAUGE GUARANTEE WILL BE VOID. DO <u>NOT</u> USE ENGINE OIL AS A PRESERVATIVE.

SYMBOL OF INSTRUCTIONS POUR L'INSTALLATION INSTALLATION INSTRUCTIONS

TACHYMÈTRES ÉLECTRONIQUES SERIE 997

DESCRIPTION

Les tachymètres de la série 997 sont conçus pour s'utiliser sur des systèmes d'allumage standard de 12 volts, avec mise à la masse négative. De plus, les tachymètres de cette série peuvent être utilisés sur des systèmes à transistors, des systèmes à capacité de décharge et sur certains systèmes électroniques à magnéto, comme le système Judson, mais non sur des systèmes réellement à magnéto, comme Vertex.

Ces tachymètres sont caractérisés par des mouvements D'Arsonval sur rubis, raccordés à un circuit amplifié à état solide et une aiguille de cadran indicateur couvrant un arc de 250°. La robuste construction monopièce de ces tachymètres ne requiert ni transmetteur séparé ni moniteur. Les modèles avec boîtier en métal ont aussi une aiguille qui se règle sur la ligne rouge.

RÉGLEZ POUR LE TYPE DU MOTEUR

Tous les tachymètres de la série 997 sont pré-réglés pour usage avec des moteurs de 8 cylindres à 4 temps et avec des moteurs à 4 cylindres à 2 temps. Si vous voulez utiliser les tachymètres avec d'autres types de moteurs, il vous faudra les régler. Dans ce cas, procédez comme suit:

REMARQUE: Les moteurs conventionnels utilisés dans les voitures automobiles sont à 4 temps. Le moteur à 2 temps requiert une injection d'huile avec le mélange air/essence. 997 SERIES ELECTRONIC TACHOMETERS



DESCRIPTION

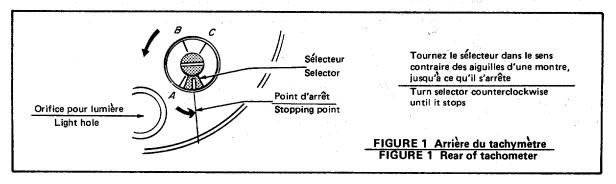
997 Series Tachometers are designed for application on 12-volt standard, negative ground ignitions. In addition, it can also be applied to transistor, capacitive discharge and some electronic magneto systems like Judson, but not true magnetos like Vertex

These Tachometers feature jeweled D' Arsonval movements coupled with solid state amplified circuitry and a face dial pointer sweep of 250°. Their sturdy onepiece construction requires no separate sender or monitor. The metal case models also have an adjustable red line pointer.

ADJUST FOR ENGINE TYPE

All 997 series tachometers are factory preset for use with 8 cylinder 4 cycle and 4 cylinder 2 cycle engines. To use tachometer with other engine types, follow the procedure below.

NOTE: Conventional automotive engines are 4 cycle. The 2 cycle engine requires oil injected with gas mixture.



- 1. Enlevez le couvercle du dispositif "CAL POT" a l'arrière du boîtier du tachymetre.
- Tournez le sélecteur dans le sens contraire des aiguilles d'une montre (Figure 1), jusqu'à ce qu'il s'arrête.

ATTENTION: N'ESSAYEZ PAS de faire tourner de force le sélecteur une fois qu'il est arrivé à son point d'arrêt, car ceci pourrait endommager le tachymètre.

- 1. Remove "CAL POT" cover on rear or tachometer case.
- 2. Turn selector counterclockwise (Figure 1) until it stops.

CAUTION: Do NOT force selector past its stopping point as damage to tachometer will result.

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Imprime aux États-Unis

P. N. 434668-CA

SER 4205-CA (3-77)

RÉGLEZ POUR LE TYPE DU MOTEUR (Suite)

 Cherchez le type de moteur en question sur le tableau des temps des cylindres. Tournez le sélecteur DANS LE SENS DES AIGUILLES D'UNE MONTRE jusqu'à ce que le réglage adéquat (Figure 2) ait été atteint, tel qu'indiqué par le tableau.

IMPORTANT: Le réglage final du sélecteur, quand on fait un nouveau réglage, doit toujours être fait dans le sens des aiguilles d'une montre.

4. Remettez en place la plaque qui recouvre le dispositif "CAL POT".

IMPORTANT: N'essayez pas de changer les fils ou de réparer les pièces internes.

TYPE DE MOTEUR		REGLAGE DU SÉLECTEUR	'
2 cylindres, 2 temps			Α
3 cylindres, 2 temps			В
4 cylindres	2 temps	Pré-réglé à l'usine	с
4 Cynnares	4 temps		Α
6 cylindres, 4 temps			в
8 cylindres, 4 temps		Pre-régle à l'usine	С

TABLEAU DES TEMPS DES CYLINDRES

ADJUST FOR ENGINE TYPE (Cont'd.)

 Locate your engine type on cylinder-cycle chart. Turn selector CLOCKWISE to proper setting (Figure 2) as indicated by chart.

IMPORTANT: Final adjustment of selector, to a new setting, must always be made in a clockwise direction.

4. Replace "CAL POT" cover plate.

IMPORTANT: Do not attempt to rewire or repair internal components.

ENGINE TYPE		SELECTOR	SETTING
2-cylinder, 2-cycle			A
3-cylinder,	2-cycle		В
1 autindae	2-cycle	Preset at factory	с
4-cylinder	4-cycle		A
6-cylinder,	4-cycle		В
8-cylinder,	4-cycle	Preset at factory	С

CYLINDER-CYCLE CHART

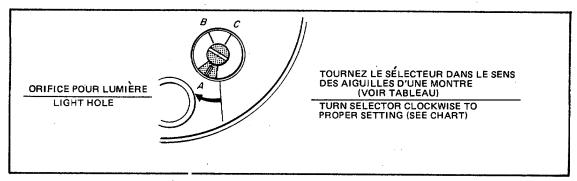


FIGURE 2. Rear of Tachometer

MONTAGE

Le tachymètre contenu dans cet empaquetage est concy pour être monté sur un panneau. Pour montage sur piédestal ou sur colonne de direction, le nécessaire 289-A est disponible pour les modèles ayant un boîtier métallique, mais ce nécessaire ne peut être utilisé pour les modèles qui ont un boîtier en plastique.

1. Choisissez un emplacement sur le panneau, le tableau de bord ou la console à un endroit où

MOUNTING

The Tachometer in this package is designed for panel mounting. For pedestal or column mounting, Kit 289-A is available for metal case models, but cannot be used for models with a plastic case.

1. Select a location on panel, dash or console for tachometer where it can be readily viewed by

le tachymètre peut être facilement vu par le conducteur et où il y a un dégagement à l'arrière d'au moins 3-7/8".

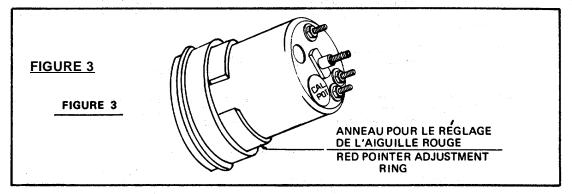
Pour les modèles avec boîtier métallique:

- a. Découpez un orifice de 3.00" de diamètre dans le panneau, à l'endroit choisi. Ce diamètre est légèrement plus grand que celui du boîtier du tachymètre, qui mesure 2.95". Prenez bien soin de faire un orifice parfaitement rond, étant donné que la partie en biseau ne peut couvrir un diamètre supérieur à 3.20 pouces.
- b. Réglez l'indicateur à ligne rouge réglable, au RPM critique désiré ou au point convenable pour le changement de vitesse. L'indicateur ou aiguille se déplace en tournant la bande blanche en plastique sur le boîtier (à l'arrière de la partie en biseau) Voir Figure 3.

driver or operator and where there is at least a 3-7/8" clearance behind it.

For Models With Metal Case:

- a. Cut a 3.00 inch diameter hole in panel at selected location. This is slightly larger than case diameter of tachometer which is 2.95. Care must be taken to make the hole round as the bezel may not mask a diameter larger than 3.20 inches.
- b. Set adjustable red line pointer to desired critical RPM or shift point at this time. The pointer moves as the white plastic band on case (behind bezel) is rotated. See Figure 3.



Pour les modèles avec boîtier en plastique:

- a. Découpez un orifice de 3.38" (3-3/8") dans le panneau, à l'endroit choisi. Prenez bien soin de faire un orifice parfaitement rond, étant donné que la partie en biseau ne peut couvrir un diamètre supérieur à 3.62 pouces. Il peut être désirable de faire une encoche pour localiser la clef sur le boîtier.
- Fixez, à ce moment ci, les fils et leurs cosses sur les poteaux à l'arrière du boîtier du tachymètre. Voir "CANALISATION ÉLECTRIQUE" pour connaître la manière de procéder.
- Passez les fils par l'orifice, insérez le tachymètre et fixez-le en utilisant le support de montage, la rondelle de blocage et l'écrou fournis.

ATTENTION: Assurez-vous que les fils ne risquent pas d'être coincés et qu'ils sont raccordés aux poteaux qui conviennent, avant de fixer le support de montage. L'n fil coincé peut occasionner un court-circuit.

CANALISATION ÉLECTRIQUE

IMPORTANT: Utilisez seulement sur système avec mise à la masse négative (Figure 6).

REMARQUE: Des rondelles de blocage et des écrous sont fournis pour fixer les fils aux bornes à l'arrière du tachymetre. For Models With Plastic Case:

- a. Cut a 3.38" (3-3/8") hole in panel, at selected location. Care must be taken to make the hole round as the bezel may not mask a diameter larger than 3.62 inches. It may be desirable to notch a hole for locating key on case.
- Secure wires and terminal to posts on rear of tachometer case at this time. See "WIRING" section for these steps.
- Feed wires through hole, insert tachometer and secure using mounting bracket, lockwasher and nut supplied.

CAUTION: Make certain wires are clear of possible pinching and are attached to correct posts before securing mounting bracket. A crimped wire can cause a short.

WIRING

IMPORTANT: Use on negative ground only (Figure 6).

NOTE: Lockwashers and nuts are supplied for securing wire to posts on rear of tachometer.

CANALISATION ÉLECTRIQUE (Suite)

 Débranchez le câble de la batterie qui est fixe à la borne négative de la batterie. Cette précaution est prise pour empêcher qu'un contact accidentel, même momentané, ne cause des dommages au tachymètre ou au système électrique de vénicule. Rebranchez le câble de la batterie après que la canalisation électrique a été complétée.

REMARQUE: Les cosses et les fils ne sont pas fournis pour les tachymètres de la série 997 avec boîtier en plastique. Pour installer la canalisation électrique de ces modèles, il est recommandé d'utiliser un fil toronné de calibre ABG No. 18 et des cosses à tiges isolées pour relier les fils au tachymètre. Suivez les étapes 2 jusqu'à 8. en utilisant des fils de couleurs codées suggérées.

- Trois types de cosses à oeillet sont fournis avec les tachymètres faisant usage d'un boîtier métallique; sertissez une cosse à une extrémité de chacune des trois longueurs de fils fournies.
- Fixez le fil BLANC avec sa cosse, sur le poteau marqué "GND" et localisé à l'arrière du tachymètre.
- 4. Sertissez la cosse à fourche à l'autre extrémité du fil BLANC et fixez celui-ci à une mise à la masse commune à celle de la batterie.

WIRING (Cont'd.)

1. Disconnect the negative battery cable from the battery. This is done to prevent even a momentary miscontact which might damage the tachometer or the vehicle's wiring circuitry. Reconnect battery cable after wiring is complete.

NOTE: Plastic case 997 Series Tachometers are not supplied with wire and terminals. For wiring of these models it is recommended that No. 18 AWG stranded wire be used, with insulated shank eyelet terminals to secure wire to tachometer. Follow steps 2 through 8 using suggested color coded wires.

- 2. Three eyelet type terminals are supplied with metal case tachometers; crimp one terminal to one end of each of the 3 lengths of wires supplied.
- 3. Secure WHITE wire and terminal, to post on rear of tachometer identified by "GND" (ground).
- 4. Crimp forked tongue terminal to other end of WHITE wire and secure to a ground, common to ground of battery.

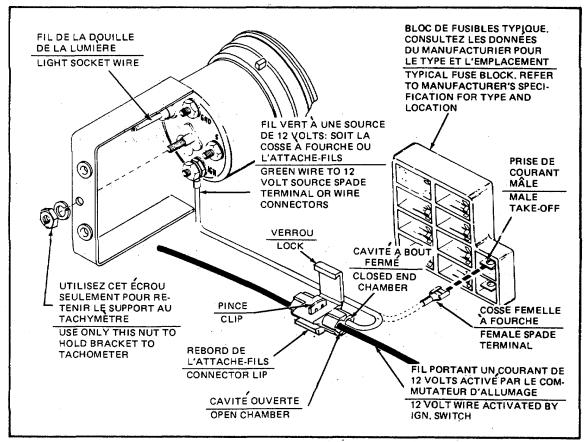


FIGURE 4. 997 Series Tach with 3 in. Metal Case

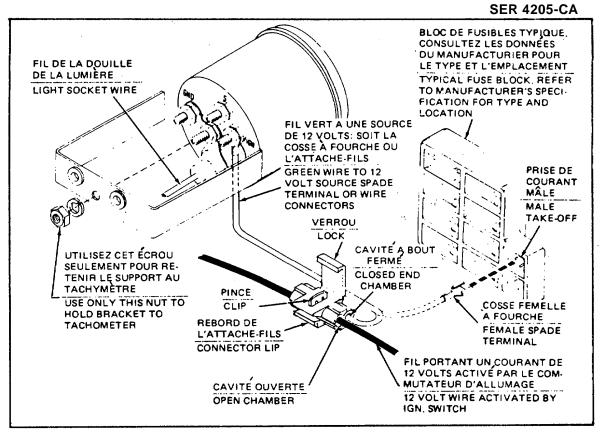


FIGURE 5 997 Series Tach with 3-3/8 in. Plastic Case

- Fixez le fil VERT avec sa cosse sur le poteau localisé à l'arrière du tachymètre et marqué "IGN" (12 volts).
- L'autre extrémité de ce fil VERT doit être reliée à une source de courrant de 12 volts, qui est activée quand on tourne la clef de commutateur d'allumage en position de marche.

Si le véhicule est équipé d'une résistance régulatrice, on doit faire la connexion au commutateur d'allumage, ou dans la canalisation du système d'allumage à un point se trouvant à l'avant de la résistance régulatrice.

Si le véhicule a une canalisation électrique à résistance dans les circuits du distributeur, on doit faire la connexion seulement au commutateur d'allumage.

Quand ni l'une ni l'autre de ces connexions sont possibles, raccordez le fil VERT à une source alimentant un accessoire, lequel est actionne quand le commutateur d'allumage est en position de marche; le bloc des fusibles présente un point commode pour faire cette connexion. Faites la connexion dans l'une ou l'autre des manières suivantes:

COSSE FEMELLE À FOURCHE

 a. La plupart des blocs de fusibles des constructeurs d'automobiles fournit une prise de courant mâle, pour le raccordement d'accessoires. Cette prise située à la suite des fusibles, sur le bloc des fusibles, peut accommoder une cosse femelle à fourche.

- 5. Secure GREEN wire and terminal to post on rear of tachometer identified by "IGN" (12-volt).
- The other end of this GREEN wire must be connected to a 12-volt source that is energized when the ignition key switch is on.

If vehicle has a ballast resistor, connection must be made at ignition switch, or in ignition wiring, before ballast resistor.

If vehicle has resistor wiring in distributor circuits, connection must be made only at ignition switch.

When neither of these connections are possible, connect the GREEN wire to an accessory power source which is energized when the ignition key switch is on; the fuse block is a convenient place to make this connection. Make connection in one of two ways:

FEMALE SPADE TERMINAL

a. Most vehicle manufacturer's fuse blocks provide a male take-off terminal for accessories next to fuses on fuse block that will accept a female spade terminal. b. Sertissez la cosse femelle à fourche (si elle est fournie) à l'autre extrémité du fil (VERT) et fixez celui-ci sur la prise de courant mâle localisée sur le bloc à fusibles. Consultez la Figure 4 pour les tachymètres avec boîtier en mêtal, ou consultez la Figure 5 pour les tachymètres avec boîtier en plastique.

IMPORTANT: Assurez-vous que l'entier voltage du courant de 12 volts du véhicule est fourni au fil VERT. Ne raccordez pas le fil VERT à un point où une résistance a réduit le voltage.

REMARQUE: Quand un circuit d'amorçage (source de 12 volts) alimente le tachymètre, mais que le moteur du véhicule n'est pas en marche, il est possible que le tachymètre indique une lecture pouvant aller jusqu'à 200 RPM. Ceci est normal et ce n'est pas une indication que l'unité est défectueuse.

ATTACHE-FILS

Une autre manière de raccorder le fil du tachymètre, au circuit du commutateur d'allumage, est d'utiliser l'attache-fils (fourni avec le tachymètre).

Procédez de la manière suivante:

- a. Coupez le fil VERT à une longueur convenable.
- b. Insérez une extrémité du fil VERT dans la cavité à bout fermé de l'attache-fils (Fig. 4 ou 5), jusqu'à ce que l'extrémité du fil atteigne le fond de la cavité.
- c. Insérez le fil de 12 volts, qui est activé par le commutateur d'allumage (Fig. 4 ou 5), dans la cavité ouverte de l'attache-fils.
- d. Assurez-vous que les fils sont correctement à leur place dans les cavités de l'attache-fils, puis refermez l'attache-fils en pressant sur le verrou et la pince, avec des pinces-étau ou des pinces ordinaires, jusqu'à ce que le verrou s'enclenche avec le rebord de l'attache-fils. CONSULTEZ la Fig. 4 dans le cas d'un tachymètre avec boîtier en métal, ou la Fig. 5 pour un tachymètre avec boîtier en plastique.

REMARQUE: Utilisez l'attache-fils seulement sous le tableau de bord.

- 7. Fixez le fil ROUGE et sa cosse, sur le poteau à l'arrière du tachymètre marqué "S". Voir Figure 6.
- 8. Acheminez le fil ROUGE à travers le tablier de la carrosserie, pour qu'il aboutisse dans le compartiment du moteur.

ATTENTION: Quand vous acheminez le fil à travers le tablier de la carrosserie, ayez soin que l'isolation du fil ne soit pas endommagée par les rebords coupant des tôles, ce qui occasionnerait un court-circuit et une défaillance du système d'allumage. Le fil ROUGE ne doit pas venir en contact avec des pièces chaudes du moteur ni gêner le mouvement de pièces mobiles (leviers de commande, tringleries, dispositifs de contrôle d'émission des gaz d'échappement, etc.).

b. Crimp female spade terminal (if supplied) to other end of GREEN wire and secure to accessory male take-off terminal on fuse block. See Figure 4 for tachometers with metal case, or Figure 5 for tachometers with plastic case.

IMPORTANT: Make certain full voltage of vehicle's 12 volt system is supplied to GREEN wire. Do not connect GREEN wire where a resistor has reduced voltage.

NOTE: When tachometer is energized (12-volt source), but engine is not running, the tachometer may register a reading of up to 200 RPM. This is normal, and not an indication of a defective unit.

WIRE CONNECTOR ASSEMBLY

Another way of connecting the ignition wire of the tachometer is by using the wire connector (supplied with tachometer).

Following the succeeding steps:

- a. Cut GREEN WIRE to a suitable length.
- b. Insert GREEN WIRE to the closed end chamber of the wire connector (Fig. 4 or 5) until end of wire reaches chamber stop.
- c. Insert 12 volt wire activated by ignition switch (Fig, 4 or 5), onto the open chamber of the wire connector.
- Making sure the wires are properly placed in the wire connector chambers, close the wire connector by depressing lock and clip with vise grips or pliers until lock snaps onto wire connector lip. REFER to Fig. 4 for tachometer with metal case, or Fig. 5 for tachometer with plastic case.

NOTE: Use wire connector only under dashboard.

- 7. Secure RED wire and terminal to post on rear of tachometer identified by "S". See Figure 6.
- Route RED wire through firewall to engine compartment.

CAUTION: When routing wire through firewall, guard the insulation against damage due to sharp edges which may short the wire to ground causing ignition failure. RED wire must not contact hor engine parts or interfere with moving parts (linkage, emission devices, etc.).

- 6 -

Cette connexion varie selon le système d'allumage en question. Consultez le tableau sur la Page 5, pour connaître quel diagramme de canalisation électrique on doit utiliser pour un système d'allumage standard et pour les systèmes d'allumage autres que standard.

> **REMARQUE:** Si on entend un bruit parasite venant du système d'allumage, quand la radio joue, il peut être nécessaire de réacheminer le fil ROUGE pour qu'il soit plus éloigné de la radio ou du circuit de celle-ci. Si cette opération est impossible, remplacez le fil ROUGE par un fil avec cuirasse (cuirasse avec mise à la masse).

POUR RÉGLER LES

IMPORTANT: Les tachymètres sont calibrés à l'usine avec une précision en decà de 2%, pour toutes leurs graduations. Tout réglage du cadran du sélecteur, autre que pour changer les réglages du temps des cylindres, est laissé à la discrétion du client. Mais un tel réglage ne devrait être fait qu'en comparant avec en appareil pour la vérification des tachymètres.

Réglez les indications du tachymètre, de la manière suivante, alors que le moteur tourne à une vitesse plus élevée que la vitesse normale de ralenti:

- Répérez et enlevez le décalque identifié par "CAL POT", à l'arrière du boîtier du tachymètre.
- Avec un petit tournevis, tournez lentement le cadran du sélecteur dans le sens contraire des aiguilles d'une montre, pour augmenter l'indication du RPM ou dans, le sens des aiguilles d'une montre, pour réduire l'indication du RPM.
- Remettez en place le décalque du "CAL POT", pour empêcher les matières étrangères de pénétrer dans le mécanisme.

ÉCLAIRAGE

Le fil venant de la douille de la lumière doit être raccordé à une source d'éclairage sur le tableau de bord, laquelle est contrôlée par le commutateur d'éclairage et le rhéostat.

- 1. Assemblez l'ampoule et la douille.
- 2. Fixez soit une pince à fusible ou une cosse femelle à fourche à l'extrémité de fil NOIR de la douille de la lumière.
- 3. Fixez ce fil à une borne de fusible pour éclairage d'un accessoire ou sur la prise de courant du bloc de fusible.
- 4. Enlevez et jetez le ruban gommé qui recouvre l'orifice de la lumière. Insérez l'ampoule et la douille dans l'orifice.

Comme ampoule de rechange, utilisez l'ampoule commerciale no. 1891 pour les tachymètres avec boîtier en métal. Utilisez l'ampoule commerciale no. 57 pour les tachymètres avec boîtier en plastique. This connection varies with ignition system being used. Refer to Chart on Page 5 for correct wiring diagram to use for standard ignition and other than standard.

NOTE: If ignition interference is heard when the radio is operated in a weak signal area, it may be necessary to reroute the RED wire farther away from the radio or its wiring. If this cannot be done, replace the RED wire with a shielded wire (shield grounded).

TO ADJUST TACHOMETER READINGS

IMPORTANT: Tachometers are factory calibrated to within 2% of full scale accuracy. Any adjustment of selector dial, other than to change cycle-cylinder settings is per customer wishes and should only be made in conjunction with a tachometer checker or master tachometer.

Adjust tachometer readings at above normal engine idle speed as follows:

- 1. Locate and remove decal, on rear of tachometer case, identified by "CAL POT".
- 2. Using a small screwdriver, turn selector dial slowly counterclockwise to increase the RPM reading or clockwise to decrease reading.
- 3. Replace "CAL POT" decal to prevent foreign matter from entering mechanism.

LIGHTING

Wire from light socket must be connected to a panel lighting source that is controlled by the light switch and rheostat.

- 1. Assemble bulb and socket.
- 2. Secure either fuse clip or female spade terminal to the BLACK wire from light socket.
- Secure terminal and wire assembly to an accessory light fuse or take-off terminal on fuse block.
- 4. Remove tape from light hole and discard. Insert bulb and socket assembly into hole.

For bulb replacement, use trade no. 1891 on metal case tachometers. Use trade no. 57 on plastic case tachometers.

INDICATIONS POUR TACHYMÈTRES JUMELÉS

Sur les installations marine, quand deux tableaux de bord sont utilises pour un seul moteur, on peut installer deux tachymètres (canalisation électrique en parallèle). Il est suggéré de calibrer les deux tachymètres l'un par rapport à l'autre, afin d'obtenir des indications identiques du RPM sur les deux.

Quand deux moteurs et deux tachymetres sont utilisés, il n'est pas recommandé de changer les indications de RPM des tachymètres, étant donné la différence de RPM pour chaque moteur. Toutefois, si quatre tachymètres doivent être utilisés, deux pour chaque moteur, on peut calibrer l'un par rapport à l'autre les deux tachymètres de chaque moteur.

DUAL TACHOMETER READING

On marine installations when two instrument panels are used for one engine, two tachometers can be installed (parallel wiring). It is suggested that both tachometers be calibrated one to another so the RPM readings are the same.

When two engines and two tachometers are being used, it is not recommended to change the RPM readings of the tachometers due to the different RPM of each engine. However, if four tachometers are to be used, the two for each engine may be calibrated to each other.

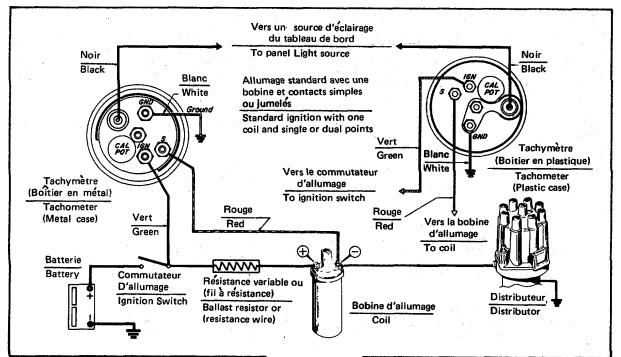


FIGURE 6

SYSTEME D'ALLUMAGE	DIAGRAMME
Accel BEI sans contacts	A
Allison Opto-Electric	В
American Motors Corp.	
AMC Prestolite	
A.R.E. Ramfire à courant continu .	C
Bendix	В
Borg-Warner	
Systèmes à courant continu Mark I	I
Chrysler	
Mopar Electronic	B
Cragar à courant continu	D
Cragar Power-Pack	D
Echlin T-38N	A
Essex Elightronic	B

SYSTEME D'ALLUMAGE

Accel BEI Breakerless Allison Opto-Electric American Motors Corp.	
	В
American Motors Corp.	
AMC Prestolite	В
A. R. E. Ramfire C-D ·····	
Bendix	В
Borg-Warner	
C-D Systems Mark II	c
Chrysler	
Mopar Electronic	B
Cragar C-D	D
Cragar Power-Pack	D
Echlin T-38N	
Essex Elightronic	в

DIAGRAM

SYSTEME D'ALLUMAGE	DIAGRAMME	IGNITION SYSTEM	DIAGRAM
Ford		Ford	
FoMoCo transistorisé à courant	t continuD	FoMoCo C-D Transistorized	D
Motor Craft sans contacts	E	Motor Craft Breakerless	E
General Motors		General Motors	
Delco Remy, à courant continu	F	Delco-Remy C-D · · · · · · · ·	F
Delco-Remy: Allumage à haute (moteurs à 4 & 6 cylindres en l		Delco-Remy H.E.I. (Inline 4 & Cylinder Engines)	6 G
Delco-Remy: Allumage à haute (moteurs V6 & V8)	e énergie H	Delco-Remy H.E.I. (V6 & V8 Engines)	н
Delco-Remy: Transistor à pulsa magnétique		Delco-Remy Magnetic Pulse Transistor	
Delco-Remy: Transistor	A	Delco-Remy Transistor	A
Grant Flame Thrower C-D II, a coura	int continu C	Grant Flame Thrower C-D II	c
Hurst-Airheart SCR Électronique		Hurst-Airheart SCR Electronic	B or D
International Harvester Corp.		International Harvester Corp.	
IHC Prestolite	D	IHC Prestolite	В
Judson à magneto électronique		Judson Electronic Magneto	D
Leece-Neville à transistors		Leece-Neville Transistorized	D
Mallory Rev-Pol Mark II (modèles z-c)	D	Mallory Rev-Pol Mark II (z-c models)	D
Mallory SS sans contacts IR	В	Mallory SS Breakerless IR	В
Mallory Super, à courant continu	D	▲ Mallory Super C-D	D
Mallory T-12NA	D	Mallory T-12NA	D
Mobelec: Électronique sans contacts	A ou J	Mobelec Electronic Breakerless	A or J
Motion Performance Inc. Phase III	C	Motion Performance Inc. Phase III	c
Motorola cdi-12	D	₩Motorola cdi-12	D
Motorola TR-12 a transistors	D	Motorola TR-12 Transistor	D
Prestolite: Allumage sans contacts (Capteur magnétique)	В	Prestolite Breakerless Ign. (Magnetic pick-up)	В
Prestolite 201 & 250 "Transigniter"	D	Prestolite 201 & 250 Transigniter	D
RAC EDX à décharge d'énergie	C	RAC EDX Energy Discharge	
Sorensen Magnition	В	Sorensen Magnition	
TRW-Lumenition	В	TRW-Lumenition	
Wico à transistors	D	Wico Transistor	D
 Le commutateur d'allumage doi position "STREET". 	t être dans la	 Selector switch of ignition must be in 	STREET po-
▲ Dans système d'allumage seuleme uteur et contacts standard.	nt avec distrib-	sition. ▲ With standard distributor and points o	only.
N'utilisez pas la prise pour tachyn par Motorola (fil gris). Si cette pa les tachymètres de la série 997 fonctionner au RPM apparaissant à droite.	rise est utilisée, cesseront de	Do not use tachometer take-off Motorola (gray wire). If used, 997 s eters will cease to operate at the RPN chart at right.	eries tachom-

RPM	Nomore de cylindres		
		· ·	
6,500	8		
8,500	6		
13,000	4		

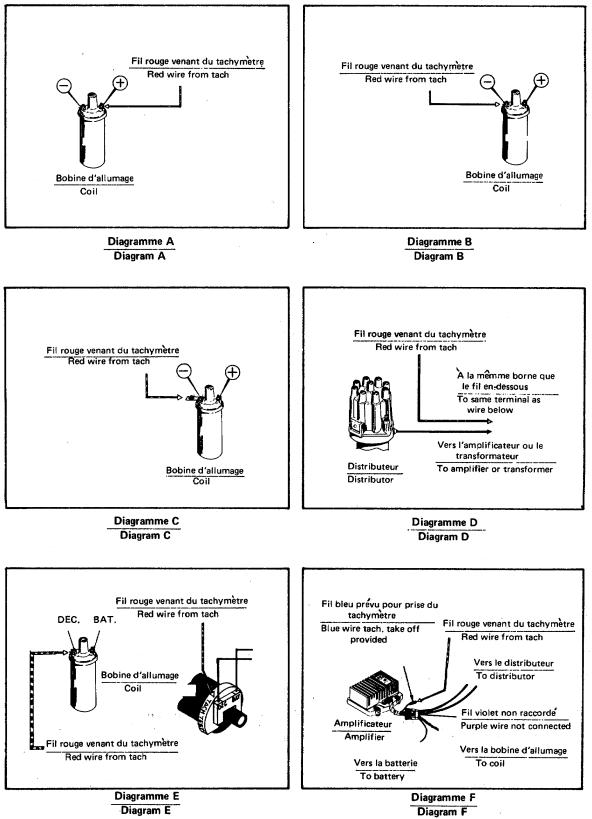
No. of Cylinders 8 6 4 13000

RPM

6500 8500



WIRING DIAGRAMS



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DIAGRAMMES DES CANALISATIONS ÉLECTRIQUES (Suite) WIRING DIAGRAMS (Cont'd.)

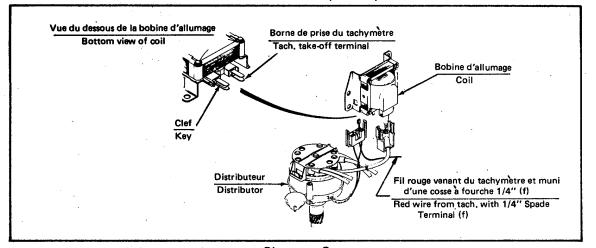
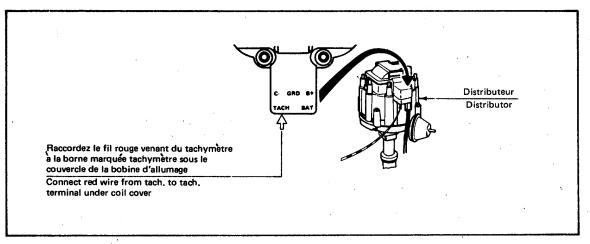


Diagramme G Diagram G







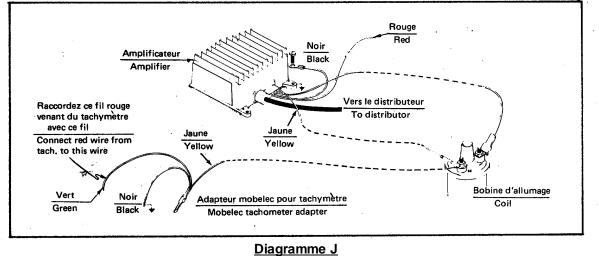


Diagram J



AKRON SWING-OUT VALVE

INSTRUCTIONS

The Akron Swing-Out Valve is designed to be a two directional valve and operate in either direction on vacuum or pressure.

INSTALLATION

The value is installed in the piping in the normal manner. If the handle is removed, the position of the ball may be determined by the slot in the top of the Handle Trunnion. The ball is in the "open" position if the slot is in line with the piping.

The Style 1488-NL Remote Control has been designed for use with this valve. It is longer and non-locking.

HANDLE POSITIONS

All available handle positions are shown on page 19 of our catalog. Position "N" is considered standard on all remote control valves and Position "W" on all other valves. Handles in these positions are furnished unless other positions are specified.

To change handle positions, remove the handle screw and washer and change the handle to the new position. Some changes also require removal of the six screws in the trunnion plate, and rotation of the plate to another position.

When replacing the six screws in the trunnion plate, be sure to tighten all partially and evenly around the circle until completely tight. (Note: A slight gap between the bottom of the plate and the top of the body is normal and right.)

<u>REPAIR</u>

To repair the valve, remove three (3) sets of adapter flange screws, loosen the remaining set, make sure the valve is in the OPEN position, and swing the valve out of the piped line. Be careful not to scratch the machined surfaces of all the flanges.

- <u>To replace seats</u>, turn ball to about a half-open position so you are able to easily grab hold of the seat and pull it out. The replacement seats snap in just as easily. Make sure they are properly and completely in place. Return valve ball back to "OPEN" position and swing the valve back into line.
- 2. <u>To replace ball</u>, remove seats as instructed above and then remove the lower trunnion (outside, bottom of the valve) and pull out the ball.

MIAINTENANCE

This valve is designed to require no grease on the ball or seat.

If the valve seems to require excessive torque to operate, a <u>very slight</u> amount of grease on the Circular Tension Gasket (directly under the handle) will be helpful.

PRESSURE LIMITS

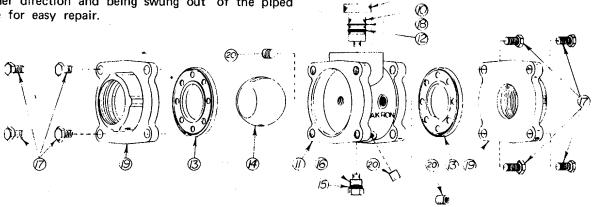
The Akron Swing-out Valves have been designed and tested for fire service use up to 500 PSI with the exception of the 1", which is designed for and tested to 1000 PSI.

CAUTION

If solder joints are used-in the plumbing of a truck, it is important that the valve be swung out of the line and the seat removed before the soldering operation is begun.

HOW TO SPECIFY

Valves to have quarter-turn, trunnion mounted balls with Tork-Lok self-locking handles. To be capable of holding 500 PSI in either direction and have no more than two (2) "O" rings, with no "O" rings between the valve flanges. To have two guaranteed non-stick, self-adjusting Norkalon* seats and ball and be capable of holding pressure or vacuum in either direction and being swung out of the piped line for easy repair.



6

--(2)

⁽³⁾(1)

 $(\overline{4})$

6

(7)

ITEM NO.	DESCRIPTION	1"	1-1/2"	2"	2-1/2"	3"	3-1/2"
1	RI HANDLE	7810-00-0-0-41-001	7815-00-0-0-41-001	7820-00-0-0-41-001	7825-00-0-0-41-001	7825-00-0-0-41-001	7825 00-0-0-41-001
1A	R2 HANDLE		7815-00-0-0-41-002	7825-00-0-0-41-002	/825-00-0-0-41-002	7825-00-0-0-41-002	7825-00-0-41-002
1B	TS HANDLE	7810-99-8-1-78-003	7815-99-8-1-78-004	7825-99-8-1-78-005	7825-99-8-1-78-005	7825-99-8-1 78-005	7825-99-8-1-78-005
1C	TSC CAP FOR TS HANDLE		7815-00-8-0-25-001	7825-00-8-0-25-001	7825-00-8-0-25-001	7825 00 8 0 25 001	7825-00-8-0-25-001
2	NYLOCK SOC. HD. CAP SCREW	7.65.020	7-65-067	7.65.066	7.65.066	7.65.066	7.65.066
3	FLAT BRASS WASHER	7-84-017	7-84-008	7-84-034	7-84-034	7-84-034	7 84 034
4	HANDLE TRUNNION	7.72-059	7-72-057	7.72.056	7.72.056	7 /2 056	7.72.056
5	CIRCULAR TENSION GASKET	7-57-002	7-57-105	7.57.054	7.57.054	7.57.054	7.57.054
6	TORK-LOK SPRING	7-68-120	7-68-116	7.68-115	7.68.115	7-68-115	7-68-115
7	TORK-LOK* SLEEVE	7-69-178	7-69-176	7.69.172	7-69-172	7-69-172	7-69-172
8	FLAT HEAD SCREWS (6)	7-67-071	7-67-072	7 67 072	7.67.0/2	7 6 / 0 / 2	7 67 0/2
6	TRUNNION RETAINING PLATE	7810-00-0-0-62-001	7815-00-0-0-62-001	7825-00-0-0-62-001	7825-00-0-0-62-001	7825-00-0-0-62-001	7825-00-0-0-62-001
10	BALL TRUNNION	7.72.060	7-72-058	7 72.049	7.72.049	7 72 061	7-72-061
11	VALVE BODY	7810-00-0-0-10-001	7815-00-0-0-10-001	7820 00-0-0 10-001	7825-00-0-0 10-001	7830-00-0-0-10-001	7830-00-0-0 10-001
12	"O" RING	7-57-112	7.57.042	7-57-010	7-57-010	/ 5/-010	7-57-010
13	SEATS (2)	7-69-179	7-69-177	7.69.180	7-69-153	7-69 181	7-69-181
14	BALL	7-03-110	7-03-081	7-03-124	7.03.084	7.03 085	7-03-085
15	"O" RING	7.57.034	7-57-034	7-57-022	7.57.022	7.57.008	7.57.008
16	THREADED TRUNNION	7-73-091	7.73.092	7-73-093	7 73 094	7-73-095	7 73 095
17	HEX HEAD CAP SCREWS (8)	7-61-047	7 61-046	7-61-007	7 61 048	7 61 048	7-61 048
18	RETAINING RING	7-58-063	7-58-060	7-58-058	7-58-058	7.58.058	7-58-058
19	PI-S ADAPTER	7810-00-0-0-02-001	7815-00-0-0-02-001	7820-00-0-0-02-001	7825-00 0-0-02-001	7830-00-0-0-02-001	7835-00-0-0-02-001
19A	P2-S ADAPTER				7825 TP-0-1 78-510	7830 TP-0-1-78-511	
198	MI-S ADAPTER	· ·	7815-00-2-0-02-013		7825 00-2-0-02-013	7830-00-2-0 02-013	7835-00 2 0 02 013
19C	M3-S ADAPTER		-		7825-NH 2-1 78-516	7830 NH 2-1 78 517	
19D	M4-S ADAPTER				7825 NH 2 1 /8-518		
19E	F1-SS ADAPTER	· ···	-		7825-NH-8-1 78-505	7830-NH-8-1 /8 506	7835-NH-8-1 78-507
19F	F2-SS ADAPTER				7825-NH-8-1-78-508		
19G	F3-SS ADAPTER				7825 NH-8 1 78 509		
19H	F1-S ADAPTER		7815-NH-8-1-78-501		7825 NH 8-1-78-502	7830-NH-8 1 78 503	7835-NH-8-1-78-504
19J	ME1-S ADAPTER				7825 NH 8 1-78-512	7830-NH-8-1-78-513	7835-NH-8 1-78-514
19K	ME2-S ADAPTER						7835-NH-8-1-78-515
19L	B1-S ADAPTER				7825-00-0-0-02-018		
19M	81-SH ADAPTER				7825-00-0-0-02-009	7830-00-0-02-009	
19N	P3-S ADAPTER	7810-00-0-0-02-016	7815-00-0-0-02-016	7820-00-0-0-02-016	7825-00-0-0-02-016	7830-00-0-0-02-016	
19P	P1-SH ADAPTER				7825-00-0-0-02-010	7830-00-0-0-02-010	
· 20	PIPE PLUGS (3)	-	7-44-009	7-44-011	7-44-011	7-44-011	7-44-011

PARTS LIST



AKRON BRASS COMPANY, WOOSTER, OHIO AKRON MFG. (CANADA), LTD., AYLMER, ONTARIO



*Trademark 79544 (REV. 11/74)

REPAIR INSTRUCTIONS FOR 11/2" DROP-OUT BALL VALVE WITH "HYDRO-LOC"

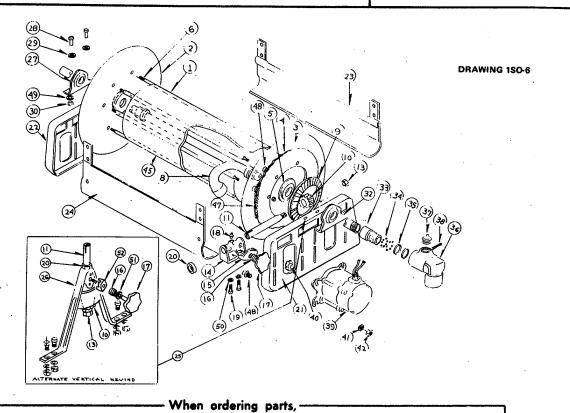
- 1. To remove valve from pipeline.
 - A. Locate handle to open position so there will be no damage to the ball when removing body.
 - B. Remove 8 bolts (index #22).
 - C. Pull valve body assembly from between end caps.
- 2. Remove "O" rings (Index #16) from ends of valve body. Wipe clean and check for cuts, gouges or any other damage.
- 3. Remove adjustable seat assembly (Index #17,18 and 19).
 - A. Insert spanner wrench into two holes located in the face of seat retainer (Index #19), turn counterclockwise and remove from body (Index #15).
 - B. Disassemble seat assembly and check "0" rings (Index #18 and #20) and seat (Index #17) for cuts, gouges, or any other damage.
- 4. Remove alien head cap screw (Index #1) and handle washer (Index #2). Lift handle slightly to free handle disc (Index #3) and remove disc. With ball (Index #11) in open position, note the position of actuator clip (Index #4) and handle body (Index #5), then remove actuator clip and handle body, examine these parts for wear or damage. **NOTE: Do not remove lock spring (Index #6).**
- 5. Remove ball pivot bolt (Index #13), and examine "O" ring (Index #12) for damage.
- 6. Remove valve ball (Index #11) through inlet end of valve body only, wipe clean, and examine for dents, scratches or lime deposits. Clean as needed.
- 7. Remove actuator shaft (Index #10) and check for damage. Examine "O" ring (Index #9) and replace if necessary.
- 8. Grease "O" ring and reassemble actuator shaft, replace valve ball (Index #11).
- 9. Grease "O" ring (Index #12) and replace pivot bolt (Index #13). Ball must slide back and forth on the pinions, with ball in open position. **NOTE: Use a silicone grease such as Dow Corning #7**. (Do not use a grease that will attack rubber).
- 10. Assemble seat retainer (Index #19), "O" ring (Index #18), ball seat (Index #17) and "O" ring (Index #20). **NOTE: Apply light coating of grease to "O" rings and rubber seat.**
- 11. Reinstall adjustable seat assembly into valve body (Index #15). Tighten seat against ball until a grease ring shows up on both sides of the sealing surface of the ball as the ball is rotated back and forth across the seat. When this point is reached, tighten seat 118 turn more.
- 12. Replace handle body (Index #5) onto valve body. Be sure that there is clearance between tabs on lock spring and square lug on inside of handle body.
- 13. Position ball and handle assembly in valve so that the actuator clip (Index #4) will straddle the spring tabs and slip onto the square end of the actuator shaft (Index #10) Check to see that there Is clearance between the spring tabs and actuator clip fingers. NOTE: Slight clearances as indicated in steps #12 and #13 are necessary for proper operation of "hydro-Loc" feature.
- 14. Assemble handle disc (Index #3), handle washer (Index #2), and allen head cap screw (Index #1). Handle disc must slip onto actuator shaft (Index #10). Operate handle and note that ball opens and closes with handle in proper quadrant.
- 15. Grease and replace "O" rings (Index #16).
- 16. With valve in open position, slide valve into place. Be sure "O" rings are not damaged as valve body is installed between end caps.
- 17. Apply Loc-Tite #242 to Hex bolts (Index #22) and replace.



CLIFFORD B. HANNAY & SON, INC., WESTERLO, NEW YORK 12193

telephone (518) 797-3791

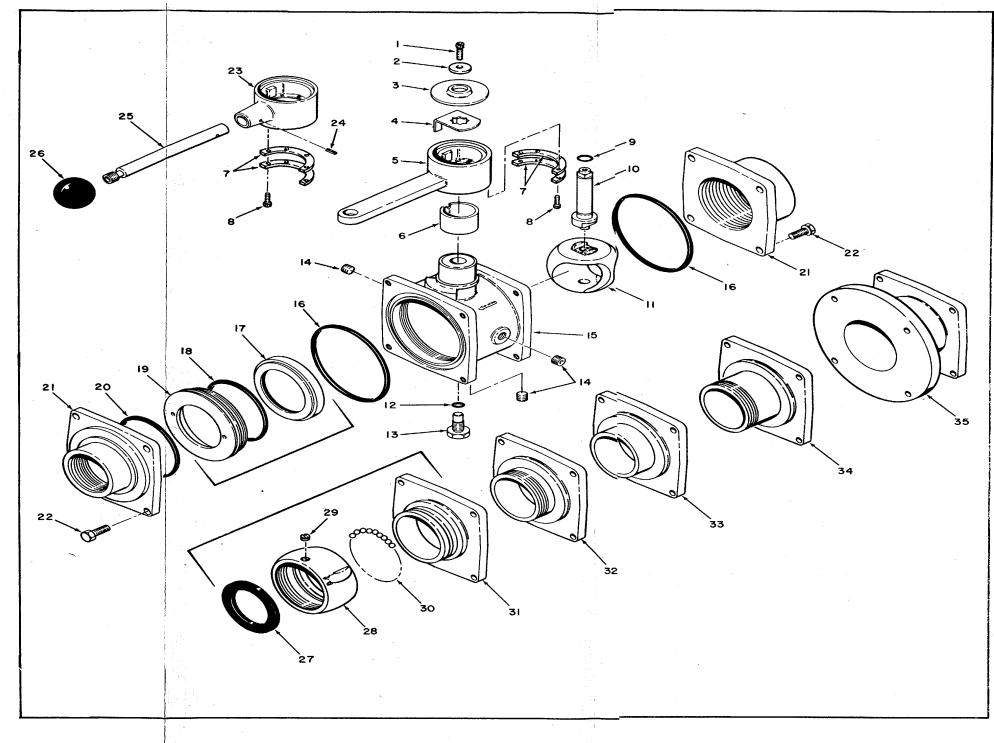
PARTS LIST **1" HOSE REELS** WITH BALL BEARING SWIVEL JOINT



BE SURE TO SPECIFY COMPLETE MODEL NUMBER and SERIAL NUMBER OF REEL

Drawing		Quantity	Drawing		Quantity
Number	Description	Required	Number	Description	Required
1.	Drum	1	29.	3/8" Flat Washer	2 per bearing
2.	Back Disc	1	30.	3/8" - 16 Heavy Hex Nut	2 per bearing
3.	Front Disc	1 1	32.	Self-aligning Front Bearing	1
4.	Disc Sprocket	1	33.	Joint Stem (not sold separately)	1 .
5.	H-14A Washer	1 per disc	34.	Joint Stainless Ball Bearings	l set
6.	Carriage Bolt	6	35.	Swivel Joint Packing Kit	1
8.	Hub Assembly including Riser (specify outlet thread)	1	36.	Joint Body (not sold separately)	. 1
9.	H-26 Ring Gear	1 .	37.	Joint Plug & Grease Fitting	1
10.	H-27 Pinion Gear	1	38.	Joint Cotter Pin	1
n.	Pinion Shaft	1	39.	Mator (specify voltage)	1
13.	5/8" - 18 SAE Hex Nut	1	40.	9 tooth #35 Chain Sprocket w/set screw	1
14.	H-2A Side Pinion Bearing	1	41.	5/16" Special Flat Washer	4
15.	H-3 Brake Pad	1	42.	5/16" - 18 Hex Nut	4
16.	H-31 Brake Spring	1	45.	Spacer Pipes	6
17.	FH-30B Brake Wheel	1	46.	5/16" - 18 x 1" Hex Head Spinlock Cap Screw	4
18.	Grease Fitting	1	47.	Length #35 Chain w/connecting link	1
19.	1/2" - 13 x 1" Hex Head Cap Screw	2 .	48.	Special Spacers	6
20.	Collar & Set Screw	1	49.	3/8" Lockwasher	2 per bearing
21.	Front Frame	1	50.	1/2" Lockwasher	2
22.	Back Frame	1	51.	Spacers	2
23.	Back Foot	1	52.	FH-3 Vertical Rewind Brake Pad	1
24.	Front Foot	1	Parts numb	er 4, 39, 40, 41, 42, 46, 47 and 48 do not apply to hand cra	of rewind reals
25.	Alternate Vertical Rewind Assembly w/mounting bolts, nuts & washe	n: 1			
26.	Vertical Rewind "A" Frame	1	Parts numbe	er 33 through 38 are sold as a complete assembly. Specify str	aight or 90 degree.
27.	Self-aligning Back Bearing	1	· · · · ·		
28.	3/8" - 16 x 1" Hex Head Cap Screw	2 per bearing i			

Form H-500-F 2500 CL 3/73



200		A100 D	NOF-OOT VALVE WITH HIDRO-EOG	<i>.</i>
INDÉX NO.	PART NO	QTY. REQ.	DESCRIPTION	LIST PRICE
1	61036	1	Cap Screw	\$.15
2345678	71082	1	Handle Washer	.45
3	25075	1	Handle Disc	4.25
4	11515	1	Actuator Clip	1.75
5	16782	1	"D" Handle (Remote Control)	14.30
6	61794	1	Lock Spring	9.70
7	16536	2	Stop Bracket	1.25
8	61076	4	Cap Screw	.15
9	57321	1	"O" Ring for Actuator Shaft	.35
10	63753	1	Actuator Shaft	2.50
1 1	15067	1	Valve Ball	24.25
12	57348	1	"O" Ring for Pivot Bolt	.25
13	63702	1	Pivot Bolt	.80
14	51891	3	1/8'' Plug, N.P.T.	.35
15	16791	1	Valve Body	35.15
16	57338	2	"O" Ring for Body	1.00
17	63821	1	Seat	5.95
18	57421	1	"O" Ring for Seat	.90
19	58882	1	Seat Retainer	11.05
	*80457	Seat	Sub-Assembly (Index Nos. 17,	
1.			18 & 19)	17.90
20	57318	1	"O" Ring for Retainer	.85
21	20055	2	"K" End Cap. 11/2" N.P.T. Fem.	15.75
22	61144	8	End Cap Bolt	.25
Ì			OPTIONAL PARTS	
23	16781	1	"F" Handle Body	13.25
24	51243	1	Roll Pin	.15
25	61520	1	"F" Handle Rod	3,15
26	42022	1	"F" Handle Knob	.95
29	42022		landle Complete (Index Nos.	.95
		• •	7, 8, 23, 24, 25 & 26)	20 55
27	33074	1	Rubber Gasket	
28	62960	1	1 ¹ / ₂ " B/G Swivel, R.L.,C.P.	.45 15.25
29	61222	1	Set Screw, C.P.	
30	15016	32	3/16" Diameter Brass Ball	.54 .05
31	20058	1	End Cap, 1 ¹ / ₂ " B/G	24.90
Ŭ	20030		End Cap, 11/2" Hose Thrd. Fem.	24.90
		- L	(Index Nos. 27, 28, 29, 30 & 31)	41.00
32	20056	1	"L" End Cap, 11/2" Hose Thrd. Ma.	24.55
33	20057	1	"J" End Cap, 192 Hose Thrd. Ma.	24.55
34	20102	1	"M" End Cap, 11/2" Hose Thrd. Ma.	20.50
~7	20102	1	"M" End Cap, 1½" Hose Thrd. Ma. "M" End Cap, 1½" N.P.T. Ma.	
34				22.15
	20101		The Cap. Flange	20.90
35 *NOTE:	20101	1	"H" End Cap. Flange	26.95

2891 11/2" APPARATUS DROP-OUT VALVE WITH "HYDRO-LOC"

*NOTE: New Seat Sub-Assembly (80457) will fit in old style valve with one piece seat.

Alarm Booster Hose

800 PSI Working Pressure

A. APPLICABLE SPECIFICATIONS

Unless otherwise specifically designated in this specification, all measurements and tests necessary to determine compliance of this hose with the specified requirements shall be made in accordance with ASTM's Standard Methods of Testing Rubber Hose, Designation: D-380-70 or the latest-revision or amendments thereof, effective as of the date of the invitation for bids.

B. TYPE AND SIZES

- B-1 The hose shall be of one type having a rubber tube, braided textile reinforcement, and a rubber cover.
- B-2 The sizes shall be either 3/4" 1/32" I.D. by 1-1/4" :'1/32" OJ). or 1" : I/16" I.D. by 1-1/2" . 1/16" O.D.

C. MATERIAL AND WORKMANSHIP

All materials used in the fabrication of this hose shall be of the best quality normally used for the purpose in good commercial practice for the type designated. The workmanship shall be of the highest quality.

D. GENERAL

The word rubber, as used in this specification, shall be understood to mean natural plantation rubber, synthetic rubber, or a combination of the two, compounded and processed to yield long serviceable life under good maintenance practices.

E. REINFORCEMENT CONSTRUCTION DETAIL

The hose shall be reinforced with two braided plies of high quality synthetic yarn. This yarn shall be evenly and firmly braided over the tube. The braids shall be completely surrounded with rubber such that the plies shall adhere firmly to each other and to the tube and cover.

F. TUBE CONSTRUCTION DETAIL

- F-1 The tube shall be made from extruded rubber and be uniform in thickness throughout its length. The water way of the tube shall be as smooth as is consistent with good manufacturing practice and free from imperfections.
- F-2 The thickness of the tube for both 3/4" and 1" hose shall not be less than .063 inches.
- F-3 When tested within 60 days from the date a shipment is received, the tube shall comply with the following requirements:

Tensile Strength, minimum 10	000 psi
Ultimate Elongation, minimum	. 200%

G. COVER CONSTRUCTION DETAIL

- G-1 The cover shall be made from Nooprene and be red in color. The cover shall be smooth, uniform in thickness, and as fee from pits, blisters or any other defects in material or workmanship as is consistent with the best manufacturing practice.
- G-2 The thickness of the cover shall not be less than .047 inches.
- G-3 When tested within 60 days from the date a shipment is received, the cover shall comply with the following requirements:

Tensile Strength, minimum 12	200 psi
Ultimate Elongation, minimum	260%

H. ACCELERATED AGING

The tensile strength and ultimate elongation of both the tube and cover after being subjected to the action of oxygen at a pressure of 300 * 10 pi and a temperature of 70 4 1 degree Centigrade for a period of 96 hrs. shall not decrease by more than 30% of their original values.

I. FINISHED HOSE

- I-1 The weight of the 3/4" hose shall not exceed 0.5 pounds per foot and the weight of the 1" home shall not exceed 0.7 pounds per foot, uncoupled.
- I-2 The adhesion between the cover and the braided reinforcement and the tube and the braided reinforcement shall be such that separation hall not occur at a rate greater than 1 inch per minute when a load of 10 pounds is applied to a ring specimen 1 inch in width.

The adhesion between the braided plies of reinforcement shall be such that separation shall not occur at a rate greater than 1 inch per minute when a load of 12 pounds is applied to a ring specimen 1 inch in width.

- I-3 An 18 inch length of hose while lying straight shall not burst under a pressure of 3200 psi.
- I-4 The hose shall neither increase in length nor decrease in diameter while under pressure.
- I-5 The change in length of the home shall be limited to between -2 and +4% when pressurized to 800 psi.
- I-6 The hose shall be flexible and asily coiled.
- I-7 Standard coupling for this hose is male and female chrome plated brass spanner hole Bar-Way with CHT threads.

HALEpumps	CARE AND OPERATION
CENTRIFUGAL PUMP	MANUAL
MODEL CBP4	· · ·
RATED CAPACITY GPM AT 150 P	P.S.I.
SERIAL NUMBER 80395	• •. •
SINGLE STAGE TWO STAGE THREE ST	
DISCHARGE VALVES	
SERIES BL 🗌 B 🗌 25BDT 🗐 30BD 🛛	
OTHER	
SUCTION VALVES	
SERIES BL 🗌 B 🗌 25BS 🗐 30BD 🗌]
OTHER	
TRANSFER VALVE OPERATION	
PACKING ARRANGEMENT PLATE NUMBER	
A Hale Pump is a quality product; ruggedly designed, accurately mathoroughly tested. In order to maintain the high quality of your pump ar important to follow the instructions on care and operation. Proper use a lengthen the life of your pump.	nd to keep it in a ready condit
ALWAYS INCLUDE THE PUMP SERIAL NUMBER IN	CORRESPONDENCE

LIMITED WARRANTY

The Hale Fire Pump Company, herein referred to as "Hale", warrants products of its manufacture to be free from defects in material and workmanship, under *normal use* and service, for a period of *one year* or 2000 hours of usage, whichever comes first. This limited warranty is effective only if the equipment or apparatus is used as directed, is not subjected to misuse, negligence or accident, and is not altered, treated or repaired by someone other than Hale or its designee. Items not manufactured by Hale shall bear only the limited warranties offered by their respective manufacturers.

The exclusive remedy for breach of this warranty shall be to give Hale written notice thereof and to request a Returned Goods Authorization. Upon receipt of the Returned Goods Authorization, the buyer will return the non-conforming material to Hale F.O.B. its plant within thirty days after the buyer has received the Returned Goods Authorization. Thereupon Hale at its own election shall repair or replace the same or repay the price thereof. No proximate, incidental, consequential or other damages shall be recoverable.

Hale shall not be liable for consequential damages or contingent liabilities including; but not limited to, loss of life, personal injury, loss of crops, loss due to fire or water property damage, and consequential trade or other commercial loss arising out of the failure of Manufacturer's product.

HALE MAKES NO WARRANTIES OF FREEDOM FROM PATENT IN-FRINGEMENT, OF MERCHANTABILITY, OF FITNESS FOR A PAR-TICULAR PURPOSE OR ARISING FROM A COURSE OF DEALING OR USAGE OF TRADE OR OTHER LIKE OR DIFFERENT EXPRESS OR IM-PLIED WARRANTIES EXCEPT AS MADE ABOVE.

> Hale Fire Pump Company Conshohocken, Pa. 19428



"1978 Hale Fire Pump Company

F-173

Product Safety Policy

The policy of Hale Fire Pump Company is to produce products that will perform well during their intended life cycle, and be as safe as possible for our customers. Product safety has, and will continue to be, given primary consideration during new product development and production. Our products are always designed to meet the current requirements of applicable safety standards.

Instruction manuals are supplied with all Hale products. It is strongly recommended that our customer read and understand the information contained therein before operating any equipment.

We keep comprehensive records on parts or assemblies, whether completely manufactured by Hale or in part purchased from other manufacturers, so that it can be ascertained on what final product these items were used.

If a problem related to product safety is discovered before our product is shipped, shipment will not be made before corrections are made. If a problem is discovered after the equipment leaves Hale, we will notify our distributor. If a problem is discovered by our distributor or the ultimate customer, detailed information should be forwarded to Hale, as soon as possible. Once apprised of a problem, prompt discussions will be held to determine how to resolve the situation.

We recognize the need to place more emphasis on Product Safety and have, therefore, established a Product Safety Committee which is responsible for implementing the Hale Product Safety Policy. Product Safety meetings are held on a regularly scheduled basis, to review current problems and practices, to Identify safety related problems that may develop, to analyze recommendations from the field and to administer corrective action.

Hale's Limited Warranty states that the Limited Warranty "is effective only If the equipment or apparatus is used as directed". We therefore strongly suggest that anyone who will use our product thoroughly familiarize themselves with the instruction manuals furnished with those products, before initial operation.

Hale Fire Pump Company Conshohocken. Pa. 19428 April 1978

CARE AND OPERATION FOR HALE CENTRIFUGAL BOOSTER PUMP

Hale pumps are built to produce the volumes and pressures shown on the performance curves. However, the volume & pressure you can obtain safely depends on the torque capacity of the truck's transmission or transfer case, power take-off, and the pump drive line. In most cases, the torque rating of the PTO will determine maximum pump performance. Power take-off manufacturers assign a torque rating to their product. This torque rating is based on intermittent service. They define intermittent service as operating the PTO at the full torque limit for a period of 5 minutes or less. If the operating time is over 5 minutes, then the application is considered continuous duty and the PTO torque rating must be derated 30%. The apparatus builder can give you various pump performance spots that will define the torque limit of the PTO in terms of GPM and PSI. When pumping continuously, care should be taken not to overheat the truck's power take-off, transmission or transfer case. If the oil temperature exceeds the manufacturer's recommendations, supplemental cooling must be provided for the oil. Failure to follow this procedure may result in serious personal injury and/or damage to equipment.

LUBRICATION

The drive unit bearings and gears are supplied with oil from the drive unit housing. Use a good grade of SAE EP-90 oil. Keep oil level to height of oil level plug on the side of drive unit housing (capacity 1 Qt.). Too much oil or too heavy an oil will result in unnecessary loss of power and high oil temperature. Drain oil and renew every 12 months, depending on pump usage.

Priming Pump - If Furnished

Keep primer oil tank filled with SAE 30 motor oil. Always oil the priming pump after using the booster pump. To do this, engage the priming pump and allow it to run until oil sprays out of the discharge. Should oil continue to leak from the primer, check the small air vent hole in the top of the tubing line at the primer oil tank. This should always be open so that air can flow into the hole. It prevents the oil in the tank from syphoning into the priming pump.

Priming Pump Motor

The priming pump electric motor has one lubricating fitting at the pump end. Add a few drops of good quality machine oil every three months. One type of electric motor does not have an oil fitting and does not require external lubrication.

MAINTENANCE

Except for lubrication, this pump requires very little attention. The little required, however, is important.

During freezing weather, be sure to drain all water out of the pump. Drain pump body and discharge valves. If the drive unit is equipped with a water cooling line, drain this line. There should be drains for the gauge lines, the cooling line to the engine and the relief valve, if pump is equipped with relief valve. All of these should be opened until all water is drained out, then close the drain valves. Do not put off closing drains until a later time, as forgetting to close them will result in failure to prime when attempting to work from draft.

After pumping salt water or water with chemicals, connect the pump to a fresh water hydrant or other source of fresh clean water and pump for a few minutes to clean out the contaminates.

If you have been forced to pump water containing sand or other foreign matter, do the same as stated above for salt water, flushing out relief valve, gauge lines and cooling lines.

Gaskets and Washers

Inspect suction hose and suction tube cap rubber washers frequently. Foreign matter under these washers or faulty washers will cause air leaks, which may prevent priming the pump when working from draft and even if you get water, will cause an irregular pulsating stream.

Mechanical Seal

The mechanical seal is a cartridge type seal which is spring loaded and does not require adjustment.

<u>CAUTION:</u> The mechanical seal may be damaged if pump is run dry for a longer period of time than is necessary for normal priming.

EXPLANATION OF TERMS

Impeller

The working part of a centrifugal pump which, when rotating, imparts the energy to the water. Essentially, an impeller consists of two discs separated by curved vanes. The vanes force the water to rotate between the discs so that it is thrown outward at high velocity by centrifugal force. The water from the impeller discharges into a diverging passage, converting the high velocity energy of the water into pressure.

Relief Valve

An automatic valve which, when activated by the relief valve control, will hold the engine speeds and pump pressure steady when the pump discharge is gated or closed. The valve maintains its set pressure by diverting the pump discharge flow into the pump suction.

Relief Valve Control

A hand adjustment valve which, when set to the desired pressure, will control the relief valve to maintain the desired pump discharge pressure.

Priming Pump

An auxiliary positive displacement pump which pumps air out of the centrifugal booster pump creating a vacuum in order to prime the main pump. The priming pump is a rotary vane type, electric motor driven. Once the main pump is primed and pumping, the priming pump is shut off.

Priming Valve

A shut-off type valve located in the priming line between the priming pump and the main pump. It is normally closed and is open only during priming to allow air to pass from the main pump to the priming pump.

BEFORE PUMPING

Before attempting to pump, make sure the truck transmission is in neutral and the parking brake is set.

WORKING FROM HYDRANT

Attach one end of suction hose to the hydrant and the other end to the suction of the pump. If possible, flush dirt from hydrant first.

Close discharge valves. If pump is equipped with an automatic relief valve, turn the relief valve control hand wheel clockwise as far as possible. Then open hydrant.

Check the transmission neutral warning light to see that it indicates the truck transmission is in neutral. With the truck transmission in neutral and engine idling, engage the power take-off to drive the pump. Open discharge valve or valves.

Check the warning light at the throttle control to make sure the transmission is in neutral, then open engine throttle gradually until desired pressure is reached. If the compound gauge shows a vacuum before desired pressure is reached, it is a definite indication that you are getting all the water hydrant will supply. In this case, the only way to get more pressure is to use smaller nozzle tips.

As soon as desired pressure is reached, regulate the valve for cooling the engine. Set automatic relief valve control by watching pressure gauge and turning the control counterclockwise until pressure begins to drop, then turn clockwise until original pressure is restored. Whenever the pump pressure is changed, this control must be reset in the same manner. Turn the handwheel clockwise for higher pressures -- counterclockwise for lower pressures.

The pump will not discharge more water than the capacity of the hydrant. For the sake of the water system, it is not good practice to reduce the pressure on the compound

gauge below zero. Disregarding this could result in serious damage to water mains.

Watch the pressure gauge as you open the throttle. If the engine speed increases without a proportionate increase in pressure, the pump is "running away" from the water. In this case close the throttle slowly until the pressure begins to drop and the engine speed becomes reasonable. You will pump no more water by going beyond this point. Cavitation will cause damage to the pump.

WORKING FROM DRAFT

Get as close to the water as possible, As the vertical lift increases, the pump capacity will decrease. This applies to any type or make of pump.

Attach suction hose to pump, put strainer on the opposite end and submerge strainer in water. Avoid upward bends causing air trap in suction hose. It is very desirable to have two feet or more of water over the strainer. Use every precaution to keep strainer off bottom. Be sure to keep sand, leaves, or other foreign matter away from strainer. No pump has ever been built which will pump water with sand and foreign matter without causing wear. This pump will handle such water with as little damage resulting to the pump as any fire pump on the market -- possibly less damage-- but we do not recommend such abuse unless there is no other way to stop a fire.

Close all discharge valves and drain valves. Be sure all suction hose couplings and suction tube cap are tight. Check the transmission neutral warning light to see that it indicates the truck transmission is in neutral. With truck drive in neutral and engine idling, engage the power take-off to drive pump.

Pull priming handle which opens the priming valve and starts the priming pump motor. On pumps that are equipped with a separate control for priming valve and priming pump motor, open valve and then start motor. When primed, close the valve and turn off the motor.

<u>CAUTION:</u> When priming, the main pump is running. This pump has a mechanical seal which may be damaged if pump is run dry too long. If the priming pump does not discharge water in 30 seconds, do not continue to run. Stop and look for air leaks.

When water first reaches the priminq pump, At will come out mixed with air, Wait a few seconds until the discharge from the priming pump is uniform. Check the warning light at the throttle control to make sure the transmission is in neutral. Then open the throttle until a pressure of about 20 to 50 PSI is built up. Open discharge valve slowly until a steady stream is obtained, then release the priming handle.

Open throttle gradually until the desired pressure is reached, regulate valve for cooling engine and set relief valve control as described under "Working from Hydrant". As the throttle is opened, the pressure should build up as the engine speed increases.

Should the engine speed increase without a corresponding increase in pressure, the pump is cavitating or "running away" from the water. Cavitation will cause damage to the pump and should be avoided.

The first of two reasons for cavitation can occur on high vertical lifts with several short lines having large tips pumping a large volume. In this case, close engine throttle slowly until pressure gauge begins to drop, then run at this point.

In the second case, when pump is not completely primed, it is desirable to reprime the pump and also look for possible air leaks.

Air leaks will cause high engine speed in relation to pressure.

Foreign matter in impeller will cause high engine speed and less than normal volume.

If water should continue to flow out the priming pump discharge after the main pump is running, flush the priming valve by opening and closing it several times.

When changing the hose or for any other reason a shut-down is desired when working from draft, simply slow down to about 20 PSI discharge pressure on ordinary lifts and 35 PSI on very high lifts and close discharge valves. Closing the discharge valves will prevent pump from losing its water. Make sure the pump does not get hot from continued churning without flow. Open a discharge valve slightly when this occurs to discharge the hot water. If the pump has a recalculating valve, open this cooling line, to resume, simply open the discharge valves and throttle.

Do not pump hard enough to cause a whirlpool at the strainer. This will allow air to get into the pump and result in rough operation and pulsation. If more water is needed, try to get better submergence for the strainer.

