DEPARTMENT OF THE ARMY TECHNICAL MANUAL

FIELD AND DEPOT MAINTENANCE MANUAL

SNOW REMOVAL UNIT, SELF-PROPELLED:

GASOLINE DRIVEN; ROTARY; WHEEL MTD;

WINTERIZED (FWD MODEL S-349-V)

FSN 3825-810-7074

HEADQUARTERS, DEPARTMENT OF THE ARMY

27 AUGUST 1962

SAFETY PRECAUTIONS

Be sure to remove all tools and other repair equipment from the snow removal unit before starting operation, as they could cause serious damage to the equipment or bodily injury to personnel.

Before removing any engine components for repair, clean walkway and decks to free them of grease, oil, ice, and mud in order to prevent personal injury by slipping or falling.

Be sure to use an adequate lifting device when removing heavy components as serious damage to equipment or injury to personnel could result.

When a malfunction of the selenium rectifier occurs, thoroughly ventilate area to prevent inhalation of fumes. Do not handle the damaged selenium rectifier. Selenium oxide may be absorbed through the skin, especially when the rectifier is hot. Failure to observe this warning can result in serious injury or death.

Before repairing or replacing wiring in the electrical system be sure to disconnect the battery cables to avoid serious burns.

When test operation of an engine is being conducted in a building be sure to ventilate exhaust gases to outside. These gases contain carbon monoxide, a colorless, odorless, poisonous gas.

CHANGE

NO. 2

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington D.C., *12 July 1991*

FIELD AND DEPOT MAINTENANCE MANUAL

SNOW REMOVAL UNIT, SELF-PROPELLED: GASOLINE DRIVEN; ROTARY; WHEEL MOUNTED; WINTERIZED; (FWD MODEL S-349-V)

NSN 3825-00-810-7074

TM 5-3825-213-35, 27 August 1962, is changed as follows:

Cover. The cover of the manual is changed to read as shown above.

Inside front cover. Add the following WARNING to the inside front cover of the manual:

WARNING

If NSC exposure Is suspected, all air filter media should be handled by personnel wearing protective equipment. Consult your unit NBC Officer or NBC NCO for appropriate handling or disposal Instructions.

Page 3. The address listed in paragraph 1*d* is changed to read "Commander, U.S. Army Tank-Automotive Command, ATTN: AMSTA-MB, Warren, MI 48397-5000".

By Order of the Secretary of the Army:

GORDON R. SULLIVAN
General, United States Army
Chief of Staff

Official:

PATRICIA P. HICKERSON
Brigadier General, United States Army
The Adjutant General

Distribution:

To be distributed IAW DA Form 12-25-E (Block No. 1638) Direct Support and General Support maintenance requirements for TM 5-3825-213-35.

TECHNICAL MANUAL

Field and Depot Maintenance Manual
SNOW REMOVAL UNIT, SELF-PROPELLED: GASOLINE DRIVEN;
ROTARY; WHEEL MOUNTED; WINTERIZED; (FWD MODEL S-349-V)
FSN 3825-810-7074

TM 5-3825-213-35
CHANGES No. 1

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON 25, D.C., *25 March 1963*

TM 5-3825-213, 27 August 1962, is changed as follows:

Page 3, paragraph 1*e*.

e. (Superseded) Report all Equipment Improvement Recommendations as prescribed by TM 38-750.

Page 227, Appendix I. Delete AR 750-5 Maintenance Responsibilities and Shop Operation, and AR 700-38, Unsatisfactory Equipment Report.

TAGO 8465A--678231 -- April 1963

BY ORDER OF THE SECRETARY OF THE ARMY:

EARLE G. WHEELER,
General, United States Army,
Chief of Staff.

Official:

J. C. LAMBERT,
Major General, United States Army,
The Adjutant General.

Distribution:

Active Army:

USASA (2)
DCSLOG (1)
CNGB (1)
TSG (1)
CofEngrs (3)
CSigO (1)
CofT (1)
USA Maint Bd (1)
USAARTYBD (2)
USAARMBD (2)
USAIB (2)
USARADBD (2)
USA Abn Elct & SPWAR Bd (2)
USAAVNBD (2)
USCONARC (3)
USAMC (5)
OS Maj Comd (5) except
USARJ (10)
MDW (1)
Armies (2)
Corps (2)
USA Corps (1)
Div (2)
Engr Bde (1)
USMA (2)
Svc Colleges (2)
Br Svc Sch (2) except
USAES (100)
GENDEP (OS) (10)
Engr Dep (OS) (10)
Army Dep (2)
USA Trans Tml Comd (2)
Army Tml (1)
USAOSA (2)
Engr Dist (2)
Div Engr (2)
Engr Fld Maint Shops (2)
USAERDL (3)
Engr Cen (5)
AMS (3)
Chicago Engr Proc Olc (10)
USA Mbl Spt Cen (36)
ESCO (10)
Fld Comd, DASA (8)
USACOMZEUR (2)
USAREUR Engr Sup Con Agcy (10)
USAREUR Engr Proc Cen (2)
MAAG (1)
JBUSMC (1)
Units org under fol TOE:
5-48 (2)
6-237 (5)
5-262 (5)
5-267 (1)
5-278 (5)
5-279 (2)
5-500 (EA,EB) (2)

NG: State AG (3).

USAR: Units - same as Active Army except allowance is one copy to each unit. For explanation of abbreviations used, see AR 320-50.

TAGO 8465A

☆ U. S. GOVERNMENT PRINTING OFFICE: 1963

TECHNICAL MANUAL
No. 5-3825-213-35

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON 25, D.C., 27 August 1962

Field and Depot Maintenance Manual

SNOW REMOVAL UNIT, SELF-PROPELLED: GASOLINE DRIVEN; ROTARY; WHEEL MTD; WINTERIZED (FWD MODEL S-349V) FSN 3825-810-7074

CHAPTER 1
INTRODUCTION

Section I. GENERAL

1. Scope

a. These instructions are published for the use of field and depot maintenance personnel maintaining the FWD Model S-349-V snow removal unit. They provide information on the maintenance of the equipment which is beyond the scope of the tools, equipment, personnel, or supplies normally available to using organizations.

b. Appendix I contains a list of publications applicable to this manual. The Maintenance Allocation Chart is published in TM 5-3825-213-20. Field and depot maintenance repair parts are listed in TM 5-3825-213-35P.

c. Numbers in parentheses on illustrations indicate quantity. Numbers preceding nomenclature callouts on illustrations indicate the preferred maintenance sequence.

d. Report all deficiencies in this manual on DA Form 2028. Submit recommendations for changes, additions, or deletions to The Commanding General, Military Construction Supply Agency/U. S. Army Engineer Maintenance Center, Corps of Engineers, ATTN: MCSDM, P. O. Box 119, Columbus 16, Ohio. Direct communication is authorized.

e. Report unsatisfactory equipment performance and suggestions for equipment improvement as specified in AR 700-38.

2. Record and Report Forms

For record and report forms applicable to field and depot maintenance refer to TM 5-505.

Note.
Applicable forms, excluding standard Form 46 which is carried by the operator, shall be kept in a canvas bag mounted on the equipment.

Section II. DESCRIPTION AND DATA

3. Description

A general description of the snow removal unit and description of the identification and instruction plates, and information of the difference in models are contained in TM 5-3825-213-10. A more detailed description of the components is contained in TM 5-3825-213-20. The repair and maintenance instructions are described in appropriate sections of this manual.

4. Tabulated Data

a. Engines Classification and Rating.

Manufacturer..... Waukesha Motor Company
Model..... T-H884
Type..... V8-w/valve in head, 4 cycle
Number of cylinders..... 8
Piston displacement..... 884 cu. in. (cubic inch) (es)
Bore..... 5 3/8 in. (inch) (es)
Stroke..... 4 7/8 in.
Maximum torque at..... 780 ft-lb (foot-pound) (s) 1,800 rpm (revolutions per minute).
Maximum horsepower..... 330 rating at 2,600 rpm.
Compression ratio..... 7.6:1
Cylinder liners..... Replacement wet-type
Piston pin type..... Full floating
Valve type..... Straight

b. Engines Repair and Replacement Standards. Table I lists manufacturer's sizes, tolerances, desired clearances, and maximum allowable wear and clearance.

Table I. Engine Repair and Replacement Standards

	Manufacturer's dimensions and tolerances in inches		Desired clearance		Maximum allowable wear	Maximum allowable clearance
	Min.	Max.	Min.	Max.		
Connecting Rods						
Side play	0.005	0.009	------	------	------	0.010
Bore diameter	3.250	3.252				
Pin bushing id	1.500	1.501	------	------	0.005	
Bearing running clearance	------	------	0.002	0.005	------	0.005
Pistons						
Skirt diameter	5.372	5.374	------	------	0.005	
Skirt clearance in liners	------	------	0.004	0.007	------	0.010
Piston Pin						
Diameter	1.499	1.500	------	------	0.002	
Clearance in rod bushing	------	------	0.001	0.002	------	0.002
Piston Rings						
No. 1						
Width	0.093	0.094	------	------	0.003	
Clearance in groove	------	------	0.004	0.006	------	0.007
Gap	------	------	0.017	0.032	------	0.037
No. 2						
Width	0.123	0.124	------	------	0.003	
Clearance in groove	------	------	0.003	0.005	------	0.006
Gap	------	------	0.017	0.032	------	0.037
No. 3						
Width	0.124	0.125	------	------	0.003	
Clearance in groove	------	------	0.002	0.004	------	0.005
Gap	------	------	0.017	0.032	------	0.037
No. 4						
Width	0.248	0.249	------	------	0.004	
Clearance in groove	------	------	0.002	0.004	------	0.005
Gap	------	------	0.017	0.032	------	0.037
Crankshaft						
End play	------	------	0.004	0.008	------	0.010
Journal diameter (main bearings)	3.748	3.749	------	------	0.007	
Main bearing running clearance	------	------	0.002	0.005	------	0.007
Connecting rod journal	3.248	3.249	------	------	0.005	
Camshaft						
Bearing id	2.250	2.251	------	------	0.003	
Bearing clearance in crankcase	------	------	0.005	0.008	------	0.010
Journal diameter	2.247	2.248	------	------	0.003	
Bearing running clearance	------	------	0.002	0.004	------	0.006
Valves						
Guides, ream at assembly						
Intake	0.436	0.437	------	------	0.002	
Exhaust	0.437	0.438	------	------	0.002	
Stem diameter						
Intake	0.434	0.435	------	------	0.002	
Exhaust	0.434	0.435	------	------	0.002	
Stem-to-guide clearance						
Intake	------	------	0.002	0.004	------	0.005
Exhaust	------	------	0.003	0.005	------	0.006

Table I. Engine Repair and Replacement Standards-Continued

	Manufacturer's dimensions and tolerances in inches		Desired clearance		Maximum allowable wear	Maximum allowable clearance
	Min.	Max.	Min.	Max.		
Tappet clearance						
Intake	------	------	------	0.015		
Exhaust	------	------	------	0.0120		
Inserts press in head (interference).	------	------	0.003	0.005	------	0.006
Valve Lifters						
Outside diameter	1.185	1.186	------	------	0.002	
Block hole diameter	1.187	1.188				
Clearance in block	------	------	0.001	0.003	------	0.004
Push rod length	15.188					
Rocker Arm Shaft						
Shaft diameter	0.980	0.981	------	------	0.001	
Bushing id (reamed)	0.982	0.983	------	------	0.002	
Bushing-to-shaft clearance	------	------	0.001	0.003	------	0.004
Accessory Drive						
Journal diameter	0.998	0.999	------	------	0.002	
Bearing id	------	------	0.001	0.002	------	0.003
Backlash	------	------	------	------	------	0.003

c. Generator Classification and Rating.

Manufacturer.....Leece-Neville Company
Rotation .....Reversible
Voltage .....28 v (volt) (s)
Type.....5300 GP

d.Generator Regulator Classification and Rating.

Manufacturer.....Leece-Neville Company
Voltage .....28 v
Amperage .....10 amp (ampere) (s)
Type.....R0013392RP
Load relay gap setting
Hinge gap.....0.006 in. + 0.002 in.
Core gap .....0.028 in. + 0.003 in.
Contact gap, main .....0.060 in. + 0.002 in.
Contact gap, auxiliary.....0-.030 in. + 0.002 in.

e.Rectifier Classification and Rating.

Manufacturer.....Leece-Neville Company
Voltage .....28 v
Amperage .....100 amp
Type.....3 Phase full waves bridge-type selenium
Type number.....C0011029CP

f .Starter Classification and Rating.

Manufacturer.....Delco-Remy Division of General Motors Corporation.
Model.....1113891
Spring brush tension .....36 oz (ounce) (s)
Voltage 24
Amperage .....
Minimum .....60 amp
Maximum .....90 amp
Revolutions per minute
Minimum 7,000
Maximum 10,700
Lock torque test
Amperes.....500 amp
Minimum torque .....26 ft-lb
Volts.....3.5 v

g.Governor Classification and Ratings

Manufacturer.....Zenith
Model.....B732-2
Type.....Combination mechanical and vacuum.
Ratio to engine speed 1/2

h.Distributor Classification and Rating.

Manufacturer.....Delco-Remy Division of General Motors Corporation.
Model.....1111643
Rotation .....Clockwise
Control .....Full automatic
Timing.....Adjustable through 45° (degree) (s)
Gap setting .....0.020 - 0.022 in.
Condenser capacity.....18 to 21 microfarads
Side play.....0.005 in.
End play.....0.003 to 0.010 in.
Breaker arm spring
Tension .....17 to 20 oz.
Voltage.....24
Cam angle .....21° -37°

i. Torqmatic Converter Classification and Rating.

Manufacturer.....Allison Division General Motors Corporation
Model.....TC544
Maximum input speed.....2,500 rpm
Maximum input torque .....850 ft-lb
Oil pump capacity .....19 gpm (gallon per minute) at 1,600 rpm.
Number of stages.....1
Number of phases.....3
Stator freewheel roller spring. 1.17 lb ± 0.11 lb at 0.94 in. operating height
Clutch pressure regulating spring. 82 lb ± 5% load at 2.22 in operating height
Converter pressure regulating spring. 88.6 lb ± 5% load at 3.52 in operating height.
Detent spring.....20 lb ± 10% at 1.5 in. operating height.
Lockup clutch piston return spring. 880 lb ± 10% load at 0.22 in. operating height.

j. Torqmatic Converter Repair and Replacement Standards. Table II list manufacturer's sizes, tolerances, desired clearances, and maximum allowable wear and clearance.

Table II. Torqmatic Converter Replacement Standards

	Manufacturer's dimensions and tolerances in inches		Desired clearance		Maximum allowable wear	Maximum allowable clearance
	Min.	Max.	Min.	Max.		
Converter Housing						
Oil pump drive gear bore	4.162	(nom)	------	------	0.010	
Oil pump drive gear thk (per face).	------	------	------	------	0.006	
Torque Converter Stator						
Thrust washer thk	0.127	(nom)	------	------	0.010 (even across face)	
	------	------	------	------		
Stator bore	4.764	(nom)	------	------	0.003	
Stator freewheel side washers thk.	0.058	(nom)	------	------	0.010	
Stator race od	4.749	(nom)	------	------	0.010	
Stator backplate thk	0.298	(nom)	------	------	0.010	
Stator freewheel roller spring (1)						
Torque Converter Turbine						
Turbine hub	0.570	(nom)	------	------	0.010	
Flywheel Assembly						
Pilot bore	2.435	(nom)	------	------	0.010	
Charging Oil Pump						
Converter pressure regulating valve clearance with cover.	------	------	------	------	0.006	
Converter pressure regulating spring (2).						

Note. Spring tension do
(1) 1.17 lb ± 0.11 lb at 0.94 In. operating height.
(2) 88.6 lb ± 5% load at 952 In. operating height.

k. Torqmatic Transmission Classification and Rating.

Manufacturer..... Allison Division of General Motors Corporation
Model..... TG 602 RM
Input rotation..... Right-hand
Output rotation ..... Same as input
Input speed ..... 2,100 rpm max
Input torque..... 3,000 ft-lb
Gear train..... Constant mesh compound planetary
Gears.....Spur-type alloy steel carburized and hardened.
Drive range ratio:
Low 4.4:1
Intermediate 2.33:1
High 1:1
Reverse.....3.54:1
Clutch packs 4
Oil pump .....Positive displacement gear-type

l. Torqmatic Transmission Repair and Replacement Standards. Table III lists manufacturer's sizes, tolerances, desired clearances, and maximum allowable wear and clearance.

Table III. Torqmatic Transmission Replacement Standards

	Manufacturer's dimensions and tolerances in inches		Desired clearance		Maximum allowable wear	Maximum allowable clearance
	Min.	Max.	Min.	Max.		
Transmission Housing						
Seal ring bore	------	3.552				
Transmission Main Shaft						
Journal diameter	1.9684	1.9689	------	------	0.0005	
Low Range Clutch						
Clutch friction plate thickness	------	0.153	------	------	0.020	
Clutch reaction plate thickness	------	0.109	------	------	0.020	
Intermediate Range Clutch						
Clutch friction plate thickness	------	0.170	------	------	0.020	
Clutch reaction plate thickness	------	0.113	------	------	0.020	
High Range Clutch						
Clutch friction plate thickness	------	0.153	------	------	0.020	
Clutch reaction plate thickness	------	0.109	------	------	0.020	
Reverse Range Clutch						
External snap ring thickness	------	0.115				
Clutch friction plate thickness	------	0.153	------	------	0.020	
Clutch reaction plate thickness	------	0.109	------	------	0.020	
Clutch pin dia	------	0.500	------	------	0.015	
Transmission Rear Oil Pump						
Gear end clearance with unit assembled.	------	------	------	------	------	0.008
Gear od clearance	------	------	------	------	------	0.010
Speedometer Drive						
Drive sleeve bore	0.375	0.381	------	------	0.006	
Drive shaft journal dia	0.366	0.372	------	------	0.006	
Drive bushing bore	0.374	0.379	------	------	0.005	0.008
Planetary Gearing						
Thrust washer thickness	0.050	0.063	------	------	0.13	
Minimum groove depth	0.005					
Gear end clearance assembled	------	------	------	------	------	0.063
Range Selector Valve						
Selector valve-to-housing clearance.	------	------	------	------	------	0.004

m. Front and Rear Axle Classification and Rating.

Manufacturer ..... FWD Corporation
Ratio 6.167:1
Differential bearing ..... 2 to 4 ft-lb preload.
Pinion bearing preload ..... 1/2 to 1 1/2 ft-lb
Type ..... Single reduction heavy duty
Pinion and ring gear backlash ..... 0.010 to 0.013 in.

n. Plow Engine Clutch Classification and Rating.

Manufacturer ..... FWD Corporation
Type ..... Air actuated
Air operating pressure ..... 85 to 105 lb
Clutch release lever free travel ..... 1/8 in.
Plate 1
Type ..... Dry
Springs

Number 12
Free length ..... 2 15/16 in.
Pounds pressure ..... 220-230 lbs @ 2 1/16 in.
Pressure plate to flywheel .... 15/32 in.
Release lever to pressure..... 2 9/32 in.
plate.
Release lever to flywheel ..... 2 3/4 in.
Backplate mounting to..... 1 1/4 in.
pressure plate.

o. Steering Gear Classification and Rating.

Manufacturer ..... FWD Corporation
Type ..... Semireversible cam and twin lever
Wheel angle ..... 26° to 30°
Lever shaft and bushing ..... 0.0025 to 0.005 in.
clearance.
Bushing-to-shaft reamed ..... 0.005 in.
clearance.

p. Plow Assembly Classification and Rating.

Manufacturer ..... Klauer Mfg. Co.
Auger drive sprocket ..... 3 with 24 teeth
Auger drive shaft procket ..... 1 with 15 teeth
Auger drive idler sprocket..... 1 with 15 teeth
lower.
Fan gearease
Type ..... Reduction gear integral with bevel gear.

q. Engine Heater Classification and Rating.

Manufacturer ..... Hupp Corporation, Perfection Division.
Heat output ..... 60,000 Btu (British thermal unit)
Fuel consumption ..... 75 gph (gallon per hour)
Watts (running) 40-50
Maximum ignition voltage .... 120% (percent)
Minimum ignition voltage 85%
Minimum operating voltage.. 75%
Voltage ..... 24 v

r. Personnel Heater Classification and Rating.

Manufacturer ..... Hupp Corporation, Perfection Division
Heat output ..... 60,000 Btu
Fuel consumption (high ..... 75 gph-
fire).
Watts (running) 140-150
Maximum ignition voltage 120%
Minimum ignition voltage 85%
Minimum operating voltage.. 75%
Voltage ..... 24 v

s. Nut and Bolt Torque Data.

Main bearing bolts ..... 150 ft-lb
Connecting rod bolts ..... 90 ft-lb
Cylinder-head studs ..... 175 ft-lb
Manifold stud ..... 60 ft-lb
Flywheel bolts ..... 175 ft-lb
Spark plugs ..... 29 ft-lb
Pinion yoke nut ..... 800-900 ft-lb
Differential bearing cap ..... 310-320 ft-lb
bolts after backlash adjustment.

t. Adjustment.

Caster	1 1/2° positive
Camber	2° positive
Toe-in	0 to 1/8 in.

u. Time Standards. Table IV lists the number of man-hours required under normal conditions to perform the indicated maintenance and repair for the snow removal unit. Components are listed under the appropriate functional index. The times listed are not intended to be rigid standards. Under adverse conditions, the operations will take longer; but under ideal conditions with highly skilled mechanics, most of the operations can be accomplished in considerably less time.

Note. Symbols in table IV are as follows:

(A) Denotes components relative to the plow.
(B) Denotes components relative to the carrier.

Table IV. Time Standards.

		Lubrication and service	Man/Hours
01		ENGINE	
	0100	ENGINE ASSEMBLY	
		Engine assembly	
		(drain and refill crankcase)	0.8
	0106.2	OIL FILTERS	
		Filter assembly, oil	
		(remove element, clean housing with approved solvent, dry. Install element, start engine, check oil level gage, and inspect for leaks)	0.6
	0106.5	CRANKCASE VENTILATION	
		Breather assembly	
		(remove, clean with approved solvent, dry and replace)	0.5

Table IV. Time Standards-Continued

		Lubrication and service	Man/Hours
	0106.6	OIL PAN, LINES, LEVEL GAGE	
		Screen, oil strainer	
		(remove, clean with approved solvent, dry and replace)	7.0
02		CLUTCH	
	0200	CLUTCH ASSEMBLY	
		Clutch assembly	
		(lubricate fittings)	0.4
03		FUEL SYSTEM	
	0302.4	FUEL PUMP, GASOLINE	
		Pump, fuel	
		(remove, wipe clean, and replace)	0.4
	0304	AIR CLEANER	
		Air cleaner	
		(remove screen, clean with approved solvent, dry and replace)	0.7
	0306	TANK, LINES, FITTINGS	
		Tank, fuel	
		(remove breather, clean and replace)	0.4
	0309	FUEL FILTERS	
		Strainer, fuel	
		(remove element, clean housing, dry and replace)	0.6
05		COOLING SYSTEM	
	0501	RADIATOR	
		Radiator	
		(drain and refill)	0.5
06		ELECTRICAL SYSTEM	
		(ENGINE AND VEHICULAR)	
	0603	STARTER	
		Starter	
		(lubricate oil points)	0.2
	0604.1	DISTRIBUTOR	
		Distributor	
		(remove plug and oil wick)	0.4
	0604.6	IGNITION COIL: WIRING, SPARK PLUGS	
		Spark plugs	
		(remove, clean, gap and replace)	1.0
	0612	BATTERIES	
		Batteries	
		(clean and add water)	0.7
07		TRANSMISSION	
	0700	TRANSMISSION ASSEMBLY	
		Transmission assembly	
		(drain and refill to proper level)	0.6
	0706.3	OIL FILTERS	
		(remove element, clean housing with approved solvent, dry and install new element)	1.0
	0706.5	OIL COOLERS	
		Cooler, oil	
		(drain and refill)	0.5
	0706.7	VENTILATION AND BREATHERS	
		Breather	
		(remove, clean with approved solvent, dry and replace)	0.2
08		POWER TRANSFER	
		(Regular Mechanical Transfer Only)	

Table IV. Time Standards-Continued

		Lubrication and service	Man/Hours
	0800	POWER TRANSFER ASSEMBLY	
		Power transfer assembly	
		(drain and refill to proper level)	0.7
09		PROPELLER SHAFT	
	0900	PROPELLER SHAFTS	
		Shaft assembly, propeller	
		(lubricate fittings)	0.2
	0903	PILLOW BLOCKS, BEARINGS	
		Bearing assembly, drive shaft	
		(lubricate fittings)	0.2
10		FRONT AXLE	
	1000	FRONT AXLE ASSEMBLY	
		Axle assembly, front	
		(drain and refill to proper level)	0.6
	1005	VENTILATION	
		Breather	
		(remove, clean with approved solvent, dry and replace)	0.4
11		REAR AXLE	
	1100	REAR AXLE ASSEMBLY	
		Axle assembly, rear	
		(drain and refill to proper level)	0.6
		VENTILATION	
		Breather	
		(remove, clean with approved solvent, dry and replace)	0.4
12		BRAKES (Other than Special Purpose)	
	1201	HAND BRAKES	
		Brakes, hand	
		(lubricate fittings)	0.2
	1206	MECHANICAL BRAKE CONTROLS	
		Controls, brake	
		(lubricate fittings)	0.2
	1209	AIR COMPRESSOR ASSEMBLY	
		Compressor assembly, air	
		(drain and refill to proper level)	0.8
	1209.3	AIR RESERVOIR, FITTINGS	
		Reservoir, air	
		(drain moisture)	0.1
13		WHEELS AND TRACKS	
	1311	WHEEL ASSEMBLY	
		Wheel assembly	
		(remove bearings, clean with approved solvent, dry, repack and replace)	1.0
	1313	TIRES, TUBES	
		Tires	
		(check and add air if necessary)	0.3
14		STEERING	
	1401	STEERING ASSEMBLY	
		Steering assembly	
		(drain and refill to proper level)	0.4
	1413	TANKS; RESERVOIRS	
		Tank	
		(drain and refill to proper level)	0.4
43		HYDRAULIC, AIR AND VACUUM SYSTEMS (EXCLUDE BRAKE SYSTEMS)	
	4300	HYDRAULIC SYSTEM	
		Hydraulic system	
		(drain and refill to proper level)	0.6

Table IV. Time Standards-Continued

		Lubrication and service	Man/Hours
	4301.1	STRAINERS AND FILTERS	
		Strainers and filters	
		(remove element, wash housing with approved solvent, dry and replace with new element)	0.8
	4308	OIL TANK OR RESERVOIRS	
		Tank, hydraulic oil	
		(drain and refill to proper level)	0.6
50		PNEUMATIC EQUIPMENT	
	5008	AIR INTAKE	
		Air cleaner	
		(remove screen, clean with approved solvent, dry and replace)	0.5
60		STEAM BOILERS; WATER HEATERS; HEATING UNITS; BURNERS	
	6000.3	ENGINE OR EQUIPMENT HEATERS	
		Filter assembly, fuel	
		(remove element, clean housing with approved solvent, dry and replace)	0.6
71		SNOW REMOVAL; MOWING; SWEEPING EQUIPMENT	
	7103	FEED AND DISCHARGE: ACTIVATING MECHANISM	
		Turret assembly	
		(lubricate fittings)	0.3
		Gearbox assembly	
		(drain and refill to proper level)	0.4
	7103.1	ROTOR BRAKES, BLADES, FANS, SHAFTS, AUGER, BEARINGS	
		Auger assembly	
		(lubricate fittings)	0.2
		Rotor assembly, fan	
		(lubricate fittings)	0.2
	7103.3	DRIVE AND CONTROLS: TILTING ATTACHMENTS	
		Drive shaft assembly, auger	
		(lubricate fittings)	0.3
		Gearcase assembly, fan and auger drive	
		(drain and refill to proper level)	0.4
		Lift assembly, hydraulic	
		(lubricate fittings)	0.2
		Tightener assembly, chain	
		(lubricate fittings)	0.2
76		FIREFIGHTING EQUIPMENT	
	7603	FIRE EXTINGUISHERS	
		Extinguisher, fire	
		(remove, wipe clean, check and replace)	0.2

Table IV. Time Standards-Continued

		Removal and replacement	Man/Hours
01		ENGINE	
	0100	ENGINE ASSEMBLY	
		Engine assembly	
		(includes removal and installation of hood, heater, lines, linkage, radiator, hoses, and transmission.)	16.0 (B) 8.0 (A)
	0101	CRANKCASE, BLOCK, CYLINDER HEAD	
		Crankcase; block	

Table IV. Time Standards-Continued

		Removal and replacement	Man/Hours
		(engine out of unit includes removal and installation of intake manifold, exhaust manifold, cylinder heads, oil pan, camshaft, timing gears, timing gear cover, crankshaft, water pump, fan, and pistons.)	20.0
		Sleeve, cylinder	
		(engine out of unit-includes removal and installation of intake and exhaust manifold, cylinder head, oil pan, and pistons.)	24.0
		Head, cylinder	
		(engine out of unit-includes removal and installation of intake and exhaust manifold and spark plug wires.)	6.0
		Cock, drain	0.2
0102		CRANKSHAFT	
		Crankshaft	
		(engine out of unit-includes removal and installation of carburetor, manifold, cylinder head, oil pan, piston and rods, flywheel, timing gear cover, and main bearings)	16.0
		Bearings, main	
		(engine out of unit-includes removal and installation of oil pan and bearings)	12.0
		Pulleys	
		(includes removal and installation of hood, radiator, belts, and pulley)	5.0
0103		FLYWHEEL ASSEMBLY	
		Flywheel	
		(engine out of unit-includes removal and installation of transmis-sion, clutch and clutch housing, and flywheel)	5.0
		Housing	
		(engine out of unit-includes removal and installation of trans-mission and housing)	4.0
0104		PISTONS, CONNECTING RODS	
		Pistons, rings, pins, retainers	
		(engine out of unit-includes removal and installation of intake and exhaust manifold, cylinder head, spark plug wires, and oil pan)	14.0
		Rods, connecting	
		(engine out of unit-includes removal and installation of intake and exhaust manifold, cylinder head, spark plug wires, and oil pan)	15.0
		Bearings, rod	
		(engine out of unit-includes removal and installation of oil pan)	6.0
0105.1		VALVES	
		Valves	
		(includes removal and installation of manifolds, valve cover, and heads)	8.5
		Springs; lock; guides	
		(includes removal and installation of manifolds and heads.)	8.0
		Seats, inserts	
		(includes removal and installation of manifolds, heads, lock, springs, and valves)	10.0
0105.2		ROCKER ARMS, TAPPETS	
		Arm assembly, rocker	
		(includes removal and installation of spark plug wires and valve covers)	8.0
		Covers, gasket	0.5
0105.3		CAMSHAFTS	
		Camshafts	
		(engine out bf unit-includes removal and installation of manifolds, valve covers, rocker arms, push rods, lifters, water pump,	14.0

Table IV. Time Standards-Continued

		Removal and replacement	Man/Hours
		distributor, cover accessory drive, hydraulic pump, timing gear cover, idler gear, and camshaft)	
		Camshaft bushings	
		(engine out of unit-includes removal and installation of manifolds, valve cover, rocker arms, push rods, lifters, water pump, distributor, cover, accessory drive, hydraulic pump, timing gear cover, idler gear, camshaft, and flywheel)	24.0
	0105.5	TIMING GEARS	
		Gears, timing	
		(engine out of unit-includes removal and installation of fan, belts, crankshaft pulley, and timing gear cover)	16.0
		Gear, idler	
		(engine out of unit-includes removal and installation of fan, belts, crankshaft pulley, and timing gear cover)	16.0
	0106.1	OIL PUMP	
		Pump assembly, oil	
		(engine out of unit-includes removal and installation of oil pan)	4.5
		Relief valves	
		(engine out of unit-includes removal and installation of oil pan)	4.5
	0106.2	OIL FILTERS	
		Filter assembly, oil	
		(includes removal and installation of side panels and bracket)	2.0
		Element and gaskets	
		(includes removal and installation of filter cover, gasket, and element)	1.0
	0106.3	OIL COOLER	
		Cooler, oil	
		(includes removal and installation of side panels and lines)	4.0
	0106.5	CRANKCASE VENTILATION	
		Breather assembly	0.8
	0106.6	OIL PAN, LINES, LEVEL GAGE	
		Pan, oil	
		(includes removal and installation of inspection plates and lines)	6.0
		Screen, oil strainer	
		(includes removal and installation of oil pan)	6.3
		Lines	
		(includes removal and installation of oil pan)	7.0
		Gage, level	0.2
	0108	MANIFOLDS	
		Manifolds	
		(includes removal and installation of carburetor and lines)	4.0
	0109.1	ACCESSORY DRIVE	
		Accessory drive	
		(engine out of unit-includes removal and installation of water and fan, hose, lines, cable, alternator, rectifier, air compressor, alcohol injector, crankshaft pulley, cover and idler gear, timing gear cover)	10.2
02		CLUTCH	
	0200	CLUTCH ASSEMBLY	
		Clutch assembly	
		(includes removal and installation of transmission linkage)	12.0
	0201	CLUTCH DISKS AND PLATES	
		Disks	
		(includes removal and installation of transmission and pressure plates)	13.0

Table IV. Time Standards-Continued

		Removal and replacement	Man/Hours
	0202	CLUTCH RELEASE MECHANISM	
		Shaft, cross; yoke, throwout	
		(includes removal and installation of transmission, linkage, and lines)	13.0
		Lever; rod, clevis, operating	2.0
		Valve, air chamber	
		(includes removal and installation of lines and fittings)	0.5
	0204	FLUID COUPLING: TORQUE CONVERTER	
		Torque converter	
		(includes removal and installation of drive shaft and torque converter)	13.0
		Oil pump	
		(includes removal and installation of lines.)	5.0
03		FUEL SYSTEM	
	0801	CARBURETOR: FUEL INJECTOR	
		Carburetor	
		(includes removal and installation of lines and linkage)	1.0
	0302.4	FUEL PUMP, GASOLINE	
		Pump, fuel	
		(includes removal and installation of lines)	2.0
		Housing	
		(includes removal and installation of bracket)	4.0
	0304	AIR CLEANER	
		Air cleaner	
		(includes removal and installation of air hose)	1.0
		Pipe, air, intake	
		(includes removal and installation of clamps and hose)	0.8
	0306	TANKS, LINES, FITTINGS	
		Tank, fuel	
		(includes removal and installation of brackets and tank straps)	4.0
		Cap, tank	
		(includes removal and installation of cap)	0.2
		Lines	
		(includes removal and installation of connections)	1.0
		Fittings	
		(includes removal and installation of connections and fittings)	1.0
		Valves	
		(includes removal and installation of lines, connection, and valve)	1.5
	0308	ENGINE SPEED GOVERNOR	
		Governor assembly	
		(includes removal and installation of line and linkage)	2.0
	0308.2	GOVERNOR DRIVE	
		Drive, governor	
		(includes removal and installation of lines and governor plates, distributor, intake manifold)	10.0
	0309	FUEL FILTERS	
		Strainer, fuel	
		(includes removal and installation of fuel cap and strainer)	0.8
	0311	PRIMING SYSTEM	
		Priming system, engine	
		(includes removal and installation of fuel lines and primer)	3.0
	0312	ACCELERATOR, THROTTLE OR CHOKE CONTROLS	
		Control assembly, choke and throttle	
		(includes removal and installation of lines and linkage, and hoses)	2.0

Table IV. Time Standards-Continued

		Removal and replacement	Man/Hours
04		EXHAUST SYSTEM	
	0401	MUFFLER AND PIPES	
		Muffler and pipes	
		(includes removal and installation of clamps)	1.0
05		COOLING SYSTEM	
	0501	RADIATOR	
		Radiator	
		(includes removal and installation of panel, hose, and radiator)	8.0 (B) 5.0 (A)
		Cap, pressure	
		(includes removal and installation of cap and gasket)	0.2
	0502	COWLING, DELFECTORS, AIR DUCT, SHROUD	
		Cowling, deflectors, air duct, shroud	
		(includes removal and installation of fastener and arms)	2.5
	0503	LINES AND FITTINGS, HOSES, PIPES, CLAMPS	
		Lines and fittings, hoses, pipes, clamps	
		(includes removal and installation of hoses and clamps)	2.0
	0504	WATER PUMP	
		Pump, water	
		(includes removal and installation of fan assembly, hose, fan guard, belts, plate, and pump)	10.0
	0505	FAN ASSEMBLY	
		Fan assembly	
		(includes removal and installation of fan guard, belts, and fan)	1.5
		Guard, fan	
		(includes removal and installation of fan guard)	1.0
		Belts	
		(includes removal and installation of belts)	1.5
	0506	WATER MANIFOLDS, HEADERS, THERMOSTAT AND HOUSING, GASKETS	
		Manifold, water	
		(includes removal and installation of hoses and manifold)	1.0
		Housing and gasket	
		(includes removal and installation of manifold)	1.3
		Thermostats	
		(includes removal and installation of hose and cover)	1.0
06		ELECTRICAL SYSTEM	
		(ENGINE AND VEHICULAR)	
	0601	GENERATOR	(B)
		Generator	
		(includes removal and installation of belts and bracket)	0.8
		Brushes	
		(includes removal and installation of belts, generator, and brush holder)	1.5
	0601.1	GENERATOR SPECIAL DRIVE	(B)
		Belts	
		(includes removal and installation of adjusting bracket and belts)	0.7
	0602	GENERATOR REGULATOR	(B)
		Regulator, generator	
		(includes removal and installation of wires and regulator)	0.8
	0603	STARTER	
		Starter	
		(includes removal and installation of wires and starter)	1.0
		Brushes	
		(includes removal and installation of wires, starter cover, and starter)	1.5

Table IV. Time Standards-Continued

		Removal and replacement	Man/Hours
	0604.1	DISTRIBUTOR	
		Distrubutor	
		(includes removal and installation of wires and distributor)	1.0
		Points, condenser rotor	
		(includes removal and installation of distributor cap)	1.4
	0604.6	IGNITION COIL: WIRING, SPARK PLUGS	
		Coil, ignition	
		(includes removal and installation of wiring, bracket, and coil)	0.8
		Wiring	
		(includes removal and installation of wiring and connections)	0.7
		Spark plugs	
		(includes removal and installation of wiring, plug, and gaskets)	0.8
	0607	INSTRUMENT OR ENGINE CONTROL PANEL	
		Panel	
		(includes removal and installation of wires, gages, and switches)	4.5
		Wiring, switches, gages, lights, panel.	
		(includes removal and installation of switches, gages, lights)	5.5
		Lamps	
		(includes removal and installation of wiring and nuts)	0.3
	0608	MISCELLANEOUS ITEMS	
		Box, junction	
		(includes removal and installation of wire and switches)	2.0
		Board, terminal	
		(includes removal and installation of wire and switches)	2.0
	0609.1	HEAD, TAIL, AND MARKER LIGHTS	
		Lights, head, tail, and marker	
		(includes removal and installation of covers)	0.7
		Doors, lamps, gaskets, lenses	
		(includes removal and installation of doors and clamps)	1.0
	0609.2	ADDITIONAL LIGHTS	
		Lights	
		(includes removal and installation of wires and clamps)	2.0
		Doors, lamps, gaskets, lenses	
		(includes removal and installation of doors, clamps, and wires)	1.0
	0612	BATTERIES	
		Batteries	
		(includes removal and installation of cables)	1.0
		Box, battery	
		(includes removal and installation of batteries)	2.0
		Cables	0.8
	0613	HULL OR CHASSIS WIRING HARNESS	
		Harness, wiring	
		(includes removal and installation of brackets)	9.0
	0615	RADIO SUPPRESSION	
		Suppression	
		(includes removal and installation of wiring, and ground straps)	1.0
	0617	TRAILER COUPLINGS	
		Couplings, electrical	
		(includes removal and installation of wiring)	0.5
07		TRANSMISSION	
	0700	TRANSMISSION ASSEMBLY	(A)
		Transmission assembly	
		(includes removal and installation of heater, cowling, transmission cover, linkage, and drive shaft)	11.0

Table IV. Time Standards-Continued

		Removal and replacement	Man/Hours
	0701	TRANSMISSION CASE	(A)
		Case, transmission	
		(transmission out of unit-includes removal and installation of shafts, seals, and bearing)	20.0
	0702.1	INPUT SHAFT	(A)
		Input shaft	
		(transmission out of unit-includes removal and installation of bearings, gears, shaft)	10.0
	0702.3	OUTPUT SHAFT; MAIN SHAFT	(A)
		Output shaft	
		(transmission out of unit-includes removal and installation of bearings, gears, and shafts)	12.0
	0703	TRANSMISSION CLUTCH	(A)
		Clutch, transmission	
		(transmission out of unit-includes removal and installation of pressure plate)	1.0
	0703.1	TRANSMISSION CLUTCH CONTROLS	(A)
		Range selector valve	
		(includes removal and installation of cover)	4.0
	0704.1	CONTROL SHAFTS, RODS	(A)
		Shafts, rod, control	
		(includes removal and installation of linkage)	2.0
	0706.3	OIL FILTERS	(B)
		Filter, oil	
		(includes removal and installation of oil lines and bracket)	2.0
	0706.5	OIL COOLERS	(B)
		Coolers, oil	
		(includes removal and installation of line guard and hose)	3.0
	0706.6	OIL PRESSURE REGULATORS	(B)
		Regulator, oil pressure	
		(includes removal and installation of linkage)	4.0
	0706.7	VENTILATION AND BREATHERS	(B)
		Filler and cap	
		(includes removal and installation of cap, pipe, bracket, and nut)	0.3
		Breather	0.2 (A)
	0706.9	OIL LINES, FITTINGS, SENDING UNITS	(B)
		Lines, oil	
		(includes removal and installation of lines and fittings)	0.8
08		POWER TRANSFER	
		(Regulator Mechanical Transfer Only)	
	0800	POWER TRANSFER ASSEMBLY	(B)
		Power transfer assembly	
		(includes removal and installation of drive shaft, linkage, input shaft, hangers, wiring, and speedometer cable)	12.0
	0801	TRANSFER CASE	
		Case, transfer	(B)
		(transfer out of unit-includes removal and installation of gears, bearings, shafts, and seal)	8.0
	0802.1	INPUT SHAFT	(B)
		Shaft assembly, input	
		(transfer out of unit-includes removal and installation of bearings, shafts, gears, and seals)	6.0

Table IV. Time Standards-Continued

		Removal and replacement	Man/Hours
	0802.3	IDLER SHAFTS	(B)
		Shafts, counter	
		(transfer out of unit-includes removal and installation of gears, shafts, seals, and bearing)	8.0
	0802.6	OUTPUT SHAFT; MAIN SHAFT	(B)
		Shaft assembly, output	
		(transfer out of unit-inclvdes removal and installation of gears, shafts, seals, and bearings)	6.0
	0803	CLUTCH	(B)
		Clutch power transfer	
		(includes removal and installation of transfer case, drive shaft, and clutch)	8.0
	0803.1	CLUTCH CONTROLS	(B)
		Controls, clutch	
		(includes removal and installation of controls and linkage)	6.0
	0804	SHIFT LEVERS, SHAFTS, YOKES	(B)
		Shifter assembly	
		(includes removal and installation of control rods, shaft and yoke)	7.0
	0806.7	VENTILATION, BREATHERS	(B)
		Breather, ventilation	
		(includes removal and installation of breather)	0.5
09		PROPELLER SHAFT	
	0900	PROPELLER SHAFTS	(B)
		Shaft assembly, propeller	
		(includes removal and installation of drive shaft universal joint)	2.0
	0903	PILLOW BLOCKS, BEARINGS	(A)
		Bearing assembly, drive shaft	
		(includes removal and installation of drive shaft, and pillow block)	1.0
10		FRONT AXLE	
	1000	FRONT AXLE ASSEMBLY	(B)
		Axle assembly, front	
		(includes removal and installation of tires, wheels, cover, ball joints)	10.0
	1001	HOUSING, BEAM, HOUSING COVERS, PLUGS	(B)
		Beam, housing	
		(includes removal and installation of tires, wheels, axles, air lines, steering, springs, and drive shaft)	13.0
	1002	DIFFERENTIAL	
		Differential assembly	
		(includes removal and installation of wheels, axles, and drive shafts)	14.0
		Lock assembly, differential	
		(includes removal and installation of wheels, axles, gears, and seals)	15.0
		Valve, lines	2.0
		Power cluster	
		(includes removal and installation of lines, bracket, and power cluster)	3.0
	1004	STEERING	
		Steering assembly	
		(includes removal and installation of linkage and lines)	9.0
	1005	VENTILATION	
		Breather	0.2
	1006	SHAFT	
		Shafts	
		(includes removal and installation of drag link, bracket, arm wheel, wiring, and cover plate)	10.0

Table IV. Time Standards-Continued

		Removal and replacement	Man/Hours
11		REAR AXLE	
	1100	REAR AXLE ASSEMBLY	
		Axle assembly, rear	
		(includes removal and installation of tire, wheel, axle cap, and steering joint)	10.0
	1101	HOUSING, BEAM, HOUSING COVERS, PLUGS	
		Beam, housing	
		(includes removal and installation of tires, wheel, drive shaft, air connections, brakedrums, and axle)	12.0
	1102	DIFFERENTIAL	
		Differential assembly	
		(includesremoval and installation of tires, wheels, axles, drive shafts, and differential carrier)	13.0
		Lock assembly, differential	
		(includes removal and installation of lines and linkage)	14.5
		Valves, lines	
		(includes removal and installation of lines and valves)	2.0
		Power cluster	
		(includes removal and installation of lines, linkage, and valve)	3.0
	1104	STEERING	
		Steering assembly	
		(includes removal and installation of lines, linkage, and bracket)	10.0
	1105	VENTILATION	
		Breather	0.2
	1106	SHAFTS	
		Shafts	
		(includes removal and installation of tie rod cylinder)	9.0
12		BRAKES (Other than Special Purpose)	
	1201	HAND BRAKES	(B)
		Brake, hand	
		(includes removal and installation of linkage)	4.5
	1202	SERVICE BRAKES	(B)
		Brakes, service	
		(includes removal and installation of wheel, linkage, and lines)	6.0
	1206	MECHANICAL BRAKE CONTROLS	(B)
		Controls, brake	
		(includes removal and installation of linkage)	4.0
	1208.1	AIR BRAKE SYSTEM	(B)
		Brake system, air	
		(includes removal and installation of lines, linkage, and fittings)	14.0
	1208.3	BRAKE CHAMBERS, DIAPHRAGMS, VALVES, FILTERS	(B)
		Chambers, brake	
		(includes removal and installation of lines and linkage)	3.0
		Valve, quick release moisture ejector	
		(includes removal and installation of lines and bracket)	0.8
	1209	AIR COMPRESSOR ASSEMBLY	(B)
		Compressor assembly, air	
		(includes removal and installation of lines, belts, and compressor)	4.5
	1209.3	AIR RESERVOIR, FITTINGS	(B)
		Reservoir, air	
		(includes removal and installation of lines, fittings, and reservoir)	3.0
		Fittings	
		(includes removal and installation of lines, fittings, and bracket)	1.0
		Safety release valve	
		(includes removal and installation of valve)	0.4

Table IV. Time Standards-Continued

		Removal and replacement	Man/Hours
	1211	TRAILER BRAKE CONNECTIONS AND CONTROLS	(B)
		Connections, brake	2.8
		Controls	
		(includes removal and installation of linkage)	1.0
13		WHEELS AND TRACKS	
	1311	WHEEL ASSEMBLY	(B)
		Wheel assembly	
		(includes removal and installation of wheels)	4.0
	1313	TIRES, TUBES	(B)
		Tires	
		(includes removal and installation of wheels from unit (each))	1.0
		Tubes	
		(includes removal and installation of wheel from unit and tire from the rim (each))	1.2
14		STEERINIG	
	1401	STEERING ASSEMBLY	(B)
		Steering assembly	
		(includes removal and installation of wheels, linkage, wiring, and housing)	6.0
	1410	HYDRAULIC PUMP OR FLUID MOTOR ASSEMBLY	
		Pump assembly, hydraulic	
		(includes removal and installation of hose, belt, and pump)	2.0
	1410.1	PUMP DRIVE	
		Drive, pump	
		(includes removal and installation of belts)	3.5
		Belt	
		(includes removal and installation of belt)	1.0
	1411	HOSE, LINES, FITTINGS	
		Hose and lines	
		(includes removal and installation of hose and lines)	3.0
		Fittings	
		(includes removal and installation of fittings)	1.0
	1412	HYDRAULIC OR AIR CYLINDERS	
		Cylinders	
		(includes removal and installation of hose, pins, and cylinder)	1.8
	1413	TANKS: RESERVOIRS	
		Tanks	
		(includes removal and installation of lines, fittings, and reservoir)	3.0
	1414.1	STEERING VALVES	
		Valves, steering	
		(includes removal and installation of lines and fittings)	3.5
15		FRAME	
	1501	FRAME ASSEMBLY	
		Frame assembly	
		(includes removal and installation of engines, axle, cab, heaters, tanks, lines and fittings, and power cluster)	104.0
	1501.1	PLATFORMS, SUPERSTRUCTURES, RAMPS, CATWALKS	
		Steps, grab handles, platforms, guardrails	
		(includes removal and installation of guardrails)	1.5
	1501.3	BUMPERS, GUARDS, ROLLERS	
		Bumper	
		(includes removal and installation of bumper.)	2.5
	1503	PINTLES AND TOWING ATTACHMENTS	
		Pintle	
		(includes removal and installation of spare tire, cotter pin, and nut)	1.0
	1504	SPARE WHEEL CARRIER AND TIRE LOCK	
		Spare wheel carrier	
		(includes removal and installation of wheel and carrier)	1.0

Table IV. Time Standards-Continued

		Removal and replacement	Man/Hours
16		SPRING AND SHOCK ABSORBERS	(B)
	1601.1	FRONT SPRINGS	
		Spring, front	
		(includes removal and installation of shackle bolts, u-bolts, and springs)	7.0
	1601.3	REAR SPRINGS	
		Spring, rear	
		(includes removal and installation of shackle bolts, u-bolts, and springs)	8.0
	1602	AUXILIARY SPRINGS	
		Springs, auxiliary	
		includes removal and installation of U-bolts)	5.0
17		BODY; CAB; HOOD; HULL	(B)
	1700	BODY, CAB ASSEMBLY	
		Cab assembly	
		(includes removal and installation of panels, wiring, light, cab, and line assembly)	24.0
	1701.1	FENDERS, SAND SHIELDS, RUNNING BOARDS	
		Fenders	
		(includes removal and installation of wiring, hose, linkage, cab, and fenders)	22.0
	1702	ENGINE SIDE PANELS	
		Panels, engine side	
		(includes removal and installation of panels)	1.0
	1703	DOORS; HATCHES; HOOD	
		Doors, hatches, hood	
		(includes removal and installation of bracket)	2.0
	1704	PANELS	
		Ventilators	
		(includes removal and installation of panels)	2.0
		Windshield	
		(includes removal and installation of mounting frames)	11.0
	1705	FLOORS	
		Floors	
		(includes removal and installation of hardware and floors)	10.0
	1706	UPHOLSTERY, SEATS, CARPETS	
		Seats	
		(includes removal and installation of brackets and seats)	1.0
	1708	STOWAGE RACKS, BOXES, STRAPS	
		Box, tool	
		(includes removal and installation of toolbox)	1.0
22		MISCELLANEOUS BODY, CHASSIS OR HULL, AND ACCESSORY ITEMS	
	2202.1	MIRRORS, REFLECTORS, DEFROSTERS, WIPERS, AIR HORNS	
		Mirrors, reflectors, air horns	
		(includes removal and installation of line and fittings)	2.0
		Defrosters	
		(includes removal and installation of hose)	3.0
		Wiper assembly, windshield	
		(includes removal and installation of lines, fittings, and linkage)	2.0
	2207	WINTERIZATION EQUIPMENT	
		Ducts and fittings, air	
		(includes removal and installation of covers, clamps, and brackets)	3.0

Table IV. Time Standards-Continued

		Removal and replacement	Man/Hours
		Shroud	
		(includes removal and installation of hardware, brackets, and shroud)	4.0
		Shutter, radiator	
		(includes removal and installation of linkage, lever, and shutter)	3.0
		Manifold, air	
		(includes removal and installation of air tubing, wiring, and manifold)	4.0
		Lines, fittings	
		(includes removal and installation of fitting and lines)	4.0
		Pump assembly, coolant	
		(includes removal and installation of fan belts, pump, and gaskets)	1.5
		Alcohol dispenser	
		(includes removal and installation of lines, hardware, and dispenser)	1.0
	2210	DATA PLATES AND INSTRUCTION HOLDERS	
		Plates, data	
		(includes removal and installation of data plates)	0.3
		Plates, caution, and instruction holders	
		(includes removal and installation of holders)	0.3
26		ACCESSORIES, PUBLICATIONS, TEST EQUIPMENT AND TOOLS	
	2602.1	ACCESSORIES	
		Accessories	0.2
	2602.2	COMMON TOOLS	
		Tools, common	0.1
	2602.3	SPECIAL TOOLS	
		Tools, special	0.1
	2602.4	PUBLICATIONS	
		Publications	0.1
43		HYDRAULIC, AIR AND VACUUM SYSTEMS	
		(EXCLUDE BRAKE SYSTEMS)	
	4300	HYDRAULIC SYSTEM	(A)
		Hydraulic system	
		(includes removal and installation of brackets, lines, fittings, and hoses)	16.0
	4301	HOSE, PIPE, FITTINGS, TUBING	
		Hose; pipe; fittings; tubing	
		(includes removal and installation of bracket)	4.0
	4301.1	STRAINER AND FILTERS	
		Strainer and filters -	
		(includes removal and installation of brackets, hoses, fittings, and clamps)	2.0
	4302	PUMP AND MOUNTING PARTS	
		Pump assembly, hydraulic	
		(includes removal and installation of hoses, lines, and fittings)	4.0
	4303	PUMP DRIVES	
		Gear drive	
		(includes removal and installation of carrier engine radiator)	10.0
	4305	MANIFOLD AND/OR CONTROL VALVES	
		Valves, control	
		(includes removal and installation of hoses, lines, fittings, and linkage)	4.0
	4306	HYDRAULIC OR FLUID MOTOR	
		Hydraulic motor	
		(includes removal and installation of cover, hose, lines, and fittings)	1.5

Table IV. Time Standards-Continued

		Removal and replacement	Man/Hours
	4307	HYDRAULIC CYLINDERS Cylinders, hydraulic (includes removal and installation of hoses, lines, and linkage)	3.0
	4308	OIL TANK OR RESERVOIRS Tank, hydraulic oil (includes removal and installation of lines, fittings, hoses, and tank)	4.0
	4309	HYDRAULIC CONTROLS AND/OR MANUAL CONTROLS Controls (includes removal and installation of lines, fittings, hoses, and linkage)	3.0
	4315	AIR OR VACUUM SYSTEM Air or vacuum system (includes removal and installation of hoses, lines, linkage, fitting, and brackets)	14.0
	4316	HOSE, FITTINGS, LINES, BREATHERS, FILTERS, AND TRAPS Hoses; fittings, lines (includes removal and installation of brackets)	3.0
	4317.1	MANIFOLD OR CONTROL VALVES Valves, control (includes removal and installation of lines, fittings, linkage, and hoses)	3.0
	4318.1	DIAPHRAGMS, CHAMBERS, CYLINDERS Chambers (includes removal and installation of lines, fittings, and linkage)	11.0
47		GAGES (NONELECTRICAL) WEIGHING AND MEASURING DEVICES	
	4701.2	TACHOMETERS Tachometer drive (includes removal and installation of wires and cable)	2.0
	4707	LIQUID LEVEL GAGES Gage, level (includes removal and installation of level gage)	0.1
	4709.1	VACUUM GAGES Gage, vacuum (includes removal and installation of lines and fittings)	1.0
50		PNEUMATIC EQUIPMENT	
	5001.1	ROTOR HOUSING Housing, rotor (includes removal and installation of lines, fittings, belts, and housing)	12.0
	5002.3	COMPRESSOR DRIVE Drive, compressor (includes removal and installation of belts and pulleys)	2.0
	5004.1	ROTOR, BEARINGS, ETC. Rotor and bearings (includes removal and installation of lines, fitting, compressor from unit, housing, and oil pan)	6.0
	5006.3	OIL PAN Reservoir (includes removal and installation of compressor from mounting brackets) Dome assembly (includes removal and installation of lines and fittings)	6.5 1.0

Table IV. Time Standards-Continued

		Removal and replacement	Man/Hours
	5006.4	LUBRICATORS	
		Valve assembly	
		(includes removal and installation of lines and valve)	0.8
	5008	AIR INTAKE	
		Air cleaner	
		(includes removal and installation of air cleaner)	0.5
	5009.3	UNLOADER VALVES; COMPRESSOR INTAKE	
		Valve unloader	
		(includes removal and installation of lines and fittings)	2.0
	5010	COMPRESSOR COOLING	
		Lines, hoses	
		(includes removal and installation of lines and hoses)	0.7
	5015.1	DISCHARGE LINES, FITTINGS, MANIFOLDS	
		Lines; fittings; manifold	
		(includes removal and installation of lines, fittings, and manifold)	1.7
60		STEAM BOILERS; WATER HEATERS; HEATING UNITS; BURNERS	
	6000.1	PERSONNEL HEATERS	
		Heater, personnel	
		(includes removal and installation of hoses, lines, wires, and fittings)	4.0
		Control and control box	
		(includes removal and installation of wires)	3.0
	6002	FUEL SYSTEM	
		Pump and strainers	
		(includes removal and installation of wires, lines, and fittings)	0.8
	6002.1	BURNER ASSEMBLY	
		Igniters	
		(includes removal and installation of wires and cover)	0.5
	6002.2	FUEL TANKS	
		Lines and fittings	
		(includes removal and installation of lines and fitting)	1.0
	6002.3	BLOWER ASSEMBLY	
		Blower assembly	
		(includes removal and installation of wires and blower)	2.0
	6004	EXHAUST SYSTEM	
		Pipes and clamps	
		(includes removal and installation of pipes and clamps)	1.0
	6005	COMBUSTION CHAMBER	
		Liners and insulators	
		(includes removal and installation of wires, clamps, and housing)	6.0
71		SNOW REMOVAL MOWING; SWEEPING EQUIPMENT	
	7100	SNOW PLOW ASSEMBLY	(A)
		Snow plow assembly	
		(includes removal and installation of lines and pins)	3.0
	7101	FRAMES, SEMICIRCLES	
		Frame assembly rotary	
		(includes removal and installation of lines, fittings, hardware, and semicircle)	12.0
	7102	MOLDBOARD, BLADES	
		Bar, cutter	
		(includes removal and installation of bar and cutter)	1.5
		Plates, wear, cutting edge	1.5
	7103	FEED AND DISCHARGE; ACTIVATING MECHANISM	
		Turret assembly	
		(includes removal and installation of lines, fittings, and brackets)	4.0

Table IV. Time Standards-Continued

		Removal and replacement	Man/Hours
		Gearbox assembly	
		(includes removal and installation of chute and cover)	4.0
		Cover, turret, chute	
		(includes removal and installation of chute)	2.0
	7103.1	ROTOR RAKES, BLADES, FANS, SHAFTS, AUGER, BEARINGS	
		Auger assembly	
		(includes removal and installation of sprockets, chains, and cover)	4.0
		Sprocket drive	
		(includes removal and installation of cover and chains)	3.0
		Fan assembly	
		(includes removal and installation of blades)	8.5
		Fan guard	
		(includes removal and installation of gearbox assembly, lines, fittings, hoses, cover and turret assembly)	10.5
	7103.3	DRIVE AND CONTROLS; TILTING ATTACHMENTS	
		Coupling, flexible	
		(includes removal and installation of chute)	1.5
		Drive shaft assembly, auger	
		(includes removal and installation of cover sprocket and chain)	1.0
		Fan and auger drive	
		(includes removal and installation of universal joint, fan assembly, flex coupling, and sprocket)	12.0
		Shaft assembly, gearcase drive	
		(includes removal and installation of flex coupling)	6.0
		Chain auger drive	
		(includes removal and installation of cover)	6.0
		Shear pins	
		(includes removal and installation of shear pins)	0.5
76		FIREFIGHTING EQUIPMENT	
	7603	FIRE EXTINGUISHERS	
		Extinguisher, fire	0.2

v. Carrier Electrical System Schematic Wiring Diagram. Refer to TM 5-3825-213-20 for the carrier electrical system wiring diagram.

w. Personnel and Engine Heaters Electrical System Schematic Wiring Diagram. Refer to TM 5-3825-213-20 for the heater system.

CHAPTER 2

GENERAL MAINTENANCE INSTRUCTIONS

Section I. SPECIAL TOOLS AND EQUIPMENT

5. Special Tools and Equipment

There are no special tools required for the maintenance of the snow removal unit.

6. Field and Depot Maintenance Repair Parts

Field and depot maintenance repair parts are listed and illustrated in TM 5-3825-213-35P.

Section II. TROUBLESHOOTING

7. General

This section provides information useful in diagnosing and correcting unsatisfactory operation or failure of the snow removal unit or any of its components. Each trouble symptom stated is followed by a list of probable causes of trouble. The possible remedy recommended is described opposite the probable cause.

8. Plow or Carrier Engine Fails to Start

Probable cause	*Possible remedy*
Poor compression	Replace valves (pars. 218-220). Replace piston rings (pars. 247-249).
Starter inoperative	Repair starter (pars. 190-192).
Carburetor defective	Repair the carburetor (pars. 206-208).
Distributor defective	Repair the distributor (pars. 194-196).

9. Plow or Carrier Engine Lacks Power

Probable cause	*Possible remedy*
Cracked or broken valve seats.	Replace the valve seats (pars. 218-220).
Carburetor defective	Repair the carburetor (pars. 206-208).
Governor defective	Repair governor (pars. 202-204).
Piston or piston rings defective.	Replace pistons or piston rings (pars. 247-249).
Distributor defective	Repair distributor (pars. 194-196).
Defective valves	Replace defective valves (pars. 218-220).
Low compression or defective head gasket.	Replace defective cylinder head gasket (pars. 218-220).

10. Plow or Carrier Engine Overheats

Probable cause	*Possible remedy*
Engine water pump defective.	Repair engine water pump (pars. 214-216).
Defective radiators	Replace or repair the radiators (pars. 210- 212).

11. Plow or Carrier Engine Exhaust Smokes

Probable cause	*Possible remedy*
Pistons worn	Replace pistons (pars. 247-249).
Carburetor defective	Repair carburetor (pars. 206-208).
Piston rings worn	Replace piston rings (pars. 247-249).
Valve guides worn	Replace valve guides (pars. 218-220).

12. Plow or Carrier Engine Misfires

Probable cause	*Possible remedy*
Defective distributor	Repair distributor (pars. 194-196).
Valves not seating properly.	Reseat valves (pars. 218-220).

13. Plow or Carrier Engine Uses Oil Excessively

Probable cause	*Possible remedy*
Leaks in seals or gaskets	Replace all leaking seals or gaskets.
Rings worn or broken	Replace rings (pars. 247-249).
Valve guides worn	Replace worn valve guides (pars. 218-220).

14. Plow or Carrier Engine Oil Pressure Low

Probable cause	*Possible remedy*
Engine Oil pump defective	Repair or replace engine oil pump (pars. 225-227).
Excessive main bearing clearance.	Replace bearing (pars. 251-253).
Engine oil pump strainer clogged.	Remove and clean oil pump strainer (pars. 225-227).
Excessive camshaft bearing clearance.	Replace camshaft bearings (pars. 255-257).

15. Plow or Carrier Engine Knocks and Pings

Probable cause	*Possible remedy*
Connecting rod bearings loose.	Replace connecting rod bearings (pars. 247-249).
Valve spring broken or cracked.	Replace valve springs (pars. 218-220).
Connecting rod bent	Replace connecting rod (pars. 247-249).
Piston pin too tight or too loose.	Replace piston pin (pars. 247-249).
Worn pistons	Replace pistons (pars. 247-249).

16. Plow or Carrier Engine Compression Low

Probable cause	*Possible remedy*
Valve lash tight	Adust valves (TM 5-3925-213-20).
Piston rings broken or stuck.	Replace piston rings (pars. 247-249).
Worn pistons and rings	Replace pistons and rings (pars. 247-249).
Cylinder head or gasket leaks.	Repair or replace cylinder head and replace gasket (pars. 218-220).

17. Plow or Carrier Engine Stops Suddenly

Probable cause	*Possible remedy*
Defective distributor	Repair distributor (pars. 194-196).
Engine crankshaft or connecting rod bearing seized.	Replaced seized crankshaft bearings (pars. 251-253) or seized connecting rod bearings (pars. 247-249).

18. Plow or Carrier Engine Will Not Idle Smoothly

Probable cause	*Possible remedy*
Carburetor defective	Repair carburetor (pars. 206-208).
Piston rings worn or piston scored.	Replace rings and/or pistons (pars. , 247-249).
Valves burned, warped, or sticking.	Replace valves (pars. 218-220).
Defective distributor	Repair distributor (pars. 194-196).

19. Plow or Carrier Engine Blows Cylinder-Head Gasket Repeatedly

Probable cause	*Possible remedy*
Warped or cracked cylinder head.	Replace or repair cylinder head (pars. 218-220).
Warped or cracked cylinder block.	Replace or repair cylinder block (pars. 259-261).

20. Plow Fan Vibrates

Probable cause	*Possible remedy*
Bent or broken blade	Replace fan blade (TM 5-3825-213-20).
Gearcase bearings damaged.	Replace bearings (pars. 165-167).
Engine out of time	Time plow engine (TM 5-3825-213-20).

21. Plow Assembly Will Not Raise or Lower

Probable cause	*Possible remedy*
Defective hydraulic pump	Repair hydraulic pump (pars. 99-101).
Defective hydraulic cylinder.	Repair hydraulic cylinder (pars. 83-85).