WORKING FROM BOOSTER TANK

Open valve between tank and pump suction.

Close discharge valves. Prime exactly as when working from draft.

Open discharge valve and build up pressure by opening throttle.

FINAL TEST BEFORE HOUSING ENGINE AFTER RETURNING FROM FIRE

After all instructions on maintenance and lubrication have been followed, close discharge valves, booster line valve, and drain valves and tighten suction caps. Engage priming pump. Run until compound gauge shows about 15 inches of vacuum (approximately 15 seconds). Close priming valve, disengage priming pump and watch gauge. If vacuum falls rapidly, it is a certain indication of an air leak or leaks which must be eliminated before pump can be considered in serviceable condition. Air leaks may often be detected by ear after the engine is stopped.

It is further advisable to test the suction hose by this same method at reasonably frequent intervals. This can be done by attaching the suction hose to the pump and placing the suction tube cap on end of suction hose to seal the end.

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INSTALLATION and SERVICE INSTRUCTIONS FOR HALE ELECTRIC & CLUTCH PRIMING PUMP LUBRICATION SYSTEMS

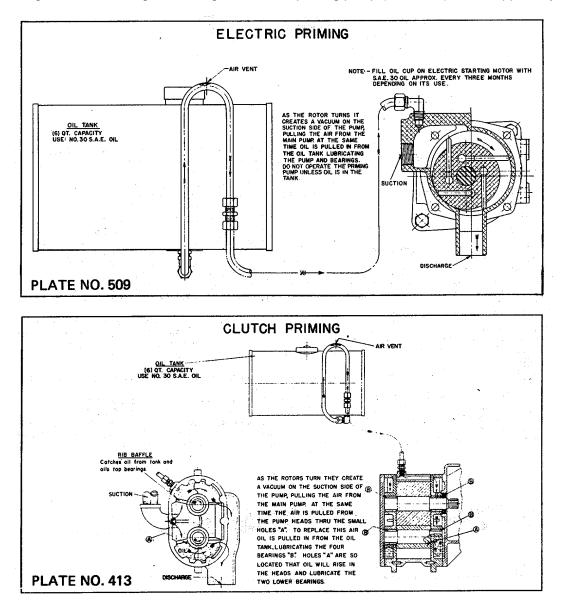
The "self priming" priming pumps, which prime centrifugal pumps, are lubricated as shown. Priming instructions are covered in the pump instruction manual.

The priming pump oil tank should be kept full of SAE 30 motor oil. Never run the priming pump unless oil is in the tank and lubricating the priming pump. After using the priming pump, it should be oiled by engaging the pump until oil sprays out of the discharge. If oil continues to run after the pump is stopped, check the oil tube air vent hole to make sure it is open.

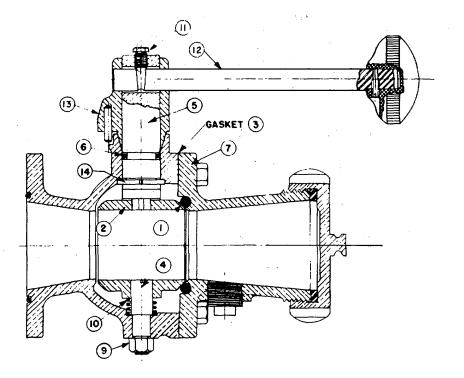
If the priming operation is not using oil, water might be entering the oil tank from the major centrifugal pump. This can occur if the priming valve leaks while the major pump is in operation. To correct, drain tank and service the priming valve.

The air vent in the priming tank tube is to break the syphon preventing oil flow from the tank into the priming pump after the priming operation. This hole is made with a No. 60 drill and should not be enlarged. It should be kept open at all times. The air vent in the filler cap should similarly be left open.

The location of the oil tank on the apparatus is optional with the manufacturer mounting the pump and will be determined by accessibility for inspection, filling and conditions of mounting. The tank is furnished with strap mounting brackets. Tubing connecting oil tank with priming pump (5/16 O.D.) is not supplied by Hale.



SERVICE INSTRUCTIONS FOR BL & B SERIES VALVES



LUBRICATION

Using a brush, lubricate the face of the ball (2) with a waterproof grease once a week. Additionally, on a suction valve, squirt some oil in the space next to the rubber washer to lubricate the swivel balls. The remote control linkage connecting the valves should be lubricated monthly.

If a drain valve is installed on the discharge valve, insert an oil can tip in the open end of the discharge valve and allow some oil to run down the connecting pipe to the closed drain valve. SERVICE

SERVICE If the valve leaks, it is probably due to the "0" ring seal (1) not pressing tightly enough against the ball (2). To increase the pressure of the "0" ring (1) against the ball (2), remove one cover gasket (3) and reassemble. If valve still leaks, remove another gasket. The valve is usually assembled with two or three gaskets. Do not remove too many gaskets. The valve should turn easily yet hold a vacuum and pressure. Never remove the last gasket. If you are down to the last gasket and the valve still leaks, turn the "0" ring (1) around and put the new side against the ball (2). If this fails, install a new "0" ring (1). If the valve has high usage and wear, it might be necessary to install a new ball (2), pivot (4) or stem (5) Should the valve leak up thru the stem (5) install a new more "0" ring (6) (4) or stem (5). Should the valve leak up thru the stem (5), install a new stem "O" ring (6). TO DISASSEMBLE VALVE

TO DISASSEMELE VALUE Remove cover (7) and "O" ring (1). Take off nut (9), tap pivot (4) up through the ball and remove. Remove ball (2) and spring (10). Remove adjusting screw (11), handle (12) and stop (13). On some valves, the handle adjusting screw (11) will be two pieces. In this case, loosen the nut and then remove the screw. Push stem (5) in and remove split shoulder ring (14). Pull out stem (5). TO ADJUST HANDLE LOCK

<u>Both the handle (12) and adjusting screw (11) are made of hardened steel and should wear very little</u> in service. If the lock on the handle does not function, adjust as follows: Put handle (12) thru stop (13) and stem (5). Enter adjusting screw (11) in the cam slot of handle (12). Turn knob to unlocked position and tighten adjusting screw (11). Back off on adjusting screw (11) until handle (12) locks with 1/8 to 1/4 turn. Valve ball (2) must be free to turn. The adjusting screw will stay in the set position due to the nylon locking element on the threads. If the valve is equipped with a set screw and nut, hold the screw in the set position and tighten the locking nut.

HALE FIRE PUMP COMPANY 708 Spring Mill Avenue, Conshohocken, PA 19428

PLATE NO. 313B

4-1-76 F.R.E.



YEAR_____ UNIT #_____

TRUCK MFR. _

PUMP MODEL & SERIAL NO. _____

MONTHLY CHECK LIST

WEEKLY

Recommended test on the relief valve system or governor; test transfer valve (if applicable). Test the priming system and check oil level in priming oil tank—lubricate all valves, discharge, suction, hose drain and multi drain. Check pump shift warning indicator lights.

MONTHLY

ubricate remote controls heck controlled packing leakage (Adjust if necessary - 8 to 10 drops per min.) erform Dry Vacuum Test - Per NFPA-1901 Para. 11-2.2.4 2" Minimum Vacuum - Loss not to Exceed 10" Vacuum in 10 ninutes beck drive line bolts ubricate suction tube threads and clean strainer, inspect gaskets. theck oil level in pump gear box, if contaminated eplace with SAE EP 90 oil in midship pumps; SAE 10W-30 in ront mount pumps NNUALLY Complete all previous checks & on-all-guestions					1600	-Chi				^t o ^o	MOV.	
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omplete all previous checks 🕅 on-all-questions]						
check oil level in auto lube assembly (SAE-EP 90 oil) ubricate power transfer cylinder, power shift cylinder and change pump gear box oil and refill (SAE-EP oil midship po check individual drain lines from pump to multi drain to en ubricate transfer valve mechanism on two stage pumps. Fun yearly standard pump test (Underwriters) to check pur lepacking of pump is recommended every two or three ye	umps; S sure pr np perf	OPEr 0)W-30 draina) fron Ige ar	t mou nd pro	ints). otectic	n froi	n free	-			
OTE: The above general recommendations are provided f idicate a need for increased maintenance. Good preventative consult service chart in operator's manual for detailed info	e mainte	enance										
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MIDSHIP SERVICE DIAGNOSTIC CHART

CONDITION	POSSIBLE CAUSE	SUGGESTED CORRECTION
PUMP WILL NOT ENGAGE		
Standard Trans- mission w/Manual Pump_Shift	Clutch not fully disengaged or malfunction in shift linkage	Check clutch disengagement, drive shaft must come to a complete stop before attempting pump shift. Check pump shift linkage, lubricate and adjust if necessary.
Automatic Trans- mission w/Manual Pump Shift	Automatic transmission not in neutral position	Repeat recommended shift procedures with transmission in neutral position.
Standard Trans- mission w/Power Shift system	Insufficient air or vacuum supply in shift system	Repeat recommended shift procedures. Check system for loss of vacuum or air supply. Check for leaks in system. Employ shift override procedures as follows: Hole is provided in shifting shaft to accomplish emergency shifting. Complete shift of control in cab and proceed to complete shift of lower control manually.
Automatic Trans- mission w/Power Shift system	Automatic transmission not in neutral position	Repeat recommended shift procedures with transmission in neutral position.
	Pump Shift attempted before vehicle has been brought to a complete stop	Release braking system momentarily, then reset and repeat recommended shift procedures.
	Premature application of parking brake system (before truck comes to a complete stop)	Release braking system momentarily, then reset and repeat recommended shift procedures.
	Insufficient air or vacuum in shift system	Repeat recommended shift procedures. Check system for loss of air or vacuum. Check for leak in system. Employ manual override procedures if necessary. (See Standard Transmission w/Power Shift)
	Air or vacuum leaks in system	Attempt to locate leak and take necessary steps to repair. Leakage, if external, may be detected audibly. Leakage could be internal and not as easily detected.
		NOTE: Do Not leave cab after completing pump shift unless shift indicator light is illuminated or a speedometer reading is noted.
PUMP WILL NOT PRIME OR LOSES PRIME	No oil in priming oil tank	Refill priming oil tank with SAE30 motor oil.
	Engine speed too low (Rotary Gear Primer)	Increase engine RPM to recommended priming range 1000 to 1200 RPM.
	Electric Priming System	No recommended engine speed is required to operate the electric primer, however, 1000 engine RPM will maintain truck electrical system while providing enough speed for initial pumping operation.
	Defective Priming System	Check priming system by performing "Dry Vacuum Test" per NFPA 1901, Paragraph 11-2.2.4. If pump is tight but primer pulls less than 22" vacuum, it could indicate excessiv wear in primer.
,	Defective Priming Valve (Electric)	Defective sealing rings — replace if necessary, lubricate rings. Priming valve stuck open will allow loss of prime, also will permit unnecessary running of electric priming motor — assure complete closure of priming valve, dismantle and lubricate if necessary.
		NOTE: Weekly use is recommended to keep priming system in good operating condition.
	Defective Priming Valve (Air or Vacuum)	Priming valve not opening — employ manual override to open valve. Inactivity may cause the above. Remove and lubricate when practical. Defective diaphragm in priming valve — replace.
	Suction lifts too high	Do not attempt lifts exceeding 22' except at low elevations.
· · · · · · · · · · · · · · · · · · ·	14. 1917 - 1917 - 1917 - 1917 - 1917 - 1917 - 1917 - 1917 - 1917 - 1917 - 1917 - 1917 - 1917 - 1917 - 1917 - 1917 -	Suction strainer must be at least two feet below water surface to prevent whirlpooling.
	Blocked suction strainer	Remove obstruction from suction hose strainer, do not allow suction hose and strainer to rest on bottom of water supply.
1999 - Carlos A.	Suction connections	Clean and tighten all section connections. Check suction hose and suction hose gaskets for possible defects.

CONDITION	POSSIBLE CAUSE	SUGGESTED CORRECTION
	Primer not operated long enough	Proper priming procedures should be followed, do not release primer control before assurance of complete prime, open discharge valve slowly during completion of prime to assure same.
		NOTE: Do not run primer over 30 seconds in attempting prime. If prime is not attained in 30 seconds, stop and look for possible cause, i.e. air leaks, blocked suction, etc.
	Air trap in section line	Avoid placing any part of the suction hose higher than the suction intake. Suction hose should be laid with continuous decline to water supply. If trap in hose is unavoidable, repeated priming may be necessary to eliminate air pocket in suction hose.
	Pump pressure too low when nozzle is opened	Reprime pump and maintain higher pump pressure while opening discharge valve slowly.
	Air leaks	Attempt to locate and correct air leaks.
		Use the following procedures to locate air leaks: Perform dry vacuum test on pump per NFPA 1901, paragraph 11-2.2.4, with 22" minimum vacuum required with loss not to exceed 10" vacuum in 10 minutes. If a minimum of 22" vacuum cannot be attained, priming device or system may be defective or leak is too large for primer to overcome (i.e. valve open). Loss of vacuum indicates leakage and could prevent priming or cause loss of prime. Attempt above dry prime and shut engine off, audible detection of leak is often possible. Connect suction hose from hydrant or the discharge of another pumper to pressurze pump with water and lock for visible leakage and correct. A pressure of 100 PSI should be sufficient. Do not exceed pressure limitations of pump or pump accessories or piping connections.
		Check pump packing during attempt to locate leakage. If leakage is in excess of recommendations, adjust accordingly, following instructions outlined in pump manual.
INSUFFICIENT PUMP	Insufficient Engine Power	Engine power check or tune-up may be required for peak engine and pump performance.
CAPACITY		Engine linkage not opening throttle fully.
	Transfer Valve not in proper "Volume" position	Place transfer valve in "Volume" position (parallel) when pumping more than 2/3 rated capacity (Does not apply to single stage pumps). For pressure above 200 PSI, pump should be placed in "Pressure" (Series) position.
	Relief Valve set improperly	If relief valve control is set at too low a pressure, it will allow relief valve to open and by pass water. Reset Relief Valve Control, per recommended procedures, to correct pressure requirements. Other bypass lines (i.e. foam system, inline valves) may reduce pump capacity or pressure.
	Engine Governor set incorrectly	Engine governor, if set for too low a pressure setting when on automatic, will decelerate engine speed before desired pressure is attained. Reset governor according to recommended procedures.
	Truck transmission in wrong gear or clutch is slipping	Recheck pumping procedures for recommended transmission gear or range.
	gear or ciuter is suppling	Utilize mechanical speed counter on pump panel to check actual speed against possible clutch or transmission slipping or inaccurate tachometer (Check manual for proper speed counter ratio).
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INSUFFICIENT PRESSURE	Check similar causes for Insufficient capacity	Recheck pumping procedures for recommended transmission gear or range. Utilize mechanical speed counter on pump panel to check actual speed against possible clutch or transmission slippage or inaccurate tachometer (check manual for proper speed counter ratio).
	Transfer Valve not in "Pressure" position	For desired pump pressures above 200 PSI transfer valve should be in "Pressure" position. Does not apply to single stage pumps.
	Impeller Blockage	Blockage in the impeller can prevent loss of both <i>capacity</i> and <i>pressure.</i> Back flushing of pump from discharge to suction may free blockage. Removal of one half of pump body may be required to remove blockage.
	Worn Pump Impellers & Clearance Ring	Worn impellers and clearance (wear) rings will reduce both pump <i>capacity</i> and <i>pressure.</i> Installation of new parts required, considered major repair.
Engine speeds too high for required	Impeller blockage	Same as impeller blockage above.
capacity or pressure	Worn pump impellers and clearance rings	Installation of new parts required same as above "Pump Worn Out"
	Blockage of suction hose entry	Clean suction hose strainer of obstruction and follow recommended practices for laying suction hose — keep off the bottom of the water supply but at least 2 feet below the surface of water.
	Defective Suction Hose	Inner liner of suction hose may collapse when drafting and is usually undetectable. Try a different suction hose on same pump test mode for comparison against original hose and results.

CONDITION	POSSIBLE CAUSE	SUGGESTED CORRECTION
	Lift too high, suction hose too small	Higher than normal lift (10') will cause higher engine speeds, high vacuum, and rough operation. Larger suction hose will assist above condition.
	Truck transmission in wrong range or gear	Check recommended procedures for correct transmission selection.
RELIEF VALVE DOES NOT RELIEVE PRES SURE WHEN VALVES	Incorrect setting of Control Valve (Pilot valve)	Check and repeat proper procedures for setting relief valve system
ARE CLOSED	Relief Valve inoperative	Possibly in need of lubrication. Remove relief valve from pump, dismantle, clean and
RELIEF VALVE DOES	Dirt in system causing sticky	lubricate. Weekly use of the Relief Valve System is recommended. Relief Valve dirty or sticky, follow above instructions for disassembling, cleaning,
NOT RECOVER AND RETURN TO ORIGI-	or slow reaction	and lubrication
NAL PRESSURE SET TING AFTER OPENING VALVES		Blocked Clean with small wire or straightened paper clip.
RELIEF VALVE OPENS	Drain hole in housing or piston blocked	Clean hole, same as above
VALVE IS LOCKED OUT		
UNABLE TO ATTAIN	Wrong procedures	Check instructions for setting Relief Valve Control and reset.
PROPER SETTING ON RELIEF VALVE	Blocked strainer	Check and clean strainer in supply line from pump discharge to control valve. Check schematic in pump manual for exact location. Check and clean tubing lines related to the relief valve and control valve.
	Foreign matter in Control Valve	Remove and clean
	Hunting condition	Insufficient water supply coming from pump to Control Valve — check strainer in relief valve system
		Foreign matter in control valve remove and clean
EM GOVERNOR THROTTLE CONTROL	Dampening needle blocked	Remove dampening needle and clean capillary tube per "Governor Service" in pump manual
KNOB DIFFICULT	Governor unit dirty and in need of lubrication	Remove, clean, and lubricate per manua!
		Clean panel strainer and replace filter. Weekly use of governor system is recommended
GOVERNOR SHAFT DOES NOT RETURN TO SHUT DOWN	Governor unit dirty and in need of lubrication	Remove: clean and lubricate per manual Recommend weekly use of governor system for best operation
POSITION (IDLE)		
UNABLE TO SET GOVERNOR ON AUTOMATIC AND RETAIN REFER-	Leak in system	Check for leaks, external leaks with be visible internal leaks in O - rings) will cause pressur loss in reference system, replace sealing rings
ENCE PRESSURE		
9	Reference tank filled with water	Drain reference tank Reference tank should have independent drain and must be drained with same. Multi- drain valve will not drain reference tank.
	Improper procedure used	Reset governor on automatic: Caution, wait a full 3 seconds before pulling Actuator longer if engine is slow responding to throttle setting
GOVERNOR SLOW RESPONDING ON	Dampening needle out of adjustment	Check manual for proper adjustment of dampening needle
AUTOMATIC SETTING	Faulty throttles cable or linkage	Check throttle cable for proper clamping see manual for recommendation
GOVERNOR WILL NOT STOP HUNTING	Improper adjustment of dampening needle	See Governor operating and instruction in pump manual for proper adjusting
	Check Valve Ball missing	Check unit for check valve ball and replace if missing
LEAK AT PUMP PACKING	Adjust pump packing	Follow procedures in manual "Packing Adjustment" (8 to 10 drops per minute of leakage preferred)
	Replace pump packing	Follow pump manual for replacement of packing. Packing replacement is recommended every 2 or 3 years
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CONDITION	POSSIBLE CAUSE	SUGGESTED CORRECTION
WATER IN PUMP GEAR BOX (Midship only)	Leak coming from above pump	Check all piping connections and tank overflow for the possiblity of spillage falling directly on pump gear box.
	Excessive leakage at pump packing	Follow above procedures for adjustment or replacement of packing. Excess packing leakage permits the flushing of water over the gear box casing to the input shaft area. Induction of this excessive water may occur thru the oil seal or speedometer connection. Inspect and replace oil seal if necessary. Check speedometer connection cap and tighten if necessary. Install modification of additional slinger and front bearing cap if desired; available from factory. (Not required on models after 1972) Drain contaminated oil form gear box, flush with lighter oil (SAE30), drain again and replace with SAE-EP-90 gear oil.
DISCHARGE VALVES DIFFICULT TO OPERATE	Lack of lubrication	Recommend weekly lubrication of discharge and suction valve. Use good grade petroleul base grease or silicon grease.
TO OPENATE	Valve in need of more clearance	Add gasket to valve cover (per manual). Multi gasket design allows additional gaskets for more clearance and free operation.
		NOTE Addition of too many gaskets to valve will permit leakage.
REMOTE CONTROL DIFFICULT TO OPERATE	Lack of lubrication	Lubricate remote control linkages and collar with oil.

HALE PUMPS

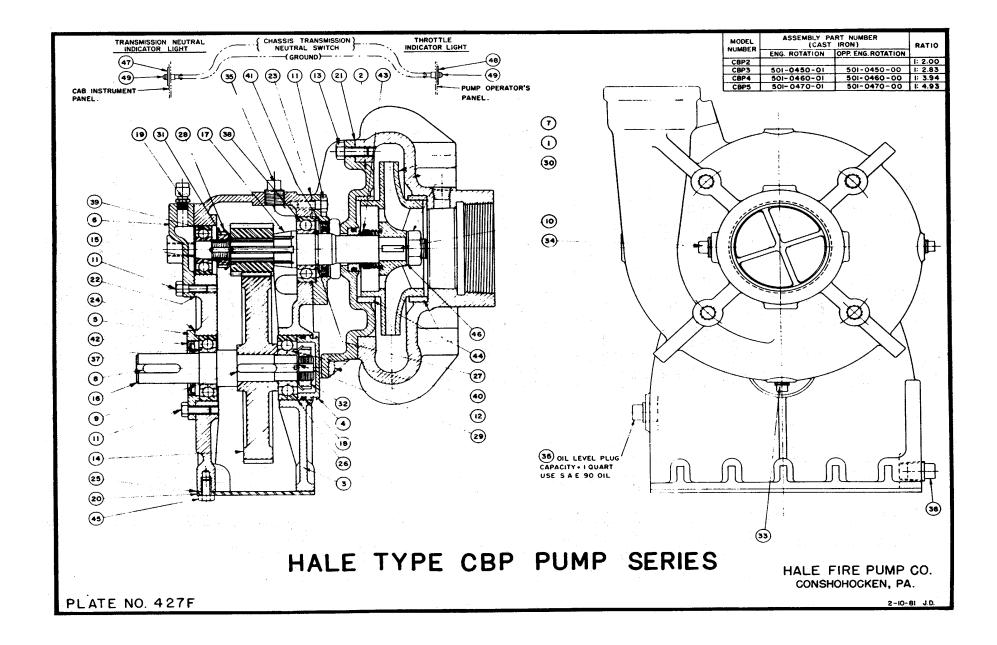
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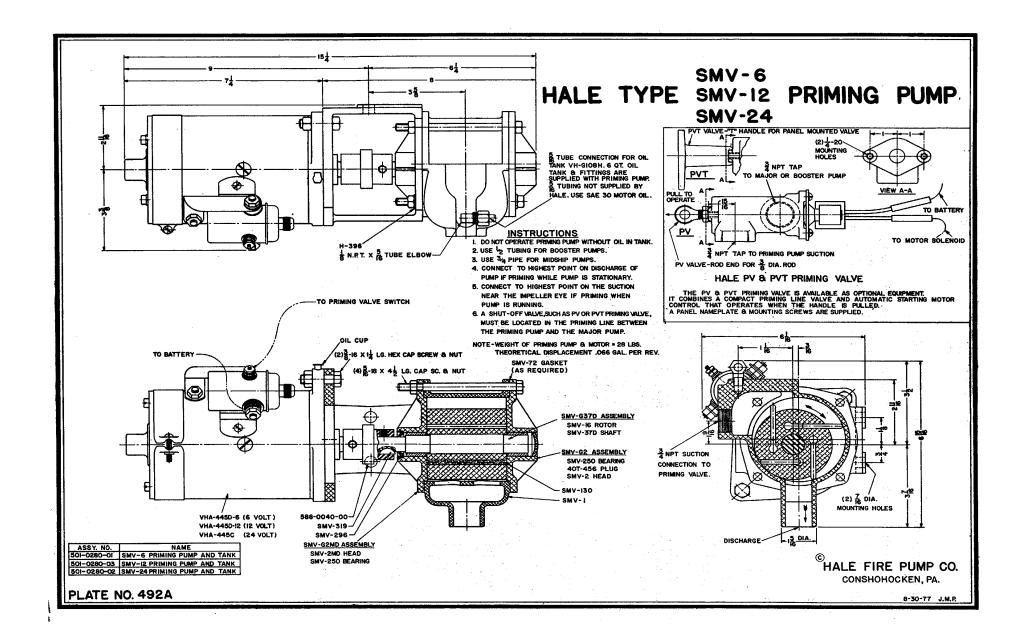
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F-184



		PARTS L	LIST HALE TYPE CBP SERIES PUMPS	
ITE NO			Plate No. 427F NAME OF PART	NO.REQ
1	001-0190-00	CBF-320LD	Body-Volute (Opp. Engine Rotation)	1
1	001-0200-00	CBP-320RD	Body-Volute (Engine Rotation)	1
2	002-0170-00	CBP-2F	Head-Pump	1
3	004-0090-00	CBP-4J	Housing-Drive Unit (CBP3 Pump)	1
3	004-0100-00	2CBP-4D	Housing-Drive Unit (CBP4 & CBP5 Pumps)	1 1
4 5	008-0130-00 008-0140-00	CBP-47 CBP-49	Cap-Rear Bearing Cap-Front Bearing	1
6	008-0150-00	CBP-61D	Cover-Pump Shaft Bearing	1
7	016-0230-00	CBP-16L-6-1/2	Impeller (Opp. Engine Rotation)	1
7	016-0240-00	CBP-16R-6-1/2	Impeller (Engine Rotation)	1
8	017-0100-00	H-95X	Key-Drive Shaft	1
9	017-0100-00	H-95X	Key-Drive Shaft Gear (CBP4 and CBP5 Pumps)	1
9	017-0240-00	CBP-32	Key-Drive Shaft Gear (CBP3 Pump)	1
10	017-0250-00	CBP-17	Key-Impeller	1
11	018-1406-00		Screw-5/16-18 x 3/4 Lg. Hex. Hd. Stl. Cap	12
12	018-1410-00		Screw-5/16-18 x 1 Lg. Hex. Hd. Steel Cap	2
13	018-1607-04		Screw-3/8-16 x 7/8 Lg. 3600 Nyl. Lock Hex. Hd. Stl. Cap	8
14 14	031-0360-00 031-0370-00	CBP-143-51 CBP-143-71	Gear-Drive (CBP3 Pump) (51 Teeth) Gear-Drive (CBP4 Pump) (71 Teeth)	1 1
14	031-0380-00	CBP-143-74	Gear-Drive (CBP5 Pump) (74 Teeth)	1
15	031-0390-00	CBP-31-15	Gear-Pump Shaft (CBP5 Pump) (15 Teeth)	1
15	031-0400-00	CBP-31-18	Gear-Pump Shaft (CBP3 & CBP4 Pumps) (18 Teeth)	1
16	037-0320-00	25D-36	Shaft-Drive (CBP3 Pump)	1
16	03'7-0360-00	3PTF-36D	Shaft-Drive (CBP4 and CBP5 Pumps)	1
17	037-0330-00	CBP-37H	Shaft-Pump	1
18	040-2270-00	40-4N212	Ring-Rear Bearing Cap Seal	1
19	044-0260-00	171-1/8	Vent-Air	1
20 20	044-0830-00 044-0840-00		Cover-Drive Unit (CBP3 Pump) Cover-Drive Unit (CBP4 & CBP5 Pumps)	1
20	046-0350-00	FZ-W323	Gasket-Volute Body	1
22	046-5230-00	CBP-71D	Gasket-Pump Shaft Bearing Cover	1
23	046-5240-00	CBP-72	Gasket-Pump Head	1
24	046-5250-00	CBP-292	Gasket-Front Bearing Cap	1
25	046-5260-01		Gasket-Drive Unit Cover (CBP3 Pump)	1
25	046-5270-01		Gasket-Drive Unit Cover (CBP4 & CBPS Pumps)	1
26	048-0360-00	344-10	Shim-Drive Shaft	2
27	077-1180-05	78S118	Ring-Pump Shaft Bearing Retaining	1
28 29	097-3170-04 097-3170-05	317-04 317-05	Washer-Pump Shaft Lock Washer-Drive Shaft Lock	1
30	110-2701-06	517-05	Nut-3/4-16 Hex. Stainless Jam	1
31	110-6110-04	110-04	Nut-Gear Lock	1
32	110-6110-05	110-05	Nut-Drive Shaft Bearing Lock	1
33	217-0201-00		Plug-1/4 NPT Black Mal. Iron	2
34	217-0301-00		Plug-3/8 NPT Black Mal. Iron	1
35	217-0401-00		Plug-1/2 NPT Black Mal. Iron	2
36	217-0401-08	2066	Plug-1/2 NPT Magnetic	1
37 38	250-0206-00 250-0206-06	206S 206KG	Bearing-Drive Shaft Bearing-Pump Shaft	1 1
39	250-0200-00	303W	Bearing-Pump Shaft	1
40	250-0305-00	305S	Bearing-Drive Shaft	1
41	296-2110-00	296K4-118	Seal-Pump Shaft Oil	1
42	296-2150-00	CBP-296D	Seal-Drive Shaft Oil	1
43	296-5050-00	CBP-G444	Seal-Mechanical	1
44	321-0070-00	FZ-321	Ring-Clearance	2
45 45	018-1404-00		Screw-5/16-18 x 1/2 Lg. Hex. Hd. St Cap (CBP3)	10
45 46	018-1404-00		Screw-5/16-18 x 1/2 Lg. Hex. Hd. Stl. Cap (CBP4 &CBPS) Washer-3/4 External Tooth Stainless Lock	12 1
46 47	097-0960-00 101-0251-00		Plate-Instruction	1
48	101-0291-00		Plate-Instruction	1
49	200-0540-00		Light-Indicator, Assembly	2



PARTS LIST HALE TYPE SMV PRIMING PUMP Plate No. 492A

ASSEMBLY PART NO. DESCRIPTION

501-0280-01	SMV-6	Priming Pump (with motor) and tank
501-0280-02	SMV-24	Priming Pump (with motor) and tank
501-0280-03	SMV-12	Priming Pump (with motor) and tank

NAME OF PARTNO. REQ.

001-0130-00	SMV-1	Body-Pump		1
017-0190-00	SMV-319	Key-Drive Shat	1	
018-1444-00		Screw-5/16-18	x 4-1/2 Lg. Hex. Hd. Steel Cap	4
018-1612-00		Screw-3/8-16 x	1-1/4 Lg. Hex. Hd. Steel Cap	2
046-5200-00	SMV-72	Gasket-Pump I	Head	As req.
082-0103-02		Elbow-1/8 NPT	to 5/16 Tube Compression	1
097-0240-00	H-396	Washer-Flat		2
108-0010-00	VH-GIO8H	Tank-Oil (Asse	mbly)	1
110-1400-00		Nut-5/16-18 He	ex Steel	4
110-1600-00		Nut-3/8-16 He>	Steel	2
130-0010-00	SMV-130	Vane-Rotor		4
200-0040-00	VHA-445D-12	Motor-Priming	Pump (12 Volt)	1
200-0050-00	VHA-445D-6	Motor-Priming		1
200-0060-00	VHA-445C	Motor-Priming	Pump (24 Volt)	1
296-2130-00	SMV-296	Seal-Oil		1
502-0060-00	SMIV-G2MD	Head-Pump Mo	ounting Assembly	1
002-0110-00		SMV-2MD	Head-Pump Mounting	1
250-9110-00		SMV-250	Bearing-Pump	1
502-0070-00	SMV-G2	Head-Pump (A	ssembly)	1
002-0120-00		SMV-2	Head-Pump	1
217-3004-00		40T-456	Plug-Expansion	1
250-9110-00		SMV-250	Bearing-Pump	1
537-0280-00	SMV-G37D	Shaft-Pump (A	ssembly)	1
016-0170-00		SMV-16	Rotor	1
037-0270-00		SMV-37D	Shaft-Pump	1
588-0040-00		Coupling-Drive		1

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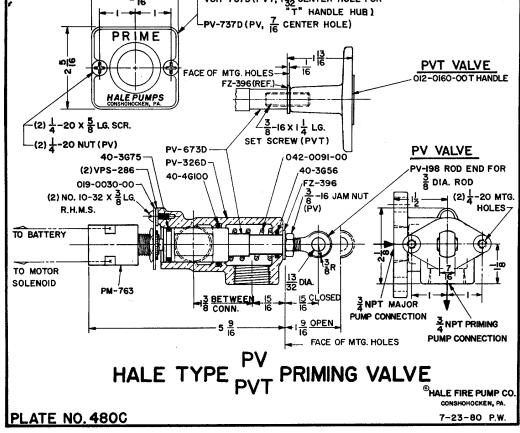
PART NO.

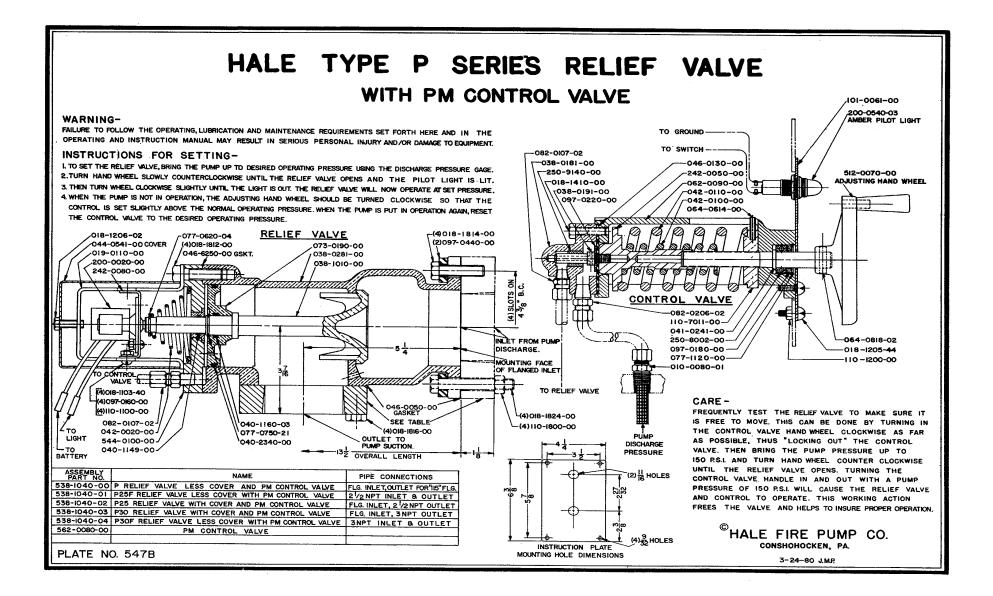
HALE FIRE PUMP COMPANY Conshohocken, PA

1 of 1

PARTS LIST HALE TYPE PV & PVT PRIMING VALVE Plate No. 480C

ASSEMBLY PART NO.		DESCRIPTION	
538-0210-00		PV PrimingVallve Assembly with 101-0020-00 Instruction Plate & Screws	
538-0280-00		PVT Priming Valve Assembly	
PART NO.		NAME OF PART	NO. REQ.
012-0160-00		Handle-(PVT Valve)	1
012-0100-00		Screw-#10-32 x 3/8 Lg. Steel Rd. HD. Mach.	2
018-1205-44		Screw -1/4 x 5/8 Lg. Ph. Rd. Hd. SST. Mach.	2
018-1612-54		Screw -3/8-16 x 1-1/4 Lg. Soc. Hd. Stl. Knurled	Z
010-1012-34		Pt. Set. (PVT Valve)	1
019-0030-00		Bracket-Switch Mounting	1
028-0050-00	PV-198	End-Rod (PV Valve)	1
038-0170-00	PV-326D	Body-Valve	1
040-1130-03	40-3G56	Ring-Body Seal	1
040-1160-03	40-3G75	Ring-Piston Seal	1
040-2140-03	40-4G100	Ring-Body Seal	1
042-0091-00		Spring	1
073-0040-00	PV-673D	Piston-Valve	1
097-0170-00	FZ-396	Washer-Valve Piston (PV Valve)	1
097-0540-00	VPS-286	Washer	2
101-0020-00	PV-737D	Plate-Instruction (PV Valve)	1
101-0050-00	VSH-737D	Plate-Instruction (PVT Valve)	1
110-1200-00		Nut-1/4-20 Steel Hex (PV Valve)	2
110-1601-00		Nur-3/8-16 Hex Steel Jam (PV Valve)	1
200-0010-00	PM-763	Switch-Priming Valve	1
			-
	 2 7	VSH-737D (PVT, 1 1 CENTER HOLE FOR	
ľ	-+	T" HANDLE HUB)	





PARTS LIST HALE TYPE P SERIES RELIEF VALVE AND PM CONTROL VALVE Plate No. 547B

PART NO.	NO. REQ.	NAME OF PART		
		P SERIES RELIEF VALVE	_	
018-1103-40		Screw-#10-32 x 3/8 Lg. R.H. Stl. Mach.		4
018-1206-02		Screw-1/4-20 x 3/4 Lg. Hex. Hd. Cad. P1. Stl.		1
018-1814-00		Screw-3/8-16 x 1-1/2 Lg. Hex. Hd. Stl.		4
018-1812-00		Screw-3/8-16 x 1-1/4 Lg. Hex. Hd. Stl.(P25 & P30 Ass'y Only)		4
018-1816-00 018-1824-00		Screw-7/16-14 x 1-3/4 Lg. Hex. Hd. Stl. Screw-7/16-14 x 2-1/2 Lg. Hex. Hd. Stl.(P25F & P30F Ass'y.		4
010-1024-00		Only)		4
019-0110-00		Support-Switch		4
038-0281-00		Body-Relief Valve		1
038-1010-00	QL-682D	Valve		1
040-1149-00	40Q-3N62	Ring-Cover Seal		1
040-1160-03	40-3G75	Ring-Valve Seal		1
040-2340-00	40-4X300	Ring-Piston Seal		1
042-0020-00	Q-721	Spring-Valve		1
044-0541-00		Cover-Switch(P25 and P30 Ass'y. Only)		1
046-0050-00	46DW	Gasket-Flange		2
046-6250-00		Gasket-Cover		1
073-0190-00	QL-673D	Piston-Relief Valve		1
077-0620-04	710S62	Ring-Spring Retaining		1
077-0750-21	77SS75	Ring-Piston Retaining		1
082-0107-02		Connector- 1/8 NPT to 3/8 Tubing Compression		1
097-0160-00		Washer-#10 Stl. Lock		4
097-0440-00	3DBD-396	Washer-Valve Mounting Nut-#10-32 Stl.		2 4
110-1100-00 110-1800-00		Nut-7/16-14 Hex. Stl. (P25F & P30F Ass'y. Only)		4 5
115-0070-00	115-2-1/2	Flange-2-1/2 NPT (1 Req. on P25 Ass'y.)		5 1
115-0070-00	115-2-1/2	Flange-2-1/2 NPT (2 Req. for P25F Ass y.) Flange-2-1/2 NPT (2 Req. for P25F Ass'y.)		2
115-0080-00	115-3	Flange-3 NPT (1 req. on P30 Ass'y.)		1
115-0080-00	115-3	Flange-3NPT (2 Req. for P30F Ass'y.)		2
200-0020-00	PV-763	Switch-Pilot Light		1
242-0080-00	P75-227	Strap-Switch		1
544-0100-00		Cover-Relief Valve (Assembly)		1
044-0321-00		Cover-Relief Valve	1	
048-0050-00		Q-705 Sleeve-Relief Valve	1	

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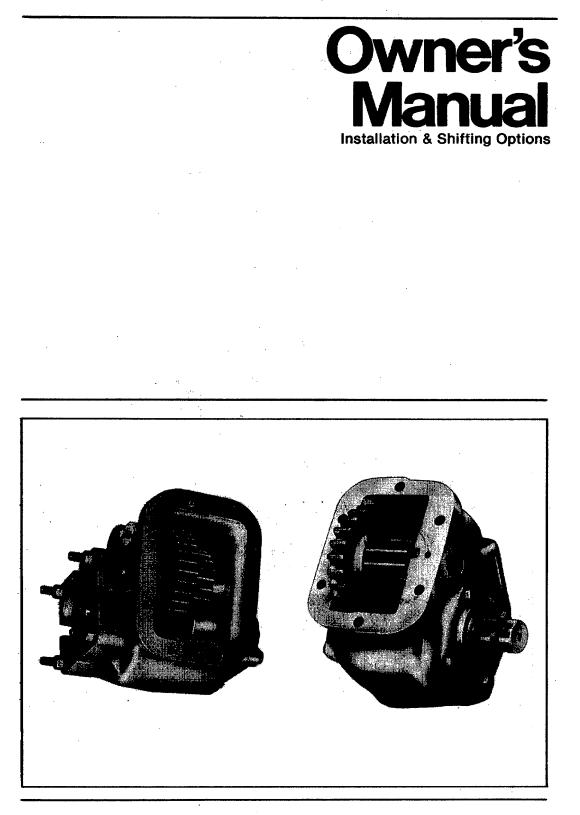
1 of 2

PARTS LIST HALE TYPE P SERIES RELIEF VALVE AND PM CONTROL VALVE Plate No.547B

PART NO. REQ.		NAME OF PART	NO.
		PM CONTROL VALVE	
010-0080-01		Strainer-Relief Valve Control	
018-1205-44		Screw-1/4-20 x 5/8 Lg. Rd. Hd. SST. Phillips Hd. Mach.	
018-1410-00		Screw-5/16-18 x 1 Lg. Hex. Hd. Steel Cap	
038-0181-00		Body-Control	
038-0191-00		Valve-Control	
041-0241-00		Stem-Adjusting	
042-0100-00	PM-693	Spring-Inside	
042-0110-00	PM-694	Spring-Outside	
046-0130-00	PM-688	Diaphragm-Control Body	
062-0090-00	PM-665	Housing-Spring	
064-0614-00	03-64-07	Pin-Adjusting Nut	
064-0818-02	04-64-09S	Pin-Wheel Lock	
077-1120-00	79S112	Ring-Bearing Washer Retaining	
082-0107-02		Connector-Compression 1/8 NPT to 3/8 Tubing	
082-0206-02	BM 000	Connector-Compression 1/4 NPT to 3/8 Tubing	
097-0180-00	PM-689	Washer-Bearing	
097-0220-00	FIR-396	Washer-Diaphragm Support	
101-0010-00	PM-443	Tag-Instruction	
101-0061-00		Plate-Instruction	
110-1200-00		Nut-1/4-20 Steel Hex	
110-4400-08 110-7011-00		Nut-Switch Mounting Nut-Adjusting	
200-0540-03		Light-Indicator	
242-0050-00	PM-662D	Clamp-Diaphragm	
250-8002-00	CS-230	Bearing-Thrust	
250-9140-00	00 200	Bearing-Control Valve	
512-0070-00	PM-G697D	Wheel-Adjusting (Assembly)	
012-0170-00			1
012-0180-0			1
064-1016-0			1

PL-85	HALE FIRE PUMP COMPANY	2 of 2
3-24-80	Conshohocken, PA	

Chelsea®



CONTENTS

GENERAL INFORMATION	PAGE
Foreword	
Transmission Tag Locations	3
Horsepower * Torque · RPM Conversion chart	
P.T.O. Ratings	5
INSTALLATION INSTRUCTIONS	
Application Questions	
Mounting P.T.O. to Transmission	
Checking Backlash	
Adapter Plates, Filler Blocks, Adapter Assembly	
Mounting Adapter Assembly	13
Lubricant in Transmission/Inspect Installation	
P.T.O. Installation Tips for Automatic Transmissions	
WIRE SHIFT P.T.O.'s	
Continuity Check, 378969 Indicator Switch	
Cable Control Installation Instructions	16-20
AIR SHIFT INSTALLATION	
Continuity Check, 378969 Indicator Switch	
Installation Sketch for 41, 42, 430, S380 Series P.T.O.	
Installation for Two Ported Valve (Midland)	
Installation for Single Ported Valve (Williams)	22
Installation Sketch for 22, 26 and 811 Series P.T.O.	
(New 220, 260, 812, 100, 381, 410, 420 and 431 Series)	
Installation Sketch for 8 Bolts	24
AUTOMATIC TRANSMISSIONS	
Pressure Lube Hose Connection	
Power Shift Circuitry	
P.T.O. Openings for Automatic Transmissions	
Circuit Check for Power Shift P.T.O.'s	
Air Shift Drilling Template 6 & 8 Bolts	
Lever and Wire Control	
22, 26 and 811 Series	
(New 220, 260, 812, 100, 300, 321, 322, 340, 350,	
370, 381, 410, 420, 431, 450 and 611 Series)	
Indicator Light Installation	
Indicator Light Dash Drilling Template	
P.T.O. Shifting Procedure & Precautions	
New Williams Valves Available late 1980	20.44
LOOSE IN THIS BOOKLET	
Mounting Gaskets	
Sun Visor Decal	

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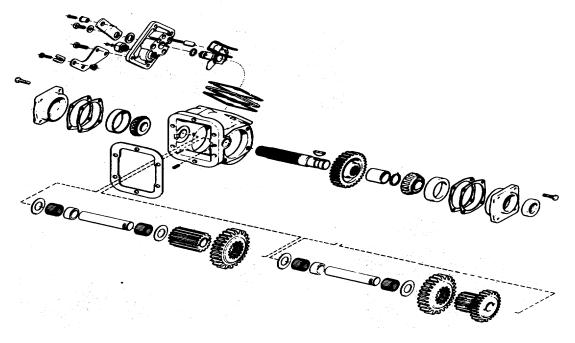
FOREWORD

Since it is our major objective to show you how to get additional and more profitable miles from truck, tractor and trailer components, we want to provide you with information on the installation of 6 and 8 Bolt Chelsea Power Take-Offs.

We all realize that an inadequate transmission will overwork any power takeoff in a very short period of time. In addition, a mismatched transmission/P.T.O. combination can result in unsatisfactory performance of the equipment right from the start. Before you order new trucks be sure that you're getting the right transmission/P.T.O combination. It is of vital importance for efficient performance to have adequate power. To help you select the proper type, size and design of P.T.O. it is advisable to discuss your specific requirements with a Chelsea P.T.O. specialist. He knows his products and has easy access to manufacturers of equipment, transmissions and power takeoffs. He can inform you about everything you need to know about power, at the right time, before you specify components.

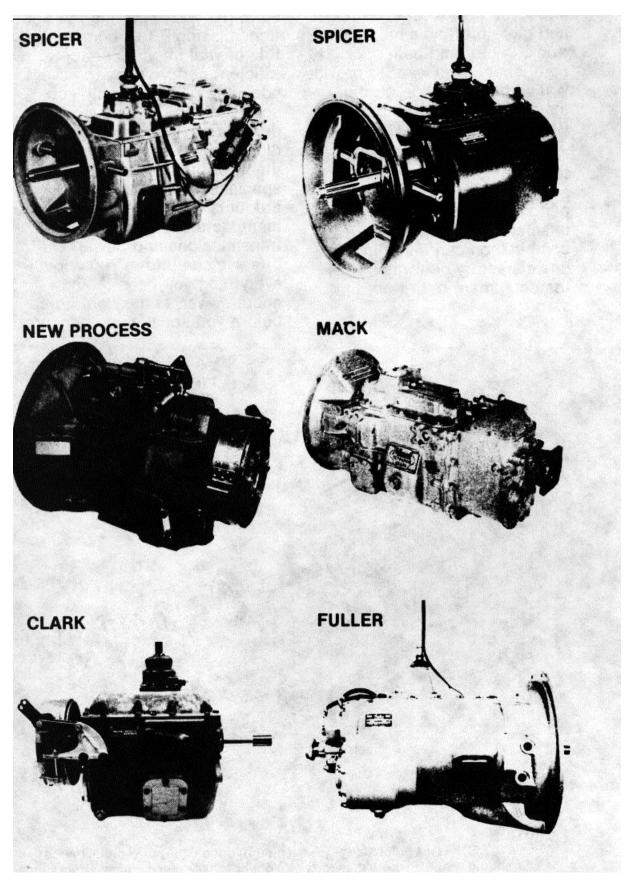
EXPLODED VIEW OF A TYPICAL TRANSMISSION MOUNTED P.T.O.

- P.T.O.
- Shifter Cover Sub-assembly Components for Wire Control
- Output Shaft/Gear Components
- Mounting Gaskets
- Input Gear/Shaft Components



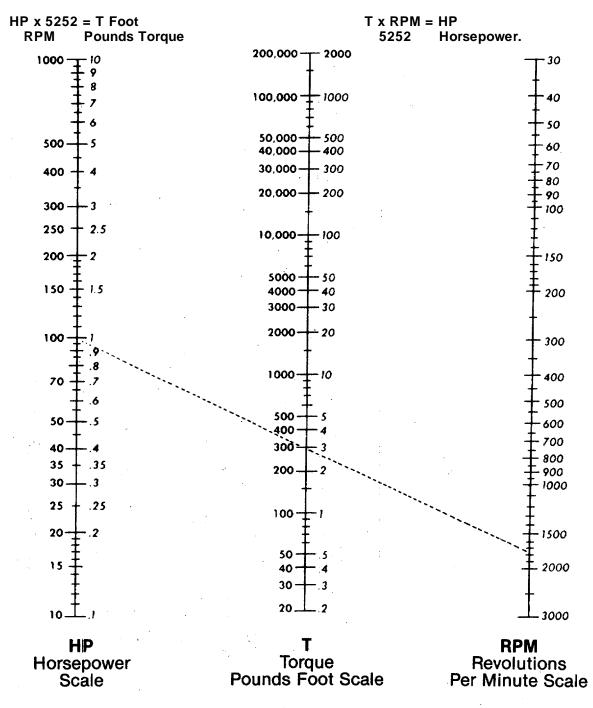
Caution

When a P.T.O. has the pump flange (direct mount) option, the pump being bolted to the P.T.O. should weight no more than forty (40) pounds. If the pump is heavier, we suggest the use of a bracket or strap for support, bolted to engine or transmission.



HORSEPOWER • TORQUE • RPM CONVERSION CHART

TO FIND THE TORQUE. Given: 100HP at 1750 RPM. Then: with a straight edge on HP scale at 100 (Left Side) and on RPM scale at 1750. Find Answer on T scale = 300 foot pounds torque (Middle). Formula: TO FIND THE HP. Given: 3 foot pounds torque at 1750 RPM. Then: with a straight edge on the "T" scale at 3 (Middle) and on the RPM scale at 1750. Find Answer on the HP scale = 1 Horsepower (Left Side) Formula:



4

P.T.O. RATINGS

Basic P.T.O. Models		8	Horsepower At			Weight
Old Model No.	New Model No.	SAE Aperture	500 rpm	1000 rpm	Torque Rating *	Approximate Pounds
A1, 2, 3N A22C & D A22L & LL 26 27 30 320 S320 34L S35, 36, & 37 SR35, 36, & 37 SR35, 36, & 37 S380 41C 41D 41K 41X 42	100 220L & P 220- E & C 260 270 300 321 Hel. 322 Spur. 340 350 370 381 0BS 6-1-80 410_U 410_W 410_X	6-Bolt 6-Bolt 6-Bolt 6-Bolt 6-Bolt 6-Bolt 6-Bolt 6-Bolt 6-Bolt 6-Bolt 6-Bolt 6-Bolt 6-Bolt 6-Bolt 6-Bolt 6-Bolt 6-Bolt 6-Bolt 6-Bolt	11.9 19552352235223522352235223522352235223522	23.5 38 47 47 26.5 26.5 26.5 26.5 26.5 26.5 26.5 26.5	125 lbs. ft. 200 lbs. ft. 250 lbs. ft. 250 lbs. ft. 250 lbs. ft. 250 lbs. ft. 140 lbs. ft. 140 lbs. ft. 140 lbs. ft. 140 lbs. ft. 140 lbs. ft. 140 lbs. ft. 140 lbs. ft. 140 lbs. ft. 140 lbs. ft. 125 lbs. ft. 10 lbs. ft. 200 lbs. ft. 125 lbs. ft.	10 lbs. 30 lbs. 30 lbs. 28 lbs. 45 lbs. 45 lbs. 39 lbs. 39 lbs. 39 lbs. 37 lbs. 23 lbs. 26 lbs. 26 lbs. 26 lbs. 26 lbs.
430D 430K S45, 46 & 47 510 540-P 540-R 540-R 540-S 610(Z) A2625 A2627	420 431U 431W 450 Same Same Same 611 700 710	6-Bolt 6-Bolt 6-Bolt 6-Bolt 6-Bolt Countershaft Countershaft Countershaft Countershaft 6-Bolt 6-Bolt Gear Box Gear Box	21.4 17 18.6 15 16.7 13.2 47.6 38.1 28.5 13.2 11.9	42.8 32 37.1 30 33.3 26.5 95.2 95.2 95.2 76.2 57 26.5 23.5	225 lbs. ft. 180 lbs. ft. 195 lbs. ft. 160 lbs. ft. 175 lbs. ft. 140 lbs. ft. 500 lbs. ft. 500 lbs. ft. 300 lbs. ft. 140 lbs. ft. 140 lbs. ft. 125 lbs. ft.	26 lbs. 30 lbs. 30 lbs. 30 lbs. 30 lbs. 37 lbs. 37 lbs. 37 lbs. 37 lbs. 37 lbs. 37 lbs. 39 lbs.
Single Speed Two Speed & 2615 2536 2538 810 811 821 831 841 851 861 4600 4700 5551 Front Mounte	Shaft Input Shaft 720 730 800 812 822 832 832 832 852 852 852 862 900 910 930	Gear Box Gear Box Gear Box 8-Bolt 8-Bolt 8-Bolt 8-Bolt 8-Bolt 8-Bolt 8-Bolt 8-Bolt 8-Bolt 8-Bolt 5plit Shaft P.T.0 Split Shaft P.T.0		20 23.5 26.5 26.5 26.5 66 76 94 57 94 94 94	110 lbs. ft. 125 lbs. ft. 140 lbs. ft. 140 lbs. ft. 350 lbs. ft. 350 lbs. ft. 300 lbs. ft. 500 lbs. ft. 500 lbs. ft. 500 lbs. ft. 500 lbs. ft. 4300 lbs. ft. 4300 lbs. ft. 4500 lbs. ft. 250 lbs. ft.	39 lbs. 49 lbs. 49 lbs. 38 lbs. 50 lbs. 76 lbs. 76 lbs. 76 lbs. 88 lbs. 96 lbs. 185 lbs. 126 lbs. 102 lbs.
490 2740 2642	491 2381 2420	Air Clutch Gear Box Gear Box Gear Box	28.5 13.2 19 21.4	57 26.5 38 42.8	300 lbs. ft. 140 lbs. ft. 200 lbs. ft. 225 lbs. ft.	34 lbs. 69 lbs. 69 lbs. 69 lbs.

This chart provides a guide to the many different models of P.T.O.'s which may be used in a given application.

From this group, a model can be selected to meet the exact horsepower, speed and 5 rotation requirements of the accessory to be driven.

*Based on intermittent service.

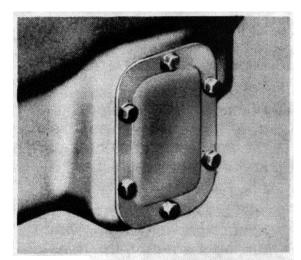
APPLICATION QUESTIONS

Here are some of the questions that are relevant to the Proper Selection of a Transmission Mounted Power Take-Off

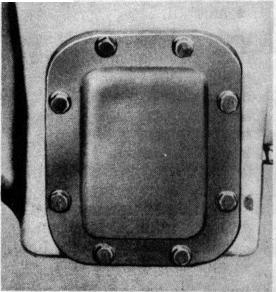
- 1. What is the make and model of your transmission?
- 2. Which P.T.O. opening will be used?
- 3. What accessory is to be driven?
- 4. How much horsepower is required to drive the accessory?
- 5. What is the required rotation of the P.T.O.?
- 6. What is required P.T.O. output shaft speed as a percent of engine speed?
- 7. What is the required method of shifting the P.T.O., cable, lever of air?

Once all of the answers to these questions have been determined, a transmission mounted P.T.O. can be selected to meet the horsepower, speed and rotation that you require.

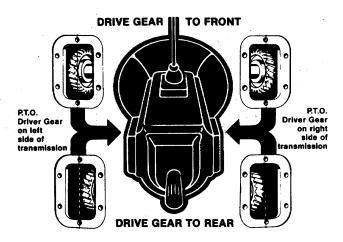
Having made the selection of a P.T.O., you are ready to start the installation.



SAE 6 Bolt



SAE 8 Bolt Standard SAE Power Take-Off Apertures

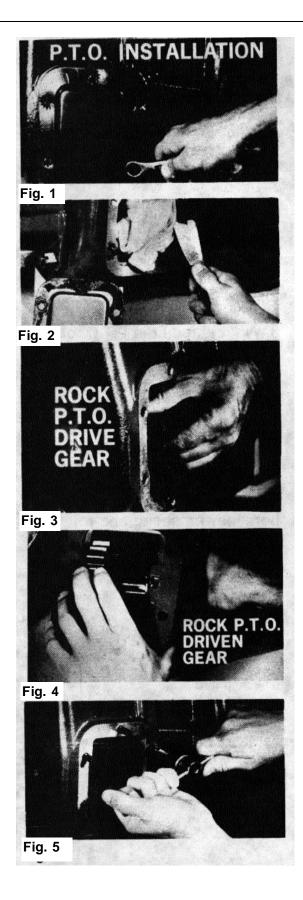


P.T.O. Drive Gear Location

The standard location for the P.T.O. drive gear in the transmission is 1/2" to the front or 1/2"to the rear of vertical center line.

- 1. Drain the oil from the transmission and remove the P.T.O. aperture cover plate. (See FIG. 1.)
- Discard the coverplate and cover plate gasket then clean the aperture pad using a putty knife or wire brush. (See FIG. 2.) NOTE: Stuff a rag in the aperture opening to prevent dirt from entering the transmission while you are cleaning it.
- 3. Using your hand, rock the P.T.O. driver gear in the transmission (see FIG. 3) and the driven gear in the P.T.O. assembly (see FIG. 4). Rocking the gears provides two important factors.
- (a) It shows you the amount of backlash that has been designed into each unit.
- (b) It is helpful in establishing the proper backlash when installing the P.T.O.
- 4. Install the proper studs in the P.T.O. aperture pad using a stud driver. (See FIG. 5.)
- 5. Where holes are tapped through the transmission case, use Permatex or equivalent to prevent leaks.

NOTE: Avoid contact of Permatex with automatic transmission fluid in automatics. Always check to be sure that the studs do not interfere with transmission gears

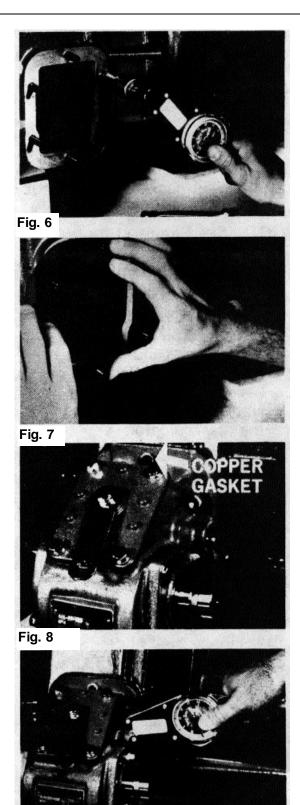


- Tighten the studs securely and torque to 30-35 lbs. ft. (4.14-4.84 kg meters) for 6 bolt and 45-50 lbs. ft. (6.22-6.91 kg meters) for 8 bolt. (See FIG. 6.)
- Place the correct number of gaskets over studs. (See FIG. 7.) Do not use Permatex between gaskets because you may want to add or subtract gaskets to obtain proper backlash.
 - When mounting a P.T.O. use gaskets between all mounting surfaces.
 - Do not stack more than 3 gaskets together.
 - Usually one thick gasket .020 (.50mm) will be required.
 - Remember the lubricant in the transmission also lubricates the P.T.O. Therefore, at least one gasket must always be used on either side of filler blocks, adapter assemblies or adapter plates. More gaskets may be required when establishing proper backlash.
- 8. Secure P.T.O. to the transmission.
 - Copper gaskets are used as a guard against leaks under cap screw head. (See FIG. 8.)

NOTE: If holes in the P.T.O. aperture are not drilled through, discard the copper gaskets and replace them with lock washers.

The 22 Series must always have a copper washer under its one cap screw head that goes through inside of housing.

 Fasten the P.T.O. to the transmission torquing 6 bolt to 30-35 lbs. ft. (4.14-4.84 kg meters) and 8 bolt to 45-50 lbs. ft. (6.22-6.91 kg meters.) (See FIG. 9.)





To check for proper backlash on P.T.O.'s with shift cover

- 1. Remove the P.T.O. shift housing and/or inspection plate.
- Mount the dial indicator so that it registers movement of the input gear (driven gear) of the P.T.O. (See FIG. 10.)

NOTE: See Figure 11 for proper location of dial indicator contact point. (Two common type dial indicators shown.)

- 3. Hold the P.T.O. driver gear in transmission with a screwdriver or bar and rock the P.T.O. input gear (driven gear) back and forth with your hand. Note the total movement on the dial indicator.
- 4. Establish backlash at .006-.012 (.15mm-.30mm) by adding or subtracting gaskets.

General rule --- A Chelsea .010 gasket will change backlash approx. .006. A .020 gasket changes backlash approx. .012.

Checking backlash on units without shift cover

"A" Series: The "A" Series or Single Gear Six-Bolt P.T.O. will generally adapt to its respective transmission by the use of a single Chelsea .020 thick gasket when no filler block or adapter gear is used.

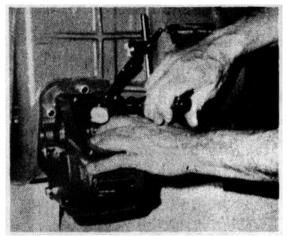
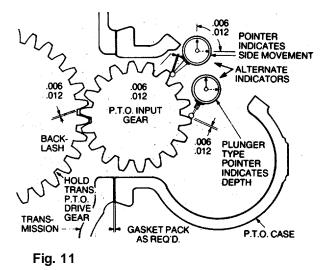


Fig. 10



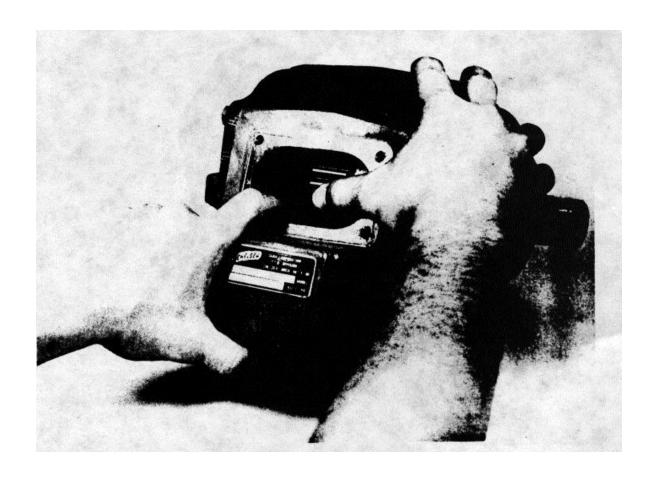
NOTE: When using a 22, 26 or 27 (New 220, 260 or 270)Series P. T. 0. with the G6 (New AJ) gear designation on an Allison Automatic transmission with a six bolt opening, a special gasket (35-P-41) is supplied. When installed with the P. T.O. this gasket reduces the need for backlash adjustment.

9

27 AND 810 SERIES New 270 And 800 Series

Remove the Dump-Back Plate on the side of the housing and rock the P.T.O. Input Gear with your hand.

Correlate this backlash to the unmounted backlash found in Step 3 on page 7. Use Gaskets to get backlash feel as close to unmounted condition as possible. NOTE: The 27DG6 & KG6 (New 270_ AAJ &_BAJ) come with a special gasket (35-P-41) which when installed with the P. T. 0. on a six (6) bolt opening on an Allison automatic reduces the need for backlash adjustment.



2 GEAR-8-BOLTS-821, 831, 841, & 851 New 822, 832 And 852 Series

An inspection hole is provided in the P.T.O. housing for feeling the mounted backlash.

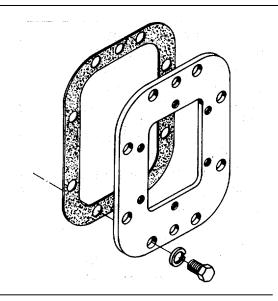
Rock the P.T.O. Input Gear with your hand and correlate this backlash to the unmounted backlash found in Step 3 on page 7. Use Gaskets to get backlash feel as close to unmounted condition as possible.



ADAPTER PLATES

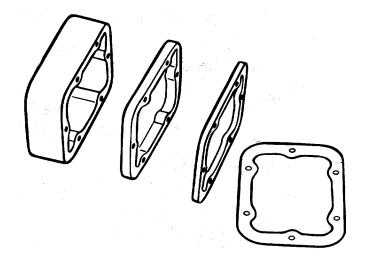
Adapter plates are used to permit mounting a 6 bolt P.T.O. on a transmission that has an 8 bolt aperture.

NOTE: A wire locking stud kit is recommended when mounting a 6 Bolt P.T.O. to an adapter plate on a bottom opening.



FILLER BLOCKS

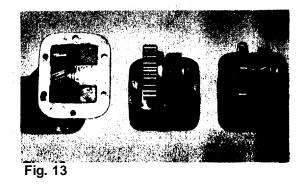
Filler blocks may be required where it is necessary to use a spacer to mount the power take-off to a particular transmission.



P.T.O. APPLICATION AND ADAPTER ASSEMBLY

Figure 13 illustrates typical adapter assembly configurations. Some P.T.O. applications require adapter assemblies because it is impossible to reach the P.T.O. driver gear in the transmission without this assembly.

An adapter assembly will change the rotation of the P.T.O. and this may be necessary for driving pumps or other accessory equipment. Obstructions, such as a bulge in the transmission, exhaust pipes or motor mounts can sometimes be compensated for through the use of an adapter.



MOUNTING ADAPTER ASSEMBLY

How to mount an adapter assembly to the transmission and P.T.O.

- 1. Use same procedure for mounting the adapter and checking backlash as was used when mounting the P.T.O. to transmission. (See Fig. 14.)
- 2. After checking for proper backlash remove the adapter, gaskets and filler block (if required) from the transmission. Keep the gaskets and filler block as a "package." (See Fig. 15.)
- 3. Bench mount the adapter to the P.T.O. using appropriate length studs. (See Fig. 16.)
- 4. Proper backlash will determine the number of gaskets to be used between the adapter and the P.T.O. (See Fig. 17.)
- 5. Remount the adapter assembly, all gaskets and the P.T.O. to the transmission in their respective sequence. (See Fig. 18.)
- 6. Secure all nuts and cap screws to proper torque.

Now... run the P.T.O. momentarily and check for noise!

CAUTION: The transmission and P.T.O. have no lubrication at this time so running time should be as short as possible.

- If the P.T.O. whines it may be mounted too tight, too little backlash. This 'indicates that gaskets should be added.
- If the P.T.O. clatters it may be mounted too loose, too much backlash. This indicates that gaskets should be removed.

General Rule: A Chelsea .010 (.25mm) gasket will change backlash approximately .006 (.15mm) and a .020 (.50mm) gasket changes backlash approximately .012 (.30mm).

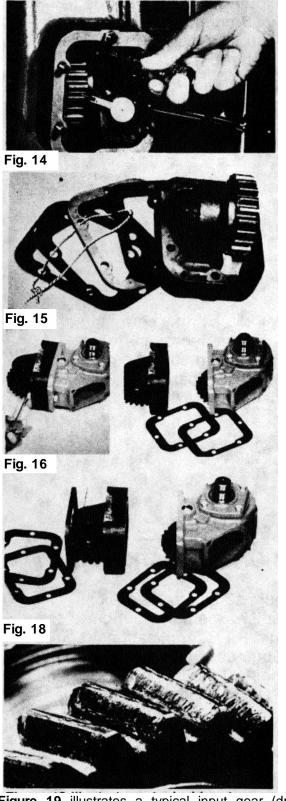


Figure 19 illustrates a typical input gear (driven gear) in a P.T.O. that was mounted too deep-insufficient backlash. Extreme heat turned the gear blue and resulted in gear and bearing failure.

LUBRICANT IN TRANSMISSION/INSPECT INSTALLATION

- Remove the filler plug from the transmission and add recommended transmission lubricant to the level prescribed by the transmission or truck manufacturer. (See Fig. 20.) NOTE: If the P.T.O. is mounted below oil level, additional lubricant will be required.
- 2. Run the P.T.O. for 510 minutes and check for oil leaks and noise.
- 3. Should a quiet P.T.O. become noisy after the universal joint connection is made, check the P.T.O. driveline components for an out of phase condition, excessive or unequal joint angles or possibly worn parts in the driven accessory.
- 4. Re-torque all mounting bolts, nuts, cap screws and set up inspection routine of the P.T.O. driveline components and the driven/auxiliary equipment.

NOTE: Anticipate slight increase in P.T.O. noise level as oil thins out at operating temperatures.

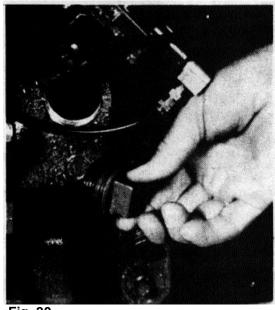


Fig. 20

P.T.O. Installation Tips For Automatic Transmissions The procedure for installing a P.T.O. on an automatic is basically the same as for a mechanical transmission. Power take-offs for automatic transmissions are assembled with a special drilled input shaft which allows the input gear to be pressure lubricated during operation. (see page 25).

After installing a P.T.O. on an automatic transmission, connect pressure lubrication hose to the P.T.O. and the transmission per installation instructions shown on page 26 of this booklet.

WARNING: Adapter assemblies are never used on an automatic transmission because they do not have pressure lubricated design features.

WARNING: Use only wire control with P.T.O. made for wire cable control. If lever is desired, order P.T.O. for lever control. The internal shifting mechanism for wire is not designed for heavy forces usually encountered with lever control linkage.



In order to insure that the switch is functioning properly, the following procedure can be used with the unit on a bench, or installed.

- 1. Use a continuity checker, battery type, either meter or light. Attach one (1) probe to the screw on the 378969 or 379110 Indicator Switch.
- 2. With the other probe, make contact with the shifter cover or housing (see Figs.#1 & 2).
- Actuate shifting device and the meter or light* should be actuated when P.T.O. gear is engaged (see Figs. #3 & 4).
- 4. Shift unit out of gear and the meter or light* should return to normal as shown (see Figs. #1 and 2).

This test procedure can be used to check Chelsea wire, lever, and air shifter covers, although an air source would be necessary for the latter.

* If a meter is not available the light in the 328751 X can be used (see Figs. #2 & 4). A six volt battery is all that is necessary for a power source.

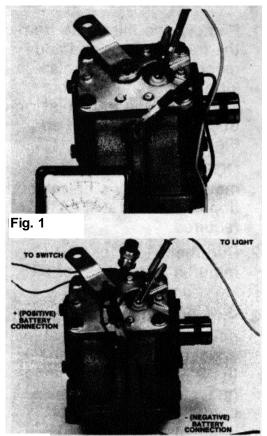
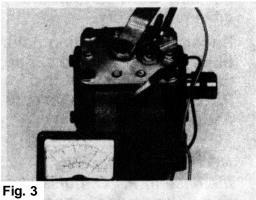
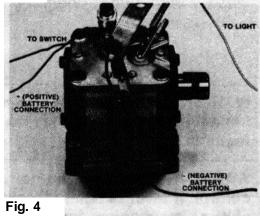


Fig. 2





1. Find a suitable area on the dash to install the cable control and the control plate-indicator light.

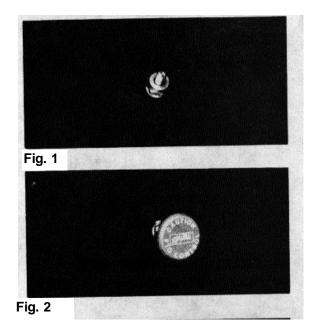
NOTE: The location of the cable control and the control plate should be as close to each other as possible and easily accessible by the driver or operator, but should not be an obstacle to driver movement nor interfere with other controls, instruments, or equipment.

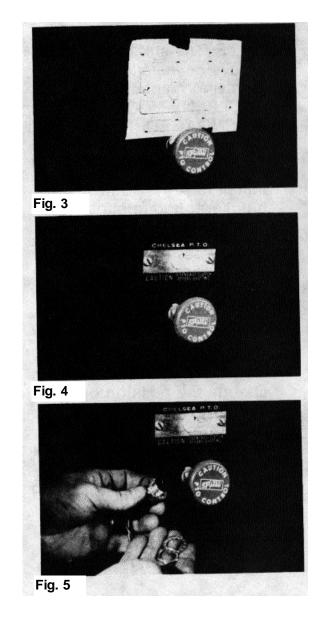
- 2. Drill a 1/2" (.5") diameter hole for the control cable.
- Install the control cable on the dash using the hex nuts supplied with the cable. The knob can then be screwed into place. The length of cable can then run through the firewall and back to the P.T.O. making sure it is kept away from the exhaust, moving parts, etc. (Fig. #1, 2)

NOTE: Do not kink the cable. In order for the cable to operate properly, there can be no bends smaller than 6 inch radius. Total bends in the cable should not exceed 3600 (example four 900 bends in cable).

4. Using the template found on page 36 drill the necessary holes for the control plate-indicator light. (Fig. #3 & 4).

* All six bolt wire shifts with the exception of the reversibles, dual shift units, and some gear boxes.





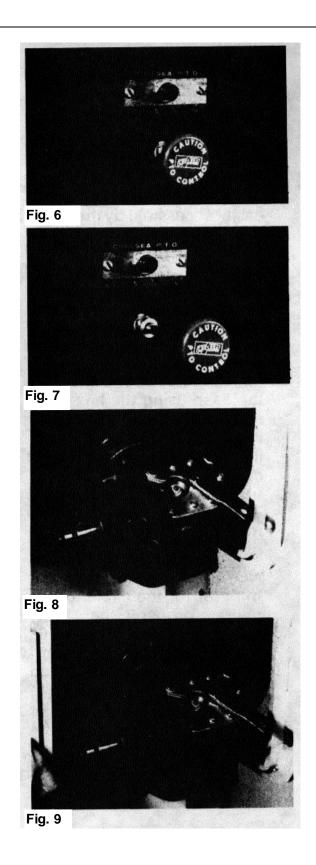
 Install the control plate indicator light on the dash using the hardware supplied in the 328751 X parts bag. (Fig. #5)

NOTE: At present the indicator light for wire control P.T.O.'s is available in the 22, 26, and 811 series. By Sept. of 1980 all wire shift P.T.O.'s will have this feature.

6. Determine from which direction the cable must come in order for the unit to be disengaged when the knob is all the way in.

NOTE: The shifter must always be installed in the following manner: CABLE IN: P.T.O. DISENGAGED (Fig. #6) CABLE OUT: P.T.O. ENGAGED (Fig. #7)

- Install the wire control bracket found in either the 328380X or 328380-1X wire control parts bag. (Fig. #8)
- 8. Line the cable up with the wire control bracket and shifter lever (disengaged position) on the P.T.O. cover assembly (Fig. #9) NOTE: It may be necessary to change the position of the shifter lever on the P.T.O. To do this, remove the shifter cover from the unit. This will prevent the possible loss of the poppet and/or spring into the transmission if the shifter post assembly should be pushed through the cover when reinstalling the lever.



9. Shift the P.T.O. to the engaged position to see how much of the cable casing must be cut to allow the lever enough travel to shift in and out completely. The casing need only go just beyond the bracket, whereas, the wire must be long enough to go through the swivel pin in the shifter 'lever. (Fig. #10)

NOTE: In some instances the cable control may not be long enough. Chelsea has available four longer lengths than the standard ten-foot cable. These come in five foot increments (i.e., 328346-15X = 15-foot cable).

10. When the length of the casing has been determined, pull the wire back through until the case can be cut without cutting the wire. Use a hacksaw or heavy pair of sidecutters to cut the casing. (Fig. #11,)

NOTE: The cable can be held by a bench vise as long as the jaws are not tightened to the point where the case mushrooms. If a vise is not accessible, a pair of vise grips will do the job.

11. Push the wire back through and install the cable using the hardware from the previously mentioned wire control parts bag (Step #7), (Fig. #12). See exploded drawing.







Fig. 11



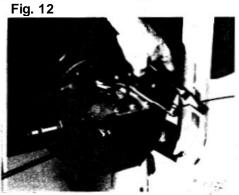


Fig. 13

- 12. Cut the excess wire after the cable casing and wire have been installed and tightened. (Fig. #13)
- 13. Shift the P.T.O. to insure enough casing has been removed to allow full gear engagement.
- 14. Install the wiring for the indicator light using the schematic from page 36 n(Fig. #14)

NOTE: Check both the cable and indicator light wires to be certain that they are not near the exhaust system or any moving parts. Carefully fasten to stationary parts of the vehicle if necessary.

15. Shift the P.T.O. The following should be adhered to: CABLE IN: P.T.O. DISENGAGED: LIGHT OUT (Fig. #14 & 15) CABLE OUT: P.T.O. ENGAGED: LIGHT ON (Fig. #16 & 17)

NOTE: The P.T.O. should be checked for continuity as per the instructions in this manual.



Fiig. 14

Fig. 15



Fig. 16



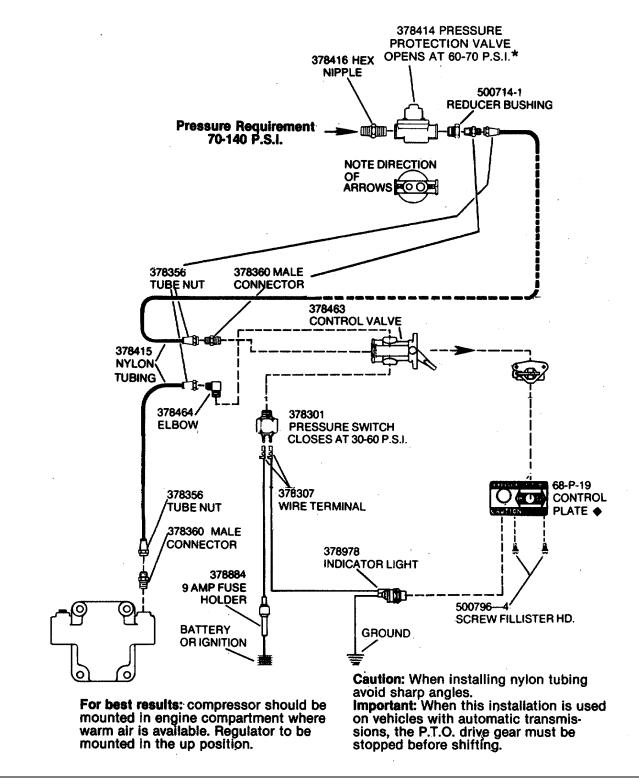
Fig. 17

■NOTE: At present the indicator light for wire control P.T.O.'s is available in the 22, 26, and 811 series. By Sept. of 1980 all wire shift P.T.O.'s will have this feature.

- 1. Use step #1 #5 from previous instructions.
- 2. In step #6 the cable can come from either direction since the P.T.O. will always be engaged when all the way in or out.
- 3. Follow step #7 and #8.
- 4. In step #9 shift the P.T.O. from forward to reverse or vice versa to determine the amount of travel needed and the length of casing to be cut.
- 5. Follow step #10 #14.
- 6. Step #15 will show the following:

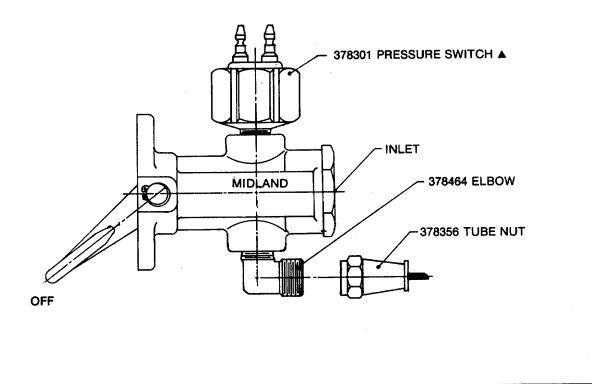
CABLE IN: P.T.O. ENGAGED: LIGHT ON CABLE OUT (1st position): P.T.O. DISENGAGED: LIGHT OUT CABLE OUT (2nd position): P.T.O. ENGAGED: LIGHT ON

AIR SHIFT Installation Sketch for 41, 42, 430, and S380 Series P.T.O. Using Pressure Switch (378301)

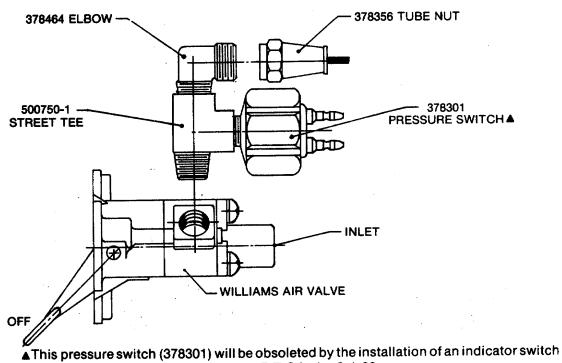


u Template for control plate on page 34.

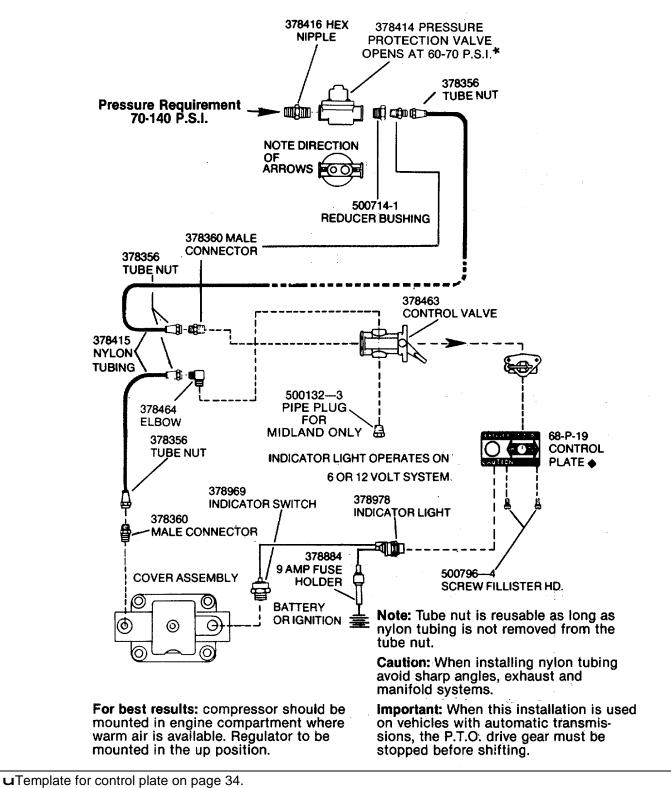
*Warning: Connect directly to air supply. Do not use tubing between air supply and pressure protection valve.



Installation For Single Ported Valve (Williams)

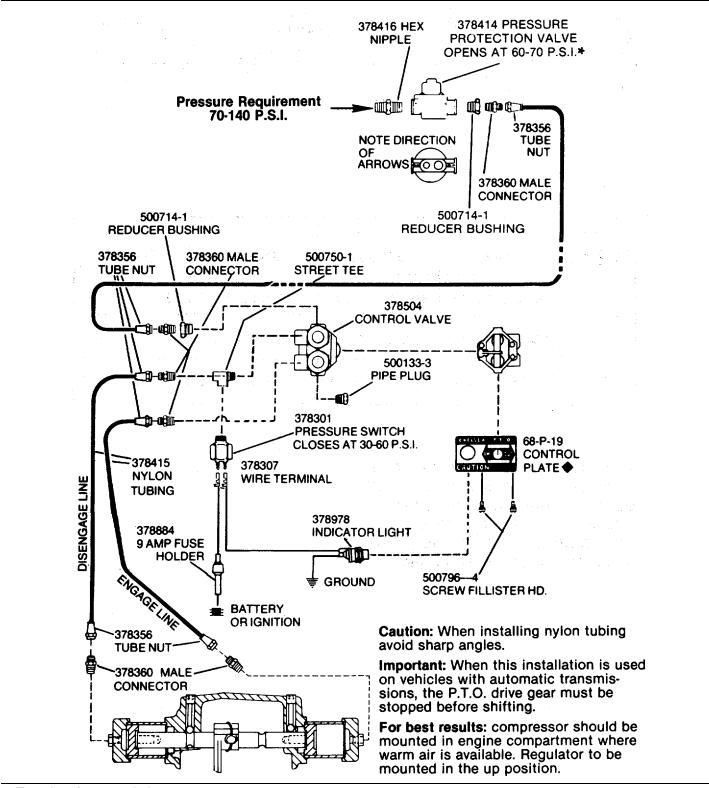


located in the shifter cover of all 6 bolt P.T.O.'s, by 9-1-80.

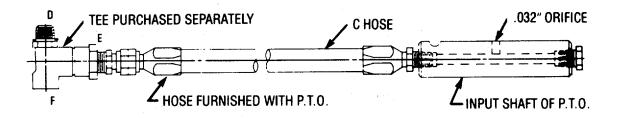


*Warning: Connect directly to air supply. Do not use tubing between air supply and pressure protection valve.

AIR SHIFT Installation Sketch for 8 Bolt P.T.O.'s. (Except for the 811 or new 812 Series)



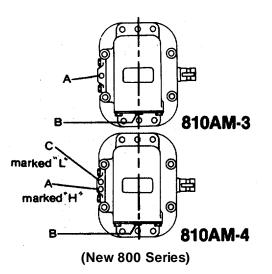
uTemplate for control plate on page 34. *Warning: Connect directly to air supply. Do not use tubing between air supply and , pressure protection valve.



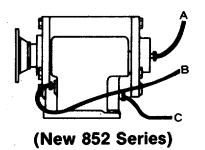
TEE FITTING	378840	378880	378970	378897
D	.750-16 U.N.F. 2A	.875-14 U.N.F. 2A	1.062-16 U.N.F. 2A	1.312-12 U.N. 2A
E	.250-18 N.P.T.F.	.250-18 N.P.T.F.	.250-18 N.P.T.F.	.250-18 N.P.T.F.
F	.750-16 U.N.F. 2B	.875-14 U.N.F. 2B	1.062-16 U.N.F. 2B	1.312-12 U.N. 2B

The specific "T" Fitting for each Automatic Transmission is called out at the bottom of each transmission's application sheet. If a "T" fitting is not called out, then a standard pipe tee will adapt.

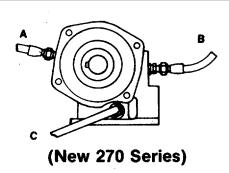
- A. High Pressure Line From Valve.
- B. Dump Line to P.T.O. From 3 Way Valve.
- C. Lubrication Line From Transmission. (New 800 Series)



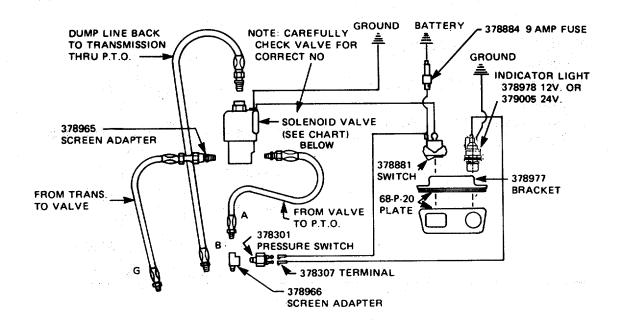
- A. High Pressure Line From Valve.
- B. Dump Line to P.T.O. From 3 Way Valve.
- C. Lubrication Line From Transmission. Attach to Either End of IDLER Shaft.



- A. High Pressure Line From Valve.
- B. Dump Line to P.T.O. From 3 Way Valve.
- C. Lubrication Line From Transmission. Attach to Either End of IDLER Shaft.

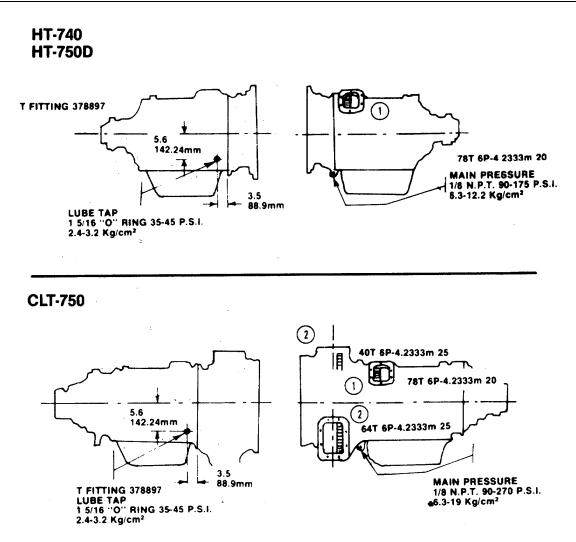


26

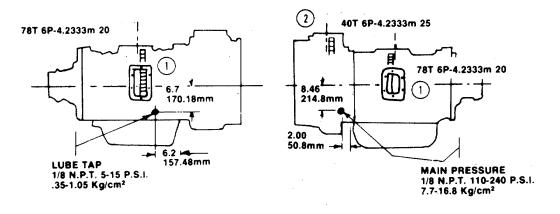


SOLENOID VALVE APPLICATION

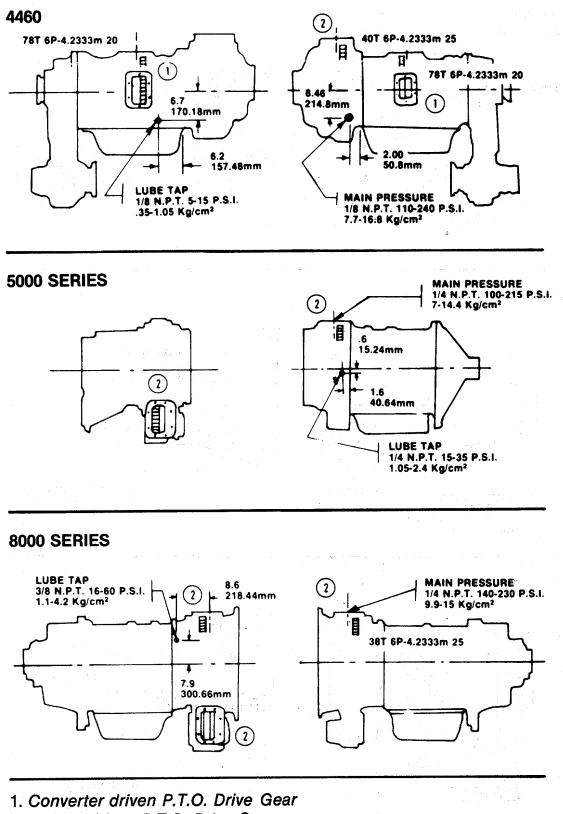
TRANSMISSION	VOLTAGE	SOLENOID VALVE NO.	COLOR CODE	
ALL ALLISON (260 P.S.I.)	12 V. 24 V.	378882-1 378882-2	Black Blue	



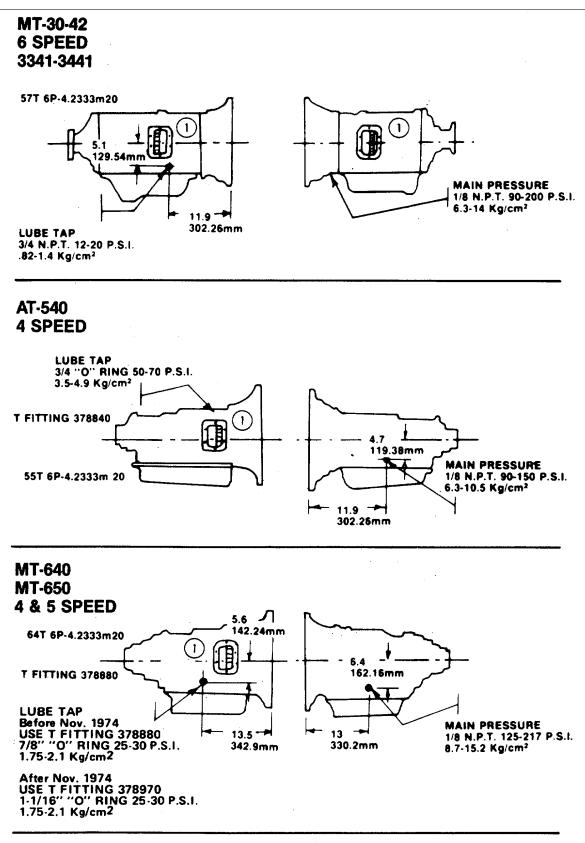
HT-70



P.T.O. OPENINGS (Continued)



2. Engine driven P.T.O. Drive Gear



1. Converter driven P.T.O. Drive Gear

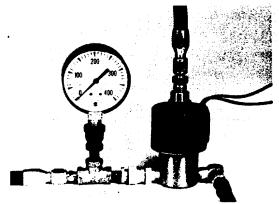
CIRCUIT CHECK For Power Shift P.T.O.'s on Automatic Transmission 27, 810 and 851 Series (New 270, 800 and 852 Series)

Perform the following and record the results when installing the P.T.O. originally, as a replacement, or while trouble shooting.

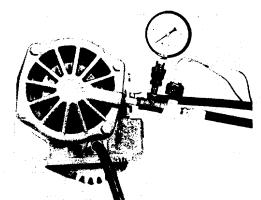
1. Install two (2) Pressure Gauges in the circuit as shown: 300-400 PSI Gauges for Allisons

2. With Solenoid Valve "Off" record the pressures at inlet to Solenoid Valve for the transmission both cold (ambient) and at operating temperature for engine

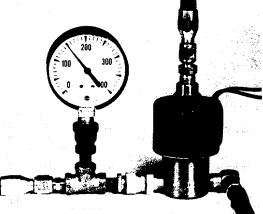
idle rpm and engine maximum rpm.



Before 378965 Screen Adapter @ "In" Port of Solenoid Valve.



Between 378966 Screen Adapter and P.T.O. "A" Port.



For Allisons should be 90-270 PSI.

RPM	Transmission Cold (Ambient)	Transmission At Operating Temperature
Engine Idle	PSI	PSI
Engine Maximum	PSI	PSI

3. With the Solenoid Valve "On" record the corresponding pressures at the two (2) gauges with the transmission both cold (ambient) and at operating temperature for engine idle rpm and engine maximum rpm.

For Allisons should be 90-270 PSI.

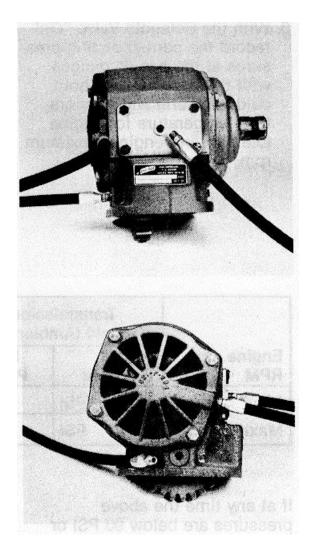
	Transmission Cold (Ambient)		Transmission At Operating Temperature		
Engine	Into	Into	Into	Into	
RPM	Solenoid	P.T.O.	Solenoid	P.T.O.	
Idle	PSI	PSI	PSI		PSI
Maximum	PSI	PSI	PSI		PSI

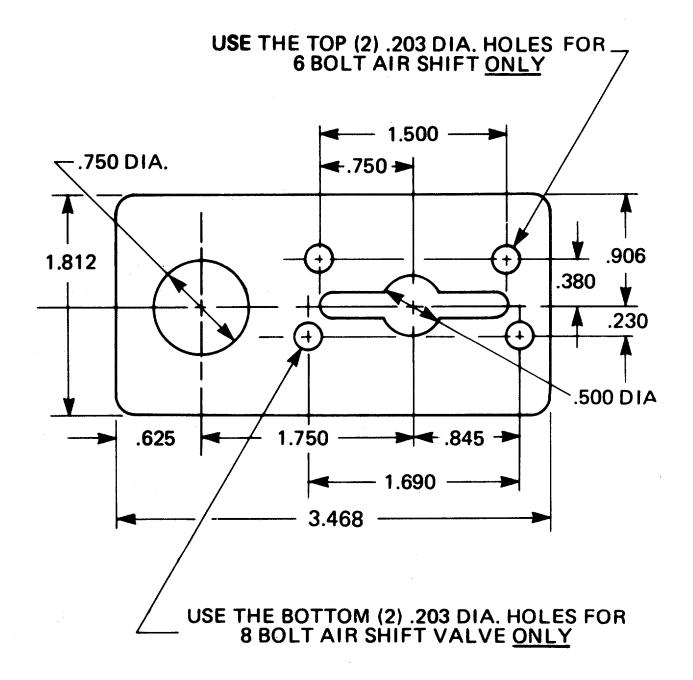
If at any time the above pressures are below 90 PSI or there is a 50 PSI or more difference in two of the corresponding readings in Part 3:

- (a) Check circuit for correct installation(b) Check hoses and screens (2) for obstruction

4. Remove the "B" line from the P.T.O. with the Solenoid Valve "On" no oil should appear from line. Then turning the Solenoid Valve to "Off" should dump the oil from the P.T.O. Clutch Pack through this line.

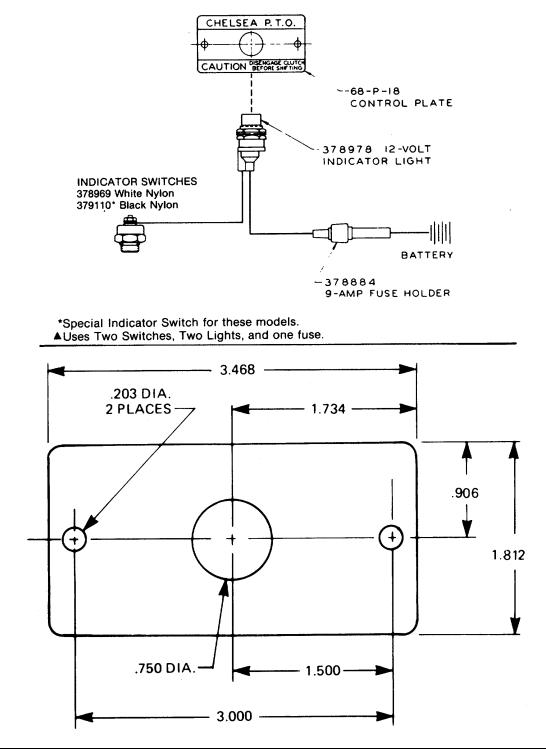
5. Remove the "C" line from the P.T.O. Idler shaft end (except 810AM-3 P.T.O.) and confirm that oil is running to this shaft for lubrication. Retain the findings of these tests for future comparison. Re-check oil level in transmission after testing is complete.





INDICATOR LIGHT INSTALLATION/ DASH DRILLING TEMPLATE

For Indicator Light Installation of 22, 26 and 811 Series Wire and Lever Control (New 220, 260, 812, 100, 300, 321, 322, 340, 350*, 370A*, 381, 410, 420, 431, 450* and 611 Series)



This vehicle is equipped with a Power Take-off. Consult operating instructions before using. (See sun visor).

POWER TAKE-OFF OPERATION -VEHICLE STATIONARY

I. Mechanical Transmission

- 1. A power take-off is, and should be, operated as an integral part of the main transmission.
- 2. Before shifting the power take-off into or out of gear disengage the clutch and wait for transmission or P.T.O. gears to stop rotating.
- II. Automatic Transmission with Manual Shift P.T.O.'s (Includes Air Shift)

On automatic transmissions, the gears in the transmission turn when the transmission is in neutral, therefore, gear clashing will occur if the power take-off is shifted into gear at this time.

A. With Converter Driven Gear:

- 1. Shift transmission lever into any of the drive positions (This will stop transmission gear from turning.)
- 2. Shift power take-off into gear.
- 3. Shift transmission into neutral. (This will start transmission gears turning).

B. With Engine Driven Gear:

1. Shift P.T.O. into gear before starting engine.

This procedure should eliminate gear clash.

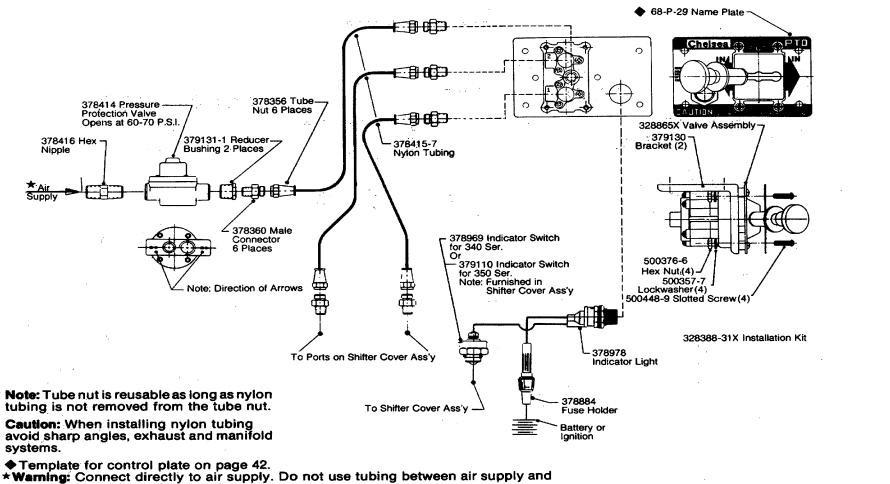
III. Automatic Transmission with Power Shift P.T.O.'s Engage P.T.O. with engine at idle speed.
Power Shift P.T.O.'s: Engine must be at idle when P.T.O. is engaged. See transmission manufacturer's instructions for special procedures.
IMPORTANT: Failure to follow proper shifting or operating sequences will result in premature P.T.O. failure with possible damage to other equipment.

WARNING

Use only wire control with P.T.O. made for wire cable control. If lever control is desired, order P.T.O. for lever control. The internal shifting mechanism for wire is not designed for heavy forces usually encountered with lever control linkage. Do not attempt to work on an installed power take off with the engine running. Make sure to block any moving or raised device that may injure a person working on or under the truck. A lever or its linkage may be accidentally moved causing movement of the device which could cause injury to a person near the device.

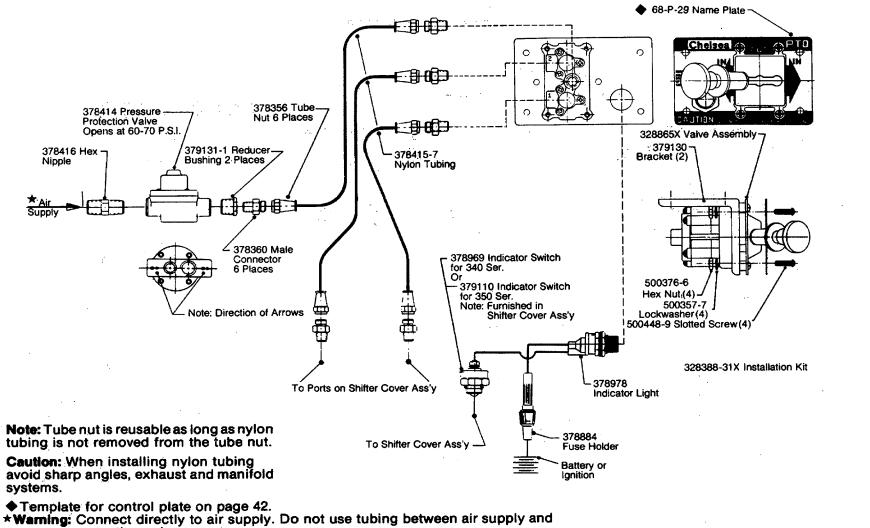
AIR SHIFT

Installation Sketch for 340 and 350 Series Using: New Williams Valve-Available Late 1980



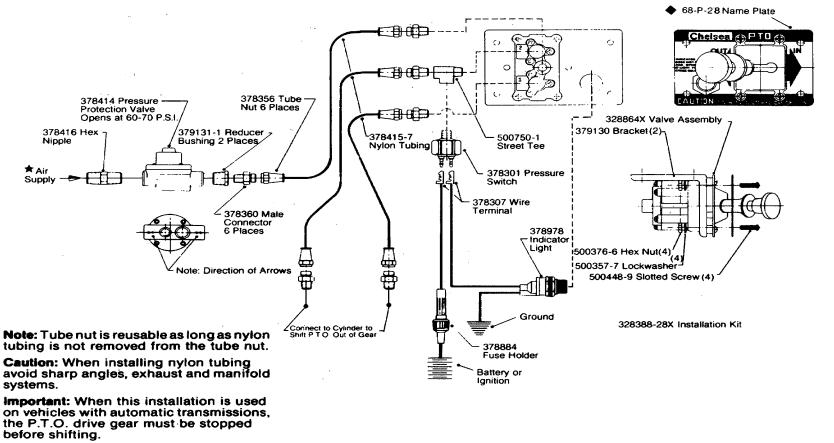
pressure protection valve.

AIR SHIFT Installation Sketch for 370 Series Using: New Williams Valve-Available Late 1980



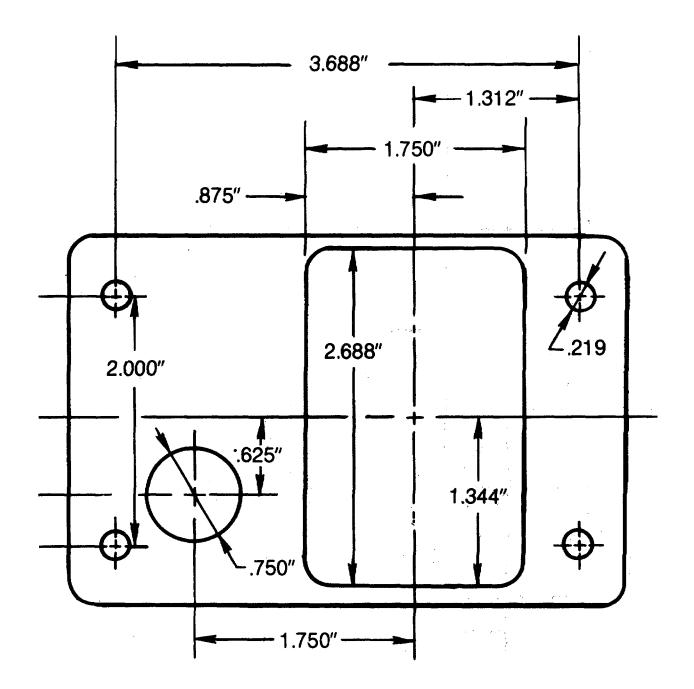
pressure protection valve.

AIR SHIFT Installation Sketch for 822, 832, 900, 910, and 920 Series Using: New Williams Valve-Available Late 1980



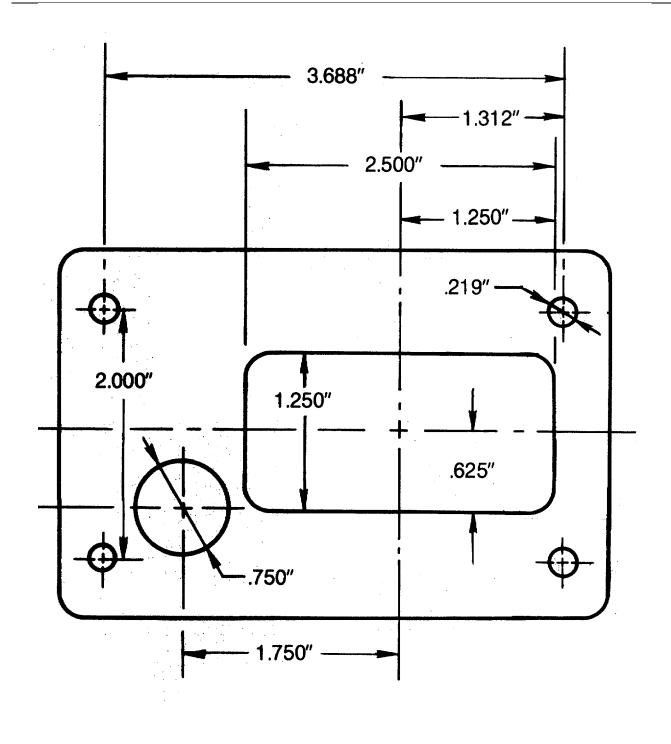
Template for control plate on page 42.

* Warning: Connect directly to air supply. Do not use tubing between air supply and pressure protection valve.



For Use with Installation Sketches on Pages 39, 40, and 41.

DASH DRILLING TEMPLATE For 6 & 8 Bolt Air Shift for New Williams Valve

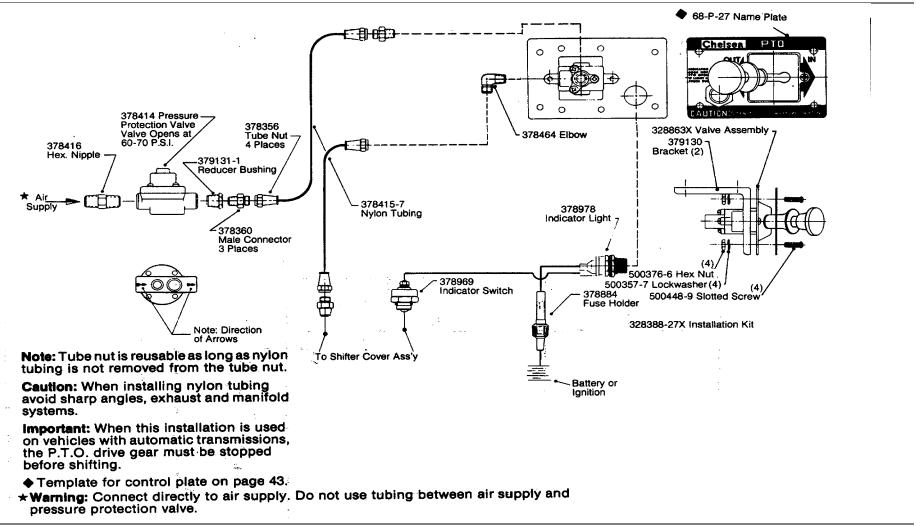


For Use with Installation Sketch o Page 44

AIR SHIFT

L

Installation Sketch for 100, 220, 260, 381, 410, 420, 431 and 812 Series Using: New Williams Valve-Available Late 1980.



Allison Transmissions

SECTION VI

AT 540,543,545 Service Manual



IMPORTANT SAFETY NOTICE

IT IS YOUR RESPONSIBILITY to be completely familiar with the warnings and cautions described in this service manual. These warnings and cautions advise against the use of specific service methods that can result in personal injury, damage to the equipment, or cause a vehicle to be unsafe. It is, however, important to understand that these warnings and cautions are not exhaustive. Detroit Diesel Allison could not possibly know, evaluate and advise the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, Detroit Diesel Allison has not undertaken any such broad evaluation. Accordingly, ANYONE WHO USES A SERVICE PROCEDURE OR TOOL WHICH IS NOT RECOMMENDED BY DETROIT DIESEL ALLISON MUST first be thoroughly satisfied that neither personal safety nor vehicle safety will be jeopardized by the service methods selected.

Proper service and repair is important to the safe, reliable operation of all motor vehicles. The service procedures recommended by Detroit Diesel Allison and described in this service manual are effective methods for performing service operations. Some of these service operations require the use of tools specially designed for the purpose. The special tools should be used when and as recommended.

Three types of headings are used in this manual to attract your attention.

WARNING	is used when an operating procedure, practice,
	etc., which, if not correctly followed could result in personal injury or loss of life.

- **<u>CAUTION</u>** is used when an operating procedure, practice, etc., which, if not strictly observed, could result in damage to or destruction of equipment.
- **NOTE** is used when an operating procedure, practice, etc., is essential to highlight.

This manual contains the following warnings. <u>IT IS YOUR RESPONSIBILITY</u> to be familiar with <u>ALL</u> the instructions contained herein.

WARNING

Do not burn discarded Teflon seals; toxic gases are produced by burning.

WARNING

Never dry bearings by spinning them with compressed air. A spinning bearing can disintegrate, allowing balls or rollers to become lethal flying projectiles. Also, spinning a bearing without lubrication can damage the bearing.

WARNING

When conducting a converter stall test, the vehicle must be prevented from moving. Both the parking and service brake must be applied and, if necessary, the vehicle should be blocked to prevent movement. Warn personnel to keep clear of the vehicle and its travel path.

SA 1241J

Service Manual

> Allison Transmissions AUTOMATIC MODELS AT 540 AT 543 AT 545

> > 1 AUGUST 1980



Printed in U.S.A

NOTE:

This publication is revised periodically to include improvements, new models, special tools, and procedures. Revision is indicated by letter suffix to publication number. Check with your Detroit Diesel Allison service outlet for currently applicable publication. Additional copies of this publication may be purchased from authorized Detroit Diesel Allison service outlets. See your yellow pages under Engines-Diesel or Transmissions-Truck, Tractor, etc.

TABLE OF CONTENTS

<u>Para</u>

<u>Page</u>

Section 1. GENERAL INFORMATION

1-1.	SCOPE OF SERVICE MANUAL	
	a. Coverage	1-1
	a. Coverage b. Arrangement	1-1
	c. Maintenance Information	1-1
1-2.	SUPPLEMENTARY INFORMATION	
1-3.	ASSEMBLY DIFFERENCES	
1-4.	ORDERING PARTS	
	a. Transmission Nameplate	1-4
	b. Parts Catalog	1-4
1-5.	GENERAL DESCRIPTION OF TRANSMISSION	
	a. Automatic, Four Speeds	1-4
	b. Torque Converter	1-4
	c. Planetary Gearing, Clutches	1-4
1-6.	OPERATING INSTRUCTIONS	1-4
	a. Vehicle-Related Controls	1-4
	b. Neutral (N)	1-4
	c. Forward Drive Ranges	
	d. Reverse (R)	1-5
	e. Towing.	
	f. Power Takeoff Operation	
1-7.	SPECIFICATIONS AND DATA	1-6

Section 2. DESCRIPTION AND OPERATION

2-1.	SCOPE OF SECTION 2	2-1
2-2.	MOUNTING	
	a. To Engine	2-1
	b. To Vehicle	2-1
2-3.	INPUT DRIVE	
	a. AT 540, 545	2-1
	b. AT 543	
2-4.	TRANSMISSION CASE	2-1
2-5.	TORQUE CONVERTER ASSEMBLY	
	a. AT 540, AT 545	2-1
	b. AT 543	
	c. Description	
	d. Operation	2-1
2-6.	OIL PUMP ASSEMBLY	
	a. Description	2-2
	b. Operation	2-2
2-7.	FORWARD CLUTCH AND TURBINE SHAFT	
	a. Description	2-2
	b. Operation	2-2
2-8.	FOURTH CLUTCH	
	a. Description	2-3
	b. Operation	2-3
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2-9.	SECOND, THIRD CLUTCHES AND CENTER SUPPORT	
	a. Description	2-3
	b. Operation of Third Clutch	2-4
	c. Operation of Second Clutch	
2-10.	FIRST CLUTCH	
	a. Description	2-4
	b. Operation	
2-11.	PLANETARY GEAR UNIT	
	a. Description	2-5
	b. Operation	
2-12.	SPEEDOMETER DRIVE	
	a. Description	2-6
	b. Operation	
2-13.	GOVERNOR	
	a. Description	2-6
	b. Operation	2-6
2-14.	VACUUM AND MECHANICAL MODULATOR	
	a. Vacuum Modulator	2-6
	b. Mechanical Modulation	
2-15.	CONTROL VALVE ASSEMBLY	
	a. Description	2-6
	b. Operation	
2-16.	OIL PAN AND OIL FILTER	
	a. Description	2-7
	b. Function	
2-17.	HYDRAULIC SYSTEM	
	a. System Functions	2-7
	b. System Schematic Illustration	2-7
	c. Oil Filter, Pump Circuit	
	d. Main-Pressure Circuit	2-7
	e. Converter, Cooler, Lubrication Circuit	2-8
	f. Selector Valve; Neutral, Forward Regulator Circuits	2-8
	g. Governor Valve, Governor Circuits	
	h. Modulator Pressure Valve Circuit	2-8
	i. Clutch Circuits, Drive Ranges	2-9
	j. Automatic Upshifts	2-10
	k. Automatic Downshifts	2-10
	I. Downshift Inhibiting	2-11
	m. Trimmer Valves	2-11
	n. Priority Valve	
	o. Trimmer Regulator Valve	2-12
2-18.	TORQUE PATHS THROUGH TRANSMISSION	
2-19.	NEUTRALTORQUE PATH	2-13
2-20.	FIRST GEARTORQUE PATH	
2-21.	SECOND GEARTORQUE PATH	
2-22.	THIRD GEARTORQUE PATH	
2-23.	FOURTH GEARTORQUE PATH	
2-24.	REVERSE GEARTORQUE PATH	2-18

Section 3. PREVENTIVE MAINTENANCE

3-1.	SCOPE OF SECTION 3	1
3-2.	INSPECTION AND CARE	1
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<u>Para</u>

3-3.	CHECKING OIL LEVEL	
	a. Importance of Proper Oil Level	3-1
	b. Foaming and Aerating	
	c. Protect Fill Pipe	3-1
	d. Dipstick Markings	
	e. Oil Level Check Procedure	
	f. Cold Oil Check	
	g. Hot Oil Check (Hot Run Band)	
	h. Hot Oil Check (Add and Full)	
	i. Adjusting Oil Level	
3-4.	KEEP OIL CLEAN	3-3
3-5.	OIL SPECIFICATIONS	
	a. Dexron	
	b. Type C-3	
	c. Ambient Temperatures, Dexron	
	d. Ambient Temperatures, C-3 Oil	
	e. Grease Used For Assembly	3-3
07	3-6.OIL, GOVERNOR OIL SCREEN AND OIL FILTER CHANGE INTERVALS	
3-7.	OIL CHANGE PROCEDURES	3-3
3-8.		0.4
	a. Water Leakage	
	b. Metal Particles	
	c. Coolant Leakage	
3-9.	d. Auxiliary Filter BREATHER	
3-9. 3-10.	LINKAGE	
3-10.	a. Installing Manual Selector Lever	2.6
	 b. Maintain Proper Adjustment 	
	c. Reference to Vehicle Manual	
	d. Mechanical Actuator Adjustment	
3-11.	SHIFT SPEED ADJUSTMENTS	
5-11.	a. Calibrated on Test Stand Or In Vehicle	3-7
	b. Location of Adjusting Component	
	c. Checks Before Adjusting Shift Points	
	d. Calibration by Road Test Method	
	e. Alternate Method Using Speedometer Readings	
	f. Calibration by Test Stand Method	
3-12.	EXTERNAL LINES AND OIL COOLER	
•	a. External Lines	3-9
	b. Oil Cooler	
3-13.	TRANSMISSION STALL TEST	
	a. Purpose	3-9
	b. Overheating	
	c. Procedure	
3-14.	PRESERVATION AND STORAGE	
	a. Storage, New Transmissions	3-10
	b. Preservation Methods	
	c. Storage, One YearWithout Oil	
	d. Storage, One YearWith Oil	
	e. Restoring Transmission to Service	
3-15.	RETAINING OUTPUT FLANGE	
3-16.	TROUBLESHOOTINGBEFORE REMOVAL OR OPERATION	
	a. Visual Inspection	
	b. Inspecting Vacuum Modulator	

3-17.	TROUBLESHOOTINGBEFORE REMOVAL AND DURING OPERATION	
	a. Determine Trouble Cause	3-13
	b. Proper Engine Tuning	
3-18.	TROUBLESHOOTINGTRANSMISSION REMOVED FROM VEHICLE	3-13
3-19.	TROUBLESHOOTING CHART	3-13
3-20.	OIL PRESSURE CHECKING PROCEDURES	3-13

Section 4. GENERAL OVERHAUL INFORMATION

4-2. TOOLS, EQUIPMENT 4-1 a. Improvised Tools and Equipment. 4-1 b. Special Tools. 4-1 c. Mechanic's Tools, Shop Equipment. 4-1 4-3. REPLACEMENT PARTS 4-1 4-3. REPLACEMENT PARTS 4-1 4-4. CAREFUL HANDLING 4-1 4-5. CLEANING, INSPECTION 4-9 a. Dirt Causes Malfunction. 4-9 b. Cleaning Bearings. 4-9 c. Cleaning Bearings. 4-9 d. Inspecting Bearings. 4-9 e. Keeping Bearings. 4-9 e. Keeping Bearings. 4-10 g. Inspecting Cast Parts, Machined Surfaces. 4-10 g. Inspecting Bushings, Thrust Washers. 4-10 h. Inspecting Gears. 4-11 j. Inspecting Splined Parts. 4-12 k. Inspecting Splined Parts. 4-12 k. Inspecting Springs 4-12 n. Inspecting Springs 4-12 n. Inspectin	4-1.	SCOPE OF SECTION 4	4-1
b. Special Tools. 4-1 c. Mechanic's Tools, Shop Equipment. 4-1 4-3. REPLACEMENT PARTS 4-1 a. Ordering Information 4-1 b. Parts Normally Replaced. 4-1 4-4. CAREFUL HANDLING 4-9 4-5. CLEANING, INSPECTION 4-9 b. Cleaning Bearings. 4-9 c. Cleaning Bearings. 4-9 d. Inspecting Bearings. 4-9 d. Inspecting Bearings. 4-9 e. Keeping Bearings. 4-10 f. Inspecting Bushings, Thrust Washers. 4-10 g. Inspecting Oil Seals, Gaskets. 4-10 h. Inspecting Splined Parts. 4-12 k. Inspecting Splined Parts. 4-12 k. Inspecting Splined Parts. 4-12 k. Inspecting Splined Parts. 4-12 n. Inspecting Splings 4-12 n. Inspecting Splings 4-12 n. Inspecting Splings 4-12 n. Inspecting S	4-2.		
c. Mechanic's Tools, Shop Equipment			
4-3. REPLACEMENT PARTS a. Ordering Information b. Parts Normally Replaced. 4-4. CAREFUL HANDLING 4-5. CLEANING, INSPECTION a. Dirt Causes Malfunction. 4-5. CLEaning Parts C. Cleaning Bearings. 4-9 C. d. Inspecting Bearings. 4-9 E. d. Inspecting Bearings. 4-9 E. d. Inspecting Cast Parts, Machined Surfaces. 4-10 f. f. Inspecting Gast Parts, Machined Surfaces. 4-10 g. n. Inspecting Gast Parts, Machined Surfaces. 4-10 i. n. Inspecting Gastes. 4-10 i. i. Inspecting Gears. 4-11 j. i. Inspecting Splined Parts. 4-12 I. i. Inspecting Springs 4-12 I. i. Inspecting Springs 4-12 Inspecting Springs a			
a. Ordering Information 4-1 b. Parts Normally Replaced. 4-1 4-4. CAREFUL HANDLING 4-9 4-5. CLEANING, INSPECTION 4-9 a. Dirt Causes Malfunction. 4-9 b. Cleaning Parts 4-9 c. Cleaning Bearings. 4-9 d. Inspecting Bearings. 4-9 e. Keeping Bearings. 4-9 e. Keeping Bearings. 4-9 e. Keeping Bearings. 4-9 e. Keeping Bearings. 4-9 e. Keeping Bearings. 4-10 f. Inspecting Cast Parts, Machined Surfaces. 4-10 g. Inspecting Guis Seals, Gaskets. 4-10 h. Inspecting Gears. 4-11 j. Inspecting Gears. 4-12 k. Inspecting Splined Parts. 4-12 k. Inspecting Springs 4-12 n. Inspecting Springs 4-12 n. Inspecting Surfaces. 4-12 n. Inspecting Surfaces. 4-12 n. Inspecting Surfaces. 4-12 n. Inspecting Surfaces. 4-12 o. Inspecting Surfaces. 4-12 n. Inspecting Surfaces. 4-12 <t< td=""><td></td><td>c. Mechanic's Tools, Shop Equipment</td><td>4-1</td></t<>		c. Mechanic's Tools, Shop Equipment	4-1
b. Parts Normally Replaced. 4-1 4-4. CAREFUL HANDLING 4-9 4-5. CLEANING, INSPECTION 4-9 a. Dirt Causes Malfunction. 4-9 b. Cleaning Parts 4-9 c. Cleaning Bearings. 4-9 d. Inspecting Bearings. 4-9 e. Keeping Bearings Clean 4-10 f. Inspecting Cast Parts, Machined Surfaces. 4-10 g. Inspecting Bushings, Thrust Washers. 4-10 h. Inspecting Gears. 4-11 j. Inspecting Gears. 4-12 k. Inspecting Splined Parts. 4-12 k. Inspecting Springs 4-12 m. Inspecting Springs 4-12 n. Inspecting Springs 4-12 n. Inspecting Springs 4-12 n. Inspecting Springs 4-12 n. Inspecting Surfaces 4-12 n. Inspecting Sealing Surfaces 4-12 n. Inspecting Sealing Surfaces 4-12 n. Inspecting Sealing Surfaces 4-12 n. Inspecting Sealing Surfaces 4-12 n. Inspecting Sealing Surfaces 4-12 n. Inspecting Sealing Surfaces 4-13 d.	4-3.		
4-4. CAREFUL HANDLING 4-9 4-5. CLEANING, INSPECTION 4-9 a. Dirt Causes Malfunction			
4-5. CLEANING, INSPECTION a. Dirt Causes Malfunction			
a. Dirt Causes Malfunction	4-4.		4-9
b. Cleaning Parts 4-9 c. Cleaning Bearings 4-9 d. Inspecting Bearings Clean. 4-9 e. Keeping Bearings Clean. 4-10 f. Inspecting Cast Parts, Machined Surfaces. 4-10 g. Inspecting Bushings, Thrust Washers. 4-10 h. Inspecting Gears. 4-10 i. Inspecting Gears. 4-10 i. Inspecting Splined Parts. 4-12 k. Inspecting Snaprings 4-12 n. Inspecting Springs 4-12 n. Inspecting Springs 4-12 n. Inspecting Springs 4-12 n. Inspecting Suffaces. 4-12 o. Inspecting Suffaces. 4-12 o. Inspecting Sealing Surfaces. 4-12 a. Clutches, Pistons. 4-12 b. LubricantsUsed For Assembly 4-12 c. External Plugs, Hydraulic Fittings. 4-13 d. Oil-Soluble Grease 4-13 e. Sealring Compounds, Nonsoluble Greases 4-13 f. Lip-type Oil Seals 4-13 j. Interference-fit Parts 4-13 h. Sleeve-type Bearings and Bushings. 4-13 i. Bearings (Ball or Roller). 4-14	4-5.		
c. Cleaning Bearings			
d. Inspecting Bearings 4-9 e. Keeping Bearings Clean 4-10 f. Inspecting Cast Parts, Machined Surfaces 4-10 g. Inspecting Bushings, Thrust Washers 4-10 h. Inspecting Gears 4-11 i. Inspecting Gears 4-11 j. Inspecting Splined Parts 4-12 k. Inspecting Splined Parts 4-12 k. Inspecting Springs 4-12 n. Inspecting Springs 4-12 n. Inspecting Springs 4-12 n. Inspecting Springs 4-12 n. Inspecting Springs 4-12 n. Inspecting Springs 4-12 n. Inspecting Springs 4-12 n. Inspecting Suffaces 4-12 n. Inspecting Sealing Surfaces 4-12 a. Clutches, Pistons 4-12 b. LubricantsUsed For Assembly 4-12 c. External Plugs, Hydraulic Fittings 4-13 d. Oil-Soluble Grease 4-13 g. I		0	
e. Keeping Bearings Clean			
f. Inspecting Cast Parts, Machined Surfaces			
g. Inspecting Bushings, Thrust Washers			
h. Inspecting Oil Seals, Gaskets			
i. Inspecting Gears			
j.Inspecting Splined Parts			
k. Inspecting Threaded Parts			
I. Inspecting Snaprings			
m. Inspecting Springs4-12n. Inspecting Clutch Plates.4-12o. Inspecting Sealing Surfaces.4-124-6. GENERAL ASSEMBLY PROCEDURES4-12a. Clutches, Pistons.4-12b. LubricantsUsed For Assembly4-12c. External Plugs, Hydraulic Fittings.4-13d. Oil-Soluble Grease4-13e. Sealring Compounds, Nonsoluble Greases.4-13f. Lip-type Oil Seals4-13g. Interference-fit Parts4-13h. Sleeve-type Bearings and Bushings.4-144-7. WEAR LIMITS.4-144-8. SPRING SPECIFICATIONS.4-14			
n. Inspecting Clutch Plates			
o.Inspecting Sealing Surfaces.4-124-6.GENERAL ASSEMBLY PROCEDURESa.Clutches, Pistons.4-12b.LubricantsUsed For Assembly			
4-6. GENERAL ASSEMBLY PROCEDURES a. Clutches, Pistons. b. LubricantsUsed For Assembly c. External Plugs, Hydraulic Fittings. d. Oil-Soluble Grease e. Sealring Compounds, Nonsoluble Greases. f. Lip-type Oil Seals g. Interference-fit Parts h. Sleeve-type Bearings and Bushings. i. Bearings (Ball or Roller). 4-7. WEAR LIMITS. 4-8. SPRING SPECIFICATIONS.		n. Inspecting Clutch Plates	4-12
a. Clutches, Pistons.4-12b. LubricantsUsed For Assembly4-12c. External Plugs, Hydraulic Fittings.4-13d. Oil-Soluble Grease4-13e. Sealring Compounds, Nonsoluble Greases.4-13f. Lip-type Oil Seals4-13g. Interference-fit Parts4-13h. Sleeve-type Bearings and Bushings.4-13i. Bearings (Ball or Roller).4-144-7. WEAR LIMITS.4-144-8. SPRING SPECIFICATIONS.4-14			4-12
b.LubricantsUsed For Assembly4-12c.External Plugs, Hydraulic Fittings4-13d.Oil-Soluble Grease4-13e.Sealring Compounds, Nonsoluble Greases4-13f.Lip-type Oil Seals4-13g.Interference-fit Parts4-13h.Sleeve-type Bearings and Bushings4-13i.Bearings (Ball or Roller)4-144-7.WEAR LIMITS4-144-8.SPRING SPECIFICATIONS4-14	4-6.		
 c. External Plugs, Hydraulic Fittings			
d. Oil-Soluble Grease 4-13 e. Sealring Compounds, Nonsoluble Greases. 4-13 f. Lip-type Oil Seals 4-13 g. Interference-fit Parts 4-13 h. Sleeve-type Bearings and Bushings 4-13 i. Bearings (Ball or Roller) 4-14 4-7. WEAR LIMITS 4-14 4-8. SPRING SPECIFICATIONS 4-14			
 e. Sealring Compounds, Nonsoluble Greases			
f. Lip-type Oil Seals			
 g. Interference-fit Parts			
 h. Sleeve-type Bearings and Bushings			
i. Bearings (Ball or Roller)			
4-7.WEAR LIMITS4-144-8.SPRING SPECIFICATIONS4-14			
4-8. SPRING SPECIFICATIONS			
4-9. TORQUE SPECIFICATIONS			
	4-9.	TORQUE SPECIFICATIONS	4-14

Section 5. DISASSEMBLY OF TRANSMISSION

5-1.	SCOPE OF SECTION 5	.5-	1
------	--------------------	-----	---

5-2.	REMOVAL OF EXTERIOR PARTS
	a. Torque Converter
	b. Mounting in Holding Fixture5-1
	c. Vacuum Modulator, Mechanical Actuator
	d. Governor
	e. Oil Pan
	f. Oil Filter
5-3.	REMOVAL OF CONTROL VALVE BODY
5-4.	REMOVAL OF OIL PUMP AND FORWARD CLUTCH
5-4.	
	a. Oil Pump5-4 b. Forward Clutch and Turbine Shaft
5-5.	REMOVAL OF FOURTH AND THIRD CLUTCHES
	a. Fourth Clutch
	b. Third Clutch
5-6.	REMOVAL OF CENTER SUPPORT ASSEMBLY AND GEARING
	a. Center Support Assembly
	b. Gearing5-7
5-7.	REMOVAL OF SECOND AND FIRST CLUTCHES
	a. Second Clutch
	b. First Clutch
5-8.	REMOVAL OF OUTPUT SHAFT SEAL AND BEARING
0.01	a. Output Shaft Seal
	b. Bearing
	b. Douring
Section 6	REBUILD OF SUBASSEMBLIES
<u>6-1.</u>	SCOPE OF SECTION 6
6-2.	GENERAL INFORMATION FOR SUBASSEMBLY REBUILD
0-2.	
	a. Tools, Parts, Methods
	b. Cleaning, Inspection
	c. Torque Specifications
	d. Wear Limits, Spring Data6-1
	e. External Plugs, Hydraulic Lines
	f. Clutch Pack Procedure6-1
	g. Retaining Sleeve-Type Bearings6-1
6-3.	TORQUE CONVERTER INSPECTIONAT 540, AT 545
	a. Closed Unit Assembly6-1
	b. End Play Measurement
	c. Leak Test
6-4.	TORQUE CONVERTERAT 543
•	a. Preliminary Inspection
	b. Disassembly
	c. Rebuilding Stator Assembly
	d. Assembly
6 5	GOVERNOR
6-5.	
	a. Disassembly
	b. Assembly
6-6.	CONTROL VALVE BODY ASSEMBLY
	a. Disassembly6-11
	b. Assembly
6-7.	OIL PUMP ASSEMBLY
	a. Disassembly
	b. Assembly
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V

6-8.	FORWARD CLUTCH AND TURBINE SHAFT	
	a. Disassembly	6-19
	b. Checking Clutch Pack Clearance	6-21
	c. Assembly	6-23
6-9.	FOURTH CLUTCH	
	a. Disassembly	6-24
	b. Checking Clutch Pack Clearance	
	c. Assembly	
6-10.	CENTER SUPPORT ASSEMBLY	
0 10.	a. Disassembly	6-26
	b. Assembly	
6-11.	PLANETARY GEAR UNIT	0-27
0-11.		C 00
	a. Disassembly	
	b. Assembly	
6-12.	TRANSMISSION CASE	
	a. Disassembly	
	b. Assembly	6-35
6-13.	PLANETARY CARRIER ASSEMBLIES	
	a. Assembly Inspection	6-35
	b. Removal of Pinion Components	6-36
	c. Replacing Bushing in Front Planetary Carrier	6-36
	d. Installation of Pinion Components	
	ASSEMBLY OF TRANSMISSION	
7-1.	SCOPE OF SECTION 7	7-1
7-2.	SELECTIVE COMPONENTS	
	a. Establish Clearances	7-1
	b. Clutch Plate Stack	7-1
7-3.	INSTALLATION OF FIRST CLUTCH AND GEARING	
	a. First Clutch	7-1
	b. Planetary Gear Unit	
7-4.	INSTALLATION OF SECOND CLUTCH AND CENTER SUPPORT	
,	a. Second Clutch	7-5
	b. Center Support Assembly	
7-5.	INSTALLATION OF REAR BEARING SPACER AND FOURTH CLUTCH	
7-5.	a. Selecting, Installing Rear Bearing Spacer	7 0
7.0	b. Fourth Clutch INSTALLATION OF THIRD AND FORWARD CLUTCHES	
7-6.		
	a. Third Clutch	
	b. Forward Clutch and Turbine Shaft Assembly	
7-7.	INSTALLATION OF OIL PUMP ASSEMBLY	
	a. Selection of Front Thrust Washer	
	b. Oil Pump Assembly	7-13
7-8.	INSTALLATION OF OUTPUT SHAFT OIL BAL	
7-9.	INSTALLATION OF VALVE BODY, OIL FILTER AND OIL PAN	
	a. Control Valve Body	7-14
	b. Oil Filter	
	c. Oil Pan	
7-10.	INSTALLATION OF GOVERNOR, MODULATOR AND TORQUE CONVERTER	
, 10.	a. Governor	7-17
	b. Vacuum Modulator	
	c. Torque Converter Assembly	

7-11.	SELECTION, INSTALLATION AND LUBRICATION OF PTO AUXILIARY DRIVE	
	ASSEMBLIES	
	a. Transmission PTO	
	b. PTO Unit Selection	7-20
	c. Installation	7-20
	d. Backlash	7-20
	e. Lubrication	7-20
7-12.	INSTALLATION OF EXTERNAL SELECTOR LEVER.	7-20
	REMOVAL OF REAR BEARING.	-

Section 8. WEAR LIMITS AND SPRING DATA

8-1.	SCOPE OF SECTION 8	
8-2.	WEAR LIMITS DATA	
	a. Maximum Variations	
	b. Cleaning, Inspection	8-1
	c. Bearings, Bearing Journals, Bores	8-1
	d. Gears	
	e. Splines	8-1
	f. Hook-type Sealrings	8-1
	g. Oil Seals	8-1
8-3.	ŠPRING DATA	8-1
8-4.	WEAR LIMITS CHART	
8-5.	SPRING CHART	
8-6.	CLUTCH PLATE CONE.	

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vii

FOLDOUT ILLUSTRATIONS (back of Service Manual)

Cross-section View

- 1. Model AT 540 transmission
- 2. Model AT 543, 545 transmission

Schematic View

- 3. Model AT 540 transmission hydraulic schematic
- 4. Model AT 543, 545 transmission hydraulic schematic

Exploded Views

- A, 5. Torque converter assembly (AT 543)
- B, 5. Torque converter (AT 540, 545) and oil pump assembly
- A, 6. Forward clutch and turbine shaft
- B, 6. Fourth clutch
- A, 7. Second clutch, center support hird clutch
- B, 7. Planetary gear unit
- A, 8. First clutch
- B, 8. Transmission case, governor, vacuum modulator
- A, 9. Control valve body assembly
- B, 9. Oil pan, oil filter, governor and speedometer drives

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viii

1-1. SCOPE OF SERVICE MANUAL

a. <u>Coverage</u>. T his Service Manual describes the operation, maintenance and overhaul procedures for the AT 540, AT 543 and AT 545 automatic transmissions. The major components of the transmissions are discussed, and the function and operation of the hydraulic system and torque paths are explained. Assembly or disassembly procedures for the transmission and its components may be considered common, if not qualified. Figures 1-1, 1-2, 1-3 and 1-4 illustrate the transmissions.

b. Arrangement

(1) <u>Eight sections</u> E i g h t sections are included in this manual. Each paragraph and illustration number is prefixed with the applicable section number.

(2) Section content Section I contains g e n e r a l information, specifications, and data. Section 2 describes the transmission components and explains their operation. Section 3 outlines maintenance procedures a n d includes troubleshooting data. Section 4 isgeneral information required for overhaul. Section 5 disassembly of the covers transmission into subassemblies. Section 6 covers rebuild of subassemblies. Section 7 covers assembly of the transmission from subassemblies. Section 8 covers wear limits and spring information.

(3) Foldout illustrations Seven foldout illustrations at the end of this manual include a cross-section view of the transmission, a schematic view of the hydraulic system, and five exploded parts views which show all components in assembly relation.

<u>c.</u> <u>MaintenanceInformation</u> Each task outlined in this Service Manual has been successfully accomplished by service organizations and individuals. It is not expected that every service organization or individual will possess the required special tooling, training, or experience to perform all the tasks outlined. However, any task outlined herein may be performed if the following conditions are met:

(1) The organization or individual has the required knowledge of t he task through:

Formal instruction in a DDA or Distributor training facility.

"On-the-job" instruction by a DDA or Distributor representative.

Experience in performing the task.

(2) The work environment is suitable to prevent contamination or d a m a g e to transmission parts or assemblies.

(3) Required tools and fixtures are available as outlined in the Service Manual.

(4) Reasonable and prudent maintenance practices are utilized.

NOTE

Service organizations and individuals are encouraged to contact their local DDA Distributor for information and guidance on any of the tasks outlined herein.

1-2. SUPPLEMENTARY INFORMATION

Supplementary information will be issued, as re quired, to cover changes made after publication of this manual.