22. Plow Discharge Chute Will Not Rotate

Probable cause	*Possible remedy*
Defective hydraulic motor	Repair hydraulic motor (pars. 103-105).
Defective hydraulic lines and fittings	Replace defective hydraulic lines and fittings (TM 5-3825-213-20).
Defective hydraulic pump	Repair hydraulic pump (pars. 99-101).

23. Plow Discharge Chute Will Not Raise or Lower

Probable cause	*Possible remedy*
Defective hydraulic pump	Repair hydraulic pump (pars. 99-101).
Defective hydraulic cylinder.	Repair hydraulic cylinder (pars. 91-93).

24. Plow Transmission Vibrates or is Noisy

Probable cause	*Possible remedy*
Plow engine clutch shaft bent or distorted.	Replace clutch shaft (pars. 142-144).
Defective bearings	Replace bearings (pars. 142-144).
Engine out of time	Time the engine (TM 5-3825-213-20).

25. Plow and Carrier Drive Shafts Vibrate, Bind, or Noisy

Probable cause	*Possible remedy*
Defective transfer case bearings.	Replace bearings (pars. 275-277).
Defective carrier bearings	Replace bearings (pars. 287-289).

26. Carrier Engine Generator Charging Rate Low

Probable cause	*Possible remedy*
Defective generator	Repair generator (pars. 181-183).
Defective generator voltage regulator.	Repair generator voltage regulator (pars. 186-188).

27. Carrier Torqmatic Transmission Leaks Fluid

Probable cause	*Possible remedy*
Defective seals	Replace seals (pars. 267-269).
Hole or crack in case	Replace or repair case (pars. 267-269).

28. Carrier Torqmatic Transmission Noisy

Probable cause	*Possible remedy*
Worn gears	Repair transmission (pars. 267-269).
Worn bearings	Repair transmission (pars. 267-269).

29. Carrier Transfer Case Will Not Shift Properly

Probable cause	*Possible remedy*
Shifter shaft worn or loose.	Tighten or replace shifter shaft (pars. 275-277).
Shifting fork worn or bent.	Replace shifting fork (pars. 275-277).
Gears or shaft damaged	Replace gears or shaft (pars. 275-277).

30. Carrier Transfer Case Leaks

Probable cause	*Possible remedy*
Defective seals	Replace transfer case seals (pars. 275-277).
Hole or crack in case	Repair or replace case (pars. 275-277).

31. Front or Rear Axle Has Backlash

Probable cause	*Possible remedy*
Poor ring gear and pinion adjustment.	Adjust the ring gear and pinion (pars. 287-289).
Worn differential or pinion bearings.	Replace differential or pinion bearings (pars. 287-289).
Worn axle shaft cage ring bushings.	Replace worn axle shaft cage ring bushings (pars. 283-285).

32. Front or Rear Axle Leaks Grease

Probable cause	*Possible remedy*
Defective oil seal	Replace oil seal (pars. 287-289).
Hole or crack in axle housing.	Replace or repair axle housing (pars. 287-289).

33. Carrier Power Transfer Case Noisy

Probable cause	*Possible remedy*
Defective bearings	Replace or repair power transfer (pars. 275-277).
Damaged gears	Replace gears (pars. 275-277).

34. Carrier Steers Hard

Probable cause	*Possible remedy*
Defective bearings in gearbox.	Replace or repair steering gearbox (pars. 279-281).
Defective hydraulic pump	Repair pump (pars. 63-65).
Defective steering control valves.	Repair steering control valves (pars. 71-73 and 75-77).
Defective steering cylinder.	Repair steering cylinder (pars. 67-69).

35. Steering Wheel Has Excessive Play

Probable cause	*Possible remedy*
Worn steering ball and socket.	Repair steering ball and socket (pars. 283-285).
Defective steering gearbox.	Replace or repair steering gearbox (pars. 279-281).

36. Rear Axle Steering Fails to Operate

Probable cause	*Possible remedy*
Defective control valve	Replace or repair control valve (TM 5-3825-213-20).
Defective hydraulic pump	Repair hydraulic pump (pars. 63-65).
Defective steering cylinder	Repair steering cylinder (pars. 75-77).

37. Insufficient Brakes or no Brakes

Probable cause	*Possible remedy*
Grease-soaked or worn linings.	Replace linings (pars. 291-293).
Defective treadle valve	Repair treadle valve (pars. 122-124).
Defective air compressor	Replace or repair air compressor (pars. 107-109).
Defective air chamber	Repair air chamber (para 134-136).

38. Heater Inoperative

Probable cause	*Possible remedy*
Defective fuel pump	Replace fuel pump (TM 5-3825-213-20).
Heater fails to ignite -	Replace flame switch (pars. 55-57 and 59-61) and/or igniter (TM 5-3825-213-20).
Fuel regulator valve failure.	Replace regulator valve (pars. 55-57 and 59-61).
Power relay failure	Replace relay (pars. 55-57 and 59-61).
Defective heater	Replace or repair heater (pars. 55-57 and 59- 61).

39. Low Converter Charging Pressure

Probable cause	*Possible remedy*
Defective oil pump	Repair or replace oil pump (pars. 263-265).
Defective selector valve	Replace defective selector valve (TM 5-3825213-20).
Defective check valve	Replace defective check valve (pars. 263-265).

40. Low Engine Speed at Converter Stall

Probable cause	*Possible remedy*
Defective converter	Repair or replace converter (pars. 263-265).
Damaged stators	Repair converter (pars. 263-265).

41. Transmission Input Shaft Does Not Turn Freely By Hand

Probable cause	*Possible remedy*
Range clutch binding	Repair torqmatic transmission (pars. 267-269).
Converter failure	Repair converter (pars. 263-265).

42. High Engine Speed at Converter Stall

Probable cause	*Possible remedy*
Defective converter	Repair converter (pars. 263-265).
Torqmatic transmission clutch slippage.	Replace clutches (pars. 267-269).

43. No Power Transmitted in Any Range (Torqmatic Transmission)

Probable cause	*Possible remedy*
Low clutch pressure	Repair oil pump (pars. 263-265).
Converter failure	Repair converter (pars. 263-265).

Section III. RADIO INTERFERENCE SUPPRESSION

44. General

Refer to TM 11-483 for definitions, purpose, sources, and methods to attain proper suppression. Refer to TM 5-3825-213-20 for location, description, and replacement of primary radio suppression components. The generator regulator has capacitors contained within the base that are to be replaced upon disassembly of the regulator.

45. Generator Voltage Regulator

a. Removal. Remove the generator voltage regulator (TM 5-3825-213-20).

b. Disassembly. Disassemble the generator voltage regulator by disassembling the generator voltage regulator cover assembly (fig. 1), and box assembly (fig. 2), and the load relay assembly (fig. 3). These assemblies comprise the generator voltage regulator, and are disassembled in the numerical sequence shown in the respective illustrations.

c. Reassembly. Reassemble the generator voltage regulator in the reverse order of numerical sequence as illustrated on figures 1, 2, and 3.

d. *Installation.* Install the generator voltage regulator (TM 5-3825-213-20)

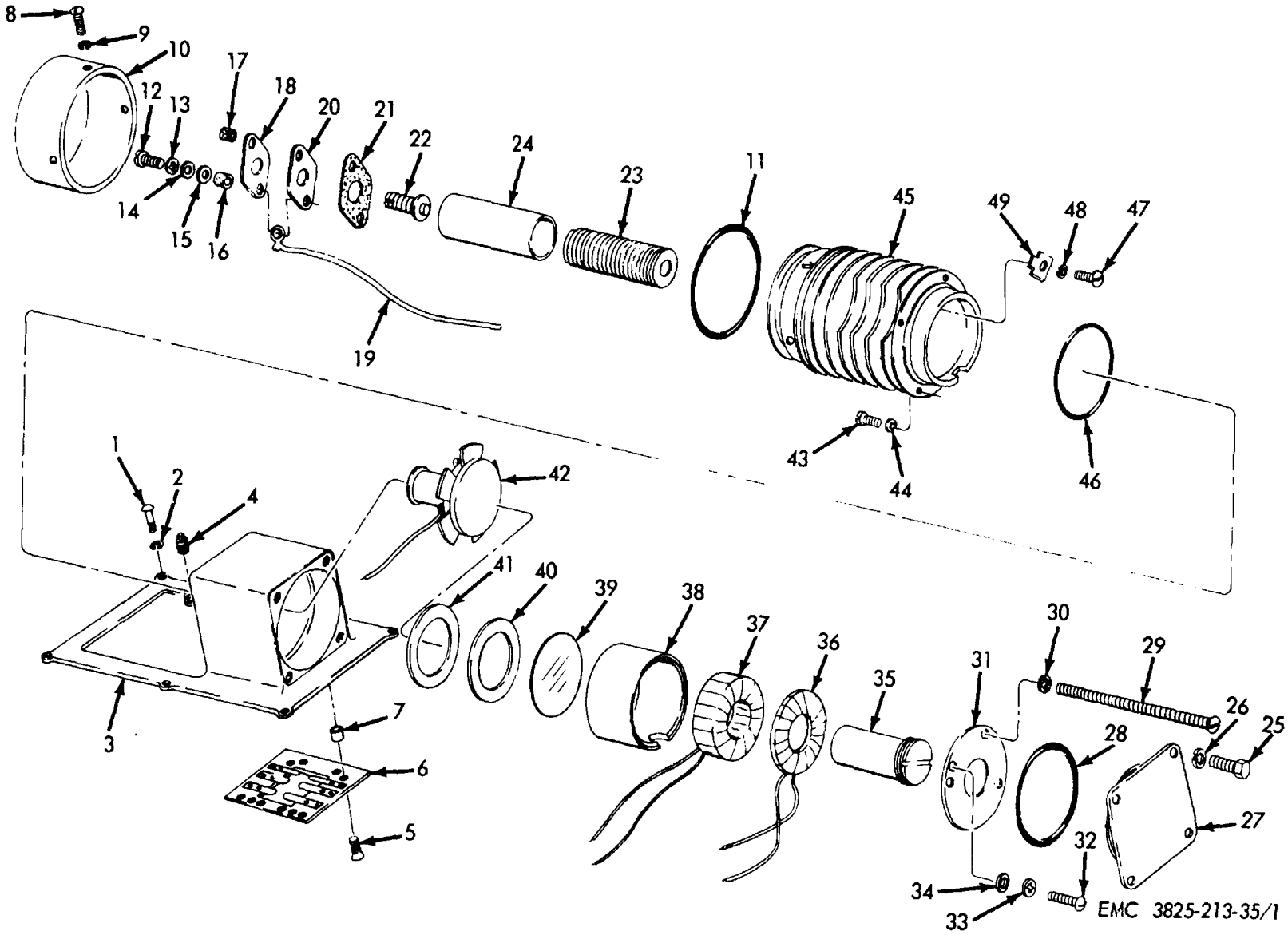


Figure 1. Generator voltage regulator cover assembly, disassembly and reassembly, exploded view.

1 Screw, machine, No. 10-32 x 3/4 in. (6 rqr)
2 Washer, lock, No. 10 (6 rqr)
3 Regulator cover
4 Plug, pipe, 1/4 in.
5 Screw, machine, No. 6-32 x 3/4 in. (4 rqr)
6 Contact panel assembly
7 Spacer (4 rqr)
8 Screw, machine, No. 6-32 x 5/16 in. (4 rqr)
9 Washer, lock, No. 6 (4 rqr)
10 Cover
11 Preformed packing
12 Screw, machine, No. 6-32 x 1/2 in. (2 rqr)
13 Washer, lock, No. 6 (2 rqr)
14 Washer, fat, No. 6 (2 rqr)
15 Insulator washer (2 rqr)
16 Insulator
17 Insulator
18 Contact screw plate
19 Contact screw electrical lead
20 Contact screw plate
21 Insulator plate
22 Contact screw
23 Carbon pile
24 Carbon pile tube
25 Screw, machine, No. 10-32 x 3/8 in. (4 rqr)
26 Washer, lock, No. 10 (4 rqr)
27 End plate
28 Preformed packing
29 Screw, machine, No. 6-32 x 1 3/4 in. (3 rqr)
30 Washer, lock, No. 6 (3 rqr)
31 Coil pot end plate
32 Screw, machine, No. 10-32 x 1/4 in.
33 Washer, lock, No. 10
34 Washer, flat, No. 10
35 Coil core
36 Paralleling coil
37 Operating coil
38 Coil pot
39 Shim (as rqr)
40 Bimetal ring
41 Spacer
42 Armature
43 Screw, - machine, No. 6-32 x 1/2 in. (4 rqr)
44 Washer, lock, No. 6 (4 rqr)
45 Regulator element
46 Preformed packing
47 Screw, machine, No. 6-32 *x* 3/16 in.
48 Washer, lock, No. 6
49 Tab lock

Figure 1-Continued.

46. Testing of Radio Interference Suppression Components

Test the capacitors for leaks and shorts on a capacitor tester. Replace a defective capacitor. If test equipment is not available and interference is indicated, isolate the cause of interference by the trial-and-error method of replacing each capacitor in turn until the cause of interference is located and eliminated.

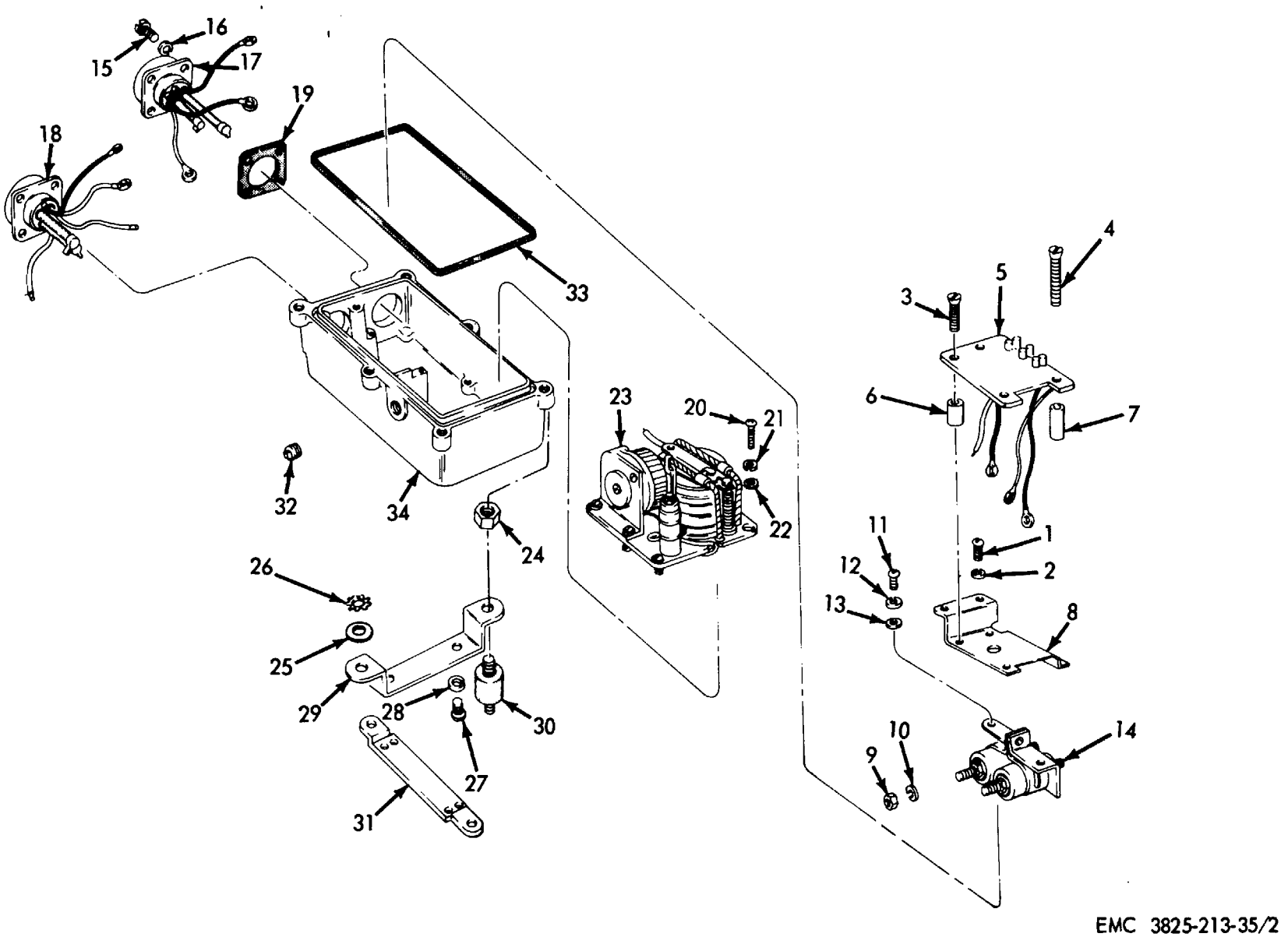


Figure 2. Generator voltage regulator box assembly, disassembly and reassembly, exploded view.

1 Screw, machine, No. 6-32 x 6/16 in. (2 rqr)
2 Washer, lock, No. 6-32 (2 rqr)
3 Screw, machine, No. 6-32 x 7/8 in. (3 rqr)
4 Screw, machine, No. 6-32 x 1 1/4 in.
5 Regulator panel
6 Spacer (3 rqr)
7 Spacer
8 Regulator shield
9 Nut, 1/4-20 (4 rqr)
10 Washer, lock, 1/4 in. (4 rqr)
11 Screw, machine, No. 6-32 x 3/8 in. (2 rqr)
12 Washer, lock, 3/8 in. (2 rqr)
13 Washer, flat, 3/8 in. (2 rqr)
14 Capacitor assembly
15 Screw, machine, No. 8-32 x 1/2 in. (8 rqr)
16 Washer, lock, No. 8 (8 rqr)
17 Connector assembly
18 Connector assembly
19 Gasket
20 Screw, machine, No. 10-32 x 2 1/2 in. (4 rqr)
21 Washer, lock (4 rqr)
22 Washer, flat (4 rqr)
23 Load relay assembly
24 Nut, 5/16-24 (4 rqr)
25 Washer, lock, 5/16 in. (3 rqr)
26 Washer, lock, ET (2 rqr)
27 Screw, machine, 10-32 x 1/2 in. (4 rqr)
28 Washer, flat, No. 10 (4 rqr)
29 Bracket (2 rqr)
30 Support (4 rqr)
31 Plate
32 Plug, pipe, 1/4 in.
33 Preformed packing
34 Regulator box

Figure 2 -Continued.

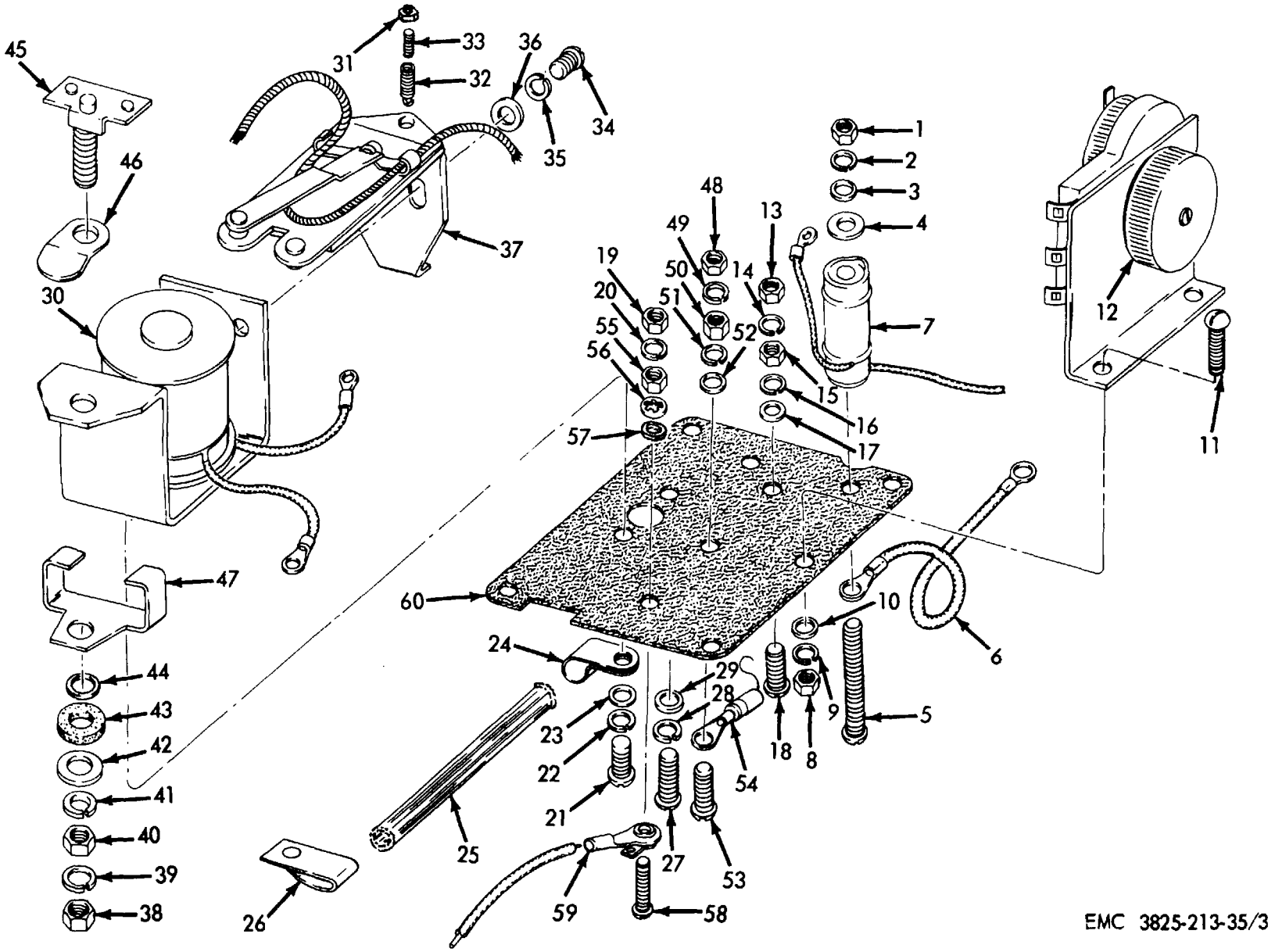


Figure 3. Load relay assembly, disassembly and reassembly, exploded v*iew.*

1 Nut, No. 1032
2 Washer, lock, No. 10
3 Washer, flat, No. 10
4 Insulating washer
5 Screw, machine, No. 10-32 x 2 1/4 in.
6 Relay electrical lead
7 Fixed resistor
8 Nut, No. 1032
9 Washer, lock, No. 10
10 Washer-, flat, No. 10
11 Screw, machine, No. 10-32 x 1/2 in. (2 rqr)
12 Resistor assembly
13 Nut, No. 10-32
14 Washer, lock, No. 10
15 Nut, No. 10-32
16 Washer, lock, No. 10
17 Washer, flat, No. 10
18 Screw, machine, No. 10-32 x 3/4 in.
19 Nut, No. 4-40
20 Washer, lock
21 Screw, machine, No. 10-32 x 3/4 in.
22 Washer, lock, No. 10
23 Washer, flat, No. 10
24 Clip
25 Sleeve
26 Clip
27 Screw, No. 10-32 x 5/16 in.
28 Washer, lock, 5/16 in.
29 Washer, flat, 5/16 in.
30 Operating coil assembly
31 Adjusting nut, special
32 Spring
33 Screw, adjusting, special
34 Screw, machine, No. 10-32x 1/4 in. (2 rqr)
35 Washer, lock, No. 10 (2 rqr)
36 Washer, flat, No. 10 (2 rqr)
37 Armature
38 Nut, 1/420
39 Washer, lock, 1/4 in.
40 Nut, 1/420
41 Washer, lock, 1/4 in.
42 Washer, flat, 1/4 in.
43 Insulating washer
44 Insulating bushing
45 Contact plate
46 Contact insulator plate
47 Armature stop
48 Nut, No. 10-32
49 Washer, lock, No. 10
50 Nut, No. 10-32
51 Washer, lock, No. 10
52 Washer, flat, No. 10
53 Screw, No. 1032 x 3/4 in.
54 Fixed resistor (360-ohm)
55 Nut, No. 440
56 Washer, lock, ET, No. 4
57 Washer, flat, No. 14
58 Screw, No. 4-40 x 3/4 in.
59 Rectifier lead
60 Panel

Figure 3-Continued.

Section IV. REMOVAL AND INSTALLATION OF MAJOR COMPONENTS OR AUXILIARIES

47. General

The major components and auxiliaries of the snow removal unit consist of the plow engine, carrier engine, transfer case, torqmatic transmission, plow transmission, and plow assembly.

48. Plow Assembly

a. Removal. Remove the plow assembly (TM 5-3825-213-10).

b. Installation. Install the #low assembly (TM 5-3825-213-10).

49. Plow Engine and Clutch Assembly

a. Removal.

(1) Remove the plow engine hood (TM 5-3825-213-20).

(2) Close shutoff valve on fuel tanks and remove the fuel line (TM 5 3825-213-20).

(3) Drain the coolant system (TM 5 3825-213-10).

(4) Drain the lubricating system (TM 54825-213-10).

(5) Remove the battery cables and wiring (TM 5-3825-213-20).

(6) Remove the necessary oil, heater, and coolant lines (TM 54825-213-20).

(7) Remove the oil pan shields (TM 5-3825-213-20).

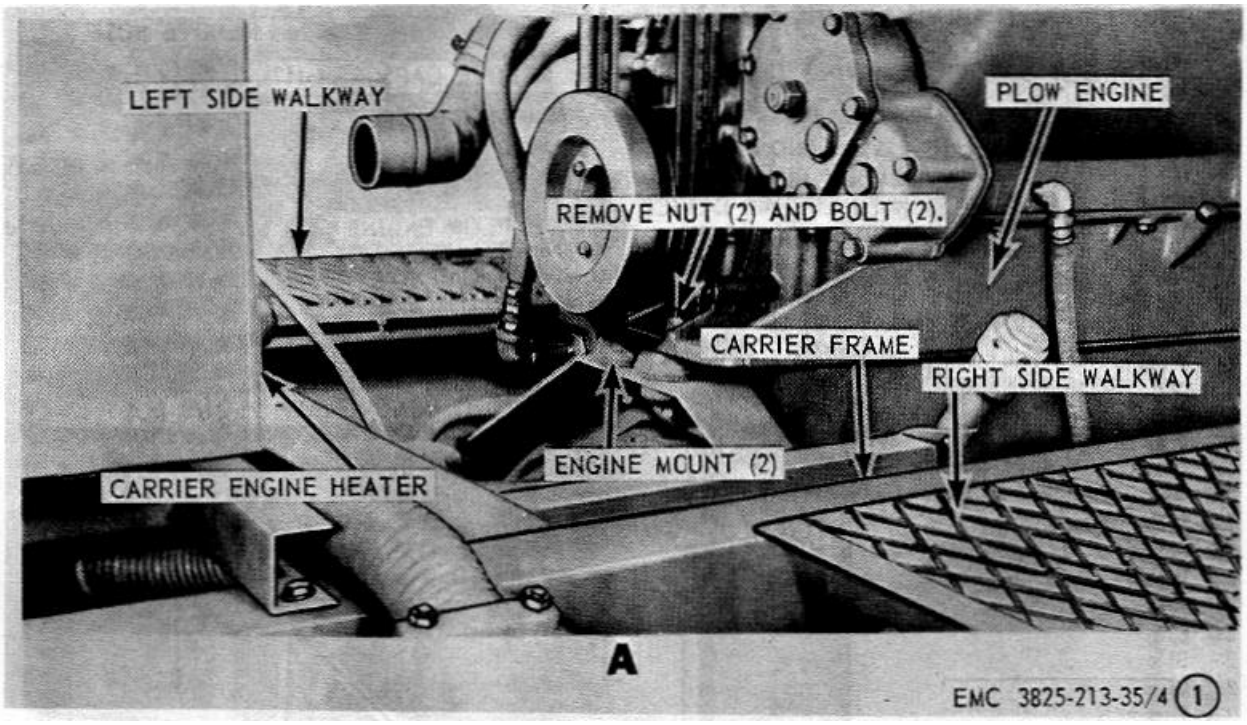
(8) Remove the plow transmission (par. 53).

(9) Remove the plow engine and clutch , assembly as instructed on figure 4.

b. Installation.

(1) Install the plow engine and clutch assembly as instructed on figure 4.

(2) Install the plow transmission (par. 53).



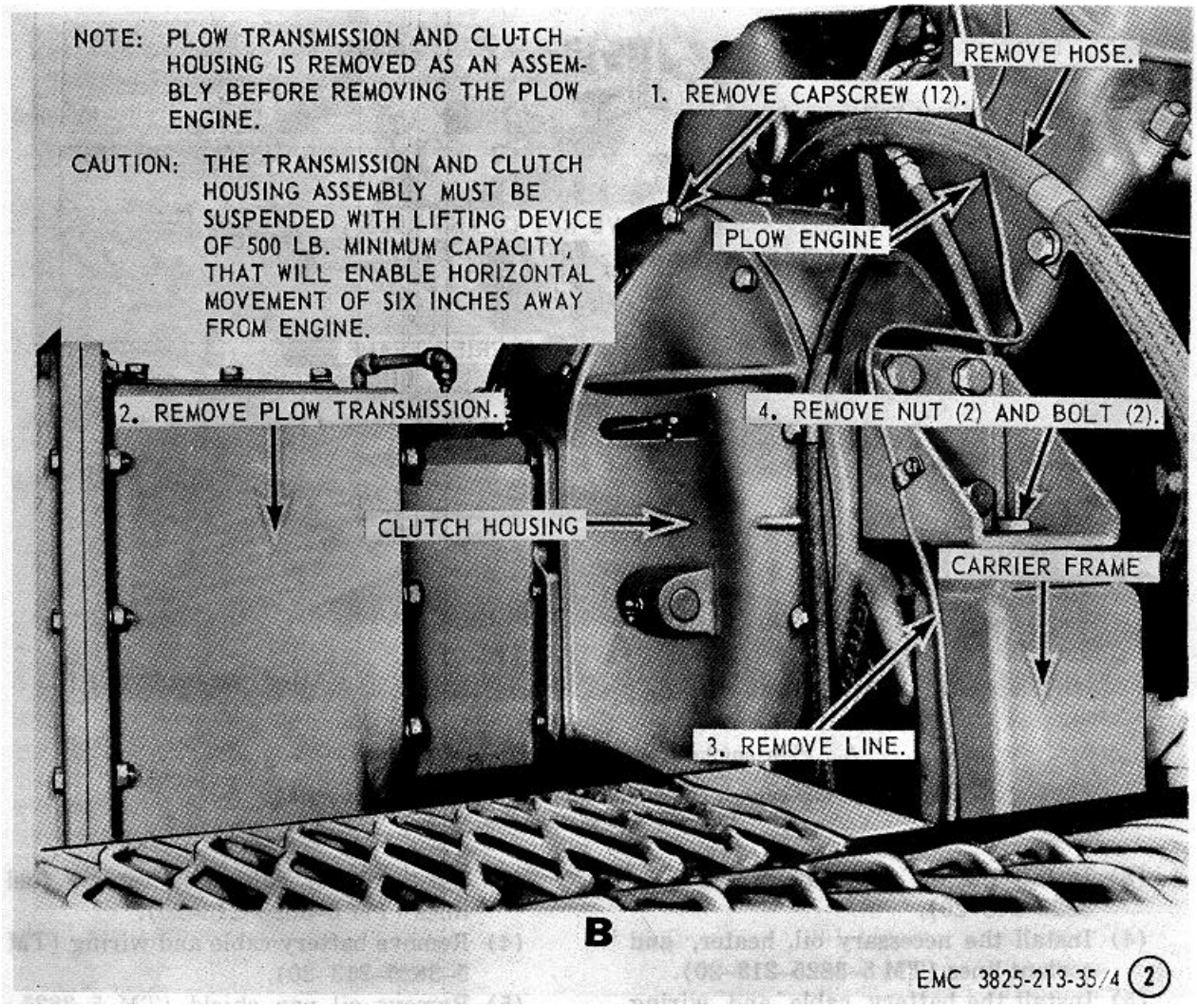
A. Plow engine front mounting removal points.

Figure 4. Plow engine, clutch housing, and transmission assembly, removal and installation.

(3) Install the oil pan shields (TM 53825-213-20).
(4) Install the necessary oil, heater, and coolant lines (TM 5-3825-213-20).
(5) Install the battery cable and wiring (TM 5-3825-213-20).
(6) Fill the lubricating system (LO 53825-213-20).
(7) Fill the coolant system (TM 5-3825213-10).
(8) Install the fuel lines and open the shutoff valves (TM 5-3825-213-10).
(9) Install the plow engine hood (TM 5-3825-213-20).

50. Carrier Engine and Torqmatic Converter Assembly

a. Removal.
(1) Drain the coolant system (TM 5-3825-213-10).
(2) Drain the transmission, hydraulic, and lubricating systems (TM 5-3825-213-10).
(3) Close shutoff valve and remove fuel lines (TM 5-3825-213-20).
(4) Remove battery cable and wiring (TM 53825-213-20).
(5) Remove oil pan shield (TM 5-3825-213-20).
(6) Remove transmission oil cooler (TM 5-3825-213-20).
(7) Remove alinement shaft (TM 53825-213-20).
(8) Remove hydraulic steering and plow lines (TM 5-3825-213-20).
(9) Remove the carrier engine hood (TM 5-3825-213-20).
(10) Remove the radiator (par. 210).
(11) Remove the carrier engine heater (TM 5-3825-213-20).
(12) Remove the starter (TM 5-3825-213-20).
(13) Remove the carrier engine and converter assembly as instructed on figure 5.

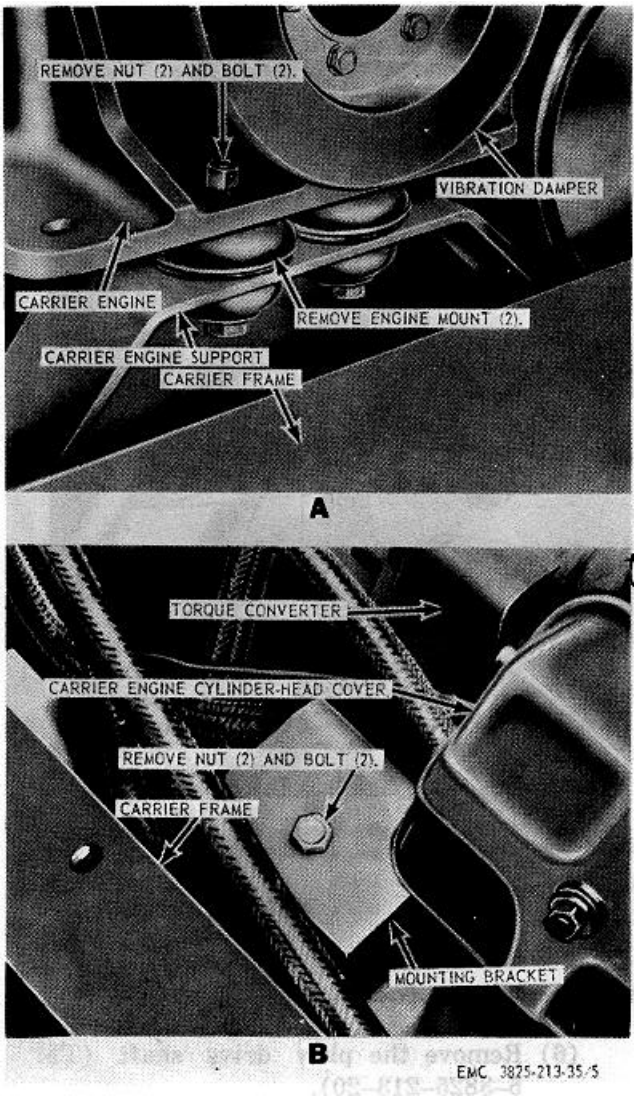


B. Rear plow engine, clutch housing, and transmission removal points

Figure 4-Continued.

b. Installation.

(1) Install the carrier engine and converter assembly as instructed on figure 5.
(2) Install the starter (TM 5-3825-213-20).
(3) Install the carrier engine heater (TM 5-3825-213-20).
(4) Install the radiator (par. 212).
(5) Install the carrier engine hood (TM 5-3825-213-20).
(6) Install hydraulic steering and plow lines (TM 5-3825-213-20).
(7) Install the alinement shaft (TM 5-3825-213-20).
(8) Install the transmission oil cooler (TM 5-3825-213-20).
(9) Install the oil pan shield (TM 5-3825 213-20).
(10) Install the battery cable and wiring (TM 5-3825-213-20).
(11) Install the fuel lines and open shut-off valve (TM 5-3825-213-10).
(12) Fill the transmission, hydraulic, and lubricating systems (LO 5-3825-213-20)
(13) Fill the coolant system (TM 5-3825- 213-20).



A. Front removal points.
B. Rear removal points.

Figure 5. Carrier engine and torque converter assembly, removal and installation.

51. Torqmatic Transmission Assembly

a. Removal.

(1) Drain the torqmatic transmission (TM 5-3825-213-10).
(2) Remove the hydraulic lines (TM 5-3825213-20).
(3) Remove sending unit wiring (TM 5- 3825-213-20).
(4) Remove universal joints (TM 5-3825-213-20).
(5) Remove the plow engine (par. 49).
(6) Disconnect the speedometer cable (TM 5-3825-213-20).
(7) Remove the torqmatic transmission assembly as instructed on figure 6.

b. Installation.

(1) Install the torqmatic transmission assembly a s instructed on figure 6.
(2) Install the plow engine (par. 49).
(3) Install the universal joints (TM 5-3825-213-20).
(4) Install the sending unit wiring (TM 5-3825-213-20).
(5) Install hydraulic lines (TM 5-825-213-20).
(6) Install the speedometer cable (TM 5-3825-213-20).
(7) Fill the torqmatic transmission (LO 53825-213-20).

52. Transfer Case Assembly

a. Removal.

(1) Remove the front and rear differential drive shafts and jack shaft (TM 5-3825-213-20).

Note

Mark each end of the transmission jack shaft for proper alinement when installing.

(2) Remove hydraulic lines (TM 5-3825- 213-20).
(3) Disconnect shift lever, brake cable, and bracket (TM 5-3825-213-20).
(4) Remove governor electrical connection (TM 5-3825-213-20).
(5) Disconnect speedometer cable (TM 5-3825-213-20).
(6) Remove the transfer case assembly as instructed on figure 7.

b. Installation.

(1) Install the transfer case assembly as instructed on figure 7.
(2) Connect the speedometer cable (TM 5-3825-213-20).
(3) Install the governor electrical connection (TM 5-3825-213-20).
(4) Connect the shift lever, brake cable, and bracket (TM 5-3825-213-20).
(5) Install the hydraulic lines (TM 5- 3825-213-20).

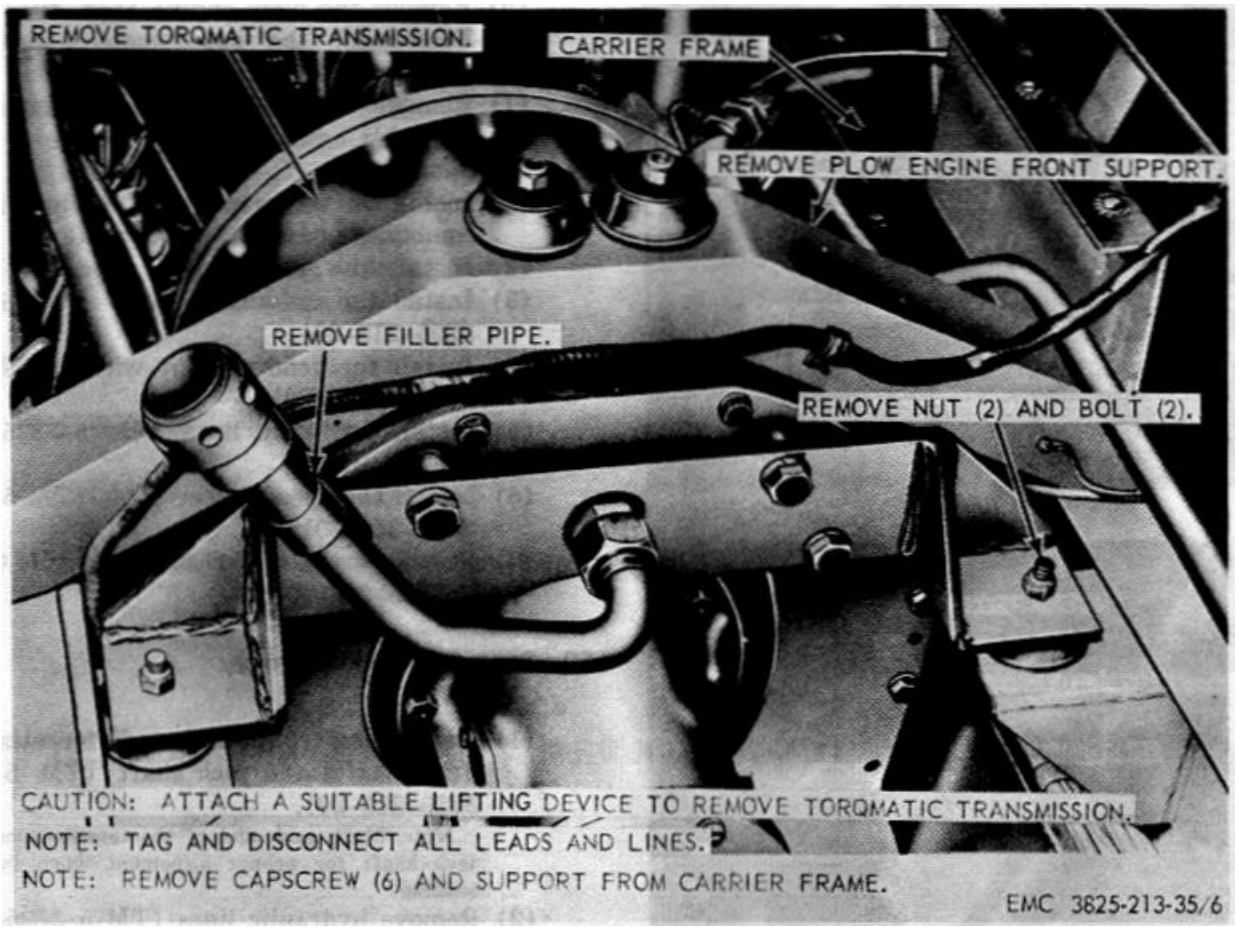


Figure 6. Torqmatic transmission assembly, removal and installation.

(6) Install the front and rear drive shafts and transmission to transfer case jack shaft (TM 5-3825-213-20).

53. Plow Transmission Assembly

a. Removal.

(1) Drain plow engine coolant system (TM 5-3825-213-10).
(2) Remove the plow engine hood (TM 5-3825-213-20).
(3) Remove the plow engine heaters, heater ducts, and shields (TM 5-3825-213-20).
(4) Remove plow transmission hood.
(5) Remove the clutch operating linkage (TM 5-3825-213-20).
(6) Remove the plow drive shaft (TM 53825-213-20).
(7) Disconnect the shifter arm (TM 53825-213-20).
(8) Remove the plow transmission assemble as instructed on figure 4.

b. Installation.

(1) Install the plow transmission assembly as instructed on figure 4.
(2) Connect the shifter arm (TM 5 3825-213-20).
(3) Install the drive shaft (TM 5-3825-213-20).
(4) Install the clutch operating linkage (TM 54825-213-20).

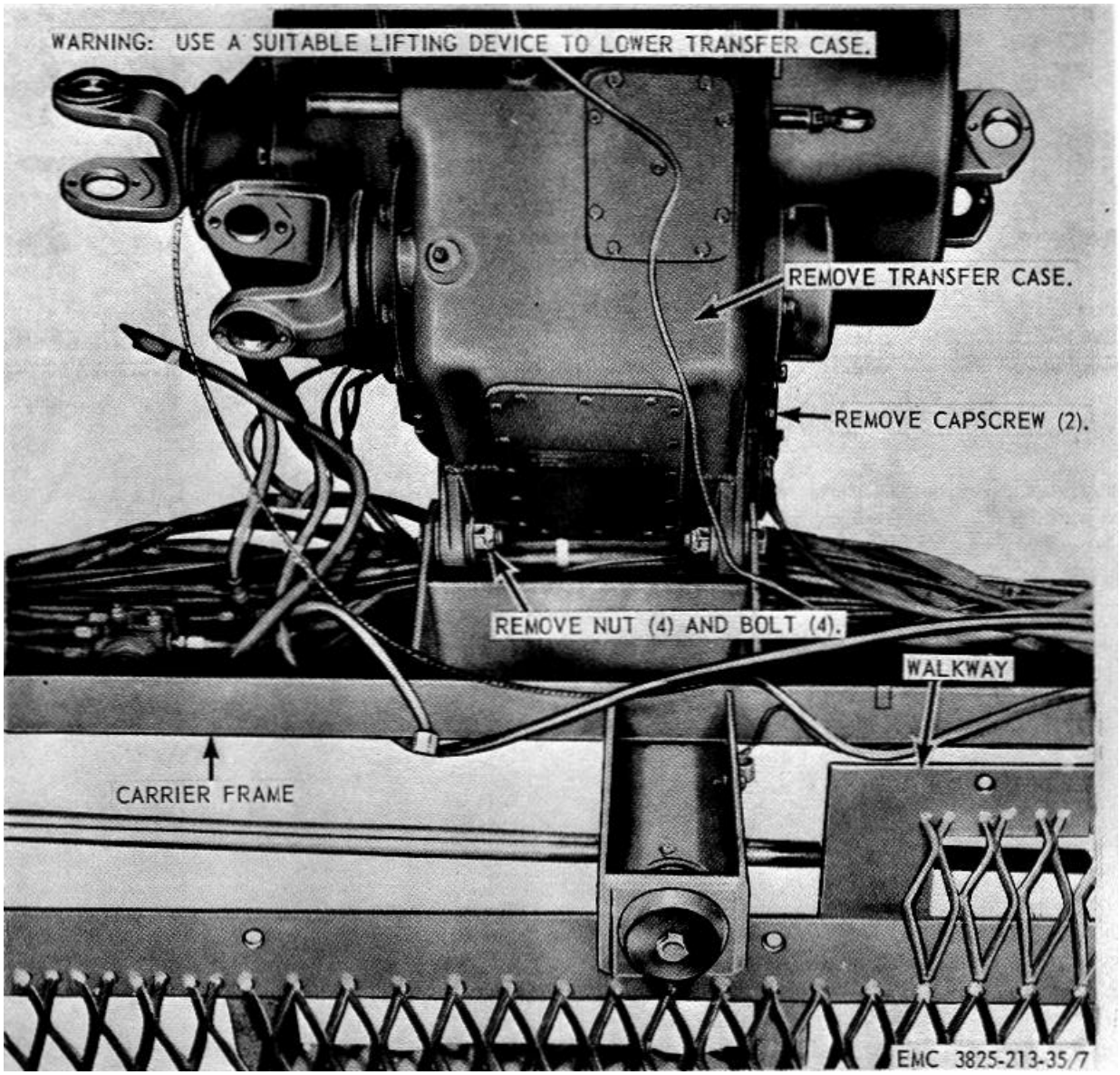


Figure 7. Transfer case assembly, removal and installation.

(5) Install the plow transmission hood.
(6) Install the plow engine heaters, heater ducts, and shields (TM 5-3825-213-20).
(7) Install the plow engine hood (TM 5-3825-213-20).
(8) Fill engine coolant system (TM 5-3825-213-10).

CHAPTER 3

ENGINE HEATER REPAIR INSTRUCTIONS

Section I. CARRIER AND PLOW ENGINE HEATERS

54. General

a. Description. There are two electrically controlled, gasoline-operated, coolant heaters which preheat the engine coolant before starting under conditions of extreme cold. The carrier engine heater is mounted on the carrier frame in front of the carrier engine hood. The plow engine heater is mounted on the plow clutch housing cover in back of the plow engine hood.

b. Fuel System. Fuel to operate the heaters is drawn from the carrier fuel tank. Each heater has a fuel filter, electrical fuel pump, and an electrically operated regulating valve which controls the flow of fuel.

c. Electrical System. The heater electrical system controls the operation of the fuel and air systems throughout the complete heater cycle. The control box, located in the carrier cab, controls the circuits from the power source to the heater and fuel pump.

55. Carrier and Plow Engine Heaters Removal and Disassembly

a. Removal.

(1) Remove the engine heater (TM 5 3825-213-20).

(2) Remove control panel cover and igniter (TM 5-3825-213-20).

b. Disassembly. Disassemble the engine heaters in numerical sequence as illustrated on figures 8 and 9.

56. Carrier and Plow Engine Heaters Cleaning, Inspection, Repair, and Test

a. Cleaning. Clean all parts with an approved cleaning solvent and dry thoroughly.

b. Inspection and Repair.

(1) Inspect for defective power, preheat, and nonfire relay; ignition coil assembly, fuel regulator valve and nozzle assembly, flame switch, and contact plate on the control head.

(2) Inspect for a defective combustion fan and motor, combustion chamber, and heater housing.

(3) Repair or replace all defective parts.

c. Testing.

(1) *Flame switch.* Disconnect all leads from the flame switch (27, fig. 8). Check the continuity of the circuits through the flame switch with a test light and probe, or an ohmmeter. Use the wiring diagram (TM 5-3825-213-20) when making these checks. Apply heat to the flame switch tube. The switch should change to hot position at 400° to 500° F. Continuity should now be across terminals 1 and 2 and terminals 1 and 5. Allow the tube to cool. The switch should return to cold position at 200° to 300° F.

(2) Blower motor. Connect a power supply with the motors specified dc voltage to the assembly and operate the motor. With a tachometer check the motor speed. The minimum rpm for the circulating air blower motor is 3,700. Combustion air blower motor 6,500. The motor speed should be equal to or greater than specified rpm for particular unit tested.

57. Carrier and Plow Engine Heaters Reassembly and Installation

a. Reassembly.

(1) Reassemble the engine heaters in the reverse of the numerical sequence illustrated on figures 8 and 9.

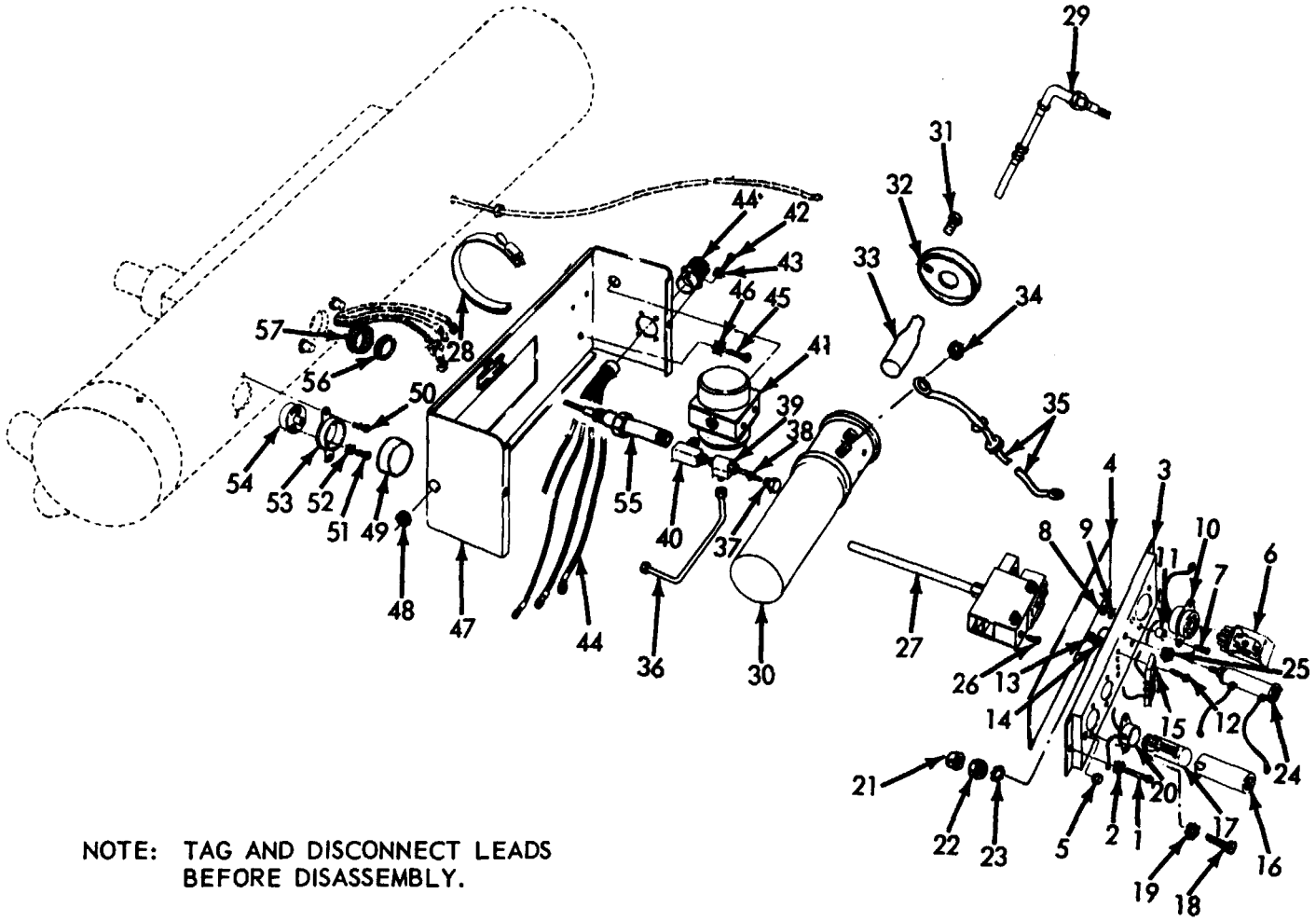
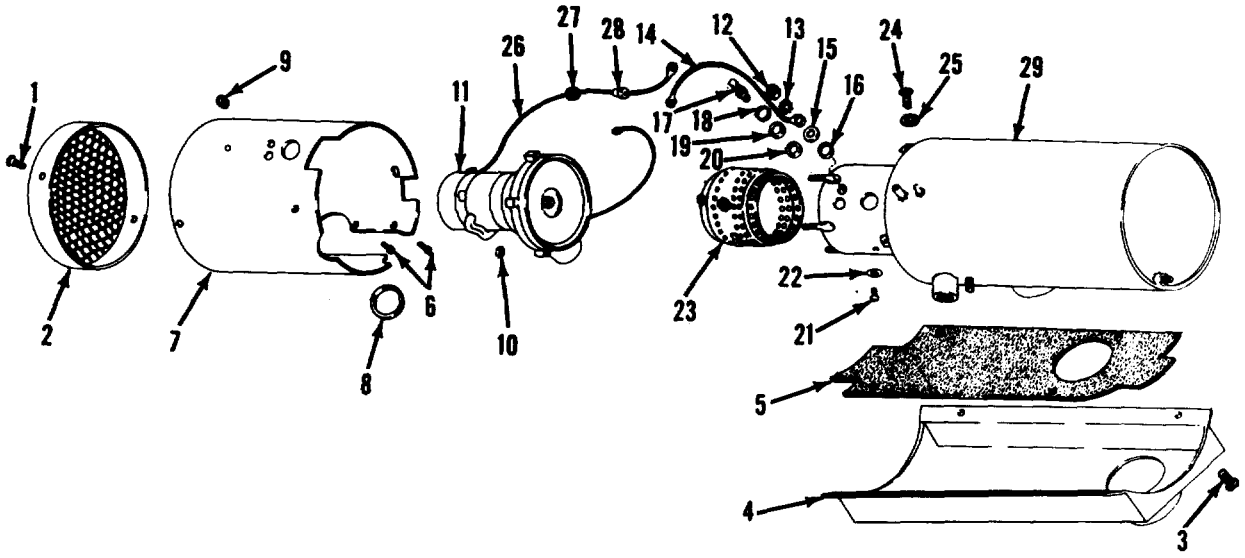


Figure 8. Heater control head, disassembly and reassembly, exploded view.

1 Screw, machine, No. 10-2 x 1/4 in. (2 rqr)
2 Washer, lock, No. 10 (2 rqr)
3 Relay mounting base
4 Insulation
5 Grommet (2 rqr)
6 Power relay
7 Screw, machine, No. 6-32 x 1/2 in. (2 rqr)
8 Nut, No. 6 (2 rqr)
9 Washer, lock, ET, No. 6 (2 rqr)
10 Relay socket
11 Spacer (2 rqr)
12 Screw, machine, No. 10-32 x 1/4 in. (2 rqr)
13 Nut, No. 10-32 (2 rqr)
14 Washer, lock, ET, No. 10 (2 rqr)
15 Terminal block
16 Relay shield (2 rqr)
17 Time relay (2 rqr)
18 Screw, No. 4-40 x 3/8 in. (4 rqr)
19 Washer, ET, No. 4 (4 rqr)
20 Shield socket (2 rqr)
21 Nut, special
22 Nut, No. 6-32
23 Washer, lock, ET, No. 6
24 Resistor
25 Nut, No. 6-32 (2 rqr)
26 Screw, machine, No. 12-28 x 3/16 in. (5 rqr)
27 Flame switch
28 Clamp, coil mounting
29 Coil-to-igniter cable
30 Ignition coil
31 Screw, special
32 End cover
33 Capacitor
34 Nut
35 Electrical lead assembly
36 Fuel tube
37 Plug, pipe
38 Nozzle assembly
39 Adapter
40 Elbow
41 Regulator valve
42 Screw, machine, No. 4-40 x 5/16 in. (4 rqr)
43 Washer, lock, ET, No. 4 (4 rqr)
44 Receptacle
45 Screw, machine, No. 8-32 x 3/8 in. (2 rqr)
46 Washer, lock, ET, No. 8 (2 rqr)
47 Control head base
48 Grommet
49 Cap
50 Screw, special (2 rqr)
51 Screw, machine, No. 82 x 1/4 in. (2 rqr)
52 Washer, lock, No. 8 (2 rqr)
53 Switch retainer
54 Limit switch
65 Igniter
56 Washer, special
57 Seal

Figure 8-Continued.



1 Screw, machine, 10-82 x 1/4 (3 rqr)
2 Cover
3 Screw, 10-32 x 3/8 (4 rqr)
4 Base
5 Insulation
6 Screw, machine, 10-32 x 2/8 in. (6 rqr)
7 Casing
8 Seal
9 Grommet
10 Nut, special (4 rqr)
11 Combustion blower assembly
12 Nut, 10-32
13 Washer, lock, ET, No. 10
14 Lead
15 Washer, flat, No. 10
16 Insulation washer
17 Union
18 Washer, seal
19 Seal
20 Gasket
21 Screw, 8-32 x 5/8 (2 rqr)
22 Washer, flat, No. 8 (2 rqr)
23 Burner
24 Screw, machine, 10-32 x 3/4 in.
25 Insulator
26 Wire
27 Grommet
28 Grommet
29 Combustion chamber

Figure 9. Engine heater combustion chamber, disassembly and reassembly, exploded view.

(2) Install the igniter and cover (TM 5- 3825-213-20) .

b. Installation. Install the heaters (TM 5- 3825-213-20).

Section II. PERSONNEL HEATER

58. General

a. *Description.* The personnel heater is an electrically controlled, gasoline-operated heater. It is mounted on the plow clutch housing cover to the rear of the carrier cab. The heater supplies heated fresh air to the personnel cab, windshield defrosters, and battery box.

b. Fuel System. Fuel to operate the heater is drawn from the carrier fuel tank through an electric fuel pump and fuel filter to the electrically operated regulating valve which controls the flow of fuel.

c. Electrical System. The heater electrical system controls operation of the fuel and air

system throughout the complete heater cycle. The control box, located in the carrier cab, controls the circuits from the power source to the heater and fuel pump.

59. Personnel Heater Removal and Disassembly

a. Removal.

(1) Remove the personnel heater (TM 53825-213-20).

(2) Remove the cover and igniter (TM 5-3825-213-20).

b. Disassembly. Disassemble the personnel heater in numerical sequence as illustrated on figures 8, 9, 10, and 11.

60. Personnel Heater Cleaning, Inspection, Repair, and Test

a. Cleaning. Clean all parts with an approved cleaning solvent and dry thoroughly.

b. Inspection and Repair.

(1) Inspect for a defective power, preheat, and nonfire relay; ignition coil assembly, fuel regulator valve and nozzle assembly, flame switch, and contact plate on the control head.

(2) Inspect for a defective combustion fan and motor, circulating fan and motor, combustion chamber, and heater housing.

(3) Repair or replace all defective parts.

c. Testing. Test the heater components (par. 56).

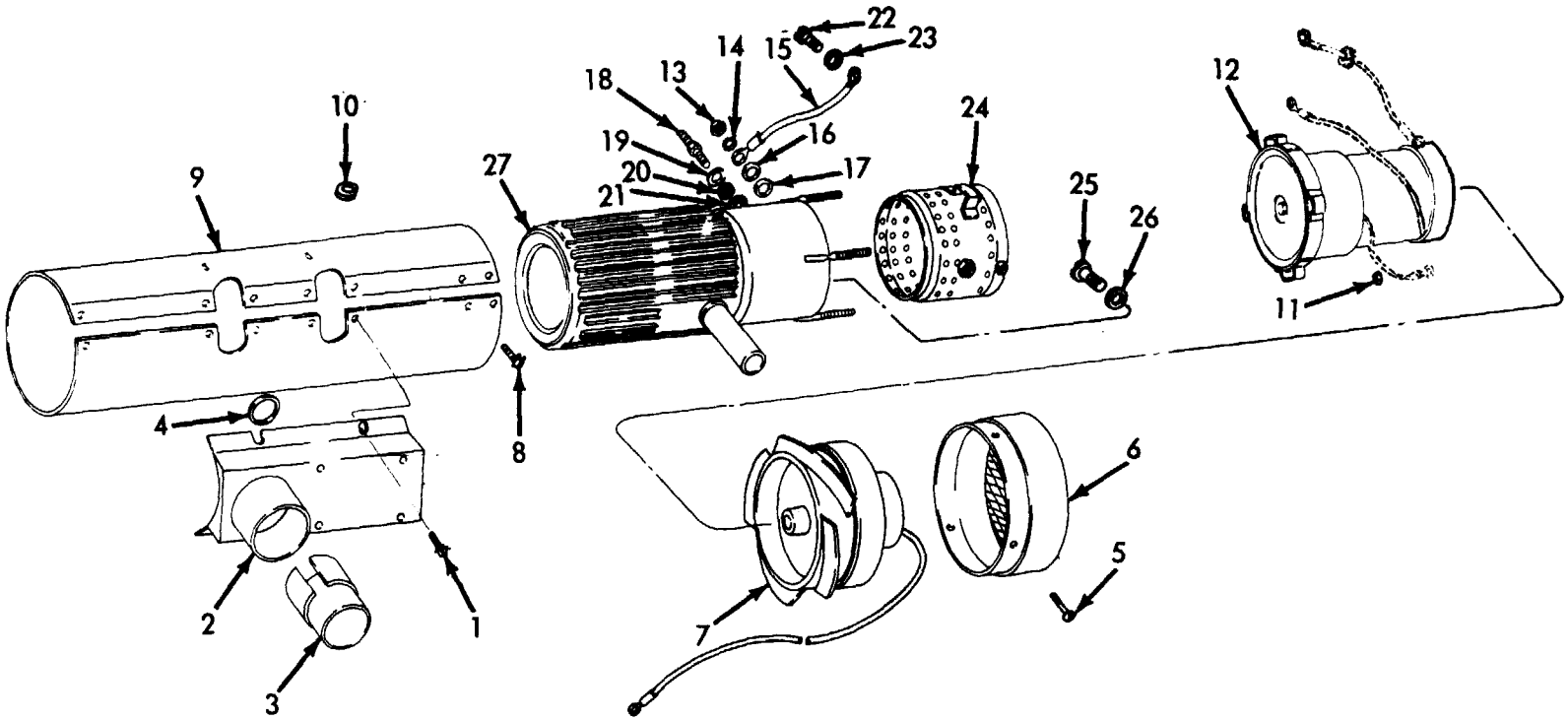
61. Personnel Heater Reassembly and Installation

a. Reassembly.

(1) Reassemble the personnel heater in reverse of numerical sequence illustrated on figures 8, 9, 10, and 11.

(2) Install the igniter and cover (TM 6 3825-213-20).

b. Installation. Install the personnel heater (TM 53825213-20).



EMC 3825-213-35/10

1 Screw, 10-32 x 3/8 in. (4 rqr)
2 Base
3 Adapter
4 Seal
5 Screw, 10-32 x 3/8 in. (4 rqr)
6 Cover
7 Blower assembly
8 Screw, 10-32 x 3/8 in. (4 rqr)
9 Casing
10 Grommet
11 Nut, special (4 rqr)
12 Combustion blower assembly
13 Nut, 10-32
14 Washer, lock, ET, No. 10
15 Lead
16 Washer, flats No. 10
17 Insulating washer
18 Union
19 Gasket
20 Washer, flat, special
21 Seal, washer
22 Screw, 8-32 x 5/8 in. (2 rqr)
23 Washer, flat, No. 8 (2 rqr)
24 Burner
25 Screw, 10-32 x 3/4 in.
26 Washer, flat, No. 10
27 Combustion chamber

Figure 10. Personnel heater combustion chamber assembly-, disassembly and reassembly,- exploded view.