1-3. ASSEMBLY DIFFERENCES

Assemblies within the AT Series differ slightly. Some AT 540, 545 models include a power takeoff drive gear; some do not. All AT 543 models include the gear. Control

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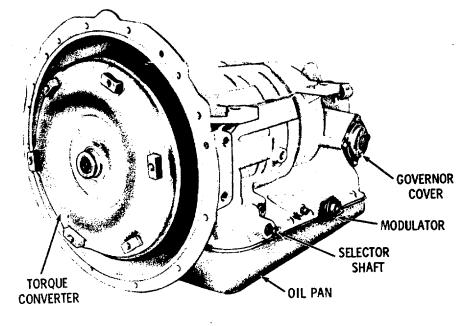


Fig. 1-1. AT 540 automatic transmission--left-front view

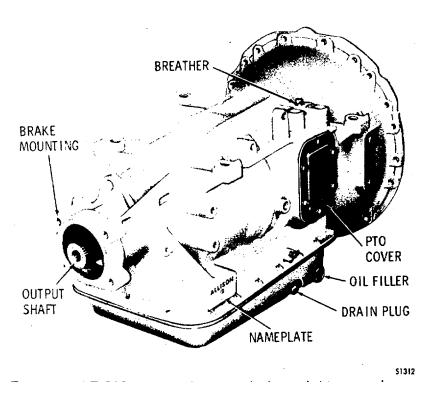


Fig. 1-2 AT 540 automatic transmission--right-rear view

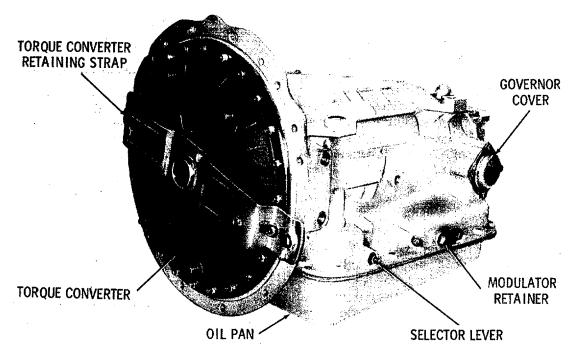


Fig. 1-3. AT 543 automatic transmission--left-front view

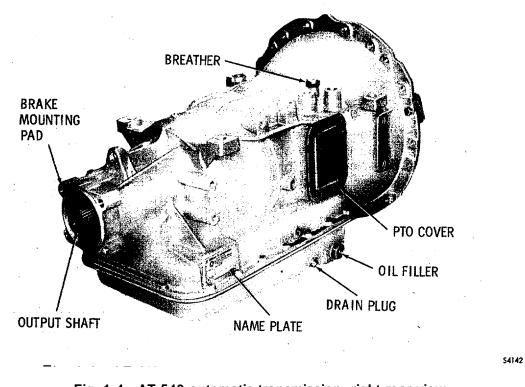


Fig. 1-4. AT 543 automatic transmission--right-rear view

valves require a combination of calibrated springs to time the automatic shifts. Modulator valves require either a vacuum modulator (gasoline engine) or a mechanical actuator (diesel engine) to control modulator pressure. Explanations in Section 2 clarify the difference between a vacuum modulator and a mechanical actuator. Section 6 explains the power takeoff differences. A spring chart in Section 8 covers the selection of valve body springs.

1-4. ORDERING PARTS

<u>a.</u> <u>Transmission Nameplate</u> The nameplate (fig. 1-5), located on the right-rear side of the transmission, includes the transmission serial number, assembly number, and model designation. All three of these must be supplied when ordering repair parts or requesting service information.

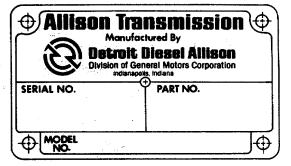
<u>b.</u> Parts Catalog All replacement parts should be ordered from your dealer. These parts are listed in the current Parts Catalog (SA 1235). Do not order by illustration item numbers used in foldouts 5 through 9. Refer to Section 4 for further replacement parts information.

1-5. GENERAL DESCRIPTION OF TRANSMISSION

<u>a.</u> <u>Automatic</u>, <u>Four Speeds</u>. The AT 540, AT 543, and AT 545 transmissions have four forward speeds and one reverse. Shifting within the forward ranges selected by the operator is fully automatic.

<u>b.</u> <u>Torque</u> <u>Converter</u>. A simple, 3element torque converter (fig. 1-1, 1-3) transmits power from the engine to the transmission gearing. The torque converter serves as both a fluid coupling and a torque multiplier.

<u>c. Planetary Gearing, Clutches</u> Ratios for four forward speeds and reverse are established by planetary gearing. The planetary gearing is controlled by multiple disc, hydraulic clutches. All gearing is in constant mesh.



9663A

Fig. 1-5. Transmission nameplate

1-6. OPERATING INSTRUCTIONS

<u>a.</u> <u>Vehicle-Related Controls</u>. For information on controls which are related to the vehicle, refer to the vehicle service manual.

<u>b.</u> <u>Neutral (N)</u>. Place the shift selector at the neutral position before starting the engine. A neutral safety switch o n the transmission (or in the selector linkage) prevents starting the engine while the selector lever is not at neutral. Apply the parking brake and shift to neutral any time the engine is to be running while the operator is not at the controls. Refer to drivers handbook SA 1334.

c. Forward Drive Ranges

(1) <u>Shifting from neutral</u> The engine should be at idle speed when any shift from neutral to a drive range is made.

(2) <u>Drive (D</u>). Drive (D) includes all four forward gears. By depressing the accelerator, the transmission will start in first gear and automatically upshift at the proper speeds through second, third and fourth gears. Downshifts will also occur automatically, in relation to speed.

(3) <u>Drive 3 (3)</u>. In t hi s range, the transmission will start i n first gear, and automatically upshift, at the proper speeds, to second and third gears.

(4) <u>Drive 2 (2</u>). In this range, the transmission will start in first gear, and automatically upshift, at the proper speed, to second gear.

(5) <u>Drive 1 (1</u>). In this range, the transmission will start in first gear. No automatic upshift will occur unless excessive speed is attained in first gear.

<u>d.</u> <u>Reverse (R)</u> To move the vehicle backward, idle the engine and shift the selector to the reverse position. Depressing the accelerator will then cause the vehicle to back up.

<u>e.</u> <u>Towing</u> All lubricating and clutch apply oil is provided by the input oil pump. Because the pump location is in front of the transmission gearing and clutches, the pump cannot be motored by pushing or towing the vehicle. Therefore, any time the vehicle must be towed or pushed, the driveline must be disconnected or the driving wheels must be lifted off the ground.

f. Power Takeoff Operation

NOTE

The power takeoff is converter drive n. It can be operated while the vehicle is standing or moving.

(1) Engagement. To engage the power takeoff, apply the vehicle brakes to prevent the vehicle moving and shift to any selector position other than neutral. This stops the rotation of the PTO drive gear in the transmission. Then engage the power takeoff. If engagement is prevented by the gear teeth not meshing properly, release the brakes and allow the vehicle to creep slightly-or shift the selector to neutral and then back into gear.

CAUTION

The PTO unit should never be engaged by clashing the gear teeth. This may damage the PTO unit and the transmission PTO drive gear teeth. This could result in further damage to the transmission and PTO.

(2) <u>Neutral operation</u> T o operate the power takeoff while the vehicle is standing, shift the transmission to neutral after engagement of the power takeoff. Then, increase engine speed until the desired power takeoff operating speed is obtained.

(3) <u>Disengagement after neutral operation</u> To disengage the power takeoff after operation with the vehicle standing, release the throttle, allow the driven equipment to come to a stop, and then disengage the power takeoff.

(4) <u>Operation with vehicle in motion</u> To operate the power takeoff during movement of the vehicle, after engagement, as described in (1), above, shift to the desired range and drive the vehicle. The speed of the power takeoff, during this period of operation, will always maintain a direct relation to vehicle speed. Power takeoff speed will decrease, in relation to vehicle (transmission output) speed as shifts to higher ranges occur. The following chart shows these relations.

<u>Gear</u>	PTO DRIVE GEAR SPEED (x transmission output speed)
First	3.45
Second	2.25
Third	1.41
Fourth	1.00
Reverse	5.02

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(5) <u>Disengagement after operation with</u> <u>vehicle in motion</u>. When operating the power takeoff while the vehicle is moving, the power takeoff may be disengaged whenever it is no longer required. When there is no load on the power takeoff gear, it can be pulled out of engagement.

1-7. SPECIFICATIONS AND DATA

The specifications and data in the chart which follows are applicable to AT 540, AT 543 and AT 545 transmissions.

SPECIFICATIONS, DATA CHART

ModelsAT 540, AT 543, AT 545			
Manufacturer	Detroit Diesel Allison Division, GM AT 540, AT 545	AT 543	
Rating:			
input torque	385 lb ft (max)(522 N.m)	415 lb ft (max) (563 N.m)	
input speed	4000 rpm (max)(gasoline)	2800 rpm (max)	
	3200 rpm (max)(Diesel)		
input horsepower (net installed)	235 hp (175 kW) (max)	221 hp (165 kW) (max)	
Vehicle application:	255 hp (175 kW) (hax)	221 hp (100 kW) (hax)	
gross vehicle weight	36,000 lb (16 329 kg)		
gross combined weight	50,000 lb (22 680 kg)		
Mounting:			
engine	SAE 3 automotive housing		
vehicle	Two side mounting pads (in addition, mission may be overhung)	trans-	
Drive	Flexplate		
Rotation (viewed from input):	1 lonplate		
input	right		
output (in forward range)s	right		
Output location	In line with input		
Dry weight (basic configuration)	275 lb (1223 N) (AT 540, AT 545); 28	30 lb	
	(1245 N) (AT 543)		
Parking brake provision	Mounting provided at rear of transmis	ssion case	
Output flange	Supplied by installer		
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GENERAL INFORMATION

SPECIFICATIONS, DATA CHART (cont)

Oil capacity (less external system)	AT 540 & EARLY AT 543 15 US qts (12.5 liters), initial fill as re- ceived from factory 15 US qts (14 liters), inial fill when dry 9 US qts (8.5 liters), refill
	LATE AT 543 & AT 545 20 US qts (18.9 liters), initial fill as re- ceived from factory 22 US qts (20.8 liters), initial fill when dry 16 US qts (15 liters), refill
Temperatures: sump	2500OF (1210C) max
to coolerconverter-out normal operation minimum	300OF (1480C) max 160-2200OF (71-1040C) 1OO°F (380C)
Clutches	Oil wet, hydraulic-actuated, spring-released, self-compensating for wear
Gearing	Planetary, straight-cut spur, contant mesh
Power takeoff (converter driven): mounting (one opening) drive gear location rotation rating: (continuous) (intermittent)	SAE regular duty, 6-bolt 6 pitch, 55 teeth, 200 pressure angle right side, viewed from rear same as engine 200 lb ft (270 N.m) 250 lb ft (340 N.m)
Oil filter	Integral (in sump)
Sump	Integral
Input pressure oil pump	Positive displacement
Oil type	Dexron(® or Dexron II@*
Oil pressure (Refer to paragraph 3-20)	
Converter: number of stages number of elements stall-torque multiplication:	1 3
AT 540 AT 543	2.0:1 TC 350 3.09:1; TC 370 2.51:1; TC 375 2.13:1; TC 380 1.86:1
AT 545	2.0:1

*Dexron $\ensuremath{\mathbb{R}}$ and Dexron II $\ensuremath{\mathbb{R}}$ are registered trademarks of General Motors.

SPECIFICATIONS, DATA CHART (cont)

Drive range and sequences	Reverse, N, 1-2-3-4, 1-2-3, 1-2, 1	
Drive range and shift control (external)	Mechanical	
Shifting mechanism (internal control)	Hydraulic	
Shift modulation	Vacuum or Mechanical	
Neutral start and reverse signal switches	Supplied by customer	
Speedometer drive:		
type	13/16-20 UNEF thread for SAE regular duty thread type	
drive gear data (cross axis)	5 teeth, 29 normal pitch, 850, 20', 30", left helix angle, 200 normal pressure angle	
	8 teeth, 20 normal pitch, 780, 59', 42", left hand helix angle, 200 normalres- sure angle	
driven gear	Supplied by customer	

TRANSMISSION RATIOS (mechanical*)

<u>Range</u>	<u>Clutch(es) Engage</u> d	<u>Ratio</u>
Neutral	First	0
First	Forward and first	3.45:1
Second	Forward and second	2.25:1
Third	Forward and third	1.41:1
Fourth	Forward and fourth	1.00:1
Reverse	Fourth and first	5.02:1

*Overall torque multiplication ratio of transmission (output stalled) is the product of the converter torque multiplication ratio (see Converter, above) and the mechanical (gear) ratio.

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2-1. SCOPE OF SECTION.2

This section describes transmission components and explains their function. The hydraulic system and torque paths through the transmission are explained.

2-2. MOUNTING

<u>a.</u> <u>To Engine</u>. The front of the transmission case (fig. 1-1) is a SAE size 3 flange. This flange is bolted to the. rear of the engine.

<u>b.</u> <u>To</u> <u>Vehicle</u>. Two 5/8-11 tapped holes in flat mounting pads at each side of the transmission, slightly behind t h e engine mounting flange (fig. 1-1), provide for mounting support in the vehicle.

2-3. INPUT DRIVE

<u>a.</u> <u>At 540, 545</u>. Six tapped lugs on the front of the torque converter provide for attachment of a flexible drive disk. The outer bolt circle of the disk is bolted to the lugs. The inner bolt circle is bolted to the engine crankshaft or crankshaft adapter hub.

<u>b.</u> <u>AT 543</u>. S i x threaded studs on the front of the torque converter provide for the attachment of a flexible drive disk using nuts. Otherwise, the arrangement is the same as described in a, above.

2-4. TRANSMISSION CASE

The transmission case (B, foldout ,8) is cast aluminum. It is machined to receive the clutches and gearing, oil pump, governor, control valve, and oil pan. A parking brake mounting surface is provided at the rear. A power takeoff mounting surface is provided on the right side.

2-5. TORQUE CONVERTER ASSEMBLY

<u>a.</u> <u>AT 540, AT 545</u>. The AT 540 and AT 545 torque converter (foldout I and 2) is a closed, welded unit that cannot be disassembled (except by removing the weld metal).

<u>b.</u> <u>AT 543</u>. The AT 543 torque converter (foldout 1) is a bolted assembly, somewhat larger than that of the AT 540.

The assembly and its components are illustrated in A, foldout 5.

c. <u>Description</u> The AT 540, AT 543 and 545 model torque converters include a pump, a turbine, and a stator. The pump is driven by the engine. The turbine drives the turbine shaft. T he stator is mounted on a freewheel clutch, the hub of which is splined to a stationary ground sleeve. The hub of the pump drives the transmission input pressure pump.

d. Operation (foldout I and 2)

(1) The torque converter assembly is continually fill e d with oil, which flows through the converter to cool and lubricate it. When the converter is driven by the engine, the pump vanes throw oil against the turbine vanes. The impact of the oil against the turbine vanes tends to rotate the turbine.

(2) The turbine, splined to the turbine shaft, transmits torque to the transmission gearing. At engine idle speed, the impact of oil against the turbine vanes is not great. At high engine speed, the impact is much greater than at idle, and high torque is produced by the turbine.

(3) Oil thrown into the turbine flows to the stator vanes. The stator vanes change the direction of oil flow (when the stator is locked against rotation), and directs the oil to the pump in a direction that assists the rotation of the pump. It is the redirection of the oil in a manner to assist the pump that enables the torque converter to multiply input torque.

(4) Greatest torque multiplication occurs when the turbine is stalled and the pump. is rotating at its highest speed. Torque multiplication decreases as the turbine rotates and gains speed.

(5) When turbine speed approaches the speed of the pump, oil flowing to the stator begins striking the backs of the stator vanes. This rotates the stator in the same direction as the turbine and pump. At this point, torque multiplication stops and the converter becomes, in effect, a fluid coupling.

(6) Thus, as explained in (1) through (5), preceding, the torque converter accomplishes three main functions. It acts as a disconnect clutch because little torque is transmitted at engine idle speed. It multiplies torque at low turbine/high pump speed to give greater starting or driving effort when needed. And, it acts as a fluid coupling to efficiently transmit engine torque to the transmission gearing during drive, other than idle or starting.

2-6. OIL PUMP ASSEMBLY

<u>a.</u> <u>Description</u>(B, foldout 5)

(1) Oil pump assembly 2 includes, in addition to pump components, a front support assembly 17 and main-pressure regulator components 24 through 27.

(2) The oil pump consists mainly of an eccentric driven gear 9 and drive gear 10 which are located in pump body 8. Pump body 8 is bolted to front support and bearing assembly 16.

(3) The front support assembly includes stator shaft 19. Front support 21 is the member which closes the front of the transmission, and supports the torque converter, input shaft and forward clutch.

b. Operation (B, foldout 5)

(1) When the torque converter is rotating, its rear hub drives pump drive gear 10. Gear 10 is meshed with the internal teeth of driven gear 9. Gear 9 is eccentric from gear 10.

(2) A crescent-shaped projection in pump body 8 fills the space between the external teeth of drive gear 10 and the internal teeth of drive gear 9, opposite the point where the gears mesh. As the gears rotate, oil is drawn into a port near the unmeshing teeth and carried to a port near the remeshing teeth. The remeshing teeth force the oil out of the pump and into the hydraulic system.

(3) Refer to paragraph 2-17, following, for further explanation of the oil pump, in relation to the hydraulic system.

2-7. FORWARD CLUTCH AND TURBINE SHAFT

<u>a.</u> <u>Description</u>(A, foldout 6)

(1) The forward clutch and turbine shaft assembly connects the converter turbine to the other clutches and gearing in the transmission. The output from the converter must be transmitted by the turbine shaft during every operational phase of the transmission, including PTO operation.

(2) Turbine shaft 8 is splined to clutch housing 10. The external tangs of clutch plates 23 engage slots in housing 10. The internal splines of clutch plates 24 engage hub 22, that transmits torque to the gearing.

(3) Piston 15 is installed in a bore in housing 10, -and retained by sixteen release springs 16, retainer 17 and snapring 18. Clutch plates 23 and 24 are held in housing 10 by fourth clutch driving hub 25, retained by snapring 26.

(4) Transmissions are available with or without power takeoff drive gear 3 or 28. When used, gear 28 is splined to housing 10 and retained by one snapring 27. Earlier models use gear 3, splined to housing 10 and retained by snaprings 2 and 4.

b. Operation(A, foldout 6)

(1) Turbine shaft 8 and housing 10 rotate when the 'torque converter turbine rotates. Fourth clutch driving hub 25 also rotates, and rotates internalsplined plates 4 (B, foldout 6) of the fourth clutch. PTO drive gear 3 or 28 (A, foldout 6), when included, also rotates.

DESCRIPTION AND OPERATION

(2) When hydraulic pressure is directed to the piston bore in housing 10 (A, foldout 6), piston 15 compresses clutch plates 23 and 24 against driving hub 25. This locks clutch hub 22 to housing 10. Hub 22 is splined to transmission main shaft 5 (B, foldout 7).

(3) When the converter turbine rotates, and the forward clutch is applied, the transmission ma in shaft is rotated. This drives t he transmission gear set, and will drive the output shaft in any forward gear depending upon which additional clutch is engaged.

(4) The forward clutch is engaged only during operation in a forward gear, and is always paired with another clutch (either first, second, third or fourth). It is released during neutral and reverse operation.

(5) In neutral, the forward clutch housing can rotate to drive the power takeoff. In reverse, its housing can rotate to drive the fourth clutch (which is applied in combination with the first clutch to obtain reverse gear).

2-8. FOURTH CLUTCH

a. Description(B, foldout 6)

(1) The fourth clutch includes housing assembly 12, piston 9, five external tanged clutch plates 5, five internal-splined plates 4, and back plate 3.

(2) Piston 9 is installed in a bore in housing 14, and retained by sixteen return springs 8, retainer 7' and snapring 6. External-tanged plates 5 engage slots in housing 14. Internal-splined plates 4 are splined to fourth clutch driving hub 25 (A, foldout 6). Plates 4 and 5 (B, foldout 6) are retained in housing 14 by clutch back plate 3 and snapring 2.

(3) The central hub of housing 14 is splined to sun gear shaft 4 (B, foldout 7). The outer splines on housing 14 (B, foldout 6) engages internal-splined plates 3 (A, foldout 7) of the third clutch. b. Operation (B, foldout 6)

(1) When the fourth clutch is released, internal-splined plates 4 are free of external-tanged plates 5. This permits plates 4 to rotate independent of housing 14, whether housing 14 is stopped or has a different speed or direction of rotation.

(2) When hydraulic pressure is directed to the piston cavity in housing 14, piston 9 compresses plates 4 and 5 against back plate 3. This locks internal-splined plates 4 to external-tanged plates 5, and in turn, to housing 14.

(3) Thus, when the fourth clutch is engaged, it is locked to fourth clutch driving hub 25 (A, foldout 6) and must rotate with the turbine shaft when the forward clutch is engaged. This condition exists only during fourth gear and reverse gear operations.

(4) In fourth gear, the purpose is to transmit turbine shaft rotation to sun gear shaft 4 (B, foldout 7) while the same rotation is being transmitted to transmission main shaft 5 by the engaged forward clutch. The result is direct drive to the output shaft.

(5) In reverse gear, the purpose is to transmit turbine shaft rotation to sun gear shaft 4 (B, foldout 7) while the first clutch (A, foldout 8) is engaged. The result is reverse rotation of the transmission output shaft.

2-9. SECOND, THIRD CLUTCHES AND CENTER SUPPORT

<u>a.</u> <u>Description</u>(A, foldout 7)

(1) T he second and third clutches are identical, and positioned back-to-back in the transmission case. The third clutch is forward of the center support assembly; the second clutch is behind the center support assembly.

(2) The third clutch includes items I through 12 (A, foldout 7). The second clutch includes items 17 through 26. Center support assembly 6 serves the two clutches

jointly. The front side of support 16 is bored to receive third clutch piston 10. The rear side of support 16 is bored to receive second clutch piston 19. Center support 16 includes passages which direct oil to both these clutches, as well as a passage to serve the fourth clutch. The fourth clutch passage directs oil to the support hub, where oil is directed to fourth clutch housing 14 (B, foldout 6) which rotates on the hub.

(3) Externa-tanged clutch plates 4 (A, foldout 7) and 24 engage slots in the transmission case, and are always stationary. Internal-splined plates 3 of the third clutch engage housing 14 (B, foldout 6) of the fourth clutch. Internal-splined plates 25 (A, foldout 7) of the second clutch engage external splines of front planetary assembly 9 (B, foldout 7).

b. Operation of third Clutch (A, foldout 7)

(1) When the thid clutch is released, internal-splined plates 3 can rotate freely. This permits fourth clutch housing 14 (B, foldout 6) to rotate. The third clutch is released in all gears except third.

(2) When hydraulic pressure is directed to t he third clutch piston cavity (front) of center support 16 (A, foldout 7), piston 10 compresses plates 3 and 4 against back plate 2, that is retained in the transmission case by snapring 1. This locks internal-splined plates 3. Plates 3, splined to fourth clutch housing 14 (B, foldout 6), lock housing 14 stationary. Housing 14 is splined to sun gear shaft 4 (B, foldout 7), that is, thus, also held stationary. This provides a reaction for the gearing and causes the gears to produce third gear (input torque for the gearing comes through the engaged forward clutch and transmission main shaft).

c. Operation of Second Clutch (A, foldout 5)

(1) When the second clutch is released, internal-splined plates 25 are free to rotate. Plates 25 are splined to front planetary carrier assembly 9 (B, foldout 7) that is, thus, also f r e to rotate. The second

clutch i s released during operation in all gears except second.

(2) When hydraulic pressure is directed to the second clutch piston cavity (rear) of center support 16 (A, foldout 7), piston 19 compresses plates 24 and 25 against back plate 26. Back plate 26 reacts against the transmission case. This locks internal-splined plates 25 to external-tanged plates 24, holding plates 25 stationary.

(3) Plates 25, in turn, holdfront planetary carrier assembly 9 (B, foldout 7) stationary. A compound arrangement in the gearing produces second gear (input torque comes through the turbine shaft, the engaged foreward clutch, and the transmission main shaft).

2-10. FIRST CLUTCH

<u>a.</u> <u>Description</u>(A, foldout 8)

(1) The first clutch includes, mainly, piston 9, seven external-tanged clutch plates 4, seven internal-splined clutch plates 3, and back plate 2.

(2) Piston 9 is positioned in a bore in the rear of the transmission case. The external tangs of clutch plates 4 engage slots in the transmission case, and are always stationary. Internal-splined plates 3 engage rear planetary ring gear 5 (or 54 in B, foldout 7 for earlier models).

(3) Piston 9 (A, foldout 8) is retained in the transmission case by twenty-two return springs 8, retainer 7, and snapring 6. Back plate 2, and clutch plates 3 and 4 are retained in the transmission case by snapring 1.

b. Operation(A, foldout 8)

(1) When the first clutch is released, internal splined plates 3 are free to rotate. This leaves rear planetary ring gear 5 free to rotate. The first clutch is released during operation in all gears except first and reverse. It is engaged during operation in neutral, first gear and reverse.

(2) When hydraulic pressure is directed to the first clutch piston cavity (in the transmission case), piston 9 (A, foldout 8) compresses clutch plates 3 and 4 against b a c k plate 2. This locks internal-splined plates 3 to external-tanged plates 4, which are stationary. Plates 3, splined to rear planetary ring gear 5, hold the ring gear stationary.

(3) The stationary ring gear provides a reaction for the planetary gearing to produce either first gear or reverse, depending upon the driving member in the gear set. In first gear, the driving member is rear planetary sun gear 32 (B, foldout 7), which receives torque through the turbine shaft, the engaged forward clutch, and the transmission main shaft.

(4) In re verse gear, the driving member is center sun gear 20 (B, foldout 7), which receives torque through the turbine shaft, the engaged fourth clutch, and sun gear shaft 4. First gear is a simple planetary action (involving only one planetary). Reverse gear is a compound planetary action (involving two planetary sets).

2-11. PLANETARY GEAR UNIT

a. <u>Description</u>(B, foldout 7)

(1) Planetary gear unit I includes all of the gears and shafts in the transmission, except the turbine shaft and the rear planetary ring gear.

(2) Three planetary gear sets are included in the assembly. These, because their functions overlap, are called simply front planetary, center planetary, and rear planetary. The planetary sets are so designated because of their location in relation to the transmission and to each other.

(3) The front planetary includes sun gear 7, carrier assembly 9, and ring gear 19. The center planetary includes sun gear 20, carrier assembly 21, and ring gear 31. The rear planetary includes sun gear 32 and carrier assembly 37.

(4) The three planetary sets are interconnected by sun gear shaft 4, main shaft

5 and connecting drum 29. This interconnection of the planetary input, reaction, and output elements, and connection of clutches to the shafts and planetary elements, produces four forward speeds and reverse.

<u>b.</u> <u>Operation</u>(B, foldout 7)

(1) The front planetary, in conjunction with the center planetary, produces second gear when the forward and second clutches are engaged (fig. 2-3).

(2) The center planetary is active in second, third, and reverse gears. In second gear it is compounded with the front planetary as described in (1), above.

(3) T he center planetary produces t h i r d gear when the forward and third clutches are engaged (fig. 2-4).

(4) The center planetary is locked up along w it h the front and with the rear planetaries to produce fourth gear when the forward and fourth clutches are engaged (fig. 2-5).

(5) T he center planetary is compounded with the rear planetary to produce reverse gear when the fourth and first clutches are engaged (fig. 2-6).

(6) The rear planetary is active in first and reverse gears.

(7) The rear planetary is locked up with the front and center planetaries to produce fourth gear as explained in (4), above.

(8) The rear planetary is compounded with the center planetary to produce reverse gear as explained in (5), above.

(9) The rear planetary acts alone to produce first gear when the forward and first clutches are engaged (fig. 2-2).

NOTE

In fourth gear, because both the forward and fourth clutches are engaged, all three planetaries rotate as a unit. This gives direct drive through the transmission.

2-12. SPEEDOMETER DRIVE

a. <u>Description</u>(B, foldout 9)

(1) The speedometer drive consists of drive gear 2, and provision for mounting the driven gear assembly in the transmission case.

(2) Drive gear 2 is a worm type, with a lefthand helix. It is concentric with the transmission output shaft. Having no key or drive splines, the drive gear is clamped between adjacent components for rotational drive.

<u>b.</u> <u>Operation</u> (B, foldout 9). W hen the transmission output shaft rotates, drive gear 2 rotates. The driven gear, supplied by the vehicle manufacturer, rotates clockwise during forward operation (viewed at drive cable connection on transmission).

2-13. GOVERNOR

<u>a.</u> <u>Description</u> (B, foldout 8). Governor assembly 17 is a centrifugal (flyweight) governor, rotated by drive gear I (B, foldout 9), mounted on the transmission output shaft. It is retained in the transmission case by cover 21 (B, foldout 8).

<u>b.</u> Operation (B, foldout 8). When the governor rotates, centrifugal force causes t h e governor weights to move outward. Their outward movement pushes a valve into the governor body. The valve admits oil to the governor circuit. When oil is admitted, governor pressure increases. In turn, when governor pressure increases, the governor valve is pushed back against the weights. Governor pressure is regulated when the push of the weights is balanced by the opposite push of governor pressure. Thus, governor pressure varies with transmission output speed, increasing as output speed increases. Governor pressure, in combination with modulator pressure (para 2-14, below) controls automatic shifting of the transmission gears. Refer also to paragraph2-17q, h, j, k and 1.

2-14. VACUUM AND MECHANICAL MODULATOR

<u>a.</u> <u>Vacuum Modulator</u> (B, foldout 8)

(1) Vacuum modulator 26 (B, foldout 8) is a unit assembly calibrated and sealed at the factory. It contains a spring and diaphragm which is responsive to vacuum. A vacuum line from the engine intake manifold is connected to the shell of the modulator. Evacuation of air causes the diaphragm to depress the diaphragm spring. Movement of the diaphragm actuates the modulator valve through an actuator pin in the control valve body assembly.

(2) Vacuum varies with vehicle speed, load, and engine throttle opening. The position of the diaphragm in the modulator varies with vacuum. When the diaphragm moves, flow in the modulator valve is affected, thereby affecting modulation pressure. Modulator and governor pressures control the automatic selection of transmission ranges. Refer to paragraph 2-13, above, for the explanation of the governor. Refer to paragraphs 2-17 g, h,., k and 1.

b. <u>Mechanical Modulation</u>

(1) Mechanical modulation is required when the transmission is coupled to a diesel engine. Mechanical modulation is used because the diesel engine is incapable of producing a suitable control vacuum. The modulator unit is attached to the transmission and activated by a cable.

(2) T he cable is connected to the fuel control lever at one end and the modulator valve mechanical actuator at the other. With the actuation of the accelerator, the fuel control lever moves the cable, thereby mechanically controlling the modulator valve. The valve requires no force at engine idle and a 13.5 to 15.5 lb (60 to 69 N) force at full throttle.

2-15. CONTROL VALVE ASSEMBLY

<u>a.</u> <u>Description</u> (A, foldout 9). Control valve body assembly I includes the various valves, springs and other components which control the selection of ranges, and the automatic selection of gears. The valve body assembly is bolted to the bottom of the transmission case, which is channeled to direct the flow of oil between the valve body and clutches, and other components.

<u>b.</u> <u>Operation</u> Refer to paragraph 2-17 for operation of control valve body assembly.

2-16. OIL PAN AND OIL FILTER

a. <u>Description</u>(B, foldout 9)

(1) Oil pan 19 is a pressed steel assembly providing openings for draining oil and for mounting a combination oil filler tube and dipstick-type oil level checking gage. The oil pan is the oil sump for the transmission and bolts to the bottom of the transmission housing.

(2) Oil filter assembly 16 is a box like sheet metal frame having a fine-mesh screen, through which oil enters. The oil is then directed to the transmission hydraulic system by intake pipe 15. Screw 17 secures the filter assembly to the bottom of the control valve body. The filter assembly is submerged in the oil in the oil pan.

b. Function (B, foldout 9)

(1) Oil pan 19 holds the entire oil supply for the transmission and covers the control valve body assembly and the oil filter. The oil pan is removed to replace the oil filter.

(2) The oil filter assembly screens all oil entering the hydraulic system.

2-17. HYDRAULIC SYSTEM

<u>a. System Functions</u> The hydraulic system generates, directs and controls the pressure arfdb w of the hydraulic fluid within the transmission. The hydraulic fluid (transmission oil) is the power transmitting medium in the torque converter. Its velocity drives the torque converter turbine. Its flow cools and lubricates the transmission; its pressure applies the clutches. <u>b.</u> <u>System Schematic Illustration</u> (foldouts 3, 4). A color-coded foldout illustration, representing the system in action, in neutral, with the engine idling, is presented at the back of this manual. It may be folded out for reference in connection with the study of text covering the hydraulic system.

<u>c. Oil Filter, Pump Circuit</u> (foldouts 3, 4). Oil (blue) is drawn from the sump (transmission oil pan) through a fine-mesh filter screen by the input-driven pressure pump. Oil (red), discharged by the pump, flows into the bore of the main-pressure regulator valve. A bypass (blue and red) returns oil to the pump intake when main pressure is excessive.

d. <u>Main-PressureCircuit</u> (foldouts 3, 4)

(1) Main pressure (red) is regulated by the main-pressure regulator valve. Oil from the pump flows into the bore surrounding the valve, into an internal passage of the valve, and to the upper end of the valve. Pressure at t he upper end of the valve forces the valve downward until oil (yellow) flows to the torque converter and, if pump flow is of sufficient volume, to the bypass (red and blue). Spring pressure, below the valve, balances oil pressure above it.

(2) The main oil (red) passage to the remainder of the hydraulic system is connected to the main-pressure regulator valve bore at the same point as the pump outlet. Before Serial Number 34501 (AT 540, 543 models), main pressure was directed to seven points in the system. These are: 3-4 shift signal valve; 2-3 shift signal valve; 1-2 shift signal valve; selector valve; 1-2 relay valve; modulator valve; and governor valve. After Serial Number 34500 (AT 540, 543 models), the trimmer regulator valve and the priority valve were added to the main pressure circuit. The functions of these valves are described later.

(3) Although main pressure is controlled primarily by the force of the spring below the regulator valve, two other factors influence main pressure. These are modulator pressure (red and green) and neutral, for-

ward regulator pressure (red a n d yellow). The presence of either will reduce main pressure. Further explanations of the effects of these two pressures are made in paragraphs covering the selector valve and the modulator pressure valve.

(4) Increased main pressure (PSI) was introduced on the AT 543 and AT 545, by removing modulated pressure at the main regulator valve (foldout 3, 4). With throttled-modulated main pressure removed, a constant main pressure schedule is maintained throughout the entire throttle range of the transmission. This provides for increased clutch capacity resulting in less slippage and plate wear.

<u>e.</u> <u>Converter</u>, <u>Cooler</u>, <u>Lubrication</u> <u>Circuit</u> (foldouts 3, 4)

(1) This circuit originates at the mainpressure regulator valve. Converter-in (yellow) flows to the torque converter. Oil must flow through the converter continuously to keep it filled, and to carry off the heat generated by the turbulence of the oil.

(2) Converter-out (orange) oil, leaving the torque converter, flows to an external cooler (supplied by vehicle or power unit manufacturer). A flow of air or water over or through the cooler removes the heat from the transmission oil.

(3) Lubrication (green) oil leaving the cooler is returned to the transmission, and directed to points requiring a continuous flow to lubricate components. Lubrication oil returns, finally, to the transmission sump.

<u>f.</u> <u>Selector</u> <u>Valve</u>; <u>Neutral</u>, <u>Forward</u> <u>Regulator</u> <u>Circuits</u> (foldouts 3, 4)

(1) T h e selector valve is manually shifted to select the operating range desired. It can be shifted to any of six positions. These are: neutral (N) reverse (RX drive (D) drive 3 (3); drive 2 (2); and drive I (1). At each of these positions, the selector valve establishes the hydraulic circuit for operation in the condition indicated.

(2) D r i v e 1, drive 2, drive 3 and drive are forward ranges, in which the highest gear attainable (by automatic upshifts) is indicated by the numerical in the range. The lowest gear attainable in each is first gear. Anytime the vehicle starts off in any of these four ranges, it is in first gear. Shifting within any range is automatic, depending upon speed and throttle position.

(3) The neutral, forward regulator pressure (orange and yellow) is directed from the selector valve to the main-pressure regulator valve when the selector valve is at any position except reverse. In neutral, and all forward drive ranges, t h is pressure pushes downward on the main-pressure regulator valve, and reduces main pressure. In reverse, the regulator pressure is absent, permitting a higher main pressure.

<u>q.</u> <u>Governor Valve</u>, <u>Governor Circuits</u> (foldout 2)

(1) Governor feed is merely main pressure (red) directed to the governor valve. A centrifugal-type governor, driven by the transmission output, controls the position of the governor valve. The position of the governor valve determines the pressure in the governor circuit (green and white). When the transmission output is not rotating, governor pressure is negligible. When the transmission output rotates, governor pressure varies with the speed of rotation. The greater the speed of rotation, the greater is governor pressure.

(2) Governor pressure (green and white) is directed to the 1-2, 2-3, and 3-4 shift values. The action of governor pressure in automatic upshifts and downshifts is explained in \underline{k} , and \underline{l} below.

h. <u>Modulator Pressure Valve Circuit</u> (foldouts 3, 4)

(1) Modulation pressure (red and green) is a regulated, reduced pressure derived from main pressure at the modulator pressure valve. The valve is moved rightward by a spring at the left end of the valve

DESCRIPTION AND OPERATION

when the actuator pin pressure is released. Pressure is applied by either a vacuum modulator (gasoline engine) or a mechanical actuator (diesel engine). At high vacuum all pressure is removed from the actuator pin allowing the valve to move rightward. Low vacuum increases the pressure on the actuator pin, due to the overpowering spring in the vacuum modulator, forcing the valve leftward. The actuator pin movement for the mechanical actuator fluctuates according to throttle position. Opening the throttle applies pressure to the actuator pin, and pushes the valve leftward (decreasing modulator pressure). Closing the throttle removes pressure from the actuator pin, and permits the valve to move rightward (increasing modulator pressure).

(2) Thus, when the modulator pressure valve moves leftward, modulator pressure is reduced; when it moves rightward, modulator pressure is increased. Since engine vacuum varies with load, throttle opening and engine speed, the position of the modulator pressure valve, and modulator pressure, vary also. On the AT 543 and AT 545, this varying pressure is directed to the / three shift signal valves, and to the trimmer regulator valve. On the AT 540, main pressure is directed to one additional valve, the main pressure regulator valve.

(3) At the 1-2, 2-3 and 3-4 shift signal valves, modulator and governor pressures act on calibrated areas to upshift the valves against calibrated springs. Each of the shift valves and springs are calibrated to insure that the valves will shift in proper sequence. At a given governor pressure, an increase in modulator pressure will upshift a signal valve. A decrease in modulator pressure will cause a downshift if governor pressure alone will not hold the valve upward.

(4) At the main-pressure regulator valve, modulator pressure (red and green) (foldout 3) exerts a downward force on the valve. An increase in modulator pressure causes a decrease in main pressure; a decrease in modulator pressure causes an increase in main pressure. Thus, under full throttle conditions, main pressure is higher to prevent clutch slippage. (5) Be fore S/N 34501 modulator pressure is blocked by a separator plate at the trimmer regulator valve. After S/N 34500 modulator pressure is directed to a calibrated area on the trimmer regulator valve, exerting an upward force against its spring. This causes a reduction in trimmer regulator pressure at the trimmer valves. Refer to o, below, for explanation of the trimmer regulator valve. Before S/N 34501, the trimmer regulator valve was either isolated and not functional or was not present.

i. <u>Clutch Circuits</u>, <u>Drive Ranges</u>(foldouts 3, 4)

(1) There are five clutches in the transmission. These are: first clutch; second clutch; third clutch; fourth clutch; and forward clutch. The clutches are applied for various conditions, as follows:

<u>Condition</u>	Clutch(es)applied
Neutral First gear Second gear Third gear Fourth gear Reverse	First First and forward Second and forward Third and forward Fourth and forward First and fourth

(2) Each of the five clutches has its own circuit. Each clutch except the forward clutch is connected to a relay valve and a trimmer valve. The forward clutch is connected directly to the selector valve and does not connect to a trimmer valve. It does not require connection to a trimmer valve because its application (except in a neutral-to-first gear shift) precedes the application of an additional clutch, which is trimmed.

(3) The first clutch circuit (red and white) connects the clutch to the 1-2 relay valve and to the first clutch trimmer valve. In neutral, the 1-2 relay valve is held upward by spring pressure, and main pressure (red) is directed to the clutch circuit. The 1-2 relay valve cannot move downward unless the 1-2 signal line is charged. This will not occur in neutral (vehicle standing) because there is no governor pressure to shift the 1-2 signal valve. Only the first clutch is applied, so

the transmission output cannot locate since two clutches must be applied to transmit power (refer to fig. 2-1).

(4) The four t r i mm e r valves all function in a similar manner. They differ only in calibration. Refer to m, below, for explanation of the trimmer.

(5) The first clutch, in addition to being applied during neutral operation, is applied also in first and reverse gears. Shifting the selector valve from neutral (N) to drive (D) or to any other drive range (3, 2 or 1) charges the forward clutch circuit and applies the forward clutch. The first clutch remains charged. Shifting the selector valve f r o m neutral to reverse (R) charges the fourth clutch, while the first clutch remains applied.

(6) Movement of the selector valve determines the highest gear which will be normally reached automatically. In drive (D), automatic 1-2, 2-3, and 3-4 shifts can occur. In drive 3 (3), automatic 1-2 and 2-3 shifts can occur. In drive 2 (2), an automatic 1-2 shift can occur. In drive I (1), no upshift can occur unless overspeed occurs. Automatic downshifts can occur within the selected ranges.

(7) The various drive ranges limit the highest gear attainable by introducing a pressure which prevents rear governor pressure from upshifting the signal valves (unless a governor pressure well above that normally attained is reached). This pressure is a regulated, reduced pressure derived from main pressure at the hold regulator valve. Main pressure is directed to the hold regulator valve through the hold feed line when the selector valve is at drive 3, drive 2, or drive I position. The pressure produced in the hold regulator valve is directed to the 3-4 shift signal valve when the selector valve is at drive 3. The hold pressure is directed to the 2-3 and 3-4 shift signal valves when the selector valve is at drive 2 position. The pressure is directed to all three shift signal valves (3-4, 2-3 and 1-2) when the selector valve is at drive I position.

(8) Hold regulator pressure at each shift signal valve will push the upper valve upward, and raise the pressure at which the lower valve will be pushed upward by rear governor pressure. Thus, when hold regulator pressure is present, an upshift can occur at that shift signal valve, but only at an elevated speed.

<u>j.</u> <u>Automatic Upshifts</u>(foldouts 3, 4)

(1) When the transmission is operated in first gear, with the selector valve at drive (D), a combination of governor pressure and modulator pressure, or governor pressure alone, will upshift the transmission to second gear. At closed, or part throttle, modulator pressure exists and will assist governor pressure. At full throttle, there is no modulator pressure. Thus, upshifts occur sooner when, the throttle is closed; and are delayed by opening the throttle.

(2) Governor pressure is dependent upon the rotational speed of the transmission output. The greater the output (vehicle) speed, the greater is governor pressure. When governor pressure is sufficient, the first upshift (1-2) will occur. A further L increase in governor pressure (and vehicle speed) will cause a 2-3 upshift. A still further increase in governor pressure will cause a 3-4 upshift. Note that each of these upshifts will be either delayed or hastened by the decrease or increase, respectively, of modulator pressure.

(3) In other drive ranges, the same upshift sequence occurs until the highest gear attainable in that range is reached (i (6), (7), above).

(4) In any automatic upshift, the shift signal valve acts first. This directs a shift pressure to the relay valve. The relay valve shifts, exhausting the applied clutch and applying a clutch for a higher gear.

- <u>k.</u> <u>Automatic Downshifts</u>(foldouts 3, 4)
 - (1) Automatic downshifts, like upshifts, are controlled by governor and modu-

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lator pressures. Downshifts occur in sequence as governor pressure and/or modulator pressures decrease. Low modulator pressure (open throttle) will hasten the downshift; high modulator pressure (closed throttle) will delay downshifts.

(2) In any automatic downshift, the shift signal valve acts first. This exhausts the shift signal holding the relay valve downward. The relay valve then moves upward, exhausting the applied clutch and applying the clutch for the next lower gear.

<u>I.</u> <u>DownshiftInhibiting</u>(foldouts 3, 4)

(1) Inherent in the system, as a result of valve areas and pressure calibrations, is a means for preventing downshifts at a too rapid rate. For example, if the vehicle is traveling at high speed in fourth gear (4), and the selector valve is inadvertently shifted to drive I (I), the transmission will not immediately shift to first gear. Instead, it will shift 4-3-2-1 as speed decreases (it will remain in fourth gear if speed is not decreased sufficiently to require an automatic downshift).

(2) The progressive downshift occurs because the regulated hold pressure is calibrated, along with the valve areas, to shift the signal valves downward against governor pressure only' when the' governor pressure decreases to a value corresponding to a safe downshift speed. Thus, if speed is too great, governor pressure is sufficient to hold the s hi f t' signal valve upward against drive 3, drive 2 or drive I pressure (all of which are the regulated holding pressure originating in the hold regulator valve). As governor pressure decreases, shift signal valves (3-4, 2-3, 1-2) move downward in sequence.

m. <u>Trimmer Valves</u> (foldouts 3, 4)

(1) There are four trimmer valves in the hydraulic system. These are: first clutch trimmer; second-clutch trimmer; third-clutch trimmer, a n d fourth-clutch trimmer. The purpose of a trimmer is the initial application of a clutch at reduced pressure, followed by a gradual increase in apply pressure to maximum. This method of clutch application is necessary to avoid harsh shifts.

(2) All four trimmers function in the same manner. Each trimmer includes (from top to bottom) an orificed trimmer valve, a valve plug, a plug spring or springs and a stop. The plug spring or springs (calibrated for each trimmer), push and hold the valve plug and trimmer valve to the top of the valve bore. With the exception of trimmer regulator pressure applied to the first and second clutch trimmer valves and the no trimmer is as described in (3), below. The trim regulated first and second clutch trimmers and the no reverse trimmer action is an described in (4) and (5), below.

(3) W he n any clutch (except forward) is applied, apply pressure is sent also to t he upper end of the trimmer valve. Initially, the valve and plug are forced downward against the plug spring until oil escapes to exhaust. This escape of oil, as long as it continues, reduces clutch apply pressure. However, oil flows through an orifice in the trimmer value to the cavity between the trimmer valve and plug. Pressure in this cavity forces the plug farther downward, to the stop. The plug stops, and flow through the orifice in the trimmer valve stops. Pressures above and below t he trimmer valve equalize. The pressure below the trimmer valve, because it is acting upon a greater diameter, pushes the trimmer valve to the top of the valve bore. This throttles, then stops, the escape of oil to exhaust. When escape of oil is throttled, clutch apply pressure rises. When escape of oil stops, clutch apply pressure is at maximum value. The plug remains downward, against the stop, until the clutch is released.

(4) The second clutch trimmer valve is regulated by a calibrated spring and trimmer regulator pressure at the bottom of the valve bore. (Reference para 2-17, o.) The

trimmer regulator pressure is directed to the bottom of the second clutch trimmer valve (foldouts 3, 4). This regulated pressure at the bottom of the valve resists the clutch apply pressure at the top of the valve, holding the trimmer valve and valve plug at the top of the valve bore until increased clutch apply pressure moves the valve downward. This increased pressure shifts the clutch with a positive action, preventing clutch slippage and promoting longer plate life.

(5) The fourth clutch trimmer is utilized in two gears, fourth and reverse. In fourth gear the clutch trimming procedure is explained in (3), above., In reverse gear the fourth clutch trimming is explained as follows. Since reverse gear is usually applied when the vehicle is standing still, a trimming action is not Therefore, (AT 545 only) when the required. transmission is shifted into reverse gear, clutch apply pressure is directed to the top and. bottom of the fourthclutch trimmer valve (foldout 4). This application of oil equalizes the pressure on both ends of the valve holding the trimmer valve and valve plug at the top of the valve, bore. With the valve and valve plug held at the top of the valve bore, no trimming action in reverse gear will occur.

(6) This action applies the clutch gently, preventing shift shock. When the clutch is released, the plug spring pushes the trimmer components to the top of the bore. In that position, the trimmer is reset, ready to repeat its trimming action when the clutch is again engaged.

n. Priority Valve (foldouts 3, 4)

(1) The priority valve insures that the control system upstream from the valve will retain sufficient pressure during shifts to perform its automatic functions.

(2) Without the priority valve, the filling of a clutch might require a greater volume of oil (momentarily) than the pump could supply and still, maintain the necessary control pressures.

(3) Before S/N 34501, main pressure was routed directly to the 1-2 relay valve, thus eliminating the priority valve function until the selector valve was moved. After S/N 34500, main pressure was routed directly to the priority valve, thereby including the 1-2 signal valve in those receiving pressure priority.

o. <u>Trimmer Regulator Valve</u> (foldouts 3, 4)

(1) The trimmer regulator valve reduces main pressure to a .regulated pressure (red and yellow). The regulated pressure is raised or lowered by changes in modulator pressure (red and green).

(2) Trimmer regulator pressure (red and yellow) is directed to the lower sides of the first and second clutch trimmer valve plugs to vary the clutch apply pressure pattern of the trimmer valves. A higher modulator pressure (closed throttle) will reduce trimmer regulator pressure. This results in lower initial clutch pressure. Conversely, a lower modulator pressure (open throttle) results in higher regulator pressure and a higher initial clutch pressure.

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DESCRIPTION AND OPERATION

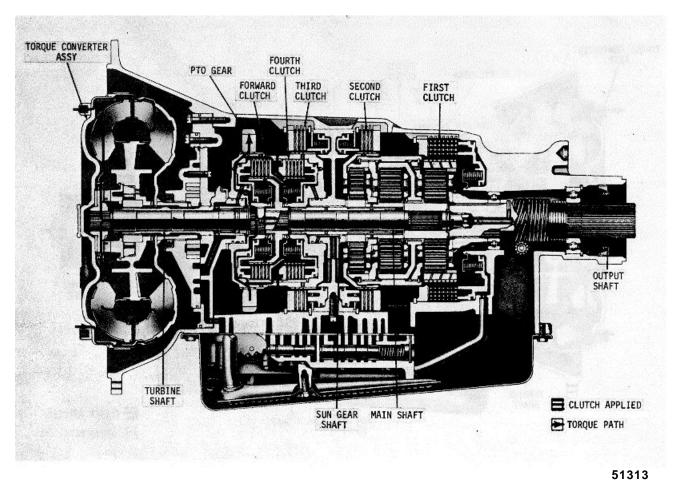


Fig. 2-1. Neutral power flow

2-18. TORQUE PATHS THROUGH TRANSMISSION

hydraulically through the a. Power is transmitted pump. The pump throws oil against the vanes of the converter turbine shaft which is also attached to the turbine, imparting torque to the converter turbine shaft. forward clutch housing. From the turbine, oil flows between the vanes of the stator, and re-enters the pump where the cycle begins 2-19. NEUTRAL -TORQUE PATH (fig. 2-1) again.

identical in all drive situations and in neutral. When the forward clutch housing as the forward clutch is not engine is idling, impact of the oil upon the turbine vanes applied. (The first clutch is applied, but two clutches must is negligible. When the engine is accelerated, the impact be applied to produce output shaft rotation in either is increased and the torque produced in the converter forward or reverse.) turbine shaft can exceed the engine torque (by an amount equal to the torque ratio of the converter).

Because torque converter torque paths are c. identical in all situations, the torque paths described in torque converter. The engine drives the converter paragraphs 2-19 through 2-24, below, all start at the

Torque produced in the torque converter is not b. The torque path through the torque converter is transmitted beyond the one-piece turbine shaft and

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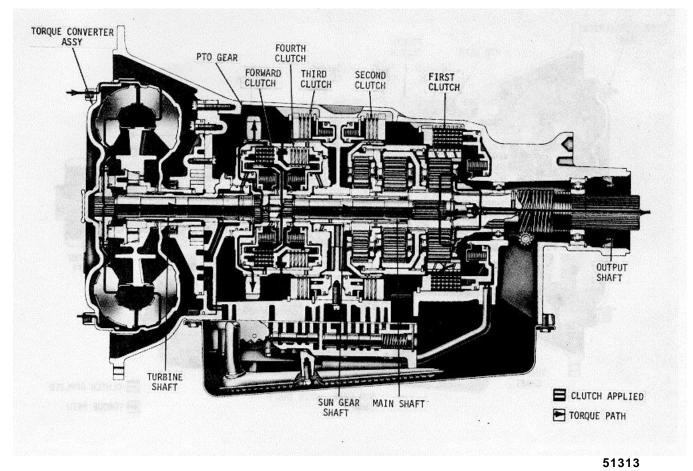


Fig. 2-2. First gear power flow

2-20. FIRST GEAR -- TORQUE PATH (fig. 2-2)

clutch application anchors the rear planetary ring gear applied first clutch and the rear sun gear rotating the against rotation. The forward clutch application locks the pinions, the rear planetary carrier must rotate within the, turbine shaft and transmission main shaft together to ring gear and drive the output shaft at a speed reduction rotate as a unit. The rear sun gear is splined to the main of 3.45:1. shaft and rotates with it and, in turn, it rotates the rear

planetary pinions. The pinions are part of the carrier assembly which is splined to the transmission output The forward and first clutches are applied. The first shaft. With the rear ring gear held stationary by the

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DESCRIPTION AND OPERATION

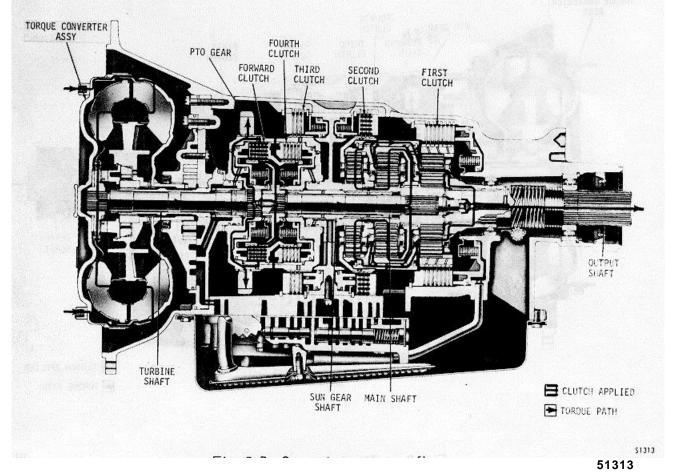


Fig. 2-3. Second gear power flow

2-21. SECOND GEAR -- TORQUE PATH (fig. 2-3)

The second clutch application anchors the carrier of the carrier pinions whose carrier is anchored against rotating front planetary carrier assembly against rotation. The by the applied second clutch. In turn, the rotating front forward clutch application locks the turbine shaft and main carrier pinions rotate the front ring gear, which, along with shaft together to rotate as a unit. The rear sun gear is the center carrier, is splined, via the planetary connecting splined to both the rotating main shaft and the center ring drum and rear carrier assembly, to the output shaft. Due gear and all three parts rotate at turbine speed. With the to this compounding action of the front and c e n t e r carrier of the front planetary carrier assembly anchored planetary gear sets, there is an output speed reduction of against rotation (by second clutch application), the 2.25:1. rotating center ring gear, rotates the center sun gear via

the planetary pinions. This sun gear is splined to the sun gear shaft assembly to which the front sun gear is also The forward and the second clutches are applied. splined. The rotating front sun gear rotates the front

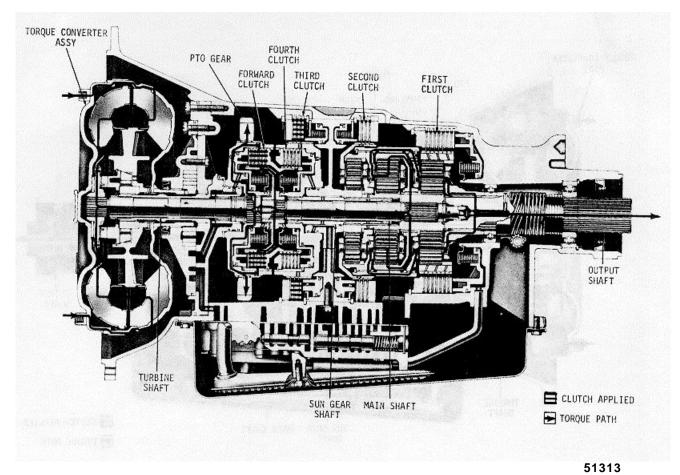


Fig. 2-4. Third gear power flow

2-22. THIRD GEAR -TORQUE PATH (fig. 2-4)

third clutch application anchors the sun gear shaft T hi s carrier (and also the rear planetary carrier) is against rotation, which, in turn, prevents the center sun splined to the planetary connecting drum and rotates with gear (splined to rear of shaft) from rotating. The forward it as a unit. The rear carrier is splined to the transmission clutch application locks the turbine shaft and main shaft output shaft which rotates with the rear carrier at the same together, to rotate as a unit. The rear sun gear is splined speed as the center planetary carrier (1.41:1 speed to both the main shaft and the center ring gear and reduction). rotates at turbine speed. With the' center sun gear

stationary and the center ring gear rotating, the ring gear drives the center planetary carrier pinions. This rotates The forward and the third clutches are applied. The the center planetary carrier at a speed reduction of 1.41:1.

DESCRIPTION AND OPERATION

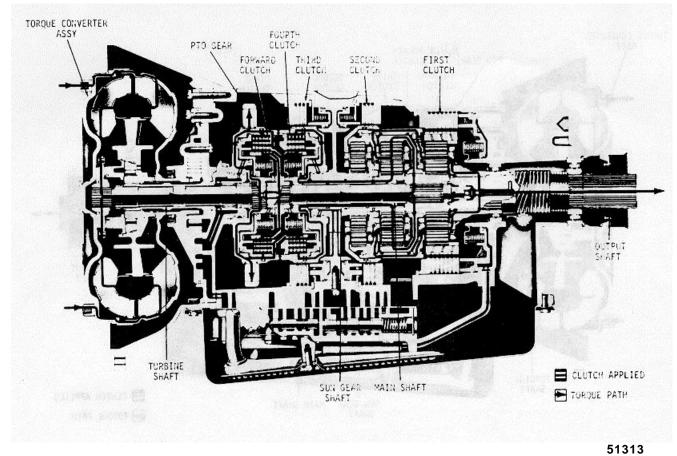


Fig. 2-5. Fourth gear power flow

2-23. FOURTH GEAR -TORQUE PATH (fig. 2-5)

The forward and fourth clutches are applied. With the carriers splined to the planetary connecting drum, all clutches applied, the transmission main shaft and the sun components rotate at turbine output speed. The gear shaft are locked together and rotate as a unit at transmission output shaft is splined to the rear carrier and turbine speed. With the center and rear sun gears gives an output ratio of 1.00:1. rotating at the same speed (locked together), a n d their

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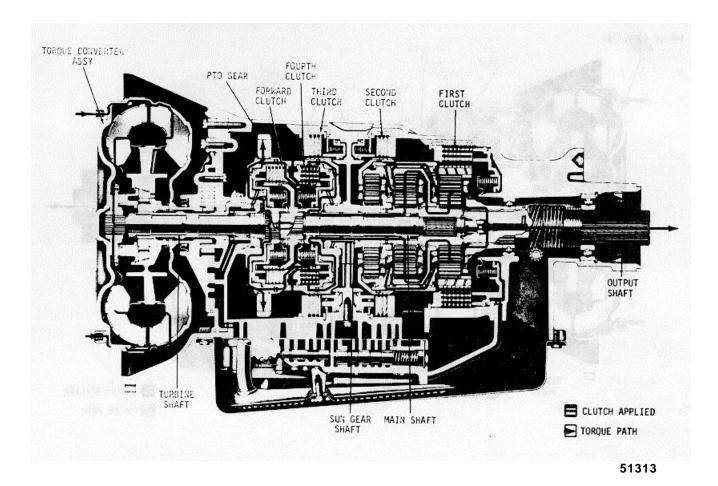


Fig. 2-6. Reverse gear power flow

2-24. REVERSE GEAR -TORQUE PATH (fig. 2-6)

clutch is not engaged. In this gear, the fourth clutch is This causes the rear planetary pinions to drive the rear applied and this rotates the sun gear shaft assembly (with carrier, in a reverse direction, within the stationary ring the front and center sun gears splined to it) at turbine gear. This compounding action of the center and rear speed. The first clutch is applied also, and anchors the planetaries gives a reverse rotation with 5.02:1 speed rear ring gear against rotation. The center sun gear reduction, to the rear carrier, which is splined to the rotates the center carrier pinions, which, in turn, rotate the transmission output shaft. center ring gear in an opposite direction. The center

carrier is splined to the planetary connecting drum, which is splined to the rear carrier. The reverse direction of Reverse gear is the only gear in which the forward rotation of the center ring gear rotates the rear sun gear.

Section 3. PREVENTIVE MAINTENANCE

3-1. SCOPE OF SECTION 3

This section outlines the routine and periodical procedures required to maintain the transmission i n good operating condition. Included are instructions for inspection, for care of the oil system and breather, for checking temperatures and pressures, for care of external cooler and piping, and explanations o f operating characteristics a n d troubleshooting. Tabulated troubleshooting information is included at the back of this section.

3-2. INSPECTION AND CARE

The transmission should be kept clean. Check for loose bolts, loose or leaking oil lines, condition of control linkage and hose to vacuum modulator, and for oil leakage. Check the transmission oil level at the intervals specified in vehicle operator's manual (refer to para 3-3, below).

3-3. CHECKING OIL LEVEL

a. Importance of Proper Oil Level

(1) Maintaining the proper oil level is very important. If, during check procedure (d, below), inconsistent dipstick readings occur, look for proper venting of the transmission breather (p a r a 3-9), and/or proper venting of the oil filler tube.

(2) Always check the oil level on the dipstick at least twice. Consistency is important in maintaining accuracy.

(3) Do not overfill the transmission with oil. Excessive oil causes overheating and irregular shift patterns. If the oil level is too low the result can be poor performance (clutches will not receive adequate oil supply).

CAUTION

The oil level rises as the sump temperature increases. Do not add oil to the transmission until a normal operating temperature is reached (f, g and h, below).

b. Foaming and Aerating

(1) Transmission performance will be' affected when the oil foams or aerates. The primary causes of aeration are, low oil in the sump, too much oil in the sump, or a defective or missing sealring on the intake pipe.

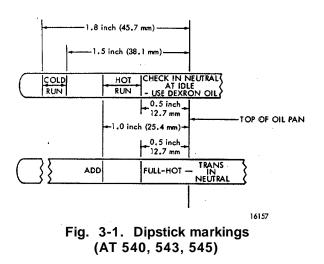
(2) A low oil level (denoted on the dipstick) will not completely envelop the oil filter. Therefore oil and air are drawn by the input pump and are directed to the clutches and converter, causing converter cavitational noises and irregular shifting. The aeration also changes the viscosity and color to a thin milky liquid.

(3) At normal oil level (Full mark on the dipstick) the oil is slightly below the planetary gear units. If additional oil is added bringing the oil level above the Full mark, the planetary units will run in the oil, foaming and aerating the oil. Overheating and irregular shift patterns can occur when the oil is aerated.

(4) A defective sealring 14 (B, foldout 9) on the filter intake pipe will also cause the input pump to draw air and oil from the sump, causing the same problems as in (2) above.

<u>c.</u> <u>Protect Fill Pipe</u>. When adding oil or checking oil level, dirt or foreign material must not be allowed to enter the fill pipe. Before removing the dipstick, clean around the end of fill pipe.

<u>d.</u> <u>Dipstick Markings</u> Earlier models use a dipstick marked Full and Add (fig.3-1). Later models use a dipstick marked Cold Run and Hot Run. Figure 3-2 illustrates the marks in relation to the transmission.



NOTE

The add and full dimensions on t he early dipsticks coincide with the Hot Run band dimensions on the later dipsticks.

If desired, the early dipstick can be recalibrated to show Hot and Cold Run bands.

e. <u>Oil Level Check Procedure</u> Start the engine and shift the transmission through all drive ranges to fill the clutch cavities and oil passages, then shift to neutral. Idle the engine for at least a minute at 1000-1200 rpm to clear the system of air. Check the oil while the vehicle is on level ground and the parking brake is applied. When adding oil or checking the oil level remove all dirt or foreign material around the fill pipe opening. Paragraphs 3-3f, and g. describe the checks that can be made when the dipstick has Cold Run and Hot Run bands.

Paragraph h, describes the check that can be made when the dipstick is marked Full and Add.

<u>f.</u> Cold Oil Check(Cold Run band). A cold oil check should be performed with the engine idling and the oil temperature at 60 to 120F (16-49° C). Remove the dipstick from the oil filter tube and check the oil level. If the oil level registers in the Cold Run band (fig. 3-1) the transmission may be safely operated. If it registers at or below

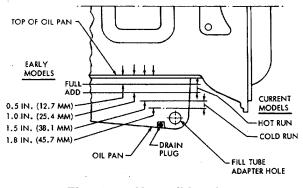


Fig. 3-2. How oil levels are 1B57A established (AT 540, 543, 545)

the bottom line of the Cold Run band add oil to bring the oil level to the middle of the Cold Run band. A hot oil check may be made after the transmission reaches operating temperature.

<u>q.</u> Hot Oil Check (Hot Run band) A hot oil check should be, performed with the engine idling and the oil temperature at 160 to 200 F (71 to 93° C). Remove the dipstick from the oil filler tube and check the oil level. If the oil level registers in the Hot Run band (fig. 3-1), the transmission may be safely operated. If it registers at or below the bottom of the Hot Run band, add oil to bring the level to the middle of the Hot Run band.

h. Hot Oil Check (Add and Full) A hot oil check should be performed with the engine idling and oil temperature of 160 to 200 F (71 to 93° C). Remove the dipstick from the oil filler tube and check the oil level. If the oil level registers between the Full and Add lines (fig. 3-1), the transmission may be safely operated. If it registers on or below the Add line, add oil to bring the oil level to the midpoint between the Full and Add lines.

i. Adjusting Oil Level

 (1) Approximately one U.S. quart (0.946 litre) of oil is required to raise the level from the bottom of the Hot Run band to the top of the band (or from Add to Full)

PREVENTIVE MAINTENANCE

(2) Drain oil to the top of the Hot Run band (or to Full) if a hot oil check shows the level is above that point.

(3) The oil level should never be above the top of the Cold Run band in a cold oil check. Drain to reduce t he level if necessary.

(4) Add oil as required to meet the levels prescribed in f, g, and h, above.

3-4. KEEP OIL CLEAN

Oil must be handled in clean containers, fillers, etc, to prevent foreign material entering the transmission.

CAUTION

Containers or fillers that have been used for any antifreeze solution must not be used for oil that is to be used in the transmission.

Clean around oil filler tube before removing dipstick, and lay dipstick in a clean place while filling transmission. Grease used internally must be nonfibrous, low temperature and oil soluble. Check current issue of Parts Catalog SA 1235 for proper replacement oil filter. Keep filters in cartons until ready for installation.

3-5. OIL SPECIFICATIONS

<u>a.</u> <u>Dexron</u>. Dexron II or Dexron transmission fluids are the only fluids recommended for use in on-highway automatic transmissions.

<u>b.</u> <u>Type C-3.</u> Type C-3 oil is recommended for use in automatic transmissions used in off-highway applications, and must conform to the ambient temperature, (see chart below), fluid viscosity grade and dealer recommended specification for the area.

<u>c.</u> <u>Ambient Temperatures, Dexron</u>. When the ambient temperature for transmissions using Dexron oil is below -30° F (-34° C), auxiliary preheat is required. Raise

the sump temperature above -30F (-34° C) before operating the transmission.

<u>d.</u> <u>Ambient Temperatures, C-3 Oi</u>l. The minimum ambient temperature for preheat requirements on transmissions using C-3 oil is shown below.

VISCOSITY	AMBIENT TEMPERATURE
GRADE	REQUIRING PREHEAT
SAE 30	30° F (-1°C) and below
SAE 15W-40	5°F (-15°C) and below
SAE IOW	-10oF (-23°C) and below
SAE 10W-30	-10° F (-23°C) and below
SAE 5W-20	-30° F (-35°C) and below

e. <u>G r e a s e Used For Assembly</u> A low temperature grease should be for internal assembly. The grease must be soluble in Dexron or C-3 transmission fluid. High temperature grease having a good oxidation and water resistance should be used at the inside diameter of the output and input shaft oil seals. Petrolatum should be used for assembly purposes inside t he transmission. Petrolatum normally

has a melting point of 100-140F (38-60° C) and is commercially available. Petrolatum equivalent to MILVV-P-236 or Amojell petrolatum (Amoco Oil Co.) is recommended.

3-6. OIL, GOVERNOR OIL SCREEN AND OIL FILTER CHANGE INTERVALS

The oil and oil filter should be changed every 25,000 miles or 12 months, whichever occurs first. Also replace or clean the governor oil screen 9 (B, foldout 9).

3-7. OIL CHANGE PROCEDURES

NOTE

The transmission should be at operating temperature $(160 \text{ F}, 71 \oplus \text{C} \text{ minimum})$ when the oil is drained. This will ensure quicker and more complete drainage.

<u>a</u>. Shift the transmission to neutral.

<u>b</u>. Remove the oil pan drain plug and allow the oil to drain. On earlier models, which do not have a drain plug, disconnect the oil filler tube at the pan and allow the oil to drain.

<u>c</u>. Disconnect the oil filler tube if not previously disconnected. 'Remove twenty one washer-head screws 22 (B, foldout 9) that retain oil pan 21 to the transmission housing. Discard pan gasket 20. Clean pan 21 with mineral spirits.

<u>d.</u> Remove one screw 19 that retains internal oil filter 17. Pull out oil filter 17 and oil intake pipe 15. Remove sealring 14 and discard.

<u>e</u>. Clean or replace the governor oil screen 9. The screen is located in the governor feed tube bore. Replacement of the screen can only be accomplished by removing the governor feed tube 8. This tube and the two remaining tubes are held in place by the control valve body. Refer to paragraph 5-3 for valve body removal procedures and paragraph 7-9 for valve body installation.

 $\underline{f.}$ Install a new sealring 14 onto the top end of oil intake pipe 15. Lubricate the sealring with transmission fluid.

<u>g.</u> Insert the intake pipe and sealring into the hole in the bottom of the transmission. Install new oil filter assembly 17 (includes grommet) onto the intake pipe.

<u>h</u>. Install the $5/16-18 \times 5/8$ washer-head screw 19 and tighten it to 10-13 lb ft (14-18 N.m). Some models have a hex-head bolt at this location. Use washer 18 with the bolt. Tighten the bolt the 10-15 lb ft (14-20 N.m).

<u>i</u>. Place the oil pan gasket onto the oil pan<u>Do</u> <u>not</u> use any substance as a gasket retainer.

CAUTION

Do not use gasket-type sealing compounds any place inside the transmission or where they might get washed into the transmission. A I s o, nonsoluble, vegetable base, cooking compounds or fibrous greases must not be used inside the transmission.

<u>j.</u> Install the oil pan. Guide the pan and gasket carefully into place. Guard against dirt or foreign material entering the pan. Retain the pan to the housing with four 5/16-18 washer-head screws. Install each screw, by hand, one at a time, into each corner of the pan.

<u>k</u>. Install the r e m a i n i n g seventeen washerhead screws by hand, carefully threading each through the gasket and into the transmission. Bottom all of the screws before tightening any of them.

<u>I.</u> Tighten all twenty-one screws evenly to 10-13 lb ft (14-18 N.m). Check gasket fit while the screws are being tightened.

<u>m</u>. Install the filler tube at the side of the pan. Tighten the tube fitting to 90-100 lb ft (122-136 Nm). Install the drain plug and gasket, if used. Tighten the plug 15-20 lb ft (20-22 N-m).

<u>n</u>. Remove the dipstick and refill the transmission with transmission fluid. Transmissions with 4-inch deep pan will require about 9 quarts (8.5 liters) of fluid. Transmissions with 5-inch deep pan will require about 16 quarts (15 liters) of fluid. Check oil level (refer to paragraph 3-3). Finish filling as required.

3-8. OIL CONTAMINATION

a. Water Leakage

(1) Before changing the oil, increase the temperature of the oil to normal running level. Inspect the breather for oil spewing. Drain the oil from the oil pan. If the oil is gray or cloudy the presence of water is indicated. Excessive quantities of water in the oil will cause rust and pitted transmission parts, reducing the life of the transmission.

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3-4

(2) Remove the oil pan and clean thoroughly. Inspect the engine radiator for evidence of oil (this may also indicate engine oil leakage). During disassembly (Section 5) and rebuild (Section 6), inspect all gaskets and seals for blistering and wrinkling, indicating presence of water.

<u>b. Metal Particles</u>. Metal particles in the oil (except for the minute particles normally trapped in the oil filter) indicate damage has occurred in the transmission. when these particles are found in the sump, the transmission must be disassembled and closely inspected to find the source. Metal contamination will require complete disassembly of the transmission and cleaning of all internal and external circuits, cooler, filter, and all other areas where the particles could lodge.

c. CoolantLeakage

(1) The presence of ethylene glycol coolant in the transmission oil is detrimental to the reliability and durability of the internal components. Ethylene glycol has a deteriorating effect on non-metallic components (seals, gasket, etc.) and on highly loaded steel parts, such as bearings and gears, due to reduced lubricity of the oil.

(2) Should the presence of ethylene glycol in the oil be suspected, an immediate verification test should be made. Gly-Tek TestKit is available and is a quick and easy method to determine the presence of glycol. If glycol is found, disassemble, inspect and remove all traces of coolant and varnish deposits resulting from coolant contamination. Replace seals, gaskets and fiber clutch plates.

d. Auxiliary Filter

(1) Standard recommended practice is to install an oil filter in the transmission oil cooler circuit (cooler return line). This filter prevents debris in the oil circuit from entering the transmission.

(2) Filter installation at the time of initial transmission installation will prevent manufacturing debris from entering the transmission and ensure a clean oil system.

(3) If the transmission does not have an auxiliary filter installed and a transmission failure occurs that introduces debris into the oil system, complete clean-up of the system cannot be assured. Repeated cleaning and flushing may not remove all debris from the oil cooler circuit.

(4) To prevent a repeat failure, caused by eventual movement of trapped debris, installation of an auxiliary filter between the oil cooler and transmission is recommended. T h is recommendation applies whether the transmission is overhauled, or replaced by a new or rebuilt unit.

(5) Approved filters with 40 micron particle filtering capacities such as the AC Filter PF 132W, AC PF 141 or the Fram HP-I mounted to the Fram HPK-2 filter base, can be used satisfactorily. Maximum pressure drop in the filter must not exceed 3 psi at 4.5 gpm at 180° F (21 kPa at 17 liters per minute at 82C).

(6) Install the filter into the line from the cooler to the transmission. Use No. 8 hose (13/32 (10.32 mm) I.D. min.) with a length great enough to allow power pack movement. Proper hose size will permit a minimum flow rate of 4.5 gpm (17 liters per minute). Hose must have a burst pressure of not less than 200 psi (1379 kPa), and a minimum inside diameter, at fittings, of .391 inch (9.93 mm). All hose must meet SAE 100 R5 specification, with an operating range between -40 to +300F (-40 to 149° C).

(7) The total cooler circuit (to and from cooler) pressure drop should not exceed 25 psi (172 kPa) at 4.5 gpm (17 liters per minute). Verify relief valve operating pressure. It should be 6-15 psi (41-103 kPa).

(8) Filter elements should be replaced after the first 5,000 miles (8000 km) and at normal oil change intervals thereafter.

3-9. BREATHER

The transmission breather is pressed into the top of the transmission (fig. 1-2). This serves to prevent pressure within the transmission and relieve surges. The breather must be kept clean and the passage open.

3-10. LINKAGE

a. InstallingManual SelectorLever

CAUTION

Manual selector shafts that are center-drilled at their outer ends require an M10 X 1.5-6G nut (metric thread). Shafts that are undrilled require a 3/8-16 nut (standard inch series). Use of the wrong nut will damage both the shaft and the nut. Torque for either nut is 15-20 lb ft (20-27 N \odot m). Excessive torque applied to the nut, without holding the lever, can damage the internal lever.

(1) Rotate the selector shaft to a position that is at least two detent notches from either end of its travel.

(2) Install the lever, a lining the flats in the lever opening with the tapered flats on the selector shaft. Install the nut.

(3) Hold the lever to prevent rotation and tighten the nut to 15-20 lb ft (20-27 N.m).

<u>b.</u> <u>Maintain Proper Adjustment</u> Proper adjustment of t he manual selector valve linkage is important as the shift tower detents must correspond exactly to those in the transmission. Periodic inspections should be made for bent or worn parts, loose threaded connections, loose bolts, and accumulation of grease and dirt. All moving joints must be kept clean and well lubricated.

<u>c.</u> <u>Reference to Vehicle Manual Refer to vehicle</u> manual for specific linkage adjustment procedures. The following general procedures are applicable to most vehicles.

(1) The manual selector lever should move easily and give a crisp detent feel in each position. The linkage should be adjusted so the stops in the shift tower match the detents in the transmission.

(2) When the linkage is correctly adjusted, the pin which engages the shift lever linkage at the transmission can be moved freely in each range.

d. MechanicalActuatorAdjustment

(1) It is imperative the mechanical linkage be properly adjusted for efficient performance.

(2) Place the fuel control lever on the engine at full throttle position.

(3) Place t he mechanical actuator cable at full throttle position against the mechanical stop.

(4) Adjust the clevis at the fuel control lever so the pin fits freely through the hole in the clevis, making sure the lever is secure.

(5) Total cable control travelshould not be less than 1.187 inches (30.14 mm) or more than 1.56 inches (39.6 mm).

(6) R e f e r to oil checking chart, paragraph 3-20.

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3-6

PREVENTIVE MAINTENANCE

3-11. SHIFT SPEED ADJUSTMENTS

NOTE

Transmission shift points cannot be satisfactorily adjusted if the transmission has the wrona governor installed. Check the twodigit code o n the head of the governor with the code shown in the current parts catalog (SA 1235) for the governor listed for your transmission assembly part number. If the letter "M" follows the two-digit code, the governor is a service replacement assembly. If the "M" is not included, the governor was installed at original factory build.

a. Calibrated On-Test Stand Or In Vehicle

(1) Proper timing of shift speed points is necessary for maximum transmission performance. Shifts may be adjusted on the test stand when the transmission is rebuilt or overhauled, or during road testing of the vehicle.

(2) The Kent Moore Valve and Governor est Stand (3-25000) is designed to check five principal transmission functions. It performs a checking procedure on the governor, modulator, hold regulator, shift points (up-down-inhibit), and a trimmer regulator check. If a test stand is not available, satisfactory calibration of shift points may be made af ter road testing of the vehicle.

b. Location of Adjusting Components

(1) Shift speeds are changed by changing the positions of adjusting rings that determine the retaining force of certain valve springs in the valve body. Refer to items 5, 54, 60 and 66 on A, foldout 9.

(2) A special tool (J24314 -see special tools table in Section 4) is used to de

press and rotate the adjusting rings to the proper positions. Clockwise rotation increases spring force and will raise the shift point. Counterclockwise rotation will reduce spring force, and lower the shift point.

NOTE Each notch of adjustment will alter the shift point approximately 50 rpm.

c. Checks Before Adjusting Shift Points

(1) When calibration is to be made during a road test, or on a test stand that simulates road operation, certain preparations must be made.

(2) Warm up the transmission or test stand setup to normal operating temperature of 160-22 (71-104° C) for road test.

(3) Check the engine governor setting, and adjust if required, to conform to the transmission's engine speed requirements.

(4) Check the engine for satisfactory performance before checking shift points.

(5) Check the linkage that controls the mechanical modulator valve actuator in the transmission (diesel) for proper travel, routing and operation. Check condition and routing of vacuum lines, hoses and connections for the vacuum modulator used with most gasoline engines.

(6) Check the shift selector linkage for proper range selection.

(7) P r o v i d e accurate instrumentation required for observing speeds, temperatures, pressures, vacuum, etc.

d. Calibration by Road Test Method

(1) Note the governed speed of the engine (c(3), above). This is the base speed from which checks adjustments are made.

(2) Automatic upshifts should occur as follows:

1-2 -within 400 rpm below engine governed speed.*
2-3 -within 300 rpm below engine governed speed.*
3-4 -within 200 rpm below engine governed speed.*

*Vehicle loaded.

NOTE

Before road test, determine the vehicle tachometer error with a test tachometer. Make corrections for error, as required, in subsequent tests.

(3) Drive the vehicle and check the engine speed (at full throttle) at which each upshift occurs. Each upshift should occur at the speed specified above.

(4) If an upshift speed does not reach that specified, the shift point may be raised by adjusting (increasing) the spring force on the 1-2, 2-3 or 3-4 shift signal valve. If the upshift speed exceeds the specified rpm, or if upshift does not occur at all, the spring force must be reduced. Adjust the force on only the springs for valves that do not upshift at the proper speed.

NOTE

If more than one shift signal valve spring requires adjustment in the same direction, it may be necessary to adjust the spring force on the modulator valve in the same direction. If not adjusted, the closed throttle downshifts may be abnormally high or low depending on the direction the shift signal adjusting rings were rotated. If all full throttle upshift points are too low by approximately the same amount,

check adjustment of the modulator external linkage.

(5) Refer to sections 5, 6 and 7 for procedures covering removal and replacement of affected components.

e. Alternate Method Using Speedometer Readings

(1) When a tachometer is not available for checking shift points, the vehicle speedometer can be used. Proceed as outlined in (2) through (4), below.

(2) Check the top speed of the vehicle in each selector hold position (first, second, third gears). Record the top speed for each.

(3) For checking the shift points, place the selector at DRIVE (D) so that all automatic shifts can occur. Drive the vehicle at full throttle from a standing start until the 3-4 upshift occurs, recording the mph at which each upshift occurs.

(4) Compare the upshift speeds with the hold speeds recorded in (2), above. The 2-3 upshift should occur at approximately two mph below the top speed of second gear. The 3-4 upshift should occur at approximately two mph, below the top speed for third gear. The 1-2 upshift is not be to adjusted relative to hold speed. The 2-1 downshift at closed throttle should occur at 3 to 5 mph (4.83 to 8.05 km/h).

f. Calibration by Test Stand Method

(1) The table below providesdet a i led information required for adjusting shift points on transmissions matched to engines having governed speeds from 2400 to 3800 rpm.

(2) The a c t u a I adjustment procedures are as outlined in d, above. However, the base for checks and adjustments is output shaft speed instead of engine governed speed. Individual output shaft speed ranges are given for each shift.

PREVENTIVE MAINTENANCE

SHIFT POINT CHECK

					0	JTPUT RPM AT	START OF SHIF	T		
ENGINE	GOVERNED SP	EED (RPM)	3800	3600	3400	3200	3000	2800	2600	2400
RANGE	THROTTLE SETTING	SHIFT								
		1-2	900-960	900-960	770-830	770-830	710-770	595-655	595-655	580-640
	FULL	2-3	1490-1625	1400-1535	1310-1445	1220-1355	1130-1265	1045-1100	955-1090	865-1000
DRIVE		3-4	2450-2590	2305-2445	2165-2305	2020-2160	1880-2020	1735-1875	1595-1735	1455-159:
		4-3*	300-700	150-600	675-970	530-750	410-680	490-685	350-610	305-555
	CLOSED	3-2*	455-765	405-720	620-875	590-810	550-760	520-665	465-630	400-560
		2-1	50+450	50-450	20-450	20-450	20-300	20-300	20-300	20-300
DR 3		4-3	2760-3240	2600-3050	2400-2890	2290-2770	2240-2690	2100-2370	1980-2280	1820-2120
DR 2	FULL	3-2	1700-2130	1570-1990	1470-1850	1380-1740	1330-1700	1270-1530	1200-1470	1060-1350
DR 1]	2-1	1000-1450	900-1340	960-1200	930-1100	910-1080	770-1010	735-970	660-900

*4-2 DOWNSHIFT IS ACCEPTABLE

FULL THROTTLE SETTING IS 0 IN. HG VACUUM CLOSED THROTTLE SETTING IS 19-21 IN. HG VACUUM

3-12. EXTERNAL LINES AND OIL COOLER

a. External Lines

(1) Inspect for loose or leaking connections, worn or damaged hoses, tubing and loose fastenings.

(2) Examine the radiator coolant for traces of transmission oil. This condition indicates a faulty heat exchanger.

<u>b.</u> <u>Oil Cooler</u>. Transmission operation at abnormally high temperatures can cause clogging of the oil cooler as well as transmission failure. It is suggested the oil cooler system be thoroughly cleaned after each major or minor rebuild. Failure to do so may cause poor performance, overheating and transmission damage. For recommendations for cleaning or flushing the oil cooler, see the vehicle service manual.

3-13. TRANSMISSION STALL TEST

<u>a.</u> <u>Purpose</u> A stall test should be conducted when the power package (engine and transmission) is not performing satisfactorily. The purpose of the test is to determine if the transmission is the malfunctioning component.

WARNING

When conducting a converter stall test, the vehicle must be prevented from moving. Both the parking and service brakes must be applied and, if necessary, the vehicle should be blocked to prevent movement. Warn personnel to keep clear of the vehicle and its travel path.

CAUTION

Do not maintain the stalled condition longer than 30 seconds due to rapid heating of the transmission oil.

<u>b.</u> <u>Overheating</u> If the temperature reaches 300° F (149° C), or if 30 seconds is insufficient time to complete the needed checks, the transmission temperature should be lowered as follows.

(1) With the transmission in neutral, run the engine at 1200 to 1500 rpm for 2 minutes to cool the oil.

(2) Maintain a constant check on converterout oil temperature. It should not exceed 300F (149° C).

(3) Keep a close check on the engine cooling system to prevent overheating.

<u>c.</u> Procedure

(1) A torque converte stall test is performed by locking the transmission output, putting the transmission in gear, accel-

erating the engine to full throttle, and noting the maximum rpm the engine will attain. The speed attained is then compared to the speed specified by the vehicle manufacturer as normal for those conditions. An engine speed above or below the specified range may indicate a malfunction in the 'engine or transmission.

NOTE

Engine power will decrease with an increase irr elevation (altitude), becoming more pronounced at greater elevation. This will result in a lower engine speed under converterstall conditions.

(2) After making allowances for elevation, a low engine speed may indicate the engine is not delivering full power. Refer to engine service manual for engine repair information.

(3) If low engine speed persists after engine is tuned, refer to the troubleshooting procedures and chart in paragraph 3-19.

(4) If high enginespeed is noted, refer to the troubleshooting chart in paragraph 3-19.

3-14. PRESERVATION AND STORAGE

<u>a. Storage, New Transmissions</u> (prior to installation). New transmissions are tested with preservative oil and drained prior to shipment. The residual oil remaining in the transmission provides adequate protection to safely store the transmission for six weeks without further treatment.

<u>b.</u> <u>Preservation Methods</u> When the transmission is to be stored or remain inactive f o r an extended period (up to one year), specific preservation methods are recommended to prevent damage due to rust, corrosion, and organic growth in the oil. Preservation methods are presented for storage with and without transmission fluid.

c. Storage, One Year--WithoutOil

(1) Drain the oil and replace the oil filter element(s) (para 3-7).

(2) Seal all openings with moisture proof tape.

(3) Coat all exposed, unpainted surfaces with preservative grease such as petrolatum (MIL-C-1 1796), Class 2.

(4) If the breather can be easily removed, spray one ounce (30 milliliters) of Motorstor®* (or equivalent) into the transmission through the breather hole. Also, spray one ounce (30 milliliters) through the fill tube hole. If the breather cannot be removed, spray two ounces (60 milliliters) into the transmission through the fill tube hole.

(5) If additional storage time is required, repeat steps (3) and (4) at yearly intervals.

d. Storage, One Year--With Oil

(1) Drain the oil and replace the oil filter element(s) (para 3-7).

*Motorstor®is the registered trademark for a vapor phase rust preventive manufactured by Draeubert Chemical Company, Chicago, Illinois. Motorstor is covered by Military Specifications MIL-L-46002 (ORD) and MIL-I-23310 (WEP) under the designation of Nucle Oil.

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3-10

(2) Fill the transmission to operating level with a mixture of one part Motorstor (or equivalent) to 30 parts Dexron or Dexron II transmission fluid. Add 1/4 teaspoon of Biobor $J\dot{D}^*$ (or equivalent) for each 3 gallons (1 liters) of fluid in the system.

NOTE

When calculating the amount of Biobor JF required, use the total volume of the system, not just the quantity required to fill the transmission. Include external lines, filters, and the cooler.

(3) Run the engine for approximately five minutes at 1500 rpm with the transmission in neutral.

(4) Drive the vehicle. Make sure the transmission shifts through all ranges. If it is equipped with a converter lockup clutch, make sure the lockup clutch is activated.

(5) Continue running the engine at 1500 rpm with the transmission in neutral until n o r m a l operating temperature is reached.

CAUTION

If the unit does not have a c o n v e r t e r-out temperature gage, do not stall the converter.

(6) If normal operating temperature is less than 225° F (107° C), shift the transmission to the highest forward range and s t all the converter. When converter-out temperature reaches 225F (107° C), stop the engine. Do not exceed 225F (107° C).

(7) As soon as the transmission is cool enough to touch, seal all openings and the breather with moisture-proof tape. (8) Coat all exposed, unpainted surfaces with preservative grease such as petrolatum (MIL-C-11796), Class 2.

(9) If additional storage time is required, repeat steps (2) through (8) at yearly intervals; except, it is not necessary to drain the transmission each year. Just add Motorstor and Bilobor JF (or equivalents).

e. Restoring Transmission to Service

(1) Remove a II tape from openings and the breather.

(2) Wash off all external grease with mineral spirits.

(3) If the transmission is new, drain t he residual preservative oil. Refill the transmission to the proper level (para 3-3) with Dexron or Dexron II transmission fluid.

(4) If the transmission was prepared for storage without oil, refill the transmission to the proper level (para 3-3) with Dexron or Dexron II transmission fluid.

(5) If the transmission was prepared for storage with oil, check for proper fluid level (para 3-3). Add or drain transmission fluid as required to obtain the proper level.

NOTE

It is not necessary to drain and refill t h e transmission with new transmission fluid.

3-15. RETAINING OUTPUT FLANGE

<u>a</u>. Parts damage, and possible transmission failure can result from the flange retaining bolt not being properly tightened, or loosening during operation.

<u>b</u>. Install a new 1/2-20 x 1 1/2-inch bolt (181431 or 9409060 or equivalent) and a

*Biobor JF[®] is the registered trademark for a biological inhibitor manufactured by U.S. Borax and Chemical Corporation.

1/2-inch special lockwasher (6752556 or equivalent) to retain the output flange. Be sure the threads of the bolt and mating threads in the output shaft are clean and not damaged.

<u>c.</u> If bolt 181431 (or equivalent) is used, tighten the bolt to 83-100 lb ft (112-136 N.m). If bolt 9409060 (or equivalent) is used, tighten the bolt to 96-115 lb ft (130-156 N m). Stake the edge of the washer into the hole in the retainer washer, and bend the other side against a flat of the retaining bolt head.

3-16. TROUBLESHOOTING -BEFORE REMOVAL OR OPERATION

<u>a</u>. <u>Visual Inspection</u> Do not operate the vehicle prior to completing the procedures described in this paragraph. <u>Inspect for oil leakage</u> Visually inspect all splitlines, connections, valve bodies, oil level indicator tube, and plugs for leaks. Oil leakage at splitlines may be caused by loose mounting bolts or defective gaskets. Tighten all bolts and plugs where leakage is found. If mounting bolts are tight and oil continues to leak, install a new gasket. Oil from the indicator tube may be caused from foaming and aerating. (Refer to para. 3-3 <u>b</u>.)

b. Inspecting Vacuum Modulator

(1) <u>Vacuum diaphragm leak check</u> Insert a pipe cleaner into the vacuum connector pipe as far as possible and check for the presence of transmission oil. If oil is found, replace the modulator.

NOTE

Gasoline or water vapor may settle in the vacuum side of the modulator. If this is found without the presence of oil, the modulator need not be changed.

(2) <u>Atmospheric leak check</u> Apply a liberal coating of soap bubble solution to the vacuum connector pipe seam, crimped upper-to-lower housing seam, and threaded screw seal. Using a short piece of rubber

tubing, apply air pressure to the vacuum pipe by blowing into the tube and observe for leak bubbles. If bubbles appear, replace the modulator.

NOTE Do not use any method which will produce more than 6 psi (41 kPa) air pressure, as pressure over 6 psi (41 kPa) may damage the modulator.

(3) <u>Modulator comparison check</u> Using a comparison gage, as shown in figure 3-3, compare t h e load of a known good modulator with the assembly in question.

(a) Install a modulator, that is known to be acceptable, on either end of the gage.

(b) Install the modulator in question on the opposite end of the gage.

(c) Holding the modulators in a horizontal position, bring them together under pressure until either modulator sleeve end just touches the line in the center of the gage. The gap between the opposite modulator sleeve end and the gage line should then be 1/16 inch or less. If the distance is greater than this amount, the modulator in question should be replaced.

(4) <u>Sleeve alinement check</u> Roll the main body of the modulator on a flat surface and observe the sleeve for concentricity to the can. If the sleeve is concentric and the plunger is free, the modulator is acceptable. A modulator passing all of these checks (in (I) through (4), above) should be an acceptable part.

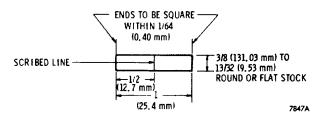


Fig. 3-3. Gage for comparing vacuum modulators

PREVENTIVE MAINTENANCE

3-17. TROUBLESHOOTING -BEFORE REMOVAL AND DURING OPERATION

a. Determine Trouble Cause. If the inspection in paragraph 3-16, above, does not reveal the cause of the failure, and the vehicle is operable, further troubleshooting is necessary. Do not remove the transmission from the vehicle until the causes of trouble listed n the troubleshooting chart, paragraph 3-19, below, are checked.

b. Proper Engine Tuning. In order to make a thorough test of the transmission while it is mounted in the vehicle, be sure that the engine is properly tuned, and the oil level in the transmission is correct. Refer to paragraph 3-3 for checking oil level.

3-18. TROUBLESHOOTING -TRANSMISSION REMOVED FROM VEHICLE

When the malfunction of a transmission is not ascertained by tests or inspections

before removal from the vehicle, the transmission may be mounted in a test stand and checked (if a test stand is available). Particular attention should be given to proper oil level and to correct linkage adjustment in every transmission test.

3-19. TROUBLESHOOTING CHART

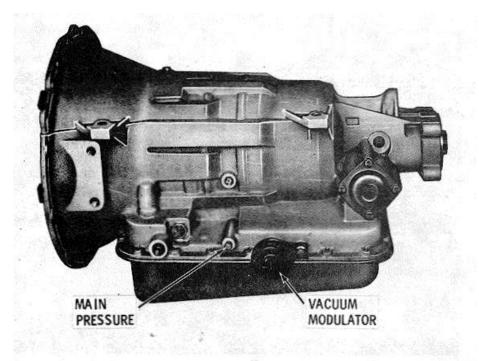
The troubleshooting information, below, outlines the possible causes of transmission troubles and their remedies. Capital letters indicate the symptom; numerals following the symptom indicate several possible causes; corresponding numerals in the right column indicate remedies for the causes.

> NOTE The various oil pressure check points are shown in the top and bottom views of figure 3-4.

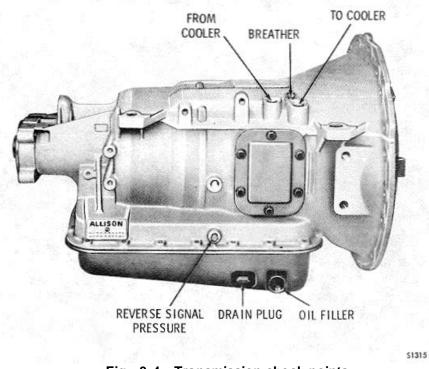
3-20. OIL PRESSURE CHECKING PROCEDURES Refer to the end of this section.

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3-13



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PREVENTIVE MAINTENANCE

TROUBLESHOOTING CHART

Cause

<u>Remedy</u>

A AUTOMATIC SHIFTS AT TOO HIGH SPEED

- 1. Governor valve malfunctioning
- 2. Vacuum modulator vacuum hose to engine kinked or leaking (light throttle shifting delayed)
- 3. Vacuum modulator failed
- 4. Mechanical actuator cable kinked, broken or not properly adjusted
- 5. Mechanical actuator malfunctioning
- 6. Shift points not properly adjusted

<u>B</u> AUTOMATIC SHIFTS AT TOO LOW SPEED AT FULL THROTTLE

- 1. Governor valve stuck
- 2. Governor spring weak
- 3. Mechanical actuator cable kinked, broken or not properly adjusted
- 4. Mechanical actuator malfunctioning
- 5. Shift points not properly adjusted

C LOW MAIN PRESSURE IN ALL RANGES

- 1. Low oil level
- 2. Oil filter element clogged
- Sealring on oil pickup tube leaking or missing
- 4. Main-pressure regulator valve spring weak
- 5. Control valve body leakage
- 6. Valves sticking
- 7. Oil pump, worn or damaged

D LOW MAIN PRESSURE IN FIRST GEAR, NORMAL PRESSURE IN OTHER FORWARD RANGES

- 1. First gear circuit of control valve body, leakage
- 2. Excessive leakage at first clutch piston seals

E BUZZING NOISE OCCURRING INTERMITTENTLY

- 1. Low oil level
- 2. Air leak at oil intake pipe
- 3. Clogged filter
- 4. Aerated oil

- 1. Clean or replace governor governor screen
- 2. Replace hose
- 3. Replace modulator
- 4. Replace or repair cable
- 5. Replace actuator
- 6. Refer to paragraph 3-11
- 1. Clean or replace governor
- 2. Replace governor
- 3. Replace or repair cable
- 4. Replace actuator
- 5. Refer to paragraph 3-11
- 1. Add oil to proper level (para 3-3)
- 2. Replace filter (para 3-7)
- 3. Install new sealring (para 3-7)
- 4. Check spring and replace if necessary
- 5. Replace or rebuild valve body assembly
- 6. Overhaul valve body assembly
- 7. Replace oil pump
- 1. Replace or rebuild control valve body (para 6-6)
- Overhaul transmission; replace seals (sect. 5 thru 7)
- 1. Add oil to proper level (para 3-3)
- 2. Replace intake pipe seal and filter (para 3-7)
- 3. Replace filter (para 37)
- 4a. Improper oil level (para 3-3)
- 4b. Improper or contaminated oil

TROUBLESHOOTING CHART (cont)

<u>Cause</u>

<u>F</u> EXCESSIVE CREEP IN FIRST AND REVERSE GEARS

1. Engine idle speed too high

G LOW LUBRICATION PRESSURE

- 1. Oil level low
- 2. Excessive internal oil leakage
- 3. Cooler lines restricted or leaking

H OIL LEAKING INTO CONVERTER HOUSING

- 1. Engine crankshaft rear oil seal, leakage
- Charging oil pump, lip-type seal at torque converter, leaking
- 3. Sealring around OD of oil pump, leaking
- 4. Cracked weld in converter assembly, leaking
- I TRANSMISSION HEATING UP IN ALL RANGES
- 1. Oil level low
- 2. Oil level high*
- 3. Engine cooling system restricted
- 4. Oil cooler lines restricted*
- 5. Broken parts in converter*

J NO RESPONSE TO MOVEMENT OF SHIFT LEVER

- 1. Range selector linkage unhooked
- 2. Range selector linkage defective or broken
- 3. Main pressure low
- 4. Range selector not engaged at control valve

*Can also result in excessive fuel consumption

- 1. Adjust to correct idle speed (refer to vehicle manual)
- 1. Add oil to proper level (para 3-3)
- Check other pressures (refer to C and D, above), check valve body mounting bolts
- Check for kinks, leakage; replace lines if necessary
- 1. Refer to vehicle service manual
- 2. Replace pump seal (para 6-7)
- 3. Replace OD seal (para 6-7)
- 4. Replace converter assembly (para 6-3)
- 1. Add oil to proper level (para 3-3)
- 2. Drain oil to proper level (para 3-3)
- 3. Refer to vehicle service manual
- 4. Clean or replace lines (refer to vehicle service manual)
- 5. Replace converter assembly (para 6-3)
- 1. Hook up linkage (refer to vehicle service manual)
- 2. Repair or replace linkage (refer to vehicle service manual)
- 3. Refer to C, above

4.

Install or replace parts involved (inside oil pan) (para 7-9)

PREVENTIVE MAINTENANCE

TROUBLESHOOTING CHART (cont)

<u>Cause</u>

K HIGH STALL SPEED (refer to para 3-13)

- 1. Oil level low
- 2. Clutch pressure low*
- 3. Forward clutch slipping (forward)*
- 4. First clutch slipping*

L LOW STALL SPEED (refer to para 3-13)

- 1. Engine not performing efficiently (may be due to high altitude)
- 2. Broken converter parts

M ROUGH SHIFTING

- 1. Manual selector linkage out of adjustment
- 2. Control valves, sticking
- 3. Governor valve malfunctioning
- 4. Vacuum modulator valve sticking
- 5. Vacuum modulator vacuum hose kinked or leaking
- 6. Mechanical actuator cable kinked, broken ornot properly adjusted
- 7. Mechanical actuator malfunctioning
- 8. Engine idle speed too fast

<u>N</u> ENGINE OVERSPEEDS ON FULL THROTTLE UPSHIFT

- 1. Piston seals leaking or clutch plates slipping in range involved
- 2. Forward clutch piston seals or clutch plates slipping (all upshifts)
- 3. Broken sealrings on front support hub
- 4. Sticking governor valve

<u>Remedy</u>

- 1. Add oil to proper level (para 3-3)
- 2. Refer to D, above
- 3. Rebuild forward clutch (para 6-8)
- Rebuild first clutch (para 7-3)
- 1. Refer to engine manufacturer's manual or vehicle service manual
- 2. Replace converter assembly (para 6-3)
- 1. Adjust linkage (para 3-10)
- 2. Replace or rebuild control valve (para 6-6)
- 3. Clean or replace governor and governor screen
- 4. Clean valve, check vacuum modulator (para 3-16b)
- 5. Replace hose
- 6. Replace or repair cable
- 7. Replace actuator
- 8. Adjust engine idle speed screw
- Overhaul transmission (Sect. 5 thru 7)
- Overhaul forward clutch and piston assembly (para 6-8)
- 3. Replace rings (para 7-b)
- 4. Clean or replace governor

*Clutch slippage may be recognized by alternate racing and loading of the engine which is, at times, accompanied by a violent chatter.

TROUBLESHOOTING CHART (cont)

<u>Cause</u>

<u>Remedy</u>

O EXCESSIVE SLIPPAGE AND CLUTCH CHATTER IN ONLY ONE RANGE

- 1. Clutch slippage in that range clutch
- 2. Excessive oil leakage in range piston seals
- 3. Oil leakage in valve components for that particular range
- P DIRTY OIL
- 1. Failure to change oil at proper interval
- 2. Heat excessive
- 3. Clutch failure
- 4. Damaged oil filter

Q OIL LEAK AT OUTPUT SHAFT

1. Faulty or missing seal at output flange

<u>R</u> SLIPPAGE IN ALL FORWARD GEARS

- 1. Oil level low
- 2. Clutch pressure low
- 3. Forward clutch slipping

S SLIPPAGE IN FOURTH AND REVERSE GEAR ONLY

- 1. Fourth clutch slipping
- 2. Broken sealring on support assembly hub

T SLIPPAGE IN REVERSE AND FIRST GEAR: PROPER FUNCTION IN OTHER FORWARD GEARS

1. First clutchslipping

U VEHICLE MOVES FORWARD IN NEUTRAL

- 1. Range selector linkage out of adjustment
- 2. Forward clutch failed and dragging

- 1. Overhaul clutch
- 2. Overhaul clutch and piston assembly
- 3. Overhaul control valve body assembly (para 6-6)
- 1. Change oil, install new filter (para 3-7)
- 2. Refer to I, 4, above
- 3. Overhaul transmission
- 4. Replace filter (para 3-7)
- Install new lip-type seal in rear of transmission housing (para 7-8)
- 1. Add oil to proper level (para 3-3)
- 2. Refer to C, above
- Rebuild forward clutch (para 6-8)
- 1. Rebuild clutch and replace piston seals (para 6-9)
- 2. Replace seal rings (para 6-9)
- 1. Overhaul clutch and replace piston seals (para 7-3)
- 1. Adjust linkage properly
- 2. Rebuild forward clutch (para 6-8)

PREVENTIVE MAINTENANCE

TROUBLESHOOTING CHART (cont)

<u>Cause</u>

<u>Remedy</u>

V VEHICLE MOVES BACKWARD IN NEUTRAL

- 1. Range selector linkage out of adjustment
- 2. Fourth clutch failed and dragging

W THROWS OIL OUT OF TRANSMISSION FILLER TUBE

- 1. Dipstick loose
- 2. Oil level too high
- 3. Oil level too low
- 4. Breather stopped up
- 5. Water in oil

X VEHICLE WILL NOT PUSH START

1. Normal operation (no rear push-start pump)

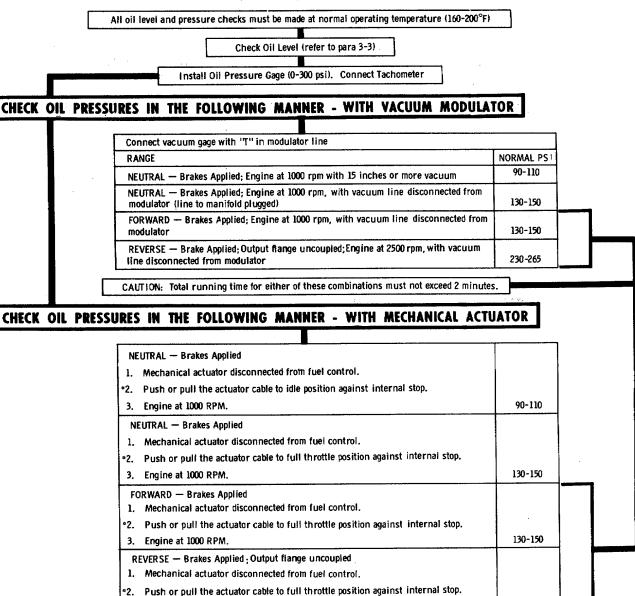
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3-19

- 1. Adjust linkage properly
- 2. Rebuild clutch assembly (para 6-9)
- 1. Tighten cap; replace if necessary
- 2. Drain oil to proper level (para 3-3); oil may also come out breather
- 3. Fill oil to proper level
- 4. Clean or replace breather
- 5. Drain oil (para 3-8<u>a</u>.)

AT 540 SERIES AUTOMATIC TRANSMISSIONS OIL PRESSURE CHECKING PROCEDURES

WARNING: Proper safety precautions must be exercised during tests. All personnel must stand clear of the vehicle. Take precautions against movement of the vehicle. Gages (vacuum, pressure, tachometer) should have extended lines to permit reading inside the vehicle.



IMPORTANT THAT THE MECHANICAL LINKAGE IS PROPERLY ADJUSTED AT THIS TIME. 1. Fuel control lever in full throttle position.

3.

Engine at 1000 RPM.

230-265

- •2. Push or pull mechanical actuator cable to full throttle position against internal mechanical stop.
- Adjust clevis so that pin fits freely through the hole in the fuel control lever and contacts the end of the slot in the clevis, thus holding the actuator cable in the full throttle position when the fuel control is at full throttle.
 Total cable travel should be 1.187 inches to 1.56 inches.

*Type of linkage will determine whether cable must be pushed or pulled to reach throttle position indicated.

Section 4. GENERAL OVERHAUL INFORMATION

4-1. SCOPE OF SECTION 4

This section provides information required before proceeding with the overhaul of t he transmission. Tools and equipment for overhaul are discussed. Replacement parts and service kit information is provided. The importance of cleanliness and careful handling is stressed. Helpful information on cleaning and inspection is given. General information on the removal and installation of t he transmission is give n. Torque specifications for bolts and nuts are tabulated. Information on wear limits and spring specifications are referenced.

4-2. TOOLS AND EQUIPMENT

- a. <u>Improvised Tools and Equipment The following items may be improvised</u>.
 - (1) Gage for comparing vacuum modulators (fig. 3-3).
 - (2) Work table (fig. 4-1).

NOTE

The transmission holding fixture (fig. 5-2) may be mounted on the work table.

b. Special Tools. Special tools are shown in figures 4-2, 4-3, 4-4, and 4-5. These too Is are identified in the special tools table, following.

- c. Mechanic's Tools, Shop Equipment
 - (1) The following tools, in addition to the common tools ordinarily required, should be available.
 - Snapring pliers (fig. 5-20, 5-21)
 - Depth micrometer (fig. 6-58)
 - Headless guide bolts, 5/16-18 x 4 (2) (fig. 7-27)
 - Torque wrench (fig. 7-12)
 - Dial indicator set (for checking end play, fig. 6-1)
 - Gear and bearing pullers

(2) A press for disassembly and assembly of spring-loaded clutches, and for installation of press-fit parts, is required (fig. 6-34, 6-41).

(3) A suitable hoist of at least 1/4ton capacity is required.

(4) A hot plate or heating equipment (for heating bearings or other interference-fit parts to aid assembly) is required.

- (5) The following should be available.
 - Clean shop cloths (do not use waste)
 - Boxes, receptacles for parts
 - Supply of wood blocks
 - Oil-soluble grease (petrolatum)
 - · Cleaning supplies (brushes, solvents, etc.)
 - Sealer -Perfect Sealer #4 or Permatex #2, or equivalent (for plugs, seals)

4-3. REPLACEMENT PARTS

- <u>a.</u> <u>Ordering Information</u> Refer to the current issue of Parts Catalog SA 1235 for parts information.
- <u>b.</u> <u>Parts Normally Replaced</u> The following parts are normally replaced at each transmission overhaul.
 - (1) Gaskets
 - (2) Washers or snaprings damaged by removal
 - (3) Oil seals, piston setrings
 - (4) Center support bolt

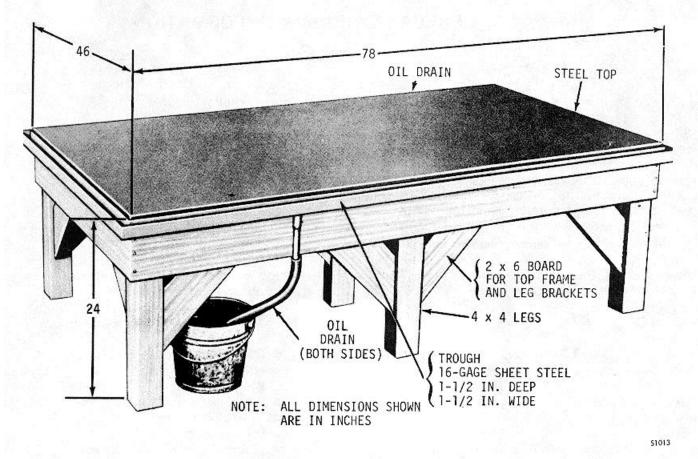


Fig. 4-1. Work table

SPECIAL TOOLS TABLE

<u>Tool No.*</u>	<u>Fig.</u>	<u>ltem</u>	Description	<u>Use illustrated</u>
J-3289-20	4-3	21	Transmission holding fixture base (used with J23642)	fig. 5-2,7-37
J-5959-1	4-4	33	Dial indicator (used with J7872-2, J7872-3, J5959-3, J5959-7)	fig. 6-1
J-5959-3	4-4	34	Rod 1/4" x 10 1/2" (used witb5959-1, J5959-7, J7872-2, J7872-3)	fig. 6-1
J-5959-7	4-4	35	Lug attachment (used with J5959-1, J5959-3, J7872-2, J7872-3)	fig. 6-1
J-6125	4-3	25	Front support slide hammer (2)	fig. 5-10
J-6125-2	4-3	26	Slide hammer adapter (2)	fig. 5-10

*These tools may be obtained from Kent-Moore Tool Division, 1501 South Jackson St., Jackson, Michigan, 49203.

GENERAL OVERHAUL INFORMATION

SPECIAL TOOLS TABLE (cont)

<u>Tool No.*</u>	<u>Fig.</u>	<u>ltem</u>	Description	<u>Use illustrate</u> d
J-7872-2	4-4	36	Magnetic clamp, dial indicator (used with 35959-1, J5959-3, J5959-7, 37872-3)	fig. 6-1
J-7872-3	4-4	37	Swivel adapter (used with J5959-1, 35959-3, 35959-7, J7872-2)	fig. 6-1
J-8092	4-2	5	Driver handle (used with 323613-01, J23615, 324778, 325356)	fig. 6-25, 6-26, 6-51
J-21359	4-2	2	Oil pump seal installer	fig. 6-27
J-21362	4-4	29	Forward clutch inner seal protector	fig. 6-35
J-21369	4-3	20	Converter leak test fixture	fig. 6-2
3-21795-4	4-2	12	Thumb screw for item 11	fig. 7-14
3-23549	4-4	45	Stator thrust bearing installer	fig. 6-8
J-23613-01	4-2	4	Output shaft bushing installer (used with 38092)	fig. 6-51
J-23614	4-2	6	Stator shaft front bushing installer (also front and rear sun gear shaft bushings)	fig. 6-26, 6-53
3-23615	4-2	3	Stator shaft rear bearing installer (used with 38092)	fig. 6-25
J-23616	4-2	9	Forward and fourth clutch spring compressor	fig. 6-34, 6-41
J-23619-01	4-3	16	Forward clutch clearance gage	fig. 6-36
3-23620	4-3	17	Fourth clutch clearance gage	fig. 6-42
3-23630	4-3	23	First clutch spring compressor assembly (includes J-23630-1, J-23630-2, J-23630-3)	NI
J-23630-1	4-3	23A'	First clutch spring compressor	fig. 5-20,7-2
J-23630-2	4-3	23B	First clutch spring compressor base (used separately to position components during thrust washer selection)	fig. 7-18, 7-19, 7-24

*These tools may be obtained from Kent-Moore Tool Division, 1501 South Jackson St. , Jackson, Michigan, 49203. NI - Not illustrated

SPECIAL TOOLS TABLE (cont)

Tool No.*	<u>Fig.</u>	<u>ltem</u>	Description	<u>Use illustrated</u>
3-23630-3	4-3	23C	Press bolt and nut	fig. 5-20,7-2
J-23631	4-2	1	Output shaft seal installer	fig. 7-29
J-23632	4-2	15	Spacer selection gage	fig. 7-16
J-23633	4-2	13	Thrust washer selection gage bar	fig. 7-24
J-23642	4-3	22	Transmission holding fixture (used with 33289-20)	fig. 5-2
J-23643	4-2	10	Center support lifting bracket	fig. 5-15
J-23715	4-3	18	First clutch clearance gage	fig. 7-5
J-23716	4-3	19	Third clutch clearance gage	fig. 7-22
J-23717	4-3	27	Center support compressor assembly	fig. 7-12, 7-13
J-23717-4	4-3	28	Snapring gage	fig. 7-13
J-23718-01	4-3	24	Output shaft positioning sleeve	fig. 6-56
J-23779	4-4	31	Forward and fourth clutch outer seal protector	fig. 6-35
J-24202-4	4-4	46	Driver handle	fig. 6-8
J-24216-01	4-4	30	First clutch inner seal protector	fig. 7-1
J-24218-1	4-4	47	Stator roller retainer ring (2 13/16 OD)	fig. 6-14
J-24314	4-2	7	Shift valve adjusting ring tool	fig. 6-23
J-24352	4-2	11	Sun gear shaft retainer assembly	fig. 7-14
3-24420	4-4	39	Rear bearing puller body (used with J24463-2)	fig. 7-38
J-24446	4-4	41	Rear bearing installer (with or without, output shaft installed)	fig. 7-17
J-24453	4-4	32	Retainer ring installer	fig. 6-48
J-24463	4-4	38	Rear bearing puller assembly (in vehicle) (includes J24420 and J24463-2)	fig. 7-38

*These tools may be obtained from Kent-Moore Tool Division, 1501' South Jackson St., Jackson, Michigan, 49203.

GENERAL OVERHAUL INFORMATION

SPECIAL TOOLS TABLE (cont)

Tool No.*	<u>Fiq.</u>	<u>ltem</u>	Description	Use illustrated
J-24463-2	4-4	40	Rear bearing puller legs (2) (used with J24420)	fig. 7-38
J-24602	4-2	14	Converter end play gage	fig. 6-1
J-24778	4-4	42	Center support bushing installer (used with J8092)	fig. 6-46
J-24787	4-4	43	Main regulator valve installer or remover	fig. 6-24
J-25356	4-4	44	Front pump bushing installe	NI
J-25587-01**	4-5	51	Planetary Rebuilding Kit	NI
J-25587-1	4-5	52	Removing, installing & swaging fixture	fig. 6-12, 6-13
J-25587-2	4-5	53	Pin remover and installer adapter	NI
J-25587-3	4-5	54	Support block	NI
J-25587-4	4-5	55	Support block	NI
J-25587-6	4-5	56	Pin remover and installer spacer	NI
3-25587-10	4-5	57	Pin installer	NI
J-25587-14	4-5	58	Pin installer	NI
J-25587-16	4-5	59	Pin remover	NI
3-25587-17	4-5	60	Bottom swaging tool holder	NI
J-25587-20	4-5	61	5/8" loading pin	NI
J-25587-22	4-5	62	1, 2" load pin	NI
J-25587-25	4-5	63	Swaging tool	NI
J-25587-27	4-5	64	Swaging tool	NI
J-25587-49	4-5	65	5/8" guide pin	NI
J-25587-50	4-5	66	1/2" guide pin	NI

*These tools may be obtained from Kent-Moore Tool Division, 1501 South Jackson St., Jackson, Michigan, 49203.

**All J25587 numbers, above, are components of Planetary Rebuilding Kit J25587-01. Additional components of the kit are used in the rebuild of planetary assemblies in other Allison models. NI -Not illustrated

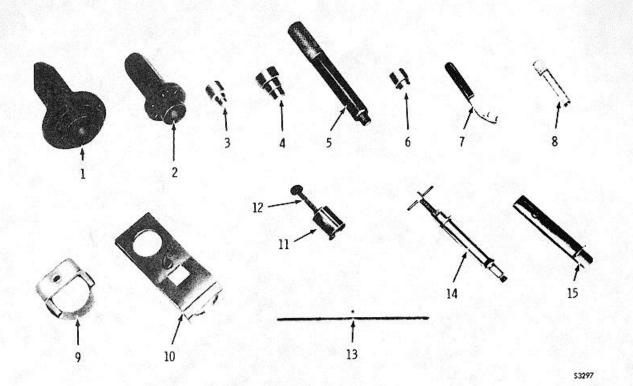
SPECIAL TOOLS TABLE (cont)

Tool No.*	<u>Fig.</u>	<u>ltem</u>	Description	<u>Use illustrated</u>
J-26282	4-2	8	Selector shaft seal installer	fig. 6-61
J-26401	NI	50	Shift lever seal remover	NI
J-26558- 601	NI	49	Sleeve retainer 601 (Loctite)	NI
J-26857	4-4	48	Dial indicator (base mounted)	fig. 6-28, 6-29, 6-30
J-28684	NI		Governor pin installer	NI
J-29121-1	4-5	69	Rivet punch	fig. 6-13
J-29121-3	4-5	70	Rivet remover pin	fig. 6-12,
J-29521	4-5	72	Stator rivet set	NI
J-29521-1	4-5	67	Stator rivet base	fig. 6-12, 6-13
J-29521-2	4-5	68	Top plate	fig. 6-12, 6-13
	4-5	71	Bolt, 5/8-11 x 3.25	fig. 6-12, 6-13

*These tools may be obtained from Kent-Moore Tool Division, 1501 South Jackson St. , Jackson, Michigan, 49203. NI - Not illustrated

4-6

GENERAL OVERHAUL INFORMATION





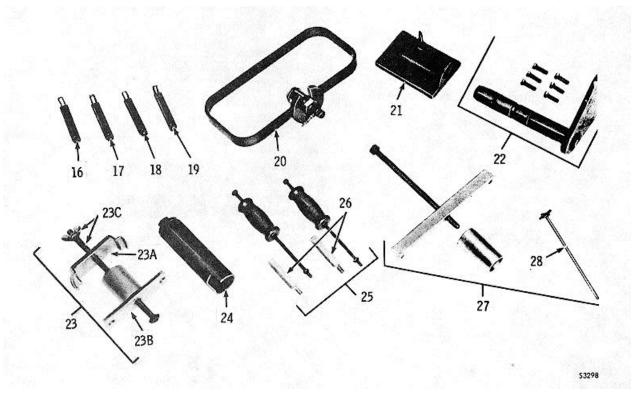


Fig. 4-3. Special tools (16 thru 28)

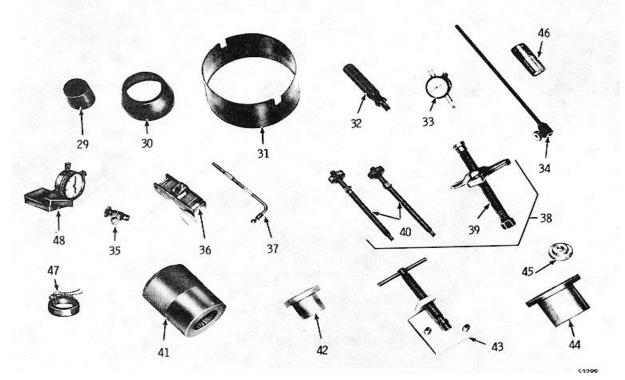
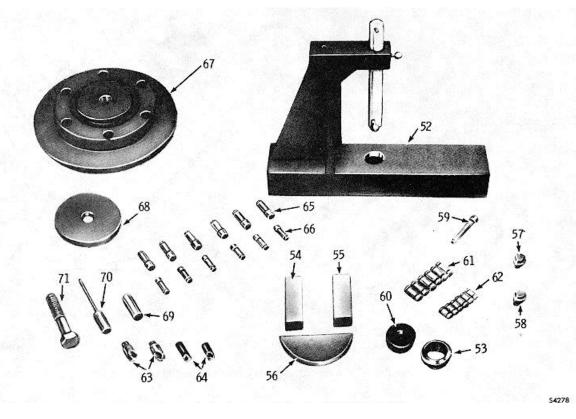
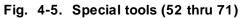


Fig. 4-4. Special tools (29 thru 48)





GENERAL OVERHAUL INFORMATION

4-4. CAREFUL HANDLING

During all rebuild procedures, parts and subassemblies must be handled carefully to prevent nicking, scratching and denting. Parts which fit together closely and have proper operating clearance can bind if damaged. Parts which depend upon smooth surfaces for sealing may leak if scratched. This is very important concerning parts of the control valve body assembly (valves, when dry, must move freely by their own weight). Such parts should be carefully handled and protected during removal, cleaning, inspection and installation as well as being kept clean while in containers awaiting installation.

4-5. CLEANING, INSPECTION

<u>a.</u> <u>Dirt Causes Malfunction All parts must be clean to permit effective inspection. At assembly, it is very important that no dirt or foreign material be allowed to enter the transmission. Even minute particles can cause the malfunction of close-fit parts, such as valves and bearings.</u>

NOTE

It is recommended that all assembled bearings be replaced when excessive metal contamination is present.

b. Cleaning Parts

(1) All the metallic parts of the transmission except bearings should be cleaned thoroughly with volatile mineral spirits or by the steam-cleaning method. Do not use caustic soda solution for steam cleaning.

(2) Parts should be dried with compressed air. Steam-cleaned parts should be oiled immediately after drying.

(3) Clean oil passages by working a piece of soft wire back and forth through the passages and flushing with mineral spirits. Dry the passages with compressed air.

(4) Examine parts, especially oil passages, after cleaning, to make certain they are entirely clean. Reclean them if necessary.

c. Cleaning Bearings

(1) Bearings that have been in service should be thoroughly washed in volatile mineral spirits.

(2) If the bearings are particularly dirty or filled with hardened grease, soak them in the spirits before trying to clean them.

WARNING

Never dry bearings by spinning them with compressed air. A spinning bearing can disintegrate, allowing balls or rollers to become lethal flying projectiles. Also, spinning bearings while they are not lubricated can damage the bearing.

(3) Before inspection, oil the bearings with the same type of oil that will be used in the transmission.

d. Inspecting Bearings

(1) Inspect bearings for roughness of rotation. Replace a bearing if its rotation is still rough after cleaning and oiling.

(2) Inspect bearings for scored, pitted, scratched, cracked, or chippedesa and for excessive wear of rollers or balls. If one of these defects is found, replace the bearing.

(3) Inspect a defective bearing's housing and shaft for grooved, burred or galled conditions that would indicate that the bearing has been turning in its bore or on its shaft. If the damage cannot be repaired with crocus cloth, replace the defective part. (4) When installing a bearing on a shaft, heat the bearing to 2000F (930C) in an oil bath (approximately 30 minutes). Use

the proper size installation sleeve and a press to seat the bearing.

(5) If a bearing must be removed or installed without a sleeve, press only on the <u>mathech is adjacent to the</u> <u>mounting surface</u>. If a press is not available, seat the bearing with a drift and hammer, driving against the supported race.

<u>e.</u> <u>Keeping Bearings Clean</u> Since the presence of dirt or grit in ball bearings is usually responsible for bearing failures, it is important to keep bearings clean during removal and installation. Observance of the following rules will do much to insure maximum bearing life.

- (1) Do not remove the wrapper from new bearings until ready to install them.
- (2) Do not, remove the grease in which new bearings are packed.
- (3) Do not I a y bearings on a dirty bench; place them on clean, lint-free paper.

(4) If assembly is not to be completed at once, wrap or cover the exposed bearings with clean paper or lint-free cloth to keep out dust.

f. Inspecting Cast Parts, Machined Surfaces

(1) Inspect bores for wear, scratches, grooves and dirt. Remove scratches and burrs with crocus cloth. Remove foreign matter. Replace parts that are deeply scratched or grooved.

(2) Inspectal oil passages for obstructions. If an obstruction is found, remove it with compressed air, or by working a soft wire back and forth through the passage and flushing it out with cleaning solvent.

(3) Inspect mounting faces for nicks, burrs, scratches, and foreignatter. Remove such defects with crocus cloth or a soft stone. If scratches are deep, replace the defective part.

(4) Inspect threaded openings for damaged threads. Chase damaged threads with the correct size used tap (a new tap can cut oversize).

(5) Replace housings or other c a s t parts that are cracked.

(6) Inspect all machined surfaces for damage that could cause oil leakage or other malfunction of the part. Rework or replace the defective parts.

(7) Inspect the oil tracks in the value body and main housing value body mounting surface for porosity, broken lands, cracks, dirt and land surface imperfections. These distortions and imperfections will cause severe oil leakage leading to transmission failure. The oil tracks identified in figure 4-6 will assist in locating troubled areas.

g. Inspecting Bushings, Thrust Washers

(1) Inspect bushings for scores, burrs, roundness, sharp edges and evidence of overheating. Remove scores with crocus cloth. Remove burrs and sharp edges with a scraper or knife blade. If the bushing is out-of-round, deeply scored, or excessively worn, replace it, using the proper size replacer.

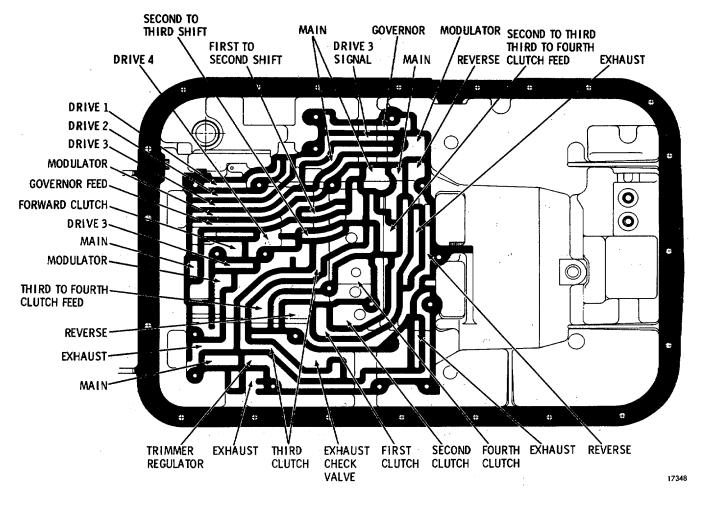
NOTE

Whenever it is necessary to cut out a defective bushing for removal, use care to not damage the bore into which the bushing fits.

(2) Inspect thrust washers for distortion, scores, burrs, and wear. Replace the thrust washer if it is defective or worn.

h. Inspecting Oil Seals, Gaskets

(1) Inspect sealrings for cuts and hardness. replaceasteings if these defects are found.



GENERAL OVERHAUL INFORMATION

Fig. 4-6. Main housing valve body mounting surface tracks

(2) When replacing lip-type oil seals, the lip side must be toward the oil to be sealed in (toward the inside of the unit). Use a nonhardening sealing compound on the outside diameter of the seal to help prevent oil leaks. Coat the inside lip of the seal with high-temperature grease to protect the seal during shaft installation and to provide lubrication during initial operation.

(3) Replace all composition gaskets.

(4) Inspect hook-type sealrings f or wear, broken hooks, and distortion.

(5) Install a new hook-type sealring if the ring shows any wear on the outside diameter, or if there is excessive side wear.

(6) The sides of the sealring must be smooth (0. 005-inch (0. 13 mm) maximum side wear). The sides of the shaft groove, or the bore, in which the sealring fits should be smooth, 50 microinches (1. 27 micrometers) equivalent and square with the axis of rotation within 0. 002 inch (0. 05 mm). If the sides of the grooves have to be reworked, install a new sealring.

i. Inspecting Gears

(1) Inspect gears for scuffed, nicked, burred, or broken teeth. If the defect cannot be removed with a soft stone, replace the gear.

(2) Inspect gear teeth for wear that may have designed the original tooth shape. If this condition is found, replace the gear.

(3) Inspect the thrust face of gears for scores, scratches, and burrs. Remove such defects with a soft stone. If scratches and scores cannot be removed with a soft stone, replace the gear.

<u>j.</u> <u>Inspecting Splined Parts</u> Inspect splined parts for stripped, twisted, chipped or burred splines. Remove burrs with a soft stone. Replace the part if other defects are found. Spline wear is not considered detrimental except where it affects tightness of fit of the splined parts.

<u>k.</u> <u>Inspecting Threaded Parts</u> Inspect parts for burred or damaged threads. Remove burrs with a soft stone or fine file. Replace damaged parts.

<u>I.</u> <u>Inspecting Snapring</u>s Inspect all snaprings for nicks, distortion, and excessive wear. Replace snapring if any of those defects are found. The snapring must snap tight in its groove for proper functioning.

<u>m</u>. <u>Inspecting Spring</u>s Inspect s p r i n g s for signs of overheating, permanent set or wear due to rubbing adjacent parts. Replace the spring if any one of these defects are found. Refer to the spring chart at the end of Section 8.

n. Inspecting Clutch Plates

(1) Inspect friction-faced steel plates (internal-splined plates) for burrs, imbedded metal particles, severely pitted faces, excessive wear, cone, cracks, distortion, and damaged spline teeth. Remove burrs, using a soft honing stone. Replace plates which have other defects.

(2) Inspect steel plates (externaltanged plate for burrs, scoring, excessive wear, cone, distortion, imbedded metal, galling, cracks, breaks, and damaged tangs. Remove burrs and minor surface irregularities, using a soft-honing stone. Replace plates which have other defects.

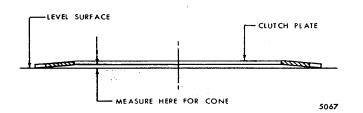


Fig. 4-7. Method of measuring clutch plate cone

(3) The amount of cone in clutch plates is determined by measuring the distance between the inside diameter of the plate and a flat surface (fig. 4-7). If the cone exceeds the wear limits shown in the wear limits chart, replace the plate. Refer to wear limits chart, Section 8.

o. Inspecting Sealing Surfaces

(1) In areas where the outside diameter of a hook-type or step-joint sealring makes contact, inspect for stepwear, nicks, scratches and scoring. Remove only the raised metal portion of these defects with crocus cloth or a soft stone. Polishing the area to remove the defect is not necessary nor desirable. If the defects are too severe, replace the defective part.

(2) At locations contacted by spring-loaded, lip-type oil seals, inspect for nicks, scratches, roughness or other surface irregularities. Also inspect for imbedded particles, step-wear and dirt on flanges or any other components exposed to external contamination. Remove the defects and restore the finish. If finish cannot be restored, replace the part.

4-6. GENERAL ASSEMBLY PROCEDURES

a. Clutches, Pistons

(1) Clutch pack clearances must be establisheprior to assembly. After clearances have been established, soak each friction-face clutch plate (2 minute minimum) in transmission fluid prior to final assembly.

GENERAL OVERHAUL INFORMATION

(2) Apply a generous amount of transmission fluid to the piston cavity prior to final assembly.

(3) Assemble clutch plates so that the cone of each plate faces the same direction as the cone of the adjacent plates.

<u>b.</u> Lubricants Used For Assembly Use transmission fl u i d to lubricate splines, bearings, clutch plates, etc. during assembly. A low temperature grease, such as petrolatum shall be used for internal assembly where it is necessary to use a grease to hold parts in place for assembly. The grease shall have a melting point of 100-140oF (38600C) and must be completely soluble in the transmission fluid. Petrolatum equivalent to MIL-VV-236 or Amojell Petrolatum (Amoco Oil Co.) is recommended. High temperature grease having good oxidation and water resistance shall be used at the ID of input and output shaft oil seals. A high temperature grease equivalent to MIL-G-81322, Mobil grease No. 28 (Mobil Oil Co.), or Aeroshell grease No. 22 (Shell Oil Co.) is recommended.

c. External Plugs, Hydraulic Fittings

CAUTION

Do not use Teflon tape or threaded parts. Slivers can get into the oil and cause the transmission to malfunction.

Prior to installation, apply a small amount of non-hardening sealant into the threads of each plug or fitting. Tighten the plugs or fittings sufficiently to prevent leakage.

d. Oil-Soluble Grease

CAUTION

Do not use oil-soluble grease to retain cork gaskets.

Use oil-soluble grease with a low melting point (petrolatum) to temporarily retain parts, step-joint sealrings, scarf-cut sealrings, and hook-type sealrings during assembly with mating parts.

<u>e</u>. <u>Sealring Compounds, Nonsolubl</u>e.Greases. Do not use gasket-type sealing compounds, fibrous greases, or nonsoluble, vegetable-base cooking compounds any place inside the transmission. Do not use them any place where they could be flushed into the transmission hydraulic system. However, if adhesvies or sealers are required for the oil pan gasket, they may be applied on the pan mounting flange, but only in the area outside of the flange bead.

f. Lip-type Oil Seals

(1) When replacing lip-type oil seals, make sure the spring-loaded lip side is toward the oil to be sealed in (toward the inside of the unit). Coat the ID of the seal with high temperature grease (MIL-G-81322 or equivalent) to protect the seal during shaft installation and to provide lubrication during initial operation.

(2) The circumference of some seals is precoated with a dry sealant. The sealant is usually colored f or easy identification. The precoated seals do not require any additional sealant before installation.

(3) The circumference of some seals is not precoated with a dry sealant. A nonhardening sealant should be applied to the circumference of these seals before installation.

<u>g.</u> <u>Interference-fit Parts</u> Assembly of interference-fit parts may be accomplished by heating and chilling the respective parts. The female part can be heated in an oven or oil bath to 300oF (1490C), and the male part can be chilled in dry ice. Either one or both parts may require a thermal process. However, if the chill process is used for a ferrous alloy part, coat the components with transmission fluid to inhibit rust due to frost and moisture.

<u>h.</u> <u>Sleeve-type Bearings and Bushing</u>sThe use of a locking compound is recommended to retain bushings and sleeve-type bearings that have press-fit tolerances. One such compound is Loctite 601 Sleeve Retainer. This compound or equivalent should be used.

i. Bearings (Ball or Roller)

(1) When installing a 'bearing on a shaft, heat the bearing to 200oF (93oC) on an electric hot plate or in an oil bath. Coat the mating surfaces with white lead and use the proper size installation sleeve and a press to seat the bearing.

NOTE

Bearings must be heated long enough for sufficient expansion. Heating time is determined by the size of the bearing. Forty-five minutes is sufficient for the largest bearing in these transmissions.

(2) If a bearing must be removed or installed without a sleeve, be careful to drive or press only on the race which is adjacent to the mounting surface. If a press is not available, seat the bearing with a drift and a hammer, driving against the supported race

4-7. WEAR LIMITS

Refer to Section8 for general and specific information covering parts fits, clearances and wear limits.

4-8. SPRING SPECIFICATIONS

Refer to the spring chart in Section 8 for spring identification and specifications.

4-9. TORQUE SPECIFICATIONS

Torque specifications are provided in chart form for each threaded fastener and are shown on the exploded view foldouts in the back of this manual. These specifications correspond with the' capital letters suffixed to the item in the legend. The torque values in the charts' are for dry assembly except where noted (i. e. , flange nuts). The bolts and nuts should be washed and dried before assembly.

4-14

Section 5. DISASSEMBLY OF TRANSMISSION

5-1. SCOPE OF SECTION 5

This section covers disassembly of the AT 540, AT 543 and AT 545 transmissions. Procedures that differ in the two models, or procedures that apply to only one model, are identified. Procedures common t o both models have no model identification.

5-2. REMOVAL OF EXTERIOR PARTS

a. Torque Converter

(1) The torque converter can be removed by pulling it forward to disengage it from the stator and turbine shafts (fig. 5-1). Nothing fastens the converter to the transmission except when a safety strap has been installed (para 4-6).

(2) If desired, the torque converter may be left on the transmission, and removed later (see b (3), below).

b. Mounting in Holding Fixture

(1) For overhaul, the transmission should be mounted in a holding fixture J-23642, as shown in figure 5-2. The holding fixture is bolted to the PTO opening after removing the PTO (or cover). Refer to figure 5-7 for proper position of the fixture.

(2) The holding fixture is first attached to the transmission. Then the transmission and fixture are hoisted into position for attachment to fixture base J-3289-20 on the work table.

(3) If not previously removed, the torque converter can be lifted from the transmission (fig. 5-3). Refer to paragraph 6-3 for inspection of the AT 540 or AT 545 torque converter assembly, or to paragraph 6-4 for rebuild of the AT 543 converter assembly

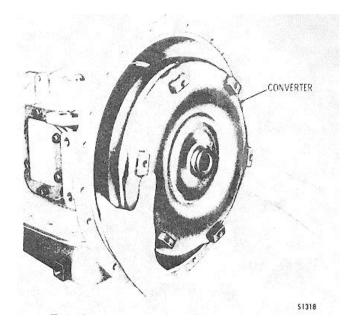


Fig. 5-1. Removing torque converter prior to overhaul

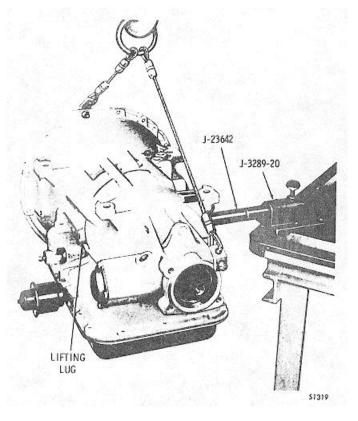


Fig. 5-2. Transmission in holding fixture

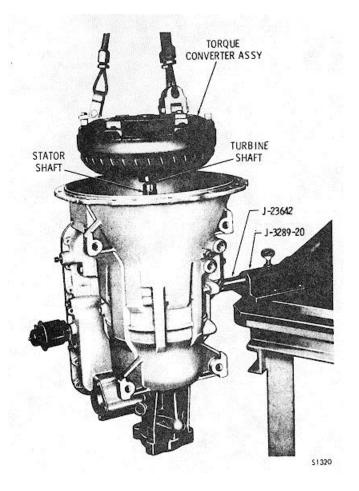


Fig. 5-3. Removing torque converter during overhaul

c. Vacuum Modulator, Mechanical Actuator

(1) Remove the bolt and retainer from the transmission case (fig. 5-4).