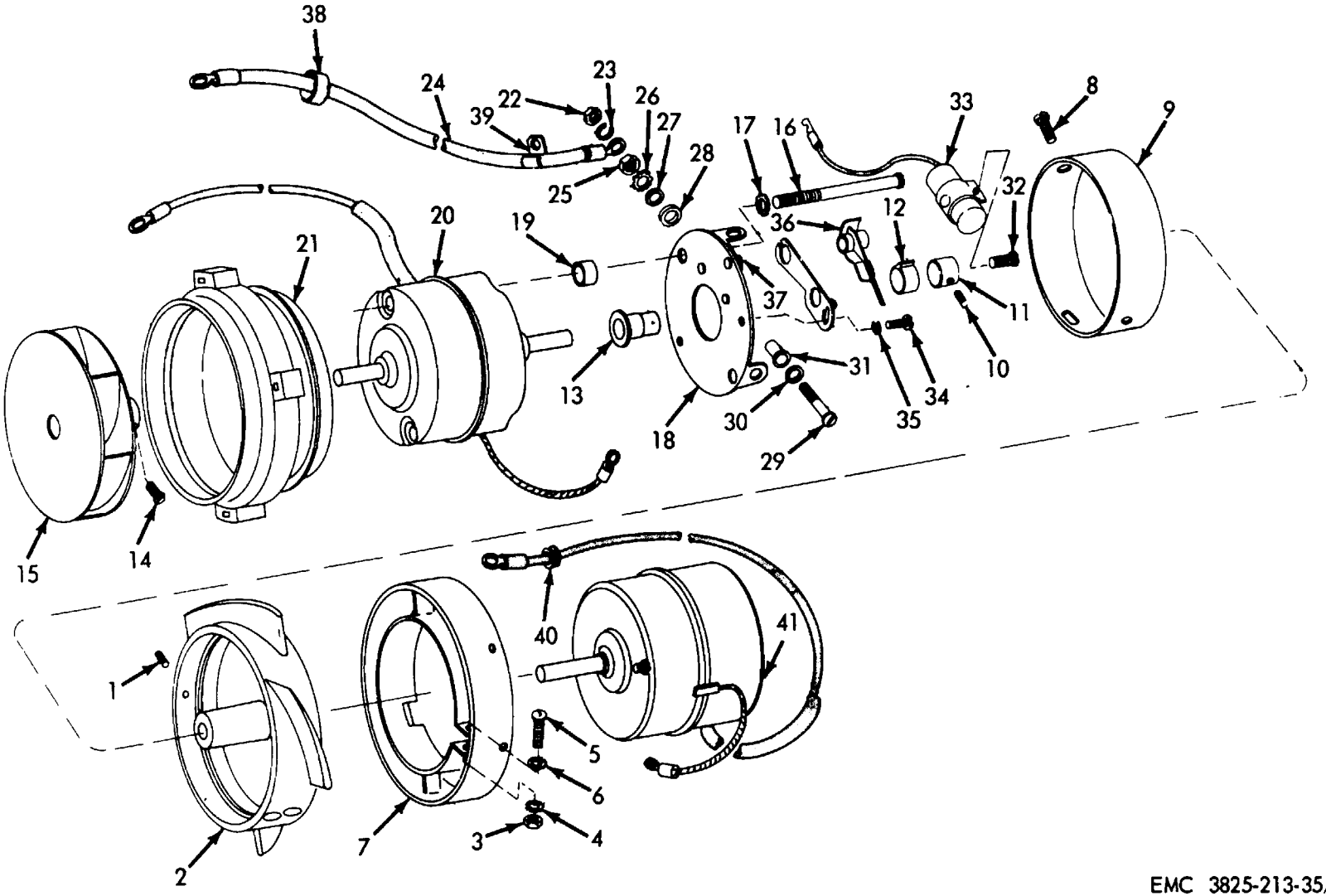


Figure 11. Personnel heater electric motor assemblies, disassembly and reassembly, exploded view.

1 Setscrews No. 10-32 x 3/8 in.
2 Fan
3 Nut, No. 10-32
4 Washer, lock, ET, No. 10
5 Screw, machine, No.10-32 x 5/8 in.
6 Washer, lock, ET, No. 10
7 Motor clamp
8 Screw, machine, No.8-32 x 3/8 in. (3 rqr)
9 Contact plate cap
10 Setscrew, No. 6-2 x 3/16 in.
11 Cam bushing
12 Cam collar
13 Contact cam
14 Screw, machine, No. 10-32 x 3/8 in.
15 Fan
16 Screw, machine, No.10-82 x 3 in. (2 rqr)
17 Washer, lock, ET, No. 10 (2 rqr)
18 Contact plate
19 Spacer (2 rqr)
20 Electric motor
21 Combustion air shell
22 Nuts No. 8-32
23 Washer, lock, No. 8
24 Lead
25 Nut, No. 8-32
26 Washer, lock, ET, No. 8
27 Washer, flat, No. 8
28 Post insulator
29 Screw, machine, No. 8-32 x 3/4 in.
30 Washer, flat, No. 8
31 Insulator washer
32 Screw, machine, No. 8-32 x 1 in.
33 Capacitor
34 Screw, machine, No. 8-32 x 1 in.
35 Washer, lock, No. 8
36 Contact
37 Contact base
38 Grommet
39 Clip
40 Grommet
41 Electric motor

Figure 11-Continued.

CHAPTER 4

STEERING HYDRAULIC SYSTEM REPAIR INSTRUCTIONS

Section I. STEERING HYDRAULIC PUMP

62. General

The hydraulic steering booster pump driven by the carrier engine is of the single-cartridge, balanced-vane type, having a constant rate of delivery per revolution. Because the vanes are initially ejected by centrifugal force it is essential when starting that the minimum drive speed be held to 600 rpm until the pump is primed and pressure built up.

63. Steering Hydraulic Pump Removal and Disassembly

a. Removal. Remove the steering hydraulic pump (TM 5-3825-213-20).

b. Disassembly. Disassemble the steering hydraulic pump in numerical sequence as illustrated on figure 12.

64. Steering Hydraulic Pump Cleaning, Inspection, and Repair

a. Cleaning. Clean all parts in an approved cleaning solvent and remove foreign matter from passages.

Caution

When repairing any component of the steering hydraulic system be sure to keep work area dust and dirt free. Dust and dirt can create a serious malfunction of the system.

Caution

Never use an air hose on or near the exposed parts because of the presence of moisture in air system.

b. Inspection and Repair. Inspect all parts for wear, scoring, pitting, or other damage. Repair or replace defective parts as necessary.

65. Steering Hydraulic Pump Reassembly and Installation

a. Reassembly. Reassemble the steering hydraulic pump in the reverse of numerical sequence illustrated on figure 12.

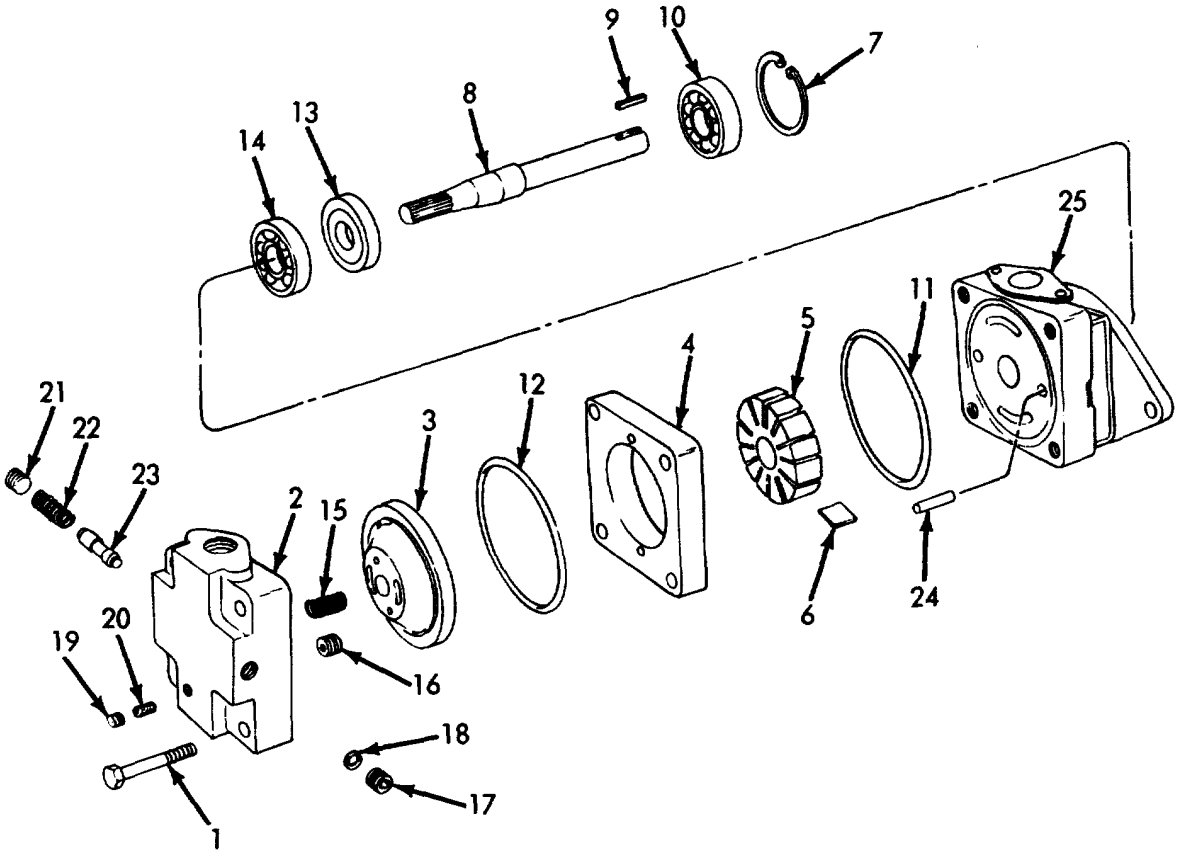
Note.

Immerse all parts in clean hydraulic fluid to facilitate reassembly.

Note

Inspect for correct pump rotation. To drive a pump in the wrong direction may cause it to seize due to lack of oil.

b. Installation. Install the steering hydraulic pump (TM 5-3825-213-20).



1 Screw, cap, 1/2-13 x 3 1/3 in. (4 rqr)
2 Cover
3 Plate
4 Ring
5 Rotor
6 Vane (12 rqr)
7 Snap ring
8 Shaft
9 Key
10 Bearing
11 O-ring
12 O-ring
13 Seal
14 Bearing
15 Spring
16 Orifice plug
17 Plug
18 Snap ring
19 Plug
20 Screen
21 Plug
22 Control valve spring
23 Control valve
24 Pin (2 rqr)
25 Body

Figure 12. Steering hydraulic pump, disassembly and reassembly, exploded view.

Section II. FRONT AND REAR STEERING CYLINDER ASSEMBLY

66. General

The steering hydraulic cylinder is a double-acting type which is connected to the steering arm bearing cap and axle housing. The steering unit controlled by mechanical linkage from the control valve to the steering mechanism of the vehicle, transmits power to the steering cylinder.

67. Front and Rear Steering Cylinder Assembly Removal and Disassembly

a. Removal. Remove the front or rear steering cylinder assembly (TM 5-3825-213-20).

b. Disassembly. Disassemble the front or rear steering assembly in numerical sequence as illustrated on figure 13.

68. Front and Rear Steering Cylinder Assembly Cleaning, Inspection, and Repair

a. Cleaning. Clean all parts with an approved cleaning solvent and remove foreign matter from passages.

b. Inspection and Repair. Inspect all parts for wear, scoring, or other damage; repair or replace defective parts as necessary. Note. Do not attempt to touch up the cylinder ram, this will result only in malfunction of the steering unit.

69. Front and Rear Steering Cylinder Assembly Reassembly and Installation

a. Reassembly. Reassemble the front or rear steering cylinder assembly in reverse of numerical sequence illustrated on figure 13.

b. Installation. Install the front or rear steering cylinder assembly (TM 53825-21320).

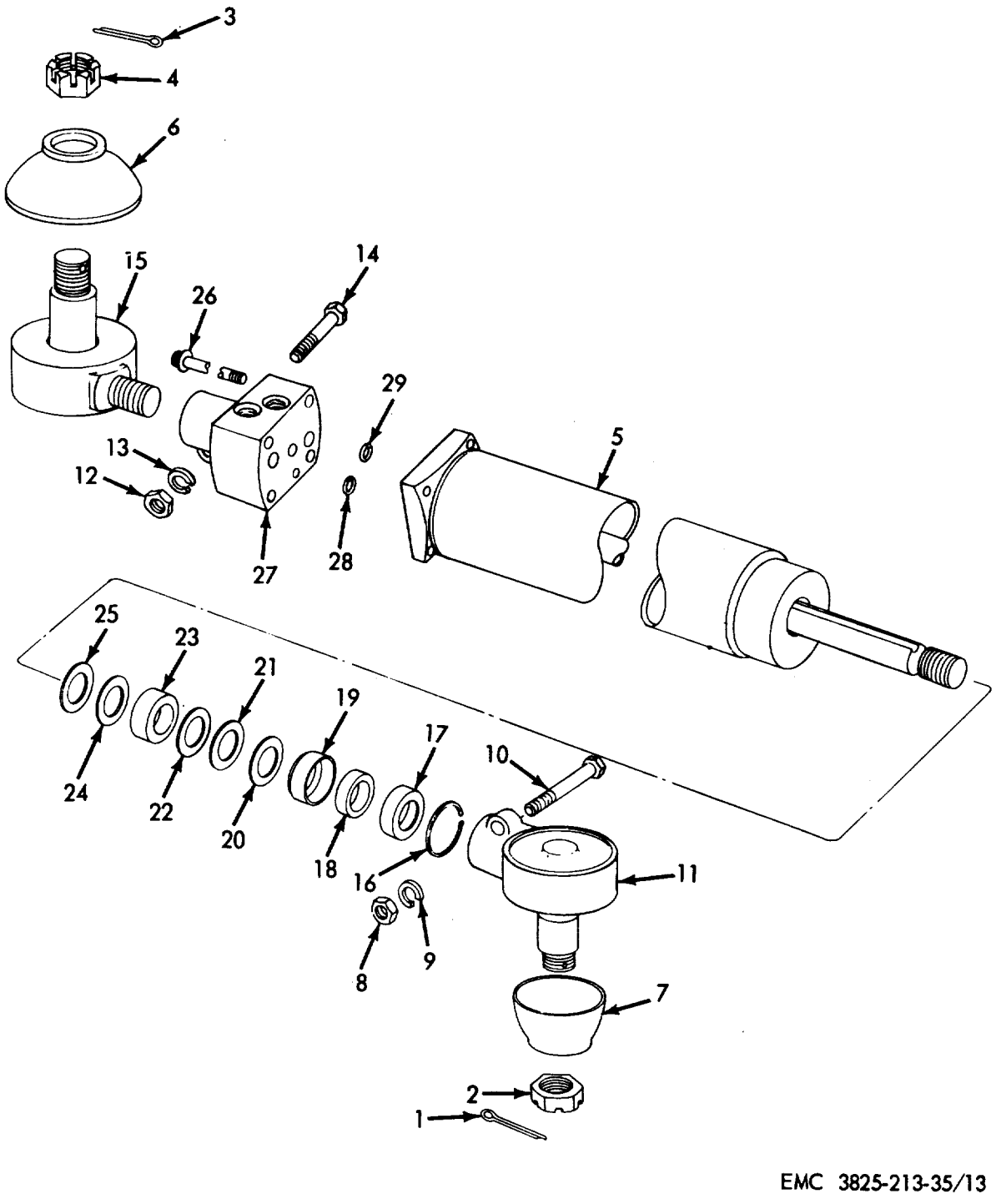


Figure 13. Front and rear steering cylinder assembly, disassembly and reassembly, exploded view.

1 Pin, cotter (2 rqr)
2 Nut, special (2 rqr)
3 Pin, cotter (2 rqr)
4 Nut, special (2 rqr)
5 Cylinder (2 rqr)
6 Cover (2 rqr)
7 Cover (2 rqr)
8 Nut, 3/8-24 (2 rqr)
9 Washer, lock, 3/8 in. (2 rqr)
10 Screw, cap, 3/8-24 x 2-3/4 in., special (2 rqr)
11 Stud ball (2 rqr)
12 Nut, 3/8-24 (2 rqr)
13 Washer, lock, 3/8 in. (2 rqr)
14 Screw, cap, 3/8-24 x 1 3/4 in. (2 rqr)
15 Stud ball (2 rqr)
16 Snap ring (2 rqr)
17 Scraper (2 rqr)
18 Wiper ring (2 rqr)
19 Retainer (2 rqr)
20 Washer (2 rqr)
21 Seal (2 rqr)
22 Seal (2 rqr)
23 Seal (2 rqr)
24 Seal (2 rqr)
25 Seal (2 rqr)
26 Bolt, machine, 3/8-24 x 2 1/2 in. (8 rqr)
27 Cap end (2 rqr)
28 O-ring (2 rqr)
29 O-ring (2 rqr)

Figure 13-Continued.

Section III. FRONT STEERING CONTROL VALVE ASSEMBLY

70. General

The front steering control is connected to the steering gearbox pitman arm and brake air chamber support arm. Hydraulic pressure from the control valve when the steering wheel is turned operates the front steering cylinder.

71. Front Steering Control Valve Assembly Removal and Disassembly

a. Removal. Remove the front steering control valve assembly (TM 5-825-213-20).

b. Disassembly. Disassemble the front steering control valve assembly in numerical sequence as illustrated on figure 14.

72. Front Steering Control Valve Assembly Cleaning, Inspection, and Repair

a. Cleaning. Clean all parts in an approved cleaning solvent and remove foreign matter from passages.

b. Inspection and Repair. Inspect all parts for wear, scoring, or other damage; repair or replace defective parts as necessary.

Note

Do not attempt to touch up the valve spool, this will result in malfunction of the steering unit.

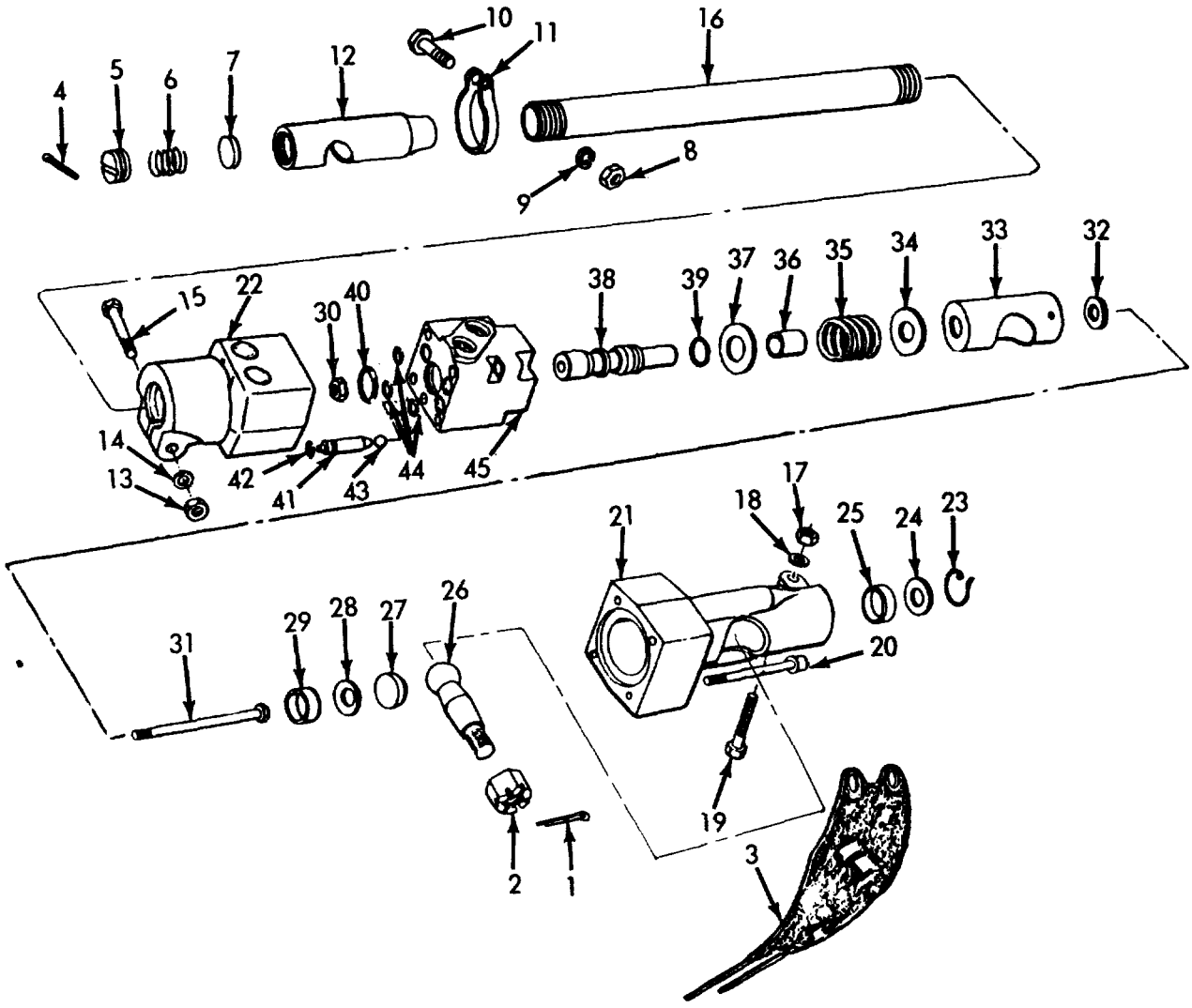
73. Front Steering Control Valve Assembly Reassembly and Installation

a. Reassembly. Reassemble the front steering control valve assembly in the reverse of numerical sequence illustrated on figure 14.

Note

Immerse the parts in clean hydraulic fluid to facilitate assembly.

b. Installation. Install the front steering control valve assembly (TM 5-3825-213-20).



1 Pin, cotter
2 Nut, special
3 Cover
4 Pin, cotter
5 Plug
6 Spring
7 Seat
8 Nut, 3/8-24
9 Washer, lock, 3/8 in.
10 Screw, cap, 3/8-24 x 2 in.
11 Clamp
12 Socket body
13 Nut, 3/8-24
14 Washer, lock, 3/8 in.
15 Screw, cap, 3/824 x 1 3/4 in.
16 Tie rod
17 Nut, 3/8-24
18 Washer, lock, 3/8 in.
19 Screw, cap, 3/8-24 x 1-3;/4 in., special
20 Bolt, machine, 3/8-24 x 5-3/8 in. (4 rqr)
21 Housing
22 Cap
23 Snap ring
24 Plug

Figure 14. Front steering control valve assembly, disassembly and reassembly, exploded view.

25 Seat
26 Stud ball
27 Seat
28 Spring
29 Spacer
30 Nut, 3/8-24
31 Screw, cap, 3/8-24 x 5 in.
32 Spring washer
33 Sleeve
34 Washer, special
35 Centering spring
36 Spacer
37 Washer, special
38 Valve spool
39 0-ring
40 0-ring
41 Valve
42 0ring
43 Ball
44 0-ring (3 rqr)
45 Valve body

Figure 14-Continued.

Section IV. REAR STEERING HYDRAULIC CONTROL VALVE ASSEMBLY

74. General

The rear steering control valve assembly located in the center and under the instrument panel controls the steering radius of the rear wheels. The control valve assembly applies pressure to the rear steering cylinder rotating the rear wheel radius to the desired direction for operation. The rear wheels are locked in center position by an air actuated pin controlled by the operator through a switch -mounted on the instrument panel.

75. Rear Steering Hydraulic Control Valve Assembly Removal and Disassembly

a. Removal. Remove the rear steering hydraulic control valve assembly (TM 5-3825213-20).

b. Disassembly. Disassemble the rear steering hydraulic control valve assembly in numerical sequence as illustrated on figure 15.

76. Rear Steering Hydraulic Control Valve Assembly Cleaning, Inspection, and Repair

a. Cleaning. Clean all parts in an approved cleaning solvent and remove foreign matter from passages.

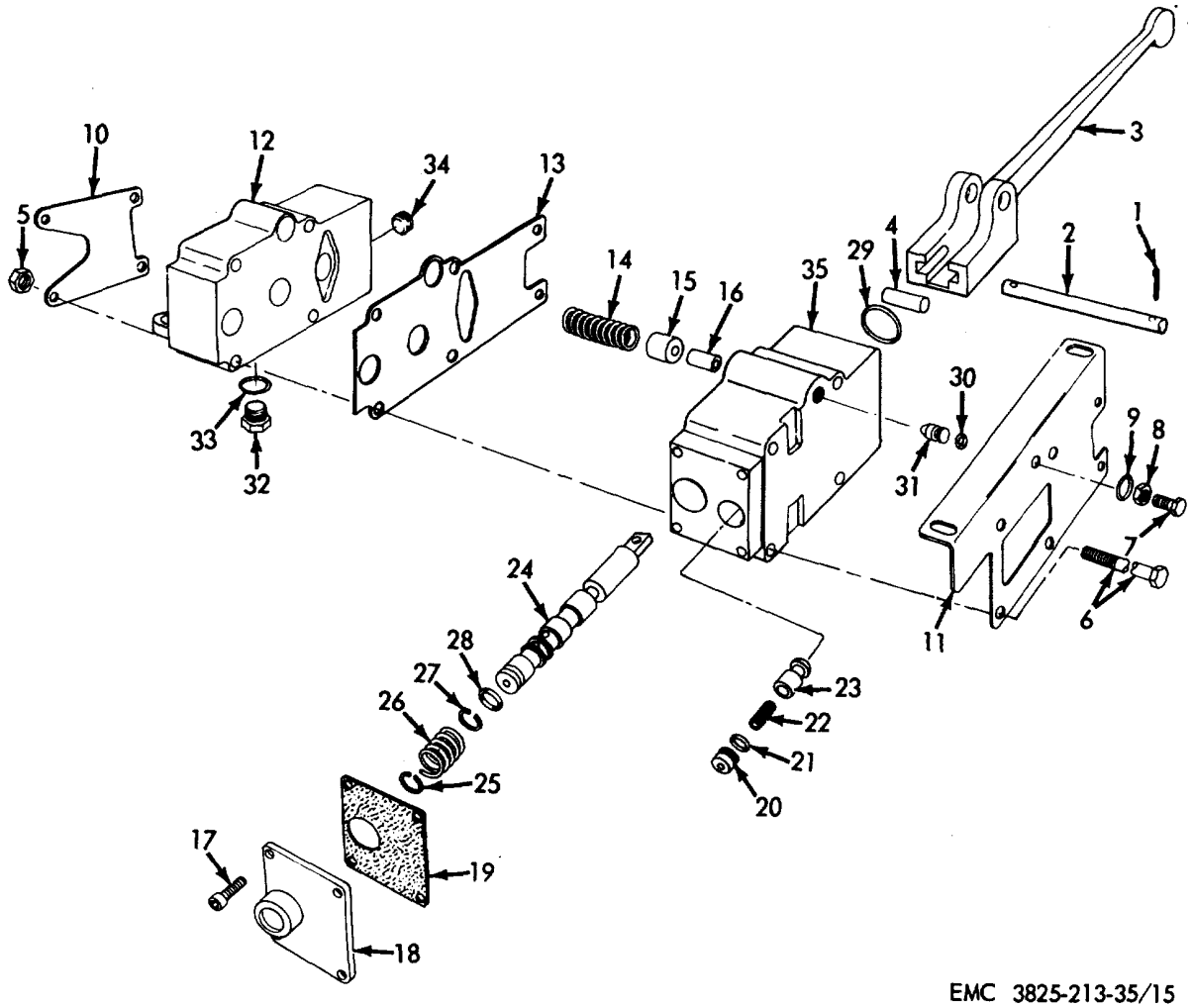
b. Inspection and Repair. Inspect all parts for wear, scoring, or other damage; repair or replace defective parts.

Note
Do not attempt to touch up the valve spool, this will result in malfunction of the steering unit.

77. Rear Steering Hydraulic Control Valve Assembly Reassembly and Installation

a. Reassembly. Reassemble the rear steering hydraulic control valve assembly in reverse of numerical sequence illustrated on figure 15. Note. Immerse parts in clean hydraulic fluid to facilitate assembly.

b. Installation. Install the rear steering hydraulic control valve assembly (TM 5-3825213-20).



1 Pin, cotter, 1/16 x 3/4 in. (2 rqr)
2 Pin, straight, 3/8 x 4 1/2 in.
3 Lever
4 Pin, 3/8 x 7/8 in.
5 Nut, self-locking, 3/824 (4 rqr)
6 Bolt, machine, 3/8-24 x 4 7/8 in. (4 rqr)
7 Screw, cap, hex hd, 5/1624 x 9/16 in.
8 Nut, plain hex, 5/16-24
9 Washer, flat, 5/16 in.
10 Plate
11 Bracket
12 Body, right
13 Plate
14 Spring
15 Retainer
16 Sleeve
17 Screw, machine, socket-hd, 3/16-24 x 5/8 in. (4 rqr)
18 Cap
19 Gasket
20 Valve plug
21 O-ring
22 Spring
23 Check valve
24 Spool
25 Retainer washer
26 Spring
27 Retainer washer
28 O-ring
29 O-ring
30 O-ring
31 Piston
32 Plug, hex hd, 3/4-16 thd
33 O-ring
34 Plug, socket-hd, 3/4-14 thd
35 Body, left

Figure 15. Rear steering hydraulic control valve assembly, disassembly and reassembly, exploded view.

Section V. STEERING HYDRAULIC RESERVOIR

78. General

The steering hydraulic reservoir located inside the carrier engine hood serves as the source of hydraulic fluid for the steering system.

79. Steering Hydraulic Reservoir Removal

Remove the steering hydraulic reservoir (TM 5-3825-213-20).

80. Steering Hydraulic Reservoir Cleaning, Inspection, Testing, and Repair

a. Cleaning and Inspection.

(1) Clean the hydraulic reservoir with an approved cleaning solvent.

(2) Inspect the hydraulic reservoir for cracks, breaks, or any other visible damage.

Caution

Be sure reservoir is free of dirt, as dirt can create a serious malfunction of the steering hydraulic system.

b. Testing and Repair. Seal all openings except one and apply 25 psi -air pressure. Note leaks that appear, clean surface, and weld.

81. Steering Hydraulic Reservoir Installation

Install the steering hydraulic reservoir (TM 5-3825-213-20).

CHAPTER 5

SNOWPLOW HYDRAULIC SYSTEM

Section I. SNOWPLOW HYDRAULIC LIFT CYLINDER ASSEMBLY

82. General

The snowplow hydraulic lift cylinder assembly is a single-acting cylinder mounted integrally with the push frame. It is controlled by the operator from the manifold valve mounted in the cab.

83. Snowplow Hydraulic Lift Cylinder Assembly Removal and Disassembly

a. Removal.

(1) Disconnect the hydraulic lines (TM 5-3825213-10).

(2) Remove the plow assembly (TM 53825-213-10) .

(3) Remove the hydraulic lift cylinder assembly as instructed on figure 16.

b. Disassembly. Disassemble the snowplow hydraulic lift cylinder assembly in numerical sequence as illustrated on figure 17.

84. Snowplow Hydraulic Lift Cylinder Assembly Cleaning, Inspection and Repair

a. Cleaning. Clean all parts in an approved cleaning solvent and remove all foreign matter from passages.

Caution

Be sure work area is free of dust and dirt. Dust particles and dirt can create a serious malfunction in the plow hydraulic system.

Caution

Do not use compressed air near exposed parts because of moisture in air system.

b. Inspection and Repair. Inspect all parts for wear, scoring, or other damage. Repair or replace defective parts as necessary.

85. Snowplow Hydraulic Lift Cylinder Assembly Reassembly and Installation

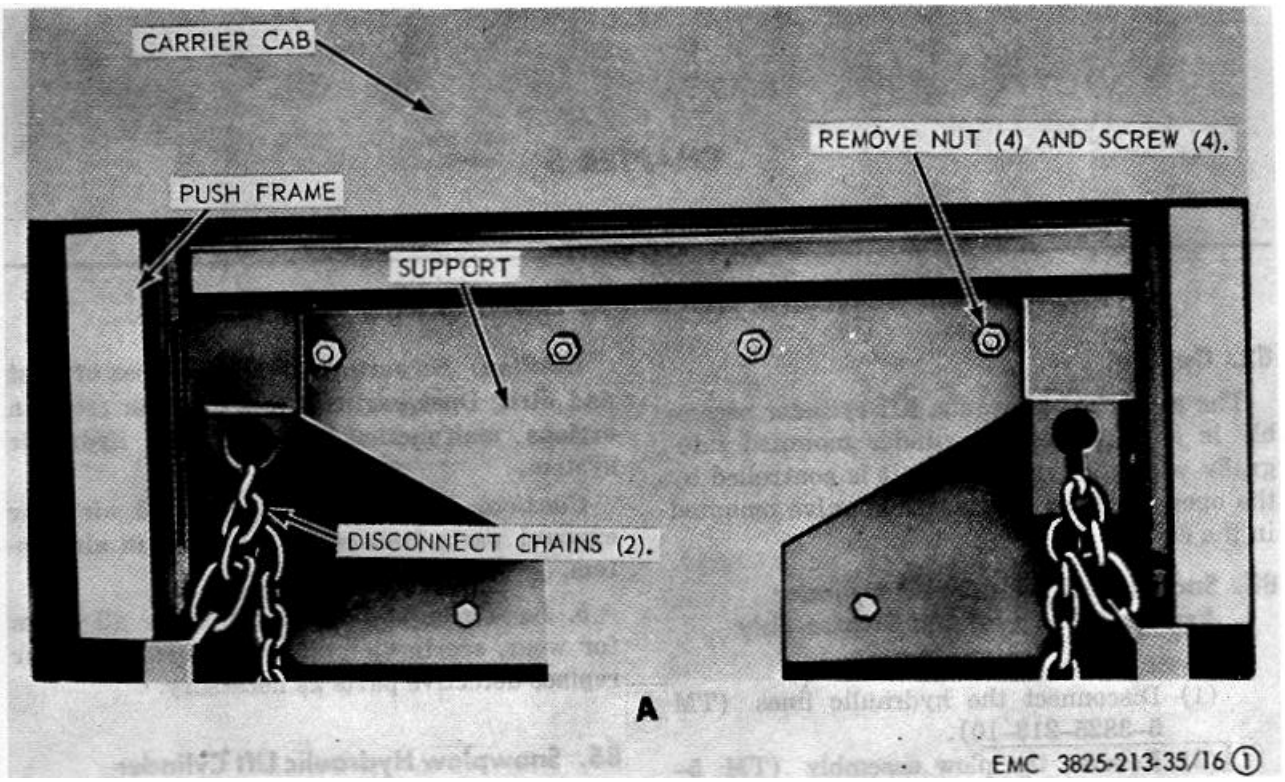
a. Reassembly. Reassemble the snowplow hydraulic lift cylinder assembly in reverse numerical sequence illustrated on figure 17.

b. Installation.

(1) Install the snowplow hydraulic lift cylinder assembly as illustrated on figure 16.

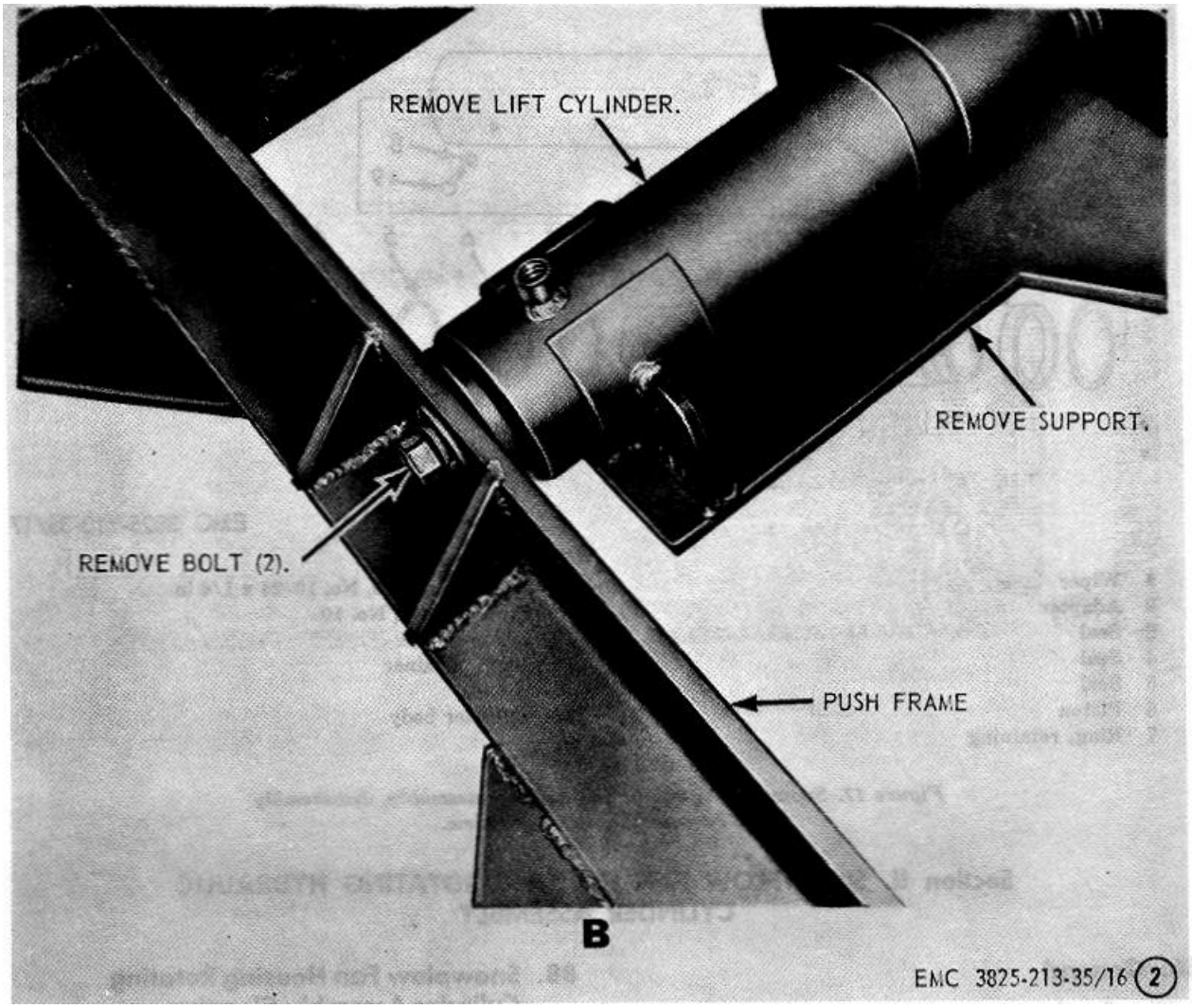
(2) Install the plow assembly (TM 5-3825-213-10).

(3) Connect the hydraulic lines (TM 5-3825-213-10).



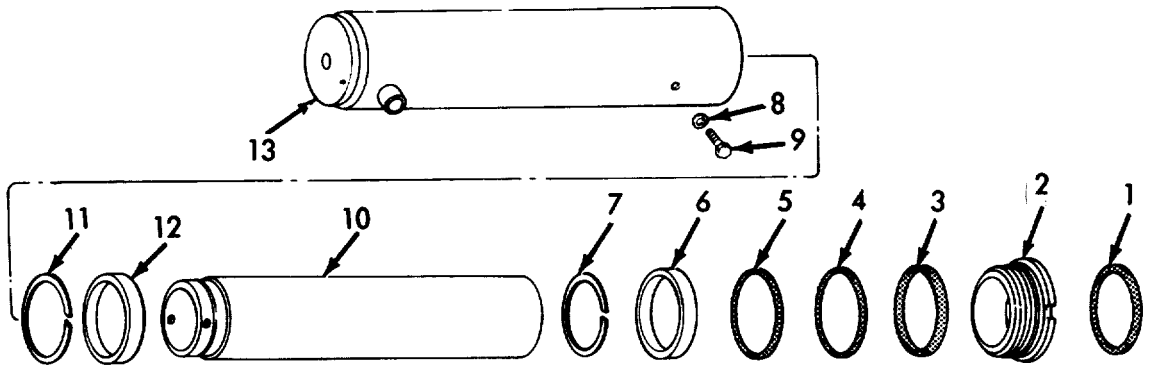
A. Support removal points.

Figure 16. Snowplow hydraulic lift cylinder assembly; removal and installation.



B. Lift cylinder removal points.

Figure 16-Continued.



EMC 3825-213-35/17

1 Wiper
2 Adapter
3 Seal
4 Seal
5 Seal
6 Piston
7 Ring, retaining
8 Screw, machine, No. 10-24 x 1/4 in.
9 Washer, lock, No. 10
10 Plunger
11 Ring, retainer
12 Gland
13 Cylinder body

Figure 17. Snowplow hydraulic lift cylinder assembly, disassembly and reassembly, exploded view.

Section II. SNOWPLOW FAN HOUSING ROTATING HYDRAULIC CYLINDER ASSEMBLY

86. General

The fan housing rotating hydraulic cylinder assembly is a double-acting cylinder. The cylinder. The cylinder is controlled by the operator rotating the fan housing to position desired for spreading operation.

87. Snowplow Fan Housing Rotating Cylinder Assembly Removal and Disassembly

a. Removal. Remove the fan housing rotating cylinder assembly (TM 5 825213-20).

b. Disassembly. Disassemble the fan housing rotating cylinder assembly in numerical sequence as illustrated on figure 18.

88. Snowplow Fan Housing Rotating Cylinder Assembly Cleaning, Inspection, and Repair

a. Cleaning. Clean all parts in an approved cleaning solvent and remove foreign matter from passages.

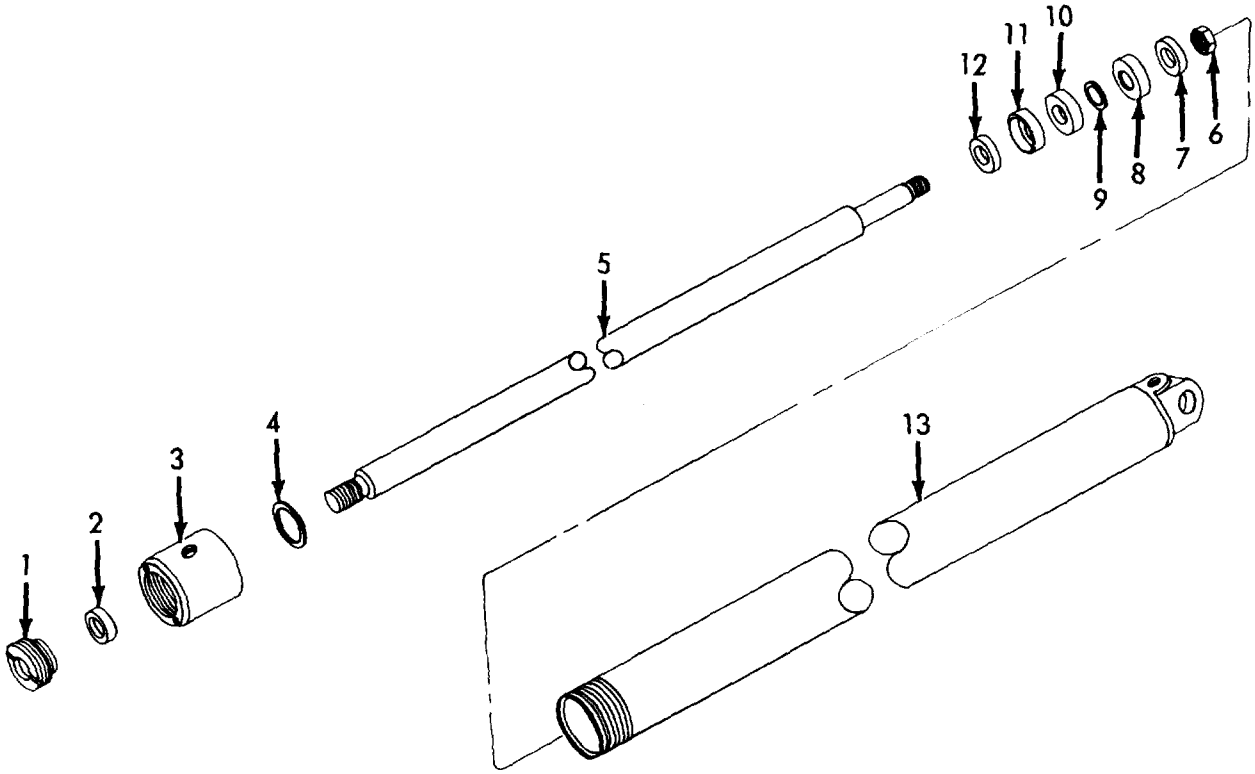
Caution

Dirt and dust can create a serious malfunction to the plow hydraulic system. Be sure to keep the work area free of these elements.

b. Inspection and Repair. Inspect all parts for wear, scoring, or other damage. Replace or repair defective parts as necessary.

Caution

Do not use compressed air near exposed parts because of dirt and water in the air system.



1 Nut, special
2 Packing
3 Cap
4 Washer, special
5 Rod
6 Nut, self-locking, 5/8-18
7 Spacer
8 Cup
9 Preformed packing
10 Piston
11 Cup
12 Spacer
13 Body

Figure 18. Snowplow fast housing rotating cylinder assembly, disassembly and reassembly, exploded view.

89. Snowplow Fan Housing Rotating Cylinder Assembly Reassembly and Installation

a. Reassembly. Reassemble the fan housing rotating cylinder assembly in reverse of numerical sequence illustrated on figure 18.

Note

Immerse cylinder parts in clean hydraulic fluid to facilitate assembly.

b. Installation. Install the fan housing rotating cylinder assembly (TM 5-825213-20).

Section III. SNOW CHUTE HYDRAULIC LIFT CYLINDER ASSEMBLY

90. General

The snow chute hydraulic lift cylinder assembly controlled by the operator extends or retracts the snow chute for the required distance for blowing the snow during removal operation. It is a double-acting cylinder.

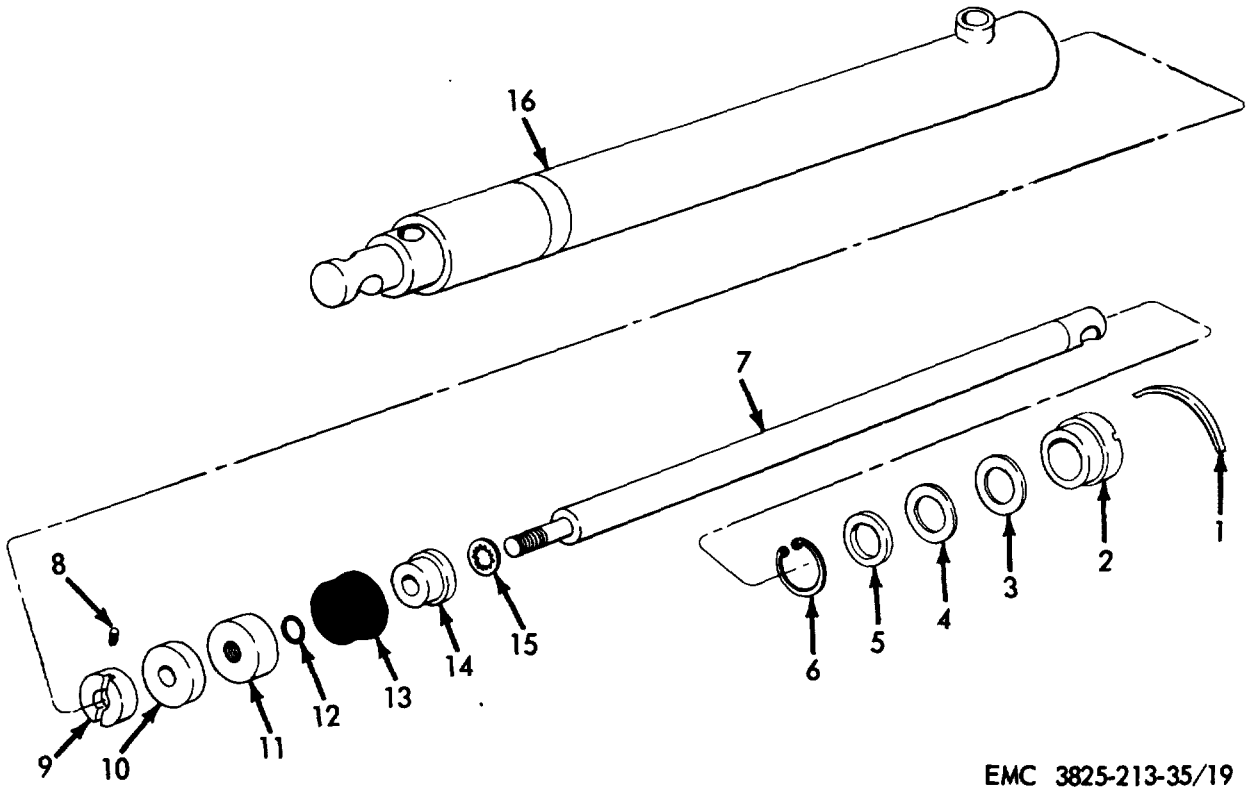
91. Snow Chute Hydraulic Lift Cylinder Assembly Removal and Disassembly

a. Removal. Remove the snow chute hydraulic lift cylinder assembly (TM 54825 213-20).

b. Disassembly. Disassemble the snow chute hydraulic lift cylinder assembly in numerical sequence as illustrated on figure 19.

92. Snow Chute Hydraulic Lift Cylinder Assembly Cleaning, Inspection, and Repair

a. Cleaning. Clean all parts in an approved cleaning solvent and remove foreign matter from passages.



1 Seal
2 Retainer nut
3 Seal
4 Seal
5 Seal retainer
6 Snap ring
7 Piston shaft
8 Setscrew, No. 1024 x 1 1/4 in.
9 Nut, special
10 Piston cup
11 Spacer
12 Seal
13 Piston cup
14 Piston head
15 Washer, lock, IT, 5/8 in.
16 Cylinder

Figure 19. Snow chute hydraulic lift cylinder assembly, disassembly and reassembly, exploded view.

Caution
Be sure work area is free of dust and dirt. These elements can create serious malfunction to the plow hydraulic system.

Caution
Do not use compressed air near exposed parts because of dirt and water in the air system.

b. Inspection and Repair. Inspect all parts for wear, scoring, or other damage. Repair or replace defective parts as necessary.

93. Snow Chute Hydraulic Lift Cylinder Assembly Reassembly and Installation

a. Reassembly. Reassemble the snow chute hydraulic lift cylinder assembly in reverse of numerical sequence illustrated on figure 19.

b. Installation. Install the snow chute hydraulic lift cylinder assembly (TM 5-3825213-20).

Section IV. SNOWPLOW HYDRAULIC OIL RESERVOIR

94. General

The snowplow hydraulic reservoir is located inside the carrier engine hood next to the steering hydraulic system reservoir. The tank is of welded sheet metal construction.

95. Snowplow Hydraulic Oil Reservoir Removal

Remove the snowplow hydraulic oil reservoir (TM 5-3825-213-20).

96. Snowplow Hydraulic Oil Reservoir Cleaning, Inspection, Test, and Repair

a. Cleaning and Inspection.

(1) Clean the reservoir with an approved cleaning solvent.

(2) Inspect the reservoir for cracks, breaks, or any other visible damage.

Caution
Be sure reservoir is free of dirt, as dirt can create a serious malfunction of the plow hydraulic system.

b. Testing and Repair. Seal all openings except one and apply 25 psi air pressure. Note any leaks that appear, clean surface, and weld the reservoir.

97. Snowplow Hydraulic Oil Reservoir Installation

Install the snowplow hydraulic oil reservoir (TM 5-3825-213-20).

Section V. SNOWPLOW HYDRAULIC PUMP ASSEMBLY

98. General

The snowplow hydraulic pump assembly, mounted on the carrier engine, is driven by the accessory drive. The pump supplies force for the hydraulic system which operates three hydraulic cylinders and a motor to rotate the snowplow chute. The pump is a gear-type pump.

99. Snowplow Hydraulic Pump Assembly Removal and Disassembly

a. Removal. Remove the snowplow hydraulic pump assembly (TM 5-3825-213-20).

b. Disassembly. Disassemble the snowplow hydraulic pump assembly in numerical sequence as illustrated on figure 20.

100. Snowplow Hydraulic Pump Assembly Cleaning, Inspection, and Repair

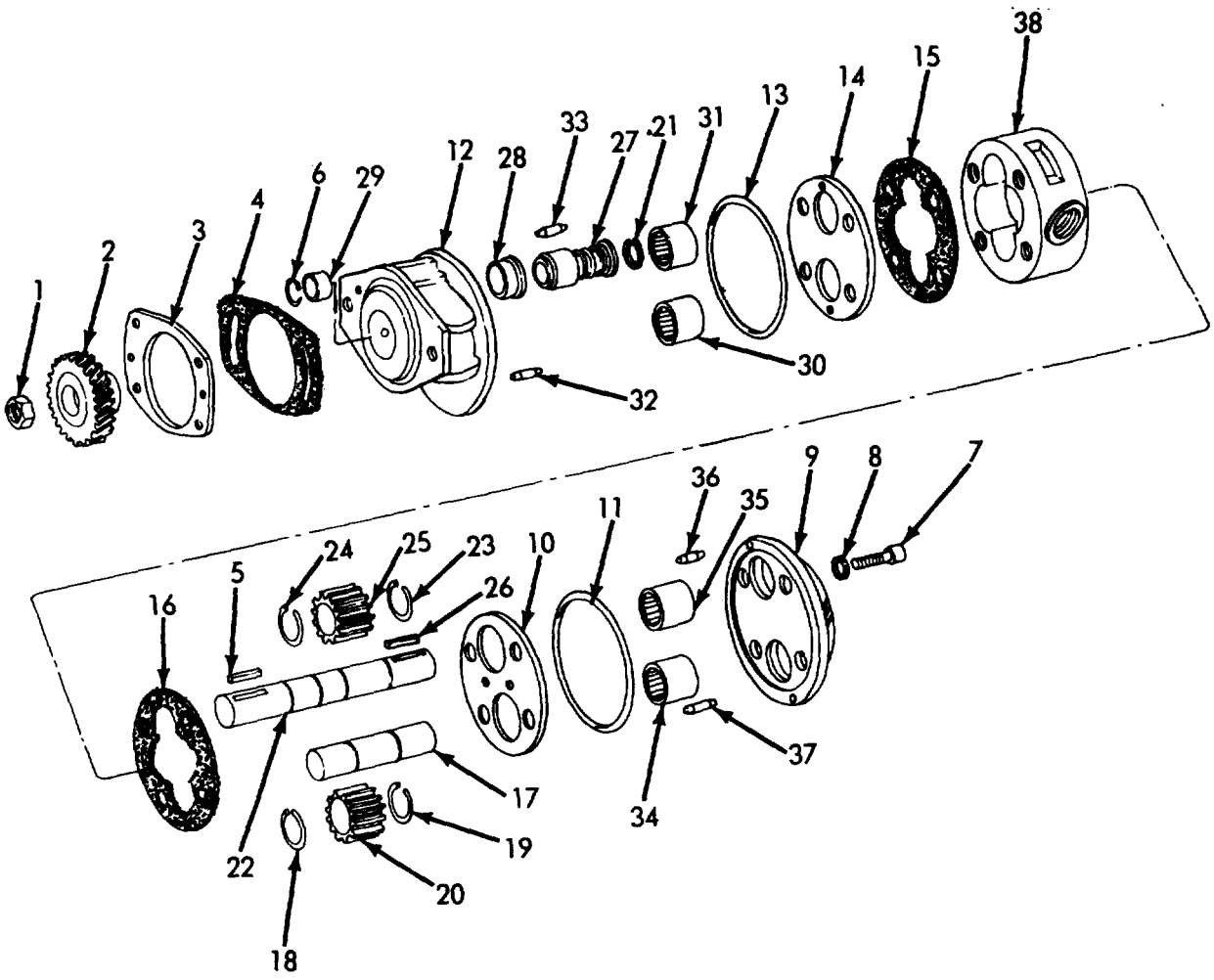
a. Cleaning. Clean all parts in an approved cleaning solvent and remove foreign matter from passages.

Caution
Be sure work area is free of dust and dirt. These elements can create a serious malfunction to the plow hydraulic system.

Caution
Do not use compressed air near exposed parts because of moisture in the air system.

b. Inspection and Repair.

(1) Inspect the pump for wear, burrs, nicks, or other damage. Remove burrs



EMC 3825-213-35/20

1 Nut
2 Gear
3 Flange
4 Gasket
5 Key
6 Ring, retaining
7 Screw, cap (4 rqr)
8 Washer, lock (4 rqr)
9 Cover
10 Wear plate
11 Seal
12 Adapter
13 Seal
14 Wear plate
15 Gasket (as rqr)
16 Gasket
17 Shaft, driven
18 Ring, retaining
19 Ring, retaining
20 Gear
21 Ring, retaining
22 Shaft, drive

Figure 20. Snowplow hydraulic pump assembly, disassembly and reassembly, exploded view.

23 Ring, retaining
24 Ring, retaining
25 Gear
26 Key
27 Seal
28 Seal seat
29 Bearing
30 Bearing
31 Bearing
32 Pin, straight headless
33 Pin, straight headless
34 Bearing
35 Bearing
36 Pin, straight headless
37 Pin, straight headless
38 Housing.

Figure 20-Continued

and nicks on the machined mating surfaces of the housing, cover, and adapter with a suitable stone or fine mill file.

(2) Inspect gears and housing for wear and measure housing width to gear width. If the housing width is 0.002 inch greater than gear width, both wear plates should be replaced.

101. Snowplow Hydraulic Pump Assembly Reassembly and Installation

a. Reassembly. Reassemble the snowplow hydraulic pump assembly in reverse of numerical sequence illustrated on figure 20.

b. Installation. Install the snowplow hydraulic pump assembly (TM 5-3825-213-20).

Section VI. SNOW CHUTE HYDRAULIC MOTOR ASSEMBLY

102. General

The snow chute hydraulic motor assembly, connected integrally with the snow chute turntable gearbox and throttle valve, rotates the gearbox, turning the snow chute to the desired operating position.

103. Snow Chute Hydraulic Motor Assembly Removal and Disassembly

a. Removal. Remove the snow chute hydraulic motor assembly (TM 53825213-20).

b. Disassembly. Disassemble the snow chute hydraulic motor assembly in numerical sequence as illustrated on figure 21.

104. Snow Chute Hydraulic Motor Assembly Cleaning, Inspection and Repair

a. Cleaning. Clean all parts in an approved solvent and dry thoroughly.

Caution

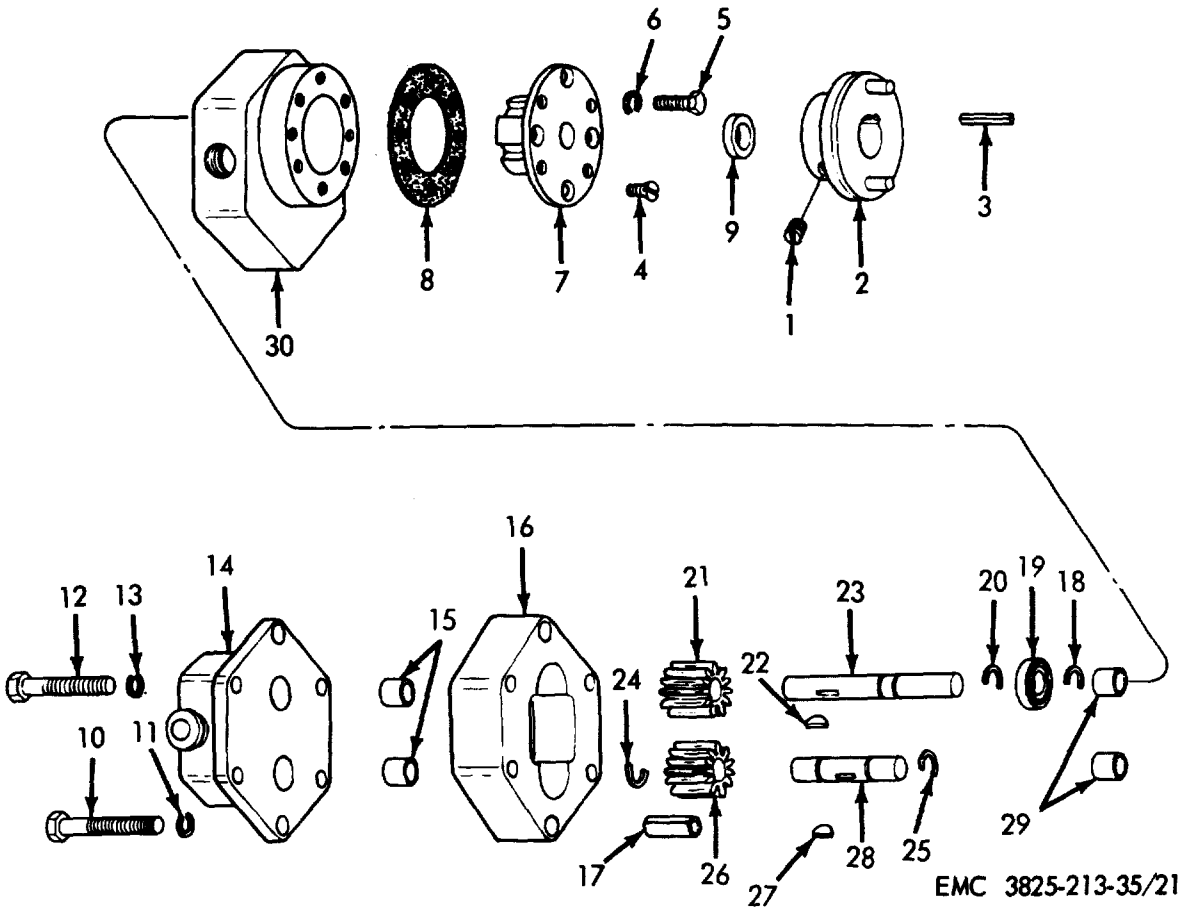
Do not use compressed air near exposed parts because of dirt and water in the air system.

b. Inspection and Repair. Inspect all parts for wear, breaks, burrs, or scoring. Repair or replace defective parts as necessary.

105. Snow Chute Hydraulic Motor Assembly Reassembly and Installation

a. Reassembly. Reassemble the snow chute hydraulic motor assembly in reverse of numerical sequence illustrated on figure 21.

b. Installation. Install the snow chute hydraulic motor assembly (TM 5-3825213-20).



1 Setscrew, 1/4-20 x 3/8 in.
2 Coupling
3 Key, machine, 1/8 x 1/8 x 1 in.
4 Screw, machine, ctsk hd, No. 8-32 x 5/16 in. (4 rqr)
5 Screw, cap, 8-32 x 1 in. (4 rqr)
6 Washer, lock, No. 8 (4 rqr)
7 Base cover
8 Gasket
9 Seal
10 Screw, machine, socket-hd, 1/4-20 x 2 1/2 in. (2 rqr)
11 Washer, lock, 1/4 in. (2 rqr)
12 Screw, machine, socket-hd, 5/16-18 x 2 3/4 in. (2 rqr)
13 Washer, lock, 5/16 in. (2 rqr)
14 Cover
15 Needle bearing (2 rqr)
16 Body
17 Roll pin, 3/8 x 1 3/16 in.
18 Retaining ring
19 Bearing
20 Retaining ring
21 Gear
22 Key, woodruff
23 Shaft
24 Retaining ring
25 Retaining ring
26 Gear
27 Key, woodruff
28 Shaft
29 Needle bearing (2 rqr)
30 Base

Figure 21. Snow chute hydraulic motor assembly, disassembly and reassembly, exploded view.

CHAPTER 6

AIR SYSTEM REPAIR INSTRUCTIONS

Section I. AIR COMPRESSOR ASSEMBLY

106. General

The air compressor is water-cooled, and pressure lubricated by the engine cooling and lubricating system. The compressor cycle is as follows: The air is drawn through the air cleaner, is compressed and pumped through the oil sump to the air dome, where the oil is separated from the compressed air and returned to the sump. The compressed air is then stored in the reservoir. A control valve governor on the compressor regulates the pumping action of the compressor and maintains the required air pressure.

107. Air Compressor Assembly Removal and Disassembly

a. Removal. Remove the air compressor assembly as instructed on figure 22.

b. Disassembly. Disassemble the air compressor assembly in numerical sequence as illustrated on figure 23.

108. Air Compressor Assembly Cleaning, Inspection, and Repair

a. Cleaning. Clean all parts with an approved cleaning solvent and dry thoroughly.

b. Inspection and Repair.

(1) Inspect the control valve body, bellows cap, valve adapter, plate, all pistons and seats, the air dome, oil pan sump cover, reservoir oiler, front and rear end plates for cracks, breaks, distortion, and other damage.

(2) Inspect all springs visually for breaks and loss of tension.

(3) Inspect the bearings for wear, pits, and scoring. Inspect threaded parts and tapped hole for damaged threads.

(4) Inspect for 0.001 clearance between rotor and housing.

(5) Replace or repair worn, damage, or defective parts.

109. Air Compressor Assembly Reassembly and Installation

a. Reassembly. Reassemble the air compressor assembly in the reverse of numerical sequence illustrated on figure 23.

b. Installation. Install the air compressor assembly as instructed on figure 22.