(2) Remove t h e vacuum modulator (fig. 5-5). Remove the sealring from the modulator.

(3) Remove the modulator valve actuator rod from the transmission case- (-fig. 5-5). Refer to paragraph 3-16b for inspection of the modulator.

(4) If a mechanical actuator is used, it must be removed from the transmission prior to removing the transmission from the vehicle. Remove the bolt and retainer as described in (1), above. Care should be taken to prevent the loss of the valve actuating rod pin (fig. 5-5).

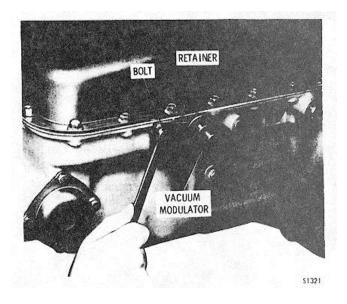


Fig. 5-4. Removing vacuum modulator retainer bolt

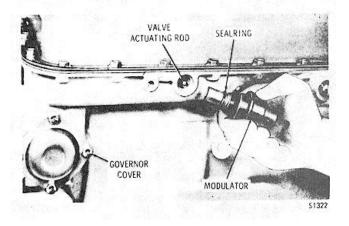


Fig. 5-5. Removing vacuum modulator

d. Governor

(1) Remove four bolts that retain the governor cover (fig. 5-5). Remove the cover.

(2) Remove the governor, rotating it clockwise to disengage the drive gears. Refer to paragraph 6-5 for inspection of the governor.

(3) Remove the governor cover gasket.

DISASSEMBLY OF TRANSMISSION

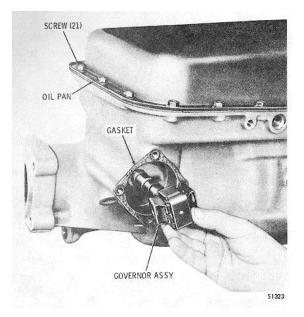


Fig. 5-6. Removing governor assembly

<u>e.</u> Oil Pan

(1) Remove 21 screws that retain the oil pan (fig. 5-6).

(2) Remove the oil pan (fig. 5-7). Remove the oil pan gasket.

<u>f.</u> Oil Filter

(1) Remove the screw that retains the oil filter (fig. 5-7). Remove the oil filter.

(2) Remove the oil intake pipe and sealring (fig. 5-8).

5-3. REMOVAL OF CONTROL VALVE BODY

<u>a</u>. Remove the bolt that retains the detent spring (fig. 5-8). Remove the spring.

<u>b</u>. Remove eighteen bolts that retain the valve body (fig. 5-8).

<u>c</u>. Remove the control valve body (fig. 8) by lifting upward on the body and the three attached oil tubes.

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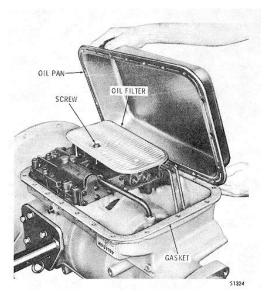


Fig. 5-7. Removing oil pan

CAUTION

Do not allow the selector valve to drop out of the valve body when the body is removed. Either tape or wire it in place, or remove it from the front of the body.

<u>d</u>. Remove the three oil tubes. Remove the oil screen from the valve body, at the governor feed tube bore (fig. 5-8). If the oil screen is located in the governor feed tube where the tube enters the transmission housing, remove and discard it, regardless of its condition. This screen is to be replaced by a wire screen and relocated in the governor feed tube bore.

<u>e</u>. Refer to paragraph 6-6 for rebuild of the control valve body assembly.

<u>f.</u> Apply a small amount of oil-soluble grease to the end of a nonmagnetic rod (1/4-inch diameter). Insert the rod (greased end first) into the valve body cavity and remove the ball (fig. 5-9).

AT 540 SERIES AUTOMATIC TRANSMISSIONS

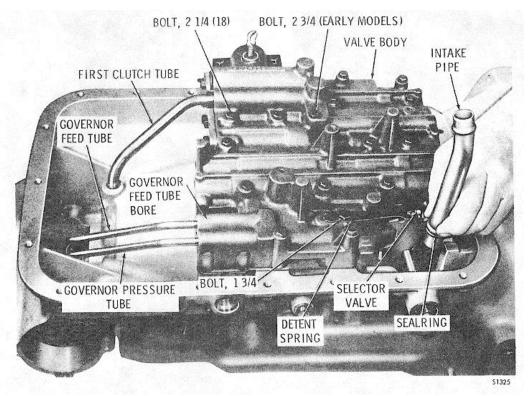


Fig. 5-8. Removing oil intake pipe

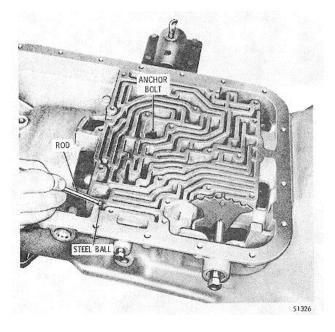


Fig. 5-9. Removing governor check ball

g. Remove t h e center support anchor bolt and flat washer (fig. 5-9).

5-4. REMOVAL OF OIL PUMP AND FORWARD CLUTCH

a. Oil Pump

(1) Remove nine bolts and washers that' retain the front support. Discard washers.

(2) Remove two bolts and washers (approximately 180° apart) from the oil pump body (fig. 5-10).

(3) Install slide hammers J-6125 into the holes from which the two bolts (step (2), above) were removed.

(4) Hammer upward with the slide hammers to loosen the oil pump assembly (fig. 5-10). When free, lift the oil pump assembly out of the transmission case.

DISASSEMBLY OF TRANSMISSION

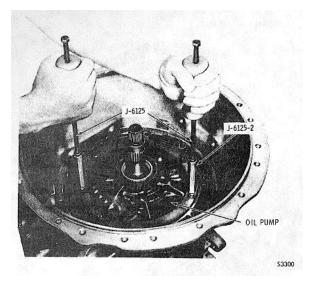


Fig. 5-10. Removing oil pump assembly

(5) Remove the slide hammers, and replace the two bolts and washers removed in (1), above. Do not tighten the bolts.

(6) Remove two hook-type sealrings 34 (B, foldout 5) and thrust washer 33 from the oil pump assembly.

(7) Refer to paragraph 6-7 for rebuild of the oil pump assembly.

b. Forward Clutch and Turbine Shaft

(1) Remove the front support gasket (fig. 5-1

(2) Grasp the turbine shaft (fig. 5-11) and lift out the forward clutch and turbine shaft assembly.

(3) Remove the nylon thrust washer from the rear of the clutch assembly.

(4) Refer to paragraph 6-8 for rebuild of the forward clutch and turbine shaft assembly.

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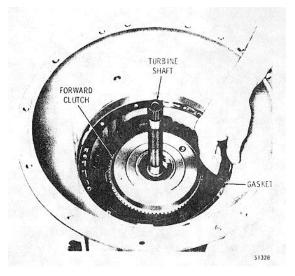
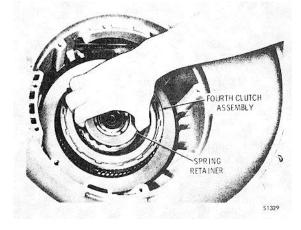


Fig. 5-11. Removing front support gasket





5-5. REMOVAL OF FOURTH AND THIRD CLUTCHES

a. Fourth Clutch

(1) Grasp the spring reainer on the fourth clutch (fig. 5-12), and lift out the fourth clutch assembly.

AT 540 SERIES AUTOMATIC TRANSMISSIONS

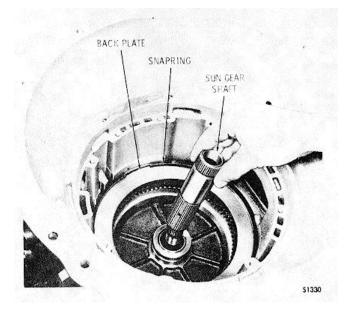


Fig. 5-13. Removing sun gear shaft assembly

(2) Refer to paragraph 6-9 for rebuild of the fourth clutch assembly.

(3) Remove sun gear shaft (fig. 5-13).

<u>b</u>. <u>Third Clutch</u> (1) Remove the snapring that retains the third clutch back plate (fig. 5-13).

(2) Remove the back plate.

(3) Remove the six third clutch plates (fig. 5-14).

5-6. REMOVAL OF CENTER SUPPORT ASSEMBLY AND GEARING

a. Center Support Assembly

(1) Remove the snapring that retains the center support assembly (fig. 5-14). This is a selective thickness snapring (refer to para 7-2a(2)).

(2) Install the center support lifting bracket J-23643 into the recess between the hook-type sealrings on the center support hub.

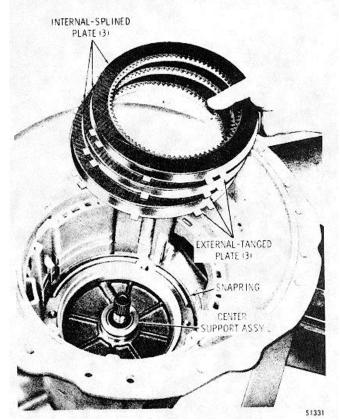


Fig. 5-14. Removing third clutch plates

(3) Lift carefully, straight upward, on the lifting bracket to remove the center support assembly (fig. 5-15).

CAUTION

The center support is fitted to the transmission case with very little clearance. It may bind in the case if the case is cold. Heat the case slightly, if necessary. Do not use a torch to heat the case. A sun lamp, or a current of warm air is sufficient. If the support assembly starts upward and then binds, tap it downward and lift again.

(4) Refer to paragraph 6-10 for rebuild of the center support assembly.

(5) Remove the thrust washer from the front planetary sun gear (fig. 5-16).

DISASSEMBLY OF TRANSMISSION



Fig. 5-15. Removing center support assembly





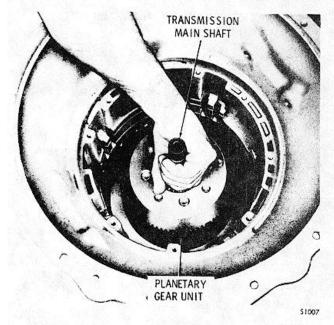


Fig. 5-17. Removing planetary gear unit

<u>b</u>. <u>Gearing</u>

NOTE Before the planetary gear unit can be removed, the rear output flange must be removed.

(1) Grasp the transmission main shaft, and lift the planetary gear unit out of the transmission case (fig. 5-17).

NOTE

It may be necessary to tap upward on the output shaft with a softfaced mallet while lifting on the gear unit.

(2) Refer to paragraph 611 for rebuild of the planetary gear unit.

(3) Governor drive gear 1 (B, foldout 9), speedometer drive gear 2 and spacer 3 may come out with; the gear unit, or may stay in the transmission. remove these parts.

AT 540 SERIES AUTOMATIC TRANSMISSIONS

5-7. REMOVAL OF SECOND AND FIRST CLUTCHES

a. Second Clutch

(1) Remove the snapring that retains the second clutch (fig. 5-18).

(2) Remove three external-tanged, and three internal-splined, second clutch plates (fi 5-18).

(3) Remove the second clutch back plate (fig. 5-19).

b. First Clutch

(1) Remove snapring I (A, foldout 8) that retains the first clutch back plate 2. Remove the back plate.

(2) Remove one internal-splined plate 3 and one external-tanged plate 4.

NOTE

The first clutch ring gear may have been installed into the transmission housing backward (extended tooth on gear, down). Although this is functionally satisfactory, it is not recom-mended.

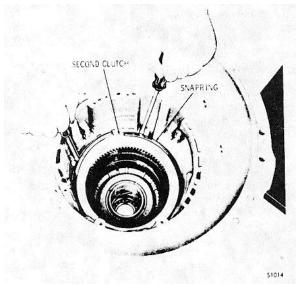


Fig. 5-18. Removing second clutch snapring

(4) On earlier models the rear ring gear is part of the rear carrier assembly and is removed with the planetary gear unit. (Refer to paragraph 6-1 la(12).)

(5) Install the first clutch spring compressor 3-23630-01. Tighten the nut to compress the clutch springs sufficiently to clear the snapring (fig. 5-20).

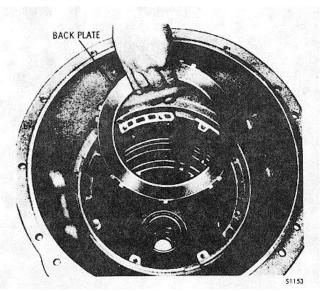


Fig. 5-19. Removing second clutch back plate

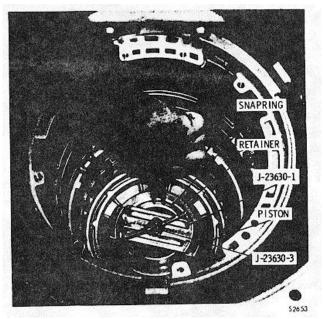


Fig. 5-20. Removing first clutch spring retainer snapring

(6) Remove the snapring. Remove the compressor.

(7) Remove the spring retainer, and the 22 piston return springs.

(8) Remove the first clutch piston (fig. 5-20). Remove the two lip-type sealrings from the piston.

5-8. REMOVAL OF OUTPUT SHAFT SEAL AND BEARING

a. Output Shaft Seal

(1) Remove oil seal 6 (B, foldout 9) from the rearof the transmission case.

(2) Clean the bore from which the oil seal wasremove.

<u>b</u>. <u>Bearing</u>

(1) Remove the snapring that retains the output shafbearing (fig. 5-21).

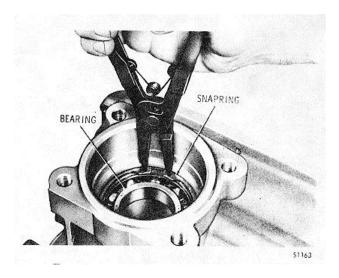


Fig. 5-21. Removing output shaft bearing snapring

(2) Remove the bearing from its bore. (Refer to paragraph 7-13.)

(3) Remove the transmission case, withits remaining attached parts, from the transmission holding fixture. Refer to paragraph 6-12 for rebuild of the transmission case.

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Section 6. REBUILD OF SUBASSEMBLIES

6-1. SCOPE OF SECTION 6

This section describes the inspection of, or the disassembly and assembly of various subassemblies which were removed in Section 5. The rebuild procedures refer to exploded views (foldouts 5 through 9) located at the end of this manual. References are also made to line drawings and photographs within this section.

6-2. GENERAL INFORMATION FOR SUBASSEMBLY REBUILD

<u>a.</u> <u>Tools, Parts, Method</u>s Refer to paragraphs 4-2, 4-3 and 4-4.

<u>b.</u> <u>Cleaning, Inspection</u> Refer to paragraph 4-5 for the cleaning and the inspection procedures.

<u>c</u>. <u>Torque Specifications</u> The specific torque value for each threaded fastener is stated at each assembly step. Torque values are also presented on the foldouts in the back of the manual.

<u>d. Wear Limits, Spring Data</u> Refer to Section 8 for wear limits and spring data.

<u>e.</u> <u>External Plugs, Hydraulic Lines</u> Prior to installation, apply a small amount of nonhardening sealant into the threads of each plug. Tighten the plugs sufficiently to prevent leakage.

<u>f</u>. <u>Clutch Pack Procedur</u>e Soak the friction-faced clutch plates in transmission fluid for a minimum of 2 minutes prior to assembly.

g. <u>Retaining Sleeve-Type Bearing</u>s The use of a locking compound to retain bushings and sleeve-type bearings that are press-fitted is recommended. One compound, LOCTITE 601 sleeve retainer or an equivalent may be used.

6-3. TORQUE CONVERTER INSPECTION - AT 540, AT 545

<u>a</u>. <u>Closed Unit Assembly</u> Because the torque converter assembly is closed and welded after assembly of the internal parts, no repairs can be made. The assembly can be tested, however, to determine its condition in two areas. End play of the internal elements can be measured, and the outer shell can be tested for leaks.

b. End Play Measurement

(1) Clear the torque converter of oil. Examine the oil for evidence of foreign matter or metal particles, indicating transmission or converter internal damage.

(2) Support the converter assembly on the converter cover (pump hub upward). Place the converter end play gage, J-24602, into the converter pump hub (Fig. 6-1).

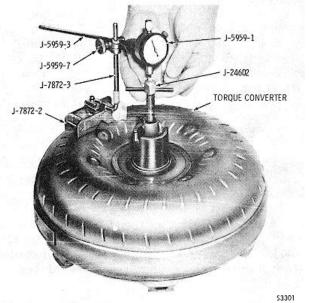


Fig. 6-1. Checking end play of torque converter elements

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(3) Retain the body of the gage in the pump hub with one hand while rotating the center screw, locking the gage to the turbine hub. Do not overtighten.

(4) Assemble J-5959-1, 3-5959-3, J-5959-7, J-7872-2, J-7872-3 as shown in figure 6-1. Install the above items onto the converter pump hub as shown in figure 6-1.

(5) Adjust the lug attachment J-5959-7 so the dial will make firm contact with the top of the center screw (Fig. 6-1).

(6) Set the dial to read zero and lift the center screw (Fig. 6-1) as far as possible. The dial indicator reading must not exceed the values listed below. If the converter end play exceeds the value listed, the torque converter assembly should be replaced.

CONVERTER END PLAY CHART

<u>Converter</u>	<u>Max. Wear</u>
DDA Original	0.037 in. 0.94 mm)
Reliabilt Remanufactured ("HL" Code)	0.037 in. (0.94 mm)
Reliabilt Remanufactured (No Code)	0.022 in. (0.56 mm)
Rebuilt by Independent	0.022 in. 0.56 mm)

c. Leak Test

(1) Clear the torque converter of oil Examine the oil for foreign matter or metal, indicating internal damage.

(2) Install the torque converter leak test fixture J-21369 onto the converter (Fig. 6-2). The center body must be installed first, with its nut loosened (toward top of body).

(3) Next, place the converter, and center body, in the fixture bracket. Tighten the nut firmly to seal the center body in the torque converter hub.

(4) Pressurize the converter to 75 psi maximum. Submerge the pressurized assembly in

water, and observe closely for bubbles that indicate leakage. If the assembly leaks, it should be replaced.

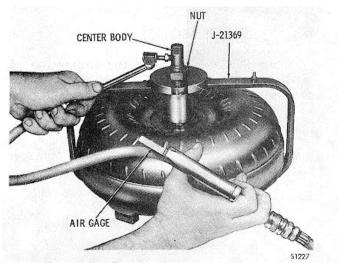


Fig. 6-2. Pressurizing torque converter for leak test

WARNING

Be sure that all pressure is exhausted from the converter before loosening the nut and removing the test fixture.

(5) Release the air from the torque converter by pushing on the valve stem in the air fitting on the center body.

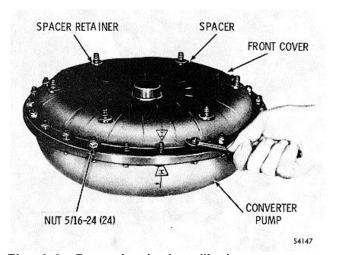
6-4. TORQUE CONVERTER - AT 543

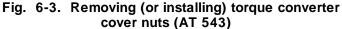
a. Preliminary Inspection

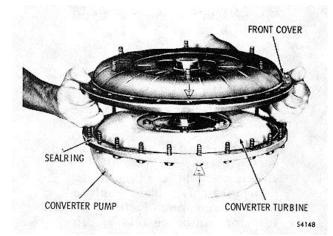
(1) Check the torque converter for end play of internal components as outlined in paragraph 6-3b, except that allowable end play is 0.025 inch (0.635 mm) for the AT 543 assembly.

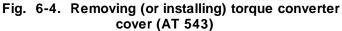
(2) If the end play does not exceed 0.025 inch (0.635 mm), the torque converter may be reassembled, after disassembly and inspection, using the same spacer 10 (A, foldout 5) as presently installed (except when parts affecting the end play are replaced).

REBUILD OF SUBASSEMBLIES









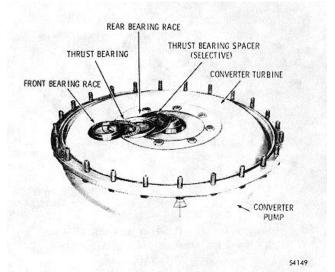
b. Disassembly

(1) Remove six retainers 3 (A, foldout 5) and spacers 4 from cover 5.

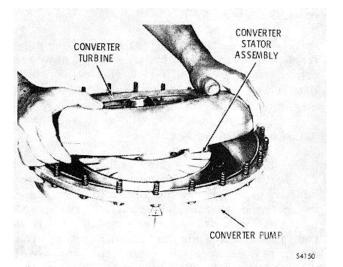
(2) Remove twenty four nuts that retain the converter front cover (Fig. 6-3).

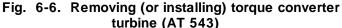
(3) Remove the front cover (Fig. 6-4). Remove the front cover sealring.

(4) Remove two bearing races, bearing and bearing spacer (Fig. 6-5).









NOTE

Some of these parts may have adhered to the cover when it was removed.

(5) Lift off the converter turbine (Fig. 6-6).

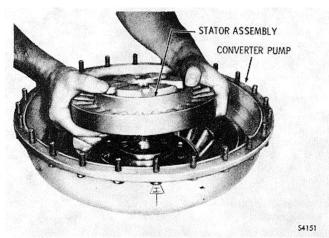


Fig. 6-7. Removing (or installing) torque converter stator assembly (AT 543)

(6) Lift off the stator assembly, using care that the freewheel roller race does not fall out (Fig. 6-7).

(7) Position the stator assembly front downward, and remove the freewheel roller race by rotating it clockwise while lifting.

(8) Remove ten rollers 16 (A, foldout 5) and springs 15.

(9) Check needle bearing assembly 20 (A, foldout 5). Wash and flush the needle bearing assembly thoroughly with dry cleaning solvent or mineral spirits. Dry it and lubricate it with transmission oil. Replace the freewheel race only and rotate the bearing while pressing upon the freewheel race. If there is no roughness or binding, the needle bearing assembly may be left in the stator and cam assembly and reused. Do not mistake dirt or grit for a damaged needle bearing. Reclean and re-oil the needle bearing if dirt is suspected. Check the needle bearing end of freewheel race if the bearing end is scratched or contains chatter marks.

(10) If needle bearing assembly 20 needs replacement, follow steps 11 through 13 below, if the stator is not to be replaced for other reasons. (Reference c, below).

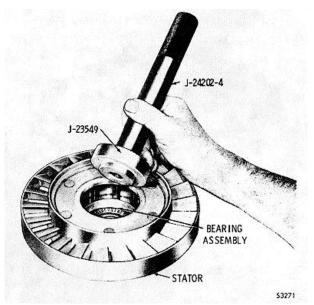


Fig. 6-8. Installing stator thrust bearing (AT 543)

CAUTION

Do not scratch or nick any stator bores. Do not attempt to disassemble the stator and cam assembly unless replacement is required. Refer c below for stator rebuilding procedure.

(11) If the needle bearing must be replaced, remove it carefully to avoid nicking the aluminum bore in which it is held.

(12) Place a new bearing assembly into the aluminum bore of the stator. Using bearing installer tool 3-23549, install the thrust bearing (Fig. 6-8).

(13) Drive the bearing assembly in until the top of the outer shell is 0.025 to 0.035 inch above the shoulder in the side plate (Fig. 6-9). The installing tool will seat on the stator area surrounding the bearing when the bearing is properly installed.

REBUILD OF SUBASSEMBLIES

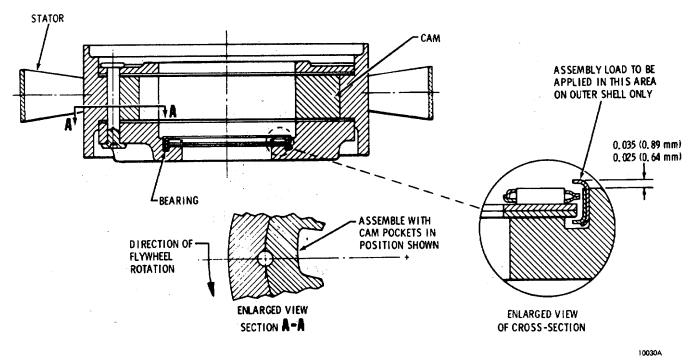


Fig. 6-9. Stator bearing installation (AT 543)

CAUTION

Apply the load only to the outer shell of the bearing during installation (Fig. 6-9).

(14) Remove the needle bearing assembly and bearing race from the converter pump (Fig. 6-10).

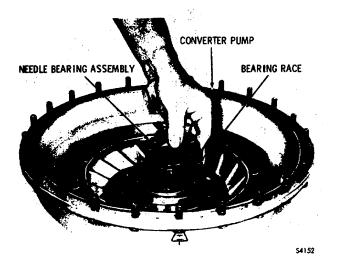
(15) Flatten the corners of lockstrips 20 (A, foldout 3). Remove eight bolts 19 and the lockstrips.

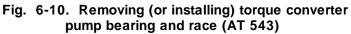
(16) Remove hub 21 (A, foldout 3) and gasket 22 from pump 24.

(17) Do not remove bolts 25 unless new bolts are needed.

NOTE

Refer to paragraph 6-2.





c. Rebuilding Stator Assembly

NOTE

Do not disassemble the stator assembly unless replacement of stator thrust washer 13, rivets 19, washer 14 or washer 17 is necessary. If stator 15 or cam 16 is cracked or damaged, replace t he complete stator assembly.

A hydraulic press having a minimum capacity of five tons, an adjustable table, and a pressure gauge to assist in determining rivet staking load is required to rebuild the stator assembly.

(1) Place the stator assembly in a drill press, formed rivet side up (Fig. 6-11).

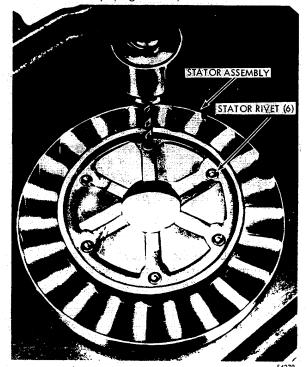


Fig. 6-11. Drilling stator rivet

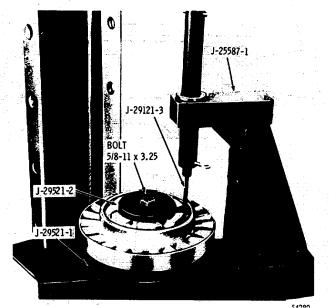


Fig. 6-12. Removing rivet

(2) Using a 3/8 inch drill, aline and drileach rivet, removing the formed head.

(3) Place baseplate J-29521-1 under the stator assembly (Fig. 6-12). Be sure holes in baseplate are under rivet heads. Place top plate 3-29521-2 on top of the stator assembly.

(4) Install the 5/8-11 x 3.25 inch bolt to hold the two plates together. Tighten the bolt to 60 pound feet (81 N•m).

(5) Place fixture stand J-25587-1 on a hydraulic press (Fig. 6-12). Install rivet remover pin 3-29121-3 into fixture J-25587-1 head. Tighten the tool retainer thumb screw.

(6) Place the stator assembly, with base and top plates, onto the fixture stand, drilled rivet side up.

(7) Aline the rivet remover pin with the drilled rivet and press the rivet from the stator assembly. Repeat the above process for each rivet.

REBUILD OF SUBASSEMBLIES

(8) Remove the retaining bolt and top plate (fig. 6-12). Separate thrust washer 13 (A, foldout 5), side plate washer 18, two cam washers 14 and 17, and cam 16 from stator 15.

(9) Inspect the stator and cam for cracks, rivet holes for burrs or swelling. Deburr as required. If cam or stator is cracked or distorted, replace the stator assembly.

(10) Clean the stator assembly components. Assemble cam 16 (A, foldout 5) and stator 15 with the roller pocket positioned as shown in figure 6-9. Install cam washer 14 and -17, one on each side of the stator. Install freewheel was her 18 and thrust washer 13.

(11) Aline the six rivet holes and insert six new $1/4 \times 1.94$ inch rivets into the stator assembly from the rear to the front of the stator (fig. 6-13).

(12) Place the stator assembly on base plate J-29521-1 (fig. 6-13). Be sure the rivet heads rest on the base plate, between clearance holes. Install top plate J-29521 -2 and the 5/811 x 3.25 retaining bolt. Strike the top plate with a rubber mallet to seat components. Tighten retainer bolt to 60 pound-feet (81 N•m).

(13) Place the stator assembly on fixture J-25587-1 (fig. 6-13). Install stake tool J-29121-1 into the fixture head of J-25587-1 and tighten the thumb screw finger tight.

NOTE

The amount of force to apply will vary depending on the condition of the swaging tool and the press equipment being used.

(14) Apply approximately 8000 pound (3629 kg) load to swage each rivet head. Swage the second rivet 180 degrees (3.15 rad) from the first. Locate the third rivet, 60 degrees (1.05 rad) from the second and - swage it. Locate the fourth rivet 180 degrees (3.15 rad) from the third, etc., until all rivets are swaged. ã 1980 General Motors Corp.

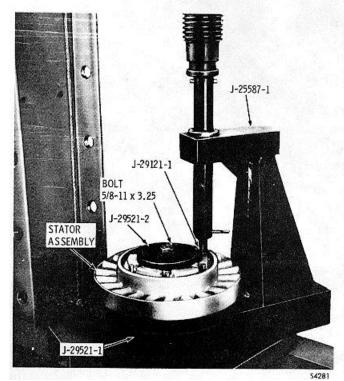


Fig. 6-13. Staking rivet

(15) Remove the top and bottom plate retaining bolt from the stator assembly 12 (A, foldout 5). Remove the two plates. Install new needle bearing; refer to paragraph $6-4\underline{b}$ 11, 12 and 13.

d. Assembly

(1) Install new gasket 27 (A, foldout 5) onto converter pump 31. Install hub 26 into pump 31, alining the holes in the hub and gasket with the holes in the pump.

(2) Install four new lockstrips 25 and eight $1/4-20 \times 5/8$ bolts 24 through hub 26 and into pump 31. Tighten the bolts to 9-11 lb ft (12-15 N•m). Bend the corners of the lockstrip against the bolt heads.

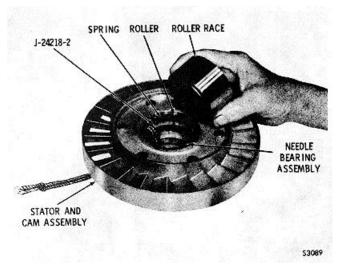


Fig. 6-14. Installing freewheel roller race (AT 543)

(3) Replace any converter pump flange bolts32 necessary and make sure any weights are in their original positions if pump bolts have been removed.

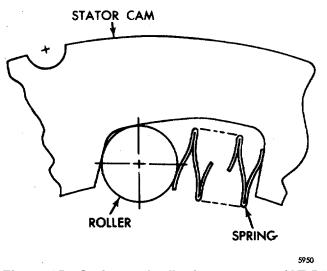
(4) Install the bearing race and needle bearing assembly into the converter pump hub (fig. 6-10).

(5) Place the stator and cam assembly on the work table with the bearing side down (fig. 6-14). Cover the bottoms of the stator cam pockets with oil-soluble grease. Install collapsible retainer J-24218-2 with cord attached as shown in figure 6-14.

(6) Install 10 freewheel rollers and 10 springs. The op e n end of the spring touching the roller must be toward the center of the stator cam assembly (fig. 6-15). The rollers are installed in the shallow ends of the cam pockets.

(7) Install the freewheel roller race, in the position shown in figure 6-14, until the race engages the rollers. Rotate the race in a clockwise direction while pressing downward until the race touches the collapsible retainer. Lift up on the stator assembly and pull on the cord to remove the retainer. Continue rotating the race while pressing downward. When the race is fully seated, rotate it firmly in the opposite direction to lock the stator and cam assembly.

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(8) Grasp stator and cam assembly as shown in figure 6-7 and install it onto the converter pump hub. Hold the roller race firmly to retain it in position.

(9) Install the converter turbine assembly (fig. 6-6).

NOTE

If no parts were replaced with new parts that affect converter end play (items 5, 11, 12, 14, 21 or 24 in A, foldout 3), complete the assembly of the converter by following steps (10) through (17), below. If any of the listed items were replaced, disregard steps (10) through (17) and complete the assembly b y following steps (18) through (27).

(10) Install the thrust bearing spacer (fig. 6-5).

(11) Using transmission fluid, lubricate the rear bearing race and install it, flat side first, onto the spacer (fig. 6-5).

(12) Lubricate the thrust bearing, and install it onto the bearing race (fig. 6-5).

(13) Using oil-soluble grease, install the front bearing race, inner lip first, into the hub of converter cover 5 (A, foldout 5).

(14) Install the sealring into the groove in the converter pump (fig. 6-4). (15) Install the converter cover onto the converter pump (fig. 6-4). The balance marks on the cover and pump must match.

(16) Install twenty-four nuts to retain the converter cover (fig. 6-3). Tighten four of the nuts, at 90° (1.58 red) intervals, to 10 lb ft (14 N•m) Then tighten all the nuts to 19-23 lb ft (26-31 N m).

(17) Install a spacer and a spacer retainer onto each of the six drive studs on the converter cover (fig. 6-3).

NOTE

Steps (18) through (27), below, are applicable only when converter end play must be calculated.

(18) Install the rear bearing race (fig. 6-5), flat side first, onto the converter turbine (selective spacer is omitted). The race should be dry. (19) Install the thrust bearing (dry) onto the rear race (fig. 6-5). Install the front bearing race (dry), inner lip upward, onto the thrust bearing.

NOTE

The measurements made in steps (20) through (23) require that the bar and blocks used (fig. 6-16 through 6-19) be straight and smooth, and have parallel sides. The actual thickness of the bar, and height of blocks are immaterial but the blocks, as pairs, must be of equal height.

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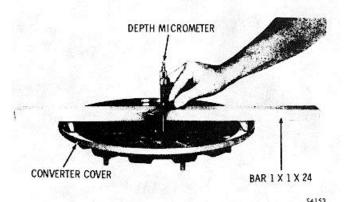


Fig. 6-16. Measuring dimension "A" for selection of converter spacer (AT 543)

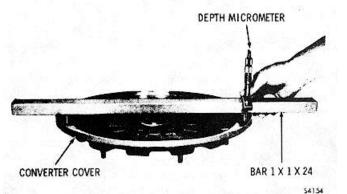


Fig. 6-17. Measuring dimension "B" for selection of converter spacer (AT 543)

(20) Position a bar and two blocks as shown in figure 6-16. Using a depth micrometer, measure the distance from the top of the bar to the machined surface of the converter cover hub. Record this dimension as "A".

(21) Measure the distance from the top of the bar to the mounting surface of the converter cover (between bolt holes) as shown in figure 6-17. Record this dimension as "B".

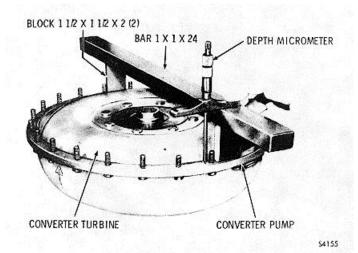


Fig. 6-18. Measuring dimension "C" for selection of converter spacer (AT 543)

(22) Position the bar and two blocks as shown in figure 6-18. Measure the distance from the top of the bar to the mounting surface of the converter pump (between bolts). Record this dimension as "C".

(23) Measure the distance (fig. 6-19) from the top of the bar to the front bearing race installed in step (19). Record this dimension as "D".

(24) Using the dimensions recorded in steps (20) through (23) in the formula X = (A-B) (C-D), find "X".

(25) From the following table, select the proper spacer.

<u>"X"</u>	<u>USE PART NO</u>	<u>COLOR</u>
0.0177-0.034	6837429	GOLD
(0.449-0.86 mr	,	
0.034-0.049	6837430	SILVER
(0.86-1.24 mm	/	
0.049-0.062	6837431	PLAIN
(1.24-1.57 mm)	
0.062-0.079	6837432	BLACK
(1.57-2.00 mm)	
0.079-0.0933	6837433	COPPER
(2.00-2.369 mr	n)	

(26) Remove the two bearing races and bearing installed in steps (18) and (19). Install the selected

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spacer onto the torque converter pump hub (fig. 6-5).

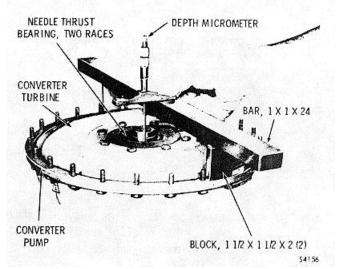


Fig. 6-19. Measuring dimension "D" for selection of converter spacer (AT 543)

(27) Complete the assembly of the torque converter by following steps (11) through (17), above.

NOTE

Check the end play after the converter is assembled to confirm that it is satisfactory (refer to para6-3b). Any clearance up to 0.025 inch (0.635 mm) is satisfactory.

6-5. GOVERNOR

a. Disassembly

(1) The governor may be disassembled for cleaning and inspection. Do not disassemble the governor unless the kit consisting of two governor weight pins and the cover gasket is available.

(2) Follow the directions furnished with the kit to disassemble the governor.

NOTE Refer to paragraph 6-2, above.

REBUILD OF SUBASSEMBLIES

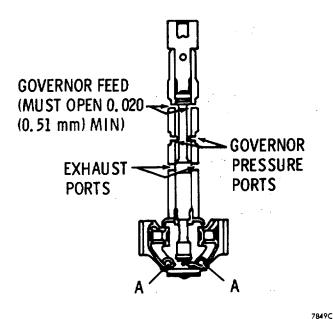


Fig. 6-20. Governor assembly--showing port openings

b. Assembly

(1) Assemble the governor as outlined in the directions furnished with the governor service kit.

(2) Check the governor port openings as outlined in the kit instructions. Refer to figure 6-20.

6-6. CONTROL VALVE BODY ASSEMBLY

<u>a</u>. <u>Disassembly</u>(A, foldout 9)

NOTE

Before removing retainer pins 4, 48, 55, 61 and 67 note and mark the positions of adjusting rings 5, 47, 54, 60 and 66. To retain the original calibration of the valve assembly, the adjusting rings must be reinstalled in the same positions as when removed. Adjusting rings

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are spring loaded.

CAUTION The valve body assembly contains a number of springs, some of which are similar and can be mistakenly interchanged. Also, springs vary in valve bodies used on different models. If springs are not reinstalled in the same locations from which removed, the calibration of valve body functions will be lost. For these reasons, it is recommended that each spring, at removal, be tagged with its item number in A, foldout 7. This will simplify correct reassembly of the valve body components.

(1) Remove manual selector valve 49 from control valve body 11.

(2) Remove three bolts 3 from vacuum modulator valve body 10. Remove the valve body and separator plate 2.

NOTE

Check the 2.800 in. (71.12 mm)dimension location (fig. 6-21) on separator plate for a 0.200 x 0.300 in. $(5.08 \times 7.62 \text{ mm})$ slot. If the plate contains a slot, replace it with new plate 6882956, containing a 0.0580.062 in. (1.47-1.57 mm) die orifice at 2.800 in. (71 mm) and 7.950 in. (202 mm) dimensions. If the 0.058-0.062 in. (1.47-1.57 mm) orifice is present in the existing plate, the plate may be reused. (Do not use 6882956 plate prior to S/N 34501.)

(3) Remove priority valve 42, spring 41, and valve stop 40 from valve body 11.

(4) Remove retainer pin 4, while holding pressure on adjusting ring 5.

AT 540 SERIES AUTOMATIC TRANSMISSIONS

36.

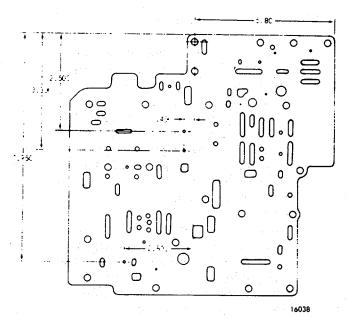


Fig. 6-21. Locating separator plate orifices

(5) Remove adjusting ring 5, stop 6, spring washer 7, valve spring 8, and vacuum modulator valve 9.

(6) Remove eight bolts 31 from trimmer cover 30.

NOTE

Trimmer cover 30 is spring loaded and must be restrained while the bolts are being removed.

(7) Remove trimmer cover 30. Remove trimmer springs 14, 18, 19, 23, 27 and 28. Remove valve stops 15, 20, 24 and 29 from the bores in body 11.

NOTE

Springs 19 and 28 are-included only after S/N 34500. Replace spring 23 with a new spring within S/N 94000 to 96000.

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(8) Remove trimmer plugs 13, 17, 22 and 26. Remove trimmer valves 12, 16, 21 and 25.

(9) Remove retainer pins 32 and 33 from control valve body 11.

NOTE

Valve stop 36 and spring spacer 39 are spring loaded and must be restrained while retainer pins 32 and 33 are being removed. Valve stop 36 replaces two parts used in earlier models.

(10) Remove spring spacer 39 and valve stop

(11) Remove relay valve springs 35 and 38. Remove relay valves 34 and 37.

NOTE

Adjusting ring 47 is spring loaded and must be restrained while retainer pin 48 is being removed.

(12) Remove retainer pin 48.

(13) Remove adjusting ring 47, washer 46, valve stop 45, valve spring 44, and hold regulator valve 43 from the bore in control valve body 11.

(14) Earlier models use a valve plug 76 instead of adjusting ring 47 and washer 46.

(15) Remove retainer pins 55, 61, and 67. Remove adjusting rings 54, 60 and 66.

(16) Remove valve stops 53, 59, and 65. Remove springs 52, 58, and 64.

(17) Remove modulator valves 51, 57, and 63. Remove signal valves 50, 56 and 62.

(18) Remove retainer pins 71 and 75.

NOTE

The retainer pins are spring loaded, and stops 70 and 74 must be restrained while pins are being removed. Valve stop 70 replaces two parts used in earlier models.

(19) Remove valve stop 70, valve spring 69, and 3-4 relay valve 68.

(20) Remove valve stop 74, valve spring 73, and trimmer regulator valve 72.

NOTE

Refer to paragraph 6-2, above.

b. <u>Assembly(A, foldout 7)</u>

NOTE

Check the configuration and position of all components (refer to fig. 6-22). Check the identification of all springs (para 8-5). All valves, when dry, should move freely in their bores under their own weight.

(1) Install valve 37 (A, foldout 9), spring 38 and spring spacer 39 into bore A (fig. 6-22). Install retainer pin 33.

(2) Install valve 34, spring 35 and valve stop 36 into bore B (fig. 6-22). Install retainer pin 32.

(3) Install valve 25, plug 26, springs 27 and 28, and valve stop 29 into bore C.

(4) Install valve 21, plug 22, spring 23 and valve stop 24 into bore D (fig. 6-22).

(5) Install valve 12, plug 13, spring 14 and valve stop 15 into bore E (fig. 6-22).

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(6) Install valve 16, plug 17, springs 18 and 19, and valve stop 20 into bore F (fig. 6-22).

NOTE Springs 19 and 28 were not included previous to transmission S/N 34501.

(7) Depress the springs installed in bores C, D, E and F (fig. 6-22) and install cover 30. Retain the cover with eight $1/4-20 \times 3/4$ -inch bolts 31. Tighten the bolts to 9-11 lb ft (12-15 N m) torque.

(8) Install valve 72, spring 73 and valve stop 74 into bore G (fig. 6-22). Install retainer pin 75.

(9) Install valve 68, spring 69 and valve stop 70 into bore H (fig. 6-22). Install retainer pin 71.

(10) Install valve 62, valve 63, spring 64, valve stop 65 and adjusting ring 66 into bore I (fig. 6-22). Install retainer pin 67 and position adjusting ring 66 at its position recorded before removal.

(11) Install valve 56, valve 57, spring 58, valve stop 59 and adjusting ring 60 into bore J (fig. 6-22). Install retainer pin 61 and position adjusting ring 60 at its position recorded before removal.

(12) Install valve 50, valve 51, spring 52, valve stop 53 and adjusting ring 54 into bore K (fig. 6-22). Install retainer pin 55 and position adjusting ring 54 at its position recorded before removal.

(13) Install valve 43, spring 44 and valve stop 45 into bore L (fig. 6-22). Prior to transmission SIN 113786, install a valve bore plug 76. Beginning with transmission S/N 113786, install washer 46 and adjusting ring 47 at its position recorded before removal.

(14) Install valve stop 40, spring 41 and valve 42 into bore M (fig. 6-22).

(15) Install valve 9, spring 8, washer 7, valve stop 6 and adjusting ring 5 into bore N (fig. 6-22). Install retainer pin 4 and position adjusting ring 5 at its position recorded before removal.

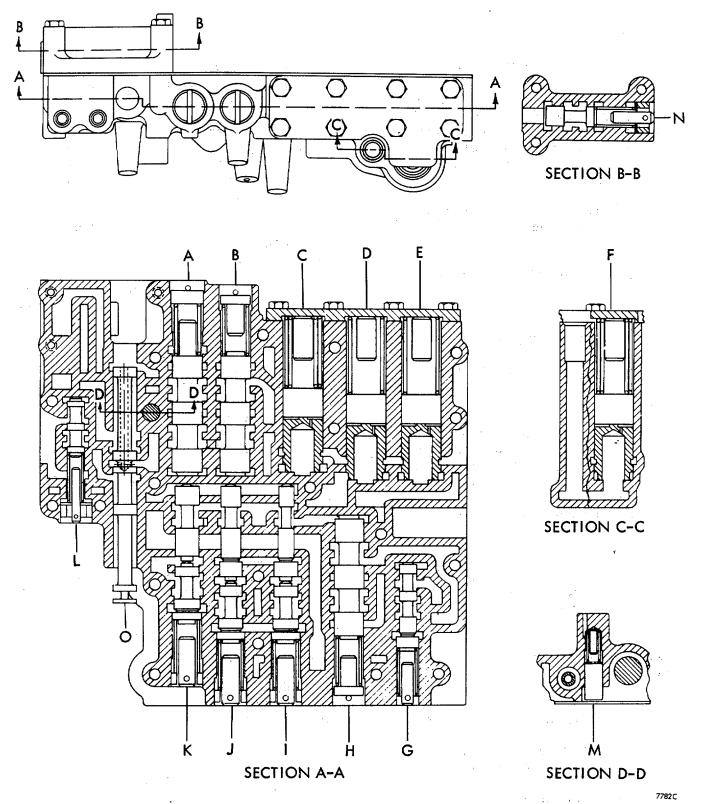


Fig. 6-22. Control valve body assembly--with components installed

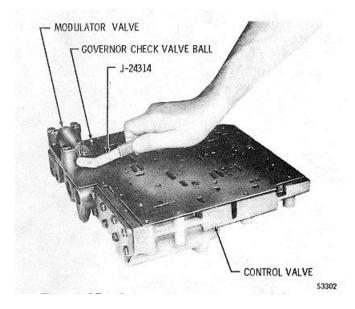


Fig. 6-23. Adjusting vacuum modulator valve ring

(16) Install separator plate 2 onto valve body 11. Install valve body 10 onto separator plate 2.

(17) Install three 1/4-20 x 1 3/4-inch bolts 3 to retain valve body 10 and separator plate 2. Tighten the bolts to 9-11 lb. ft (12-15 N m). The assembled valve body is shown in figure 6-23.

(18) Install valve 49 into the assembled valve body and retain it with a rubber band, tape or soft wire to prevent its dropping out during handling.

(19) Recheck the positions of all adjusting rings with the positions recorded before disassembly. Refer to figure 6-23.

(20) Put the assembled valve body into a plastic bag or other dirt-proof wrapping until ready to install it.

6-7. OIL PUMP ASSEMBLY

a. Disassembly (B, foldout 5)

(1) Remove sealring 13 from front support 21.

(2) R e m o v e six b o I t s (eight on earlier models) 11 and washers 12 from the front of pump body 8. Discard washers.

(3) Remove three bolts 28 and two bolts 29, from front support and bearing assembly 16.

(4) Separate pump body and gear assembly 5 from front support and bearing assembly 16. Remove pump driven gear 9 and pump drive gear 10 from pump body 8.

(5) Remove sealring 4 from pump body 8.

(6) Remove oil seal 3 and, if parts replacement is necessary, bushing 7.

(7) If necessary f o r parts replacement, collapse bushing 18 a n d remove it from stator shaft 19. Do not damage the bore.

(8) If necessary f o r parts replacement, remove roller bearing 23 from stator shaft 19.

CAUTION Do not attempt to remove stator shaft 19 from front support 21.

(9) Install main regulator valve remover J-24787. Compress spring stop 25 against main-pressure regulator valve spring 26 and remove retainer ring 24 as shown in figure 6-24.

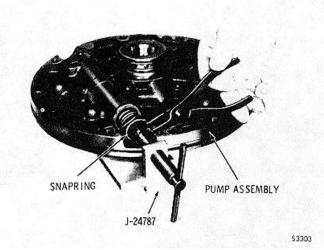


Fig. 6-24. Removing (or installing) main-pressure regulator valve

(10) R e m o v e spring stop 25 and spring 26 from the valve bore of front support 21.

(11) Remove main-pressure regulator valve assembly 27 from the same bore.

(12) Turn the front support over, remove pin 15 from front support 21 and remove valve plug 14 from the smaller end of the main-pressure regulator valve bore.

NOTE Refer to paragraph 6-2, above.

b. Assembly (B. foldout 5)

(1) Install valve plug 14 into the main-pressure regulator bore of front support 21. Install pin 15 into the pump body side of front support 21.

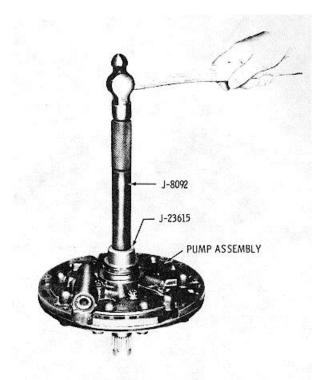
(2) Install main-pressure regulator valve assembly 27, stem-end first, into the opposite end of the valve bore.

(3) Install valve spring 26 and spring stop 25, smaller end first.

(4) Install main regulator valve remover J-24787. Compress spring stop 25 against main-pressure regulator valve spring 26 and install retainer ring 24 as shown in figure 6-24.

(5) If roller bearing 23 was removed, press a new bearing into the end of shaft 19 until the outer edge of the bearing measures 0.595 inch (15.11 mm) to 0.615 inch (15.62 mm) from the end of the shaft. Press on the lettered end of the bearing with installer J-23615. Figure-6-25: illustrates installation of the roller bearing

(6) If bushing 18 (B. foldout 5) was removed, press a new bushing into the opposite end of shaft 19 until the outer end of the bushing is flush with, to 0.005 inch (0.127 mm) below, the end of the shaft with installer J-23614. Figure 6-26 illustrates installation of the bushing.





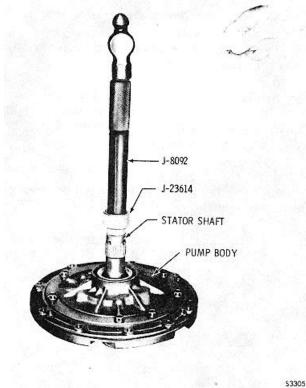


Fig. 6-26. Installing stator shaft front bushing

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REBUILD OF SUBASSEMBLIES

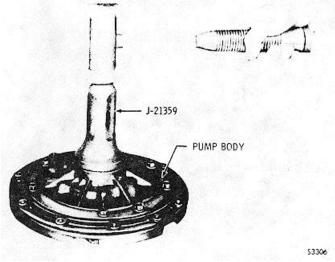


Fig. 6-27. Installing oil pump seal

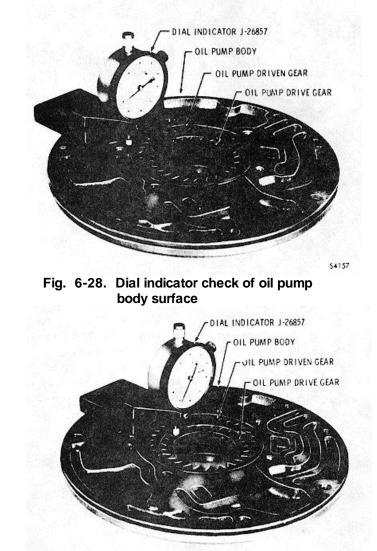
(7) If bushing 7 (B. foldout 5) was removed, install a new bushing. The split in the bushing must be located within the 10 to 12 o'clock position in the pump body, when viewing the front of the body (within a 60° (1.05 red) area immediately left of a vertical line extending upward from the pump body center). Use installer J-25356 to press the bushing into the front of the pump body. When installed, the front edge of the bushing should extend 0.010 to 0.020 inch (0.254 to 0.508 mm) above the surface.

(8) Coat the oil seal bore in pump body 8 (B. foldout 5) with Perfect Sealer #4 or an equivalent sealer and install oil seal 3, with the lip facing inward. Figure 6-27 shows the installation of the oil seal, using the special installer J-21359.

NOTE

Proper end play and side clearance of the oil pump gears must be established before the pump is assembled. Remove all nicks and burrs from pump and gear surfaces to facilitate accurate dial indicator readings.

(9) Position oil pump body assembly 6 (B. foldout 5), flat side upward. Install



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Fig. 6-29. Dial indicator check of oil pump drive gear end clearance

drive gear 10 into the pump body 6, so the internal tangs of the gear are away from bushing 7. Locate diamond mark on the side of gear 9. Install gear 9, diamond side down, into pump body 6.

(10) Position base mounted dial indicator J-26857 on the pump body as shown in figure 6-28. Record this dimension.

(11) Place the stylus of the dial indicator on the driven gear (fig. 6-29). Rotate the gear(s) 360 degrees (6.3 red), recording the maximum dimension.

AT 540 SERIES AUTOMATIC TRANSMISSIONS

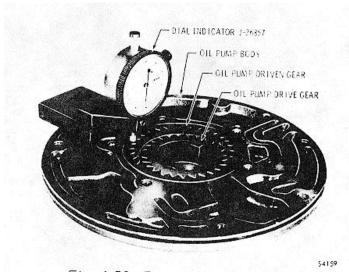


Fig. 6-30. Dial indicator check of oil pump driven gear end clearance

(12) Subtract the d i m e n s i o n recorded in step (11) from that recorded in step (10). If the difference is not within 0.0008 to 0.0022 inch (0.02 to 0.056 mm), refer to the chart below for gear replacement. Repeat the operation in step 11, measuring the clearance for the drive gear (fig. 6-30).

<u>P/N</u>	DESCRIPTION	<u>QTY</u>
8624063	Pump Driven Gear (0.7265-0.7275)	1
8629482	(18.453-18.479 mm) Pump Drive Gear (0.7255-0.7260)	AR
8629483	(18.428-18.440 mm) Pump Drive Gear (0.7260-0.7265)	AR
8629484	(18.44018.453 mm) Pump Drive Gear (0.7265-0.7270)	AR
8629485	(18.45318.465 mm) Pump Drive Gear (0.7270-0.7275)	AR
8629486	(18.46518.479 mm) Pump Drive Gear (0.7Z75-0.7Z80) (18.479-18.491 mm)	AR

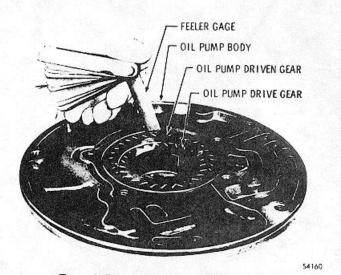


Fig. 6-31. Checking diameter clearance of oil pump driven gear

(13) Move the dial indicator base 90 degrees, repeating steps (10) through (12) each time, until the indicator base is returned to its original position.

NOTE Only one driven gear is available. Any one of five d r i v e gears may be selected.

(14) Check the driven gear diameter clearance with a feeler gage as shown in figure 6-31. Replace the gear if the clearance is not within 0.004 to 0.008 inch (0.100.20 mm).

NOTE When wear of the pump body prevents restoration of satisfactory gear end or diameter clearance, replace the entire oil pump assembly.

(15) Grease and install sealring 4 onto pump body 8.

(16) Install front support assembly 17 onto pump body assembly 6, alining the bolt holes.

CAUTION

Because of oil leakage, a six-bolt support should never be used with an eight-bolt pump body. However, the six-bolt support may be modified by tapping two additional holes (fig. 6-32). Any other: combination of parts (6-hole support with 6-hole body, 8-hole support with 6-hole body, or 8support with 6-hole body) is acceptable without modification.

(17) Install six 5/16-18 x 1-inch bolts 11 (eight on earlier models) and new rubber coated washers 12 into the pump side of the oil pump assembly. Tighten the bolts finger tight.

(18) Install three $5/16-18 \ge 1$ 3/4inch, self-locking bolts 28 and two $5/16-18 \ge 1$ -inch, self-locking bolts 29.

NOTE

Earlier assemblies use two 1 1/2inch bolts in two locations, instead of 1 3/4-inch bolts.

(19) Tighten the l-inch bolts to 1316 lb. ft (17-22 N.m) Tighten 1 3/4-inch bolts to 15-20 lb. ft (20-27 N.m).

(20) Grease and install sealring 13 onto the outer diameter of front support 21.

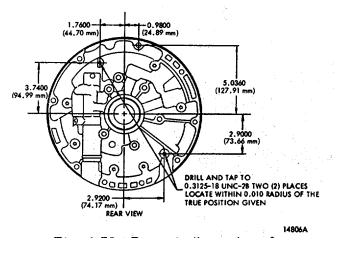


Fig. 6-32. Rework dimensions for front support

6-8. FORWARD CLUTCH AND TURBINE SHAFT

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 - 6-19

<u>a.</u> <u>Disassembly</u> (A, foldout 6)

NOTE

If the transmission does not include a PTO gear, begin disassembly-at (8), below. Disassembly of the PTO 9 e a r for later models is explained in i t e m s (1) through (6); for earlier models, in item (7).

(1) Locate the snapring gap by looking between tips of the PTO gear internal splines and the roots of the housing splines. Light can be seen in the gap area.

(2) At the opening (omitted housing spline) closest to the snapping gap, insert a small screwdriver and push the snapping toward the housing until a $5/64 \times 0.020$ steel strip (5 to 7 inches (127-178 mm) long) can be inserted in the root of the housing spline nearest the snapping gap (fig. 6-33).

(3) Repeat procedure (2), above, at the opposite side of the snapping gap.

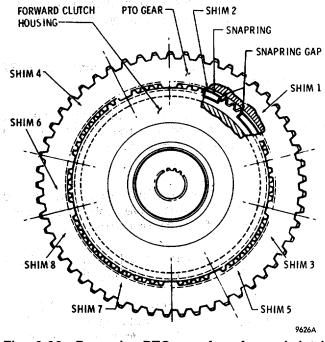


Fig. 6-33. Removing PTO gear from forward clutch housing

(4) Using the screwdriver in the openings (omitted splices) as required, to depress the snapring, place steel strips in housing spline roots, as necessary to hold the snapring inward. Work from the strips first installed to a point opposite the gap.

(5) Use as many strips as required (8 should be sufficient) and place them at positions that will hold the snapring Entirely clear of the PTO gear splines.

(6) When the snapring clears the PTO gear splines, light can be seen through all spaces (except those holding steel strips) between PTO gear spline tips and housing spline roots. Remove the gear.

(7) On earlier models, place forward clutch a n d turbine shaft assembly 7 (A, foldout 6) on the work table, : with the shaft up. Using a screwdriver, remove snapring 2 that secures PTO drive gear 3 to forward clutch housing 10. Remove gear 3 and snapring 4.

(8) Remove hook-type sealring I from shaft 8. Turn the assembly over.

(9) Using a screwdriver, remove snapring 26 from forward clutch housing 10. Remove fourth clutch driving hub 25 from the housing.

(10) Remove forward clutch hub 22 from the housing.

(11) Remove thrust bearing race 21, thrust needle bearing 20 and thrust bearing race 19 f r o m the hub of forward clutch housing 10.

(12) Remove five external-tanged clutch plates 23 and five internal-splined clutch plates 24 from clutch housing 10.

(13) Place the clutch assembly in a press with spring retainer up (fig. 6-34).

(14) Place compressor tool J-236 16 with an opening for snapring pliers, upon spring retainer 17 (A, foldout 6). Compress the retainer until snapring 18 is free. Using snapring pliers, remove snapring 18. Release the press and remove the assembly.

(15) Remove spring retainer 17 and sixteen clutch spring 16.

(16) Remove forward clutch piston 15 and its sealrings from clutch housing 10. If necessary, turn the clutch housing over and "bump" the piston from the housing.

(17) Remove piston outer sealring 14 and piston inner sealring i 3 from piston 15. Inspect ball 11 to make sure it moves freely in housing 10. If the piston is replaced, be sure the new piston has the same letter identification (A, B, or C) that was stamped on the replaced piston.

(18) Remove clutch housing sealring 12 from housing 10. On later models the sealring groove and bleed orifice have been omitted from the forward clutch housing and turbine shaft assembly.

NOTE Refer to paragraph 6-2, above.

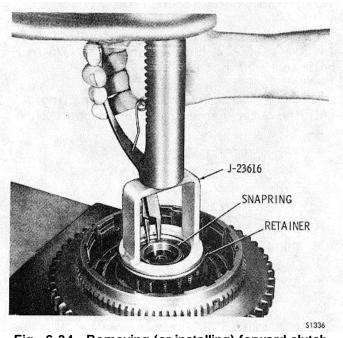


Fig. 6-34. Removing (or installing) forward clutch spring retainer snapring

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REBUILD OF SUBASSEMBLIES

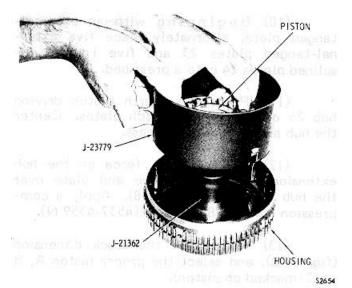


Fig. 6-35. Installing forward clutch housing piston, using sealring protector tool

b. <u>Checking Clutch Pack Clearanc</u> (A, foldout 6)

NOTE

Steps (1) through (9), below, establish the clutch clearance during assembly of the clutch. Steps (10) through (15) establish the clutch clearance prior to assembly.

(1) Place forward clutch housing and turbine shaft assembly 7 (A, foldout 6) on the work table, with the shaft down. Grease and install clutch housing sealring 12, (earlier housings), with the lip of the sealring facing downward. Be sure the sealring is centered in its groove. Late housings do not include sealring 12 groove.

(2) Place forward clutch piston 15 on the work table, with the return spring side upward, and install outer sealring 14, lip downward. Install inner sealring 13, lip downward, into the inner diameter of piston 15. Grease both seals and center each seal in its bore.

NOTE If a new piston is used, refer to instructions in a.(17), above.

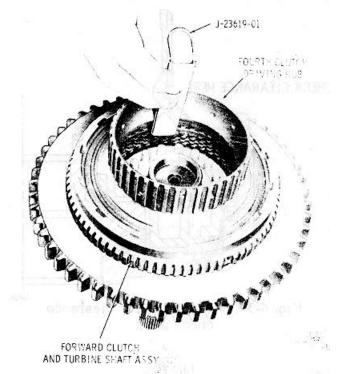


Fig. 6-36. Checking forward clutch clearance

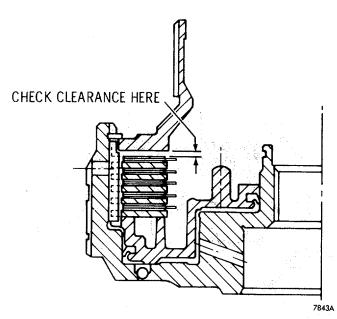
(3) Place sealring protector tools J-21362 and J-23779 over the inner and outer sealring surfaces of the piston housing (fig. 6-35). Apply lubricant to the outer surface of tool J-21362 and the inner sure; face of tool J-23779 to prevent the dislocation of the seals during tool removal.

(4) Install piston 15, with sealrings, into forward clutch housing 10 until the piston bottoms against the housing. Remove tools J-21362 and J-23779 from the housing.

(5) Beginning with an external plate, alternately install five external-tanged 23 and five internal-splined 24 plates into forward clutch housing 10.

(6) Install fourth clutch driving hub 25 into housing 10, engaging the tangs in the slots. Install snapping 26 into housing 10.

(7) While holding clutch driving hub 25 firmly against snapping 26, use clearance gage J-23619-01 to measure the clutch running clearance (fig. 6-36). This clearance should be 0.0765 (1.943 mm) to 0.1265 (3.213 mm) (fig. 6-37).

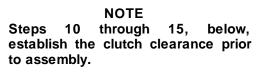




NOTE The smaller end of the gage should pass between the hub and first plate. The larger end should not.

(8) If the clutch running clearance is not within the specified limits, remove snapring 26 (A, foldout 6), fourth clutch driving hub 25, and clutch plates 24 and 23. Replace clutch plates 23 and 24 with new plates, as required, to obtain t h e -desired running clearance. Refer to wear limits, Section 8, to determine t h e plates which should be replaced.

(9) Repeat steps (5), (6), and (7) above. When the running clearance is within 0.0765 to 0.1265 (1.94 to 3.213 mm), remove snapping 26, clutch driving h u b 25, and clutch plates 23 and 24. Retain the clutch plates as a package until required. Complete assembly procedures as outlined in c, below.



(10) Beginning with an external-tanged plate, alternately place five external-tanged plates 23 and five internal plates 24 onto a press bed.

(11) Place the fourth clutch driving hub 25 on: top of the clutch plates. Center the hub and Plates in the press.

(12) Do not exert force on the hub extension. Install a sleeve and plate over the hub extension (fig. 6-38). Apply a compression load of 980-1020 lb. (4537-4359 N).

(13) Measure the stack dimension (fig. 6-38), and select the proper piston A, B or C (marked on piston).

(14) Remove t h e sleeve and plate from the fourth clutch driving hub and retain the clutch plate and hub package until required.

(15) Install the piston as outlined in steps (1) through (4), above.

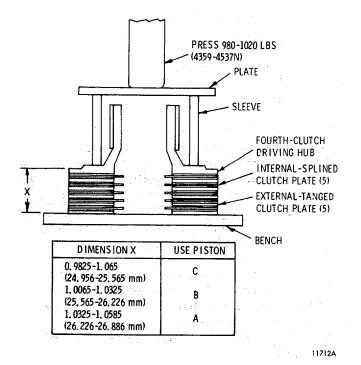


Fig. 6-38. Determining forward clutch piston thickness

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c. Assembly (A, foldout 6)

(1) Install sixteen clutch springs 16 onto their guide bosses on the piston. Install spring retainer 17, spring recess side first, onto the springs.

(2) Place the clutch assembly in a press, spring retainer upward. Lay snapping 18 in its approximate installed position, on spring retainer 17.

(3) Using compressor tool J-236 16 compress the spring retainer until it clears the snapping groove in the housing. Install snapring 18 into clutch housing 10. Release the press and remove the clutch assembly.

(4) Install the flat bearing race onto the hub of the forward clutch housing (fig. 6-39). Install the thrust needle bearing and the lipped bearing race so that it encloses the bearing. Retain the bearing and races with oil-soluble grease.

(5) Install the forward clutch hub into the clutch housing (fig. 6-40).

(6) Beginning with an external clutch plate, install the clutch package removed in b(9) or (14), above (fig. 6-40).

(7) Install fourth-clutch driving hub 25 (A, foldout 6) into housing 10 and secure the hub with snapping 26.

NOTE

If transmission d o e s not include a PTO gear, disregard (8) through (14), below. Assembly of the PTO gear for later models is explained in (8) through (11); for earlier models, in (12) through (14).

(8) Retain the forward clutch housing and turbine assembly 7 (A, foldout 6) on the work table, shaft side down.

(9) Install snapping 27 into the snapring groove in forward clutch housing 10.

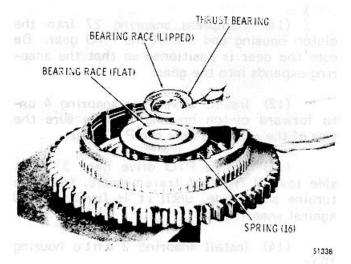


Fig. 6-39. Installing forward clutch thrust bearing

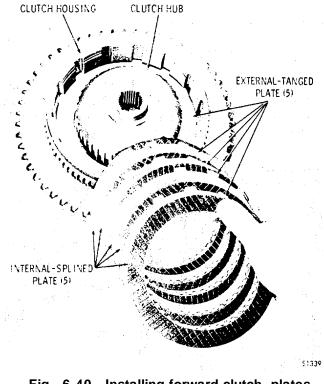


Fig. 6-40. Installing forward clutch plates

(10) Place P TO gear 28 onto the for ward clutch housing. BE sure the chamfer on the inside diameter of the PTO gear is facing downward.

(11) Compress snapring 27 into the clutch housing and install the PTO gear. Be sure the gear is positioned so that the snapring expands into the gear.

clutch housing 10. Be sure the tips of the snapring face retainer 6 (fig. 6-41). the PTO gear.

(13) Install PTO drive gear 3 (flat side toward front foldout 6) and remove fourth clutch piston 8. of transmission), from the turbine shaft side, until i t is firmly seated against snapring 4.

(14) Install snapring 2 onto housing 10 to secure gear 3.

(15) Install hook-type sealring 1 onto turbine shaft 8.

6-9. FOURTH CLUTCH

a. Disassembly(B, foldout 6)

(1) Place fourth clutch on the work table, with snapring I upward. Remove snapring 1, back plate 2, five internal splined clutch plates 3, and five external-tanged clutch plates 4.

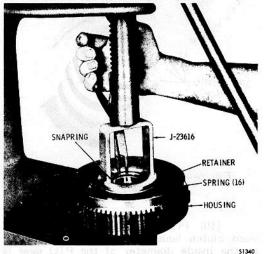


Fig. 6-41. Removing (or installing) fourth clutch spring retainer snapring

(2) Place fourth clutch housing assembly 11 in a press. Using spring compressor J-23616, depress piston (12) Install wave-type snapring 4 onto forward return spring retainer 6 and remove snapring 5 and spring

(3) Remove s ix tee n piston return springs 7 (B.

(4) Remove sealring 9 from the outside diameter of piston 8. Remove sealring 10 from the inside diameter of the piston bore in fourth clutch housing 13. Check the sealring groove thoroughly f o r burrs and rough spots.

NOTE Refer to-paragraph 6-2.

b. Checking Clutch Pack Clearance, foldout 6)

NOTE Steps 1 through 9, below, establish the clutch clearance during assembly of the clutch. Steps 10 through 15 establish the clutch clearance prior to assembly.

(1) Place fourth clutch housing assembly 11, open (front) side upward, on the work table. Install clutch: housing sealring 10, lip downward, into the groove of the housing inner hub. Grease the sealring and center it in the groove.

(2) Place fourth clutch piston 8 on the work table, return spring side (front) upward and install outer sealring 9, lip downward. Lubricate theseal ring with an oilsoluble grease. No sealring is used in the inner sealring groove of this piston.

> NOTE If piston 8 must be replaced, be sure that the identification (A, B or C) on the new piston is the same as-that replaced on the piston.

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(3) Place sealring protector tool J23779 over the outer sealring surface of piston housing 13. Apply lubricant to the inner surface of tool J-23779 to prevent the dislocation of the seal during tool removal.

(4) Install piston 8, with sealring 9, into the clutch housing assembly 11 until the piston bottoms against the housing. Remove tool J-23779 from the housing. (5) Beginning with an external-tanged plate, alternately install five external-tanged 4 and f i v e internal-splined 3 clutch plates onto piston 8.

(6) Install clutch back plate 2, flat side first, onto the last clutch plate 3 installed. Install snapring 1 into housing 13.

(7) While holding back plate 2 firmly against snapping 1, use clutch clearance gage J-23620 to measure the clearance between the back plate and the clutch plate (fig. 6-42). This clearance should be 0.0625 (1.5B8 mm) to 0.1125 (2.858 mm) (fig. 6-43).

NOTE The smaller end of the gage should pass -between the back plate and the first clutch plate; the larger e n d should not.

(8) If the clutch running clearance is not within the specified limits, remove snapring 1 (B. foldout 6), back plate 2, and clutch plates 3 and 4. Replace clutch plates 3 and 4 with new plates, as required, to establish the proper running clearance. Refer to wear limits, Section B. to determine the plates which should be replaced.

(9) Repeat s t e p s (5), (6) and (7), above. When the running clearance is within 0.0625 (1.588 mm) to 0.1125 inch (2.858 mm), remove snapping 1, clutch backing plate 2 and clutch plate 3 and 4. Retain the clutch plates as a package until required. Complete assembly procedures as outlined in c, below.

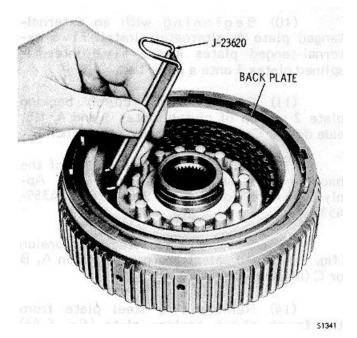


Fig. 6-42. Checking fourth clutch clearance

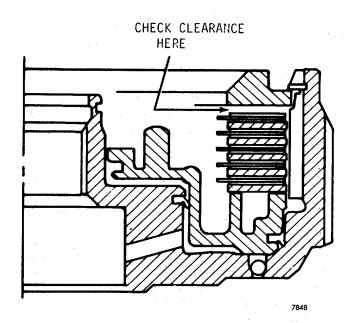


Fig. 6-43. Fourth clutch clearance check point

NOTE Steps 10 through 15, below, establish the clutch clearances prior to assembly.

(10) Beginning with an external-tanged plate 4, alternately install f i v e external-tanged plates 4 and f i v e internal splined plates 3 onto a press bed.

(11) P I a c e -fourth clutch backing plate 2 on top of clutch: plates 3 and 4, flat side down. Center the plates on the bench.

(12) Place: a steel plate on top of the backing plate, as shown in figure 6-44. Apply a compression load of 980-1020 lb. (43594537 N).

(13) Measure t h e stack dimension (fig. 6-44), and select the proper piston A, B or C (marked on piston).

(14) Remove t h e steel plate from the fourth clutch backing plate (fig. 6-44) and retain the clutch plate package until required.

(15) Install the piston as outlined in steps (1) through (4), above.

c. Assembly (B, foldout 6)

(1) Install sixteen return springs 7 onto their guide bosses on piston 8. Install spring retainer 6, spring, recess side first, onto the springs.

(2) Place the clutch assembly in a press, spring retainer upward. Lay snapping 5 in its approximate installed position, on spring retainer 6.

(3) Using compressor J-23616 compress the spring retainer until it clears the snapring groove in t h e housing hub (fig. 6-41). Install the snapping, and release the pressure f r o m the retainer. Remove the clutch assembly from the press.

(4) Beginning with an external-tanged plate, install the ten clutch plates from the pack removed in b (9) or (14), above.

(5) Install back plate 2 (B. foldout 6), flat side first, onto the clutch plates. Install snapping I to retain the back plate.

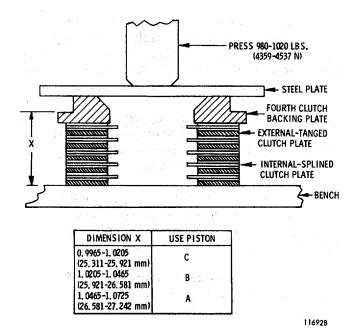
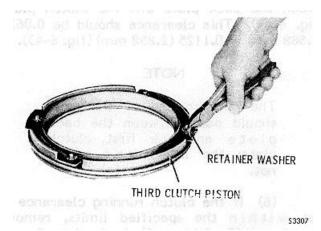


Fig. 6-44. Determining fourth clutch piston thickness





6-10. CENTER SUPPORT ASSEMBLY

<u>a.</u> <u>Disassembly</u>(A, foldout 7)

(1) Remove pistons 9 and 18 with attached parts, from center support assembly 13

(2) Remove eight retains r washers 6 and 21. Cut the retainer washers to prevent damaging the piston projections (fig. 6-45).

Ó 1980 General Motors Corp.

(3) Remove spring retainers 7 a n d 20. Remove twenty-four p i s t o n return springs 8 and 19.

(4) Remove piston inner sealring 10 and 17 from pistons 9 and 18.

(5) Remove piston outersealring 11 and 16 from piston 9 and 18.

(6) With the center s u pp o r t and bushing assembly 13 standing upright, remove the two hook-type sealrings 12.

(7) If parts replacement is necessary, place support and bushing assembly 13 in a press, sealring grooves side up. Press bushing 14 out of the support, being careful not to damage bushing bore.

NOTE Refer to paragraph 6-2, above.

b. Assembly (A, foldout 7)

(1) Place center support 15 in a press, sealring grooves side up. Using bushing tool J-24778, install bushing 14 as shown in figure 6-486 e sure the oil hole in bushing 14 is in properalinement with the oil hole in support 15.

(2) If a special bushing tool is not available, press bushing 14 flush to 0.010 inch (0.25 mm) below the surface adjacent to the bore. The bushing must withstand 500 pounds (2224 N) of end load specified in the direction of arrow A in figure 6-47 after assembly. To insure proper alinement of the oil hole in bushing 14 with the oil hole in support 15, t h e identifying notch of the bushing must lie in the area indicated in figure 6-47.

(3) Place pistons 9 and 18 (A, foldout 7) on the work table, with the four ejector pin bosses upward. Install piston return springs 8 in the twelve holes in third clutch piston 9. Install piston return springs 19 in the twelve holes in second clutch piston 18.

(4) Place spring retainers 7 and 20 on pistons 9 and 18 alining the four holes in

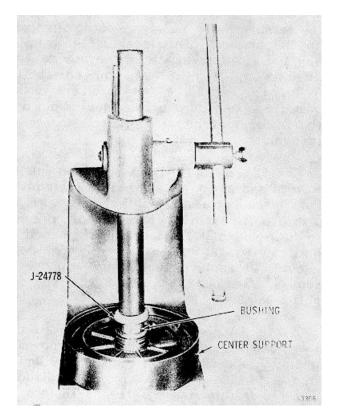


Fig. 6-46. Installing center support bushing

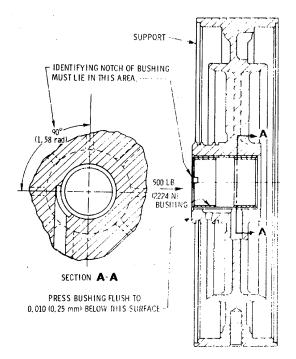


Fig. 6-47. Center support assembly

AT 540 SERIES AUTOMATIC TRANSMISSIONS

the retainer with the four ejector pin bosses on the pistons. Using tool J-24453, install eight new self locking retainer Washers 6 and 21 onto the eight ejector pin bosses trig. 6-48). Do not force the retainer washers past the upper third of the ejector pin until the piston movement is properly located in its bore.

(5) Install the assembled piston, springs and spring retainers into their piston bores in support assembly 13. Be sure the piston bottoms in its bore. Apply pressure to self locking retainer washers 6 and 21 until spring retainer 7 and 20 are seated against the outer edge of the support assembly. Remove the pistons from the support assembly.

(6) Apply oil-soluble grease to t h e inner and outer diameter sealring grooves on pistons 9 and 18. Install sealrings 10 and 17 into the inside diameter groove of pistons 9 and 18. Install sealrings 11 and 16 into the outside diameter grooves of pistons 9 and 18. Be sure the lips of the scalpings and the flat side of the piston face front planetary carrier assembly 5, and thrust washer 6 the same direction. Special care is required to prevent distortion, cutting or stretching of t h e sealrings.

(7) Install two hook-type sealrings 12 onto the hub of center support 15.

NOTE

Do not install the piston assemblies until the second and third clutch plate clearance checks are made (pare 7-4).

6-11. PLANETARY GEAR UNIT

a. Disassembly(fig. 6-49)

(1) Lay the planetary gear unit on its side on the worktable. If not done previously, remove sun gear shaft assembly 1, thrust washer 2 and front planetary sun gear 3.

(2) Remove front planetary carrier assembly 5 from ring gear B.

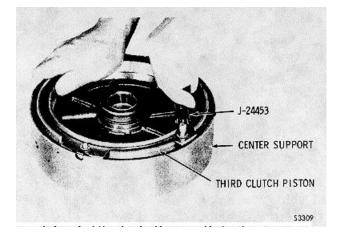


Fig. 6-48. Installing self-locking retainer washer

(3) Remove selective thrust washer 4 from from center planetary carrier assembly 9. Refer to paragraph 6-13 for rebuild of f r o n t planetary carrier assembly.

(4) Remove snapring 7 which retains front planetary ring gear 8 to planetary connecting drum 19. Remove ring gear 8 and center planetary carrier assembly 19 from drum 19. Refer to paragraph 6-1} for rebuild of center planetary carrier assembly.

(5) Remove c e n t e r planetary sun gear 10 and thrust washer 11.

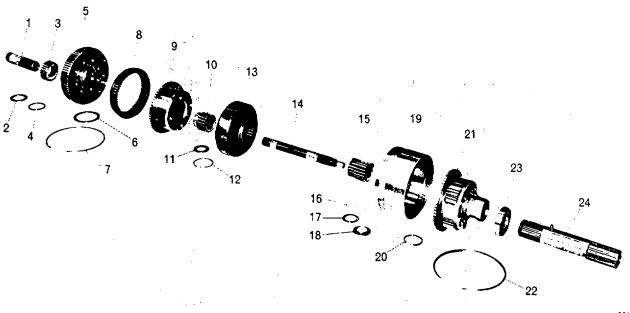
(6) Remove main shaft assembly 14. Remove snapring 12, center ring gear 13, spiral retaining ring 16 and rear sun gear 15.

(7) Remove retaining ring 22 that holds rear planetary carrier assembly 21 to planetary connecting drum 19.

(8) Remove output shaft assembly 24.

(9) Remove needle bearing assembly 17 and bearing race 18 located between output shaft 24 and rear sun gear 15.

(10) Place the output s h a f t on a work bench in a vertical position (rear planetary carrier up). If necessary force the



\$2655

- 1 Sun gear shaft assembly
- 2 Thrust washer
- 3 Front planetary sun gear
- 4 Selective thrust washer
- 5 Front planetary carrier assembly
- 6 Thrust washer
- 7 Front planetary ring gear snapring
- 8 Front planetary ring gear
- 9 Center planetary carrier assembly
- 10 Center planetary sun gear
- 11 Thrust washer
- 12 Center ring gear retaining snapping
- 13 Center ring gear

- 14 Transmission main shaft
- 15 Rear sun gear
- 16 Main shaft retaining ring
- 17 Needle bearing assembly
- 18 Needle bearing race
- 19 Planetary connecting drum
- 20 Rear planeary carrier retaining ring (output shaft to carrier)
- 21 Rear planetary carrier assembly
- 22 Rear planetary carrier retaining ring (connecting drum to carrier)
- 23 Ball bearing assembly
- 24 Transmission output shaft

Fig. 6-49. Planetary gear unit

planetary carrier down until retaining ring 20 is clear of the gear is not included in the planetary gear unit. Refer to carrier. Remove the retaining ring and bearing 23.

(11) Remove rear carrier assembly 21 from the output shaft.

(12) On models before S/N 5071, remove the spiral retainer ring and thrust washer that retain the rear shaft 4. planetary ring gear to the carrier assembly. Remove the ring gear and the thrust washer between the ring gear and the carrier (fig. 6-54). On models after S/N 5070, the ring

paragraph 6-13 for rebuild of the rear planetary carrier assembly. (13) If parts replacement is necessary, remove

spring pin 51 (B. foldout 7), bushing 48 and orifice plug 50 from output shaft 49 and two bushings 3 from sun gear

> NOTE Refer to paragraph 6-2, above.

b. Assembly (fig. 6-49)

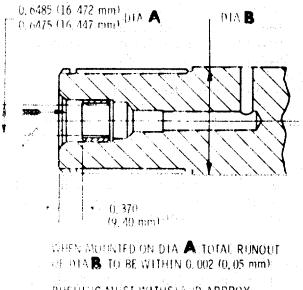
NOTE

Items (1) through (5), below, explain the assembly of parts i illustrated in B. foldout 7. Items (6) through (8) and (11) through (253 illustrate parts in figure 6-49. Items {9) and 10) illustrate parts in figure 6-51.

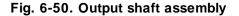
(1) If orifice e plug 50 (B, foldout 7) was removed from output shaft 49, install a new, plug Press the plug clear of chamber.

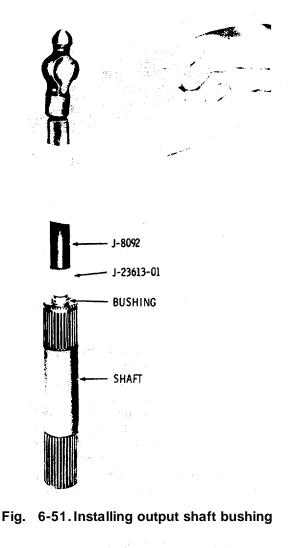
(2) If bushing 48 was removed, install a new bushing into output shaft 49, following the specifications in figure 6-50. Bushing install J 23613-01 can be used (fig. 6-51).

() If bushings 3 (B, foldout 7) were removed from sun gear shaft 4, install new bushings, following the specifications in fig. 6-52. Bushing installer J23614 can be used (fig. 6-53)



BUSHING MUSE WITHSTAND APPROX. 350 FR (1577 DECOAD IN DIRECTION SHOWN





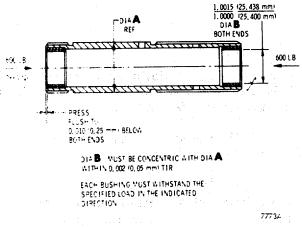
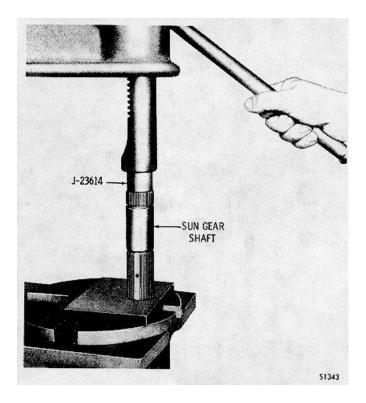


Fig. 6-52. Sun gear shaft and bushings

(4) If bushing 16 (B., foldout 7) was damaged or distorted replace the carrier assembly.



(5) If spring pin 51 was a removed from output shaft 49, install a new pin. The pin must not extend beyond 0.160-inch (4.06 mm) from shaft surface.

(6) Install rear planetary sun gear 15 (fig. 6-49) onto main shaft 14, smaller end first. Secure the sun gear to the main shaft with spiral retaining ring 16.

(7) Install center ring gear, 13, concave side forward, onto the rear sun gear and secure with snapping 12.

(8) Install the rear planetary carrier assembly 21 into planetary carrier connecting drum, 19 and secure the carrier with retaining ring 22. (Note the broad groove in the drum outer diameter is away from the carrier.)

(9) On models after S/N 5070, proceed to item (11), below. On models before S/N 5071, use figure 6-54 as a guide and install a spacer washer and the rear planetary ring gear onto the hub of the rear ear planetary carrier.

Fig. 6-53. Installing sun gear shaft bushing

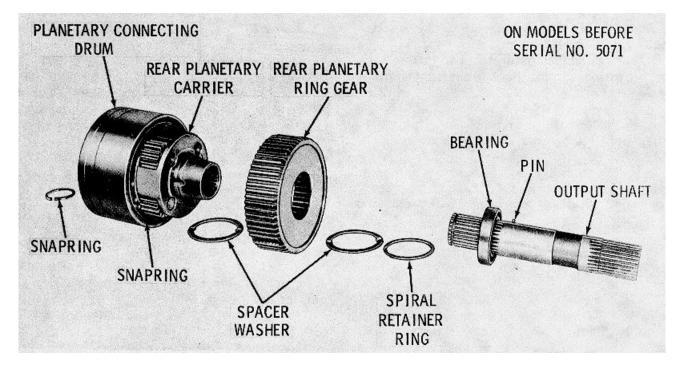


Fig. 6-54. Rear planetary (prior to S/N 5071)

(10) Install the remaining spacer washer and spiral retainer ring to secure the rear planetary ring gear.

(11) Install ball bearing assembly 23 (fig. 6-49) over the snapping groove end of output shaft t 24. Install output shaft 24 (snapping groove first) into rear planetary carrier assembly 21. Secure it with retaining ring 20.

(12) Install positioning tool J-2371801 over the output shaft and retain with a 1/2-20 bolt (fig. 6-55). Tighten the bolt to 30 lb ft (40 N.m)

(13) Lubricate race 18 (fig. 6-49) and bearing assembly 17 w i t h oil-soluble grease. Install the race and bearing onto the output shaft adjacent to the rear sun gear.

(14) Install main shaft assembly 14 into rear planetary carrier 21. Index sun gear 15 with the pinions of the rear planetary carrier.

(15) Install thrust washer 11 (fig. 6-49) against the front side of the rear sun gear.

(16) Install center planetary carrier assembly 9,smaller diameter end first, into planetary connecting drum19. Index the carrier splines with the splines in the connecting drum.

(17) Install c e n t e r sun gear 10, larger end first against thrust washer 11.

(18) Install front planetary ring gear 8, larger diameter end first, into planetary connecting drum 19 and secure with snapping.

(1) Lubricate and install thrust washer 6 around the hub of front planetary carrier 5.

(20) Install f r o n t planetary carrier assembly 5 (f ig. 6-49) onto center sun gear 10.

(21) Determine the measurement of dimension "A" (fig. 6-56) by using a depth micrometer. Take the measurements shown

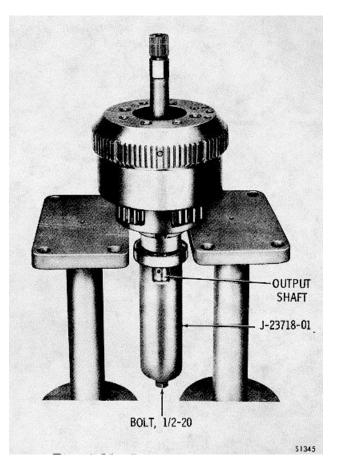


Fig. 6-55. Planetary gear unit assembled for measuring for selective thrust washer

in figures 6-57 and 6-58. The difference between these two measurements is dimension "A". Select the correct thrust washer (fig. 6-56).

(22) Remove position in 9 tool J-23718-01 from output shaft installed in (12) above.

(23) Lubricate and install thrust washer 4 (selected in step (21), above) onto center sun gear 10 (fig. 6-49).

(24) Install front planetary sun gear 3, spline chamfer first, into front planetary carrier assembly.

NOTE

Thrust washer 2 (fig. 6-49) and sun gear shaft assembly 1 will be installed after the gear unit is installed into the transmission.

REBUILD OF SUBASSEMBLIES

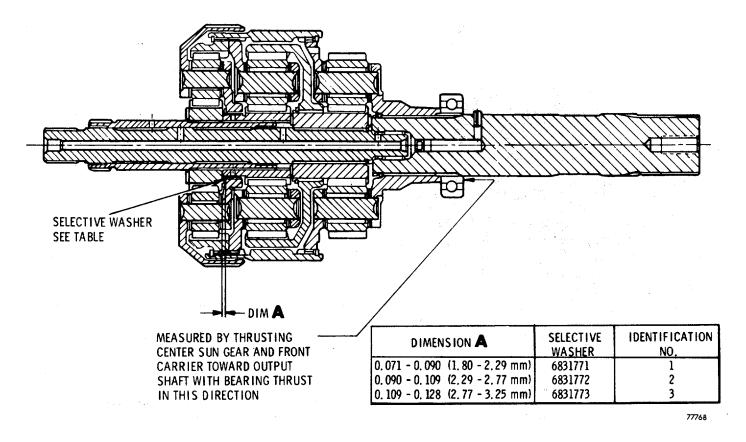
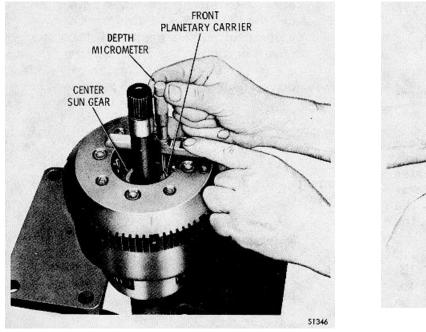


Fig. 6-56. Selection of planetary gear unit thrust washer



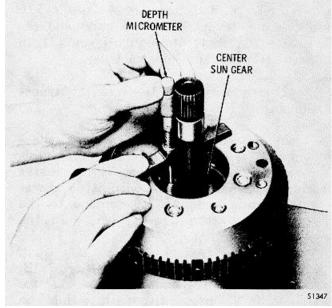


Fig. 6-58. Measuring to front of center--planetary sun gear

Fig. 6-57. Measuring depth of front planetary carrier

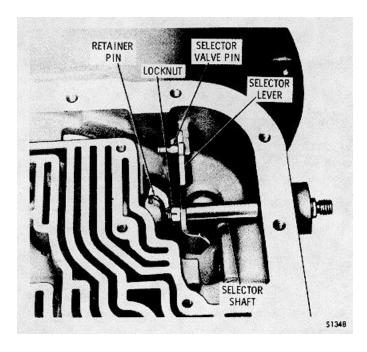


Fig. 6-59. Selector shaft components

6-12. TRANSMISSION CASE

a. Disassembly(B. foldout 9)

(1) To remove the manual shift lever, use the following procedure: Remove retainer pin 26 and locknut 27 (fig. 6-59). Hold selector lever 28 in one hand and remove selector shaft through oil seal 31 in the case. Remove the selector lever.

(2) Remove seal 31 from the transmission case.

(3) Do not remove snapping 5 unless replacement is necessary. Traces of aluminum on the outer race of bearing 4 indicates rotation of the outer race nameplate 4, remove one drive screw. within the transmission housing and possible damage to the snapping and to the bearing b o r e in the transmission housing.

(4) Do not remove breather 7 (B, foldout 8) from transmission case 11 for cleaning. It is press fit, a n d should be cleaned while in the case.

(5) Check governor support pin 12 for evidence of wear. If damaged, replace the pin (fig. 6-60).

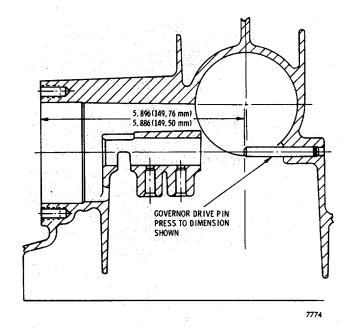


Fig.-6-60. Governor support pin location

NOTE

The alinement of the governor pin with the governor bore in the transmission case is critical. The governor must rotate freely, without interference with either the case bore or the pin. Any interference will result in damage to the governor body, the bore in the case and/or the governor driven gear.

(6) Inspect test plugs 8 and 13 (B. foldout 8). Replace if damaged.

(7) If it is necessary to replace a damaged

NOTE

All replacement parts ordered refer to the information on the nameplate. Therefore it is imperative that the new nameplate be stamped with identical information.

NOTE

Refer to paragraph 6-2 above.

REBUILD OF SUBASSEMBLIES

b. Assembly (B. foldout 8)

(1) If snapring 9 was removed, install a new snapping. Be sure to inspect the bore, into which bearing 4 (B. foldout 9) fits for damage.

(2) Coat the inside diameter of l seal 34 (B. foldout 9) with oil-soluble grease and coat the outside diameter of the seal with anonhardening sealant. Install the seal, lip first, into transmission case 11 (B. foldout 8), using special installer J-26282. Figure 6-61 shows the installation.

(3) Holding selectorlever 31 (B. foldout 9) so that the selector valve pin is facing the inside of the case, slide selector shaft 33 through the opening in case 11 (B. foldout 8), oil seal 34 (B. foldout 9), and the slot in selector lever 31. Attach locknut 30 and retainer pin 29 (fig. 6-59). Tighten the locknut to 15-20 lb ft (20-27 N m).

(4) Replace breather 7 (B. foldout 8) if there is any evidence of damage. It is pressed into the case.

(5) If governor support pin 12 was removed at disassembly, install a new pin using tool J-28664. If the tool is not available install the pin to dimensions shown in figure 6-60. Refer to the note following a(5), above.

6-13. PLANETARY CARRIER ASSEMBLIES

NOTE

The disassembly and assembly procedures f o r all planetary carrier assemblies differ only in identifies the carrier involved (front, center, rear). If the tool is common to all the planetary carrier assemblies, its number will be identifies the carrier involved (front, center, rear). If the tool is common to all the planetary carrier assemblies, its number will be identifies the carrier involved (front, center, rear). If the tool is common to all the planetary carrier assemblies, its number will be the proper tool selection for the specific application. The chart near the e n d of paragraph 613 shows t h e tool number required for a specific application and

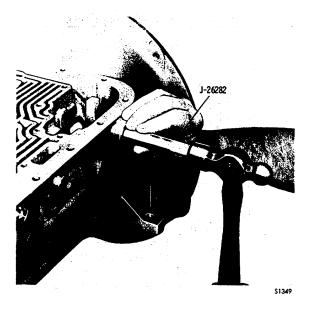


Fig. 6-61. Installing selector shaft oil seal

listed in the text. If the tool is not common, the text will refer to the chart. For planetary carrier detailed information, refer to the exploded views at the back of this manual.

a. Assembly Inspection

(1) Visually inspect planetary carier assembly for evidence of excessive wear, indications of overheating, damage or heavy metal contamination.

(2) Check end play of planetary carrier pinions. With washer held flat, insert feeler gage between the carrier and thrust washer. End play must be within 0.008 to 0.031 inch (0.20 to 0.79 mm).

NOTE

Do not disassemble carrier assembly unless parts replacement is necessary. Failure of one pinion requires replacement of the entire matched pinion gear set.

b. Removal of Pinion Components

NOTE

The hydraulic press, used with J-25587-01 Planetary Rebuilding Set, should have a five-ton capacity, an adjustable press bed of 25-inch (635 mm) minimum opening and a pressure gage to assist in determining proper installation and staking of the pinion pins.

(1) Using a drill that is slightly smaller than the pinion pin diameter, drill into the swaged end on the pins (only one end required). Do not drill into the carrier. The rear ends of all pinion pins except those in the c e n t e r carrier assembly will be drilled. Drill the front ends of the center assembly pins.

(2) Place press fixture J-25587-1 in a hydraulic press. Select the proper spacer and adapter, if required, from the tool chart below. Position t h e s e parts (if - used) to support the carrier assembly (drilled ends of pinion pins upward) solidly on the press fixture.

(3) Install p i n remover J-25587-16 into the ram of the press fixture. Press the pinion pins from the carrier assembly.

(4) Remove the pinion groups,- cons i s t i n 9 of pinions, bearings, and thrust washers.

c. Replacing Bushing in Front Planetary Carrier

NOTE

Depending upon the amount of labor (machining bushing), time, part replacement, and extent of rework, complete replacement of the assembly may be warranted.

(1) Fabricate six dummy pins to dimensions shown in figure 6-62.

(2) Place the front carrier on a work table, rear downward.

(3) Press the bushing from the carrier. Do not scratch or score the bushing bore. (Refer to pare 4- 5f(1)

(4) Place the carrier in a press, rear downward.

(5) Apply Loctite Sleeve Retainer No. 601 (or equivalent) to the outer diameter of a new bushing. Install the bushing using tool J-28501. Press the bushing flush to 0.010 inch (0.25 mm) below its adjacent surf ace (fig. 6-62).

(6) Using a lathe with a four jaw chuck, mount the carrier with surface: (A) facing the chuck. Insert the six fabricated dummy pins (fig. 6-62) into the pinion pin holes. Adjust the chuck, centering the carrier based on surface (B) and the runout of the dummy pins.

PLANETARY CARRIER ASSEMBLY REBUILD TOOL CHART

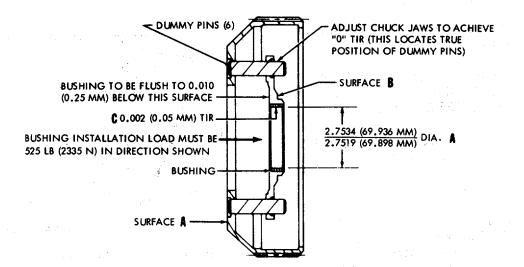
Note

All tools have a basic number (J-25587) and a suffix. Only the suffix is shown below. The figures in parentheses are quantities required.

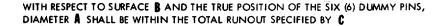
Planetary Carrier Assy	Support Block	Pin Remover	Pin Remover & Installer Adapter	Pin Remover & Installer Spacer	Loading Pin	Guide Pin	Pin Installer	Swaging Tool Holder	Swaging Tool
Front	-4	-16			-22 (4)	-50 (4)	-14	-17	-27 (2)
Center	-1	-16			-20 (4)	-49 (4)	-10	-17	-25 (2)
Rear	-3	-16	-2	-6	-20 (4)	-49 (4)	-10	-17	-25 (2)

Tools in the chart above are components of planetary rebuilding kit J-25587-01. Refer to paragraph 4-2.

REBUILD OF SUBASSEMBLIES



DIAMETER & MUST BE PERPENDICULAR WITH SURFACE B WITHIN 0.001 (0.02 MM) TIR.



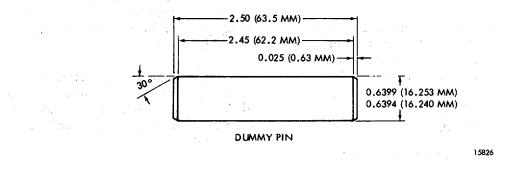


Fig. 6-62. Front carrier assembly bushing installation

(7) Total runout of bushing after boring must not exceed 0.010 inch (0.25 mm). Use figure 6-62 as a guide.

d. Installation of Pinion Components

NOTE

The hydraulic press, used with J-25587-01 Planetary Rebuilding Set, should have a five-ton capacity, an adjustable press bed of 25-inch (635 mm) minimum opening and a pressure gage to assist in determining proper installation and staking of the pinion pins.

(1) Assemble all the pinion groups for the carrier assembly. Each group is assembled by inserting

the proper loading pin into the bore of the pinion, installing the needle roller bearings around t h e loading pint installing a steel thrust washer at each end of the pinion, and installing a bronze thrust washer onto each steel thrust washer.

NOTE

Lubricate needle rollers and thrust washers before assembling the pinion groups.

(2) Position the carrier assembly rear end upward except the center carrier. Install all pinion groups into the planetary carrieralining the loading pins with the pin bores in the carrier.

(3) Install the proper pinion guide pinsalger diameters first, into the pinion

pin bores. Push the guide pins through the carrier until the loading pins drop out.

(4) Position the carrier assembly on the press fixture, using pin remover and installer adapter J-25587-2 (if required).

(5) Select the proper pin installer, and install it into the press fixture ram.

NOTE

Pin installers a r e shaped to avoid interference with bosses on the carrier assemblies. They must be installed in the ram so that the cutaway portion of the installer will clear the bosses when the pinion pin is pressed in.

(6) Place a pinion pin onto the pilot end of the the carrier while the lower spin guide located below the press fixture ram. Press the lower end of one pinion pin. pinion pin into the carrier until the installer contacts the carrier. (10) Apply sufficien

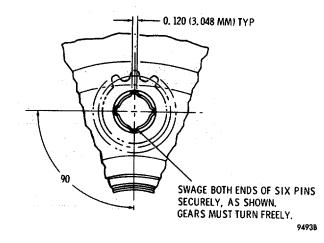
CAUTION

Do not put pressure on the carrier. Distortion of the carrier will damage it.

(7) Install the remaining pinion pins as instructed in the preceding paragraph.

(8) Remove the carrier assembly from the press fixture. Install - swaging tool holder J-25587-17 into- the opening of the press fixture bed. Install a swaging tool into the holder. Install another swaging tool into the press fixture ram. Lubricate both ends of the pinion pins with oil-soluble grease.

(9) Position the carrier assembly, rear end upward-<u>except the center carrier</u>,





on the press fixture. Use the proper support block to level the carrier while the lower swaging tool is supporting the lower end of one pinion pin.

(10) Apply sufficient pressure to the press fixture ram to firmly swage the ends of the pinion pins against the metal of the carrier. Figure 6-63 illustrates a typical swage pattern.

> NOTE Swaging pressure varies with -the the pins size of pinion (approximately two tons for front carriers; three tons for center and rear carriers). While applying pressure, rotate the pinions and feel for reduction of end play. The pinions must rotate freely and have 0.008 inch(0.20 mm)minimum end play after swaqing the- pins.

(11) Swage the remaining pinion pin ends as instructed in (14), above.

7-1. SCOPE OF SECTION 7

This sect ion covers assembly of the AT 540, AT 543 and AT 545 transmissions. Procedures that differ in the two models, or procedures that apply to only one model, are check may be in excess of the required dimension. Do identified. Procedures common to b o t h models have no model identification.

7-2. SELECTIVE COMPONENTS

a. Establish Clearances

(1) Several components are available in graduated lengths or thicknesses to pro de the proper running clearances. These components are selected by taking measurements at certain stages in the assembly of the transmission.

(2) Alternate methods for establishing clutch plate running clearances are introduced below. Their application simplifies assembly rebuild where production methods are used.

(3) The components which are selected during assembly of the transmission are tabulated below.

<u>ltem</u>	*Part <u>Number</u>	Illustration
Thrust washer	6B31620	33 (B. foldout
	thru	5)
	6831625	,
Snapring	6836545	5 (A, foldout
	thru	7)
	6836548	,
Second and	6837603	2, 26 (A, fold
third clutch	and	out 7)
back plate	6831644	,
First clutch	6831707	2 (A, foldout
back plate	thru	8)
•	6831709	,
Spacer	6834648	3 (B. foldout
•	thru	9)
	6834653	/

*Order from current parts catalog SA 1235.

b. Clutch Plate Stack

(1) An initial clutch plate runningclearance not install a thicker back plate if excess clearance can be eliminated by installing new clutch plates.

(2) Refer to wear limits, Section 8 for clutch running clearance.

7-3. INSTALLATION OF FIRST CLUTCH AND GEARING

a. First Clutch

(1) Place the transmission case assembly into the holding fixture (fig. 5-2), converter housing upward.

(2) Place inner seal protector tool J-24216-01 over the hub in the transmission housing (fig. 7-1).



Fig. 7-1. Installing first clutch piston

(3) Install the inner and outeriptype sealrings seven external anged 4 splined clutch piston. The lips of both splined clutch plates 3.
 sealrings must face toward the rear of the transmission.
 Lightly lubricate the surface of the piston bore and protector J-24216-01 with Dexron oil before installation.

(4) Install the piston a n d sealrings into eth transmission case rear bore, engaging the piston tang into the slot in the case (fig. 7-1). Be sure the lip of the sealring on the outside diameter of the piston is not distorted. Remove the protector tool.

(5) Install 22 springs into the recesses in the piston. Install the spring retainer onto the springs (fig. 7-2).

(6) Lay the spring retainer snapring on the spring retainer (fig. 7-2).

(7) Install spring compressor J-23630-01 into the rear bearing bore of the transmission case (fig. 7-2). Check the springs for proper alinement.

(8) Tighten the wing-nut on the spring compressor until the spring retainer clears t h e snapring groove. Spread the snapring, and install it into its groove. Remove the spring compressor.

NOTE

Refer to steps (9) and (10) for assembly of transmissions prior to S/N 507 I. Refer to steps (11) through (13) for assembly of transmissions after S/N 5070. Steps 14 through 16, below, explains: a method for establishing the first clutch clearance with the plates installed in the transmission. Steps 17 through 21, below, explain alternate method, before the clutch is installed.

(9) On models before S/N 5071 install all fourteen clutch plates into the transmission as follows. Beginning with an externation ged plate, alternately install

seven externaltanged 4 (A, foldout 8) and seven internalsplined clutch plates 3.

CAUTION

The first clutch retaining snapring must be installed with the snapring gap at the 12 o'clock position, viewed from the front of the transmission housing. The snapring can become disengaged f r o m its groove if the gap is not properly located.

(10) Install the clutch back plate (w i d e surface down) and secure with a snapring (fig. 7-4). Refer to step (14) and continue rebuild.

(11) After S/N 5070 place the first ring gear on a work table, extended teeth down. Beginning w i t h an internal-splined plate, alternately install six internal-splined and six externatanged clutch plates onto the rear ring gear (fig. 7-3).



Fig. 7-2. Installing first clutch spring retainer snapring

7-2

ASSEMBLY OF TRANSMISSION

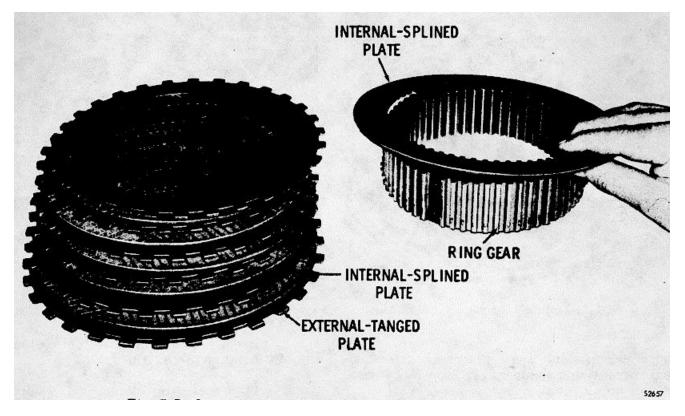


Fig. 7-3. Installing first clutch plates onto rear ring gear

(12) Pick up the gear and assembled plates. Invert the assembly. Aline the tangs of the external clutch plates on the ring gear and install the gear and plates into the transmission as a package. Be sure the extended teeth on the ring gear are at the top of the gear after installation.

CAUTION

The first clutch plate retaining snapping must be installed with the snapping gap at the 12 o'clock position, viewed from the front of the transmission housing. The snapping can become disengaged from its groove if the gap is not properly located. -

(13) Install the two remaining clutch plates, external-tanged plate first. Install the clutch back plate (wide surface down) and secure it with a snapping (fig. 7-4).

(14) Using clutch clearance gage J-23715 check the clearance between snapping and the back plate (fig. 7-5). The smaller end of the gage should go into the clearance while the larger end should not.

NOTE

The prescribed clearance range for the first clutch is 0.0405 to 0.1005 inch (2.553 to 1.029 mm).

(15) If the clearance is excessive (larger end of gage will pass between the snapping and the back plate), new plates may be installed to reduce the clearance. If the clearance is still excessive after new internal-splined and external-tanged clutch plates are installed, a thicker back plate is required.

(16) If the clearance is insufficient (small end of gage will not enter), a thinner back is required.

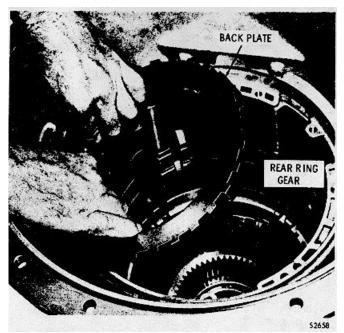


Fig. 7-4. Installing first clutch back plate

Back plates are stamped with identifying numbers (1, 2 or 3). Thicknesses are as follows:

Identification 1 0.683 to 0.693 in. thk (17.35 to 17.60 mm) Identification 2 0.647 to 0.657 in. thk - (16.43 to 16.69 mm) Identification 3 0.611 to 0.621 in. thk (15.52 to 15.77 mm)

NOTE

Steps 17 through 21, below, explain an alternate method to establish clutch plate running clearance before the clutch is installed.

(17) Place first clutch piston 9 (A, foldout 8) on a press bed, spring pocket side up. Support the piston with a flat plate, placed between the press bed and the piston.

(18) Beginning with external-tanged plate 4, alternately place seven external plates and seven internal-splined plates 3 on

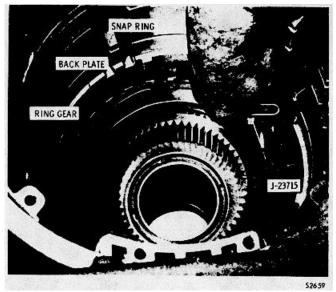


Fig. 7-5. Checking first clutch running clearance

top of piston 9. Place a flat steel plate on top of the clutch plates (fig. 7-6).

(19) Center the plates on the bench. Apply a compression load of 980 to 1020 lb (4359 to 4537 N).

(20) Measure t h e stack dimension. Refer to figure 7-6 and select the proper back plate 1, 2 or 3 (stamped on plate).

(21) Remove the steel plate from the top of the clutch plates. On models before S/N 5071, refer to items (2) through (10), below, for rebuild. On models after S/N 5070, refer to items (2) through (8), and (11) through (13).

b. Planetary Gear Unit

(1) Models before S/N 507 i include the rear planetary ring gear as part of the planetary gear unit, and should be assembled as follows:

(2) Aline all seven of the internal splined plate of the first clutch pack. Grasp the gear unit (as assembled in pare 6-11) by the main shaft and install into the transmission case (fig.7-7).

ASSEMBLY OF TRANSMISSION

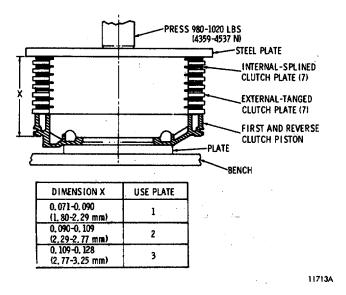


Fig. 7-6. Determining first clutch back plate thickness

NOTE

Application of air pressure to the first clutch, after installing the gear pack, will lift the ring gear (and gear pack) slightly if all splined plates are not engaged.

(3) On models after S/N 5070, grasp the planetary gear unit by the main shaft and lower the unit into the transmission (fig. 7-7). Mesh the internal teeth of the previously installed rear ring gear (para 7-3a(11) through (13)) with the rear planetary carrier pinion teeth. Be sure the unit bottoms.

(4) Install sun gear shaft assembly (long splines first) and front sun gear thrust washer (fig. 7-8).

7-4. INSTALLATION OF SECOND CLUTCH AND CENTER SUPPORT

a. <u>Second Clutch(A, foldout 7)</u>

(1) Establish the proper clutch running clearance, as outlined in (2) through (6), below. If new clutch plates are - used, see items (7) through (9), below.

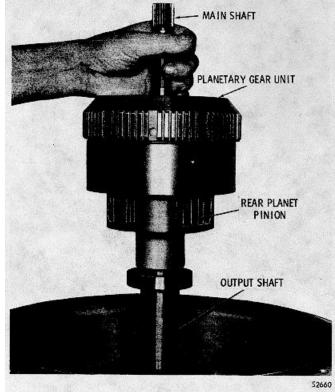


Fig. 7-7. Installing planetary gear unit

(2) Support the second clutch piston, convex (front) side downward on a flat surface of a press bed. Stack three external-tanged clutch plates, and three internal clutch plates, alternately, onto the apply face of piston (fig. 7-9).

(3) Place a flat plate upon the stacked plates. With a press, apply 980 to 1020 pounds (4359 to 4537 N) force against the plate.

(4) While the force is applied, measure the combined thickness of the piston and six clutch plates, designated "X" on figure 7-9.

(5) Note the identification number (I or 2) stamped on back plate 26 (A, foldout 7). When the identification number is 2, if dimension "X" (fig. 7-9) is not within 1.5165 to 1.5425 inches (38.519 to 39.180 mm), replace worn plates 24 and/or 25 with new plates as required to obtain the specified measurement.

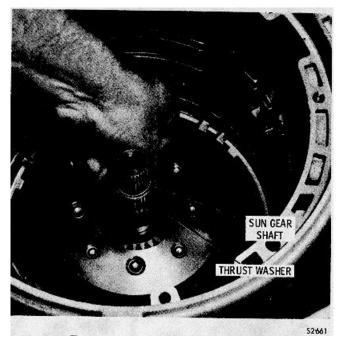


Fig. 7-8. Installing sun gear shaft assembly and thrust washer

Refer to wear limits, Section 8, for clutch plate dimensions.

(6) When the back plate identification number is 1, if dimension "X" (fig. 7-9) is not within 1.4905 to 1.5165 inches (37.859 to 38.519 mm), replace w o r n plates 24 and/or 25 with new plates as required to obtain the specified measurement. Refer to wear limits, Section 8, for clutch plate dimensions.

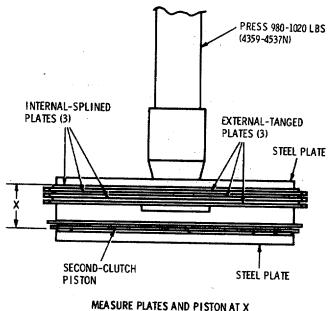
NOTE

If new clutch plates are used, follow items (7) through (9), below.

(7) Repeat item s (2), (3) and (4), above.

(8) If the X measurement is within 1.5165 to 1.5425 inches (38.519 to 39.180 mm), use back plate 26 (A, foldout 7), with the stamped identification number 2.

(9) If the X measurement is within 1.4905 to 1.5165 inches (37.859 to 38.519



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Fig. 7-9. Checking second clutch plate running clearance

mm), use back plate 26, with the stamped identification number 1.

(10) Install the second clutch piston into the rear bore of the center support assembly.

(11) Install the second clutch back plate (fig. 7-10). Note the location of the single tang in the single slot in the transmission case.

(12) Beginning with an internal splined plate, alternately install three internal-splined, and three external-tanged clutch plates (fig. 7-10). The single tangs of the clutch plates must aline with the single tang of the back plate.

(13) Install the 0.155 to 0.157 in. (3.94 to 3.99 mm) thick green snapping that retains the second clutch plates (fig. 7-11). The snapping gap should be located at the 12 o'clock position of the transmission case.

b. Center Support Assembly

(1) If the center support contains the third clutch piston, remove it.

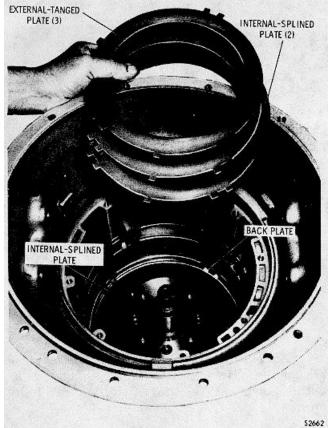


Fig. 7-10. Installing second clutch plates

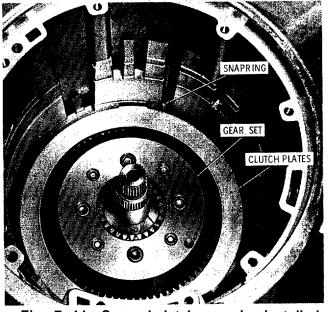


Fig. 7-11. Second-clutch snapping installed

(2) Install the remaining assembly (center support, second clutch piston, etc.) into the transmission case. Use the center support lifting bracket J-23643 to lower the assembly into the transmission case (fig. 7-5). Be sure the tapped hole in the support is alined with the bolt hole in the bottom of the case.

(3) Remove the lifting bracket. Temporarily install the original $3/8-16 \times 1$ inch anchor bolt into the support. Tighten the bolt finger tight.

(4) Install the c enter support compressor J-23717, as shown in figure 7-12. Use two of the $5/16-18 \times 1$ 3/4-inch oil pump assembly retaining bolts to retain the compressor.

(5) Tighten the compressor bolt to 5 lb ft (fig. 7-12).

(6) Using snapping 9 a 9 e J-23717-4, measure the snapping groove clearance (fig. 7-13). The gage has four lugs of different thicknesses. Try all four lugs into the groove. The thickest lug which will enter the groove indicates the thickness of the snapping required.

(7) Select a snapping,- as shown below:

Gage	Snapring	Snapring
lug	color	thickness
Blue	Blue	0.148 to 0.150 in.
		(3.76 to 3.81 mm)
Yellow	Yellow	0.152 to 0.154 in.
		(3.86 to 3.91 mm)
Green	Green	0.155 to 0.157 in.
		(3.94 to 3.99 mm)
Red	Red	0.158 to 0.160 in.
Red	Nou	(4.01 to 406 mm)

(8) Remove the center support compressor.

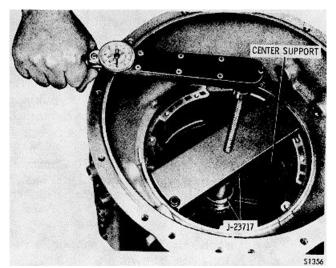


Fig. 7-12. Compressing center support for snapring measurement

(9) Attach -center support lifting bracket J-23643. Remove the anchor bolt from the bottom of the transmission case. Remove the center support. Place the center support on a work table and clean the piston bore of all foreign matter.

(10) Lubricate he sealrings of the third clutch piston. Lubricate the piston bore in the center support. Install the piston and its attached parts, engaging the small lug on the third clutch spring retainer with the slot in the center support. Be sure the lips of the sealrings face the bottom of the piston cavity in the center support.

NOTE

Both the second and third clutch pistons must bottom in their respective bores. Failure to bottom will affect transmission performance.

(11) Attach the center support lifting bracket to the center support and carefully lower the support into the transmission case, as shown in figure 5-15. During installation, aline the threaded hole in the support with the hole in the bottom of the transmission case. Install the plain washer and a new $3/8-16 \times 1$ -inch anchor bolt into the support. Tighten the bolt, finger tight.

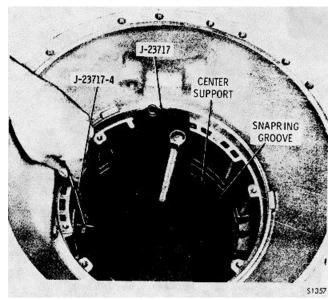


Fig. 7-13.- Measuring for selection of center support snapring

(12) Install the snapping selected in (7), above. Be sure the snapping gap is located toward t h e top of the transmission case.

NOTE

It may be necessary to use the center support compressor to install the snapring.

7-5. INSTALLATION OF REAR BEARING SPACER AND FOURTH CLUTCH

a. Selecting, Installing Rear Bearing Spacer

 (1) Install - the sun gear shaft retainer J-24352 onto the transmission main shaft (fig. 7-14). = Be sure retainer sleeve is seated on sun gear shaft while: tightening thumb screw.

(2) Position the transmission, rear end upward. upward. Install Install the governor drive gear, engaging its: slot with the pin in- the output shaft (fig. 7-15).

(3) Install the speedometer d r i v e gear onto the output shaft.

ASSEMBLY OF TRANSMISSION

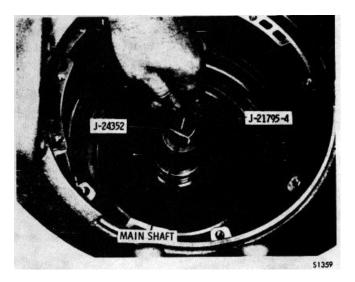


Fig. 7-14. Installing sun gear shaft retainer

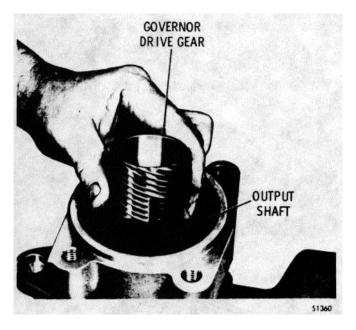


Fig. 7-15. Installing governor drive gear

(4) Using a soft drift, tap against the speedometer drive gear to seat all the installed components.



Fig. 7-16. Measuring for selection of ring bearing spacer

(5) Loosen the thumbscrew on the spacer selection gage 15 (fig. 4-2) and position the gage against the output shaft (fig. 7-16). Push the straight member of the gage against the rear of the speedometer drive gear. Push the lipped member against the rear bearing front snapping. When the gage is in firm contact with these parts, and the concave s i d e of the straight member is firmly against the output shaft, tighten the thumbscrew.

(6) Remove t h e gage, and using a depth micrometer, measure the distance from the end of the straight member to the lip of the curved member. Use this dimension to select t h e proper rear spacer, as listed in t h e following chart. Install the spacer.

<u>Micrometer</u>	Use	
<u>To</u>	spacer	Marked
1.0138in.	6B34648	1 Groove
(25.750 mm)		
1.0273in.	6834649	2 Grooves
(26.093 mm)		
1.0408 in	6834650	3 Grooves
(26.4-6 mm)		
1.0543 in.	6834651	4 Grooves
(26.779 mm)		
1.0678in.	6834652	5 Grooves
(27.122 mm)		
n) 1.0813in.	6834653	6 Grooves
(27.465 mm)		
	<u>To</u> 1.0138in. (25.750 mm) 1.0273in. (26.093 mm) 1.0408 in (26.4-6 mm) 1.0543 in. (26.779 mm) 1.0678in. (27.122 mm) 1.0813in.	To spacer 1.0138in. 6B34648 (25.750 mm) 1.0273in. 1.0273in. 6834649 (26.093 mm) 1.0408 in 1.0408 in 6834650 (26.4-6 mm) 1.0543 in. 1.0543 in. 6834651 (26.779 mm) 1.0678in. 1.0678in. 6834652 (27.122 mm) 1.0813in.

(7) Using bearing install J-24446, install the rear bearing as shown in figure 7-17. Install the beveled snapping, flat side down.

(8) Check the end play of the transmission output shaft as follows.

(9) Place t h e first clutch spring compressor base J-236-0-01, flange side down on the output shaft (fig. 7-18). Secure the base to the output shaft with a 1/2-20 bolt. Tighten the bolt to 15 lb ft (20 N m).

(10) Lift the output s h a f t with a screwdriver (fig. 7-18) and measure the distance from the top of the flange to the rear of the transmission. Release the output shaft and repeat the measurement. A minimum of 0.015-inch (0.38 mm) and a maximum of 0.042-inch (1.07 mm) is acceptable.

NOTE

A dial indicator, shown in figure 7-18, or a depth micrometer may be used to establish minimum and maximum measurement.

(11) Remove the spring compressor base, turn it over, and reinstall it. Tighten the center bolt to 15 lb ft (20 N.m). Aline the spring compressor base with the two parking brake mounting holes in the transmission case (fig. 7-19). Install two 1/2-13 bolts through the base and into the case. Tighten-these bolts evenly to 5-8 lb ft (7-11 N.m). This positions the gear pack and all components for an accurate selective thrust washer measurement in paragraph 7-7.

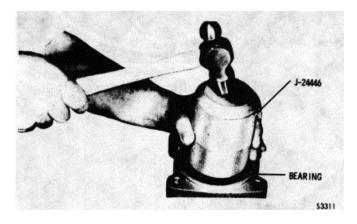


Fig. 7-17. Installing rear output shaft bearing

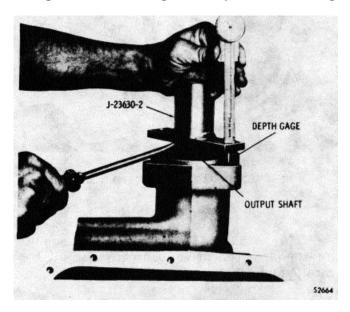


Fig. 7-18. Checking end play of output shaft

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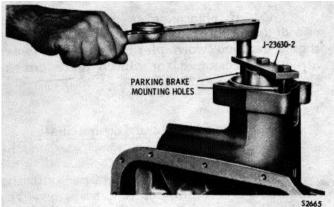


Fig. 7-19. Positioning components for front thrust washer measurements

b. Fourth Clutch

(1) Reposition the transmission, front upward. Carefully remove the sun gear shaft retainer (fig. 7-14) without moving the sun gear shaft.

CAUTION

Do not remove the sun gear shaft assembly before checking the required clearance shown on figure 7-20. If the clearance is less than 1/8-inch (3.18 mm), proceed with item (2). Otherwise omit item (2) and proceed with item (3).

(2) If the sun gear shaft assembly is properly seated, there should be approximately 1/8-inch (3.1B mm) distance from the end of the sun gear shaft assembly to the shoulder on the main shaft shown in figure 7-20. If the shaft is not properly seated, a slow rotation with a slight up and down motion may seat it. If not, remove the shaft (noting its relative position to the main shaft) and center the front sun gear thrust washer so the sun gear shaft will bottom.

NOTE

The sun gear shaft assembly must be properly seated to establish an accurate clear Fig. 7-20. Sun gear shaft clearance

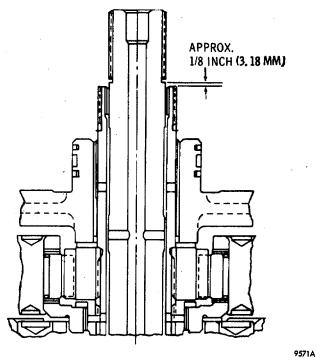


Fig. 7-20. Sun gear shaft clearance

ance between the forward clutch housing and the front support and bearing assembly. Reference paragraph 7-7.

(3) Check to make sure the two hook-type seal rings are in place on the hub of the center support.

(4) Install the fourth clutch assembly (as rebuilt in pare 6-9) onto the splines of the sun gear shaft.(1)

7-6. INSTALLATION OF THIRD AND FORWARD CLUTCHES

a. Third- Clutch

NOTE

Establishing clutch clearances by a method other than explained below, is not necessary. The clearance for this clutch is so tolerant it will accept all internal and external plates within their required w e a r limit. (Reference Section B.) (1) Beginning with an external- clutch plate, alternately install three external-tanged, and three internal-splined plates (fig. 7-21). Note the location of the three pairs of tangs and a single tang in relation to paired slots and a single slot. The plate will not have any rotational movement when properly installed.

(2) Install the third clutch back plate, alining its tangs with those of the three clutch plates (fig. 7-22). This plate is identified by the mark 2. Do not use a plate marked 1.

(3) Install the snapring that retains the back plate (fig. 7-22). T he snapping is identified by a-green mark and is 0.155 to 0.157 inch (3.94 to 3.99 mm) thick. Position the snapping gap toward t h e top of the transmission case.

(4) Using third c l u t c h clearance gage J-23716, check t h e clutch running clearance. The thin end of the gage should pass between the snapping and the back plate; the thick end should not. The prescribed clearance is 0.029 to 0.119 inch (0.74 to 3.02 mm).

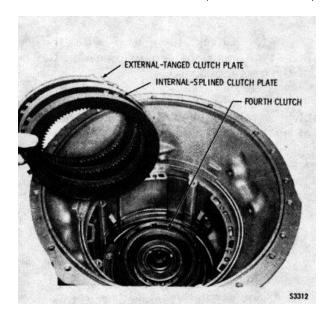


Fig. 7-21. Installing third clutch plates

(5) If clearance is excessive (larger end of gage enters plates), new clutch plates should replace worn plates. Refer to wear limits in Section 8 for clutch plate dimensions.

b. Forward Clutch and Turbine Shaft Assembly

(1) Install the thrust washer onto the hub of the forward clutch assembly, retaining it with oil-soluble grease (fig. 7-23).

(2) Install the forward clutch and turbine shaft assembly. The hub splines engage the transmission main s haft. The splines on the fourth clutch drive hub engage the internal-splined plates of t h e fourth clutch.

(3) Rotate the forward clutch assembly one or two revolutions, while pushing it downward. Make sure all the fourth clutch internal-splined plates are engaged.

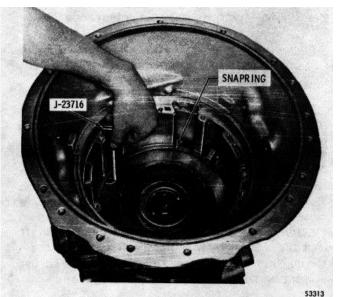


Fig. 7-22. Checking third clutch running clearance

ASSEMBLY OF TRANSMISSION

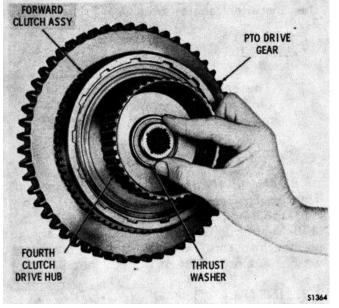


Fig. 7-24. Measuring for selection of front thrust washer

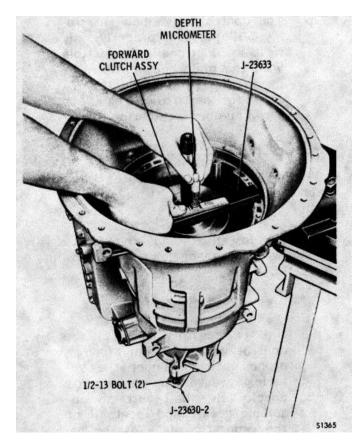


Fig. 7-24. Measuring for selection of front thrust washer

7-7. INSTALLATION OF OIL PUMP ASSEMBLY

a. Selection of Front Thrust Washer

(1) Lay thrust washer selection gage bar J-23633 into the transmission case, as shown in figure 7-24. Place the depth micrometer so that its stem passes through the center hole in the gage bar.

(2) Aline the gage bar so that the micrometer stem is above the thrust washer surface of the forward clutch housing (fig. 7-24).

(3) Measure t h e: distance from the top of the gage bar to the thrust surface of the clutch: housing (fig. 7-24). Subtract 1.00 inch (25.4 mm) or the thickness of the gage bar and record the difference. Select the proper thrust washer f r o m the following table.

<u>Dime</u> From	<u>ension</u> To	Thrust washer per number	Marked
0.7329 (18.616 mm)	0.7493 (19.032 mm)	6831620 (19.032 mm)	0
0.7493 (19.032 mm)	0.7656 (19.446 mm)	6831621	1
0.7656 (19.446 mm)	0.7820 (19.863 mm)	6B31622	2
0.7820 (19.863 mm)	0.7983 (20.277 mm)	6831623	3
(19.863 mm) 0.7983 (20.277 mm)	(20.277 mm) 0.8147 (20.693 mm)	6831624	4
0.8147 (20.693 mm)	0.8311 (21.110 mm)	6831625	5

b. Oil Pump Assembly

(1) Using oil-soluble grease, install the thrust washer selected in $\underline{a}(3)$, above, onto the oil pump assembly (fig. 7-25). The tab on the washer must engage the cast recess in the front support.

(2) Install two hook-type sealrings onto the hub of the front support (fig. 7-25).

7-13

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(3) Lubricate the sealrings and thrust washer with oil-soluble grease.

(4) Install the front support gasket, alining the bolt holes in the gasket with those in the transmission case (fig. 7-26).

(5) Install two 5/16-18 headless guide bolts into two opposite holes in the gasket and transmission case.

(6) Grasp the oil pump assembly by the stator shaft and lower it into the transmission housing (fig. 7-27). Be sure the support bottoms.

(7) Install nine $5/16-18 \times 13/4$ -inch, self-locking bolts, w i t h nine new rubber coated washers, into the front support and transmission case. Tighten the bolts to 1316 lb ft (17-22 N m).

(8) To check the turbine shaft end play, mount a vernier dial caliper on the turbine shaft. Raise the shaft, extending the depth gage to bear upon the stator shaft and record the dial reading (fig. 7-28).

(9) Release the shaft and record the dial reading. If the dial reading does not fall within the desired end play range of 0.0053 (min.) to 0.0337 (max) (0.135 to 0.856 mm), the thickness of the selective thrust washer must be recalculated.

(10) Remove t h e compressor base (installed in pare 7-5a(11), above) from the transmission case and output shaft.

7-8. INSTALLATION OF OUTPUT SHAFT OIL SEAL

 \underline{a} . Coat the oil seal lip with high-temperature grease (MIL-G-3545A).

<u>b.</u> Coat the outside circumference of the oil seal with nonhardening sealer. Start the oil seal; lip first, squarely into the rear bore of the transmission case.

<u>c</u>. losing the output shaft seal installer J-23631, drive the oil seal into the case until the installer seats against the case (fig. 7-29).

NOTE

The rear of the oil seal should be 0.51 to 0.55 inch (13 to 14 mm) f or w a rd of the brake mounting surface of the transmission case.

<u>d</u>. Install the output flange components. Tighten the retaining bolt to 83-100 lb ft (113-136 \cdot Nn) (Graded bolt) or 96-115 lb ft (130-156 mm) (Grade 6 bolt). Stake the tab washer into the flange washer. Bend the tab washer against a flat of the bolt head.

7-9. INSTALLATION OF VALVE BODY, OIL FILTER AND OIL PAN

NOTE

The control valve body assembly will perform properly only if it is functionally compatible with the main housing channeling. Refer to parts catalog SA 1235 for part numbers and serial number application.

a. Control Valve Body

(1) Tighten t h e center support anchor bolt to 39-46 lb ft (53-62 N m) (fig. 7-30).

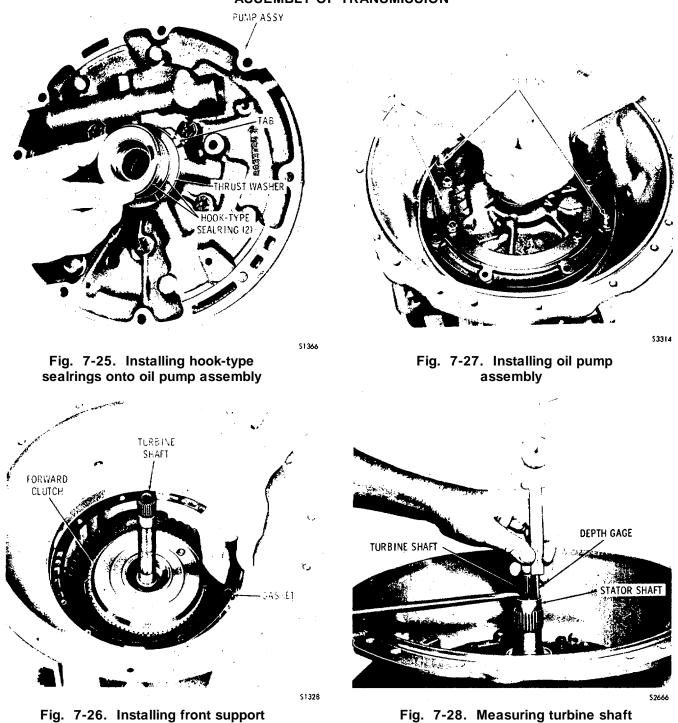
(2) Install the governor check valve ball into t h e channel in the transmission case (fig. 7-30).

NOTE

If it is necessary to install the control valve assembly from a prone position (under the vehicle), grease the governor check valve ball with an oil grease and locate it on the separator plate of the assembled control valve shown in figure 6-19.

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ASSEMBLY OF TRANSMISSION



gasket

Fig. 7-28. Measuring turbine shaft end play

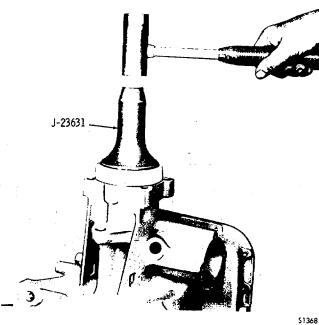


Fig. 7-29. Installing output shaft oil seal

(3) Position the control valve body on the transmission case, in its approximate installed position (fig. 7-31).

CAUTION Do not allow the selector valve to fall out during handling of the assembly.

(4) Install governor oil screen 9 (B. foldout 9) closed end first, into the valve body, at the governor feed tube opening (fig. 7-31). Install the governor feed tube.

NOTE

Inspect both ends of the governor feed tube. Some models contained a plastic oil screen located where the governor feed tube unites with the housing. This screen must be replaced with a wire screen and re located in the governor feed tube bore (fig. 7-31).

(5) Install the governor pressure tube.

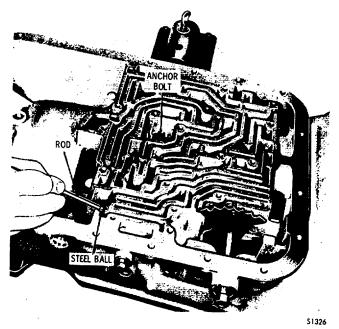


Fig. 7-30. Installing governor check ball

NOTE

If the governor feed and pressure tubes are installed, rear end first, they will not aline properly when the control valve is installed. They may appear to aline until installation of the valve body is attempted.

(6) Install first clutch tube.

(7) Lift the valve body, and swing the three tubes- into proper position to enter their holes in the transmission case.

(a) Lower the valve body onto the case, while engaging the rear ends of the tubes in the case, and the se-rector valve on the selector lever (fig. 7-31).

(9) Install the detent spring, with its roller over the selector lever, and its rear tab in the hole immediately behind the bolt hole (fig. 7-31).

(10) Install a $1/4-20 \times 1 3/4$ -inch bolt into the detent spring and valve body.