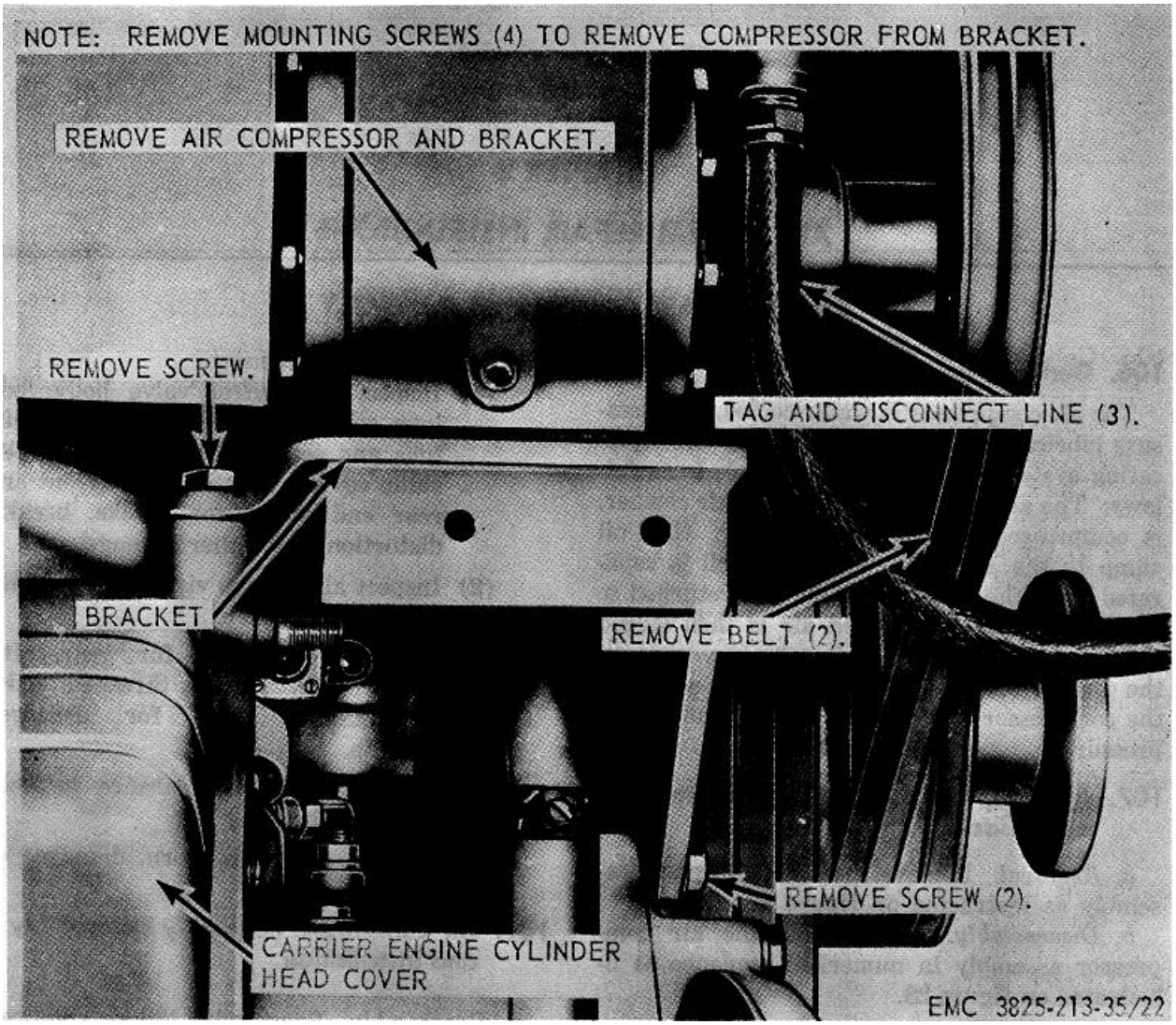
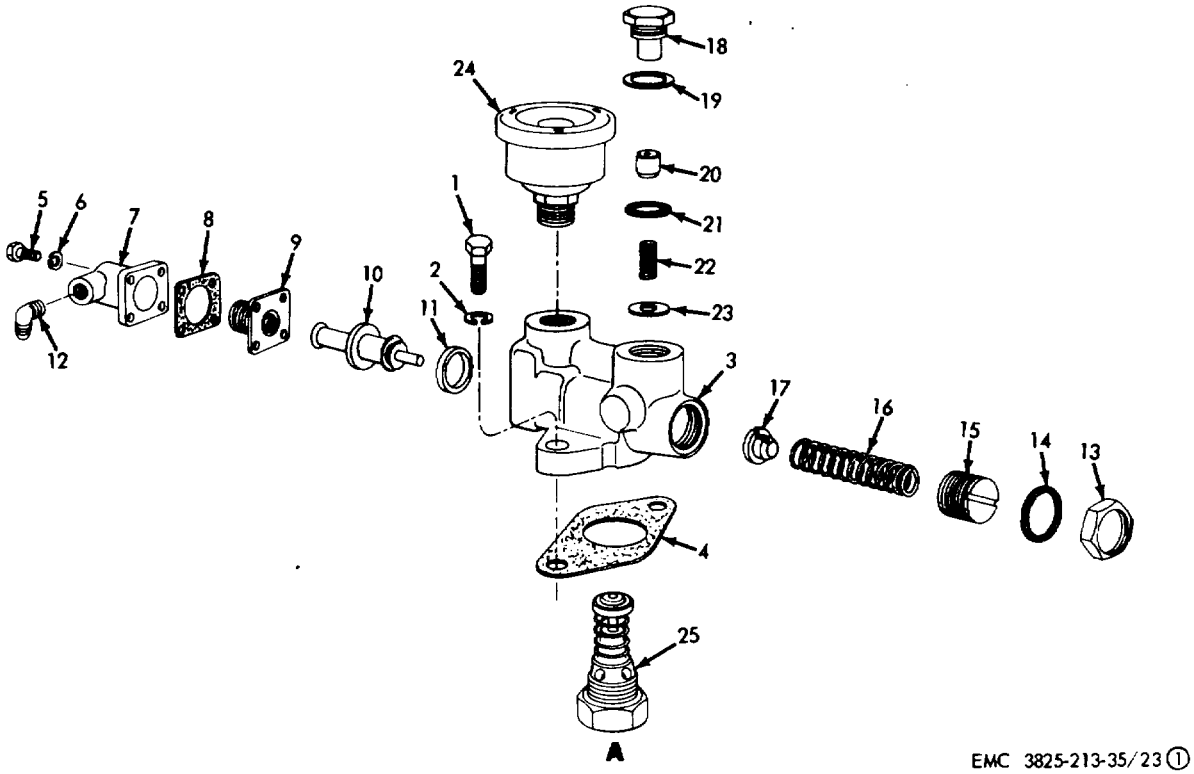


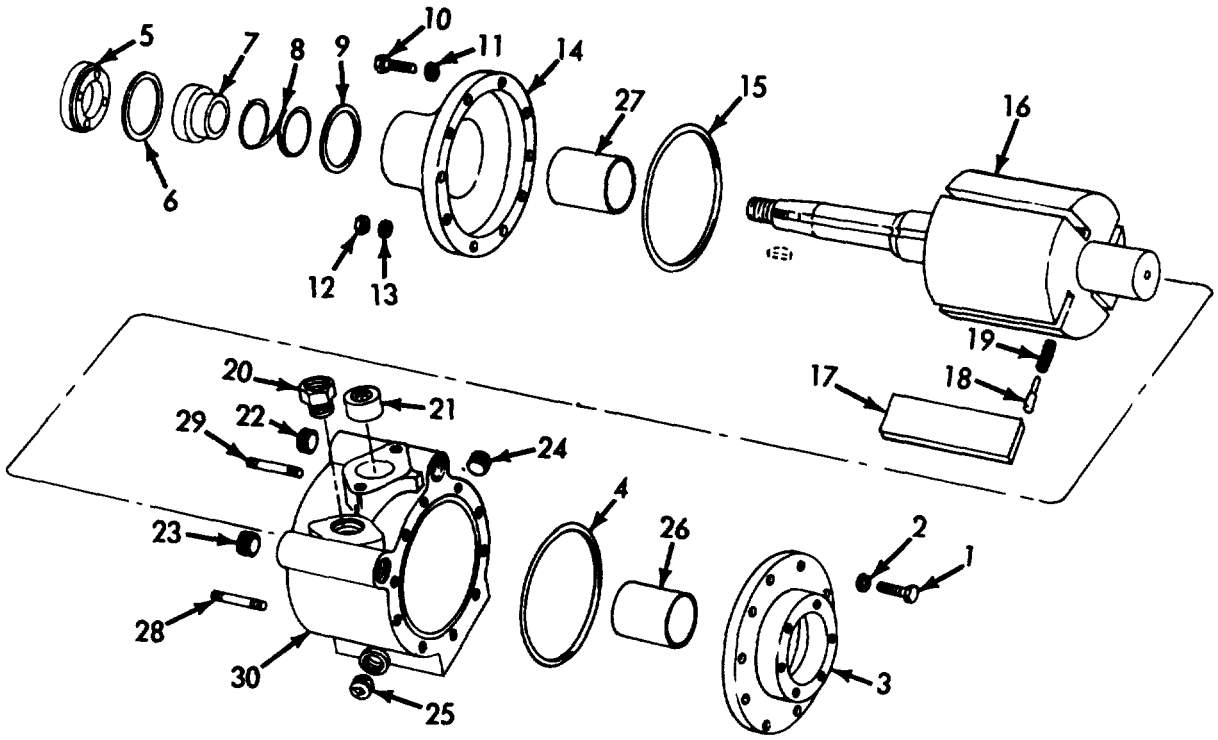
Figure 22. Air compressor assembly, removal and installation.



1	Screw, cap, 5/16-20 x 1 1/8 in.	14	Preformed packing
2	Washer, lock, 5/16 in. (2 rqr)	15	Cap
3	Body	16	Spring
4	Gasket	17	Valve
5	Screw, cap, 1/4-20 x 3/4 in. (4 rqr)	18	Cap
6	Washer, lock, 1/4 in. (4 rqr)	19	Gasket
7	Cap	20	Valve
8	Gasket	21	Preformed packing
9	Valve	22	Spring
10	Plunger	23	Seat
11	Seal	24	Air cleaner
12	Elbow	25	Valve
13	Nut, special		

A. Control valve.

Figure 23. Air compressor assembly, disassembly and reassembly, exploded view.



B

EMC 3825-213-35/23 ②

1	Screw, cap. 5/16-24 x 1 1/8 in. (10 rqr)	16	Rotor
2	Washer, lock, 6/16 in. (10 rqr)	17	Vane (4 rqr)
3	End plate	18	Pin (8 rqr)
4	Preformed packing	19	Spring (8 rqr)
5	Nut, special	20	Adapter
6	Gasket	21	Valve
7	Seal	22	Plug, pipe, 5/8 in.
8	Spring	23	Plug, pipe, 5/8 in.
9	Spring seat	24	Plug, pipe, 1/2 in.
10	Screw, cap, 5/16-20 x 1 1/8 in. (8 rqr)	25	Plug, pipe, 1/2 in.
11	Washer, lock 6/16 in. (8 rqr)	26	Bushing
12	Nut, 5/16-24 (2 rqr)	27	Bushing
13	Washer, lock, 5/16 in. (2 rqr)	28	Stud, 5/16-24 x 1 1/2 in.
14	End plate	29	Stud, 5/16-24 x 1 1/2 in.
15	Preformed packing	30	Housing

B. Rotor housing.

Figure 23. - Continued.

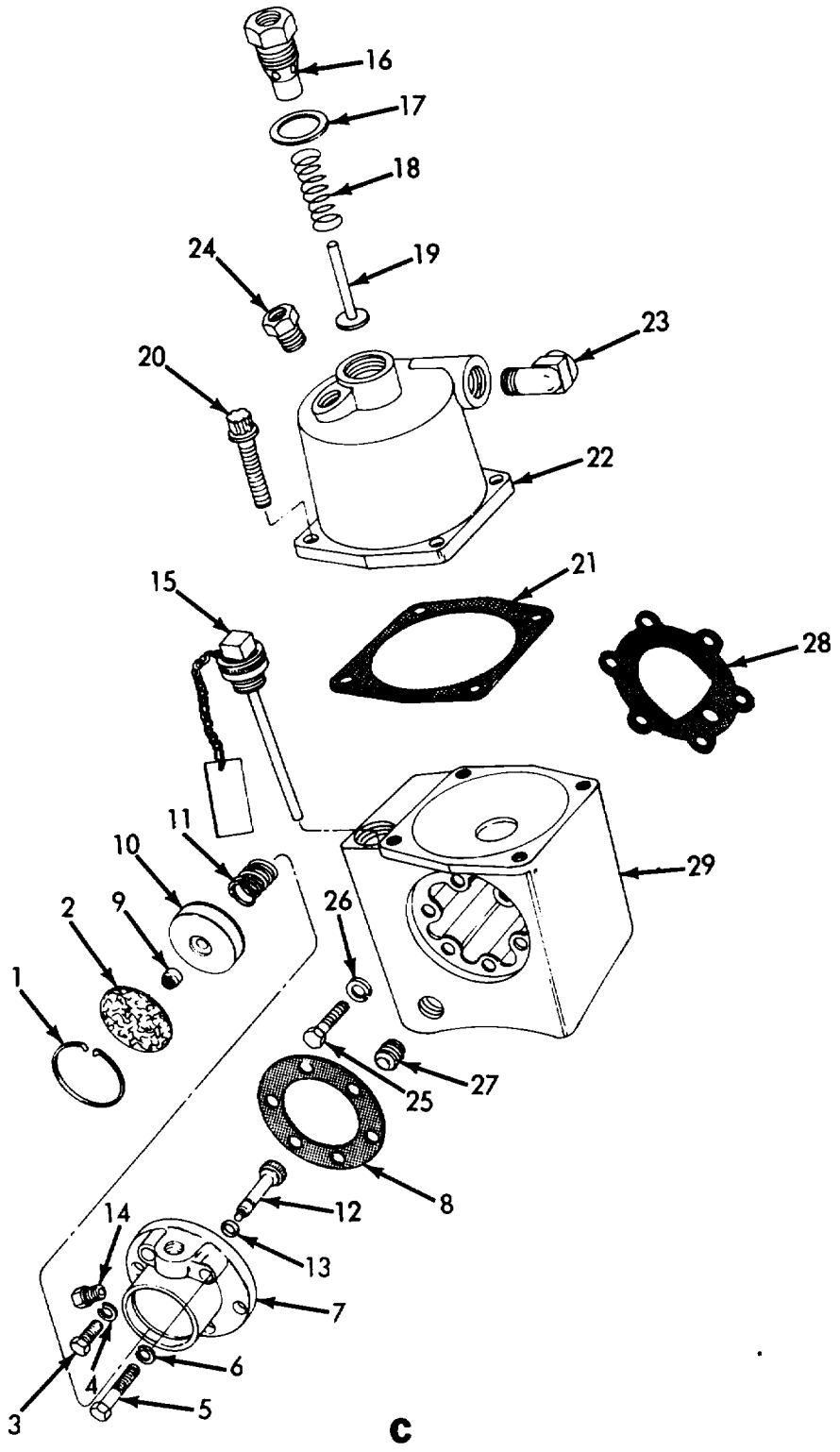


Figure 23. - Continued.

1 Ring, retaining
2 Screen
3 Screw, cap, 1/4-20 x 3/4 in. (4 rqr)
4 Washer lock, 1/4 in. (4 rqr)
5 Screw, cap, 1/4-20 x 1 7/16 in. (2 rqr)
6 Washer, lock, 1/4 in. (2 rqr)
7 Body
8 Gasket
9 Nut, 10-32
10 Valve
11 Spring
12 Plunger
13 Preformed packing
14 Adapter, male
16 Cap and dipstick
16 Valve
17 Gasket
18 Spring
19 Valve
20 Screw, machine, 3/8-24 x 1 in. (4 rqr)
21 Gasket
22 Air dome
23 Elbow
24 Adapter
25 Screw, machine, 1/4-20 x 1 in. (6 rqr)
26 Washer, lock, 1/4 in. (6 rqr)
27 Plug, pipe, 3/8 in.
28 Gasket
29 Reservoir

C. Air dome and reservoir.

Figure 23. - Continued.

Section II. MOISTURE EJECTOR VALVE ASSEMBLY

110. General

The moisture ejector valve is mounted beneath the cab on the carrier frame. It is located between the air reservoir tanks and the brake treadle valve. Air from the air reservoir tanks passes through the moisture ejector valve which is designed to purge the system of moisture and assure proper operation of the brake system.

111. Moisture Ejector Valve Assembly Removal and Disassembly

a. Removal. Remove the moisture ejector valve assembly (TM 5-3825-213-20).

b. Disassembly. Disassemble the moisture ejector valve assembly in numerical sequence as illustrated on figure 24.

112. Moisture Elector Valve Assembly Cleaning, Injection, and Repair

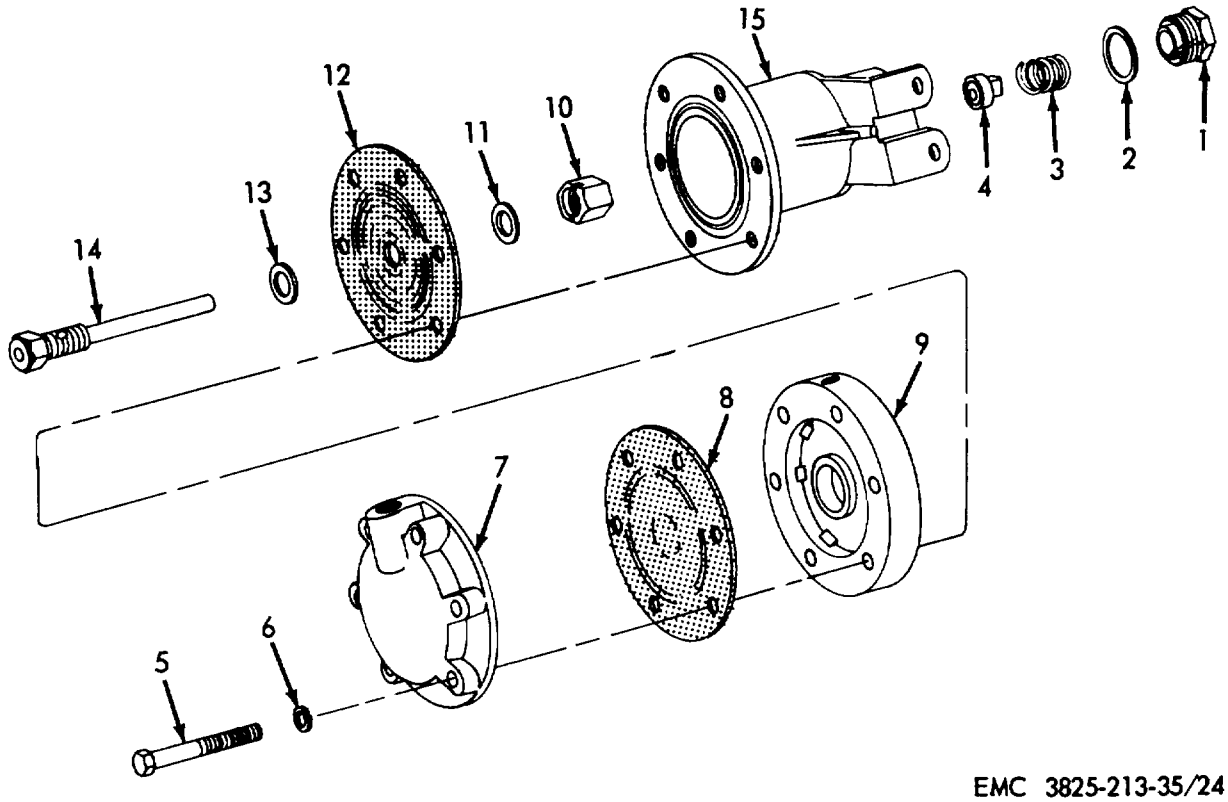
a. Cleaning. Clean all parts with an approved cleaning solvent and dry thoroughly.

b. Inspection and Repair. Inspect all -parts for defective conditions. Replace or repair worn, damaged, or defective parts. All seals and rotor blade springs should be replaced when reassembling.

113. Moisture Ejector Valve Assembly Reassembly and Installation

a. Reassembly. Reassemble the moisture ejector valve assembly in the reverse of numerical sequence illustrated on figure 24.

b. Installation. Install the moisture ejector valve assembly (TM 5-3825-213-20).



1	Cap	9	Upper housing
2	Gasket	10	Nut, special
3	Spring	11	Washer, flat, brass, special
4	Valve	12	Diaphragm
5	Screw, cap, 1/4-20 x 1 5/8 in. (6 rqr)	13	Washer, flat, brass, special
6	Washer, lock, 1/4 in. (6 rqr)	14	Valve
7	Lower housing	15	Body
8	Diaphragm		

Figure 24. Moisture ejector valve assembly, disassembly and reassembly, exploded view.

Section III. THROTTLE CYLINDER AND THROTTLE VALVE ASSEMBLY

114. General

The throttle cylinder assembly is located on the carrier engine connected to the carburetor assembly. The throttle cylinder is an air actuated cylinder. Air pressure applied to the cylinder is proportional to the position of the throttle valve.

115. Throttle Cylinder Assembly Removal and Disassembly

a. Removal. Remove the throttle cylinder assembly (TM 5-3825-213-20).

b. Disassembly. Disassemble the throttle cylinder assembly in numerical sequence as illustrated on figure 25.

116. Throttle Cylinder Assembly Cleaning, Inspection, and Repair

a. Cleaning. Clean all parts with an approved cleaning solvent and dry thoroughly.

b. Inspection and Repair. Inspect all parts for defective condition. Replace or repair worn, damaged, or defective parts.

117. Throttle Cylinder Assembly Reassembly and Installation

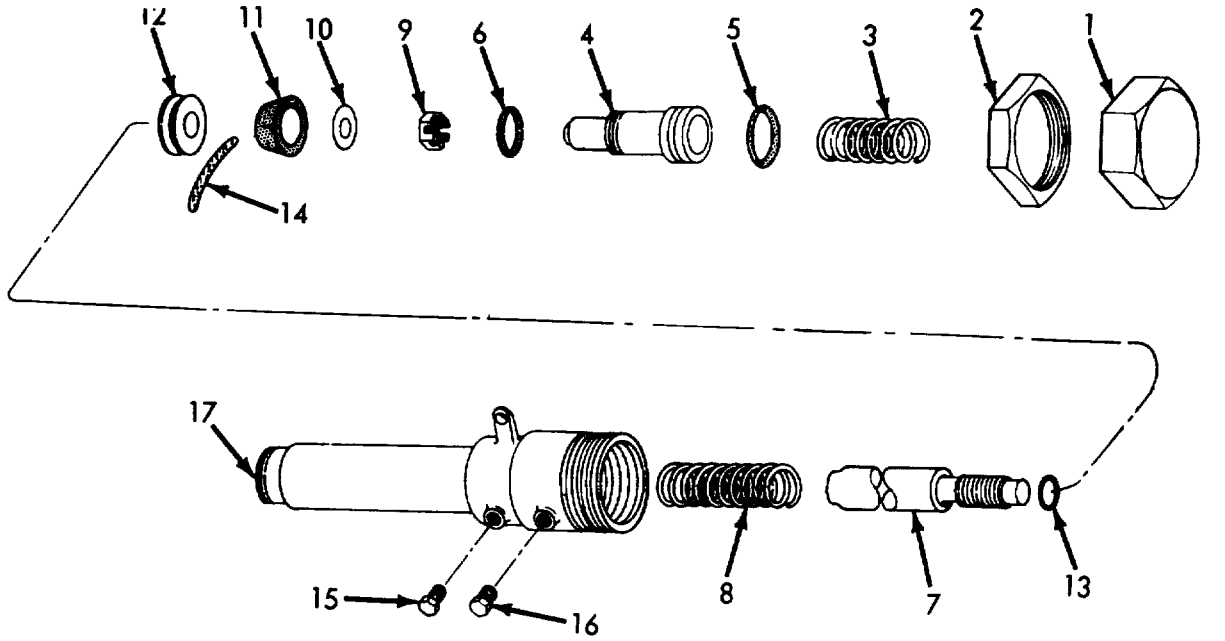
a. Reassembly. Reassemble the throttle cylinder assembly in the reverse of numerical sequence illustrated on figure 25.

b. Installation. Install the throttle cylinder assembly (TM 5-3825-213-20).

118. Throttle Valve Assembly Removal and Disassembly

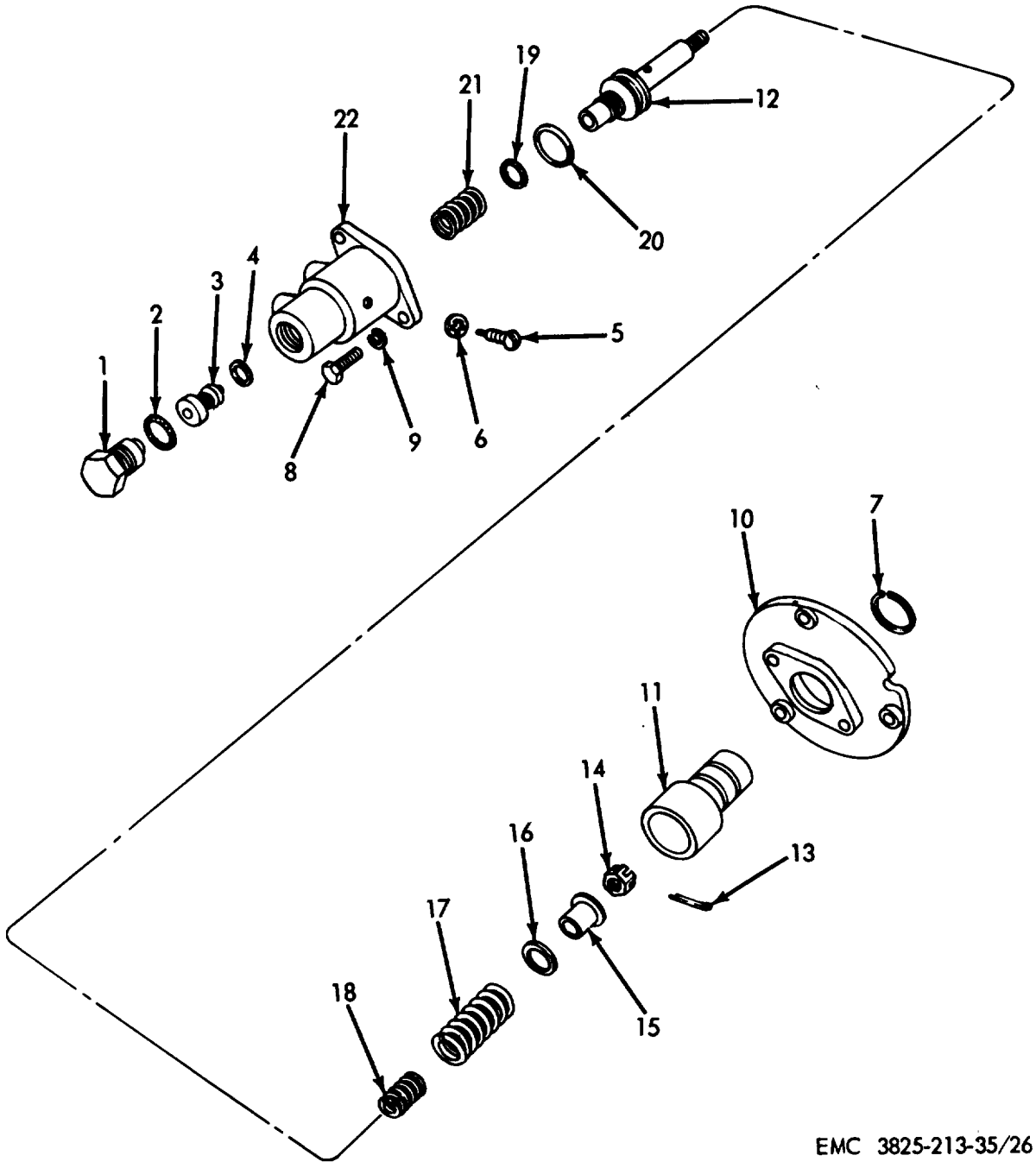
a. Removal. Remove the throttle valve assembly (TM 5-3825-213-20).

b. Disassembly. Disassemble the throttle valve assembly in numerical sequence as illustrated on figure 26.



1	Cap	10	Washer
2	Nut, special	11	Cup
3	Spring	12	Retainer
4	Piston	13	Preformed packing
5	Preformed packing	14	Wick
6	Preformed packing	15	Plug, 1/4 in.
7	Control arm	16	Plug, 3/8 in.
8	Spring	17	Body
9	Nut, self-locking		

Figure 25. Throttle cylinder assembly, disassembly and reassembly, exploded view.



1 Nut, special
2 Preformed packing
3 Valve
4 Shim
5 Screw, special
6 Washer, lock, 1/4 in.
7 Ring, retaining
8 Screw, 5/16-18 x 7/8 in. (2 rqr)
9 Washer, lock, 5/16 in. (2 rqr)
10 Plate
11 Plunger

Figure 26. Throttle valve assembly, disassembly and reassembly, exploded view.

12 Piston
13 Pin, cotter, 1/16 x 3/4 in.
14 Nut, slotted, 5/16-24
15 Seat
16 Shim
17 Spring, outer
18 Spring, inner
19 Preformed packing
20 Preformed packing
21 Spring
22 Body

Figure 26. - Continued.

119. Throttle Valve Assembly Cleaning, Inspection, and Repair

a. Cleaning. Clean all parts with an approved cleaning solvent and dry thoroughly.

b. Inspection and Repair. Inspect all parts for defective condition. Replace or repair all worn, damaged, or defective parts.

120. Throttle Valve Assembly Reassembly and Installation

a. Reassembly. Reassemble the throttle valve assembly in the reverse of numerical sequence illustrated on figure 26.

b. Installation. Install the throttle valve assembly (TM 5-3825-213-20).

Section IV. BRAKE TREADLE VALVE ASSEMBLY

121. General

The treadle valve is a foot-operated, single-acting, pressure-regulating air valve. It controls the flow of air from the air reservoir tanks to the four wheel brake cylinders. Air pressure applied to the cylinder is proportional to the effort exerted on the treadle valve. The valve assembly is divided into two sections, the upper body and the lower body, which are separated by a diaphragm. The upper body contains the metering valve, which regulates air pressure supplied to the master cylinder. The lower body contains the inlet valve, which allows air to enter the valve assembly when the treadle is depressed, and the exhaust valve, which allows air to escape from the valve assembly when the treadle is released.

122. Treadle Valve Assembly Removal and Disassembly

a. Removal. Remove the treadle valve assembly (TM 5-3825-213-20).

b. Disassembly. Disassemble the treadle valve assembly in numerical sequence as illustrated on figure 27.

123. Treadle Valve Assembly, Cleaning, Inspection, and Repair

a. Cleaning. Clean all parts with an approved cleaning solvent and dry thoroughly.

b. Inspection and Repair. Inspect all parts for defective condition. Replace or repair worn, damaged, or defective parts.

124. Treadle Valve Assembly Reassembly and Installation

a. Reassembly. Reassemble the treadle valve assembly in the reverse of numerical sequence illustrated on figure 27.

b. Installation. Install the treadle valve assembly (TM 5-3825-213-20).

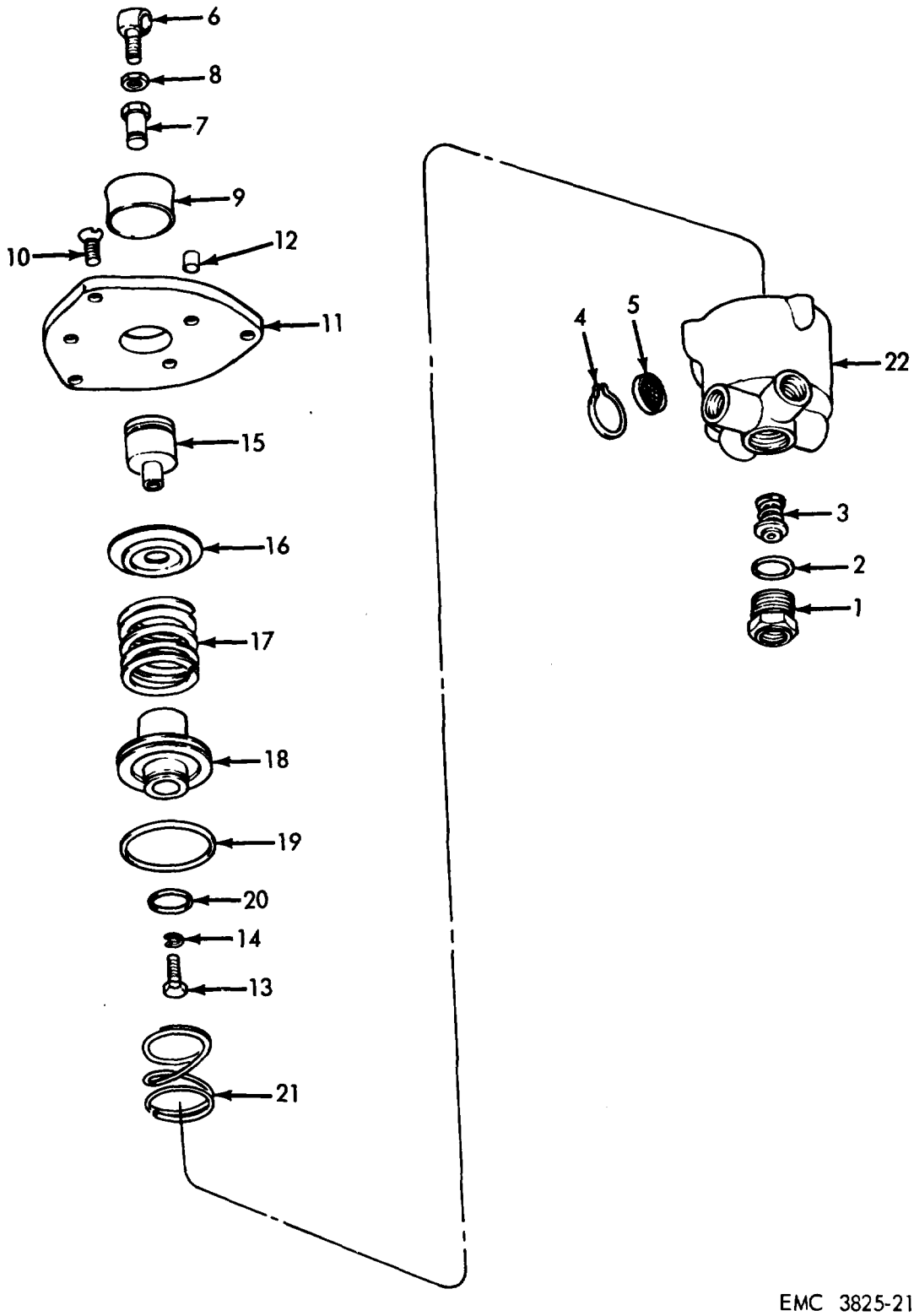


Figure 27. Treadle valve assembly, disassembly and reassembly, exploded view.

1	Cap	12	Stop
2	Preformed packing	13	Screw, machine, 1/4-20 x 1/2 in.
3	Valve	14	Washer, lock, 1/4 in.
4	Lock	15	Metering stem
5	Filter	16	Spring retainer
6	Rod	17	Spring
7	Push rod end	18	Piston
8	Nut, 3/8-24	19	Preformed packing
9	Boot	20	Preformed packing
10	Screw, machine, 5/16-18 x 13/16 in. (3 rqr)	21	Spring
11	Flange	22	Body

Figure 27. - Continued.

Section V. QUICK RELEASE VALVE ASSEMBLY

125. General

The quick release valve assembly is located above the rear differential mounted on the carrier frame. The quick release valve 'is actuated when the treadle valve is fully or partially released.

126. Quick Release Valve Assembly Removal and Disassembly

a. Removal. Remove the quick release valve assembly (TM 5-3825-213-20).

b. Disassembly. Disassemble the quick release valve assembly in numerical sequence as illustrated on figure 28.

127. Quick Release Valve Assembly Cleaning, Inspection, and Repair

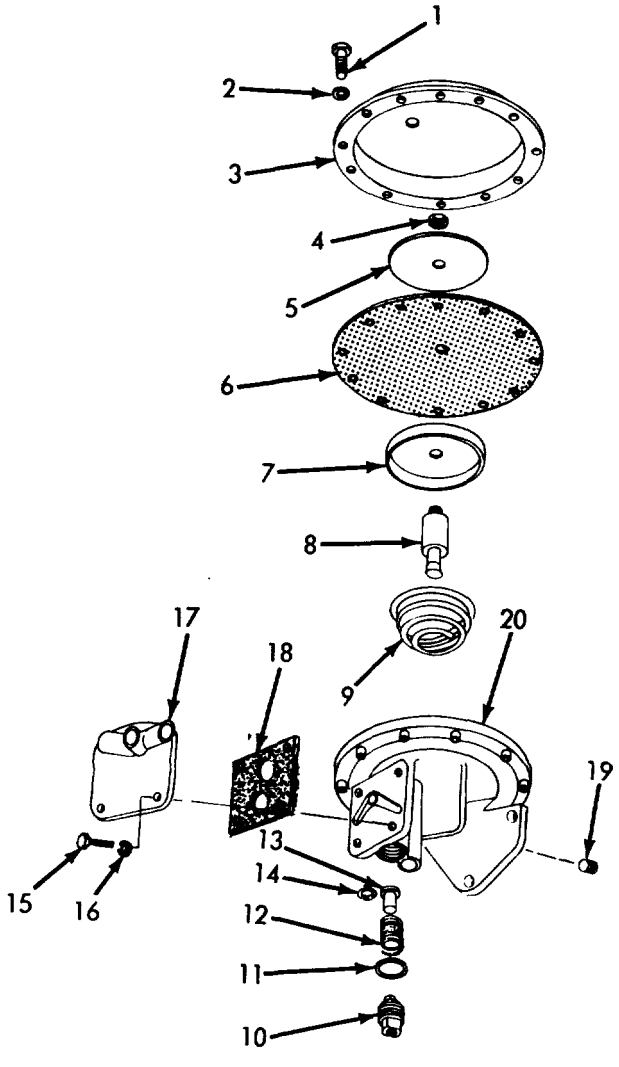
a. Cleaning. Clean all parts with an approved cleaning solvent and dry thoroughly.

b. Inspection and Repair. Inspect all parts for defective condition. Replace or repair worn, damaged, or defective parts.

128. Quick Release Valve Assembly Reassembly and Installation

a. Reassembly. Reassemble the quick release valve assembly in reverse of numerical sequence illustrated on figure 28.

b. Installation. Install the quick release valve (TM 5-3825-213-20).



EMC 3825-213-35/28

Figure 28. Quick release valve assembly, disassembly and reassembly, exploded view.

1 Screw, cap, 1/4-20 x 5/8 in. (12 rqr)
2 Washer, lock, 1/4 in. (12 rqr)
3 Diaphragm cover
4 Nut, 1/4-28
5 Diaphragm support plate
6 Diaphragm
7 Diaphragm support plate
8 Diaphragm stem
9 Return spring
10 Cap
11 Gasket
12 Spring
13 Exhaust valve
14 0-ring
15 Screw, cap, 1/4-20 x 1 in. (4 rqr)
16 Washer, lock, 1/4 in. (4 rqr)
17 Outlet cap
18 Gasket
19 Plug, pipe, 3/8 in.
20 Valve body

Figure 28. - Continued.

Section VI. REAR STEERING LOCK AIR CHAMBER ASSEMBLY

129. General

The rear steering lock air chamber functions when the lock switch on the instrument panel is turned to the ON position. The solenoid valve is opened permitting air to pass to the steering lock air chamber. The chamber raises the lockpin permitting the rear wheels to be turned either right or left.

130. Rear Steering Lock Air Chamber Assembly Removal and Disassembly

a. Removal. Remove the rear steering lock air chamber (TM 5-3825-213-20).

b. Disassembly. Disassemble the rear steering lock air chamber in numerical sequence as illustrated on figure 29.

131. Rear Steering Lock Air Chamber Assembly Cleaning, Inspection, and Repair

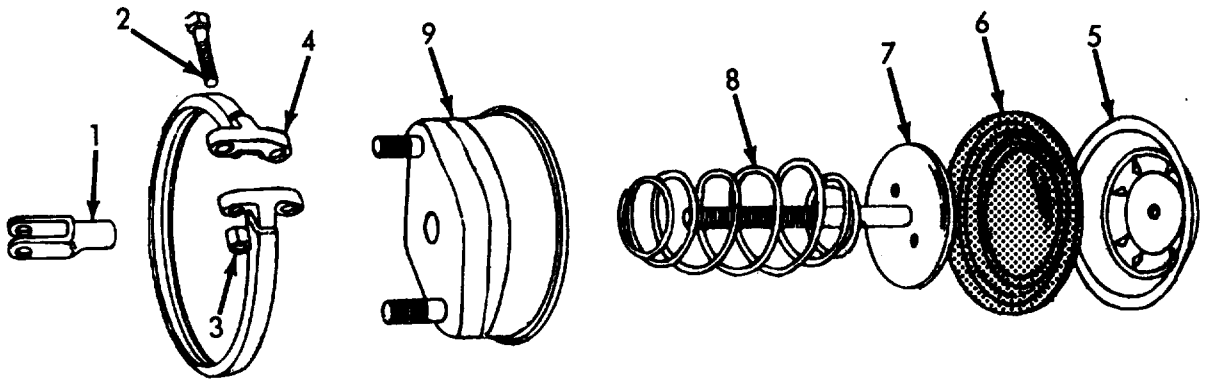
a. Cleaning. Clean all parts with an approved cleaning solvent and dry thoroughly.

b. Inspection and Repair. Inspect all parts for defective condition. Replace or repair worn, damaged, or defective parts.

132. Rear Steering Lock Air Chamber Assembly Reassembly and Installation

a. Reassembly. Reassemble the rear steering lock air chamber assembly in the reverse numerical sequence illustrated on figure 29.

b. Installation. Install the rear steering lock air chamber assembly (TM 5-3825-213-20).



EMC 3825-213-35/29

1 Clevis
2 Screw, cap, 1/2-13 x 1 in. (2 rqr)
3 Nut, 1/2-13 (2 rqr)
4 Clamp
5 Plate
6 Diaphragm
7 Rod
8 Spring
9 Mounting plate

Figure 29. Rear steering lock and se-r-ce brake air chamber assembly, disassembly and reassembly, exploded view.

Section VII. SERVICE BRAKE AIR CHAMBERS ASSEMBLY

133. General

The service brake air chamber converts the energy of compressed air into the mechanical force necessary to expand the brakeshoes against the brakedrums when the brake treadle is depressed and the diaphragm push rod and slack adjuster are moved into position to apply the brakes. As the brake pedal is released the air pressure is exhausted from the chamber, and the spring returns the diaphragm, push rod, and slack adjuster to their normal positions, releasing the brakes.

134. Service Brake Air Chamber Assembly Removal and Disassembly

a. Removal. Remove the service brake air chamber assembly (TM 5-3825-213-20).

b. Disassembly. Disassemble the service brake air chamber assembly in numerical sequence as illustrated on figure 29.

135. Service Brake Air Chamber Assembly Cleaning, Inspection, and Repair

a. Cleaning. Clean all parts with approved cleaning solvent and dry thoroughly.

b. Inspection and Repair. Inspect all parts for defective condition. Replace or repair worn, damaged, or defective parts.

136. Service Brake Air Chamber Assembly Reassembly, Installation, and Testing

a. Reassembly. Reassemble the service brake air chamber assembly in the reverse of numerical sequence illustrated on figure 29.

b. Installation. Install the service brake air chamber assembly (TM 5-3825-213-20).

c. Testing.

(1) Make a brake application and check that the brake chamber push rod moves out promptly without binding.

(2) Release the application and note that the push rod returns to the released

position promptly and without binding. Check push rod travel to be sure it is at a minimum without brakes dragging.

(3) With a full pressure application, check the brake chamber for leakage.

Note.

If leakage is detected around the flange, or clamping ring, the bolts should be tightened evenly but only enough to stop the leakage otherwise the diaphragm, flange sealing surface, or clamping ring could be destroyed.

Note.

Maximum push rod stroke at which brakes should be readjusted is 2 1/4 inches.

Section VIII. DIFFERENTIAL LOCKOUT POWER CLUSTER ASSEMBLY

137. General

Applied air is admitted through the inlet port in the cylinder body. Pressure is exerted against the piston face, forcing piston and rod to move toward the hydraulic cylinder and actuate it. Piston travel also compresses the piston return spring. The piston carries a piston cap, which seals against the cylinder body wall to prevent pressure leaks past the piston, and a felt wiper, which cleans and lubricates the body wall ahead of the piston. Piston movement changes the cylinder volume on the atmospheric side of the piston causing air movement through a filter breather port located in the cylinder head. The power cluster applies air pressure over hydraulic fluid activating the hydraulic system on the differential and transfer case lockout clutches.

138. Power Cluster Assembly Removal and Disassembly

a. Removal. Remove the power cluster as instructed on figure 30.

b. Disassembly. Disassemble the power cluster assembly in numerical sequence as illustrated on figure 31.

139. Power Cluster Assembly Cleaning, Inspection, and Repair

a. Cleaning. Clean all parts with an approved cleaning solvent and dry thoroughly.

b. Inspection and Repair.

(1) Inspect the air cylinder body for scratches, dents, or other damage which would cause damage to piston cup. Replace a defective cylinder body.

(2) Inspect piston for tightness on rod. Replace defective piston.

(3) Inspect the piston cup for wear or distortion. Replace a defective piston cup.

(4) Inspect the boot and spring for cracks, breaks, and loss of spring tension. Replace defective parts.

(5) Replace or repair any worn, damaged, or defective parts.

140. Power Cluster Assembly Reassembly and Installation

a. Reassembly. Reassemble the power cluster assembly in reverse of the numerical sequence illustrated on figure 31.

Note.

Piston must be tight on rod and at right angles to rod center line.

b. Installation. Install the power cluster assembly as instructed on figure 30.

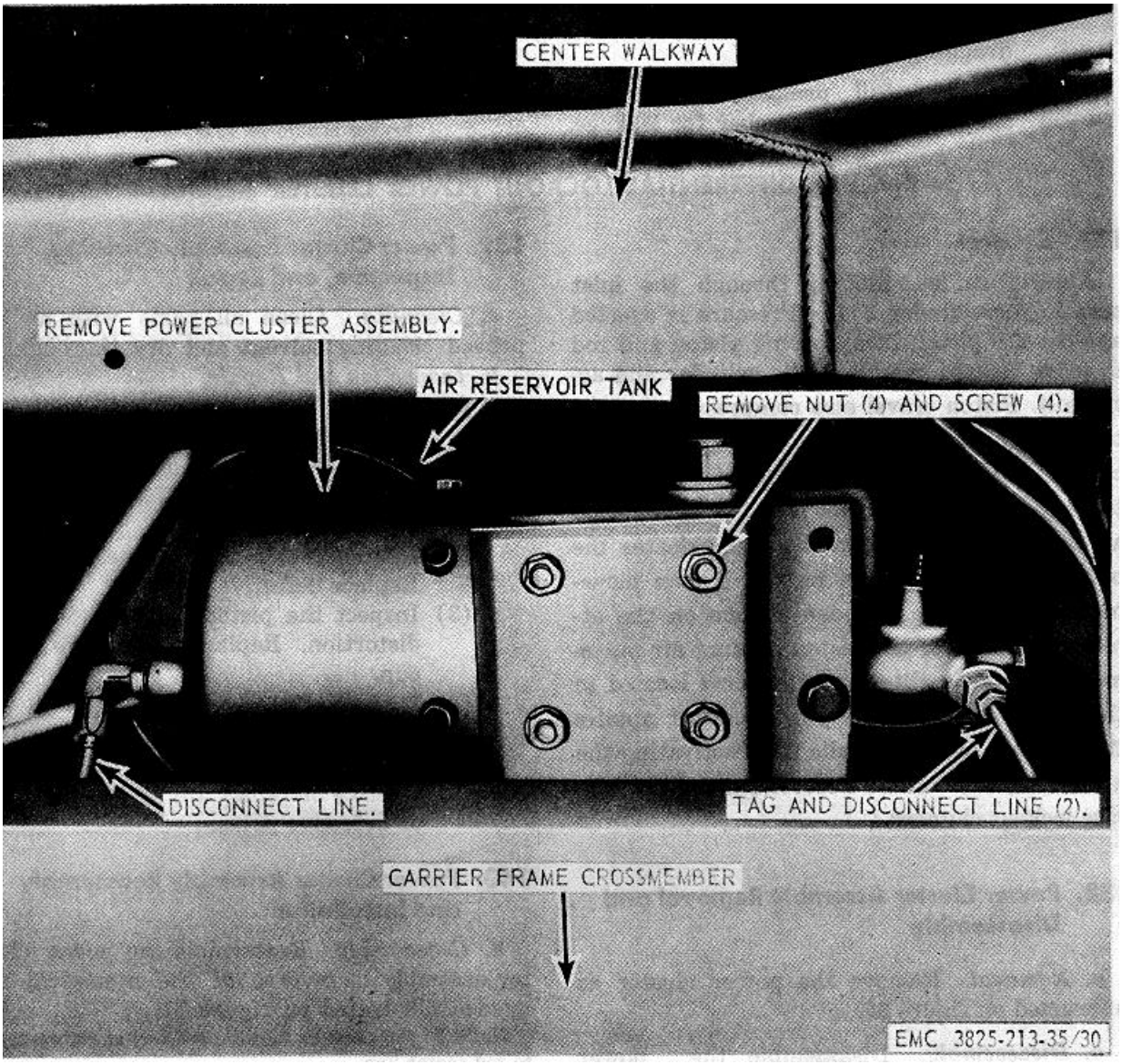
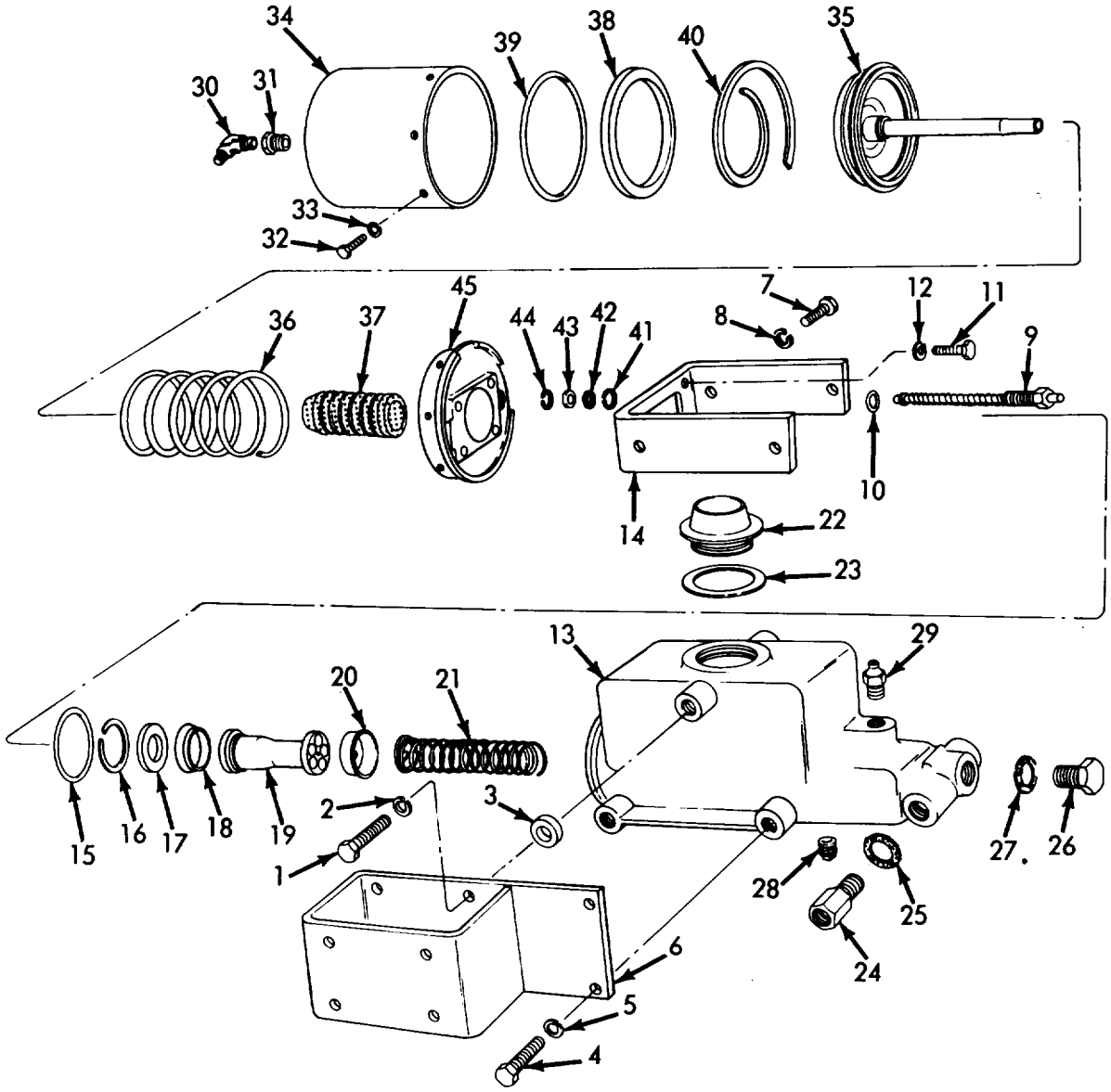


Figure 30. Power cluster assembly, removal and installation.



1	Screw, cap, 7/16-20 x 1 1/8 in.	10	Washer, lock, 3/8 in.
2	Washer, lock, 7/16 in.	11	Screw, cap, 3/8-16 x 1 in. (3 rqr)
3	Spacer	12	Washer, lock, 3/8 in. (3 rqr)
4	Screw, cap, 7/16-20 x 1 in. (2 rqr)	13	Cylinder
5	Washer	14	Bracket
6	Bracket	15	Preformed packing
7	Screw, cap, 7/16-20 x 1 1/8 in. (2 rqr)	16	Ring, retaining
8	Washer, lock, 7/16 in. (2 rqr)	17	Plate
9	Indicator	18	Cup

Figure 31. Power cluster assembly, disassembly and reassembly, exploded view.

19 Piston
20 Cup
21 Spring
22 Cap
23 Seal
24 Adapter (2 rqr)
25 Gasket
26 Plug
27 Gasket
28 Plug, pipe, 1/8 in.
29 Bleeder
30 Elbow, 90°
31 Reducer
32 Screw, 5/16-18 x 5/8 in. (8 rqr)
33 Washer, lock, 5/16 in. (8 rqr)
34 Housing
35 Piston
36 Spring
37 Boot
38 Seal
39 Spring
40 Wiper
41 Ring, retaining
42 Screen
43 Packing
44 Ring, retaining
45 Body

Figure 31. - Continued.

CHAPTER 7

PLOW REPAIR INSTRUCTIONS

Section I. PLOW TRANSMISSION, CLUTCH HOUSING, AND CLUTCH ASSEMBLY

141. General

The plow engine clutch assembly mounted on the plow engine flywheel is air-operated. The torque of the engine is transmitted by the clutch assembly to the snowplow transmission assembly. A selector lever in the cab enables the operator to select high or low fan and auger speed for snow removal operation.

142. Plow Engine Clutch Housing and Clutch Assembly Removal and Disassembly

a. Removal.

(1) Remove the plow transmission assembly (par. 53).

(2) Remove the plow engine clutch assembly as instructed on figure 32.

b. Disassembly.

(1) Disassemble the plow engine clutch assembly in the numerical sequence as illustrated on figure 33.

(2) Disassemble the plow engine clutch housing assembly in numerical sequence as illustrated on figure 34.

143. Plow Engine Clutch Housing and Clutch Assembly Cleaning, Inspection, and Repair

a. Cleaning. Clean all metal parts in an approved cleaning solvent and dry thoroughly.

b. Inspection and Repair. Inspect all parts for wear, breaks, or other damage. Repair or replace defective parts as necessary.

144. Plow Engine Clutch Housing and Clutch Assembly Reassembly and Installation

a. Reassembly.

(1) Reassemble the plow engine clutch assembly in the reverse of the numerical sequence as illustrated on figure 34.

(2) Reassemble the clutch housing assembly in the reverse of the numerical sequence as illustrated on figure 33.

b. Installation.

(1) Install the plow engine clutch assembly as instructed on figure 32.

(2) Install the transmission assembly (par. 53).

145. Plow Transmission Assembly Removal and Disassembly

a. Removal. Remove the plow transmission (par. 53).

b. Disassembly. Disassemble the snowplow transmission assembly in order of numerical sequence as illustrated on figure 35.

146. Plow Transmission Assembly Cleaning, Inspections and Repair

a. Cleaning-. Clean all parts in an approved cleaning solvent, remove gasket residue and dry thoroughly.

b. Inspection and Repair.

(1) Inspect the gears for broken or chipped teeth.

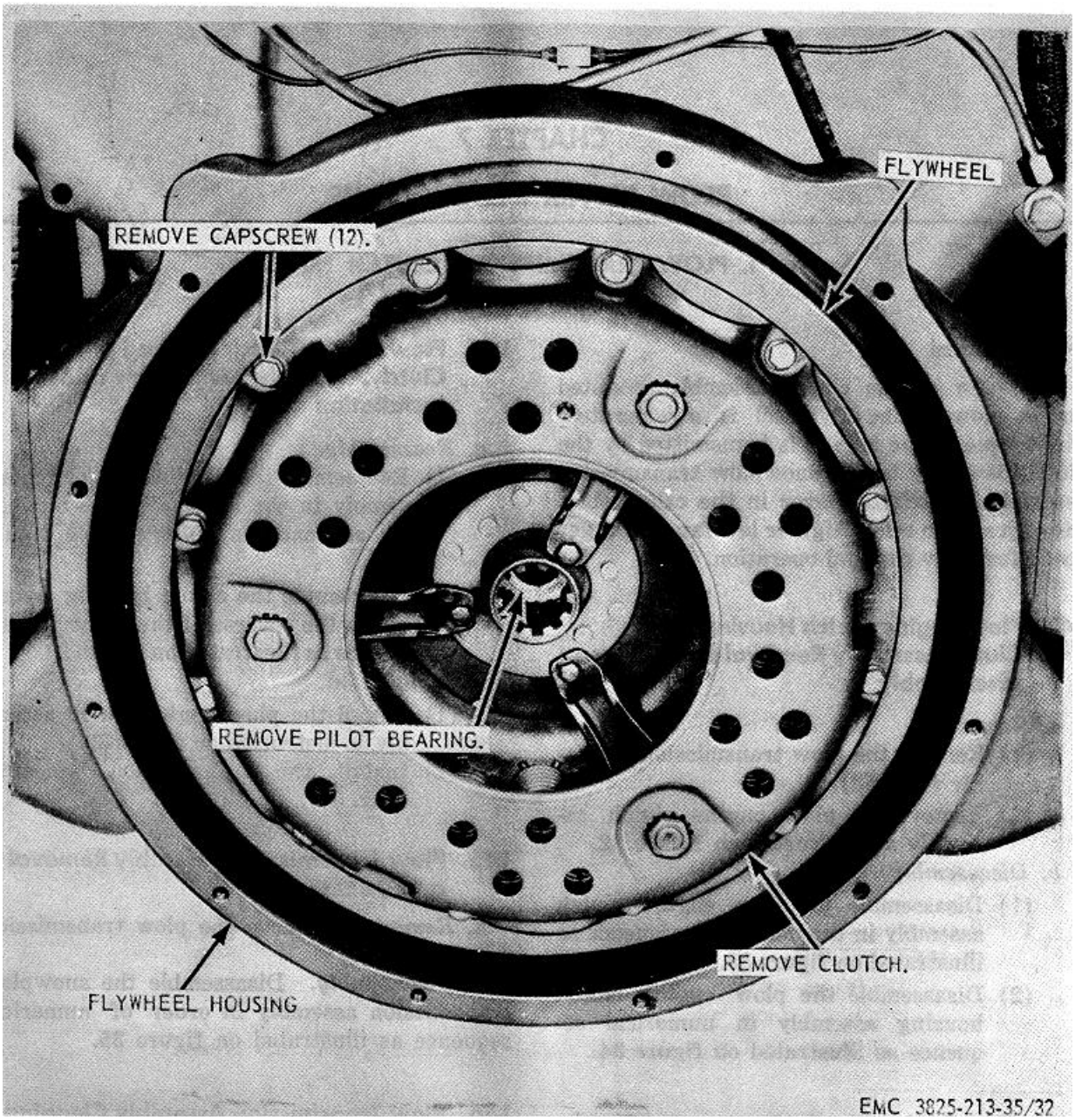


Figure 32. Plow engine clutch assembly, removal and installation.

(2) Inspect the shafts for scoring or other damage.

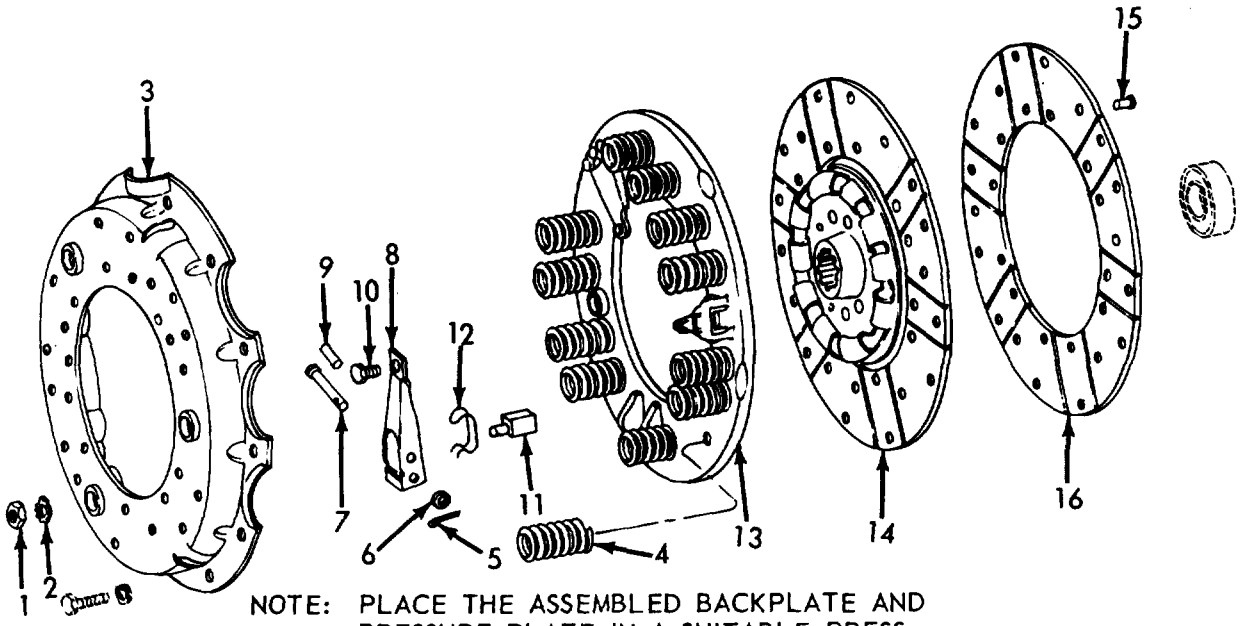
(3) Inspect the bearings for pits, and free movement.

(4) Repair or replace defective parts as necessary.

147. Plow Transmission Assembly Reassembly and Installation

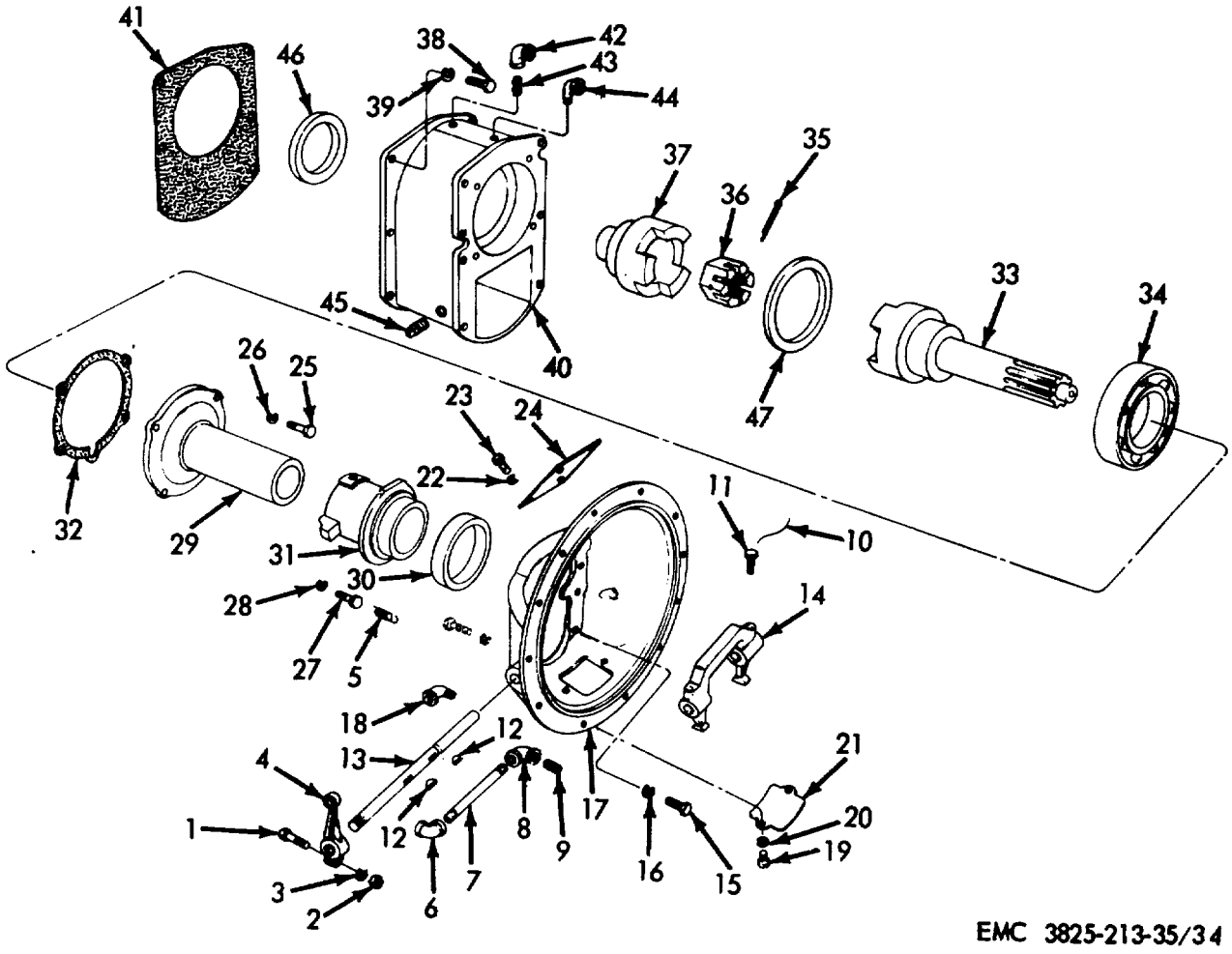
a. Reassembly. Reassemble the plow transmission assembly in reverse of the numerical sequence as illustrated on figure 35.

b. Installation. Install the plow transmission (par. 53).