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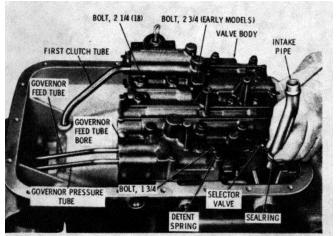


Fig. 7-31. Installing oil intake pipe

Install a 1/4-20 x 2 3/4-inch bait (later models have a 2 1/4-inch bolt) near the center of the valve body. Install seventeen $1/4-20 \times 2 1/4$ -inch bolts into the remaining bolt holes.

(11) Shake the valve body slightly, and the ends of the bolts will start into the tapped holes in the transmission case.

(12) Tighten the nineteen bolts evenly to 9-11 lb ft (12-15 N m)

NOTE

The detent spring must be held in alinement over the selector lever while the 1 3/4-inch bolt is tightened.

b. Oil Filter

(1) Install sealring onto the straighter end of the intake pipe (fig. 7-31). Lubricate the sealring with oil-soluble grease.

CAUTION

Avoid twisting the intake pipe or filter when installing the oil filter, intake pipe and sealring. The sealring may become pinched, cut or deformed. An air-tight seal must be maintained.

(2) Install the intake pipe and sealring (fig.

7-31).

(3) Install the oil filter onto the intake pipe, making sure the grommet fits the intake pipe snugly (fig. 7-32).

NOTE

Turn the intake pipe until it enters the grommet squarely, if it appears to be misalined.

(4) Retain the oil filter with one 5/16-18 x 5/8-inch, washer-head screw. Tighten the screw to 10-15 lb ft (14-20 N m).

<u>c.</u> <u>Oil Pan</u>

(1) Position the oil pan gasket on the transmission case, alining its bolt holes with those in the case (fig. 7-33).

(2) Install the oil pan, deeper end forward (fig. 7-33).

NOTE

If installation of the oil pan and gasket from a prone position is necessary, place the gasket on the oil pan alining all bolt holes. <u>Do</u> <u>not</u> use grease to retain the gasket to the oil pan.) Insert two bolts (opposite each other) through the oil pan holes to those in the transmission case. Insert the bolts into the case and tighten two or three threads. Install the remaining bolts taking care not to damage the gasket.

(3) Retain the oil pan with twenty-one 5/16-18 x 5/8-inch, washer-head screws (fig. 7-34). Tighten the screws evenly to 10-13 lb ft (14-18·Nm).

7-10. INSTALLATION OF GOVERNOR, MODULATOR AND TORQUE CONVERTER

a. Governor

(1) Install the governor cover gasket onto the transmission case, using oil-soluble grease to retain it (fig. 7-34).

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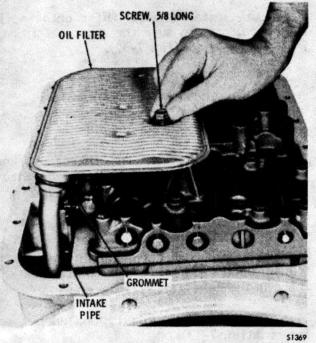


Fig. 7-32. Installing oil filter screw

(2) Install the governor assembly by pushing it inward w i t h a slight rotation counterclockwise (fig. 7-34).

(3) Install the governor cover, and retain it with four 5/16-18 x 9/16-inch bolts (fig. 7-35) Tighten the bolts to 15-20 lb ft (20-27 \cdot Nm).

b. Vacuum Modulator

(1) Install the vacuum modulator valve actuating rod, larger diameter end first (fig. 7-35). On diesel units (before S/N 22700) where a mechanical actuator is used, actuator pin 23 (B. foldout 8) is one diameter. After S/N 22699, rod 28 (with two diameters) is used.

(2) Install the sealring onto the vacuum modulator (fig. 7-35). Lubricate the sealring with oil-soluble grease. Install the vacuum modulator.

(3) Rotate the vacuum modulator until the hose nipple faces 10 degrees

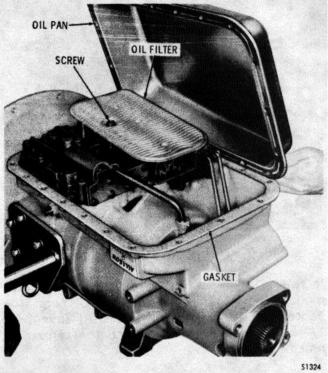


Fig. 7-33. Installing transmission oil pan

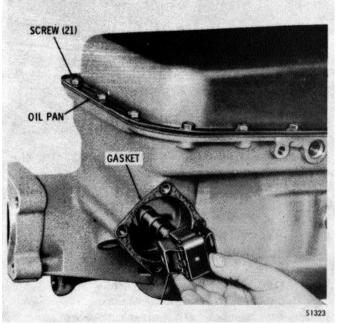


Fig. 7-34. Installing governor assembly

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7-18

ASSEMBLY OF TRANSMISSION

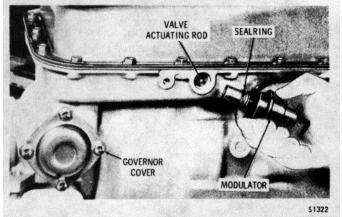


Fig. 7-35. Installing vacuum modulator

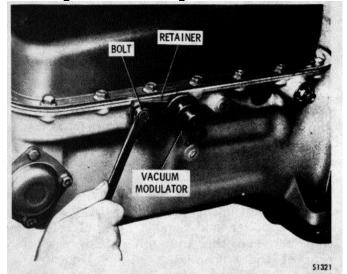


Fig. 7-36. Installing vacuum modulator retainer bolt

downward (toward bottom of transmission) from directly forward (fig. 7-36).

(1) Install the retainer, bent tabs toward transmission, and secure it with a $5/16-18 \times 3/4$ -inch bolt trig. 7-36). Tighten the bolt to 15-20 lb ft (20-27 Mr).

c. Torque Converter Assembly

(1) Install the torque converter assembly, engaging the turbine shaft with the converter turbine, the stator shaft with the stator, and the hub with the oil pump drive gear (fig. 7-37).

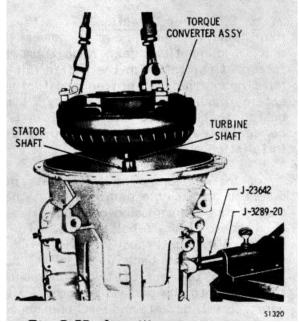


Fig. 7-37. Installing torque converter assembly

(2) Secure the torque converter assembly during handling of the transmission ay attaching a strap between one of the drive lugs and the transmission case.

(3) Install the speedometer drive, or plug as required.

(4) Remove the transmission from the holding fixture.

(5) If so equipped, install gasket 1 B. foldout 8), cover 2, and six $3/8-16 \times 1$ -inch bolts 3. Tighten the bolts to 15-20 lb Ft (20-27·Nm).

7-11. SELECTION, INSTALLATION AND LUBRICATION OF PTO AUXILIARY DRIVE ASSEMBLIES

<u>a.</u> <u>Transmission PTO</u> The transmission is equipped with a converter driven power takeoff gear mounted on the forward clutch housing. The gear has a continuous operation rating of 200 lb ft (271· Nm) and an intermittent rating of- 250 lb ft (339·Nm), with no speed limitations. In neutral, under no load, the gear will rotate at approximately engine speed. In neutral with the gear under load, it will rotate slower than engine speed. The greater the; load, t h e greater the speed difference.

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<u>b.</u> <u>PTO Unit Selection</u>. To attain maximum performance from a power takeoff unit, a compatible gear ratio must be selected. Gear ratios in the.3:1 to .5:1 ranges have been tried and proven satisfactory. To obtain maximum PTO efficiency, it is suggested that Detroit Diesel Allison Division be contacted for confirmation prior to PTO installation.

<u>c.</u> Installation The PTO units may be mounted on a single pad located at the right side of the transmission housing. This pad is a standard SAE 6-bolt type. To insure proper alinement, position the PTO driven gear toward the back of the PTO housing. Then with the aid of two alinement studs threaded into the pad, 180 degrees (3.15 red) apart, install gaskets and PTO unit housing.

CAUTION Other procedures may cause the PTO unit driven gear to interfere with and displace the third clutch snapping.

<u>d.</u> <u>Backlash</u> Varying the number of gaskets between the PTO housing and the transmission housing will change the amount of backlash between the PTO gears. To measure the backlash, lock the gear in the PTO unit and measure (through the inspection port in the PTO unit) between the transmission drive gear and its mating gear in the PTO unit. If the measurement is less than 0.006 (0.15 mm) or more than 0.012 inch (0.30 mm), add or remove shims (or gaskets). Transmissions built after S/N 184556 do not require backlash measurements.

e. Lubrication Lubrication for- the PTO gears is: primarily provided by the splash method from the forward clutch housing. However, pressure lubrication is available by tapping (0.032-inch (0.81 mm)- orifice) into the oil line returning to the transmission from the cooler. If oil pressure (40 to 60 psi (276 kPa to 414 kPa)) in the return line is to be maintained, do not exceed 0.032 inch (0.81 mm) orifice. After installation of the PTO unit, oil lines, etc. run the transmission until normal operating temperature is reached 160 to 220°F (2.8 red to 3.9 rad). Test for proper oil level (para 3-3) and signs of oil leakage. Extreme care should be exercised to prevent dirt, metal chips, or other foreign substances from getting into the PTO gears or transmission.

7-12. INSTALLATION OF EXTERNAL SELECTOR LEVER

Before installing the external selector lever, refer to paragraph 3-10 for procedure.

7-13. REMOVAL OF REAR BEARING (Transmission in Vehicle)

Disconnect the vehicle drive shaft and drive flange from the transmission. Remove the snapring that retains the output shaft bearing.: (Refer to figure 5-12). Place the feet of tool J-24463-2 between the balls of the- rear bearing, retaining them by the inner and outer race of -the bearing. Insert the legs of tool J-24463-2 through the slots in puller body J-24420. Install two nuts, one on each leg. Rotate the center screws in the puller body until the base of the screw makes contact with the output shaft. Tighten the two nuts maintaining a perpendicular relationship between the two legs and the puller body and a parallel relationship between the puller body and the rear of the transmission case. Tighten the center screw and carefully remove the bearing (fig. 7-38).

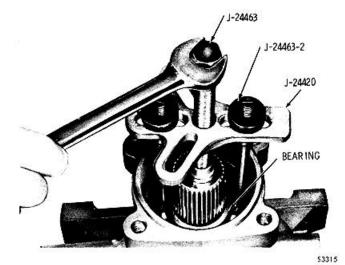


Fig. 7-38. Removing output shaft rear bearing

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8-1. SCOPE OF SECTION 8

This section tabulates wear limits and spring data, and includes an English-to-metric conversion chart.

8-2. WEAR LIMITS DATA

<u>a.</u> <u>Maximum Variations</u> Wear limits information in this section shows the maximum wear at which components are expected to function satisfactorily.

<u>b.</u> <u>Cleaning, Inspection</u> Parts must be clean to permit effective inspection for wear or damage. Refer to paragraph 4-5, above.

c. <u>Bearings, Bearing Journals, Bor</u>es The application of bearings to any product is based on the recommendations of the bearing manufacturer and, therefore, no diametral dimensional deviation should be permitted in the bearing or mated parts. Bearings should be carefully checked for signs of distress before reinstalling in the transmission.

<u>d.</u> <u>Gears.</u> Gears should be inspected for load pattern and signs of distress. Any distress indicates a possible future failure, and the reuse of such gears should be the decision of the individual customer, based on experience. Backlash cannot be used to establish critical wear of a gear. The backlash tolerances are of such nature that a gear usually pits, scuffs, scores, or galls long before the gear wear becomes critical.

e. <u>Splines</u> Unless severe, spline wear is not considered detrimental except where it affects tightness of an assembly such as drive-line flanges. Here, again, backlash cannot be used to establish critical wear because both mating parts must be concentrically located to obtain accurate measurement of backlash.

<u>f.</u> <u>Hook-type Sealring</u>s Sides of the sealring should be smooth (maximum wear 0.005 inch (0.13 mm)). The sides of the groove into which the sealrings

fit should be smooth (50 microinch; 1.27 micrometers or equivalent) and square with the axis of rotation within 0.002 inch (0.05 mm). A new sealring should be installed if grooves are reworked, or sealring outside diameter wear causes the possibility of a closed gap between sealring hooks when the ring is installed.

<u>g.</u> <u>Oil Seals</u> Seals should be replaced if they show signs of excessive hardening, scoring, cracking or other indications of deterioration. (See Section 4.)

8-3. SPRING DATA

Springs must be clean to permit effective inspection. Springs should be replaced if there are signs of overheating, wear due to rubbing adjacent parts, or permanent set. Discard springs which do not meet the loadheight specifications in the spring chart.

8-4. WEAR LIMITS CHART

The chart which follows lists the wear limits data and is referenced to the exploded views (foldouts 5 through 9) in the back of this manual.

8-5. SPRING CHART

Inspection criteria (load vs. height) and identification characteristics of the springs are presented in the chart following the wear limits chart. The spring chart data are keyed to the exploded views (foldouts 5 through 9) in the back of this manual.

NOTE

Where more than one spring part number is listed for the same location, refer to the AT 540 series Parts Catalog (SA 1235) to determine which spring is used in your specific assembly number.

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8-6. CLUTCH PLATE CONE

Inspect all steel plates for cone. The smallest conical distortion will affect clutch plate running clearance. To determine if a plate is coned, place the plate on the flat surface. If the cone exceeds the wear limit shown in the wear limit chart, replace the plate. Refer to paragraph 4-5 n. (3).

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8-2

WEAR LIMITS AND SPRING DATA

SPRING CHARTS

Fold-	Def	Queries	Dertes	No.	Wire dia	Outside dia	Approx. Free Length		under load
<u>out</u>	<u>Ref</u>	<u>Spring</u>	<u>Part no</u> .	<u>coils</u>	<u>in. (mm)</u>	<u>in. (mm)</u>	<u>in. mm)</u>	<u>in. (m</u>	<u>m) lb (N)</u>
A, 3	15	Stator	-6774966	Not a	coil-type sp	ring	0.64 (16.3)	0.30 (7.62)	0.15 to 0.33 (0.67 to 1.47)
B, 3	26	Main pressure regulator valve	¹⁸ 6833294	14	0.126 (3.20)	1.06 (27.0)	4.19 (106.4)	2.01 (51.1)	74.15 to 78.76 (329.8 to 350.3)
A, 4	16	Forward clutch	³ 8624073	10.5	0.055 (1.40)	0.45 (11.4)	1.31 (33.3)	0.88 (22.4)	12.22 max. (54.4)
B, 4	7	Fourth clutch piston release	³ 8624073	10.5	0.055 (1.40)	0.45 (11.4)	1.31 (33.3)	0.88 (22.4)	12.22 max. (54.4)
A, 5	8	Third clutch piston release	¹ 6831656	11.5	0.041 (1.04)	0.38 (9.7)	1.29 (32.8)	0.82 (20.8)	5.7 max. (25.4)
A, 5	19	Second clutch piston release	¹ 6831656	11.5	0.041 (1.04)	0.38 (9.7)	1.29 (32.8)	0.82 (20.8)	5.7 max. (25.4)
A, 6	8	First clutch piston release	⁹ 6831702	11.5	0.044 (1.12)	0.45 (11.4)	1.53 (38.9)	1.01 (25.7)	4.81 max. (21.4)
			¹⁹ 6880251	10	0.063 (1.60)	0.45 (11.4)	1.28 (32.5)	0.95 (24.1)	13.6 to 16.4 (60.5 to 73.0)
A, 7	8	Vacuum modulato valve return		10	0.054 (1.37)	0.49 (12.5)	1.47 (37.3)	0.80 (20.3)	11.9 to 13.1 (52.9 to 58.3)
			²⁷ 23012948	10	0.054 (1.37)	0.49 12.5	1.47 37.3	0.80 20.3	11.9 to 13.1 (52.9 to 58.3)
A, 7	14	Third clutch trimmer valve	⁴ 6833945	7.4	0.092 (2.33)	0.93 (23.6)	2.27 (57.7)	1.94 (49.3)	9.4 to 11.4 (41.8 to 50.7)
			¹⁴ 23012937	9	0.099 (2.52)	0.95 (24.1)	2.27 (57.7)	1.94 (49.3)	9.4 to 11.4 (41.8 to 50.7)
A, 7	18	First clutch tim- mer valve-outer	⁴ 6833945	7.4	0.092 (2.33)	0.93 (23.6)	2.27 (57.7)	1.94 (49.3)	9.4 to 11.4 (41.8 to 50.7)
			¹⁸ 6880045	10	0.099 (2.52)	0.94 (23.9)	2.18 (55.4)	1.94 (49.3)	6.2 to 7.4 (27.6 to 32.9)
			¹⁵ 6839271	10	0.103 (2.61)	0.94 (23.9)	2.56 (65.0)	1.94 (49.3)	20 to 22 (89.0 to 97.9)
A, 7	19	First clutch trim- mer valve-inner	¹¹ 6880274	9.6	0.092 (2.33)	0.69 (17.5)	1.69 (42.9)	1.10 (27.9)	32.6 to 39.8 (145.0 to 177.0)
			¹⁸ 6884701	9.6	0.092 (2.33)	0.69 ´ (17.5)	1.69 ́ (42.9)	1.10 [´] (27.9)	32.6 to 39.8 (145.0 to 177.0)
			³ 6839102	8.5	0.092 (2.33)	0.72 (18.3)	1.68 (42.7)	1.10 (27.9)	32.6 to 39.8 (145.0 to 177.0)
			²¹ 6885166	9.6	0.092 (2.33)	0.69 (17.5)	1.69 (42.9)	1.10 (27.9)	32.6 to 39.8 (145.0 to 177.0)

Color Code Key:

¹ Solid green	¹¹ Solid yellow, blue stripe	¹⁹ Solid orange, yellow stripe
³ Solid red	¹⁴ Solid white	²¹ Solid orange, white stripe
	¹⁵ Solid white, yellow stripe	²⁷ Solid white, orange stripe
⁹ Solid yellow	¹⁸ solid orange	-No color code

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SPRING CHARTS (Continued)

	SPRING CHARTS (Continued)								
-				N.L.		Outside	Approx. Free	Land	
Fold-	Def	Coring	Dort no	No.	Wire dia	dia	Length		<u>under loa</u> d
<u>out</u>	<u>Ref</u>	<u>Spring</u>	<u>Part no.</u>	<u>coils</u>	<u>in. (mm)</u>	<u>in. (mm)</u>	<u>in. mm)</u>	<u>in. (mr</u>	<u>n) lb (N)</u>
A, 7	23	Second clutch trim	1- ³ 6839102	8.5	0.092	0.72	1.68	1.10	32.6 to 39.8
		mer valve			(2.33)	(18.3)	(42.7)	(27.9)	(145.0 to 177.0)
			¹⁴ 6838532	8.5	0.121	0.95	2.10	1.94	10.5 to 15.5
			10		(3.07)	(24.1)	(53.3)	(49.3)	(46.7 to 69.0)
			¹⁹ 6833940	8.5	0.121	0.95	2.38	1.94	29.0 to 350
			15		(3.07)	(24.1)	(60.5)	(49.3)	(128.9 to 155.7)
			¹⁵ 6839271	10	0.103	0.94	2.56	1.94	20 to 22
					(2.61)	(23.9)	(65.0)	(49.3)	(88.9 to 97.9)
			276885164	8.5	0.121	0.950	2.10	1.94	10.5 to 15.5
. –	~ -		15		(3.07)	(24.1)	(53.3)	(49.3)	(46.7 to 68.9)
A, 7	27	Fourth clutch trim-	6839271	10	0.103	0.94	2.56	1.95	20 to 22
• -		mer valve-outer	0000410		(2.61)	(23.9)	(65.0)	(49.5)	(88.9 to 97.9)
A, 7	28	Fourth clutch trim-	-6880118	8.5	0.090	0.69	1.42	1.10	20.7 to 25.3
۸ 	05	mer valve-inner	30000400		(2.29)	(17.5)	(36.1)	(27.9)	(92.1 to 112.5)
A, 7	35	2-3 relay valve	³ 6832462	11	0.072	0.69	2.18	1.20	16.2 to 19.8
A 7	20		70004500		(1.83)	(17.5)	(55.4)	(30.5)	(72.1 to 88.1)
A, 7	38	1-2 relay valve	⁷ 6834528	11	0.072	0.68	1.52	1.10	7.2 to 8.8
۸ 7	41	Drierity velve	¹⁵ 6835729	4.4	(1.83)	(17.3)	(38.6)	(27.9)	(32.0 to 39.1)
A, 7	41	Priority valve	6835729	11	0.054	0.38	1.17	0.94	8.15 to 9.15
۸ 7	44	Hold regulator	⁹ 6836784	13	(1.37) 0.041	(9.7) 0.40	(29.7)	(23.9) 1.15	(36.3 to 40.7) 5.93 to 6.17
A, 7	44	Hold regulator valve	0030704	13			1.90		
		valve	⁴ 6837953	14	(1.04) 0.044	(10.2) 0.40	(48.3) 1.91	(29.2) 1.15	(26.4 to 27.5) 7.46 to 7.76
			0037955	14	(1.12)	(10.2)	(48.5)	(29.2)	(33.2 to 34.5)
			¹⁴ 6836785	14	0.041	0.40	2.01	(29.2)	6.22 to 6.48
			0000700	14	(1.04)	(10.2)	(51.1)	(29.2)	(27.7 to 28.8)
			¹ 6837952	14	0.044	0.40	1.87	1.15	7.10 to 7.40
			0007002	17	(1.12)	(10.2)	(47.5)	(29.2)	(31.6 to 32.9)
			¹⁵ 6836976	14	0.044	0.40	1.85	1.15	6.91 to 7.19
			0000070	• •	(1.12)	(10.2)	(47.0)	(29.2)	(30.7 to 32.0)
			¹¹ 6837541	14	0.044	0.40	1.82	1.15	6.61 to 6.89
					(1.12)	(10.2)	(46.3)	(29.2)	(29.4 to 30.7)
			⁵ 6837539	11	0.041	0.40	1.72	1.15	5.44 to 5.66
					(1.04)	(10.2)	(43.7)	(29.2)	(24.2 to 25.2)
A, 7	52	1-2 shift valve	¹⁹ 6834576	12	Ò.054	Ò.64 ´	2.39 [′]	1.15	7.18 to 7.68
					(1.37)	(16.3)	(60.7)	(29.2)	(31.9 to 34.2)
			¹⁴ 6833942	12	0.054	Ò.64 ´	2.50 [′]	1.15	7.85 to 8.35
					(1.37)	(16.3)	(63.5)	(29.2)	(34.9 to 37.1)

Color Code Key:

¹ Solid green	⁷ Solid blue, yellow stripe	¹⁵ Solid white, yellow stripe
³ Solid red	⁹ Solid yellow	¹⁹ Solid orange, yellow stripe
⁴ Solid blue	¹¹ Solid yellow, blue stripe	²⁷ Solid white, orange stripe
⁵ Solid blue, white stripe	¹⁴ 50lid white	-No color code

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WEAR LIMITS AND SPRING DATA

SPRING CHARTS (Continued)

Fold- <u>out</u>	<u>Ref</u>	<u>Spring</u>	<u>Part no</u> .	No. <u>coils</u>	Wire dia <u>in. (mm)</u>	Outside dia <u>in. (mm)</u>	Approx. Free Length in.mm)	<u>Length</u> in. (mr	<u>under loa</u> d <u>n) lb (N)</u>
A, 7	52	1-2 shift valve	⁹ 6837454	10.8	0.062	0.67	1.98	1.15	8.22 to 8.72
		(cont)	⁵ 6833941	13.5	(1.57) 0.062	(17.0) 0.64	(50.3) 2.15	(29.2) 1.15	(36.6 to 38.8) 9.35 to 9.85
			⁴ 6833935	9	(1.57) 0.054	(16.3) 0.64	(54.6) 2.17	(29.2) 1.15	(41.6 to 43.8) 8.6 to 9.1
			¹⁹ 23012946	12	(1.37) 0.054 (1.37)	(16.3) 0.64 (16.3)	(55.1) 2.39 (60.7)	(29.2) 1.15 (29.2)	(38.3 to 40.5) 7.18 to 7.68 (31.9 to 34.2)
A, 7	58	2-3 shift valve	-6833939	8.5	0.106́ (2.68)	0.93 (23.6)	2.18 (55.4)	1.65 (41.9)	23.8 to 28.2 (105.9 to 125.4)
			³⁰ 23012952	9	0.054 (1.37)	0.64 (16.3)	(55.1)	1.15 (29.2)	8.6 to 9.1 (38.3 to 40.5)
			¹⁴ 6833942	12	0.054	0.64	2.50	1.15	7.85 to 8.35
			³¹ 23012954	13	(1.37) 0.059	(16.3) 0.64	(63.5) 2.51	(29.2) 1.15	(34.9 to 37.1) 10.75 to 11.25
			⁹ 6837454	10.8	(1.50) 0.062	(16.3) 0.67	(63.8) 1.98	(29.2) 1.15	(47.8 to 50.0) 8.22 to 8.72
			³² 23012955	13.5	(1.57) 0.062	(17.0) 0.64	(50.3) 2.15	(29.2) 1.15	(36.6 to 38.8) 9.35 to 9.85
			¹ 6835310	13	(1.57) 0.059	(16.3) 0.64	(54.6) 2.51	(29.2) 1.15	(41.6 to 43.8) 10.75 to 11.25
			¹⁹ 23012956	12	(1.50) 0.054	(16.3) 0.64	(63.8) 2.39	(29.2) 1.15	(47.8 to 50.0) 7.18 to 7.68
			¹⁸ 6834902	13	(1.37) 0.059	(16.3) 0.64	(60.7) 2.41	(29.2) 1.15	(31.9 to 34.1) 9.95 to 10.45
			⁵ 6833941	13.5	(1.50) 0.062	(16.3) 0.64	(61.2) 2.15	(29.2) 1.15	(44.3 to 46.5) 9.35 to 9.85
			⁴ 6833935	9	(1.57) 0.054	(16.3) 0.64	(54.6) 2.17	(29.2) 1.15	(41.6 to 43.8) 8.6 to 9.1
A, 7	64	3-4 shift valve	¹⁹ 6834576	12	(1.37) 0.054	(16.3) 0.64	(55.1) 2.39	(29.2) 1.15	(38.3 to 40.5) 7.18 to 7.68
,,,,,	04		¹⁸ 6834902	13	(1.37) 0.059	(16.3) 0.64	(60.7) 2.41	(29.2) 1.15	(31.9 to 34.1) 9.95 to 10.45
			¹⁹ 23012946	12	(1.50) 0.054 (4.97)	(16.3) 0.64	(61.2) 2.39	(29.2) 1.15	(44.3 to 46.5) 7.18 to 7.68
			⁵ 6833941	13.5	(1.37) 0.062 (1.57)	(16.3) 0.64 (16.3)	(60.7) 2.15 (54.6)	(29.2) 1.15 (29.2)	(31.9 to 34.1) 9.35 to 9.85 (41.6 to 43.8)

Color Code Key:

¹ Solid green ⁴ Solid blue ⁵ Solid blue, white stripe ⁹ Solid yellow	¹⁴ Solid white ¹⁸ Solid orange ¹⁹ Solid orange, yellow stripe ³⁰ Solid orange, red stripe	³¹ Solid yellow, green stripe ³² Solid green, blue stripe -No color code
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SPRING CHARTS (Continued)

						Outside	Approx. Free		
Fold-				No.	Wire dia	dia	Length	l enath	under load
out	<u>Ref</u>	<u>Spring</u>	<u>Part no.</u>	coils	<u>in. (mm)</u>	<u>in. (mm)</u>	<u>in. mm)</u>	<u>in. (m</u>	
A, 7	64	3-4 shift valve	³⁰ 23012952	9	0.054	0.64	2.17	1.15	8.6 to 9.1
		(cont)			(1.37)	(16.3)	(55.1)	(29.2)	(38.3 to 40.5)
			¹⁴ 6833942	12	0.054	0.64	2.50	1.15	7.85 to 8.35
					(1.37)	(16.3)	(63.5)	(29.2)	(34.9 to 37.1)
			³² 23012955	13.5	0.062	0.64	2.15	1.15	9.35 to 9.85
			_		(1.57)	(16.3)	(54.6)	(29.2)	(41.6 to 43.8)
			⁹ 6837454	10.8	0.062	0.64	1.98	1.15	8.22 to 8.72
					(1.57)	(16.3)	(50.3)	(29.2)	(36.6 to 38.8)
			¹⁹ 23012956	12	0.054	0.64	2.39	1.15	57.18 to 7.68
					(1.37)	(16.3)	(60.7)	(29.2)	(31.9 to 34.1)
			⁴ 6833935	8	0.054	0.64	2.17	1.15	8.6 to 9.1
					(1.37)	(16.3)	(55.1)	(29.2)	(38.3 to 40.5)
A, 7	69	3-4 shift valve	³ 6832462	11	0.072	0.69	2.18	1.20	16.2 to 19.8
					(1.83)	(17.5)	(55.4)	(30.5)	(72.1 to 88.1)
A, 7	73	Trimmer regulator	⁶ 6834527	14	0.047	0.50	1.87	1.14	4.25 to 4.75
		valve			(1.19)	(12.7)	(47.5)	(29.0)	(18.9 to 21.1)

Color Code Key:

³ Solid red	⁹ Solid yellow	³⁰ Solid orange, red stripe
⁴ Solid blue	¹⁴ Solid white	³² Solid green, blue stripe
⁶ Solid blue, red stripe	¹⁹ Solid orange, yellow stripe	

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8-6

WEAR LIMITS AND SPRING DATA

WEAR LIMITS CHART

Illustration	Part <u>Number</u>	Description	Wear Limit <u>in. (mm)</u>	
1 foldout 5				
A, foldout 5 12	6882024	TORQUE CONVERTER ASSEMBLY Converter stator-inside	2.857	72.57 max
12	0002024	diameter of side plates	2.007	72.37 max
12, 13	6882024	Converter stator-thickness	0.435	11.05 min
12, 10	9417499	of stator thrust washer plus	0.100	11.00 11111
	0	installed bearing		
21	6882026	Freewheel roller raceoutside	No scoring	
		diameter	permissible	
B, foldout 5		TORQUE CONVERTER, OIL PUMP ASSEMBLIES		
1, 7	8627116	Torque converter hubclearance	0.0050	0.127 max
	6880917	in bushing		
8, 9	8624063	Pump driven gear 9diameter		
10	8629368	clearance in body 8		
10	8629482-	Pump drive gearside clearance	Refer to	
4.0	86	Chatar shaft hushing alasranga	para 6-7	
18	6836272	Stator shaft bushingclearance on shaft 8, (A, foldout 6)	0.004	0.10 max
A, foldout 6		FORWARD CLUTCH AND TURBINE SHAFT		
8 8	6835939	Turbine shaftclearance in	0.004	0.10 max
0	0033939	bushing 18 (B, foldout 5)	0.004	0.10 max
23	8625197	External-tanged clutch plate	No visible wear or	
20	0020101	thickness		permitted.
		cone	0.004	0.10 max
*24	6835151	Internal-splined clutch plate	0.071	1.80 min
		thickness		
25	8625718	Fourth-clutch driving hub	No visib	le wear or
		thickness at friction face		permitted.
		Forward clutch running clearance (refer to para 6-8b		
B, foldout 6		FOURTH CLUTCH		le wear or
2	8623122	Clutch back platethickness		permitted.
*3	6835151	Internal-splined clutch plate	0.071	1.80 min
4	0005407	thickness	Nia static	
4	8625197	External-tanged clutch plate		le wear or
		thickness cone	0.004	permitted. 0.10 max
		Fourth clutch running clearance (refer to para 6-9b)	0.004	0.10 max
A, foldout 7		SECOND CLUTCH, THIRD CLUTCH, CENTER SUP	PORT	
2	6831644	Third-clutch back plate		le wear or
-	5001011	thickness		permitted.
*3, 24	6884958	Internal-splined clutch plate	0.090	2.29 min
		thickness		

*See footnote at end of chart

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AT 540 SERIES AUTOMATIC TRANSMISSIONS

WEAR LIMITS CHART--Continued

	Part		Wear Limit	
<u>Illustration</u>	<u>Number</u>	Description	<u>in.</u>	<u>(mm)</u>
4, 23	6831641	External-tanged clutch plate thickness cone	No visible wear or scoring permitted. 0.010 0.25 max	
14	6836271	Center support bushingclearance on shaft 4 (B, foldout 7)	0.005	0.13 max
14	6831652	Center support bushingclearance on shaft 4 (B, foldout 5)	0.005	0.13 max
25	6837603	Second-clutch back plate (ident 1)thickness	No visible wear or scoring permitted.	
25	6831644	Second-clutch back plate (ident 2)thickness Second clutch running clearance (refer to para <u>a</u>)4 Third clutch running clearance (refer to para <u>b</u>)5	No visib	le wear or permitted.
B, foldout 7		PLANETARY GEAR UNIT		
3	6836272	Sun gear shaft bushingclearance on shaft 5	0.006	0.16 max
4	6835938	Sun gear shaftclearance in bushing 15 (A, foldout 5)	0.005	0.13 max
5	6831690	Transmisson main shaft clearance in bushing 3	0.0045	0.114 max
16, 20	6831689 6835936	Front planetary carrier bushing clearance on sun gear 20	0.005	0.13 max
48	B622947	Output shaft bushingclearance on shaft 5	0.0065	0.165 max
A, foldout 8		FIRST CLUTCH		
2	6831707	Back plate(ident 1) thickness		
2	6831708	Back plate (ident 2) thickness	No visib	le wear or
2	6831709	Back plate(ident 3) thickness		permitted.
*3	6835152	Internal-splined clutch plate thickness	0.090	2.29 max
4	6831705	External-tanged clutch plate thickness cone		le wear or permitted. 0.25 max
B, foldout 8 11, 17	6839580 6881466	First clutch running clearance (refer to pare 7-3a) TRANSMISSION CASE, GOVERNOR, AND VACUU Transmission case – clearance of governor bore on governor 17	M MODUL 0.0035	-ATOR 0.089 max

*Minimum depth of oil grooves, 0.008

- 1 Torque converter front cover (AT 543)
- 2 Torque converter turbine (AT 543)
 3 Torque converter pump (AT 543)
 4 Torque converter stator (AT 543)

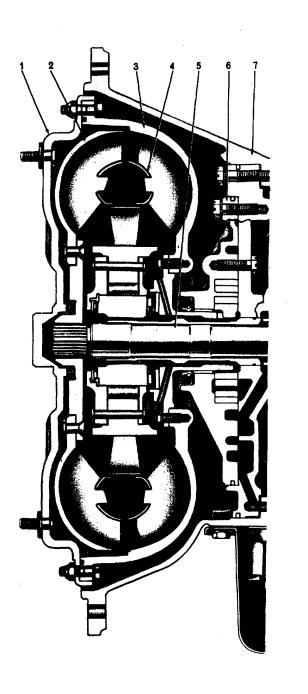
- 5 Turbine shaft
- 6 Oil pump assembly
- 7 Front support
- 8 Torque converter assembly (AT 540)9 Turbine shaft
- 9 Turbine shaft
 10 Oil pump assembly
 11 Front support
 12 PTO drive gear
 13 Forward clutch
 14 Third clutch
 15 Fourth clutch
 16 Center support
 17 Second clutch

- 17 Second clutch
- 18 Transmission main shaft 19 First clutch
- 20 Transmission case
- 21 Governor drive gear

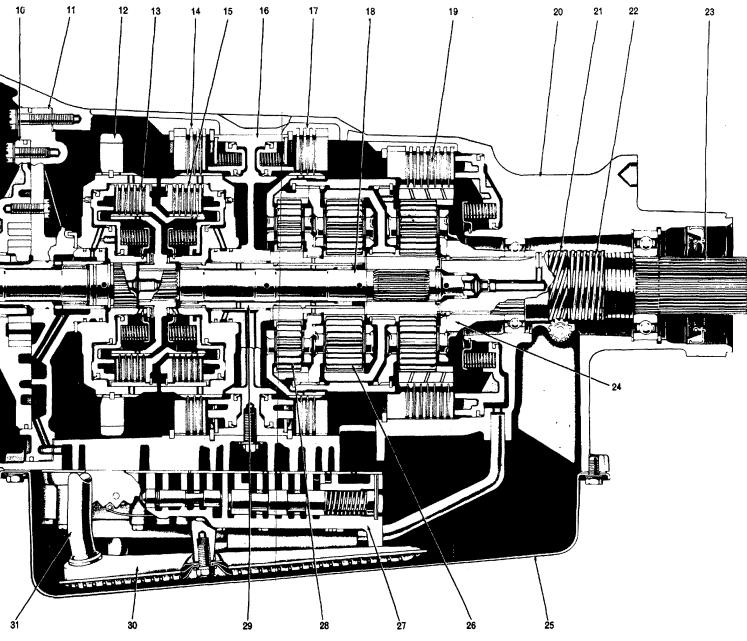
- 21 Governor drive gear
 22 Speedometer drive gear
 23 Output shaft
 24 Rear planetary gear set
 25 Oil pan
 26 Center planetary gear set
 27 Control valve body assembly
- 28 Front planetary gear set
 29 Sun gear shaft
 30 Oil filter
 31 Intake pipe

- 32 Stator shaft

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Foldout 1. Model AT 540, 543 transmissions - cross-section view

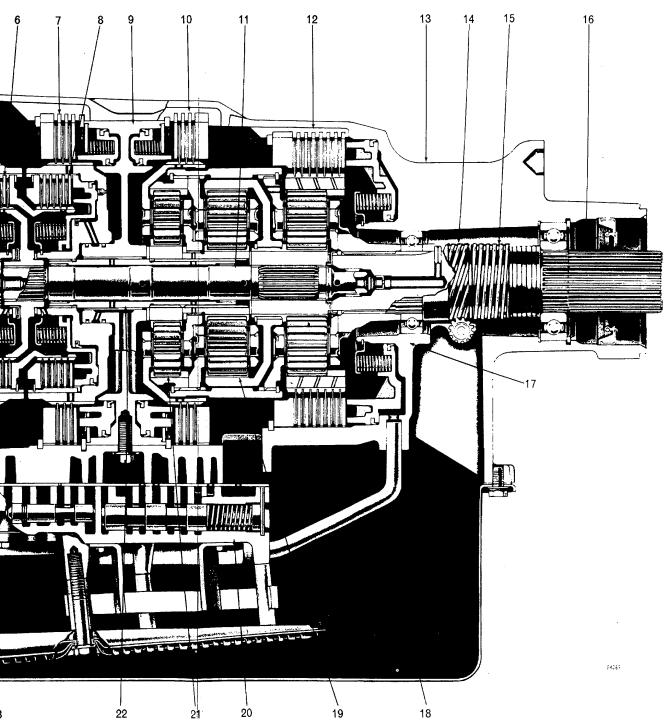


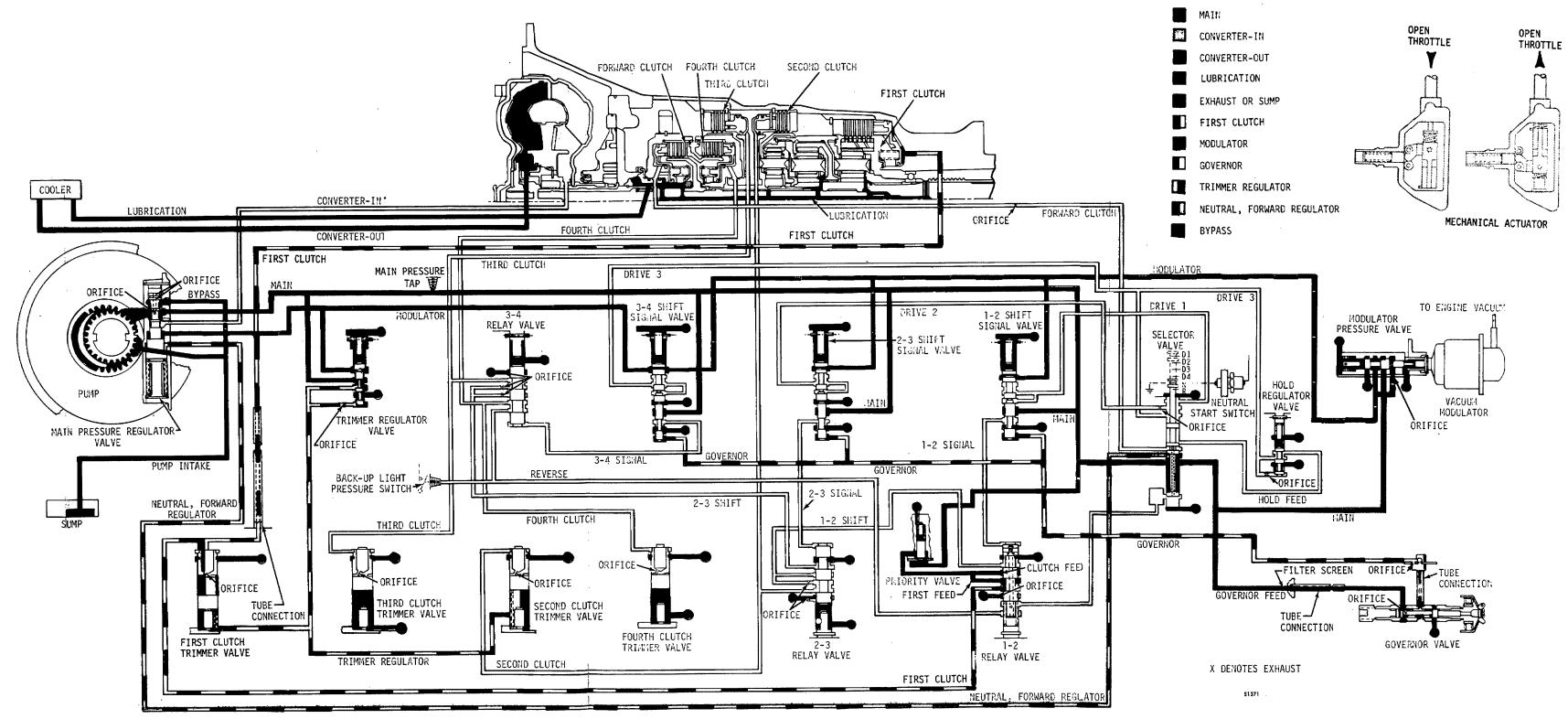
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- الم الم الم الم الم الم الم الم الم الم 23 25
- 1 Torque converter assembly (AT545)
- 2 Turbine shaft
- 3 Oil pump assembly
- 4 Front support
- 5 PTO drive gear
- 6 Forward clutch
- 7 Third clutch
- 8 Fourth clutch
- 9 Center support
- 10 Second clutch
- 11 Transmission main shaft
- 12 First clutch
- 13 Transmission main case
- 14 Governor drive gear
- 15 Speedometer drive gear
- 16 Output shaft
- 17 Rear planetary gear set
- 18 Oil pan
- 19 Center planetary gear set
- 20 Control valve body assembly
- 21 Front planetary gear set
- 22 Sun gear shaft
- 23 Oil filter
- 24 Intake pipe
- 25 Stator shaft

Foldout 2. Model AT 545 transmissions - cross-section view

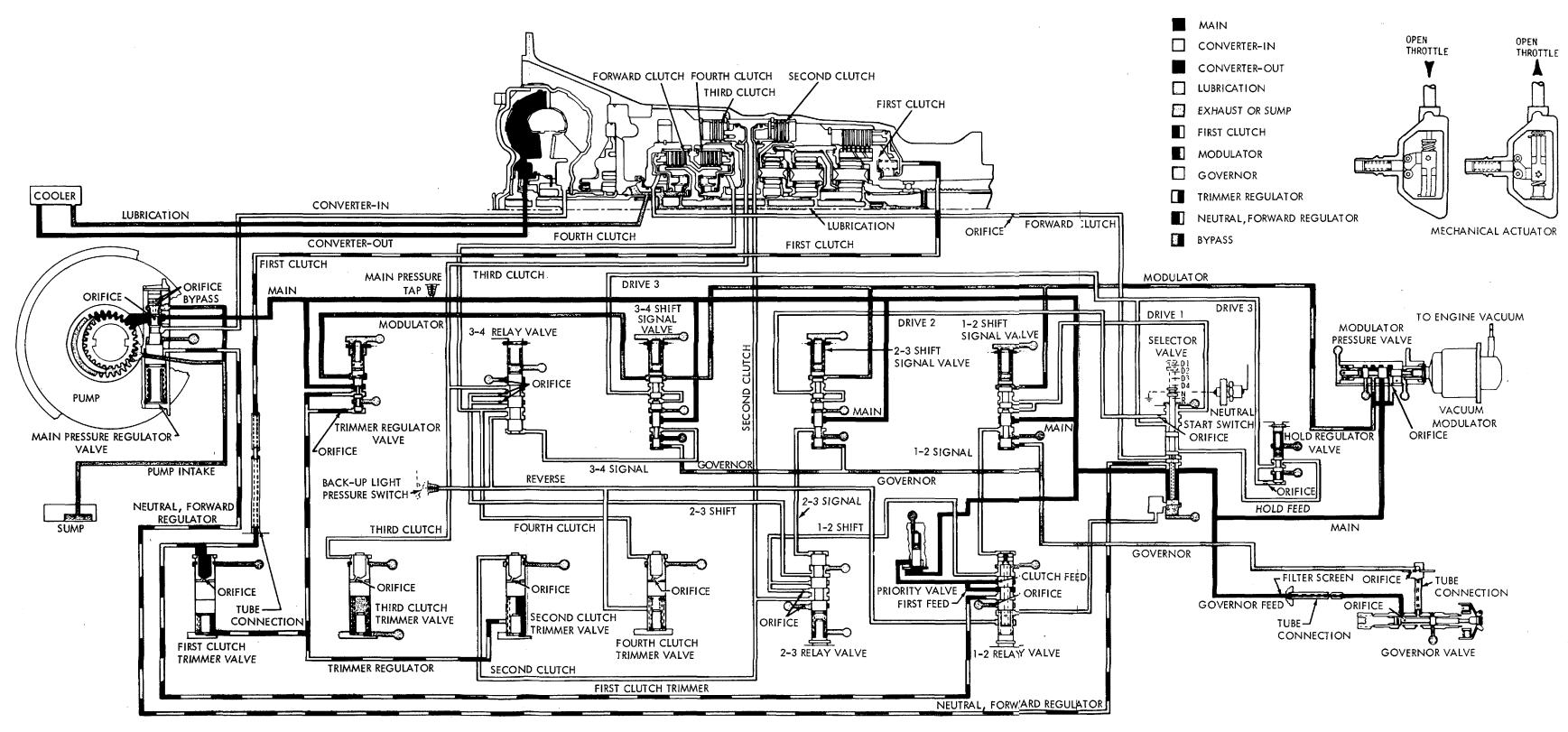
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Foldout 3. Model AT 540 transmissions hydraulic system - schematic view



54298

1 - Nut, 3/8-24 (6) C 2 - Torque converter assembly (AT 543) 3 - Spacer retainer (6) 4 -Spacer (6) 5 - Converter cover 6 - Self-locking nut, 5/16-24 (24)(B)7 - Bearing race 8 - Thrust bearing assembly 9 - Bearing race 10 - Thrust bearing spacer (selective) 11 - Converter turbine 12 - Converter stator assembly 13 - Stator thrust washer 14 - Stator cam washer 15 - Stator 16 - Stator cam 1 - Torque converter assembly- AT 540 2 - Oil pump and front support assembly 3 - Oil seal 4 - Sealring 5 - Pump body and gear assembly 6 - Pump body assembly 7 - Bushing 8 - Pump body 9 - Pump driven gear 10 - Pump drive gear 11 - Bolt, 5/16-18 x 1 (6) (8 on earlier models) 12 - Rubber coated washer (6)(A)(8 on later models 13 - Sealring 14 - Valve plug 15 - Pin 16 - Front support and bearing assembly *5 lb ft minimum after gasket sets.

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21 22 23

Α

17 - Stator cam washer

Α

18 - Freewheel washer

19 - Flat head rivet (6)

20 - Needle bearing assembly

21 - Freewheel roller race

22 - Freewheel roller (10)

23 - Freewheel roller spring (10)

24 - Bolt, $1/4-20 \ge 5/8(8)$

25 - Lockstrip(4)

26 - Converter pump hub

27 - Gasket

28 - Needle bearing assembly

29 - Bearing race

30 - Sealring

31 - Converter pump assembly

 $32 - Bolt, 5/16 - 24 \times 1.3$ (24)

Torque Specifications

(A) 9 to 11 lb ft (12 to 15 N·m) B 19 to 23 lb ft (26 to 31 N·m)
C 33 to 41 lb ft (45 to 56 N·m)

17 - Front support assembly 18 - Stator shaft bushing

19 - Stator shaft

20 - Lubrication plug

21 - Front support

22 - Plug

23 - Roller bearing

24 - Retainer ring

25 - Spring stop

26 - Valve spring

27 - Main pressure regulator valve

28 - Self-locking bolt, $5/16-18 \ge 1 \ 3/4 \ (3)$ 29 - Self-locking bolt, $5/16-18 \ge 1 \ 3/4 \ (3)$ 30 - Self-locking bolt, $5/16-18 \ge 1 \ 3/4 \ (9)$

31 - Rubber coated washer, 5/16(9)

32 - Gasket

33 - Thrust washer (selective)

34 - Hook-type sealring (2)

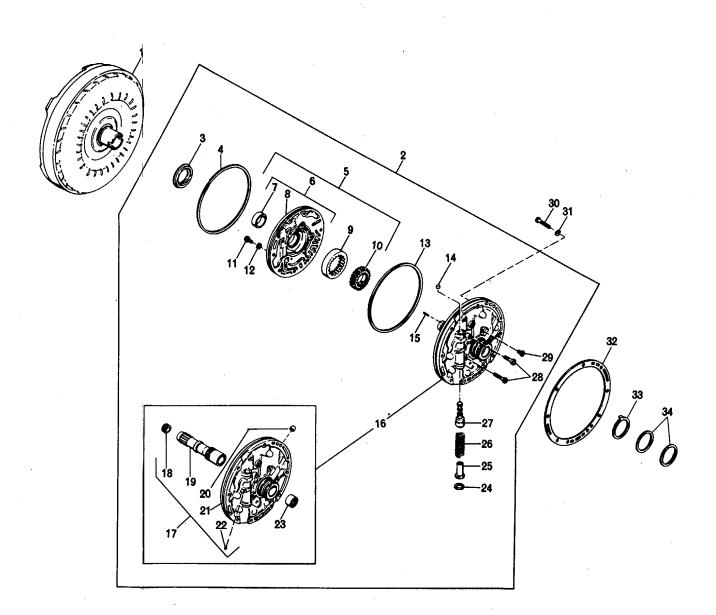
Torque Specifications (A) 15-20 lb ft (20-27 N·m)

* (B) 13-16 lb ft (18-22 N·m)

A, foldout 5. Torque converter and oil pump assemblies - exploded view

10113A

В



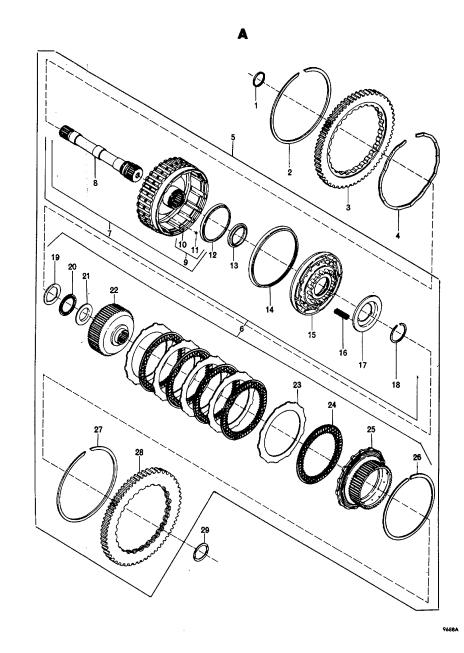
14805 A

B, foldout 5. Torque converter and oil pump assemblies - exploded view

- 1- Hook-type sealring
- 2 Snapring (earlier models)
- 3 PTO drive gear (earlier models)
- 4 Wave-type snapring (earlier models)
- 5 Forward clutch and turbine shaft assembly (w/PTO)
- 6 Forward clutch and turbine shaft assembly (w/o PTO)
- 7 Housing and shaft assembly
- 8 Turbine shaft
- 9 Forward clutch housing assembly
- 10 -Forward clutch housing
- 11 Ball 12 Clutch housing sealring (early models)
- 13 Piston inner seeking
- 14 Piston outer sealring
- 15 Forward clutch piston (selective)
- 16 Clutch release spring (16)
- 17 Spring retainer
- 18 Snapring
- 19 Thrust bearing race.
- 20 Thrust needle bearing
- 21 Thrust bearing race
- 22 Forward clutch hub
- 23 External-tanged clutch plate (5)
- 24 Internal-splined clutch plate (5)
- 25 Fourth clutch driving hub
- 26- Snapping
- 27 Snapring (later models)
- 28 PTO drive gear (later models)
- 29 Thrust washer

В

- 1 Snapring
- 2 Clutch back plate
- a Internal -splined clutch plate (5)
- 4- External-tanged clutch plate (5)
- 5 Shapring
- 6- Spring retainer
- 7 Clutch return spring (16)
- 8 Fourth clutch piston (selective)
- 9 Piston outer sealring
- 10 Clutch housing sealring
- 11 Fourth clutch housing assembly
- 12 Ball
- 13 Fourth clutch housing

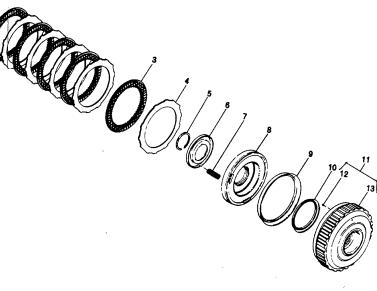


A, foldout 6. Forward clutch and turbine shaft - exploded view

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AT 540 SERIES AUTOMATIC TRANSMISSIONS

FOLDOUT 6



В

75530

B, foldout 6. Fourth clutch-exploded view

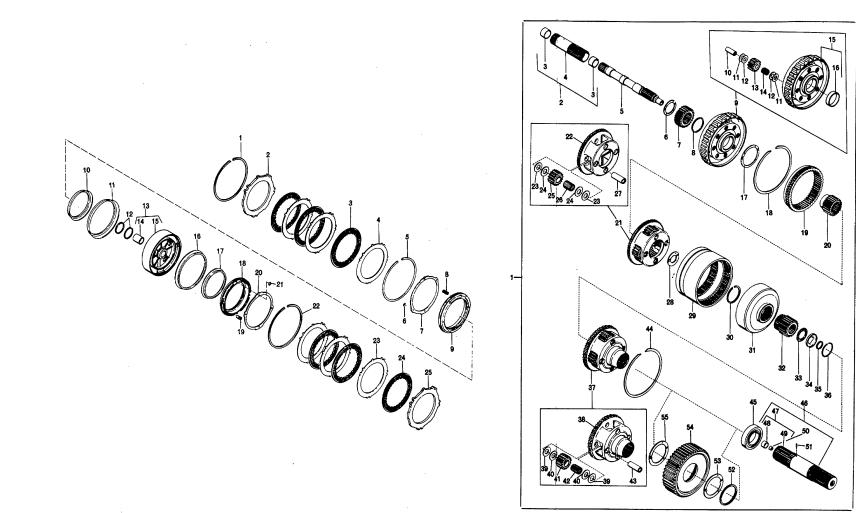
Α

- 1 Snapring 2 - Third clutch back plate (ident. 2)
- 3 Internal-splined clutch plate (3)
- 4 External-tanged clutch plate (3)
- 5 Snapring (selective)
- 6 Self-locking retainer washer (4)
- 7 Spring retainer
- 8 Piston return spring (12)
- 9 Third clutch piston
- 10 Piston inner sealring
- 11 Piston outer sealring
- 12 Hook-type sealring (2)
- 13 Center support and bushing assembly
- 14- Bushing
- 15 Center support
- 16 Piston outer sealring
- 17 Piston inner sealring
- 18 Second clutch piston
- 19 Piston return spring (12)
- 20 Spring retainer
- 21 Self-locking retainer washer (4)
- 22 Snapring
- 23 External-tanged clutch plate (3)
- 24 Internal-splined clutch plate (3)
- 25 Second clutch back plate (selective)

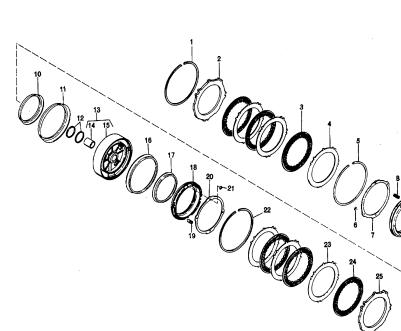
В

- 1 Planetary gear unit
- 2 Sun gear shaft assembly
- 3 Bushing (2)
- 4 Sun gear shaft
- 5 Transmission main shaft
- 6 Thrust washer
- 7 Front planetary sun gear
- 8 Thrust washer (selective)
- 9 Front planetary carrier assembly
- 10 Pinion pin (4)
- 11 Bronze thrust washer (8)
- 12 Steel thrust washer (8)
- 13 Pinion (4)
- 14 Needle roller bearing (80)
- 15 Carrier and bushing assembly
- 16 Bushing
- 17 thrust washer
- 18 Snapring
- 19 Front planetary ring gear
- 20 Center sun gear
- 21 Center planetary carrier assembly
- 22 Center planetary carrier
- 23 Bronze thrust washer (8)
- 24 Steel thrust washer (8)
- 25 Pinion (4)
- 26 Needle roller bearing (76)
- 27 Pinion pin (4)
- 28 Thrust washer

- 29 Planetary connecting drum
- 30 Snapring
- 31 Center planetary ring gear
- 32 Rear planetary sun gear
- 33 Needle thrust bearing
- 34 Thrust bearing race
- 35 Spiral retainer ring
- 36 Snapring
- 37 Rear planetary carrier assembly
- 38 Rear planetary carrier
- 39 Bronze thrust washer (8)
- 40 Steel thrust washer (8)
- 41 Pinion (4)
- 42 Needle roller bearing (76)
- 43 Pinion pin (4)
- 44 Snapring
- 45 Ball bearing
- 46 Output shaft assembly
- 47 Shaft and bushing assembly
- 48- bushing
- 49 Output shaft
- 50 Plug
- 51 Governor drive spring pin
- 52 Spiral retainer ring (prior to
- S/N 5071)
- 53 Space washer (prior to S/N 5071)
- 54 Rear planetary ring gear (prior
- to S/N 5071)
- 55 Spacer washer (prior to S/N 5071)



A, foldout 7. Second clutch, third clutch and center support-exploded view



A

AT 540 SERIES AUTOMATIC TRANSMISSIONS FOLDOUT 7

В

7561E

B, foldout 7. Planetary gear unit - exploded view

Α

1 - Snapring

- 2 Back plate (selective)
- 3 Internal-splined clutch plate (7)
- 4 External-tanged clutch plate (7)
- 5 Rear planetary ring gear (after
- S/N S070)
- 6 Snapring
- 7 Spring retainer
- 8 Piston return spring (22)
- 9 First clutch piston
- 10 Piston outer sealring
- 11 Piston inner sealring

В

1 - Gasket

2 - Power takeoff cover

3 - Bolt, 2/8-16 x 1 (6)

4 -Drive screw

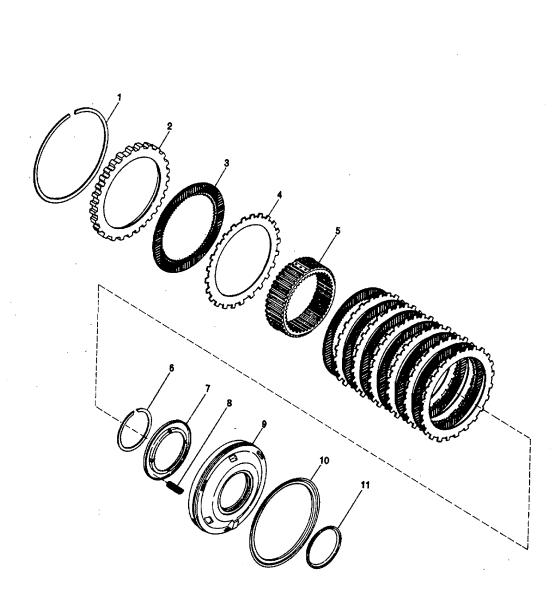
5 - Name plate

6 - Case assembly

- 7 Breather
- 8 Pipe plug, 1/8
- 9 Internal Snapring
- 10 Case and pin assembly
- 11 Transmission case
- 12 Governor support pin
- 13 Pipe plug, 1/8
- 14 Neutral start switch plug, 3/4
- 15 Gasket
- 16 Coil insert (4) (AT 543)
- 17 Governor assembly
- 18 Governor service kit
- 19 Governor weight pin (2)
- 20 Cover gasket 21 Governor cover
- 22 Bolt, 5/10-18 x 9/18 (4)(-)
- 23 Modulator valve actuating rod (diesel before S/N 22700
- 24 Bolt, 5/18-18 x 9/16O
- 25 Modulator retainer
- 26 Vacuum modulator
- 27 -Modulator sealring

28 - Modulator valve actuating rod (all gasoline; diesel after S/N 22699

Torque Specifications (A) 15 to 20 lb ft (20 to 27 N. m) (B) 10 to 15 lb ft (14 to 20 N. m) (C) 25 to 30 lb ft (34 to 41 N m)

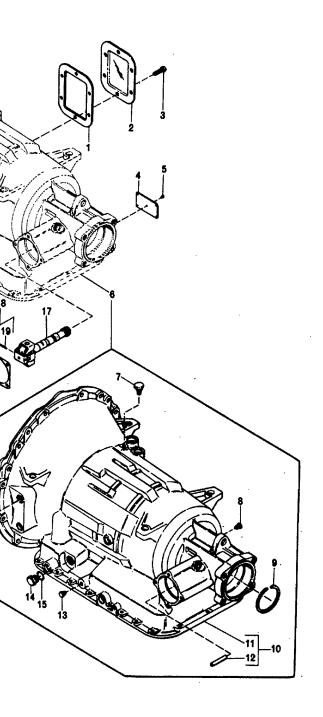


A

A, foldout 8. First clutch - exploded view

9577

B



10112 0

B, foldout8. Transmission case, governor and vacuum modulator-exploded view

Α

- 1 Control valve body assembly
- 2 Separator plate
- 3 Bolt, 1/4-20 x 1 3/4 (3)
- 4 Retainer pin
- 5 Adjusting ring
- 6 Valve stop
- 7 Washer
- 8 Valve spring
- 9 Modulator valve
- 10 Modulator valve body
- 11 Control valve bow
- 12 Third clutch trimmer valve
- 13 Trimmer plug
- 14 Trimmer spring
- 15 Valve stop
- 18 First clutch trimmer valve
- 17 Trimmer plug
- 18 Trimmer outer spring
- 19 Trimmer inner spring (after S/N 34500)
- 20 Valve atop
- 21 Second clutch trimmer valve
- 22 Trimmer plug
- 23 Trimmer spring
- 24 Valve atop
- 25 Fourth clutch trimmer valve
- 26 Trimmer plug
- 27 Trimmer outer spring
- 28 Trimmer inner Spring (after S./N 34500)
- 29 Valve atop
- 30 Trimmer cover
- 31 Bolt, 1/4-20 x 3/4 (8)
- 32 Retainer pin
- 33 Retainer pin
- 34 2-3 relay valve
- 35 Relay valve spring
- 36 Valve stop
- 37 1-2 relay valve

Torque Specification

(A) 9 to 11 lb ft (12-15 N. m)

- 38 Relay valve spring
- 39 Spring spacer
- 40 Valve stop
- 41 Priority valve spring
- 42 Priority valve
- 43 Hold regulator valve
- 44 Valve spring
- 45 Valve stop
- 46 Washer (starting with S/N 11378ff)
- 47 Adjusting ring (starting with S/N 113786)
- 48 Retainer pin
- 49 Manual selector valve
- 50 1-2 shift signal valve
- 51 Shift modulator valve
- 52 Valve spring
- 53 Valve stop

- 54 Adjusting ring
- 55 Retainer pin
- 56 2-3 shift signal valve
- 57 Shift modulator valve

25 - Drain plug gasket

27 - Bolt, 3/8-16 x 1

28 - Steel ball, 1/4

31 - Selector lever

33 - Selector shaft

34 - Oil seal

26 - Plain washer, 13/32

29 - Selector shaft retainer pin 30 - Locknut, 3/8-24 (3

32 - Locknut, M10 x 1.5 -6G 0

A, foldout 9. Control valve body assembly-exploded view

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- 58 Valve spring
- 59 Valve stop
- 60 Adjusting ring
- 61 Retainer pin
- 62 3-4 shift signal valve
- 63 Shift modulator valve
- 64 Valve spring
- 64 Valve spring
- 65 Valve stop 5
- 66 Adjusting ring
- 67 Retainer pin
- 68 3-4 relay valve
- 69 Relay valve spring
- 70 Valve stop
- 71 Retainer pin
- 72 Trimmer regulator valve
- 73 Valve spring
- 74 Valve stop
- 75 Retainer pin
- 76 Valve plug (Prior to S/N 113786)

В

- 1 Governor drive gear
- 2 Speedometer drive gear
- 3 Spacer (selective)
- 4 Ball bearing
- 5 Snapring
- 6 Oil seal
- 7 First clutch tube
- 8 Governor tube (2)
- 9 Governor oil screen
- 10 Bolt, 1/4-20 x 2 3/4 (later(3)
- models use 2 1/4 length)
- 11 Bolt, 1/4-20 x 1 3/4
- 12 Detent roller and spring assembly
- 13 Bolt, 1/4-20 x 2 1/4 (17)
- 14 Sealring
- 15 Intake pipe

18 - Washer

21 - Oil pan

23 - Magnet 24 - Drain plug

- 16 Spacer
- 17 Oil filter assembly

(A) 9 -11 lb ft (12-15 N. m)

(B) 10-15 lb ft (14-20 N. m)

(D)39-46 lb ft (53-62 N m)

19 - Bolt, 5/16-18 x 2 1/4

22 - Washer - head screw 5/16-18 x 5/8 (21) @)

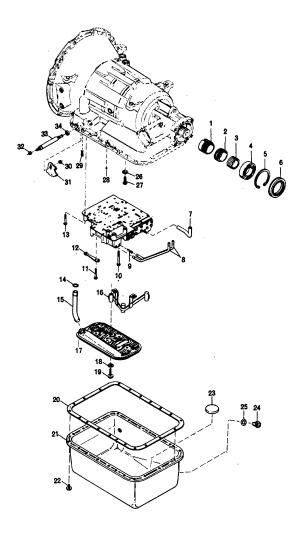
20 - Oil pan gasket

(E) 15-20 lb M (20-27 N. m)

*5 lb ft minimum after gasket sets.

(C) *10-13 lb ft (14-18 N. m)

Torque Specifications



7**592**G

B, foldout 9. Oil pan, oil filter, and governor and speedometer drives - exploded view

Allison Transmissions

AT 540,543,545 Service Manual



By Order of the Secretary of the Army:

Official:

JOHN A. WICKHAM,JR. General, United States Army Chief of Staff

R. L. DILWORTH Brigadier General, United States Army The Adjutant General

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THE METRIC SYSTEM AND EQUIVALENTS

Linear Measure

1 centimeter = 10 millimeters = .39 inch 1 decimeter = 10 centimeters = 3.94 inches 1 meter = 10 decimeters = 39.37 inches 1 dekameter = 10 meters = 32.8 feet 1 hectometer = 10 dekameters = 328.08 feet 1 kilometer = 10 hectometers = 3.2808.8 feet

Weights

1 centigram = 10 milligrams = .15 gram 1 decigram = 10 centigrams = 1.54 grains 1 gram = 10 decigram = .035 ounce 1 dekagram = 10 grams = .35 ounce 1 hectogram = 10 dekagrams = 3.52 ounces 1 kilogram = 10 hectograms = 2.2 pounds 1 quintal = 100 kilograms = 220.46 pounds 1 metric ton = 10 quintals = 1.1 short tons

Cubic Measure

1	cu.	centimeter =	1000 cu.	millimeters =	.06 cu. inch
1	cu.	decimeter =	1000 cu.	centimeters =	61.02 cu in.
1	cu.	meter = 1000) cu. deci	meters $= 35.3$	1 cu. feet

Approximate Conversion Factors

To change	То	Multiply by	To change	То	Multiply by
inches	centimeters	2.540	ounce inches	newton-meters	.0070062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
sq. inches	sq. centimeters	6.451	kilometers	miles	.621
sq. feet	sq. meters	.093	sq. centimeters	sq. inches	.155
sq. yards	sq. meters	.836	sq. meters	sq. yards	10.764
sq. miles	sq. kilometers	2.590	sq. kilometers	sq. miles	1.196
acres	sq. hectometers	.405	sq. hectometers	acres	2.471
cubic feet	cubic meters	.028	cubic meters	cubic feet	35.315
cubic yards	cubic meters	.765	milliliters	fluid ounces	.034
fluid ounces	milliliters	29.573	liters	pints	2.113
pints	liters	.472	liters	quarts	1.057
quarts	liters	.946	grams	ounces	.035
gallons	liters	3.785	kilograms	pounds	2.205
ounces	grams	28.349	metric tons	short tons	1.102
pounds	kilograms	.454	pound-feet	newton-meters	1.356
short tons	metric tons	.907	-		
pound inches	newton-meters	.11296			

Temperature (Exact)

°F Fahrenheit temperature

5/9 (after subtracting 32)

Celsius Temperature °C

Square measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. in. 1 sq. decimeter = 100 sq. centimeters = 15.5 inches 1 sq. meter (centare) = 100 sq. decimeters = 10.76 feet 1 sq. dekameter (are) = 100 sq. meters = 1.076.4 sq. ft. 1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47acres

1 sq. kilometer = 100 hectometers = .386 sq. miles

Liquid Measure

1 dekaliter = 10 liters = 2.64 gallons 1 hectoliter = 10 dekaliters = 26.42 gallons 1 kiloliter = 10 hectoliters = 264.18 gallons 1 hiter = 10 deciliters = 33.81 fl. ounces 1 centiliter = 10 milliliters = .34 fl. ounce 1 deciliter = 10 centiliters = 3 38 fl. ounces 1 metric ton = 10 quintals = 1.1 short tons

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