1	Nut, Jam, 5/8-18 (3 rqr)	9	Lever pivot pin (3 rqr)
2	Washer, lock, ET, 5/8 in. (3 rqr)	10	Screw, lever adjustment (3 rqr)
3	Backplate	11	Lever pivot block (3 rqr)
4	Pressure plate spring (24 rqr)	12	Lever spring (3 rqr)
5	Pin cotter, 3/32 x 3/4 in. (3 rqr)	13	Pressure plate
6	Washer, lever pin (3 rqr)	14	Driven plate
7	Lever pin (3 rqr)	15	Rivet (42 rqr)
8	Lever (3 rqr)	16	Lining (2 rqr)

Figure 33. Plow engine clutch assembly, disassembly and reassembly, exploded view.



1	Screw, cap, 3/8-16 x 2 in.	19	Screw, cap, 5/16-18 x 1/2 in. (2 rqr)
2	Nut, 3/8-16	20	Washer, lock, 5/16 in. (2 rqr)
3	Washer, lock, 3/8 in.	21	Inspection plate
4	Shift lever	22	Screw, cap, 5/16-18 x 1/2 in. (4 rqr)
5	Spring (2 rqr)	23	Washer, lock, 5/16 in. (4 rqr)
6	Elbow	24	Access plate
7	Nipple	25	Screw, cap, 3/8-16 x 1 3/8 in. (2 rqr)
8	Elbow	26	Washer, lock, 3/8-in. (2 rqr)
9	Nipple	27	Screw, cap, 3/8-16 x 1 1/2 in. (2 rqr)
10	Lockwire	28	Washer, lock, 3/8 in. (2 rqr)
11	Screw, cap, 3/8-24 x 1 1/4 in. (2 rqr)	29	Bearing cover
12	Key (2 rqr)	30	Bearing
13	Clutch shaft	31	Clutch release bearing
14	Shift yoke	32	Gasket
15	Screw, cap, 5/8-11 x 1 1/2 in. (6 rqr)	33	Shaft
16	Washer, lock, 5/8 in. (6 rqr)	34	Bearing
17	Clutch cover	35	Pin, cotter
18	Elbow	36	Nut, 1 1/4-12

Figure 34. Plow engine clutch housing and adapters disassembly and reassembly, exploded view.

37 Clutch drive adapter
38 Screw, cap, 5/8-11 x 1 1/2 in. (6 rqr)
39 Washer, lock, 5/8 in. (6 rqr)
40 Case adapter
41 Gasket
42 Elbow
43 Nipple
44 Elbow
45 Plug, machine
46 Seal
47 Seal

Figure 34. - Continued.

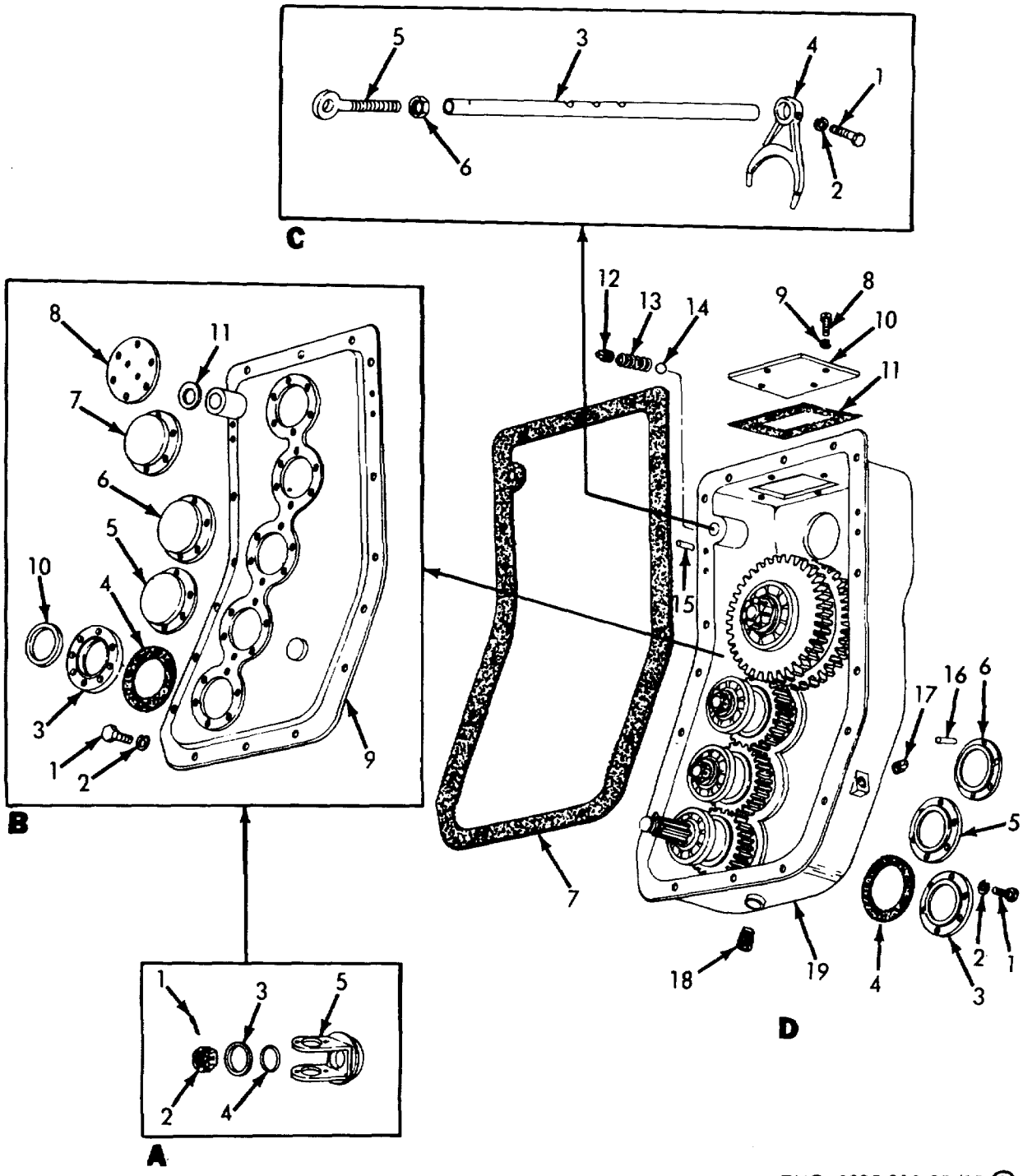


Figure 35. Plow transmission assembly, disassembly and reassembly, exploded view.

1 Pin, cotter
2 Nut, slotted, hex
3 Washer, flat
4 0-ring
5 Yoke

A. Yoke.

1 Screw, cap, hex hd, 3/8-16 x 1 3/8 in. (52 rqr)
2 Washer, lock, 3/8 in. (52 rqr)
3 Cover
4 Gasket (5 rqr)
5 Cover
6 Cover
7 Cover
8 Cover
9 Case cover
10 Seal
11 Seal

B. Case cover

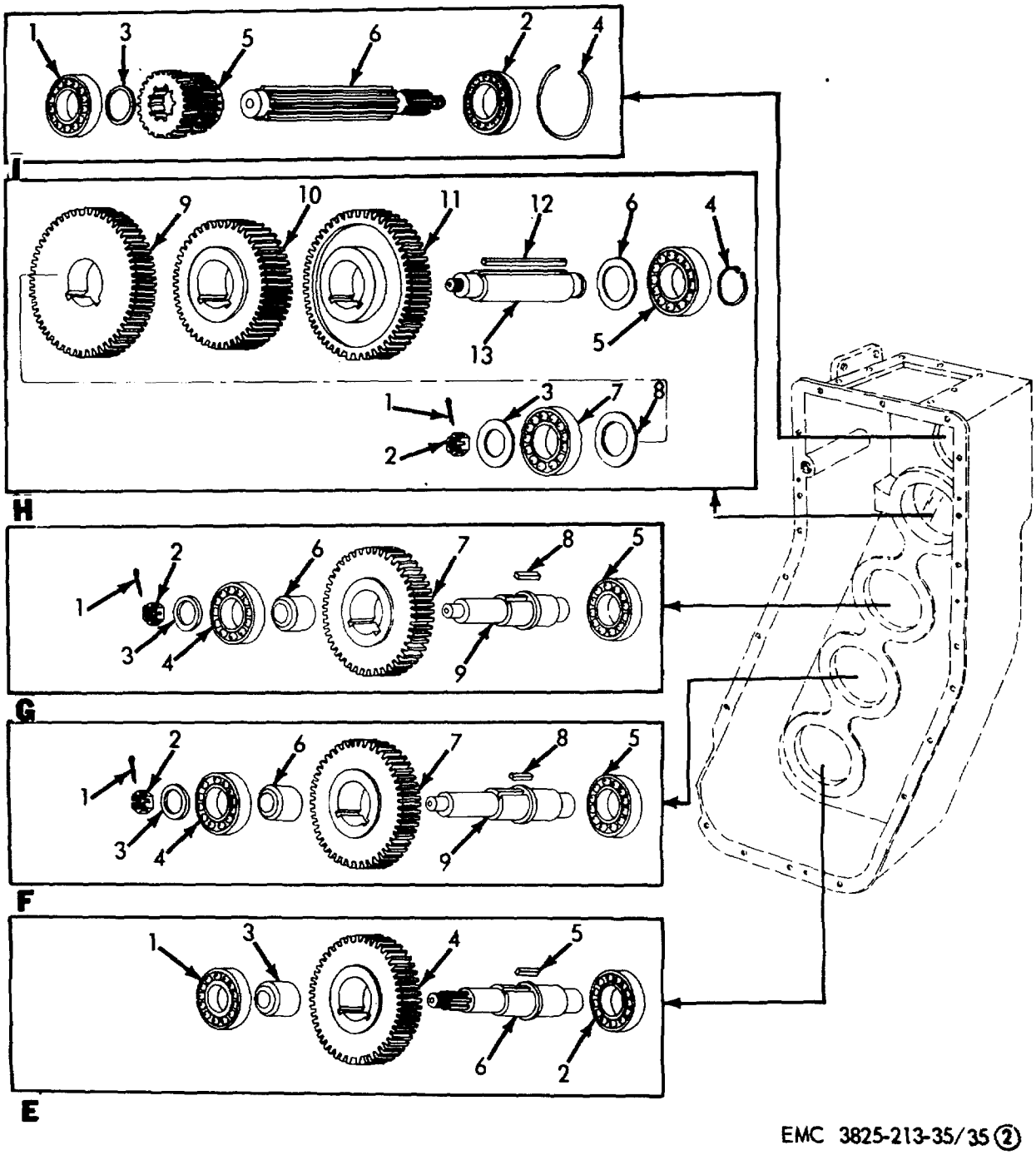
1 Screw, cap, hex hd, 3/8-16 x 1 1/4 in.
2 Washer, lock, 3/8 in.
3 Gearshift shaft
4 Selector fork
5 Rod end
6 Nut

C. Selector shaft.

1 Screw, cap, 3/8-16 x 1 3/8 (18 rqr)
2 Washer, lock, 3/8 in. (18 rqr)
3 Cover
4 Gasket (3 rqr)
5 Cover
6 Cover
7 Gasket
8 Screw, cap, 3/8-16 x 3/4 in. (8 rqr)
9 Washer, lock, 3/8 in. (8 rqr)
10 Cover
11 Gasket
12 Plug
13 Spring
14 Ball
15 Pin, dowel, 5/16 x 1 in. (3 rqr)
16 Pin, tapered (2 rqr)
17 Plug, pipe, sq hd
18 Plug, pipe, magnetic, sq hd
19 Case

D. Case.

Figure 35. - Continued.



1 Bearing
2 Bearing
3 Spacer
4 Gear
6 Key,- machine (2 rqr)
6 Shaft

E. Driven shaft.

Figure 35. - Continued.

1 Pin, cotter, 1/8 x 2 ¼ in.
2 Nut, slotted, hex, 1 ¼ in. -12
3 Washer, flat, 1 ¼ in.
4 Bearing
5 Bearing
6 Spacer
7 Gear
8 Key, machine (2 rqr)
9 Shaft

F. Idler shaft.

1 Pin, cotter, 1/8 x 2 ¼ in.
2 Nut, slotted, hex, 1 ¼12 in.
3 Washer, flat, 1 ¼ in.
4 Bearing
5 Bearing
6 Spacer
7 Gear
8 Key, machine (2 rqr)
9 Shaft

G. Idler shaft.

1 Pin, cotter, 1/8 x 2 ¼ in.
2 Nut, slotted, hex, 1 ¼-12
3 Washer, flat, 1 ¼ in.
4 Snap ring
5 Bearing
6 Spacer
7 Bearing
8 Spacer
9 Gear
10 Gear
11 Gear
12 Key, machine (2 rqr)
13 Shaft

H. Reduction shaft.

1 Bearing
2 Bearing
3 Spacer
4 Retaining ring
5 Gear
6 Shaft

I. Input shaft.

Figure 35. Continued.

Section II. PLOW LIFT FRAME

148. General

The plow lift frame is a welded beam construction. Mounted on the front of the carrier, a single-acting cylinder integral with the lift frame actuates the plow assembly up and down. The operator controls the raising and lowering of the plow from the manifold valve in the cab.

149. Plow Lift Frame Removal

a. Remove the plow assembly (TM 5-3825-213-10).

b. Remove the hydraulic lift cylinder (par. 83).

c. Remove the plow lift frame as instructed on figure 36.

150. Plow Lift Frame Cleaning, Inspection, and Repair

a. Cleaning. Clean all parts in an approved cleaning solvent and dry thoroughly.

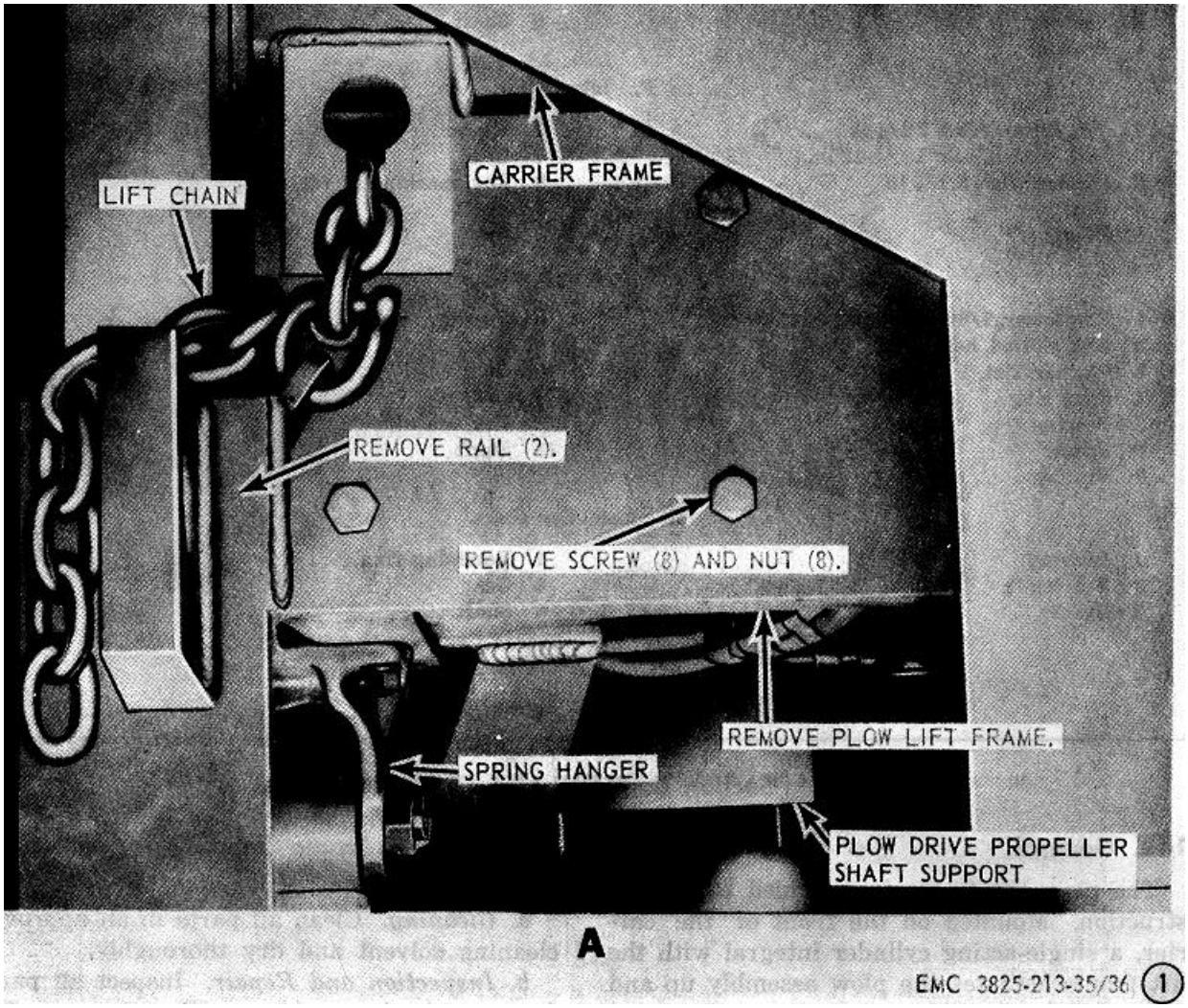
b. Inspection and Repair. Inspect all parts for wear, broken welds, or other damage. Repair or replace defective parts as necessary.

151. Plow Lift Frame Installation

a. Install the plow lift frame as instructed on figure 36.

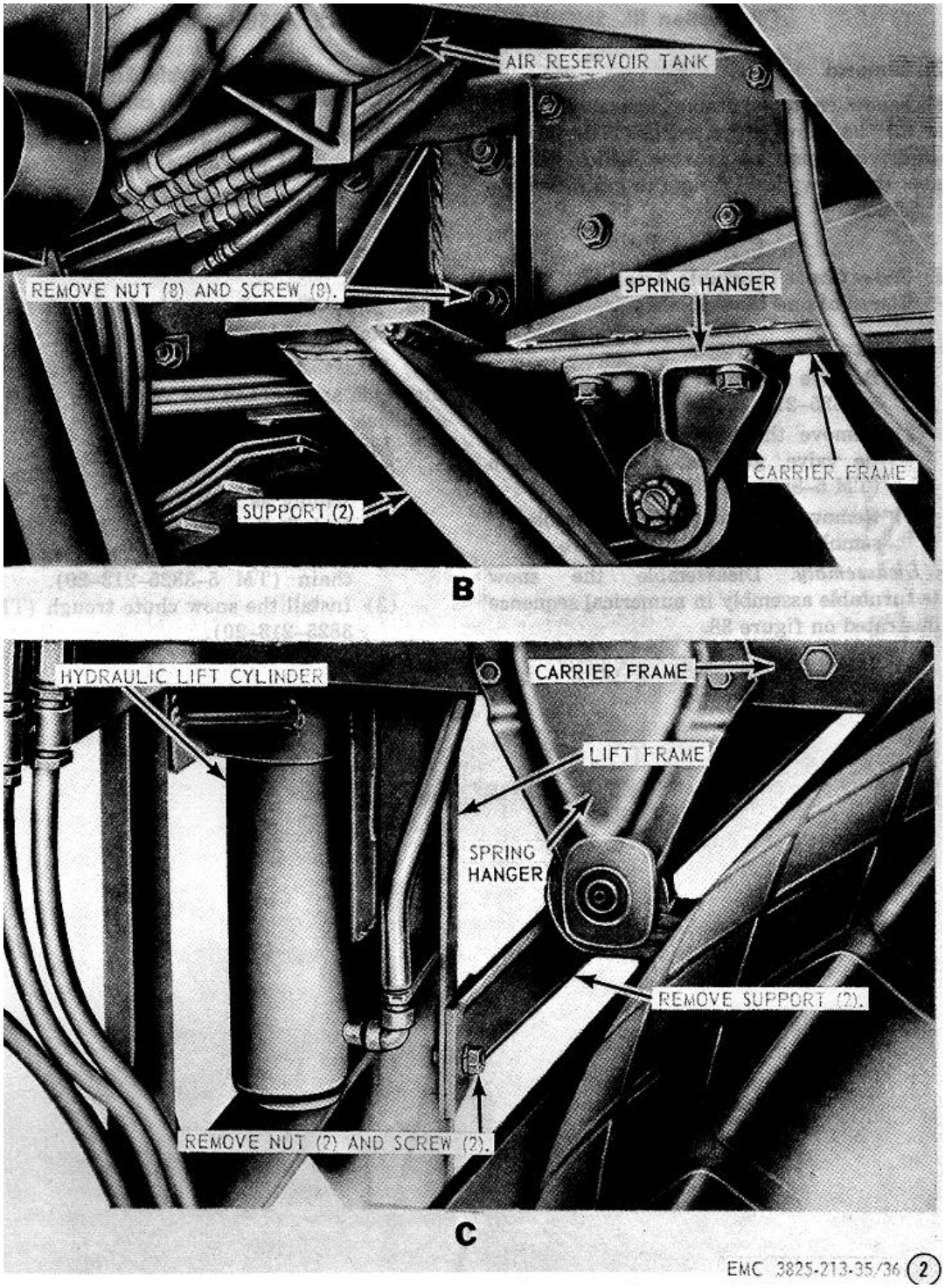
b. Install the hydraulic lift cylinder (par. 85).

c. Install the plow assembly (TM 5-3825-213-10).



A. Plow left frame removal points.

Figure 36. Plow lift frame, removal and installation.



B. Support removal points on carrier frame.

C. Support removal points on plow lift frame.

Figure 36. Continued.

Section III. SNOW CHUTE TURNTABLE ASSEMBLY

152. General

The snow chute turntable assembly is the base for the snow chute trough. The table is chain-driven from the gearbox which in turn rotates the snow chute trough to desired working position.

153. Snow Chute Turntable Assembly Removal and Disassembly

a. Removal.

(1) Remove the snow chute trough (TM 5-3825-213-20).

(2) Remove the hydraulic motor, throttle valve, gearbox, and drive chain (TM 5-3825-213-20).

(3) Remove the snow chute turntable assembly as instructed on figure 37.

b. Disassembly. Disassemble the snow chute turntable assembly in numerical sequence as illustrated on figure 38.

154. Snow Chute Turntable Assembly Cleaning, Inspection, and Repair

a. Cleaning. Clean all parts in an approved cleaning solvent and dry thoroughly.

b. Inspection and Repair. Inspect all parts for wear, breaks, or other damage. Repair or replace defective parts as necessary.

155. Snow Chute Turntable Assembly Reassembly and Installation

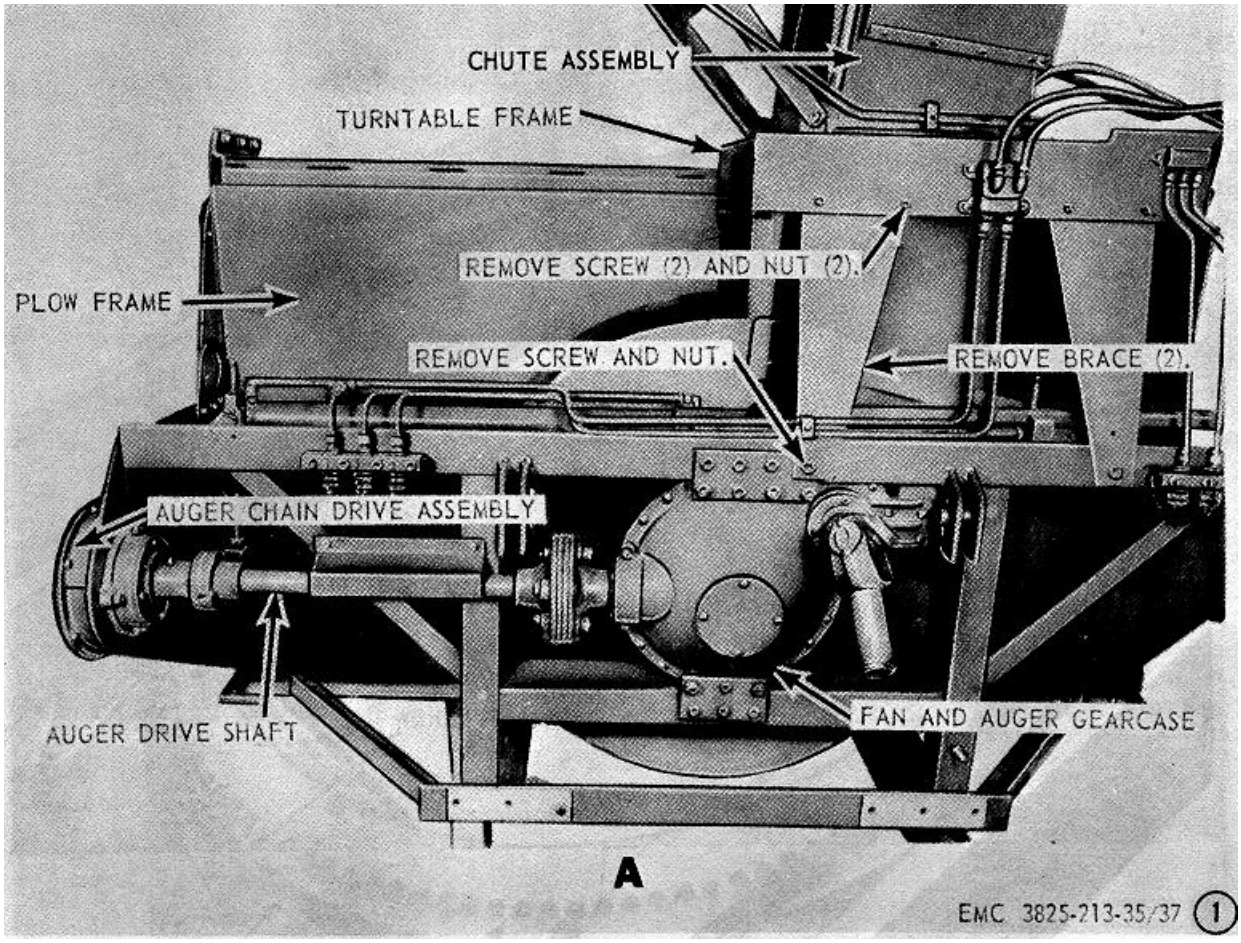
a. Reassembly. Reassemble the snow chute turntable assembly in the reverse of numerical sequence illustrated on figure 38.

b. Installation.

(1) Install the snow chute turntable assembly as instructed on figure 37.

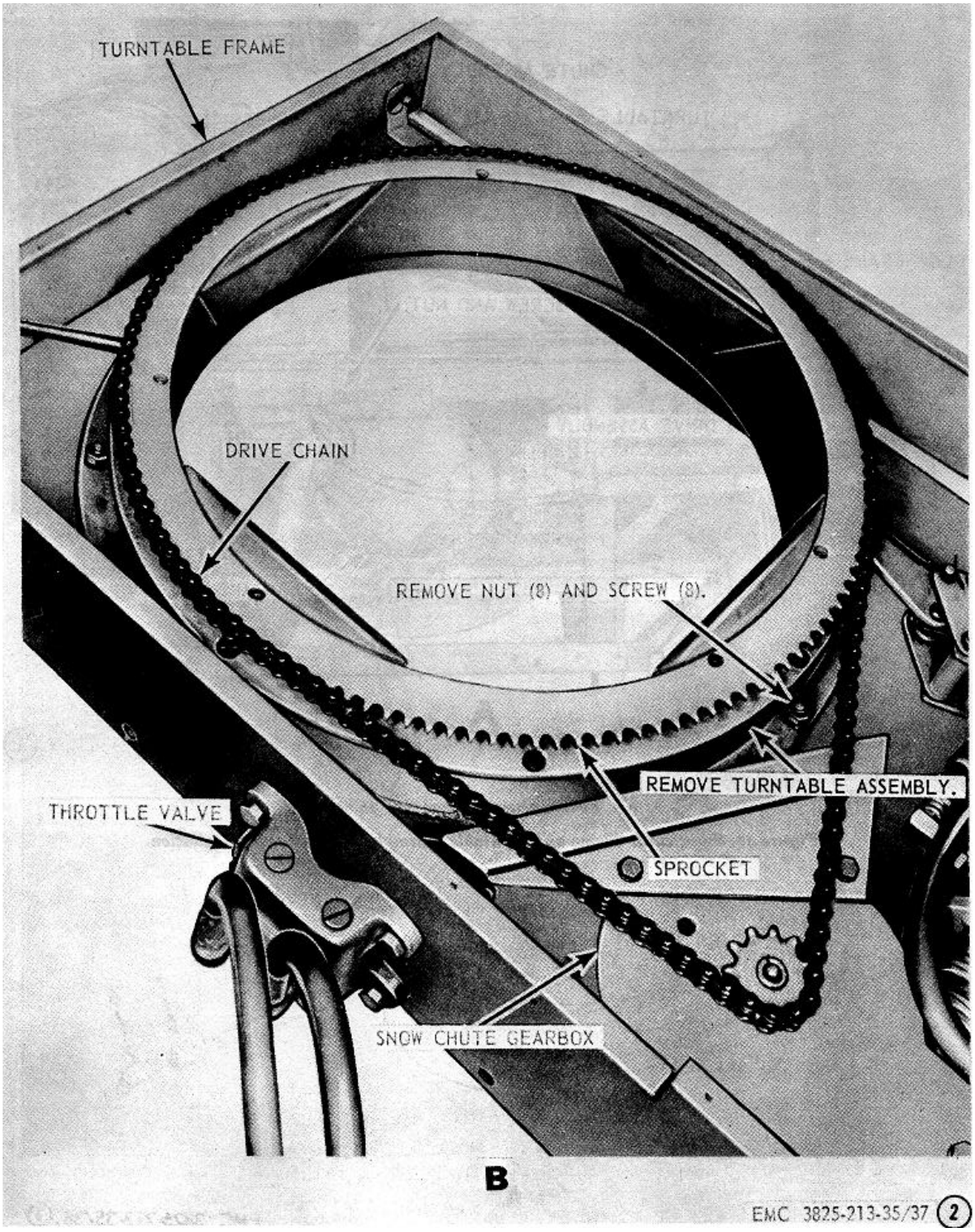
(2) Install the gear box, hydraulic motor, throttle control valve, and drive chain (TM 5-3825-213-20).

(3) Install the snow chute trough (TM 5-3825-213-20).



A. Frame assembly removal points.

Figure 37. Snow chute frame and turntable assembly, removal and installation.



B. Turntable assembly removal points.

Figure 37. Continued.

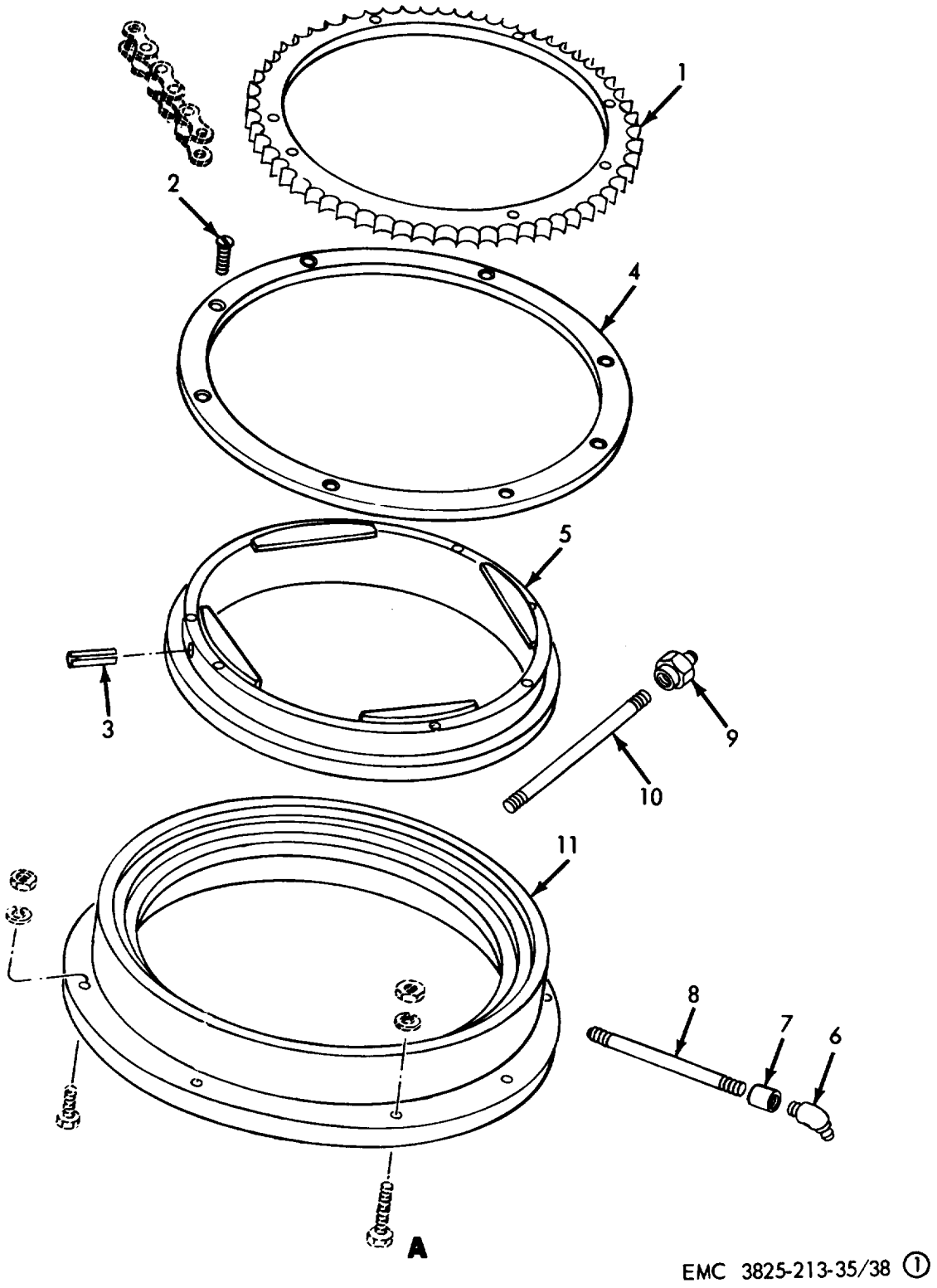


Figure 38. Snow chute turntable assembly, disassembly and reassembly, exploded view.

1 Sprocket
2 Screw, flat head, ¼-20 x ½ in. (8 rqr)
3 Pin, headless
4 Sprocket retainer
5 Housing
6 Fitting, lubrication
7 Union
8 Nipple
9 Fitting, lubrication
10 Nipple
11 Housing

A. Turntable.

Figure 38. Continued.

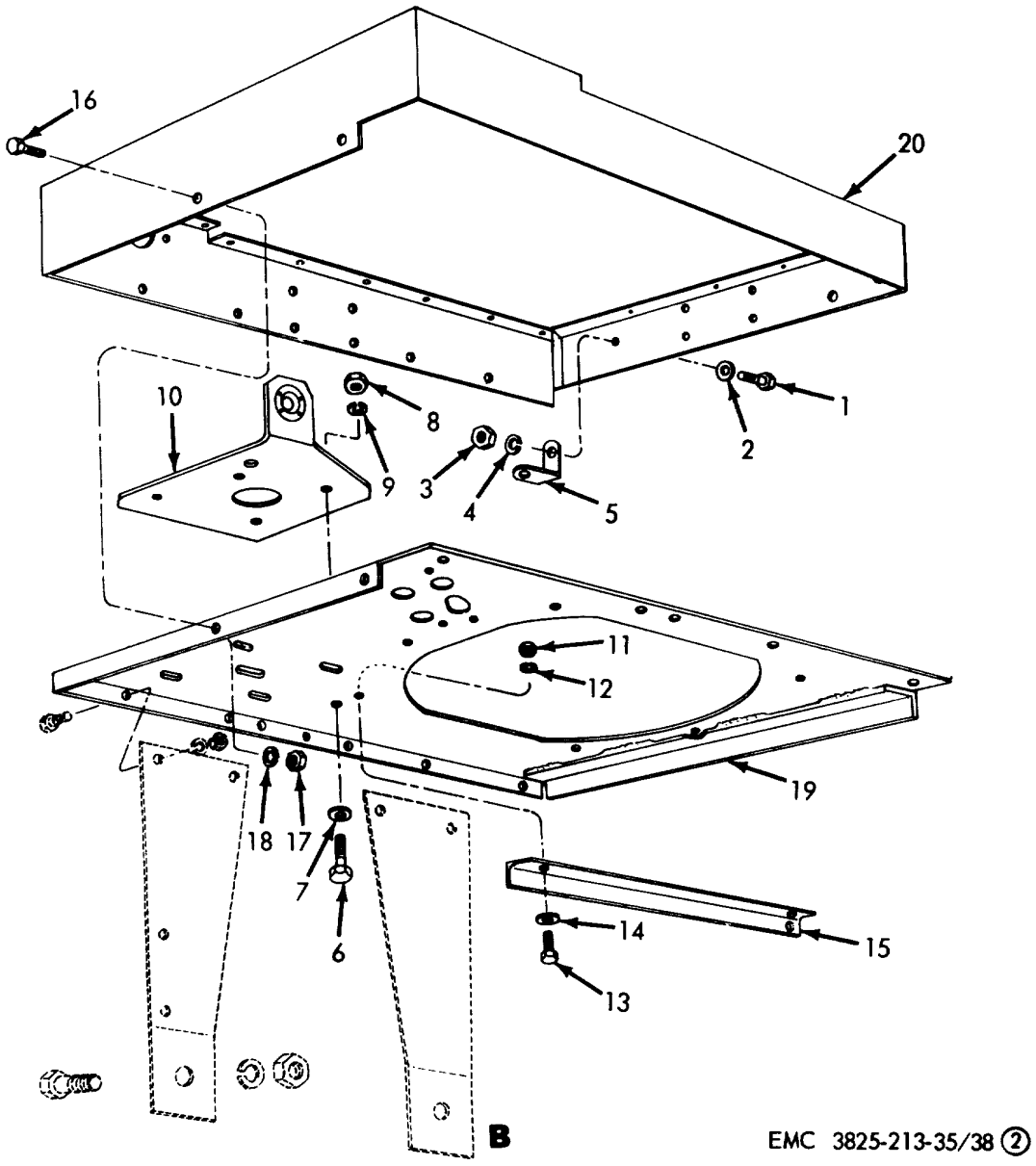


Figure 38. Continued.

1 Screw, cap, ¼-28 x 1 in.
2 Washer, flat, ¼ in.
3 Nut, ¼-28
4 Washer, lock, ¼ in.
5 Bracket
6 Screw, cap, ½-20 x 1-½ in. (4 rqr)
7 Washer, flat, ½ in. (4 rqr)
8 Nut, ½-20 (4 rqr)
9 Washer, lock, ½ in. (4 rqr)
10 Support
11 Nut, 3/8-24 (2 rqr)
12 Washer, lock, 3/8 in. (2 rqr)
13 Screw, cap, 3/8-24 x 1 in. (2 rqr)
14 Washer, flat, 3/8 in. (2 rqr)
15 Brace
16 Screw, cap, ¼-28 x ½ in. (2 rqr)
17 Nut, ¼-28 (2 rqr)
18 Washer, lock (2 rqr)
19 Cover
20 Turret housing

B. Turntable frame.

Figure 38. Continued.

Section IV. SNOW CHUTE GEARBOX ASSEMBLY

156. General

The snow chute gearbox assembly driven by the hydraulic motor rotates the turntable by a chain drive. The gearbox assembly is a reduction type.

157. Snow Chute Gearbox Assembly Removal and Disassembly

a. Removal. Remove the snow chute gearbox assembly (TM 5-3825-213-20).

b. Disassembly. Disassemble the snow chute gearbox assembly in numerical sequence as illustrated on figure 39.

158. Snow Chute Gearbox Assembly Cleaning, Inspection, and Repair

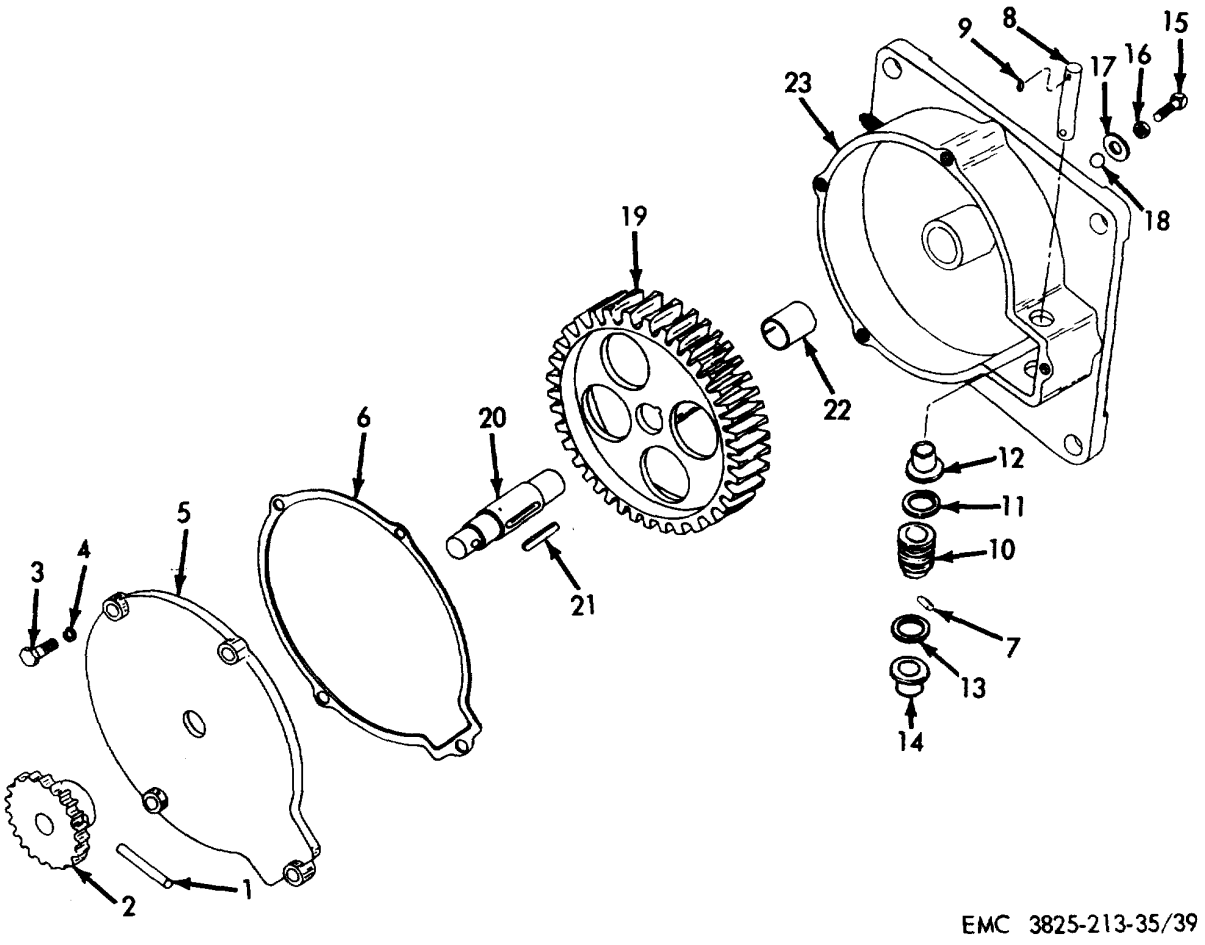
a. Cleaning. Clean all parts in an approved cleaning solvent and dry thoroughly. Remove gasket residue from mating surfaces.

b. Inspection and Repair. Inspect all parts for wear, scoring, breaks, or other damage. Repair and replace defective parts as necessary.

159. Snow Chute Gearbox Assembly Reassembly and Installation

a. Reassembly. Reassemble the snow chute gearbox assembly in reverse of numerical sequence illustrated on figure 39.

b. Installation. Install the snow chute gearbox assembly (TM 5-3825-213-20).



1	Pin, taper, special	13	Washer, flat special
2	Gear	14	Sleeve bushing
3	Screw, cap, hex head, ¼-20 x ¾ in. (4 rqr)	15	Screw, machine, sq head, 5/16-18 x 1 in.
4	Washer, lock, ¼ in. (4 rqr)	16	Not, plain hex, 5/16 in.
5	Cover	17	Washer, flat, 5/16 in.
6	Gasket	18	Ball
7	Pin, straight headless	19	Gear
8	Shaft	20	Shaft
9	Key, Woodruff, No. 404	21	Key, machine, 3/16 x 3/16 x 1 ¼ in. lg.
10	Worm gear	22	Bushing
11	Washer, flat, special	23	Gearbox
12	Sleeve bushing		

Figure 39. Snow chute gearbox assembly, disassembly and reassembly, exploded view.

Section V. AUGER DRIVE SHAFT ASSEMBLY

160. General

The auger drive shaft connects the auger drive chain assembly to the plow gearcase. A flexible coupling maintains shaft alignment with an added coupling incorporating shear bolts to prevent damage to the gearbox and drive chain when operating load becomes too great.

161. Auger Drive Shaft Assembly Removal and Disassembly

a. Removal.

(1) Remove the shaft guard (TM 5-3825-213-20).

(2) Refer to paragraph 165 and remove the fan and auger gearcase.

(3) Remove the auger drive shaft assembly as instructed on figure 40.

b. Disassembly. Disassemble the auger drive shaft assembly in numerical sequence as illustrated on figure 41.

162. Auger Drive Shaft Assembly Cleaning, Inspection, and Repair

a. Cleaning. Clean all parts in an approved cleaning solvent and dry thoroughly.

b. Inspection and Repair. Inspect all parts for wear, deterioration, bends, or other damage. Repair or replace defective parts as necessary.

163. Auger Drive Shaft Assembly Reassembly and Installation

a. Reassembly. Reassemble the auger drive shaft assembly in reverse of numerical sequence as illustrated on figure 41.

b. Installation.

(1) Install the auger drive shaft assembly as instructed on figure 40.

(2) Refer to paragraph 167, and install the fan and auger gearcase.

(3) Install the shaft guard (TM 5-3825-213-20).

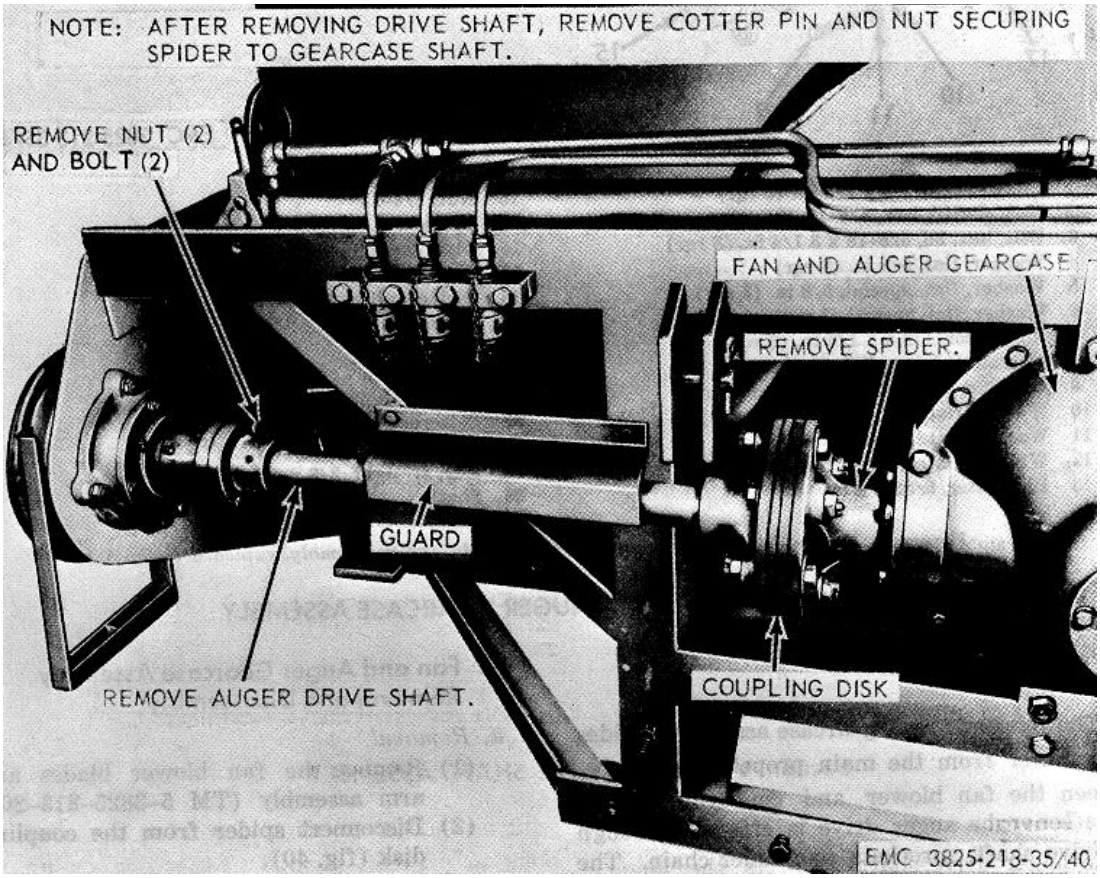
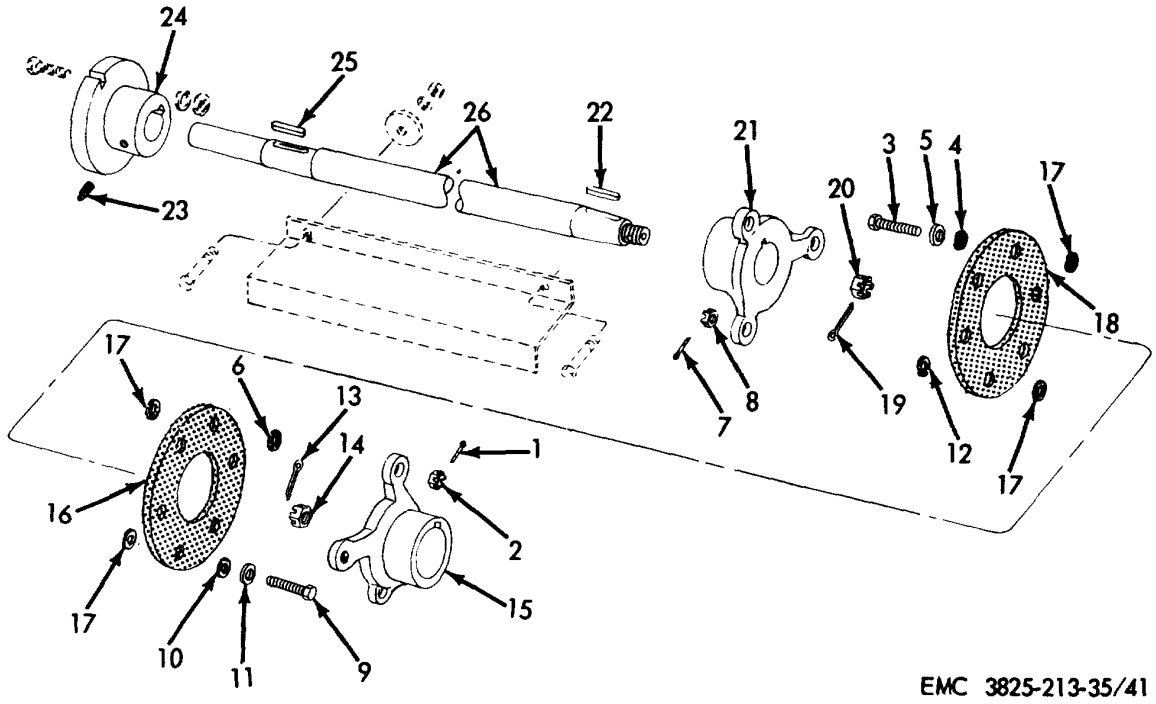


Figure 40. Auger drive shaft assembly, removal and installation.



1	Pin, cotter, 1/8 x 1 1/8 in. (3 rqr)	16	Nut, ¼-12
2	Nut, slotted, hex, 5/8-18 (3 rqr)	15	Spider
3	Bolt, hex, head, 5/8-18 x 3 ¼ in. (3 rqr)	16	Disk, coupling (2 rqr)
4	Washer, flat, 5/8 in. (3 rqr)	17	Washer, flat, special (4 rqr)
5	Washer, flat, special, 5/8 in. (3 rqr)	18	Disk coupling (2 rqr)
6	Washer, flat, special (3 rqr)	19	Pin, cotter, 5/32 x 2 in.
7	Pin, cotter, 1/8 x 1 1/8 in. (3 rqr)	20	Nut, 1 ¼-12
8	Nut, slotted, hex, 5/8-18 (3 rqr)	21	Spider
9	Bolt, hex head, 5/8-18 x 3 ¼ in. (3 rqr)	22	Key, straight, 7/16 x 7/16 x 2 1/8 in.
10	Washer, flat, special, 5/8 in. (2 rqr)	23	Setscrew, ½-13 x ½ in.
11	Washer, flat, 5/8 in. (3 rqr)	24	Driving hub
12	Washer, flat, special (3 rqr)	25	Key, straight, 3/8 x 3/8 x 2-19/32 in.
13	Pin, cotter, 5/32 x 2 in.	26	Shaft

Figure 41. Auger drive shaft assembly, disassembly and reassembly, exploded view.

Section VI. FAN AND AUGER GEARCASE ASSEMBLY

164. General

The fan and auger gearcase assembly divides the power from the main propeller shaft, between the fan blower and conveyor augers. The conveyor auger drive is effected through a drive shaft, sprockets, and roller chain. The fan blower is mounted on the main shaft of the gearcase.

165. Fan and Auger Gearcase Assembly Removal and Disassembly

a. Removal.

(1) Remove the fan blower blades and arm assembly (TM 5-3825-213-20).

(2) Disconnect spider from the coupling disk (fig. 40).

(3) Remove the fan and auger gearcase assembly as instructed on figure 42.

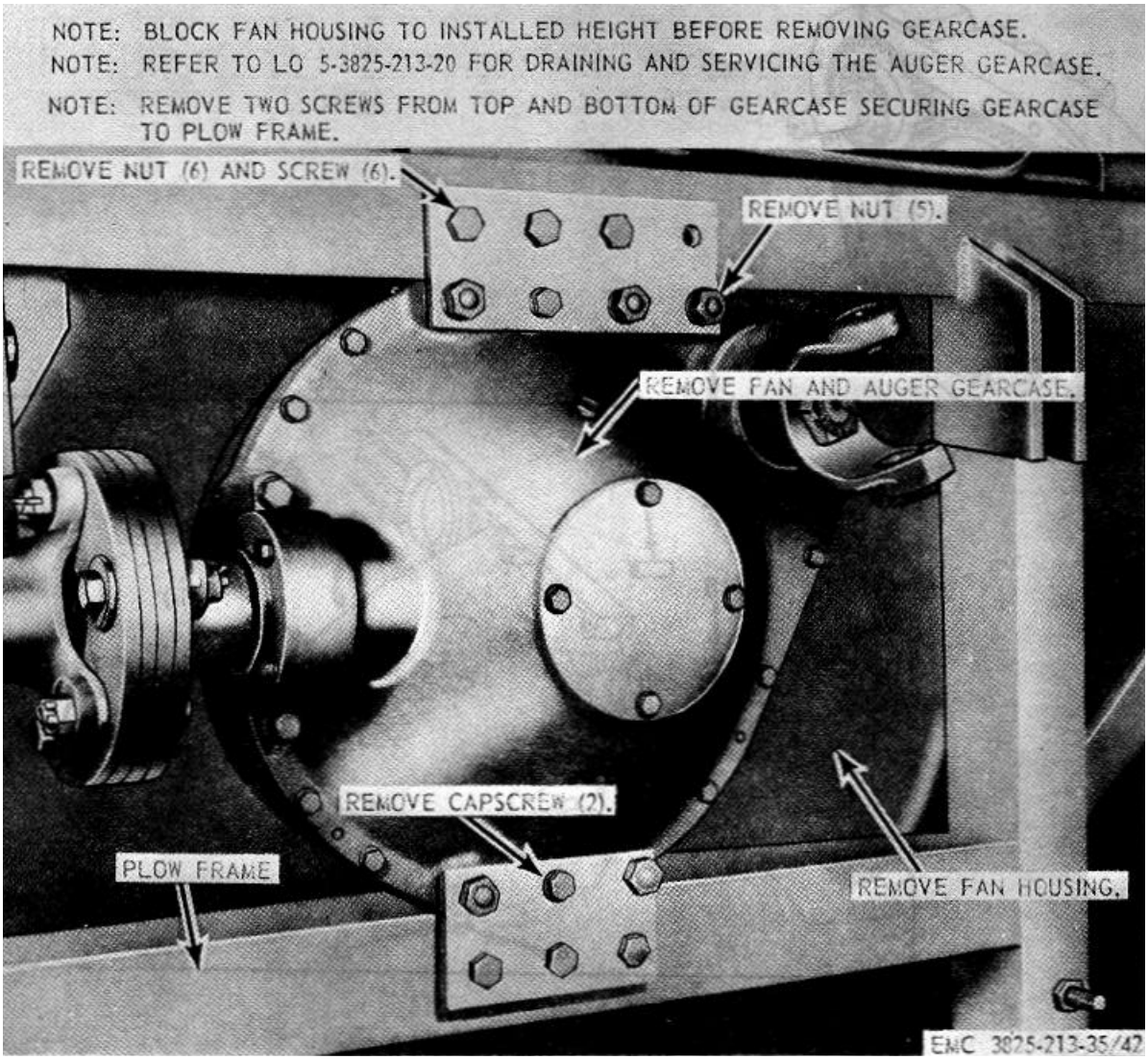


Figure 42. Auger gearcase and fan housings removal and installation.

b. Disassembly. Disassemble the fan and auger gearcase assembly in numerical sequence as illustrated on figure 43.

166. Fan and Auger Gearcase Assembly Cleaning, Inspection, and Repair

a. Cleaning. Clean all parts in an approved cleaning solvent and remove all gasket residue.

b. Inspection and Repair. Inspect all parts for wear, chips, breaks, or other damage. Repair or replace defective parts as necessary.

167. Fan and Auger Gearbox Assembly Reassembly and Installation

a. Reassembly. Reassemble the fan and auger gearbox assembly in reverse of the numerical sequence as illustrated on figure 43.

b. Installation.

(1) Install the fan and auger gearbox assembly as instructed on figure 42.

(2) Install the fan blower blades (TM 5-3825-213-20).

(3) Connect the spider to the coupling disk as instructed on figure 40.

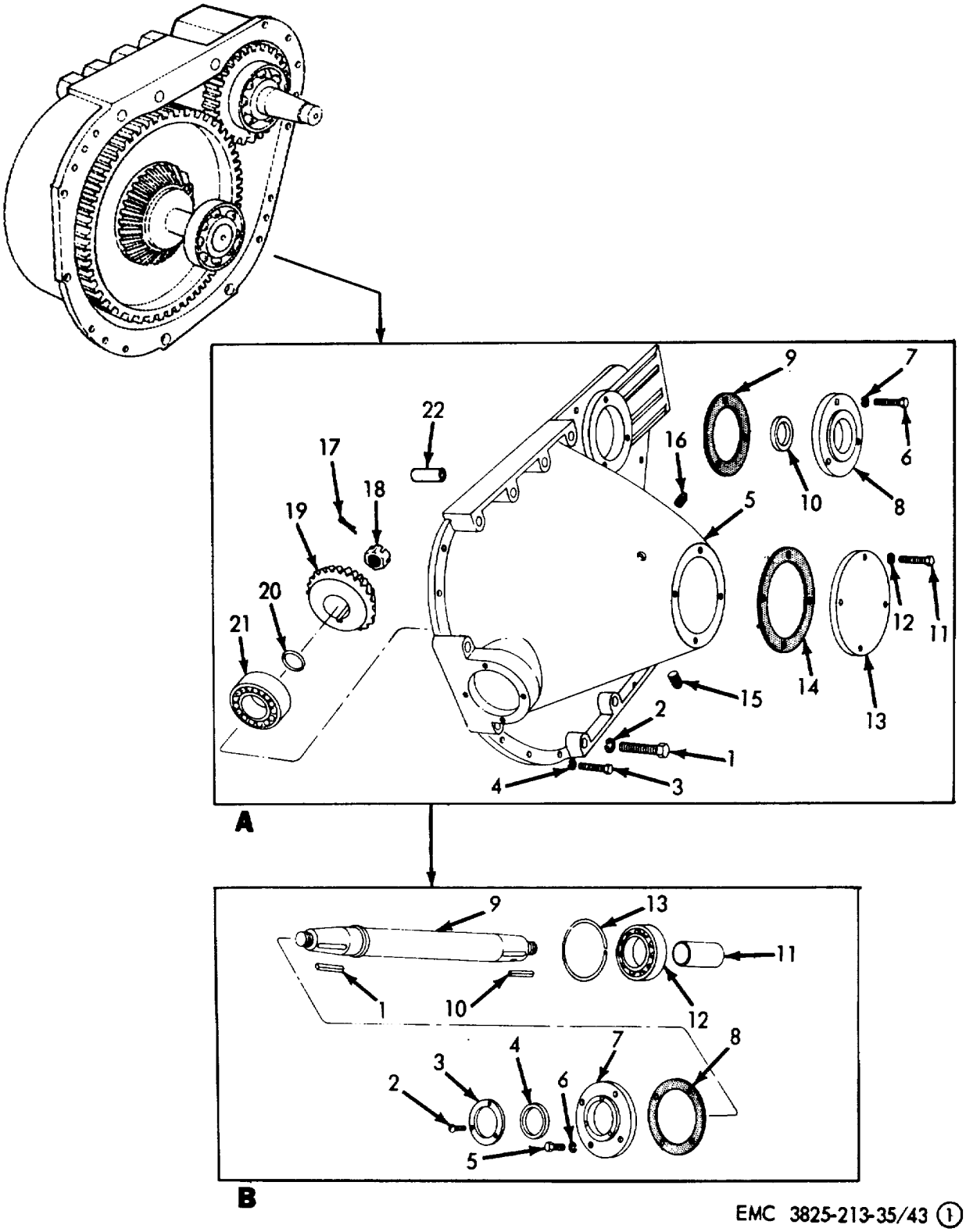


Figure 43. Fan and auger gearcase assembly, disassembly and reassembly, exploded view.

1 Screw, cap, ½-13 x 3 in. (2 rqr)
2 Washer, lock, ½ in. (2 rqr)
3 Screw, cap, 3/8-16 x 1 in. (10 rqr)
4 Washer, lock, 3/8 in. (10 rqr)
5 Cover, gearcase
6 Screw, cap, 3/8-16 x 1 in. (4 rqr)
7 Washer, lock, 3/8 in. (4 rqr)
8 Cover, pinion shaft
9 Gasket
10 Seal
11 Screw, cap, 3/8-16 x 1 in. (4 rqr)
12 Washer, lock, 3/8 in. (4 rqr)
13 Cover, fan shaft
14 Gasket
15 Plug, pipe, ½ in.
16 Plug, pipe, ½ in.
17 Pin, cotter
18 Nut, special
19 Gear, bevel
20 Spacer
21 Bearing
22 Pin, straight headless, 3/8 x 1 in. (2 rqr)

A. Cover assembly.

1 Key
2 Screw, machine, ¼-20 x ½ in. (3 rqr)
3 Retainer
4 Felt seal
5 Screw, cap, 3/8-16 x 1 in. (4 rqr)
6 Washer, lock, 3/8 in. (4 rqr)
7 Cover, bevel gear shaft
8 Gasket
9 Shaft, bevel gear
10 Key
11 Sleeve bearing
12 Bearing
13 Ring, retaining

B. Bevel gear shaft assembly.

Figure 43. Continued.

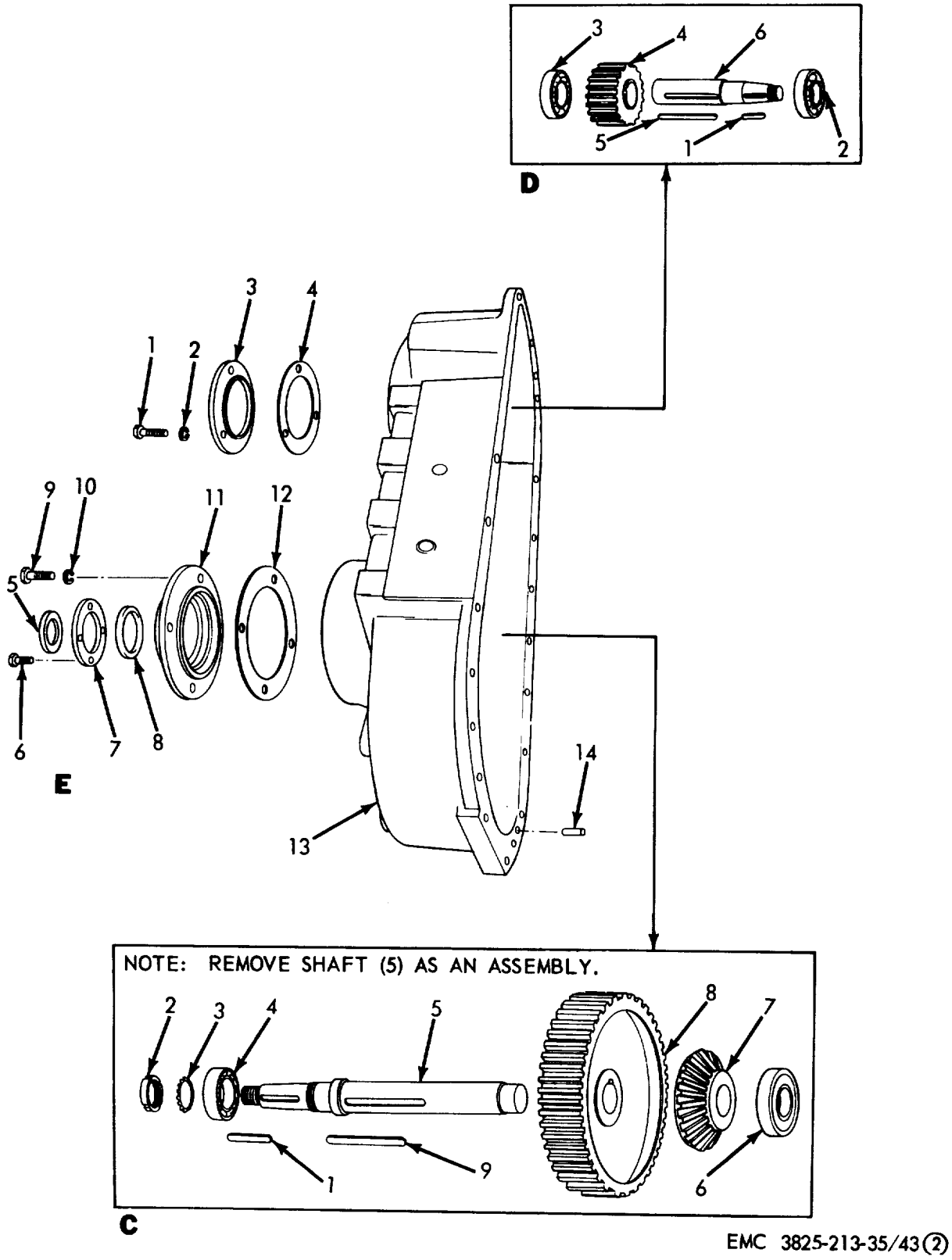


Figure 43. Continued.

1 Key
2 Lock
8 Bearing
4 Shaft, fan
5 Nut, special
6 Bearing
7 Gear, bevel
8 Gear, spur
9 Key

C. Fan shaft assembly.

1 Key
2 Bearing
3 Bearing
4 Gear, pinion
5 Key
6 Shaft, pinion

D. Pinion shaft.

1 Screw, machine, 3/8-16 x 1 in. (3 rqr)
2 Washer, lock, 3/8 in. (3 rqr)
3 Cover, pinion shaft
4 Gasket
5 Seal
6 Screw, machine, ¼-16 x ½ in. (4 rqr)
7 Retainer
8 Felt seal
9 Screw, cap, 3/8-16 x 1 in. (4 rqr)
10 Washer, lock, 3/8 in. (4 rqr)
11 Cover, fan shaft
12 Gasket
13 Gearcase
14 Pin, straight headless, 3/8 x 1 in. (2 rqr)

E. Gearcase.

Figure 43. Continued.

Section VII. FAN BLOWER HOUSING ASSEMBLY

168. General

The fan blower housing assembly houses the fan blower. The rotation of the housing assembly is hydraulically operated. It can cast snow on either side of the blower at various angles and at distances up to 175 feet or straight up through the chute trough.

169. Fan Blower Housing Removal and Disassembly

a. Removal.

(1) Remove the snow chute turntable assembly (par. 153).

(2) Remove fan blower housing control arm (TM 5-3825-213-20).

(3) Remove the fan and auger gearbox assembly (par. 165).

(4) Lift the fan blower housing out the top of the snowplow frame.

b. Disassembly. Disassemble the fan blower housing assembly in numerical sequence as illustrated on figure 44.

170. Fan Blower Housing Assembly Cleaning, Inspection, and Repair

a. Cleaning. Clean all parts with an approved cleaning solvent and dry thoroughly.

b. Inspection and Repair. Inspect all parts for breaks, bends, or damaged threads. Repair by welding or replace defective parts as necessary.

171. Fan Blower Housing Assembly Reassembly and Installation

a. Reassembly. Reassemble the fan blower housing assembly in reverse of numerical sequence illustrated on figure 44.

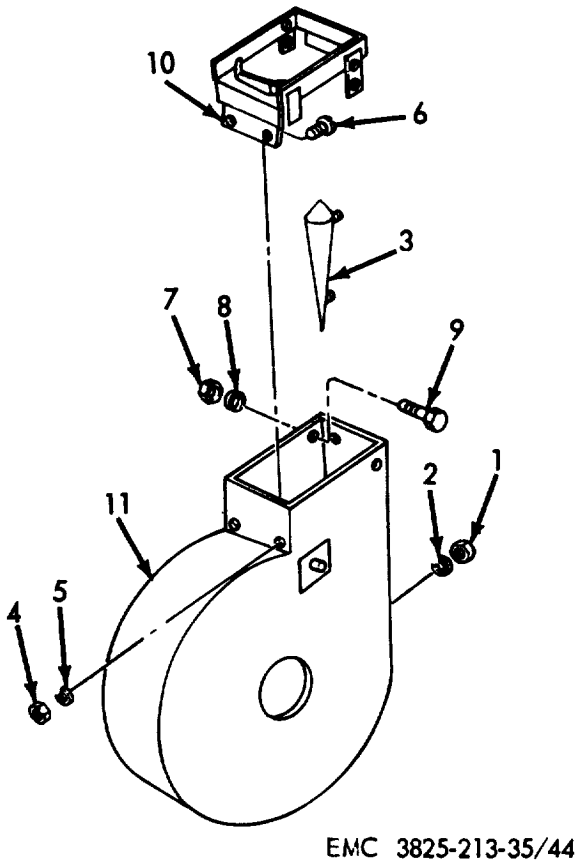
b. Installation.

(1) Set the fan blower housing into the snowplow frame.

(2) Install the fan and auger gearbox (par. 167).

(3) Install the fan blower housing control arm (TM 5-3825-213-20).

(4) Install the snow chute turntable assembly (par. 155).



1 Nut, 3/8-24 (4 rqr)
2 Washer, lock, 3/8 in. (4 rqr)
3 Baffle (2 rqr)
4 Nut, 3/8-24 (2 rqr)
6 Washer, lock, 3/8 in. (2 rqr)
6 Screw, special
7 Nut, ¼-20 (2 rqr)
8 Washer, lock, ¼ in. (2 rqr)
9 Screw, machine, ¼-20 x ¾ in. (2 rqr)
10 Adapter
11 Fan housing

Figure 44. Continued.

Figure 44. Fan blower housing assembly, disassembly and reassembly, exploded view.

Section VIII. AUGER DRIVE CHAIN AND SPROCKET ASSEMBLIES

172. General

The auger drive chain and sprocket assemblies are driven by the fan and auger gearbox. The chain must be properly installed and timed to augers to secure smooth running of the augers. The chain must be adjusted to remove all slack.

173. Auger Drive Chain and Sprocket Assemblies Removal

a. Remove the plow assembly (TM 5-3825-213-10).

b. Drain the lubricant from the chain case (TM 5-3825-213(10).

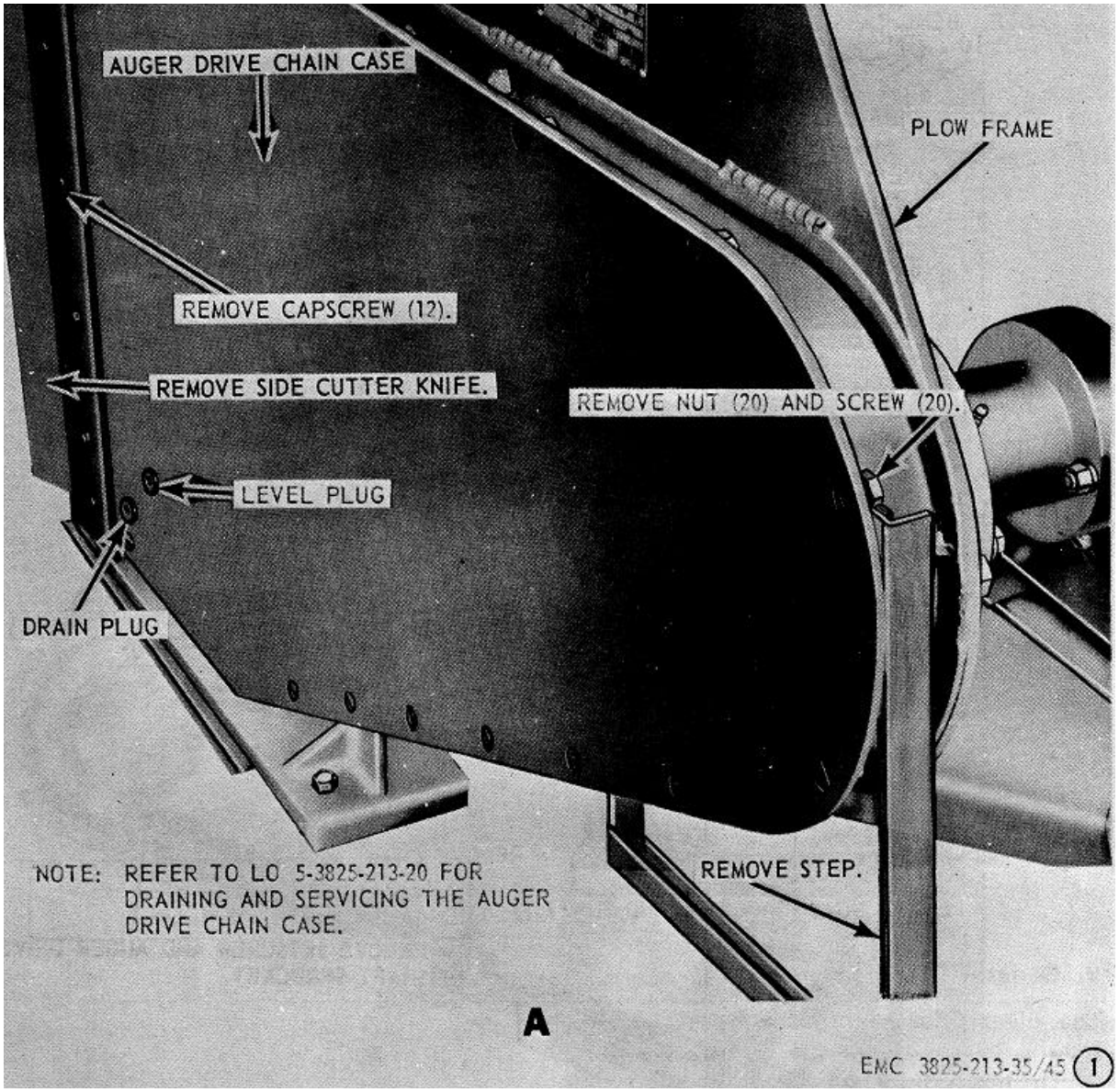
c. Remove the case cover and auger driven chain as instructed on figure 45.

d. Remove the sprocket assemblies as instructed on figure 45.

174. Auger Drive Chain and Sprocket Assemblies Cleaning, Inspection, and Repair

a. Cleaning. Clean all parts in an approved cleaning solvent and dry thoroughly. Remove hardened grease deposits and gasket residue.

b. Inspection and Repair. Inspect the sprocket and chain for wear, breaks, chips, or other damage. Repair or replace defective parts as necessary.



A. Case cover removal points.

Figure 45. Auger drive chain case cover, chain and sprocket assemblies, removal and installation.

175. Auger Drive Chain and Sprocket Assemblies Installation, Timing, and Adjustment

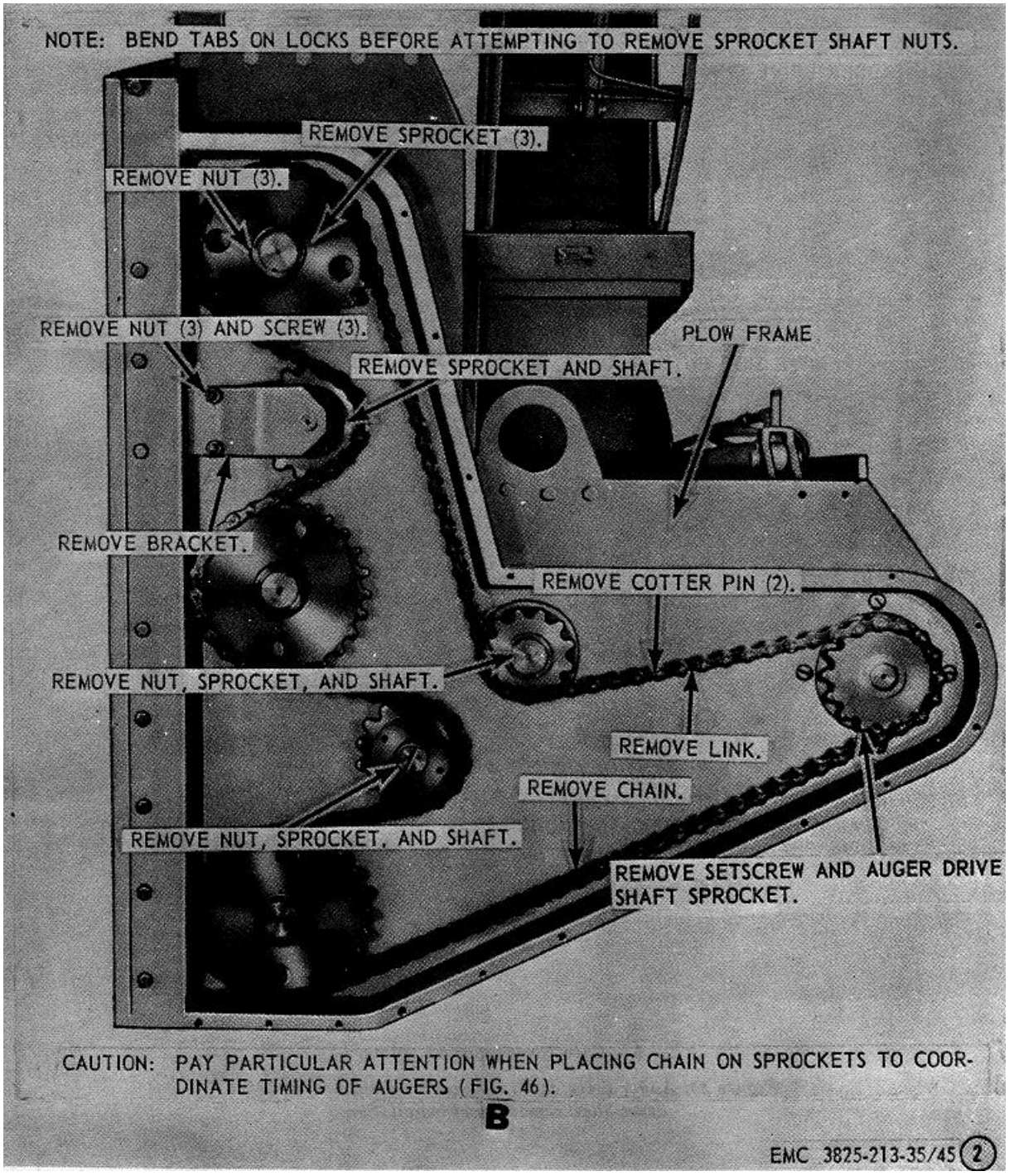
a. Installation.

(1) Install the sprocket assemblies as instructed on figure 45.

(2) Install the drive chain as instructed on figure 45.

b. Timing and Adjustment.

(1) Position the chain on the sprockets so that each auger will set in proper relation to the auger directly below it as instructed on figure 46.



B. Chain and sprocket removal points.

Figure 45. Continued.

NOTE

It is sometimes necessary to move the chain a tooth at a time until proper setting is found.

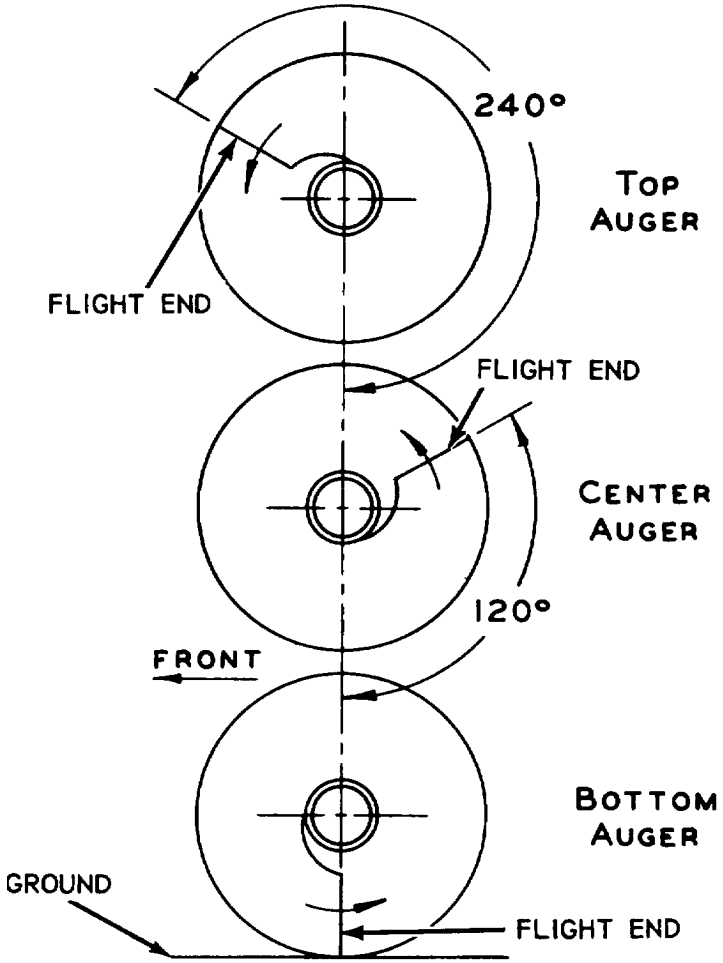
(2) Adjust the drive chain as instructed on figure 47.

NOTE

Be sure all slack is removed from drive chain for smooth operation of augers.

(3) Install the case cover as instructed on figure 45.

(4) Install snowplow on carrier (TM 5-3825-213-10).



NOTE

THE FLIGHT ENDS OF EACH AUGER FORMS A DIAGONAL LINE, ONE TO THE RIGHT AND ONE TO THE LEFT. TO TIME THE AUGERS, ALIGN THE BOTTOM AUGER FLIGHT ENDS PERPENDICULAR TO GROUND. ALIGN THE CENTER AUGER 120° AHEAD OF THE BOTTOM AUGER. ALINE THE TOP AUGER 120° AHEAD OF CENTER AUGER OR 240° AHEAD OF BOTTOM AUGER.

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Figure 46. Auger settings for proper timing.

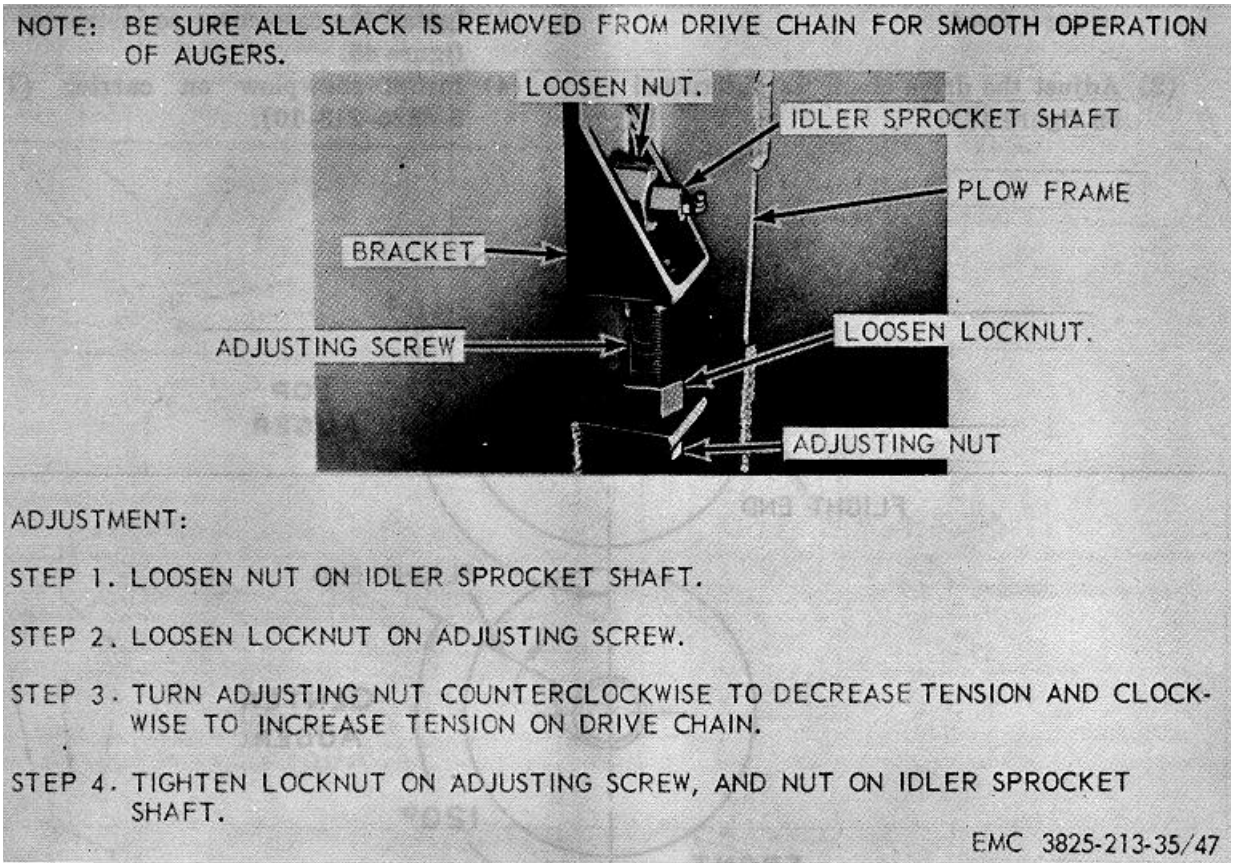

Figure 47. Drive chain adjustment.

Section IX. SNOWPLOW FRAME ASSEMBLY

176. General

The snowplow frame assembly houses all moving parts of the rotary. It is rigidly constructed to withstand the pushing of a large four wheel drive truck. The scraper blade is the curved section directly back of the lower auger. Trunnion bearings support the augers in the frame assembly.

177. Snowplow Frame Assembly Removal and Disassembly

a. Removal. Remove the snowplow frame assembly (TM 5-3825-213-10).

b. Disassembly.

(1) Remove the chute trough assembly (TM 5-3825-213-20).

(2) Remove the fan housing rotating cylinder (TM 5-3825-213-20).

(3) Remove the cutting edge and side cutters (TM 5-3825-213-20).

(4) Remove the shoes and skates (TM 5-3825-213-20).

(5) Remove the auger drive shaft (par. 161).

(6) Remove the fan and auger gearcase assembly (par. 165), and fan housing (par. 169).

(7) Remove the -augers (TM 5-3825-213-20).

(8) Remove the auger drive chain and sprocket assemblies (par. 173).

(9) Disassemble the snowplow frame assembly in numerical sequence as illustrated on figure 48.

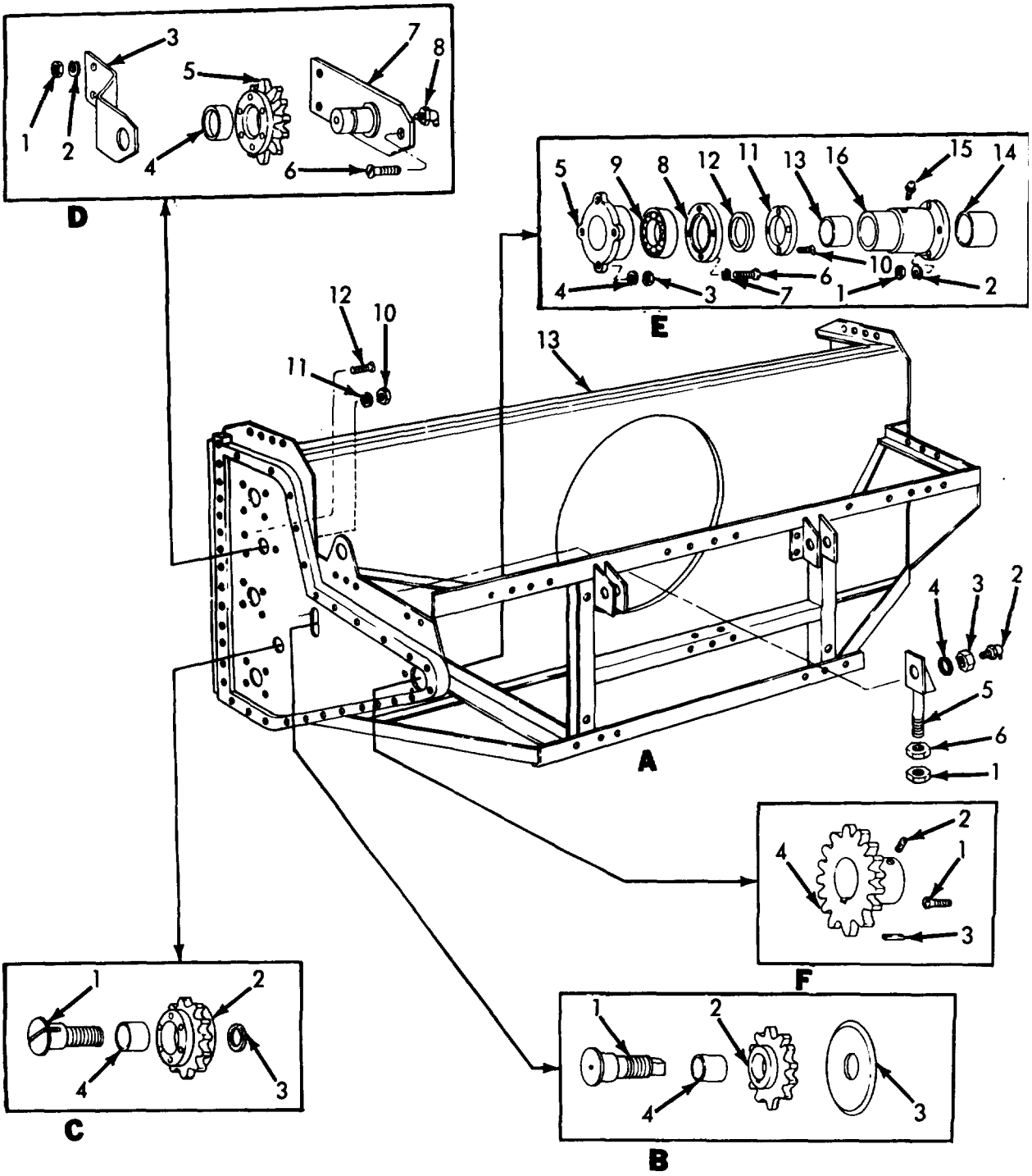

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Figure 48. Idler and auger sprockets, bearings, and snowplow frame assembly, disassembly and reassembly, exploded view.

1 Nut, 1 in. -14
2 Fitting, lubrication
3 Nut, 1 in. -14
4 Washer, lock, 1 in.
5 Adjusting bracket
6 Nut, 1 in. -14-½ in.
7 Fitting, lubrication
8 Nut, 1 ¼-12
9 Washer, lock, 1 ¼ in.
10 Nut, ½-13 (3 rqr)
11 Washer, lock, ½ in. (8 rqr)
12 Screw, machine, countersunk flat head, ½-13 x 1 (2 rqr)
13 Snowplow frame

A. Snowplow frame.

1 Adjuster stud
2 Sprocket
3 Seal plate
4 Sleeve bushing

B. Adjusting sprocket.

1 Lower idler sprocket stud
2 Lower idler sprocket
3 Spacer
4 Sleeve bushing

C. Lower idler sprocket.

1 Nut, ½-13 (2 rqr)
2 Washer, lock, ½ in. (2 rqr)
3 Bracket
4 Spacer
5 Upper idler sprocket
6 Screw, machine, countersunk flat head, ½-13 x 1 ¼ in.
7 Bracket w/stud
8 Fitting

P. Upper idler sprocket.

1 Nut, 3/8-24 (3 rqr)
2 Washer, lock, 3/8 in. (3 rqr)
3 Nut, ½-13 (4 rqr)
4 Washer, lock, ½ in. (4 rqr)
5 Housing
6 Screw, 3/8-16 x 1 in. (4 rqr)
7 Washer, lock, 3/8 in. (4 rqr)
8 Cover
9 Bearing
10 Screw, ¼-20 x ½ in. (4 rqr)
11 Retainer
12 Washer, special
13 Bearing
14 Bearing
15 Lubrication fitting
16 Sleeve

E. Auger drive chain sleeve.

1 Screw, machine, countersunk flat head, ½-13 x 1 ½ in. (4 rqr)
2 Setscrew, special
3 Key
4 Drive sprocket

F. Drive sprocket.

Figure 48. Continued.

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178. Snowplow Frame Assembly Cleaning, Inspection and Repair

a. Cleaning. Clean all parts in an approved cleaning solvent and dry thoroughly.

b. Inspection and Repair. Inspect all parts for wear, breaks, and damaged bearings and shafts. Repair or replace defective parts and repair all broken welds.

179. Snowplow Frame Assembly Reassembly and Installation

a. Reassembly.

(1) Reassemble the snowplow frame assembly in reverse of numerical sequence illustrated on figure 48.

(2) Install the augers (TM 5-3825-213-20).

(3) Install the sprocket assemblies and drive chain (par. 175).

(4) Install the fan and auger gearcase assembly (par. 167), and fan housing (par. 171).

(5) Install the auger drive shaft (par. 163).

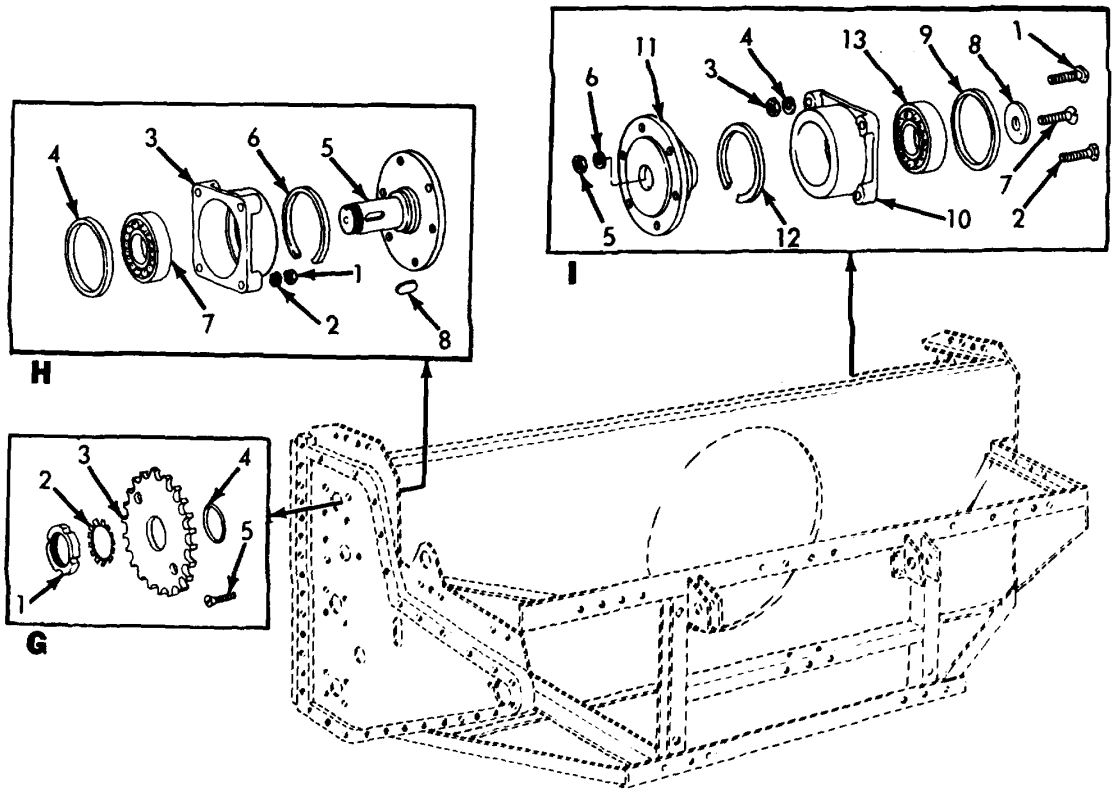
(6) Install the shoes and skates (TM 5-3825-213-20).

(7) Install the cutting edge and side cutters (TM 5-3825-213-20).

(8) Install the fan housing rotating cylinder (TM 5-3825-213-20).

(9) Install the chute trough assembly (TM 5-3825-213-20).

b. Installation. Install the snowplow frame assembly (TM 5-3825-213-10).



EMC 3825-213-35/48 ②

1 Nut, special (3 rqr)
2 Washer, special (3 rqr)
3 Auger drive sprocket (3 rqr)
4 Washer, special (3 rqr)
5 Screw, machine, countersunk flat head, ½-13 x 1 ¾ in. (12 rqr)

G. Auger drive sprocket.

1 Nut, ½-20 (12 rqr)
2 Washer, lock (12 rqr)
3 Housing (3 rqr)
4 Spacer (3 rqr)
5 Flange drive (3 rqr)
6 Seal ring (3 rqr)
7 Bearing (3 rqr)
8 Key

H. Auger drive end bearing.

1 Bolt, machine, ½-20 x 1 ¾ in. (6 rqr)
2 Bolt, machine, ½-20 x 2 ¼ in. (6 rqr)
3 Nut, ½-20 (12 rqr)
4 Washer, lock, ½ in. (12 rqr)
5 Nut, ½-13 (3 rqr)
6 Washer, lock, ½ in. (3 rqr)
7 Screw, machine, flat head, ½-13 x 3 ½ in. (3 rqr)
8 Washer, special (3 rqr)
9 Spacer (3 rqr)
10 Housing (3 rqr)
11 Flange (3 rqr)
12 Seal ring (3 rqr)
13 Bearing (B rqr)

I. Auger idler end bearing.

Figure 48. Continued.

CHAPTER 8

PLOW AND CARRIER ENGINE REPAIR INSTRUCTIONS

Section I. GENERATOR ASSEMBLY (CARRIER ENGINE)

180. General

The generator assembly is rated for 100 amperes output at 28 volts. Full output can be obtained at 2,000 generator rpm. The maximum safe operating speed, determined by bearing limits, is 8,000 rpm. When battery voltage drops below normal, the main relay coil in the regulator, which is connected in parallel across the batteries, causes the main relay contacts to close. The rotating field coil circuit is thereby energized, causing current to flow through the slipring brushes and sliprings to the field coils. The rotating field induces a voltage in the stator coils of the generator causing current to flow through the output leads and through the receptacle to the rectifier.

181. Generator Assembly Removal and Disassembly

a. Removal. Remove the generator assembly (TM 5-3825-213-20).

b. Disassembly. Disassemble the generator assembly in order of numerical sequence as illustrated on figure 49.

182. Generator Assembly Cleaning, Inspection, and Repair

a. Cleaning.

(1) Clean stator, brush holder assembly, rotor, and rotor sliprings with a cloth saturated with an approved cleaning solvent. Wipe dry or dry with compressed air.

(2) Clean all other parts with an approved cleaning solvent and dry thoroughly.

b. Inspection and Repair.

(1) Inspect fan fins for distortion or other damage.

(2) Inspect bearings for defective seals. Replace defective seals.

(3) Inspect brushes for wear. If brushes are at or below 5/16 inch minimum length, replace brushes.

(4) Inspect brush levers and lever springs for damage. Replace defective levers or springs.

(5) Inspect sliprings for excessive wear or distortion. The minimum allowable diameter of sliprings is 1.812 inches and maximum allowable eccentricity diameter is 0.001 inch. Replace defective sliprings.

(6) Replace or repair all other worn, damaged, or defective parts.

183. Generator Assembly Reassembly and Installation

a. Reassembly. Reassemble the generator assembly in the reverse of numerical sequence illustrated on figure 49.

b. Installation. Install the generator assembly (TM 5-3825-213-20).

184. Testing

a. Test Set-up. Place the alternating current generator on a test stand which incorporates a seven horsepower driving motor and connect as shown on figure 50. The 0 to 20 ampere ammeter measures field current of the generator, the 0 to 150 ampere ammeter measures load current, and the 0 to 50 voltmeter measures engine generator voltage regulator output voltage. The 1 ampere load relay switch must be closed during all tests. The closing of the switch closes the load relay in the engine generator voltage regulator and connects the

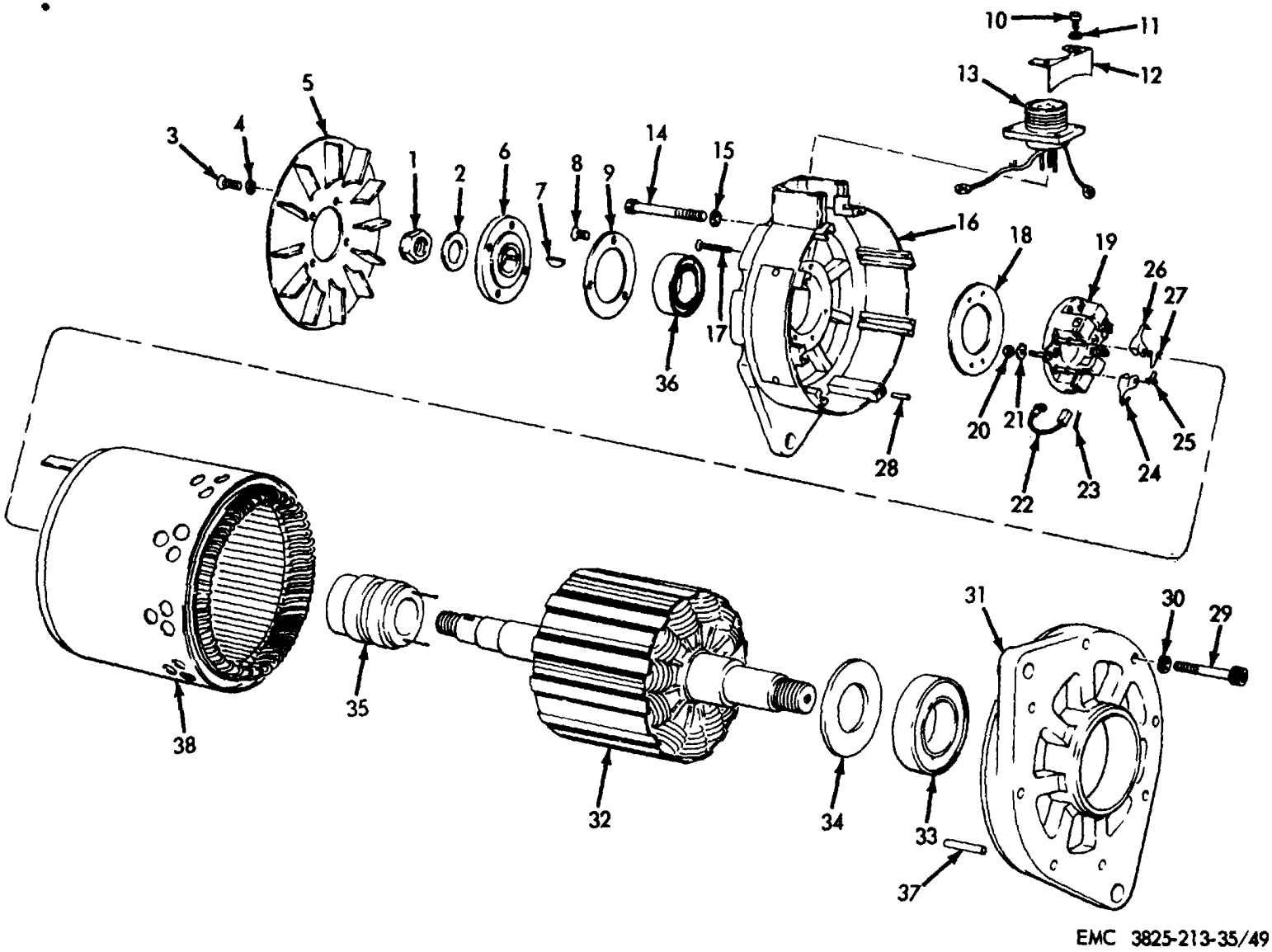


Figure 49. Generator assembly, disassembly and reassembly, exploded view.

1 Nut, ½-20
2 Washer, flat, 1/2 in.
3 Screw, machine, No. 8-32 x 1/2 in. (4 rqr)
4 Washer, lock, No. 8 (4 rqr)
5 Fan
6 Hub
7 Key, woodruff, No. 304
8 Screw, machine, No. 8-32 x 3/8 in. (3 rqr)
9 Retainer
10 Screw, machine, No. 8-32 x 1 in. (8 rqr)
11 Washer, lock, No. 8 (8 rqr)
12 Cover
13 Connector
14 Screw, ctsk hd, No. 10-32 x 2 1/2. in. (7 rqr)
15 Washer, lock, No. 10 (7 rqr)
16 Housing
17 Screw, machine, No. 8-32 x 7/8 in. (4 rqr)
18 Retainer
19 Holder assembly
20 Nut, No. 8-32 (2 rqr)
21 Washer, lock, No. 8 (2 rqr)
22 Brush (4 rqr)
23 Pin
24 Lever, brush, rh (2 rqr)
25 Spring (2 rqr)
26 Lever, brush, lh (2 rqr)
27 Spring (2 rqr)
28 Dowel pin, straight, 1/8 x 5/16 ins
29 Screw, ctsk hd, No. 10-32 x 1 3/4 in. (7 rqr)
30 Washer, lock, No. 10 (7 rqr)
31 Housing
32 Rotor
33 Bearing
34 Spacer
35 Slipring
36 Bearing
37 Dowel pin, straight, 1/8 x 5/16 in.
38 Shroud and stator assembly

Figure 49 - Continued

alternating current generator to the 24-volt battery. The load on the generator is varied by means of the load bank, the load bank being connected into the circuit by closing the 150 ampere load switch.

Warning

When a malfunction of the selenium rectifier occurs, thoroughly ventilate the area to prevent inhalation of poisonous fumes. Do not handle the damaged selenium rectifier. Selenium oxide may be absorbed through the skin, especially when the selenium rectifier is hot. Failure to observe this warning can result in severe illness or death.

b. Heat Run Tests. Perform the heat run test at room temperature of 80° F. Operate the generator for one hour at a minimum speed of 2,000 rpm under full load of 100 amperes, then reduce generator speed to 1,650 rpm. The generator should produce direct current voltage of 28 volts with an output of 50 amperes and a field current of 7.9 to 12 amperes.

c. Low Speed Test. Immediately following the heat run test as described in b above, operate the generator at 1,000 rpm. Minimum output must be 50 amperes at 28 volts of direct current.

d. Insulting Test. Using a 500 volt, 60 cycle, alternating current test lamp, apply 500 volt alternating current across the fan of the generator and each receptacle pin in turn for not less than one minute. No circuit should be indicated; the lamp should not light,

Warning

Care should be exercised in the use of test lamp circuits of 110 volts or higher. Injury or possible death by electrocution can result from contact with the test lamp circuit and/or the circuit under test.

e. Overspeed Test. Disconnect the generator from the electrical circuit and operate it at 3,000 rpm for 5 minutes. Lien for any unusual noises or heating that might indicate mechanical failure.

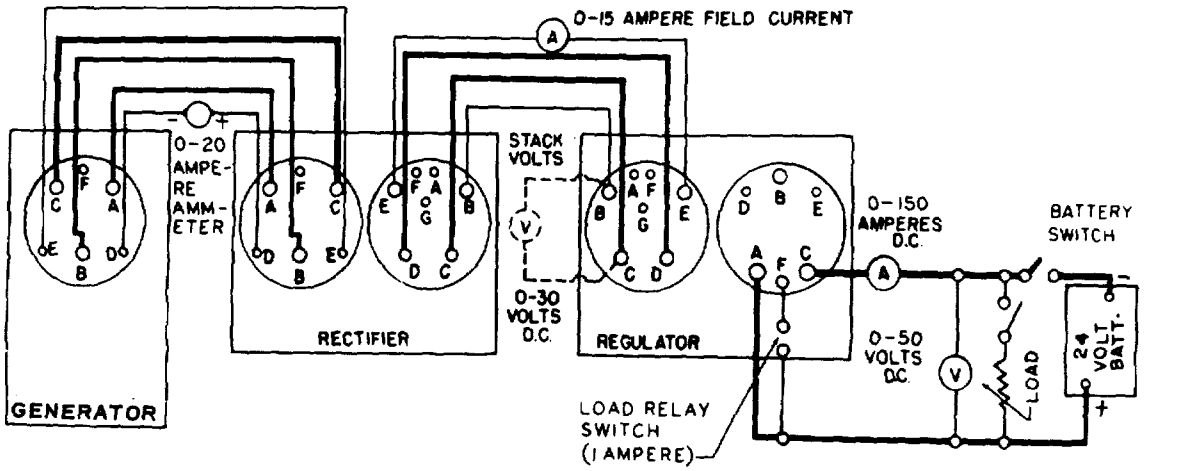


Figure 50. Generator, metallic rectifier, and engine generator voltage regulator test block wiring diagram.

Section II. GENERATOR VOLTAGE REGULATOR ASSEMBLY (CARRIER ENGINE)

185. General

The generator voltage regulator consists of a carbon pile voltage regulator and a load relay. The voltage regulator is an integral part of the cover for the watertight box which contains the load relay and a voltage adjust

rheostat. Connection is made from the voltage regulator to the box by a contact panel assembly.

186. Generator Voltage Regulator Assembly Removal and Disassembly

a. Removal. Remove the generator voltage regulator assembly (TM 5-3825-213-20).

b. Disassembly. Disassemble the generator voltage regulator in numerical sequence as illustrated on figures 1, 2, and 8.

187. Generator Voltage Regulator Assembly Cleaning, Inspection, and Repair

a. Cleaning.
- (1) Clean the regulator box and cover assembly with compressed air.
- (2) Clean all other parts in an approved manner.

b. Inspection and Repair.
- (1) Inspect the main relay contacts for burned or pitted condition. Replace defective relay.
- (2) Inspect the cover, box, and receptacles for cracks or breaks. Replace defective parts.
- (3) Inspect for loose connections and damaged hardware. Replace defective parts.
- (4) Inspect all other parts for defective condition. Replace all worn, damaged, or defective pats.

188. Generator Voltage Regulator Assembly Reassembly, Testing, Adjusting, and Installation

a. Reassembly. Reassemble the generator voltage regulator assembly in the reverse of numerical sequence illustrated on figures 1, 2, and 3.

b. Testing and Adjusting.
- (1) *Load relay assembly closing voltage adjustment.* With the cover assembly off, connect a 24-volt battery, variable resistor (0-100 ohms, 5 watts), and 0 to 50 voltmeter across C and F pins of the 6 cable electrical receptacle (17, fig. 2). Slowly increase the voltage by adjusting the variable resistors, until the relay closes. The correct closing voltage is 17 to 18 volts. Adjust the voltage, if necessary, by turning the adjusting nut (31, fig. 3) to increase or decrease voltage.
- (2) *Ground test.* Connect a 28-volt, direct-current, test lamp between the regulator box and each receptacle pin in turn. In no case should a closed circuit be indicated (lamp should not light).
- (3) *Operational test and adjustment.*
  - *(a) Test set-up.* Connect the voltage regulator into the test circuit described in paragraph 183 for the alternator current generator.

Caution

Never allow the voltage to exceed 32 volts during these tests, or the rectifier will be damaged. Unless otherwise stated, a battery must be connected in the load circuit at all times during tests.

(b) Setting adjustment.

Note

Setting is defined as a form of lapping the carbons together by rapid vibration. This is accomplished by placing the voltage regulator in a circuit which allows the carbon disk to vibrate under controlled conditions. The vibration can be heard through an earphone connected as shown on figure 51.

1. Remove the cover assembly (par. 45), and connect for setting the carbon pile as shown on figure 51. Adjust the variable resistor so that 0 to 20-volt voltmeter reads 12 to 14 volts. A crackle in the earphone or an erratic vibration indicates a loose adjustment of carbon pile. Remove the disk and tube support cover, (par. 45), and tighten the carbon pile by turning the contact screw assembly (22, fig. 1) clockwise just enough to eliminate the crackle and leave a distinct

high frequency hum. If the unit does not hum at the start of the operation, turn the contact screw counterclockwise until it begins to hum. After the regulator is adjusted for setting, allow it to operate 30 minutes and listen occasionally to make sure the hum does not stop. Remove the regulator cover ably from the test circuit.

2. Install the regulator cover assembly on the regulator box assembly (34, fig. 2) and operate the generator at 1,000 rpm. Remove the pipe plug and adjust the voltage (TM 5-3825-213-20).
3. Raise the alternating current generator speed to 2,000 rpm, close the load switch, and adjust the load bank to give a load of 60 amperes. Set the regulator voltage to 28 ±0.1 volts by adjusting the 5-ohm

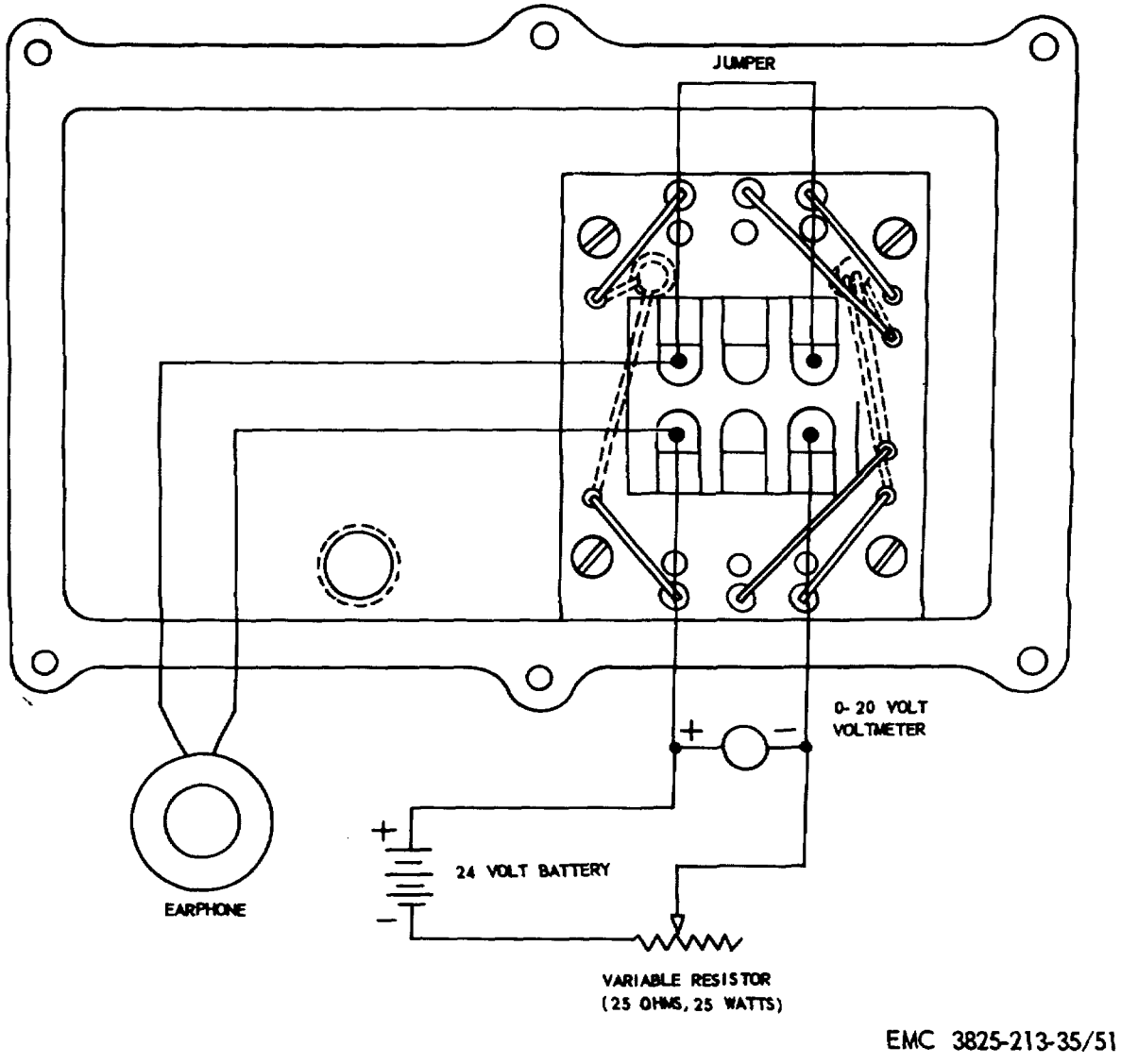


Figure 51. Setting carbon pile wiring diagram.

adjustable resistor. Operate under these conditions for 30 minutes.

(4) *Preliminary voltage adjustment.*

(a) With the generator operating at 1,000 rpm, turn the adjusting knob of the 5-ohm adjustable resistor assembly clockwise. Turn the contact screw assembly (22, fig. 1) clockwise until a stable voltage is reached. As the screw is turned in, the voltage will rise, then drop, and then start to rise again. Proper point of adjustment is just before the voltage starts to rise the second time. Vary the load from the battery load to full load (100 amperes); voltage should remain about the same.

(b) Remove the end plate (27, fig. 1) and loosen screw (32). Adjust the voltage regulator to 26.5 volts by turning the coil core (35). If the voltage is high, turn the coil core clockwise; if the voltage is low, turn the coil core counterclockwise. Turn the adjusting knob of the 5-ohm adjustable resistor assembly from its completely counterclockwise position (minimum resistance) to its completely clockwise position (maximum resistance). The voltage range should be from 25 to 30 volts. Tighten the screw to secure the coil.

Note

When the regulator is in proper adjustment, point marks on the coil core (35) and coil pot end plate (31) should not be more than one-eighth of a turn apart.

(c) Set the generator voltage to 28 volts by means of the 5-ohm adjustable resistor assembly. Apply a load of 100 amperes instantaneously and see that the voltage has remained constant.

(d) Increase the generator speed to 2,000 rpm and apply a full load of 100 amperes. The generator regulator voltage should remain at 28 ±0.5 volts. If the voltage drops when the full load is applied, turn the contact screw assembly (22) counterclockwise, apply a load of 100 amperes instantaneously, and check the voltage. If the voltage rises when a full load is applied, turn the contact screw assembly clockwise, apply a load 100 amperes instantaneously, and check the voltage. Repeat the procedure until voltage remains at 28 ± 0.5 volts under both battery ind full load conditions.

(e) Increase the alternating current generator speed to 6,000 rpm and apply a load of 100 amperes instantaneously. After applying several loads of 100 amperes instantaneously, the voltage should not rise or drop more than 0.5 volts. If the voltage drops more than 0.5 volts, turn the contact screw assembly (22) counterclockwise and apply a load of 100 amperes instantaneously. Check the voltage. If the voltage varies more than 0.5 volts, turn the contact screw assembly clockwise and apply a load of 100 amperes instantaneously. Repeat the procedure until the voltage remains at 28 ± 0.5 volts under both battery and full load conditions.

(f) Reduce the alternating current generator speed to 3,200 rpm and apply a load of 100 amperes instantaneously several times. With battery load only, voltage should now read 28 ± 0.2 volts.

(5) *Final voltage adjustment.*

(a) Operate the generator at a speed of 2,600 rpm under a 100 ampere load. Reduce the alternator speed until regulator voltage is 26.4 to 26.6 volts, and then measure the alternator field current and carbon pile voltage. To measure the carbon pile voltage, connect a voltmeter across B and C pins of the 5 cable receptacle assembly. Divide the carbon pile

voltage by the field current. The resultant value, which is the minimum resistance of the carbon pile, should not exceed 0.50 ohms.

(b) Increase the generator speed to 6,000 rpm and check the voltage drop when a load of 100 amperes is applied. If the drop is less than 0.5 volt, remove the load, reduce the alternator speed to 2,000 rpm, and turn the contact screw assembly (22) counterclockwise. Check at 6,000 rpm and 100 ampere load for a 0.5 volt drop. Repeat until the correct voltage drop is obtained.

(c) Reduce the generator speed to 4,000 rpm and shock load with 100 amperes to settle the carbon pile. Adjust the regulator to 28 volts by means of the 5-ohm adjustable resistor assembly.

(d) Repeat *(b)* and *(c)* above at least three times to assure repetition of performance.

(e) Reduce the alternating current generator speed to 1,000 rpm and remove all load, including battery load, by opening the load switch and load relay switch. Check the voltage range by first turning the adjusting knob of the 5-ohm adjustable resistor assembly completely counterclockwise, and then turning it completely clockwise. Voltage range should be 25.5 to 30 volts. If the range is incorrect, adjust by loosening the screw (32) and turning the coil core (35). If the voltage is too high, turn the coil core clockwise. If the voltage is too low, turn the coil core counterclockwise. Set the voltage at 28 volts by means of the 5-ohm adjustable resistor assembly. Tighten the screw.

(f) Install the tube support cover, pipe plug, and end plate (figs. 1 and 2).

c. Installation. Install the generator voltage regulator (TM 5-3825-213-20).

Section III. PLOW AND CARRIER ENGINE STARTER ASSEMBLIES

189. General

The starter motor converts the electrical energy from the battery into mechanical power and transmits this power to the engine for the purpose of starting. Field windings, consisting of coils of copper wires, produce a magnetic field which rotates the armature. Copper conductors are installed lengthwise in slots around the armature core, and are connected to a commutator consisting of a number of copper segments insulated from each other and from the armature shaft. The armature is mounted in bearings at each end of the motor. The brushes in the commutator make electrical contact with the revolving commutator to complete the electrical circuit.

190. Plow and Carrier Engine Starter Assemblies Removal and Disassembly

a. Removal. Remove the plow and carrier engine starters (TM 5-3825-213-20).

b. Disassembly. Disassemble the plow and carrier engine starter in numerical sequence as illustrated on figure 52.

191. Plow and Carrier Engine Starter Assemblies Cleaning, Inspection, and Repair

a. Cleaning.

(1) Clean the armature with compressed air to remove all dust and dirt. Wipe the armature with a clean cloth dampened with an approved cleaning solvent. Clean the commutator lightly with No. 00 sandpaper.

(2) Clean all other parts with an approved cleaning solvent and dry thoroughly with compressed air.

b. Inspection and Repair.

(1) Inspect armature windings to be sure all are pressed into the core slots and are stacked

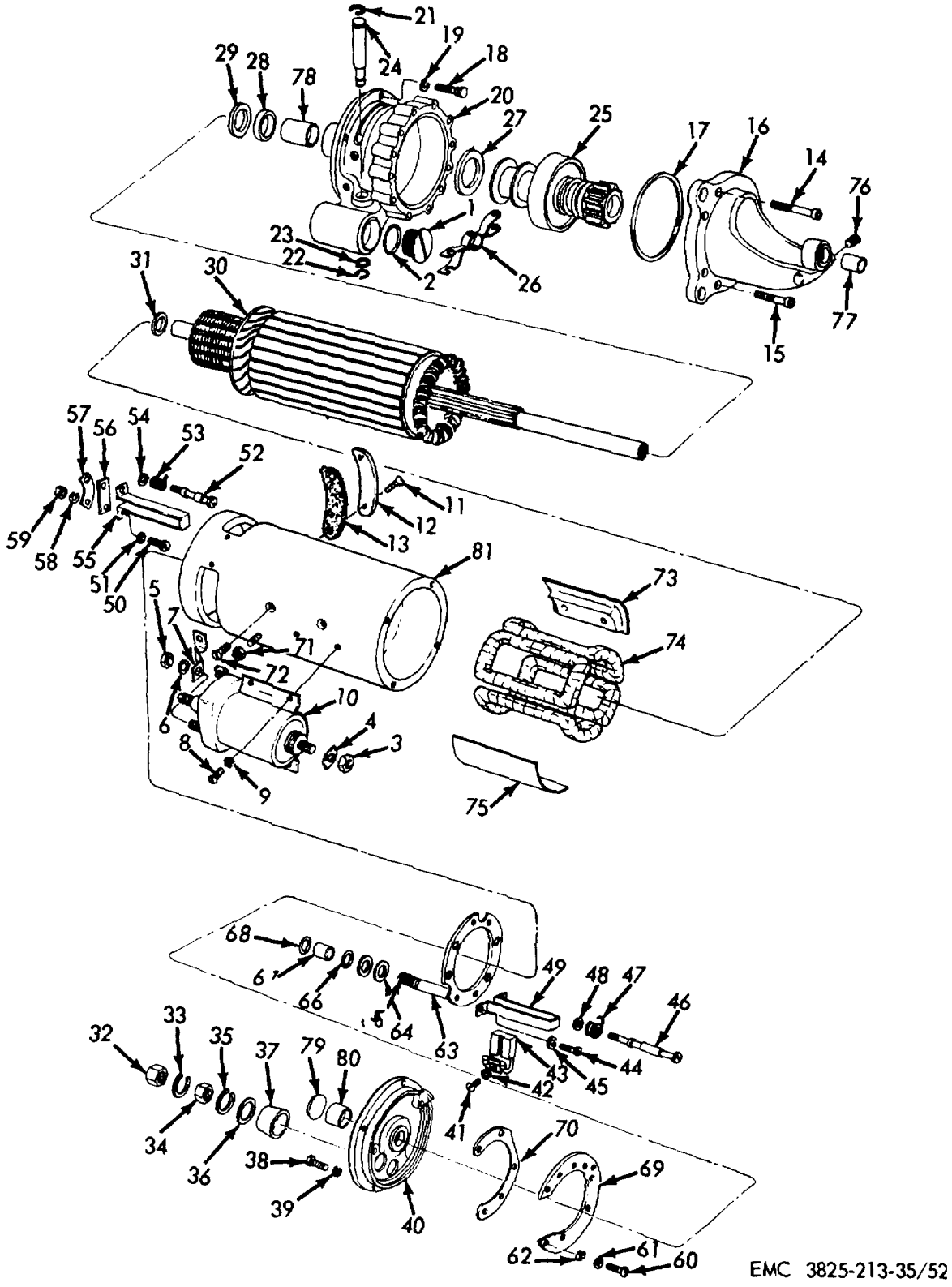


Figure 52. Plow and carrier engine starter assemblies, disassembly and reassembly, exploded view.

1 Plug, special
2 Gasket
3 Nut, No. 10-32
4 Retainer
5 Nut, 12-24
6 Washer, lock, No. 12
7 Ground plate
8 Screw, machine, 1/4-20 x 1/2 in. (4 rqr)
9 Washer, lock, 1/4 in. (4 rqr)
10 Solenoid
11 Screw, machine, 10-24 x 3/8 in. (4 rqr)
12 Cover (2 rqr)
13 Gasket (2 rqr)
14 crew, cap, special (2 rqr)
15 Screw, cap, special, (2 rqr)
16 End housing
17 Gasket
18 Screw, cap, 5/16-18 x 3/4 in. (4 rqr)
19 Washer, lock (4 rqr)
20 Drive end housing
21 Retaining ring
22 Retaining ring
23 Washer, flat
24 Shaft
25 Drive assembly
26 Shift lever
27 Seal
28 Spacer
29 Felt washer
30 Armature
31 Felt washer
32 Nut, 1/2-13
33 Washer, lock, 1/2 in.
34 Nut, 1/2-13
35 Washer, lock, 1/2 in.
36 Washer, flat, 1/2 in.
37 Insulator spacer
38 Screw, machine, No. 10-32 x 3/4 in. (4 rqr)
39 Washer, lock, No. 10 (4 rqr)
40 End bell
41 Screw, machine, No. 8-32 x 3/8 in. (4 rqr)
42 Washer, lock, No. 8 (4 rqr)
43 Brush (4 rqr)
44 Screw, No. 10-32 x 3/8 ins (2 rqr)
45 Washer, lock, No. 10 (2 rqr)
46 Bolt, shoulder, No. 10-32, special
47 Spring (2 rqr)
48 Washer, special
49 Brush holder
50 Screw, No. 10-32 x 5/8 in. (2 rqr)
51 Washer, lock, No. 10 (2 rqr)
52 Bolt, shoulder, No. 10-32, special
53 Spring (2 rqr)
54 Washer, special
55 Brush holder
56 Insulator plate (2 rqr)
57 Insulator (2 rqr)
58 Washer, lock
59 Nut
60 Screw, No. 8-32 x 1/2 in. (3 rqr)
61 Washer, lock, No. 8 (3 rqr)
62 Washer, flat, No. 8 (3 rqr)
63 Brush holder plate
64 Washer, special
65 Washer, special
66 Insulating washer
67 Insulating spacer
68 Insulating washer
69 Brush holder insulator
70 Plate insulator
71 Nut, field stud terminal
72 Screw, pole shoe (8 rqr)
73 Pole shoe (4 rqr)
74 Field
75 Field insulator (4 rqr)
76 Plug, pipe, 1/8-27
77 Bearing
78 Bearing
79 Expansion plug, 7/8 in.
80 Bearing
81 Frame

Figure 52 - continued.

and soldered to commutator risers.

(2) Inspect the armature shaft for any damage and replace as necessary.

(3) Inspect the commutator for burns, scoring, or high mica. Turn down commutator (TM 5-764).

(4) Inspect the brushes for wear or oil-soaked condition. Replace the brushes if defective or worn excessively.

(5) Test the armature and field coils (TM 5-764).

(6) Inspect the armature for out-of-round by placing it on V-block with a dial indicator gage plunger set on the commutator. Any out of-round will be noticed on the dial gage, as the armature is slowly revolved. If more than 0.003 inch out-of-round, replace armature.

(7) Inspect the remaining parts for defects or damage. Replace or repair worn, damaged, or defective parts.

192. Plow and Carrier Engine Starter Assemblies Reassembly and Installation

a. Reassembly. Reassemble the plow and carrier engine starters in the reverse of numerical sequence illustrated on figure 52.

Note

Lubricate the plow and carrier engine starters LO 5-3825-213-20).

b. Installation. Install the plow and carrier engine starters (TM 5-3825-213-20).

Section IV. PLOW AND CARRIER ENGINE DISTRIBUTOR ASSEMBLIES

193. General

The purpose of the distributor is to provide current to the primary winding of the ignition coil at the proper time and also to distribute the high tension voltage to the proper spark plug. The breaker contacts of the distributor are connected in the coil primary circuit so that the rotation of the cam opens the coil circuit at the proper instant to generate a spark. The distributor cap and rotor are arranged so that the high tension voltage is connected to the correct spark plug for firing each cylinder. The distributor is equipped with a centrifugal governor control of the timing and has the cam connected to the drive shaft through the governor. This is arranged so that as the speed is increased, the relationship of the cam to the breaker arm is changed by the centrifugal act of the governor. The rate and amount of spark advance is controlled by the weight springs.

194. Plow and Carrier Engine Distributor Assemblies Removal and Disassembly

a. Removal. Remove the plow and carrier engine distributors (TM 5-3825-213-20).

b. Disassembly. Disassemble the plow and engine distributors in numerical sequence as illustrated on figure 53.

195. Plow and Carrier Engine Distributor Assemblies Cleaning, Inspection, and Repair

a. Cleaning. Clean all parts with an approved cleaning solvent and dry thoroughly.

b. Inspection and Repair.

(1) Inspect distributor housing for cracks, pitted, or damaged machine surfaces. Replace a defective distributor housing.

(2) Inspect plate and main shaft assemblies for scores, pitting, or wear. Place shaft assembly in bearing in distributor housing and inspect plug of the shaft. If fit is too loose, replace shaft and bearing.

(3) Inspect drive gear for worn condition or chipped teeth. Replace damaged gear.

(4) Replace weight springs and gasket.

(5) Inspect breakers, levers, and spring for defective condition. Replace defective parts.

(6) Inspect all remaining parts for defective condition. Replace or repair a worn, damaged, or defective part.

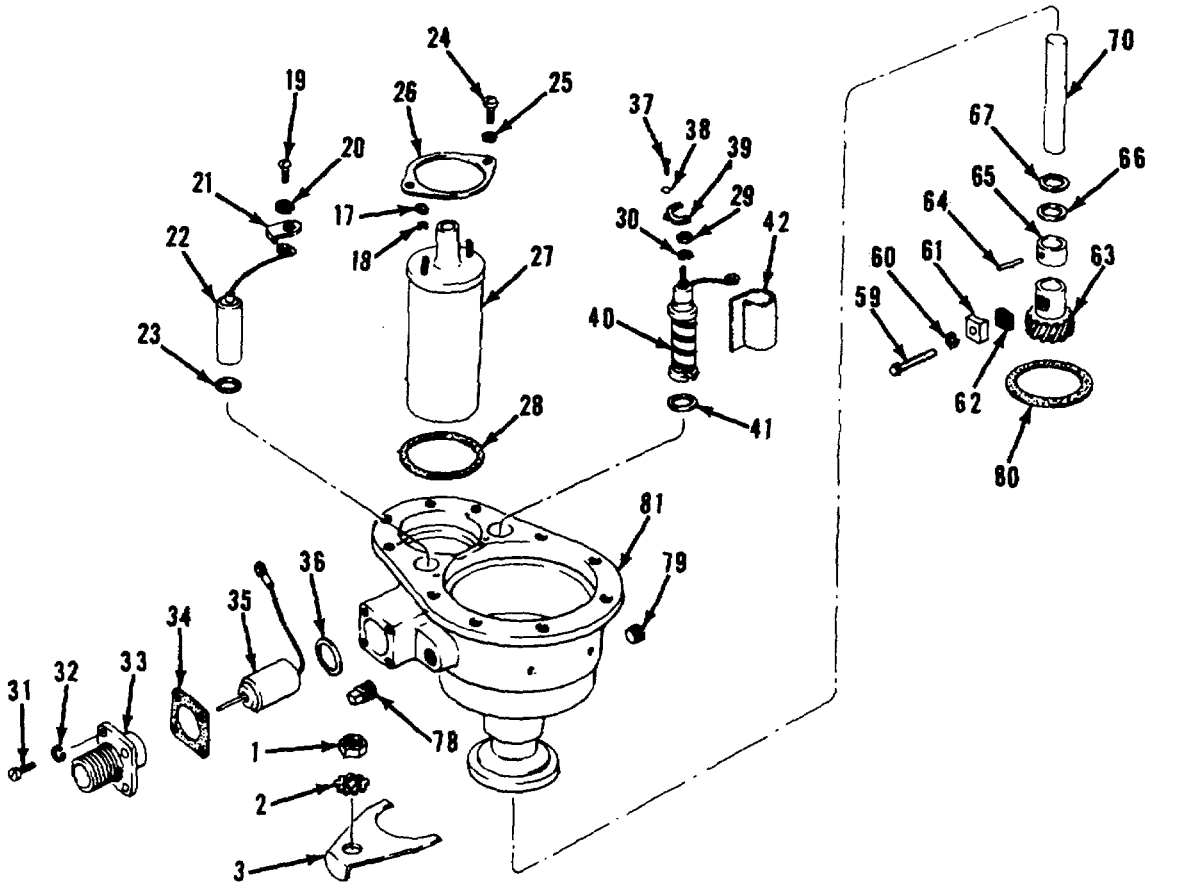
196. Plow and Carrier Engine Distributor Assemblies Reassembly and Installation

a. Reassembly. Reassemble the plow and carrier distributors in the reverse of numerical sequence illustrated on figure 53.

b. Installation.

(1) Install the plow and carrier distributor (TM 5-3825-213-20).

(2) Time the plow engine (TM 5-3825-213-20).



1	Nut, 3/8-24	19	Screw, machine, 8-32 x 3/8 in.
2	Washer, lock, ET, 3/8 in.	20	Washer, lock, No. 8
3	Bracket	21	Clamp
4	Dial	22	Ignition coil capacitor
5	Screw, machine, 10-32 x 3/8 in. (8 rqr)	23	Ignition coil capacitor spring
6	Washer, lock, No. 10 (8 rqr)	24	Screw, machine, 10-32 x 3/8 in. (2 rqr)
7	Cover	25	Washer, lock, No. 10 (2 rqr)
8	Gasket	26	Coil holddown plate
9	Plug	27	Coil
10	Screw, machine, 10-32 x 1/4 in. (4 rqr)	28	Gasket
11	Washer, lock, No. 10 (4 rqr)	29	Nut, 832
12	Washer, flat, No. 10 (4 rqr)	30	Washer, lock, No. 8
13	Distributor cap	31	Screw, machine, 6-32 (4 rqr)
14	Gasket (8 rqr)	32	Washer lock No. 6 (4 rqr)
15	Brush	33	Terminal coupling
16	Spring	34	Gasket
17	Nut, 132 (2 rqr)	35	Capacitor
18	Washer, lock, special (2 rqr)	36	Capacitor spring

Figure 53. Plow and carrier engine distributor assemblies, disassembly and reassembly, exploded view.

37 Screw, machine, 8-32
38 Washer, lock, No. 8
39 Resistor bracket
40 Resistor
41 Spring
42 Resistor insulation
43 Rotor
44 Screw, machine, 8-32 x 3/8 in. (3 rqr)
45 Washer, lock, No. 8 (3 rqr)
46 Breaker plate
47 Screw, machine, 8-32 x 3/16 in.
48 Washer, lock, No. 8
49 Clamp
50 Breaker lever cap
51 Adjusting screw, special
52 Contact and support
53 Breaker lever
54 Screw, special
55 Capacitor
56 Nut, 6-32
57 Lock, special
58 Contact capacitor lead
59 Gear pin
60 Washer, lock, No. 8
61 Rubber cushion (2 rqr)
62 Cushion block (2 rqr)
63 Drive gear
64 Pin, straight headless
65 Collar
66 Shim (2 rqr)
67 Spacer
68 Plate and main shaft assembly
69 Spacer
70 Sleeve bearing
71 Nut, 1032
72 Washer, special
73 Weight holddown plate
74 Weight spring (2 rqr)
75 Distributor cam
76 Weight (2 rqr)
77 Weight (2 rqr)
78 Plug, pipe, 1/8-27
79 Plug, pipe, 1/8-27
80 Gasket
81 Distributor housing

Figure 53 - Continued.

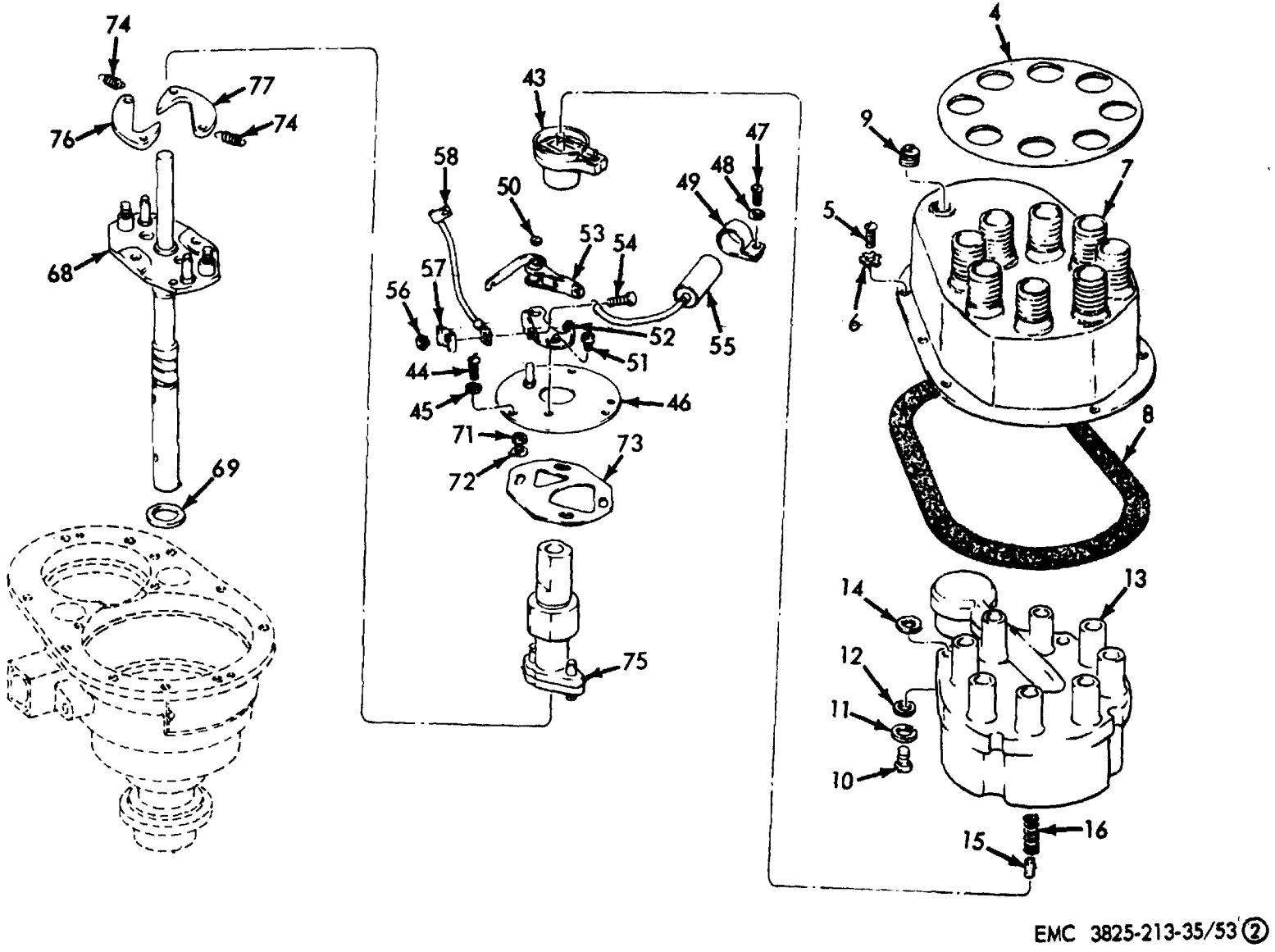


Figure 53 - Continued.

Section V. PLOW AND CARRIER ENGINE OIL COOLER ASSEMBLIES

197. General

The oil cooler is externally mounted to the engine located on the right side near the fan assembly. The oil cooler is provided with a number of passages through which oil flows under pressure. Cooling water surrounding the passages provides a heat-exchange medium and stabilizes the temperature of the engine oil.

198. Plow and Carrier Engine Oil Cooler Assemblies Removal and Disassembly

a. Removal. Remove the plow and carrier engine oil coolers (TM 5-3825-213-20).

b. Disassembly. Disassemble the plow and carrier engine oil coolers in numerical sequence as illustrated on figure 54.

199. Plow and Carrier Engine Oil Cooler Assembles Cleaning, Inspection, and Repair.

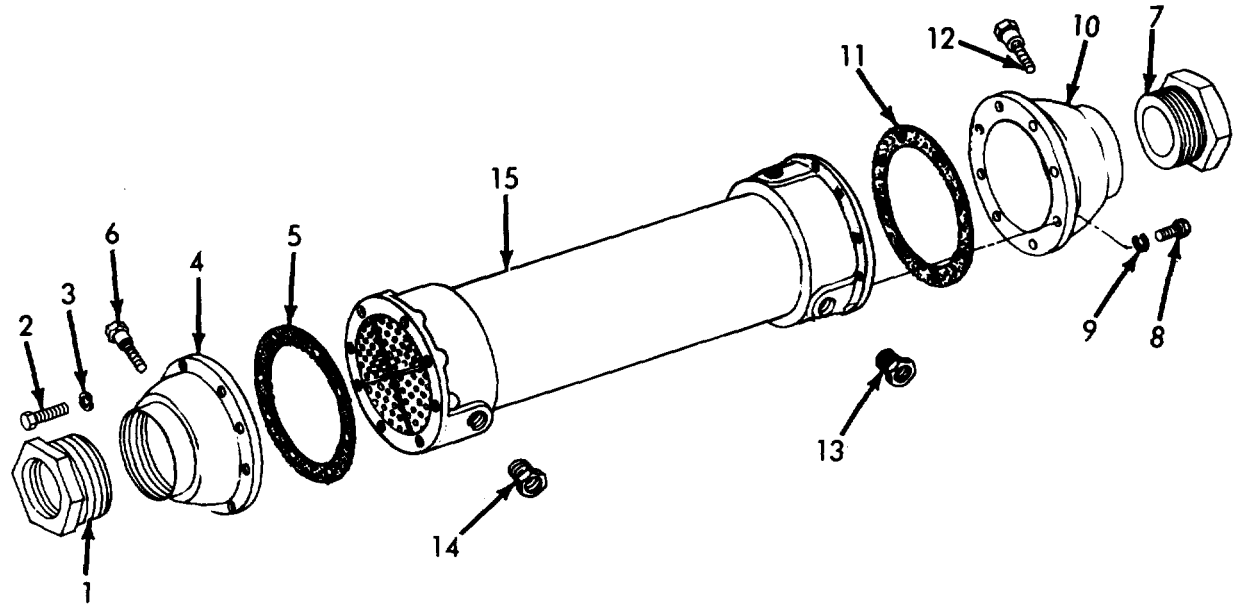
a. Cleaning. Clean an parts with an approved cleaning solvent and dry thoroughly.

b. Inspection and Repair. Inspect all parts for defective condition. Replace or repair worn, damaged, or defective parts.

200. Plow and Carrier Engine Oil Cooler Assemblies Reassembly and Installation.

a. Reassembly. Reassemble the plow and carrier engine oil coolers in reverse of numerical sequence illustrated on figure 54.

b. Installation. Install the plow and carrier engine oil coolers (TM 5-3825-213-20).



1 Reducer
2 Screw, cap, 3/8-16 x 3/4 in. (6 rqr)
3 Washer, lock, 3/8 in. (6 rqr)
4 End cover
5 Gasket
6 Plug, special
7 Reducer
8 Screw, cap, 3/8-16 x 3/4 in. (6 rqr)
9 Washer, lock, 3/8 in. (6 rqr)
10 End cover
11 Gasket
12 Plug, special
13 Reducer
14 Reducer
15 Cooler body

Figure 54. Plow and carrier engine oil cooler assemblies, disassembly and reassembly, exploded view.

Section VI. PLOW AND CARRIER ENGINE SPEED GOVERNOR ASSEMBLIES

201. General

The purpose of the governor assembly is to maintain desired engine speed by adjusting the throttle position to accommodate various loads imposed upon the engine. Weights, driven from the accessory drive shaft train, respond to variations in engine speed by moving inward or outward from the governor shaft. For example, as the engine tends to slow down under an applied load, the weights move inward due to the reduced centrifugal force. The governor also acts as a protective device to prevent engine damage from overspeeding- Here, as the speed increases toward the established maximum, the weights move outward under the increased centrifugal force. At this point the amounts of fuel and air entering the engine are held to those needed for the selected maximum speed. An increase in spring tension increase the maximum governed speed; a decrease in spring tension decreases the maximum governed speed.

202. Plow and Carrier Engine Governor Assemblies Removal-and Disassembly

a. Removal. Remove the plow and carrier engine governor (TM 5-3825-213-20).

b. Disassembly. Disassemble the plow and carrier engine governors in numerical sequence as illustrated on figure 55.

203. Plow and Carrier Engine Governor Assemblies Cleaning, Inspection, and Repair

a. Cleaning. Clean all parts with an approved cleaning solvent and dry thoroughly.

b. Inspection and Repair. Inspect all parts for defective condition. Replace or repair worn, damaged, or defective parts.

204. Plow and Carrier Governor Assemblies Reassembly and Installation

a. Reassembly. Reassemble the plow and carrier engine governors in reverse of numerical sequence illustrated on figure 55.

b. Installation. Install the plow and carrier engine governors (TM 5-3825-213-20).

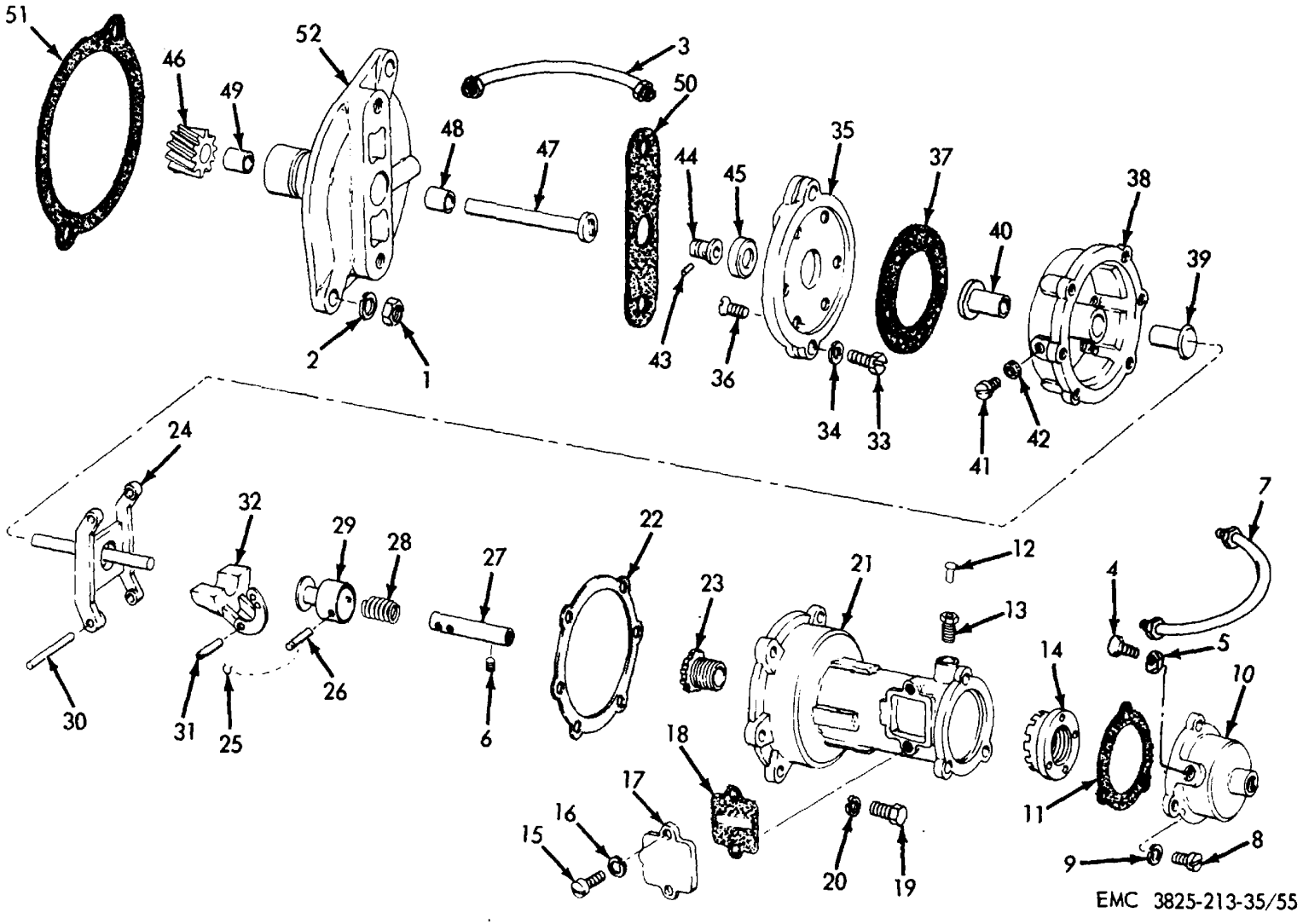


Figure 55. Plow and carrier engine governor assemblies, disassembly and reassembly, exploded view.

1 Nut, 3/8-24 (2 rqr)
2 Washer, lock, 3/8 in. (2 rqr)
3 Hose
4 Plug
5 Washer
6 Setscrew, No. 6-32 x 1/8 in.
7 Control cable and tube
8 Screw, machine, No. 8-32 x 7/16 in. (3 rqr)
9 Washer, lock, No. 8 (3 rqr)
10 Cap
11 Gasket
12 Plug, special
13 Setscrews, No. 8-32 x 1/4 in.
14 Spring tension adjusting nut
15 Screw, machine, No. 8-32 x 3/8 in. (2 rqr)
16 Washer, lock, No. 8 (2 rqr)
17 Cover
18 Gasket
19 Screw, machine, No. 8-32 x 9/16 (6 rqr)
20 Washer, lock, No. 8 (6 rqr)
21 Speed control housing
22 Gasket
23 Spring rate adjusting nut
24 Shaft flyweight carrier
25 Control rod ring (2 rqr)
26 Control rod axle
27 Control rod
28 Spring
29 Bushing and collar
30 Flyweight ale (2 rqr)
31 Bushing (2 rqr)
32 Governor flyweight (2 rqr)
33 Screw, cap, 1/4-20 x 7/8 in. (2 rqr)
34 Washer, lock, 1/4 in. (2 rqr)
35 Speed unit adapter
36 Screw, 1/4-28 x 1/2 in. (6 rqr)
37 Gasket
38 Housing
39 Drive shaft bearing
40 Drive shaft bearing
41 Plug (2 rqr)
42 Washer, (2 rqr)
43 Pin, taper, headless
44 Driven shaft
45 Oil seal
46 Gear
47 Drive shaft
48 Sleeve bearing
49 Sleeve bearing
50 Gasket
51 Gasket
52 Drive body

Figure 55 - Continued.

Section VII. PLOW AND CARRIER ENGINE CARBURETOR ASSEMBLIES

205. General

The carburetor discharges desired amounts of fuel into air stream entering the engine. Fuel from the bowl is metered through the main jet and discharged into the air stream at the point of greatest suction in the venturi through the main discharge jet. The main jet determines the maximum amount of fuel required for high-speed operations. The main jet adjustment reduces this amount if jet is turned toward its seat. The compensating system consists of main discharge jet and well vent jet. The flow of fuel from main jet is controlled by the size of the well vent jet and main discharge jet. The mixture delivered through the main discharge jet can be made richer by either increasing the size of main discharge jet or by decreasing size of the well vent jet. Mixture may be made leaner by either decreasing size in the main discharge jet or by increasing size of the well vent jet. The idle system consists of an idling jet and idle-adjusting needle. The adjusting jet receives its fuel from main jet. The fuel, metered through the idling jet is mixed with air admitted through another passage behind venturi. The idle-adjusting needle controls amounts of air admitted to the idling system. The idling system functions only at idling or low speeds.

206. Plow and Carrier Engine Carburetor Assemblies Removal and Disassembly

a. Removal. Remove the plow and carrier engine carburetors (TM 5-3825-213-20).

b. Disassembly. Disassemble the plow and carrier engine carburetors in numerical sequence as illustrated on figure 56.

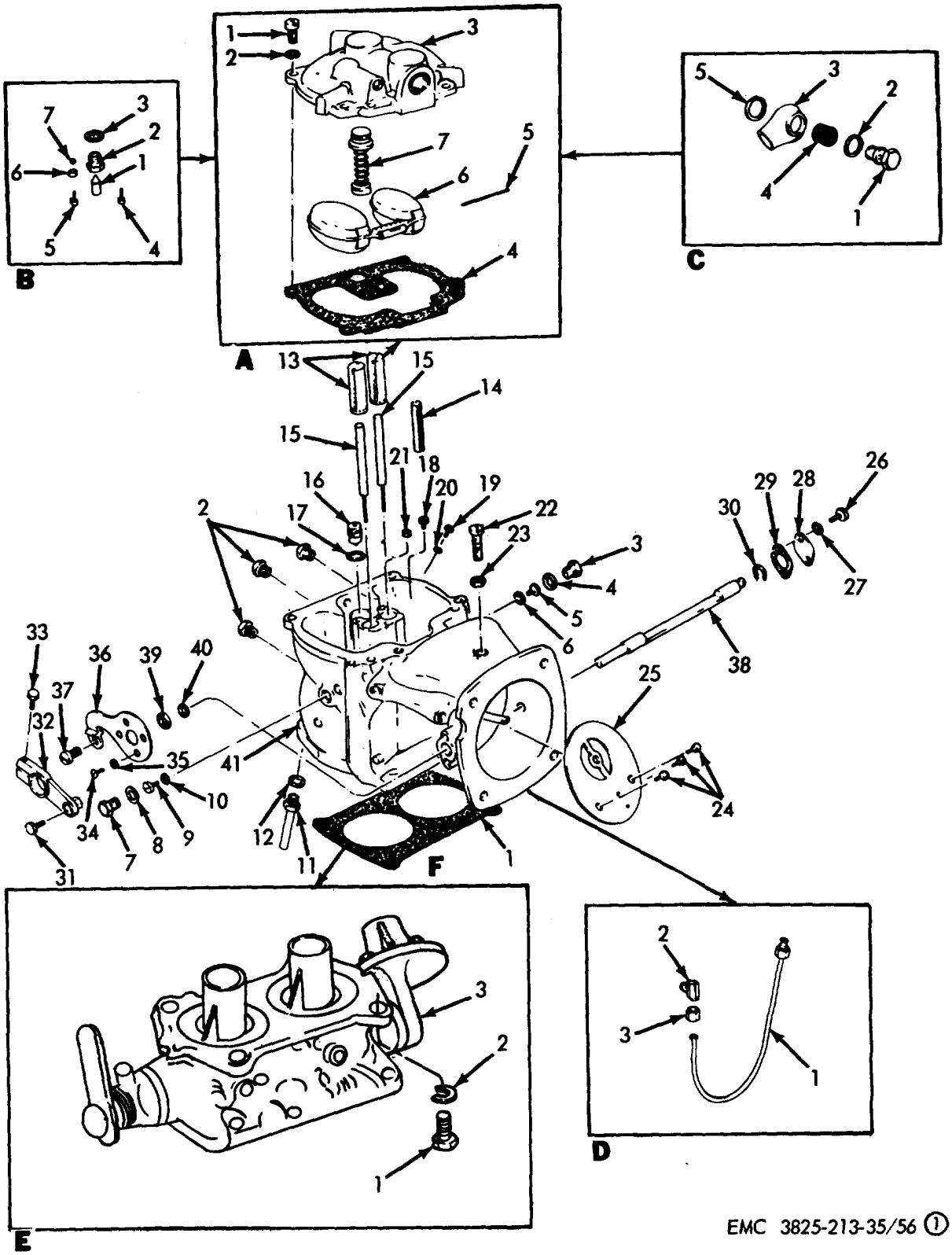


Figure 56. Plow and carrier engine carburetor assemblies, disassembly and reassembly, exploded view.

1 Screw, machine, 1/4-20 x 3/4 in. (4 rqr)
2 Washer, lock, 1/4 in. (4 rqr)
3 Float bowl cover
4 Gasket
5 Float axle
6 Carburetor float
7 Accelerating pump piston assembly

A. Cover and float.

1 Fuel valve
2 Valve seat
3 Seat washer
4 Idler jet
5 Idler jet
6 Check ball retainer
7 Check valve ball

B. Fuel valve assembly.

1 Plug
2 Washer, special
3 Body, inlet
4 Strainer
5 Washer, special

C. Inlet fuel assembly.

1 Tube and nut slave unit vent
2 Adapter
3 Compression nut (2 rqr)

D. Slave vent unit.

1 Screw, cap, 3/8-16 x 7/8 in. (4 rqr)
2 Washer, lock, 3/8 in. (4 rqr)
3 Throttle body assembly

E. Throttle body assembly.

1 Gasket
2 Plug, pipe, 1/8-27 (3 rqr)
3 Plug
4 Washer, special
5 Main jet
6 Washer, special
7 Plug
8 Washer, special
9 Main jet
10 Washer, special
11 Discharge jet (2 rqr)
12 Discharge jet washer (2 rqr)
13 Metering well (2 rqr)
14 Secondary metering well
15 Accelerator jet (2 rqr)
16 Power jet and valve
17 Washer, special
18 Well vent jet
19 Idle compensator jet (2 rqr)
20 Washer, special (2 rqr)
21 Pump check valve
22 Choke plate stop screw
23 Nut, No. 10-32
24 Screw, machine, No. 8-36 x 13/32 in. (3 rqr)
25 Choke plate
26 Screw, machine, 1/4-20 x 5/8 in. (2 rqr)
27 Washer, lock, 1/4 in. (2 rqr)
28 Cover plate
29 Gasket
30 Choke shaft thrust washer
31 Swivel screw
32 Choke lever
33 Choke lever mounting screw
34 Screw, machine, 1/4-20 x 5/8 in. (4 rqr)
35 Washer, 1/4 in. (4 rqr)
36 Choke bracket
37 Lever swivel screw
38 Choke shaft
39 Shaft seal washer
40 Choke shaft packing
41 Air intake and float bowl

F. Air intake and float bowl.

Figure 56 - Continued.

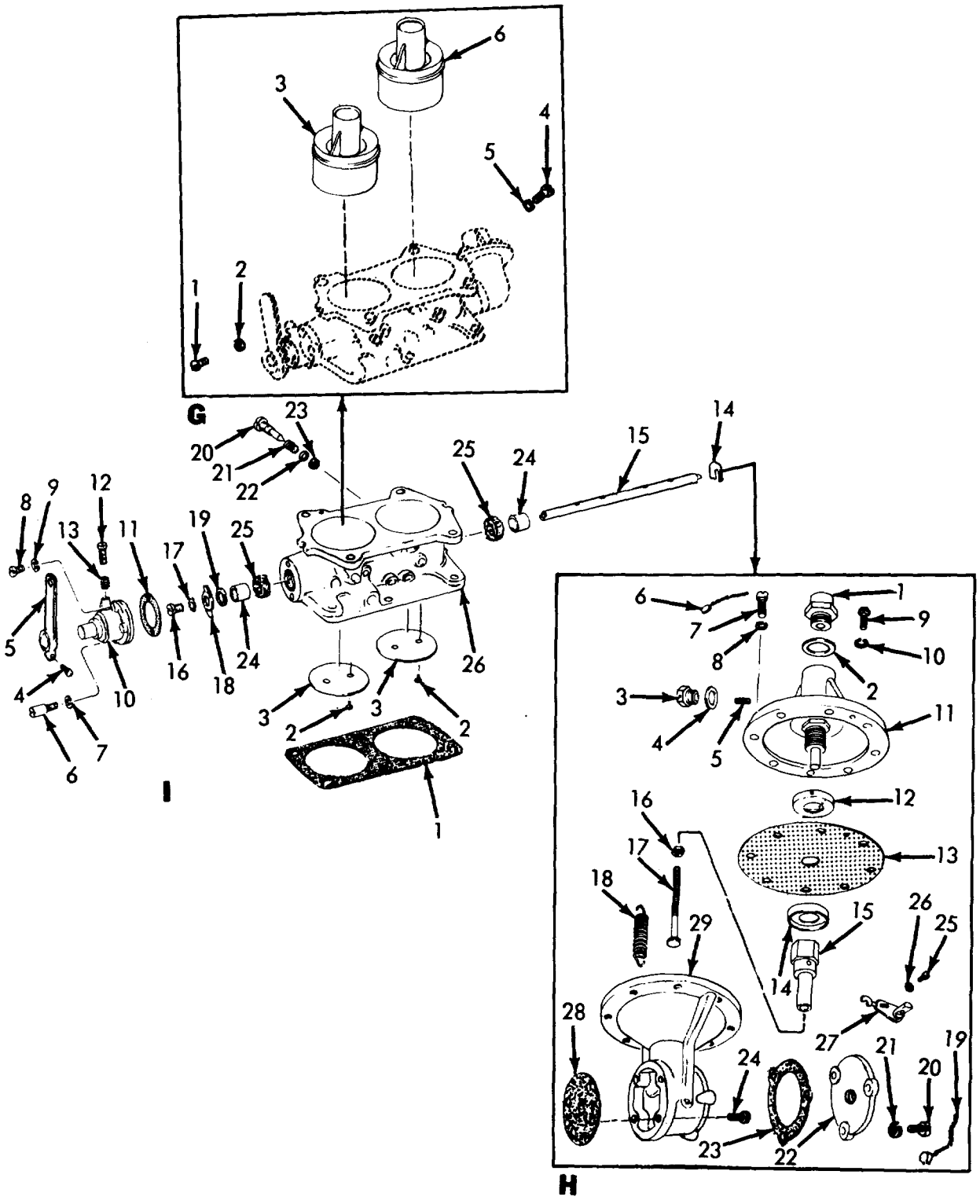


Figure 56 - Continued.

1 Screw, machine, No. 6-32 x 1/2 in.
2 Washer, fiber, No. 6
3 Venturi tube
4 Screw, machine, No. 6-32 x 1/2 in.
6 Washer, fiber, No. 6
6 Venturi tube

G. Carburetor venturi tube.

1 Connector tube
2 Connector tube washer
3 Passage plug
4 Passage plug washer
5 Setscrew, No. 6-32 x 1/8 in.
6 Seal and wire
7 Screw, machine, No. 8-32 x 1/2 in. (3 rqr)
8 Washer, lock, No. 8 (3 rqr)
9 Screw, machine, special (5 rqr)
10 Washer, lock, No. 8 (5 rqr)
11 Switch cover and valve
12 Diaphragm washer
13 Diaphragm
14 Diaphragm washer
15 Housing rod connector
16 Nut, lock, No. 8-32
17 Diaphragm rod
18 Spring
19 Seal and wire
20 Screw, machine, 6-32 x 3/8 in. (3 rqr)
21 Washer, lock, No. 6 (3 rqr)
22 Housing cover plate
23 Gasket
24 Screw, machine, slave unit to throttle body (4 rqr)
25 Screw, machine, No. 5-40 x 3/16 in.
26 Washer, lock, No. 5
27 Throttle lever
28 Gasket
29 Slave unit housing

H. Slave unit assembly.

1 Gasket
2 Throttle plate screw (4 rqr)
3 Throttle plate (2 rqr)
4 Screw, fillister head, No. 10-32 x 3/4 in.
5 Throttle clamp lever
6 Stop pin screw
7 Washer, lock stop pin screw
8 Throttle stop mounting screw
9 Washer, lock, No. 10
10 Throttle lever and stop
11 Gasket
12 Screw, machine, No. 10-32 (2 rqr)
13 Stop screw spring (2 rqr)
14 Throttle shaft thrust washer
15 Throttle control shaft
16 Driver assembly screw
17 Driver screw washer
18 Throttle shaft driver
19 Drive shaft flat washer
20 Idle adjusting needle
21 Adjusting needle spring
22 Seal retaining washer (2 rqr)
23 Adjusting needle seal
24 Needle shaft bearing
25 Bearing seal washer
26 Throttle body

I. Throttle body.

Figure 56 - Continued.

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207. Plow and Carrier Engine Carburetor Assemblies Cleaning, Inspection, and Repair

a. Cleaning. Clean all parts with an approved cleaning solvent and dry thoroughly.

b. Inspection and Repair. Inspect all parts for defective condition. Replace or repair all worn, defective, or damaged parts.

208. Plow and Carrier Engine Carburetor Assemblies Reassembly and Installation

a. Reassembly. Reassemble the carburetor in reverse of numerical sequence illustrated on figure 56.

b. Installation. Install the carburetor (TM 5-3825-213-20).

Section VIII. PLOW AND CARRIER ENGINE RADIATOR ASSEMBLIES

209. General

On-equipment flushing instructions are given in TM 5-3825-213-20. If a clogged condition cannot be corrected by this type of flushing, the radiator must be removed and cleaned as instructed in this section. The carrier engine radiator consists of top and bottom tanks and a tube-type

core. The plow engine radiator is a one-piece fin-type core with tanks welded to the top and bottom of the core.

210. Plow and Carrier Engine Radiators Removal and Disassembly

a. Removal.

(1) Drain the cooling system.

(2) Remove the plow engine radiator hose (TM 5-3825-213-20).

(3) Remove the carrier and plow engine hoods and the plow engine radiator (TM 5-3825-213-20).

(4) Remove the carrier engine radiator hose (TM 5-3825-213-20).

(5) Remove the carrier engine radiator from the carrier frame as instructed figure 57.

b. Disassembly. Disassemble the carrier or plow engine radiators in the numerical sequence as illustrated on figure 58.

211. Plow and Carrier Engine Radiators Cleaning, Inspection, Test, and Repair

a. Cleaning.

(1) *Core fin flushing.* Spray water through the core to remove any foreign substance.

(2) *Pressure flushing.* Install the radiator cap securely and seal off the overflow tube. Force a suitable cleaning solution through the radiator under a pressure of approximately 5 psi. Reverse flushing, or flow of solution from radiator outlet to inlet is effective for this type of flushing.

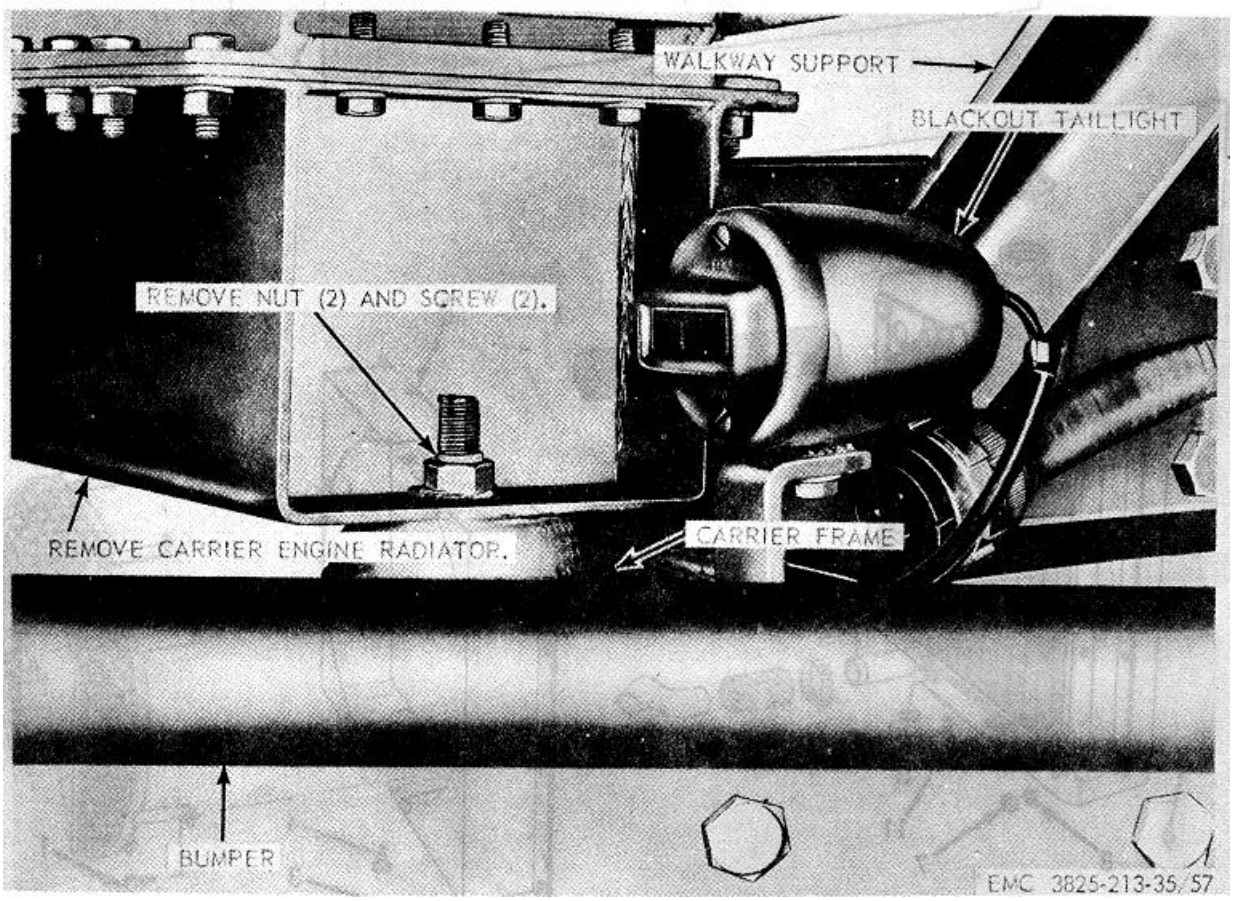


Figure 57. Carrier engine radiator, removal and installation.

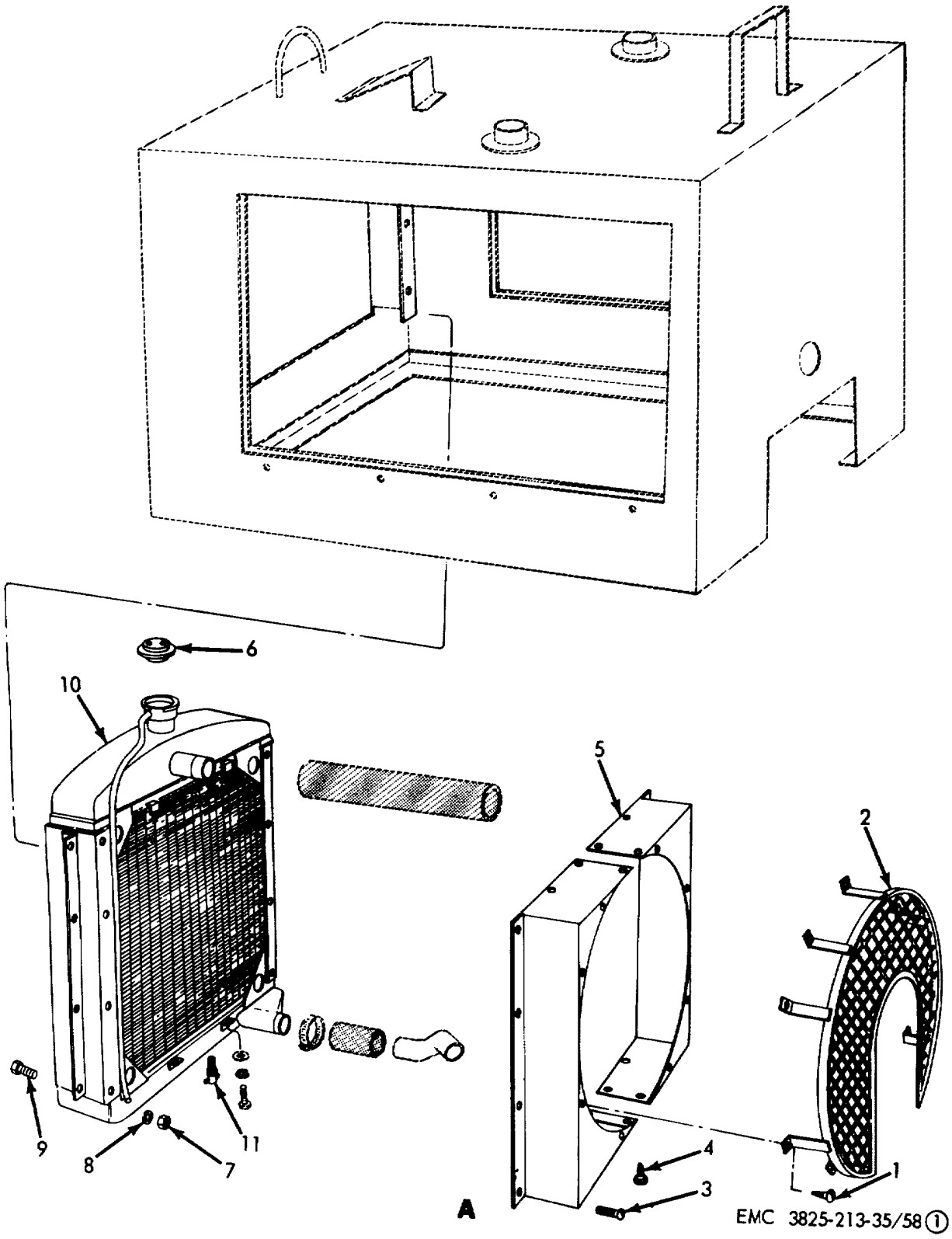


Figure 58. Carrier and plow engine radiators, disassembly and reassembly, exploded view.

1 Screw
2 Guard
3 Screw, machine, 10-32 x 3/4 in.
4 Screw
5 Shroud
6 Cap
7 Nut, 3/8-24 (8 rqr)
8 Washer, lock, 3/8 in. (8 rqr)
9 Screw, cap, 3/8-24 x 1 in. (8 rqr)
10 Radiator
11 Draincock

A. Plow engine radiator.

Figure 58 - Continued.

b. Inspection. Inspect radiators visually for sediment from water which has leaked and evaporated. Mark all leaks.

c. Testing. Seal the radiators inlet, outlet, and overflow tubes. Immerse the radiator in water and apply low pressure compressed air to the filler port. Air pressure between 3 and 5 psi provides the best test. Higher pressures often cause sediment deposits to seal leaks. Mark all leaks.

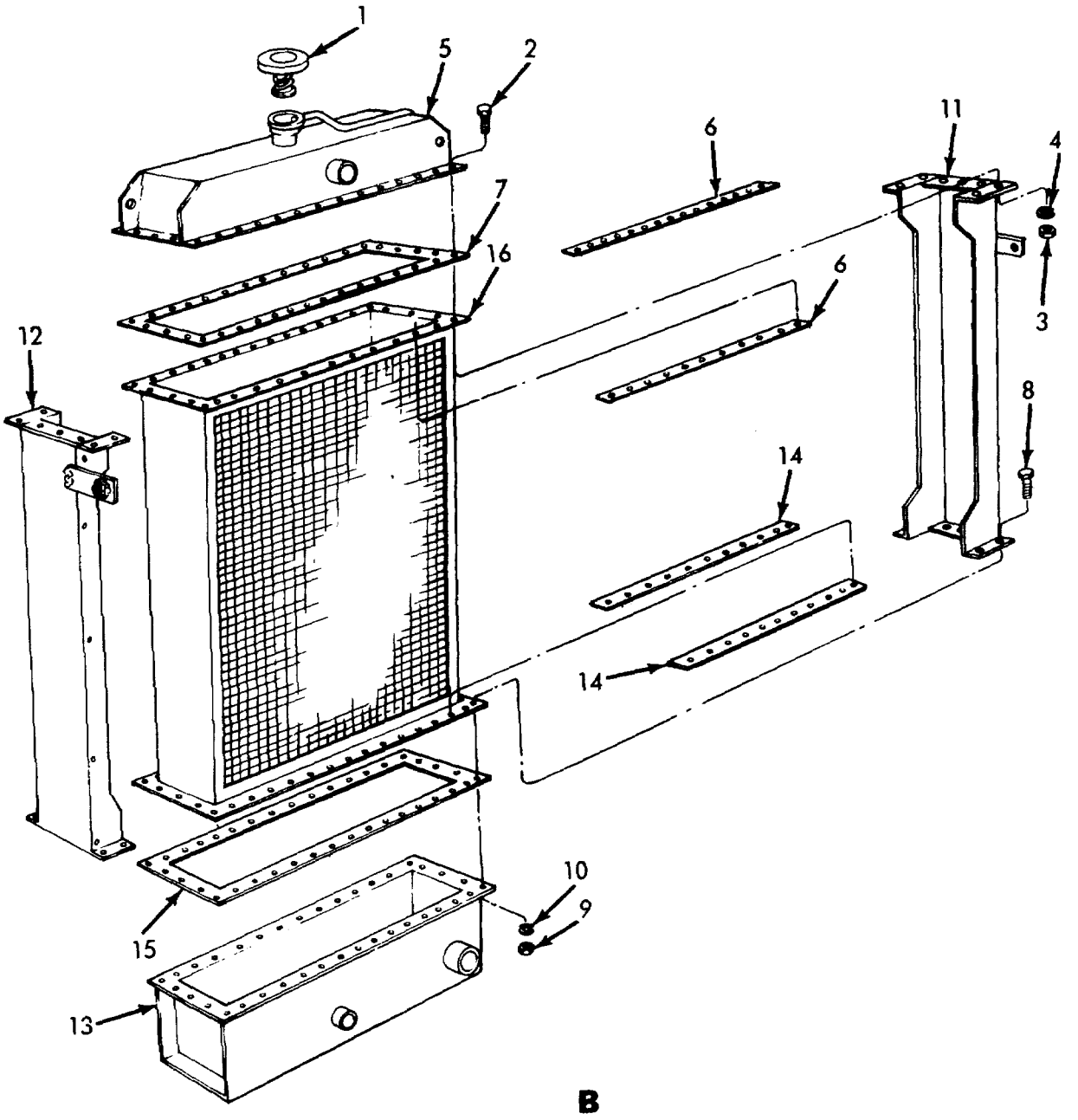
d. Repair. Solder all leaks. Straighten bent fins. Inspect all parts for defective condition. Replace or repair worn, damaged, or defective parts.

212. Plow and Carrier Engine Radiators Reassembly and Installation

a. Reassembly. Reassemble the carrier or plow engine radiators in the reverse of numerical sequence as illustrated on figure 58.

b. Installation.

(1) Install the carrier engine radiator on carrier frame as instructed on figure 57.
(2) Install the carrier engine radiator hose (TM 5-3825-213-20).
(3) Install the carrier and plow engine hoods and plow engine radiator (TM 5-3825-213-20).
(4) Install the plow engine radiator hose (TM 5-3825-213-20).
(5) Fill the coolant system.



1 Cap
2 Screw, cap, 5/16-18 x 1 in. (48 rqr)
3 Nut, 5/16-18 (48 rqr)
4 Washer, lock, 5/16 in. (48 rqr)
5 Tank, upper
6 Bar (2 rqr)
7 Gasket
8 Screw, cap, 5/16-18 x 1 in. (48 rqr)
9 Nut, 5/16-18 (48 rqr)
10 Washer, lock, 5/16 in. (48 rqr)
11 Side, rh
12 Side, lh
13 Tank, lower
14 Bar (2 rqr)
15 Gasket
16 Radiator

B. Carrier engine radiator.

Figure 58 - Continued.

Section IX. PLOW AND CARRIER ENGINE WATER PUMP ASSEMBLIES

213. General

The water pump is a centrifugal-type pump. It is located at the front of the engine and is driven by the fan pulley.

214. Plow and Carrier Engine Water Pump Assemblies Removal and Disassembly

a. Removal.

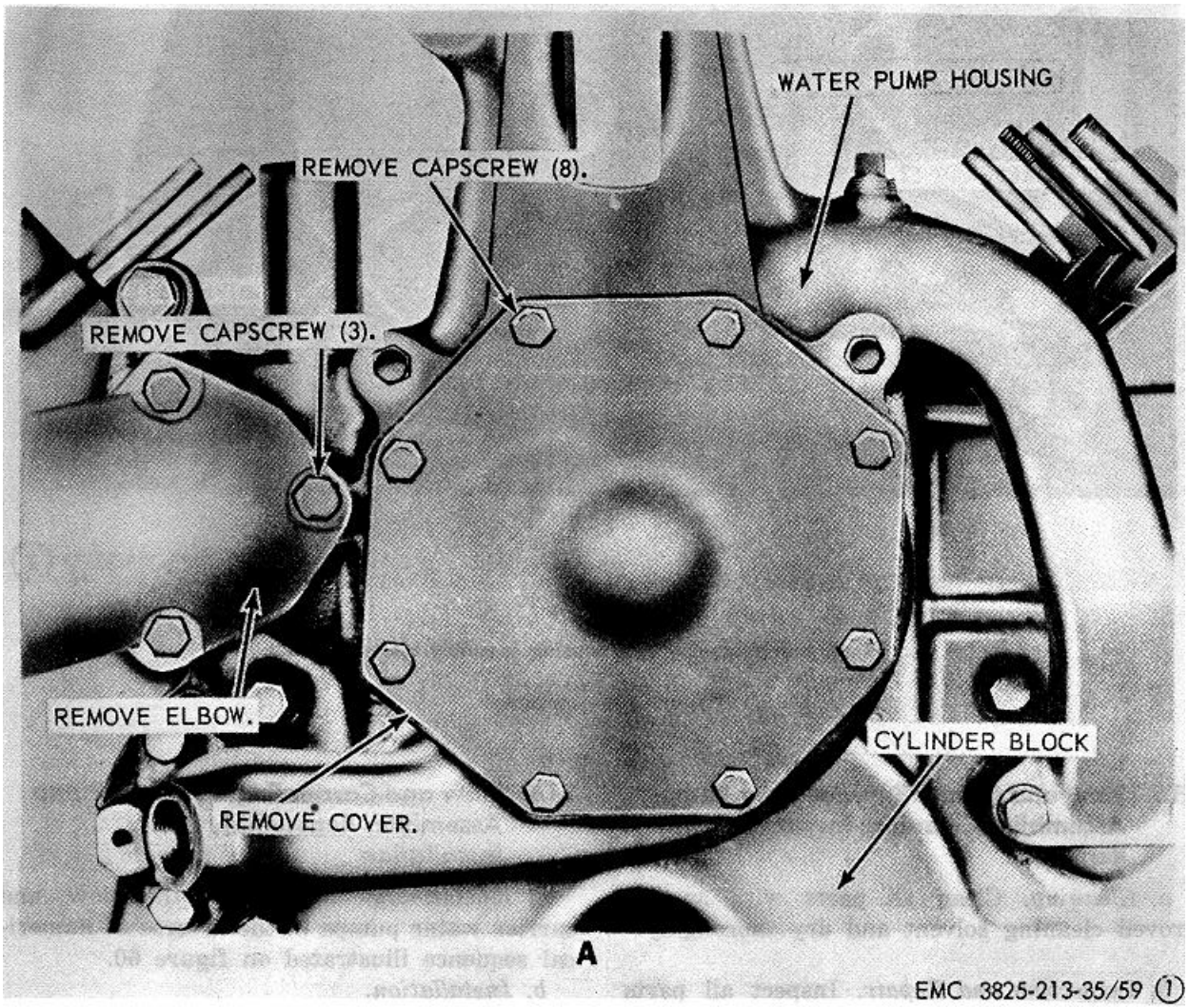
(1) Remove the plow engine radiator (TM 5-3825-213-20), and the carrier engine radiator (par. 210).

(2) Remove the plow and carrier fan and drive pulley (TM 5-3825-213-20).

(3) Remove generator and bracket from the carrier engine (TM 5-3825-213-20).

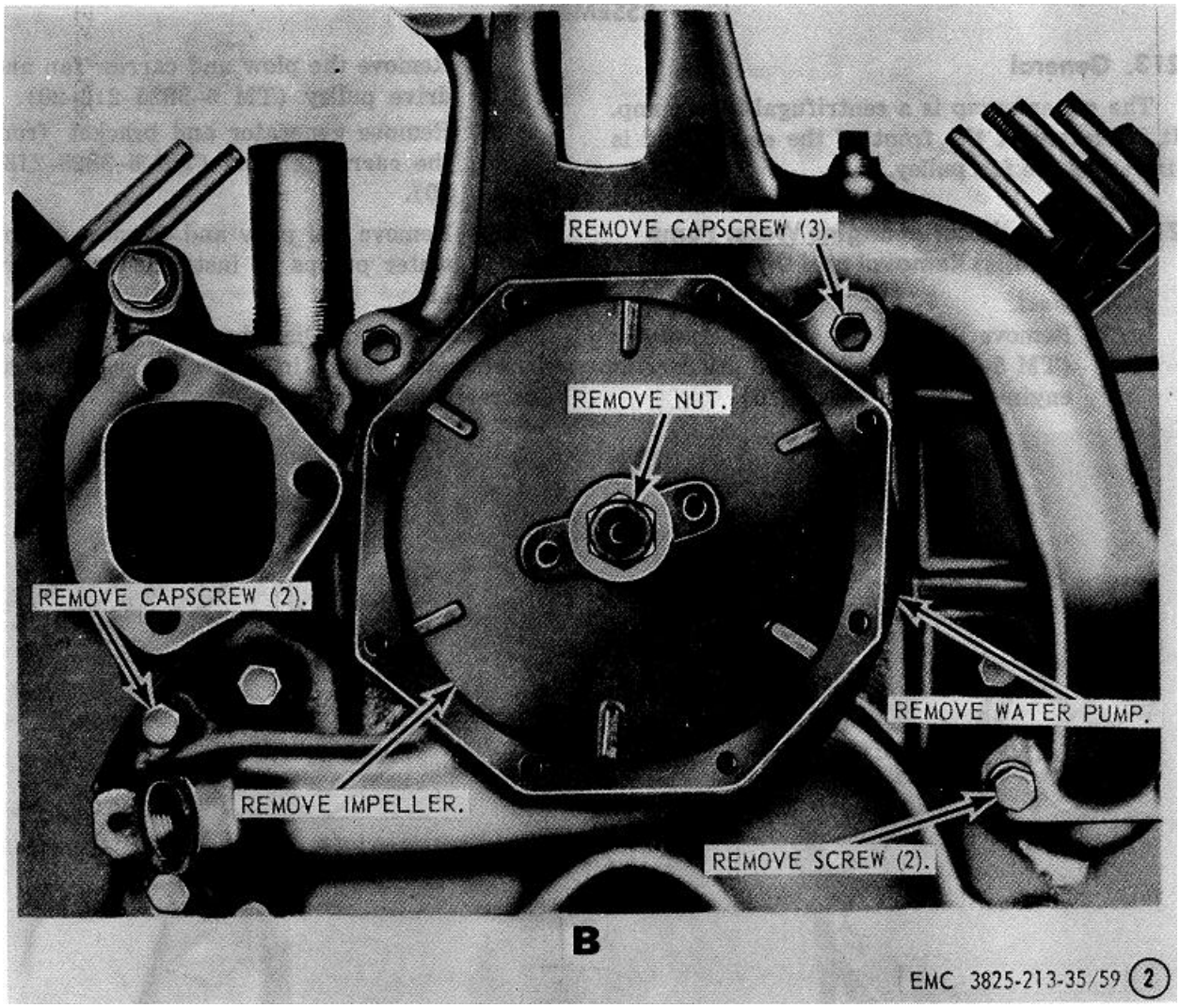
(4) Remove the plow and carrier engine water pumps as instructed on figure 59.

b. Disassembly. Disassemble the plow and carrier water pumps in numerical sequence as illustrated on figure 60.



A. Water pump cover removal point.

Figure 59. Plow and carrier engine water pump assemblies, removal and installation.



B. Water pump impeller and housing assembly removal points.

Figure 59 - Continued.

215. Plow and Carrier Engine Water Pump Assemblies Cleaning, Inspection, and Repair

a. Cleaning. Clean all parts with an approved cleaning solvent and dry thoroughly.

b. Inspection and Repair. Inspect all parts for defective condition. Replace or repair worn, damaged, or defective parts.

216. Plow and Carrier Engine Water Pump Assemblies Reassembly and Installation

a. Reassembly. Reassemble the plow and carrier water pumps in the reverse of numerical sequence illustrated on figure 60.

b. Installation.

(1) Install the plow and carrier water pumps as instructed on figure 59.

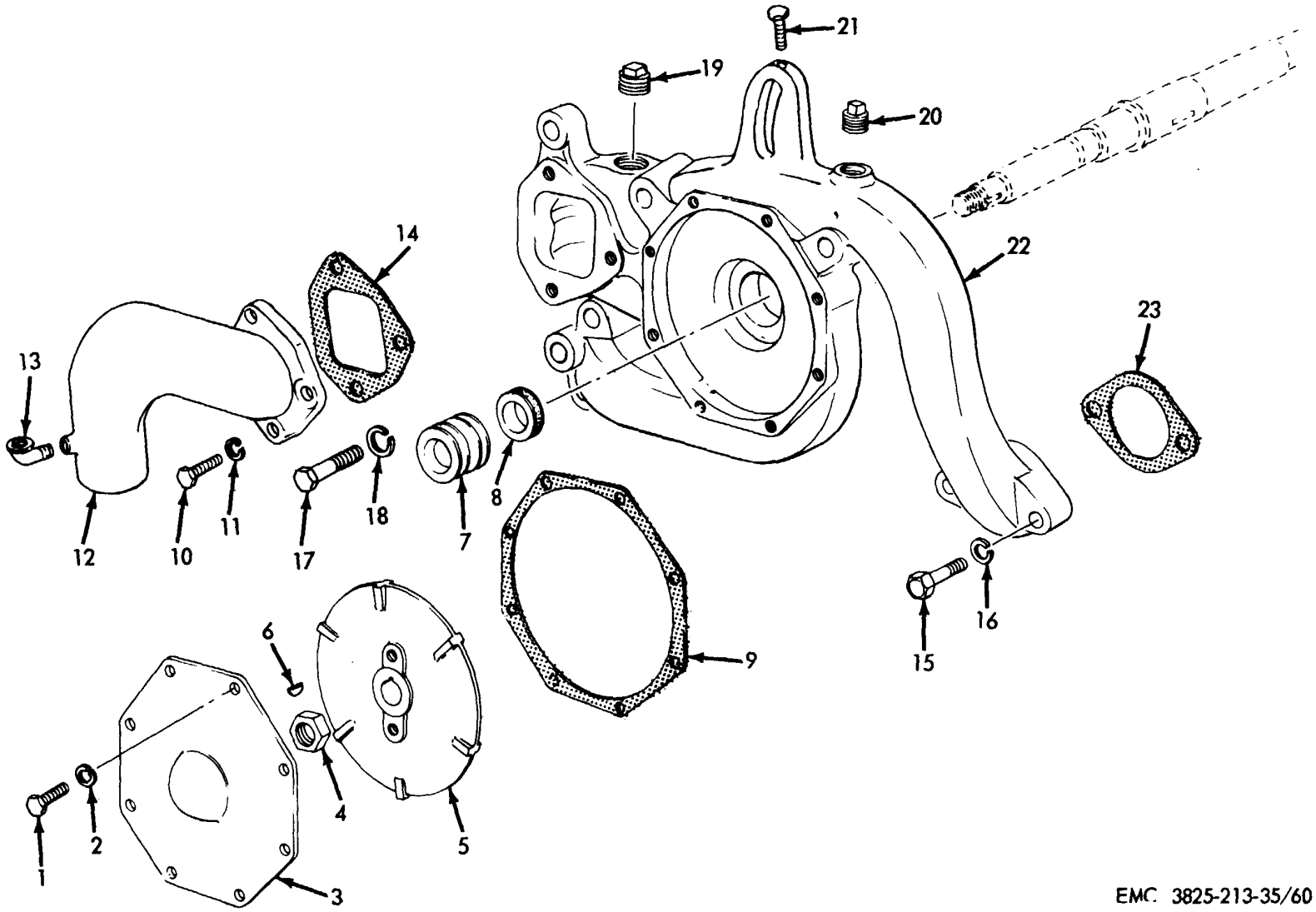


Figure 60. Plow and carrier engine water pump assemblies, disassembly and reassembly, exploded view.

1 Screw, cap, 1/4-20 x 1/2 in. (8 rqr)
2 Washer, lock, 1/4 in. (8 rqr)
3 Cover
4 Nut, 9/16-18, special
5 Impeller
6 Key
7 Seal
8 Seal seat
9 Gasket
10 Screw, cap, 3/8-16 x 1 in. (3 rqr)
11 Washer, lock, 3/8 in. (3 rqr)
12 Water pump elbow
13 Elbow
14 Gasket
15 Screw, cap, 3/8-16 x 1 3/4 in. (4 rqr)
16 Washer, lock, 3/8 in. (4 rqr)
17 Screw, cap, 3/8-16 x 2 5/8 in. (3 rqr)
18 Washer, lock, 3/8 in. (3 rqr)
19 Plug, pipe, 1 in.
20 Plug, pipe, 3/8 in.
21 Screw, adjusting, special
22 Pump body
23 Gasket (2 rqr)

Figure 60 - Continued.

(2) Install the plow and carrier fan and drive pulley (TM 5-3825-213-20).
(3) Install the generator and bracket (TM 5-3825-213-20).
(4) Install the plow engine radiator (TM 5-3825-213-20), and carrier engine radiator (par. 212).

Section X. PLOW AND CARRIER ENGINE CYLINDER HEAD VALVES, ROCKER ARM ASSEMBLY, PUSH RODS, AND LIFTERS

217. General

The valves and rocker arm assemblies are mounted in the cylinder heads. The rocker arm assemblies reverse the direction of thrust of the push rods to actuate the valves at the proper time in relation to the engine cycle. The cylinder head contains valve guides and valve seat inserts for inexpensive replacement in the event of damage and excessive wear.

218. Plow and Carrier Engine Cylinder Head, Valves, Rocker Arm Assembly, Push Rods, and Lifters Removal and Disassembly

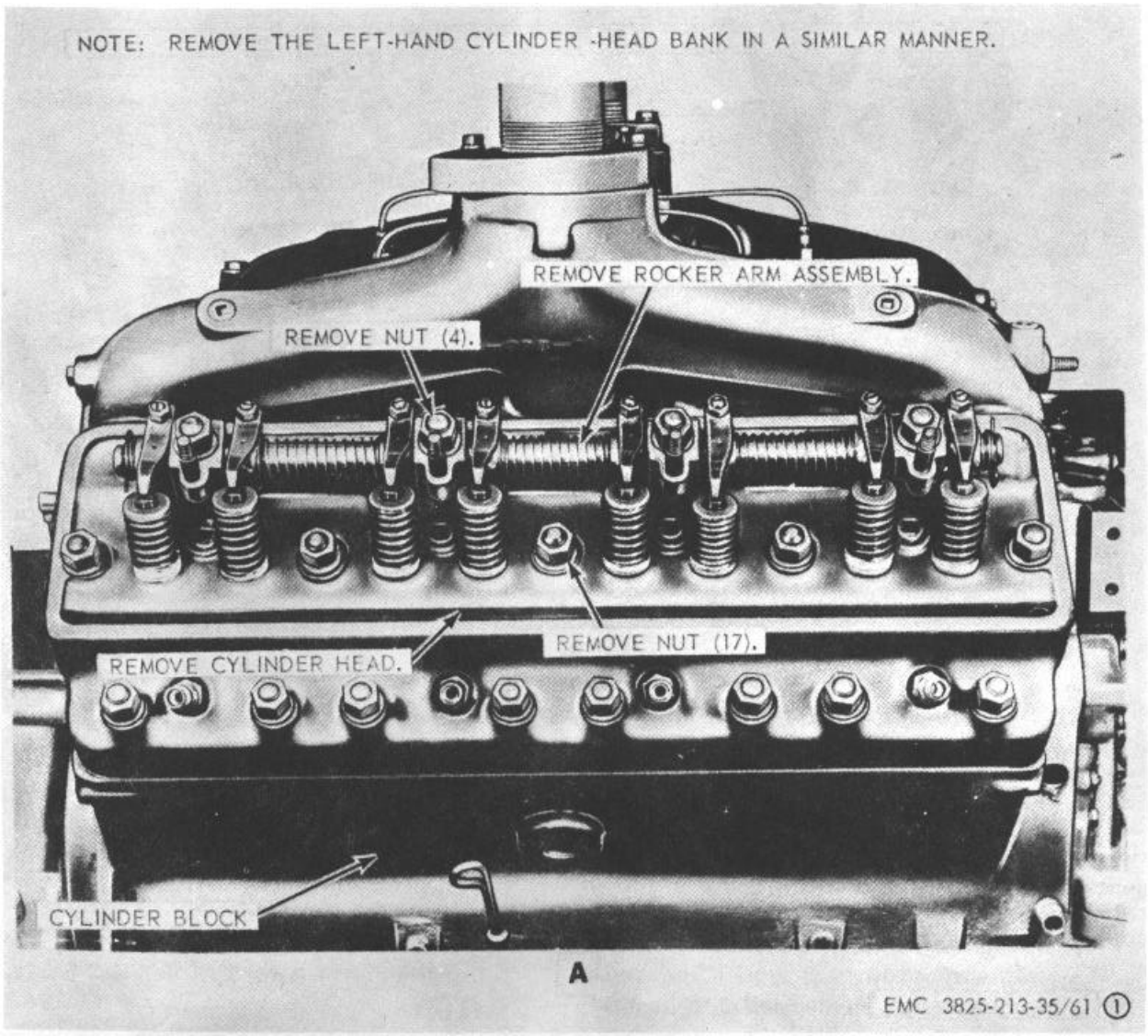
a. Removal.
(1) Remove the rocker arm covers (TM 5-3825-213-20).
(2) Remove the plow and carrier engine cylinder head, rocker assembly, push rods, and lifters as instructed on figure 61.

b. Disassembly. Disassemble the plow and carrier engine cylinder head, valves, and rocker arm assembly in numerical sequence as illustrated on figure 62.

219. Plow and Carrier Engine Cylinder Head, Valves, Rocker Arm Assembly, Valve Lifters, and Push Rods Cleaning, Inspection, and Repair

a. Cleaning. Clean all parts with an approved cleaning solvent and dry thoroughly.

b. Inspection and Repair.
(1) Inspect valve guides for excessive wear. If valve guides are to be replaced, this should be done before any work is done on valve seat inserts. This will insure that inserts will finish square with new guides. Clearance between valve guides and stems on intake valve should be between 0.002 and 0.004 inch and exhaust valve should be between 0.003 and 0.005 inch.
(2) Measure valve stem diameter. The valve stem should be 0.434 to 0.435 inch in diameter. If stems are less than 0.432 inch replace valve. Valves that are only slightly pitted can be refaced. The valve seat angle should be 45°.



A. Rocker arms and cylinder head.

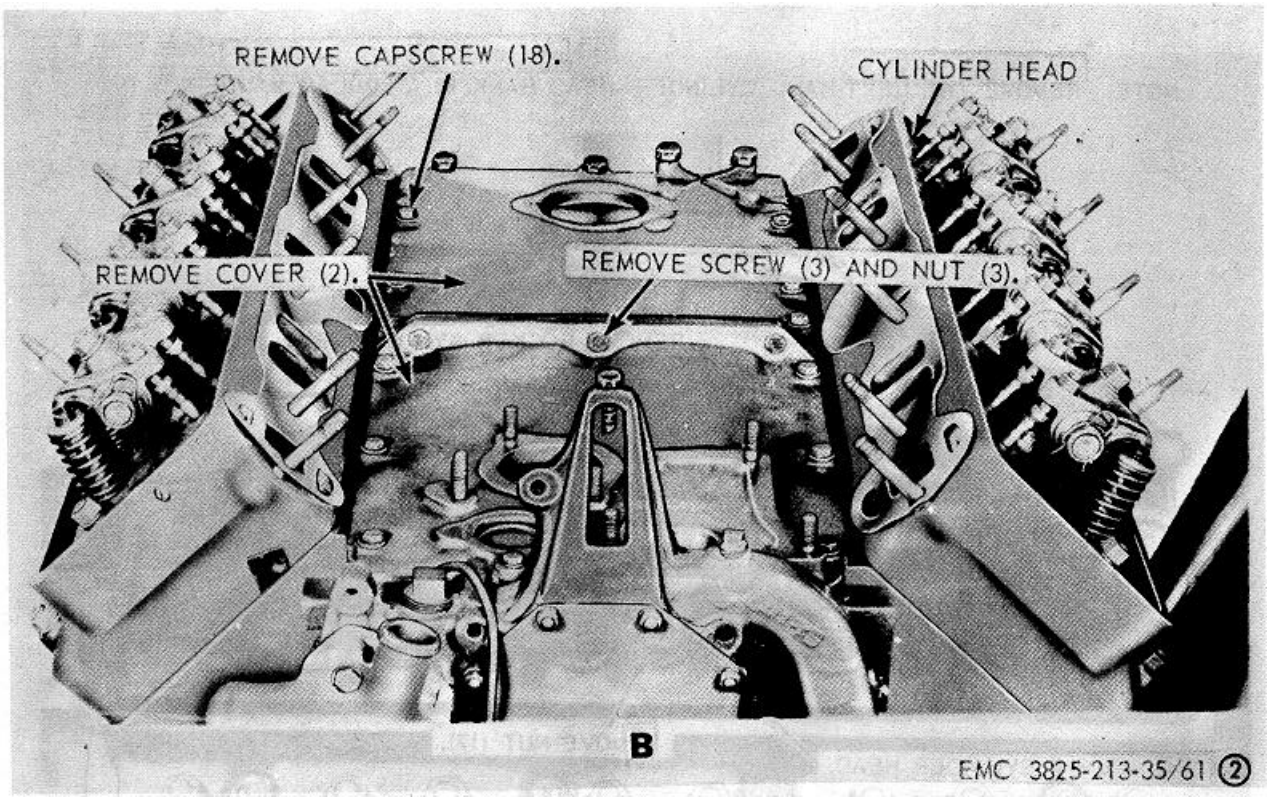
Figure 61. Plow and carrier engine cylinder head, rocker arm assembly, valve lifters, and push rods, removal and installation, and cylinder head tightening sequence.

(3) Inspect valve springs for wear or loss of tension. Replace a defective valve spring.

(4) Inspect all other parts for defective condition. Replace or repair all worn, damaged, or defective parts.

220. Plow and Carrier Engine Cylinder Head, Valves, Rocker Arm Assembly, Valve Lifters, and Push Rods Reassembly and Installation

a. Reassembly. Reassemble the plow and carrier engine cylinder head, valve, and rocker arm assembly in



B. Crankcase cover.

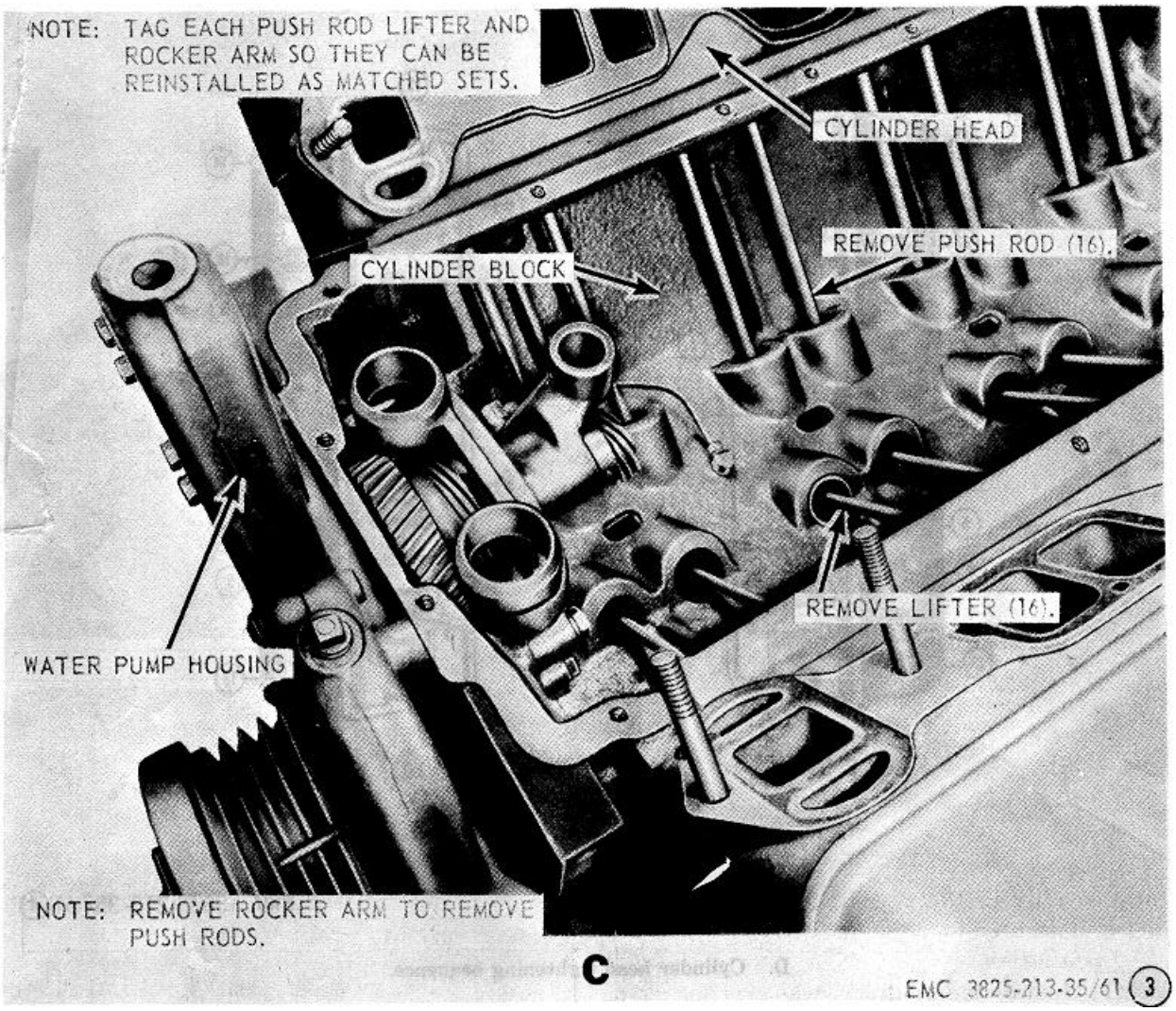
Figure 61 - Continued.

the reverse of numerical sequence illustrated on figure 62.

b. Installation.

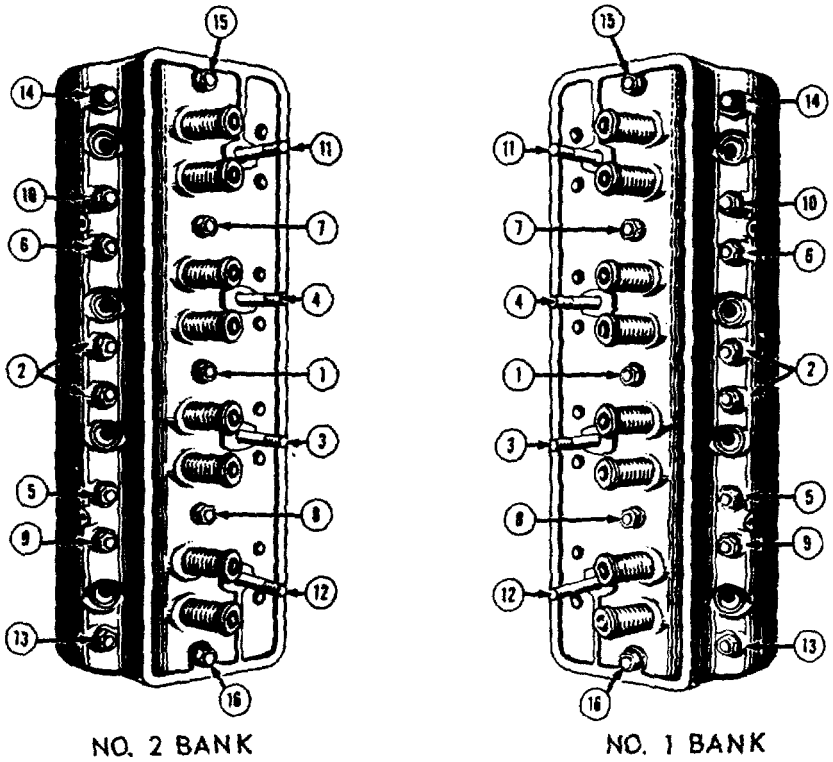
(1) Install the cylinder head, rocker arm assembly, push rods, and lifters and tighten the cylinder-head nuts in numerical sequence as instructed on figure 61.

(2) Adjust valve lash and install the rocker arm covers (TM 5-3825-213-20).



C. Push rods and lifters.

Figure 61. Continued.



D
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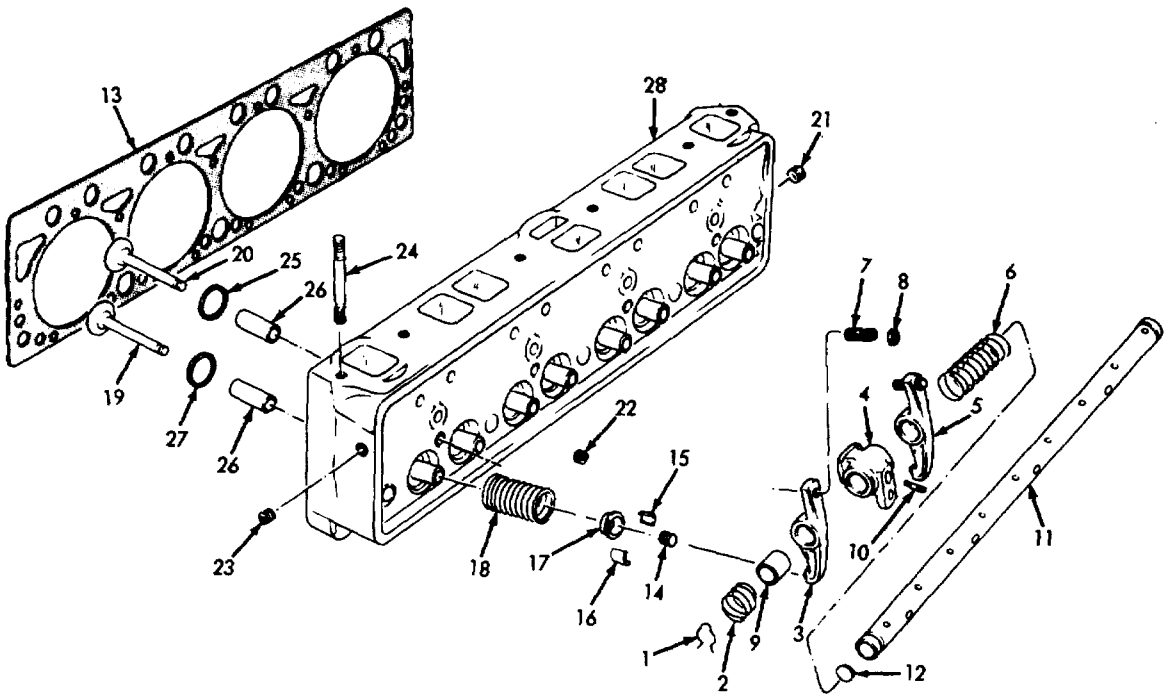
D. Cylinder head tightening sequence.

Figure 61. Continued.



1 Retainer (2 rqr)
2 Short compression spring (2 rqr)
3 Rocker arm (4 rqr)
4 Rocker arm shaft bracket (4 rqr)
5 Rocker arm (4 rqr)
6 Long compression spring (3 rqr)
7 Valve adjusting screw, 3/8-24, special (5 rqr)
8 Nut, 3/8-24 (8 rqr)
9 Sleeve bearing (8 rqr)
10 Stud, 3/8-16-24 x 2 1/8 in. (4 rqr)
11 Rocker arm shaft
12 Expansion plug
13 Gasket (2 rqr)
14 Valve stem cap (16 rqr)
15 Valve spring retainer lock (16 rqr)
16 Valve spring retainer lock (16 rqr)
17 Valve spring retainer (16 rqr)
18 Spring (16 rqr)
19 Exhaust valve (8 rqr)
20 Intake valve (8 rqr)
21 Plug, pipe, 1/8-27 (2 rqr)
22 Plug, pipe, 1/4-14 (2 rqr)
23 Plug, pipe, 1/8-27 (2 rqr)
24 Stud, 1/2-20 x 4 1/2 in. (12 rqr)
25 Intake valve seat insert (8 rqr)
26 Valve guide (16 rqr)
27 Exhaust valve seat insert (8 rqr)
28 Cylinder head (2 rqr.)

Figure 62. Plow and carrier engine cylinder head, valves, and rocker arms, disassembly and reassembly, exploded view.

Section XI. PLOW AND CARRIER ENGINE UPPER AND LOWER OIL PANS AND OIL PUMP ASSEMBLIES

221. General

The oil pump, driven by the crankshaft gear, draws oil through a floating suction screen so that the cleanest oil just under the surface can be recirculated regardless of the crankcase oil level. It is then discharged into a tube to the crankcase oil passage leading to the filter assemblies.

The regulating valve, which is built into the pump, returns the excess oil to the suction side of the pump, and maintains the correct oil pressure.

222. Plow and Carrier Engine Lower Oil Pans Removal and Disassembly

a. Removal.

(1) Remove the plow and carrier engines (pars. 49, 50).

(2) Remove the plow and carrier engine lower oil pans as instructed on figure 63.

b. Disassembly. Disassemble the plow and carrier engine lower oil pans in numerical sequence as illustrated on figure 64.

223. Plow and Carrier Engine Lower Oil Pans Cleaning, Inspection, and Repair

a. Cleaning. Clean all parts with an approved cleaning solvent and dry thoroughly.

b. Inspection and Repair. Inspect all parts for defective condition. Replace or repair all worn, defective, or damaged parts.

224. Plow and Carrier Engine Lower Oil Pans Reassembly and Installation

a. Reassembly. Reassemble the plow and carrier engine oil pans in the reverse of numerical sequence illustrated on figure 64.

b. Installation.

(1) Install the plow and carrier engine lower oil pans as instructed on figure 63.

(2) Install the plow and carrier engines (pars. 49, 50).

225. Plow and Carrier Oil Pump Assemblies Removal and Disassembly

a. Removal.

(1) Remove the plow and carrier lower oil pans (par. 222).

(2) Remove the plow and carrier engine oil pumps as instructed on figure 63.

b. Disassembly. Disassemble the plow and carrier engine oil pump in numerical sequence as illustrated on figure 65.

226. Plow and Carrier Engine Oil Pump Assemblies Cleaning, Inspection, and Repair

a. Cleaning. Clean all parts with an approved cleaning solvent and dry thoroughly.

b. Inspection and Repair. Inspect all parts for defective condition. Replace or repair worn, defective, or damaged parts.

227. Plow and Carrier Engine Oil Pump Assemblies Reassembly and Installation

a. Reassembly. Reassemble the plow and carrier engine oil pumps in reverse of nut cal sequence illustrated on figure 65.

b. Installation.

(1) Install the plow and carrier engine oil pumps as instructed on figure 63.

(2) Install the plow and carrier engine lower oil pans (par. 224).

228. Plow and Carrier Engine Upper Oil Pans Removal

a. Remove the plow and carrier engine oil pumps (par. 225).

b. Remove the plow and carrier engine upper oil pans as instructed on figure 63.

229. Plow and Carrier Engine Upper Oil Plans Cleaning, Inspection, and Repair

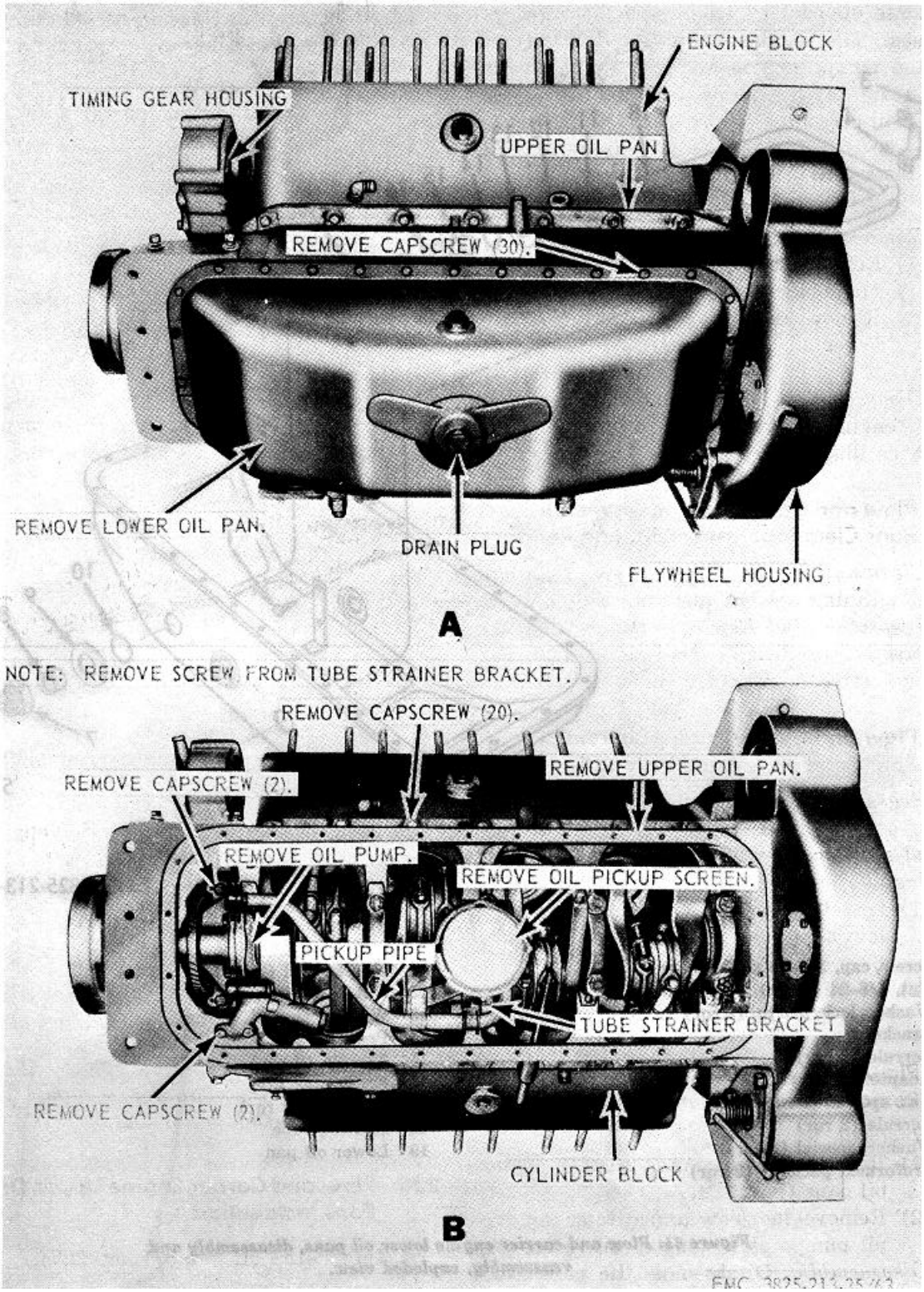
a. Cleaning. Clean all parts with an approved cleaning solvent and dry thoroughly.

b. Inspection and Repair. Inspect oil pan for defective condition. Replace or repair a worn, damaged, or defective oil pan.

230. Plow and Carrier Engine Upper Oil Pans Installation

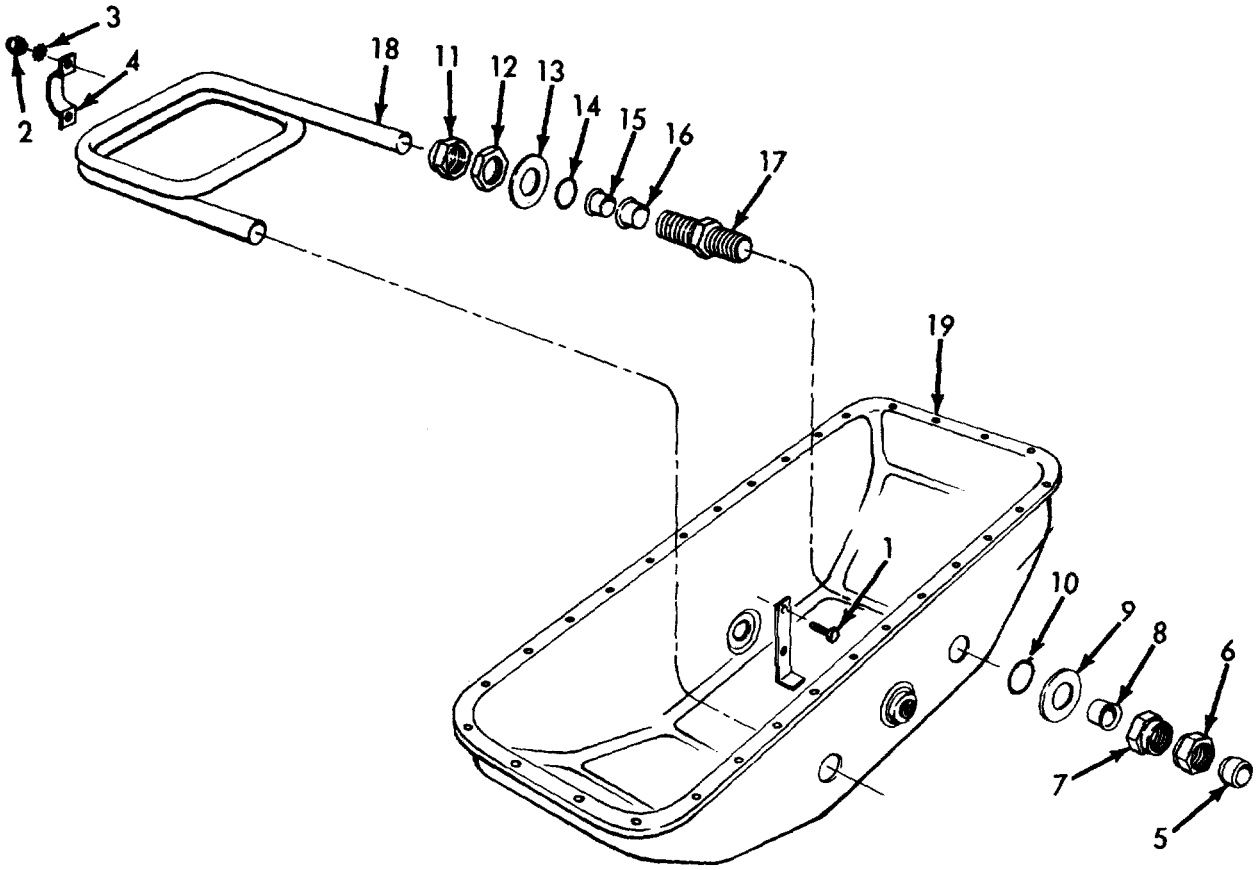
a. Install the oil pump (par. 227).

b. Install the upper plow and carrier engine oil pan as instructed on figure 63.



A. Lower oil pan, removal and installation.
B. Oil pump, pickup screen, and upper oil pan assemblies, removal and installation.

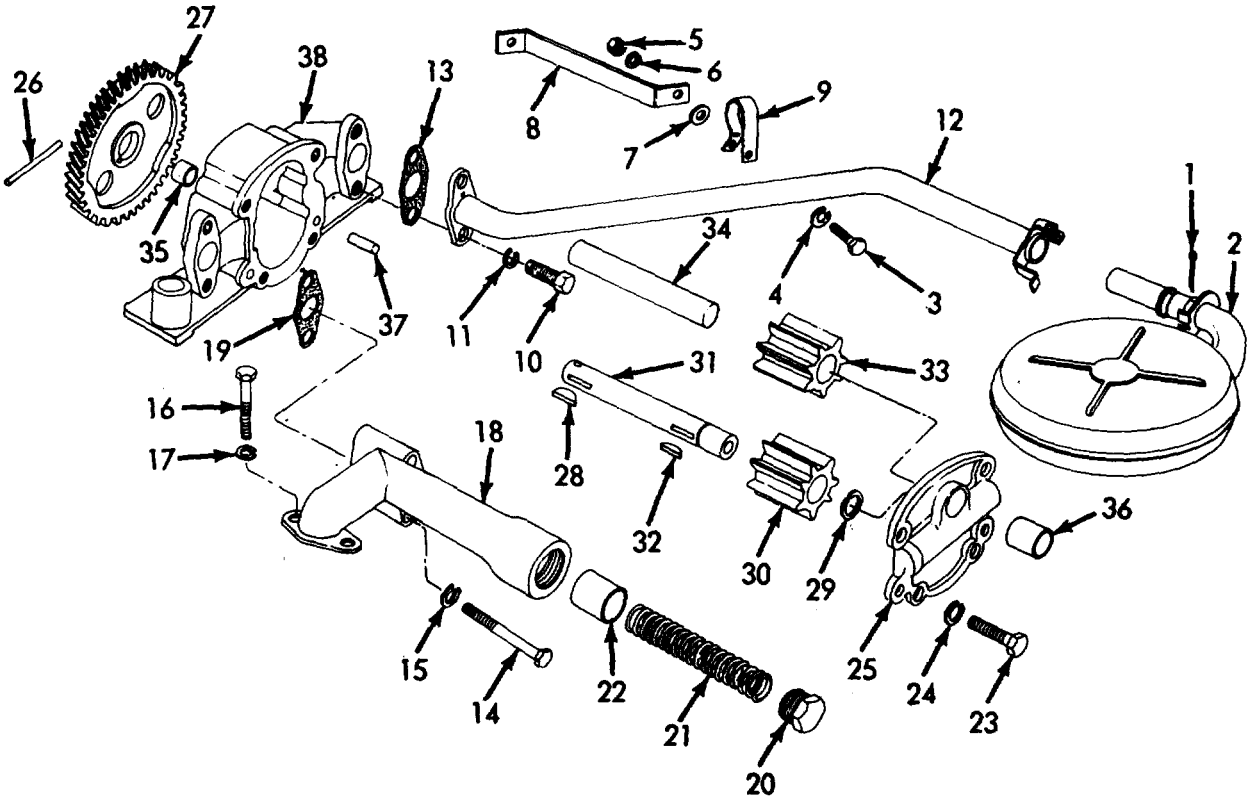
Figure 63. Plow and carrier engine lower oil pan, oil pump, pickup screen, and upper oil pan assemblies, removal and installation.



EMC 3825-213-35/64

1 Screw, cap, 3/8-24 x 1 in. (2 rqr)
2 Nut, 3/8-24 (2 rqr)
3 Washer, lock, 3/8 in. (2 rqr)
4 Bracket
5 Ferrule (2 rqr)
6 Adapter (2 rqr)
7 Nut, special (2 rqr)
8 Ferrule (2 rqr)
9 Washer, special (2 rqr)
10 Preformed packing (2 rqr)
11 Nut, special (2 rqr)
12 Nut, lock (2 rqr)
13 Washer, special (2 rqr)
14 Preformed packing (2 rqr)
15 Ferrule (2 rqr)
16 Ferrule (2 rqr)
17 Coupling (2 rqr)
18 Heating tube
19 Lower oil pan

Figure 64. Plow and carrier engine lower oil pans, disassembly and reassembly, exploded view.



1 Pin, cotter, 1 1/2 x 1/8 in.
2 Strainer
3 Screw, cap, 5/16-18 x 7/8 in.
4 Washer, lock
6 Nut, 5/16-18
6 Washer, lock, 5/16 in.
7 Washer, flat, 5/16 in.
8 Bracket
9 Clamp
10 Screw, cap, 5/16-18 x 3/4 in. (2 rqr)
11 Washer, lock, 5/16 in. (2 rqr)
12 Strainer tube
13 Gasket
14 Screw, cap, 5/16-18 x 2 1/4 in. (2 rqr)
15 Washer, lock, 5/16 in. (2 rqr)
16 Screw, cap, 5/16-18 x 1 1/2 in. (2 rqr)
17 Washer-, lock, 6/16 in. (2 rqr)
18 Connector
19 Gasket
20 Plug
21 Spring
22 Sleeve
28 Screw, cap, 5/16-18 x 7/8 in. (4 rqr)
24 Washer, lock, 5/16 in. (4 rqr)
25 Cover
26 Drive pin
27 Gear
28 Key
29 Ring, retaining
30 Gear
31 Shaft, drive
32 Key
33 Gear, idler
34 Shaft, idler
35 Bushing
36 Bushing
37 Pin, straight headless (2 rqr)
38 Housing

Figure 65. Plow and carrier engine oil pump assemblies, disassembly and reassembly, exploded view.

Section XII. PLOW AND CARRIER ENGINE DISTRIBUTOR AND GOVERNOR DRIVE ASSEMBLY

231. General

The distributor and governor drive assembly consists of the governor drive gear, drive housing, distributor drive gear, and drive shaft. The assembly is lubricated under pressure from the engine lubrication system. An oil seal on the water pump end of the shaft prevents leakage of oil from the bushing located on the timing gear cover.

232. Plow and Carrier Engine Distributor and Governor Drive Assembly Removal and Disassembly

a. Removal.

(1) Remove the plow and carrier engine water pump, impeller, and seal (par. 214).

(2) Remove the crankcase cover (fig. 61 B).

(3) Remove the plow and carrier engine distributor and governor drive assemblies as instructed on figure 66.

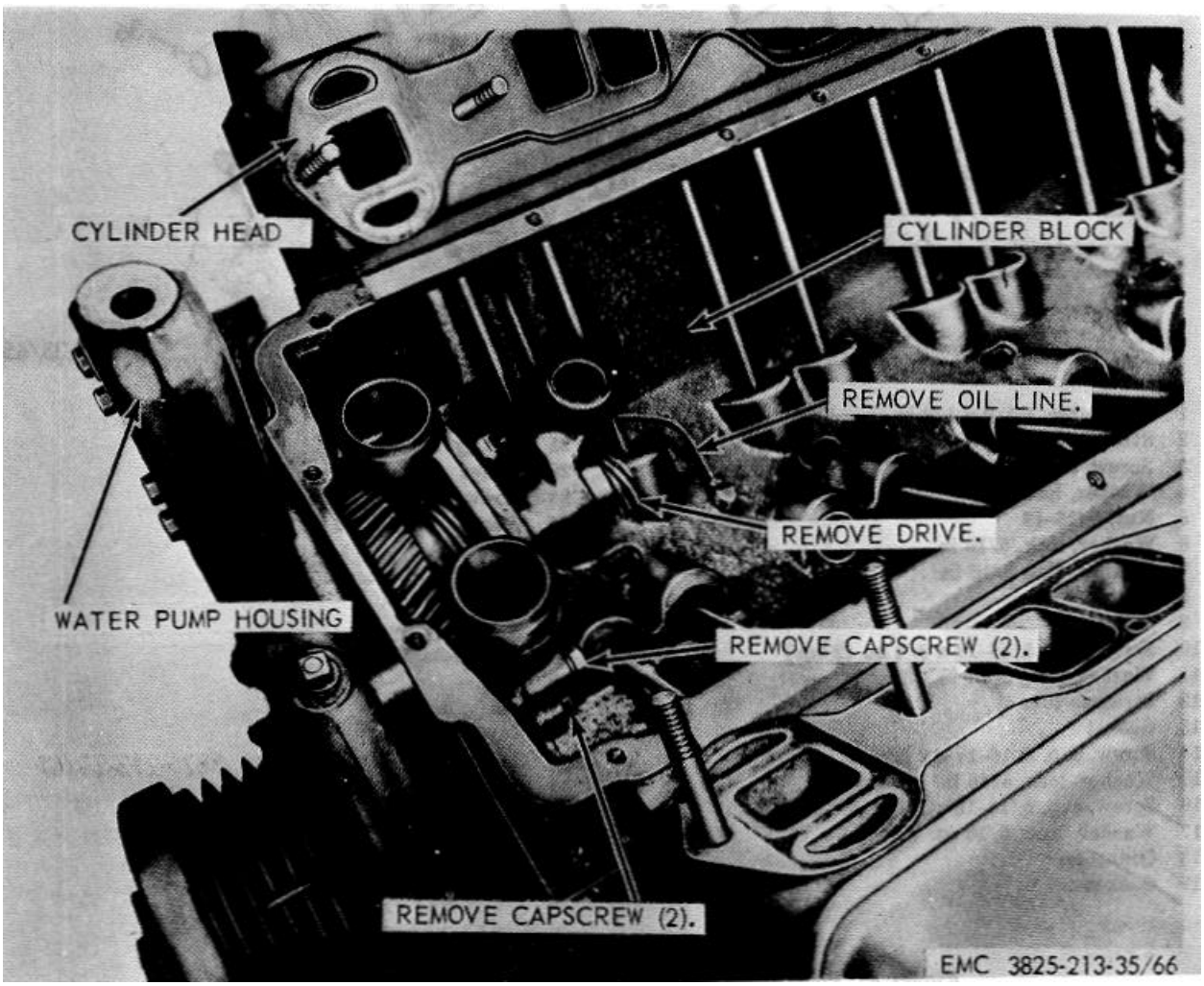


Figure 66. Plow and carrier engine, distributor and governor drive assembly, removal and installation.

b. Disassembly. Disassemble the plow and carrier engine distributor and governor drive assemblies in numerical sequence as illustrated on figure 67.

233. Plow and Carrier Engine Distributor and Governor Drive Assembly Cleaning, Inspection, and Repair

a. Cleaning. Clean all parts with an approved cleaning solvent and dry thoroughly.

b. Inspection and Repair. Inspect all parts for a defective condition. Replace or repair worn, damaged, or defective parts.

234. Plow and Carrier Engine Distributor and Governor Drive Assembly Reassembly and Installation

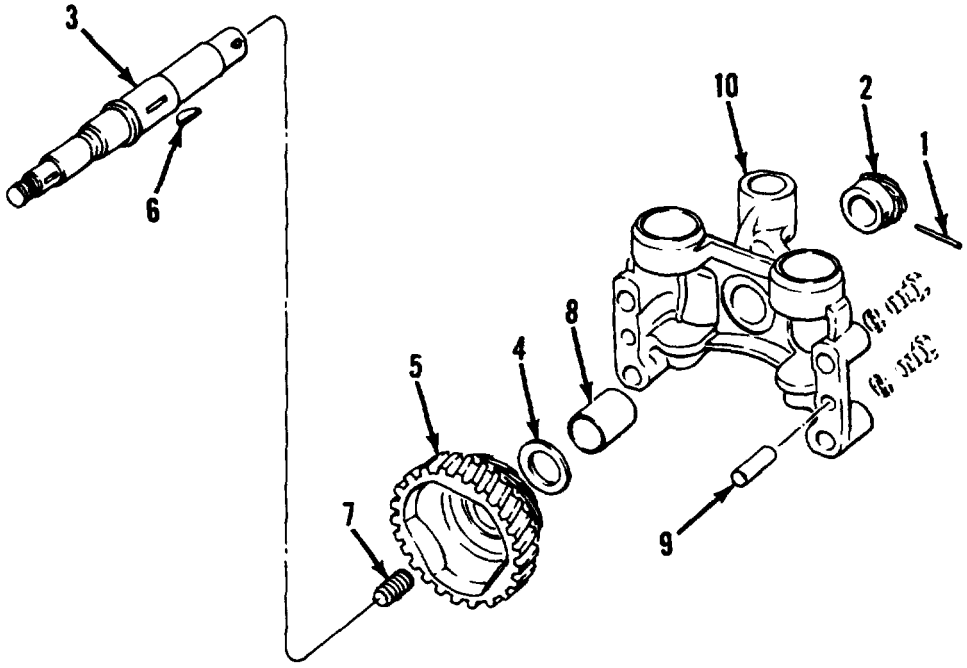
a. Reassembly. Reassemble the plow and carrier engine distributor and governor drive assembly in the reverse of numerical sequence illustrated on figure 67.

b. Installation.

(1) Install the plow and carrier distributor and governor drive assembly as instructed on figure 66.

(2) Install the crankcase cover (B fig. 61).

(3) Install the plow and carrier engine water pump, impeller and seal (par. 216).



EMC 3825-213-35/67

1 Tapered pin
2 Governor drive gear
3 Accessory drive shaft
4 Thrust washer
5 Accessory drive gear
6 Woodruff key, No. 406
7 Plug, pipe, 18-27
8 Sleeve bearing (4 rqr)
9 Dowel pin (2 rqr)
10 Accessory drive housing.

Figure 67. Plow and carrier engine distributor and governor drive assembly, exploded view.

Section XIII. PLOW AND CARRIER ENGINES FLYWHEEL AND HOUSING ASSEMBLY

235. General

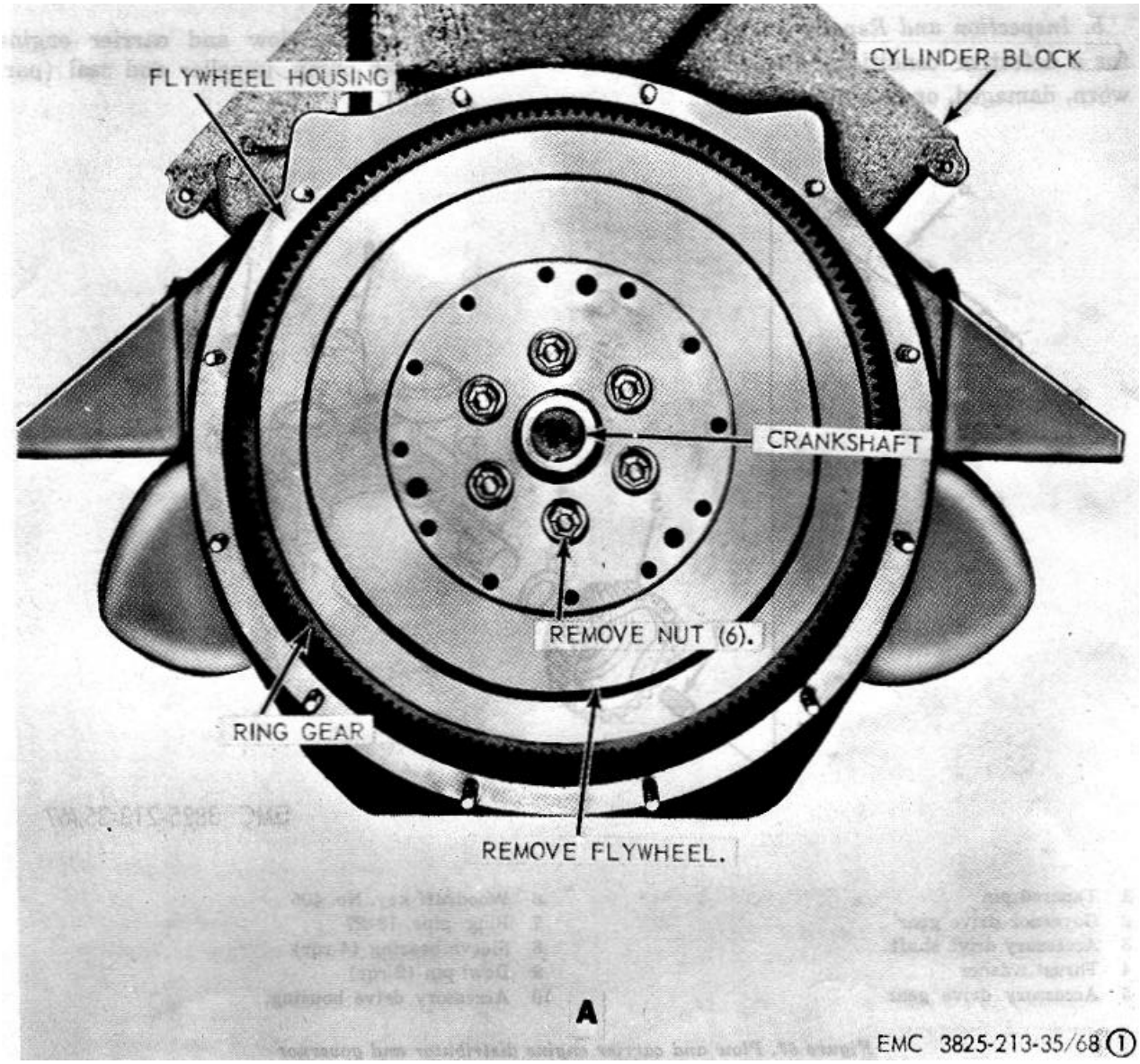
The flywheel acts to smooth power output of the engines particularly at idling speed. The flywheel ring gear and starter motor provide a means of cranking the engine. The drive pinion of the plow engine starter motor engages the flywheel ring gear to turn the engine for starting.

236. Plow and Carrier Engine Flywheel and Housing Assembly Removal

a. Remove the plow engine clutch assembly (fig. 32).

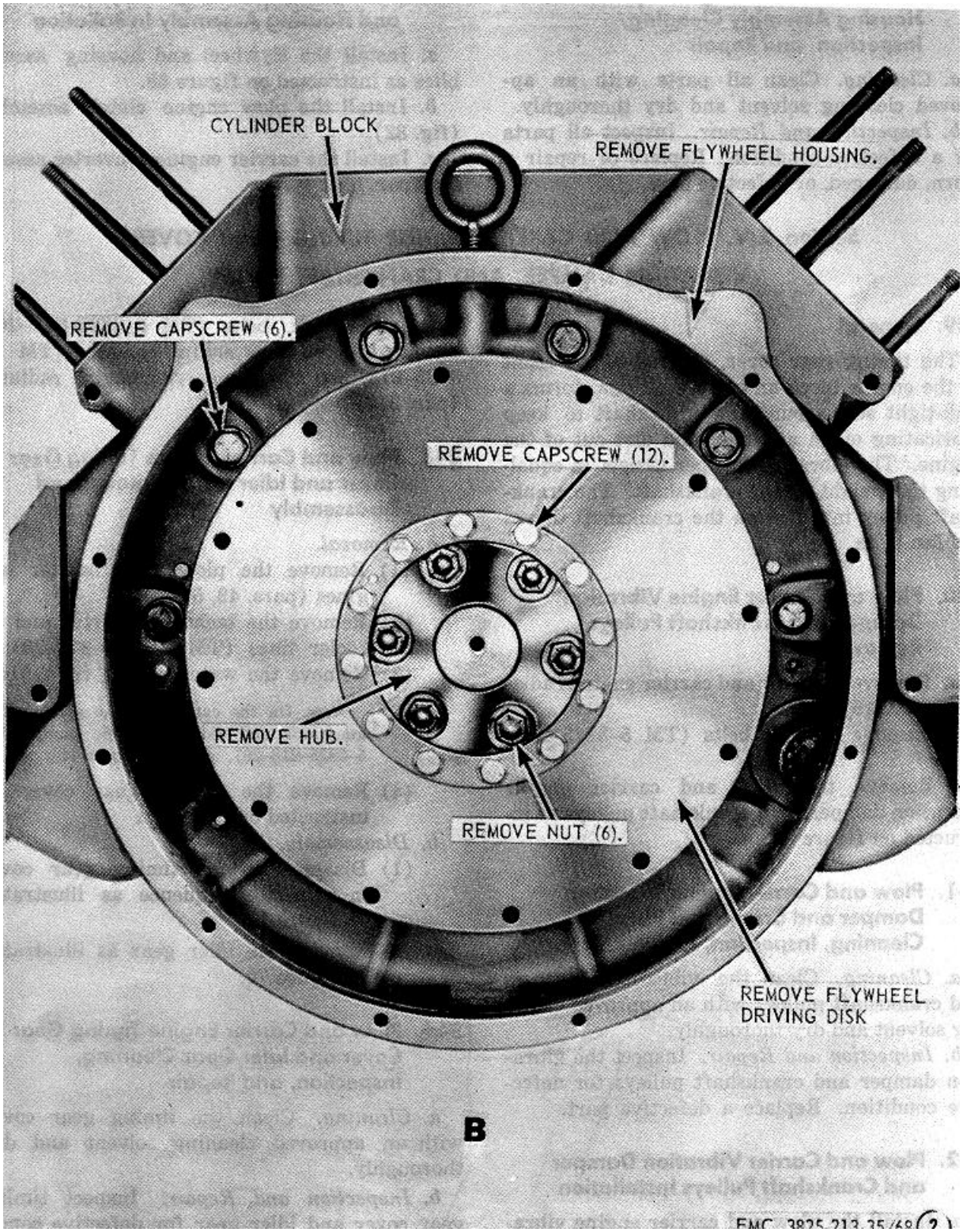
b. Remove the carrier engine converter assembly (par. 50).

c. Remove the flywheel and housing assemblies as instructed on figure 68.



A. Plow engine flywheel and housing removal points.

Figure 68. Plow and carrier engine flywheel, housing, and driving disk assemblies, removal and installation.



B. Carrier engine flywheel driving disk and housing removal points.

Figure 68. Continued.

237. Plow and Carrier Engine Flywheel and Housing Assembly Cleaning, Inspection, and Repair

a. Cleaning. Clean all parts with an approved cleaning solvent and dry thoroughly.

b. Inspection and Repair. Inspect all parts for a defective condition. Replace or repair a worn, damaged, or defective part.

238. Plow and Carrier Engine Flywheel and Housing Assembly Installation

a. Install the flywheel and housing assemblies as instructed on figure 68.

b. Install the plow engine clutch assembly (fig. 32).

c. Install the carrier engine converter assembly (par. 50).

Section XIV. PLOW AND CARRIER ENGINE TIMING GEAR COVERS, VIBRATION DAMPER, AND CRANKSHAFT PULLEY

239. General

The timing gear cover, secured to the front of the engine block and upper oil pan, forms a leak-tight seal around the crankshaft to keep lubricating oil in and dust and dirt out of the engine. The vibration damper assists in equalizing the weight on the crankshaft. The crankshaft pulley installed on the crankshaft drives the fan belts.

240. Plow and Carrier Engine Vibration Damper and Crankshaft Pulleys Removal

a. Remove the plow and carrier engine radiator (par. 210).

b. Remove the fan belts (TM 5-3825-213-20).

c. Remove the plow and carrier engine vibration dampers and crankshaft pulleys as instructed on figure 69.

241. Plow and Carrier Engine Vibration Damper and Crankshaft Pulleys Cleaning, Inspection, and Repair

a. Cleaning. Clean the vibration dampers and crankshaft pulleys with an approved cleaning solvent and dry thoroughly.

b. Inspection and Repair. Inspect the vibration damper and crankshaft pulleys for defective condition. Replace a defective part.

242. Plow and Carrier Vibration Damper and Crankshaft Pulleys Installation

a. Install the plow and carrier engine vibration dampers and crankshaft pulleys as instructed on figure 69.

b. Install fan belts (TM 5-3825-213-20).

c. Install the plow engine radiator (TM 5-3825-213-20), and the carrier engine radiator (par. 212).

243. Plow and Carrier Engine Timing Gear Cover and Idler Gear Removal and Disassembly

a. Removal.

(1) Remove the plow and carrier engines (pars. 49, 50).

(2) Remove the tachometer drive and oil cooler lines (TM 5-3825-213-20).

(3) Remove the water pumps (par. 214).

Note.
On the carrier engine also remove generator and plow hydraulic pump (TM 5-3825-213-20), and compressor (fig. 22).

(4) Remove the timing gear cover as instructed on figure 69.

b. Disassembly.

(1) Disassemble the timing gear cover in numerical sequence as illustrated on figure 70.

(2) Remove the idler gear as illustrated on figure 70.

244. Plow and Carrier Engine Timing Gear Cover and Idler Gear Cleaning, Inspection, and Repair

a. Cleaning. Clean the timing gear cover with an approved cleaning solvent and dry thoroughly.

b. Inspection and Repair. Inspect timing gear cover and idler gear for defective condition. Replace defective timing gear cover and idler gear.

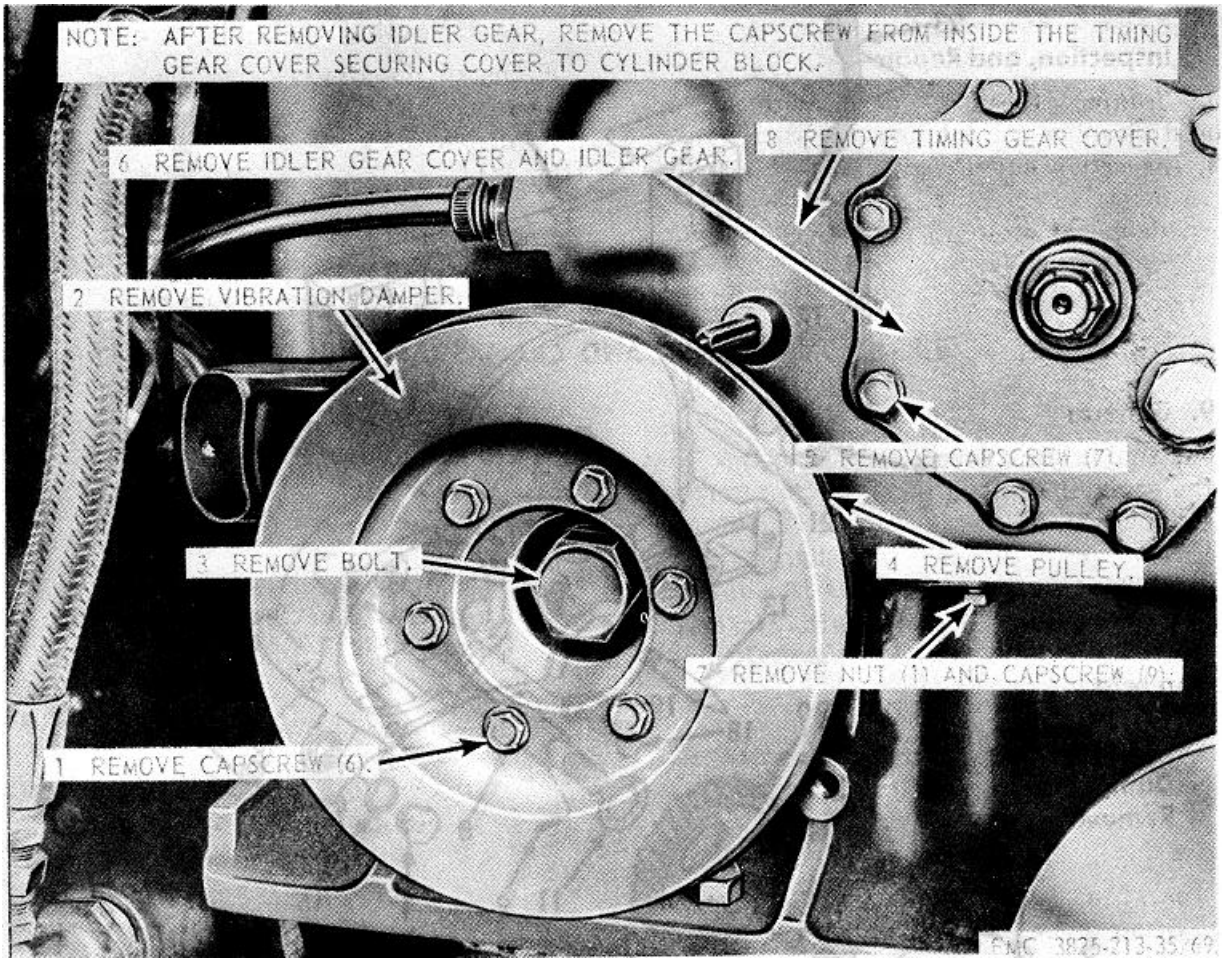


Figure 69. Plow and carrier engine vibration damper, idler gear, and timing gear cover, removal and installation.

245. Plow and Carrier Engine Timing Gear Cover and Idler Gear Reassembly and Installation

a. Reassembly.

(1) Install the idler gear as illustrated on figure 70.

(2) Reassemble the timing gear cover in the reverse of numerical sequence illustrated on figure 70.

b. Installation.

(1) Install the timing gear cover as instructed on figure 69.

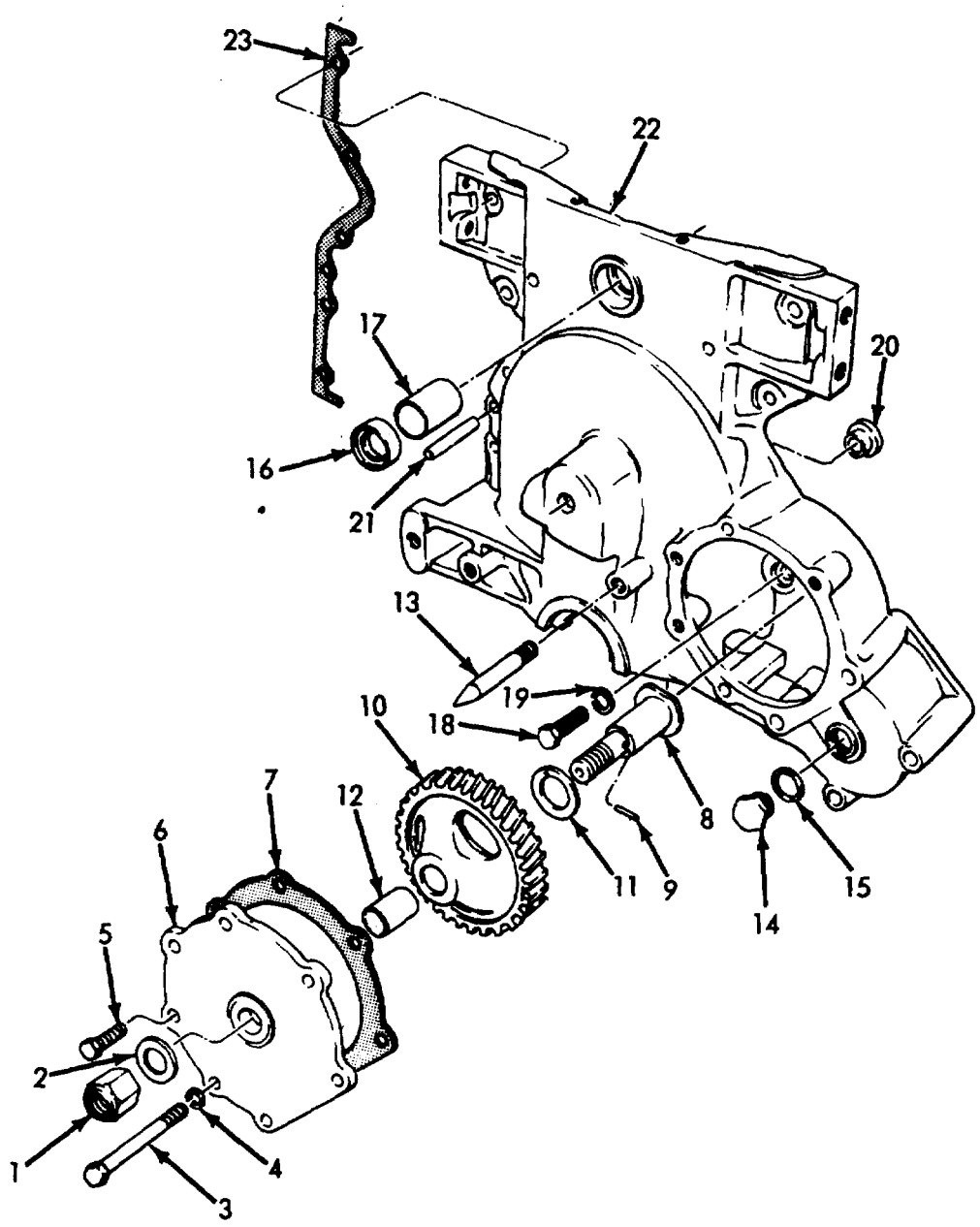
(2) Install the tachometer drive and oil cooler lines (TM 5-3825-213-20).

(3) Install the water pumps (par. 216).

(4) Install the plow and carrier engine (pars. 49, 50).

Note.

On the carrier engine also install the generator plow hydraulic pump (TM 5-3825-9213-20), and compressor (fig. 22).



EMC 3825-213-35/70

1 Nut, special
2 Washer, flat, 3/4 in.
3 Screw, cap, 3/8-16 x 4 in. (2 rqr)
4 Washer, lock, 3/8 in. (2 rqr)
5 Screw, cap, 3/8-16 x 1 in. (5 rqr)
6 Idler gear cover
7 Gasket
8 Shaft
9 Pin, straight headless
10 Idler gear
11 Thrust washer
12 Sleeve bearing
13 Timing pointer pin
14 Oil pressure plug
15 Preformed packing
16 Oil seal
17 Sleeve bearing
18 Screw, cap, hex, 3/8-16 x 1 in.
19 Washer, lock, 3/8 in.
20 Camshaft thrust plug
21 Dowel pin
22 Timing gear cover
23 Gasket

Figure 70. Plow and carrier engine timing gear cover and idler gear, disassembly and reassembly, exploded A.

Section XV. PLOW AND CARRIER ENGINE PISTONS AND CONNECTING RODS

246. General

The connecting rods are drilled for pressure lubricating to the piston pin end of the connecting rods, bushed with a replaceable bronze bushing. The connecting rods and caps are matched and must not be interchanged or turned end-for-end. he pistons are made of aluminum alloy and are grooved for four pistons rings.

247. Plow and Carrier Engine Pistons and Connecting Rods Removal and Disassembly

a. Removal.

(1) Remove the plow and carrier engine (pars. 49, 50).

(2) Remove plow and carrier engine cylinder heads (par. 218).

(3) Remove plow and carrier engine upper oil pans (par. 228).

(4) Remove the plow and carrier engine pistons and connecting rods as instructed on figure 71.

b. *Disassembly.* Disassemble the plow and carrier engine pistons and connecting rods in the numerical sequence as illustrated on figure 72.

248. Plow and Carrier Engine Pistons and Connecting Rods Cleaning, Inspection, and Repair

a. Cleaning. Clean all parts with an approved cleaning solvent and dry thoroughly. Scrape carbon from pistons and ring lands and remove varnish from cylinder walls.

b. Inspection and Repair.

(1) Measure outside of piston to determine amount of wear. The proper diameter at piston skirt at right angles to piston pins is 6.372 to 5.375 inches.

(2) Inspect the fit of each new piston ring in the grooves of the piston. The fit must be free around the piston circumference. Refer to paragraph 4.

(3) Measure outside diameter of piston pins. The proper diameter is 1.499 to 1.500 inches. If diameter is smaller than 1.497 inches replace the piston pins.

(4) Inspect connecting rod bushings for scoring, scratches, and other indications of wear or damage. The inside diameter should be 1.500 to 1.501 inches.

(5) Inspect all other parts for defective condition. Replace or repair worn, damaged, or defective parts.

249. Plow and Carrier Engine Pistons and Connecting Rods Reassembly and Installation

a. Reassembly. Reassemble the plow and carrier engine pistons and connecting rods in reverse of numerical sequence illustrated on figure 72.

b. Installation.

(1) Install the plow and carrier engine pistons and connecting rods as instructed on figure 71.

(2) Install the plow and carrier engine upper oil pan (par. 230).

(3) Install the plow and carrier engine cylinder heads (par. 220).

(4) Install the plow and carrier engine (pars. 49, 50).

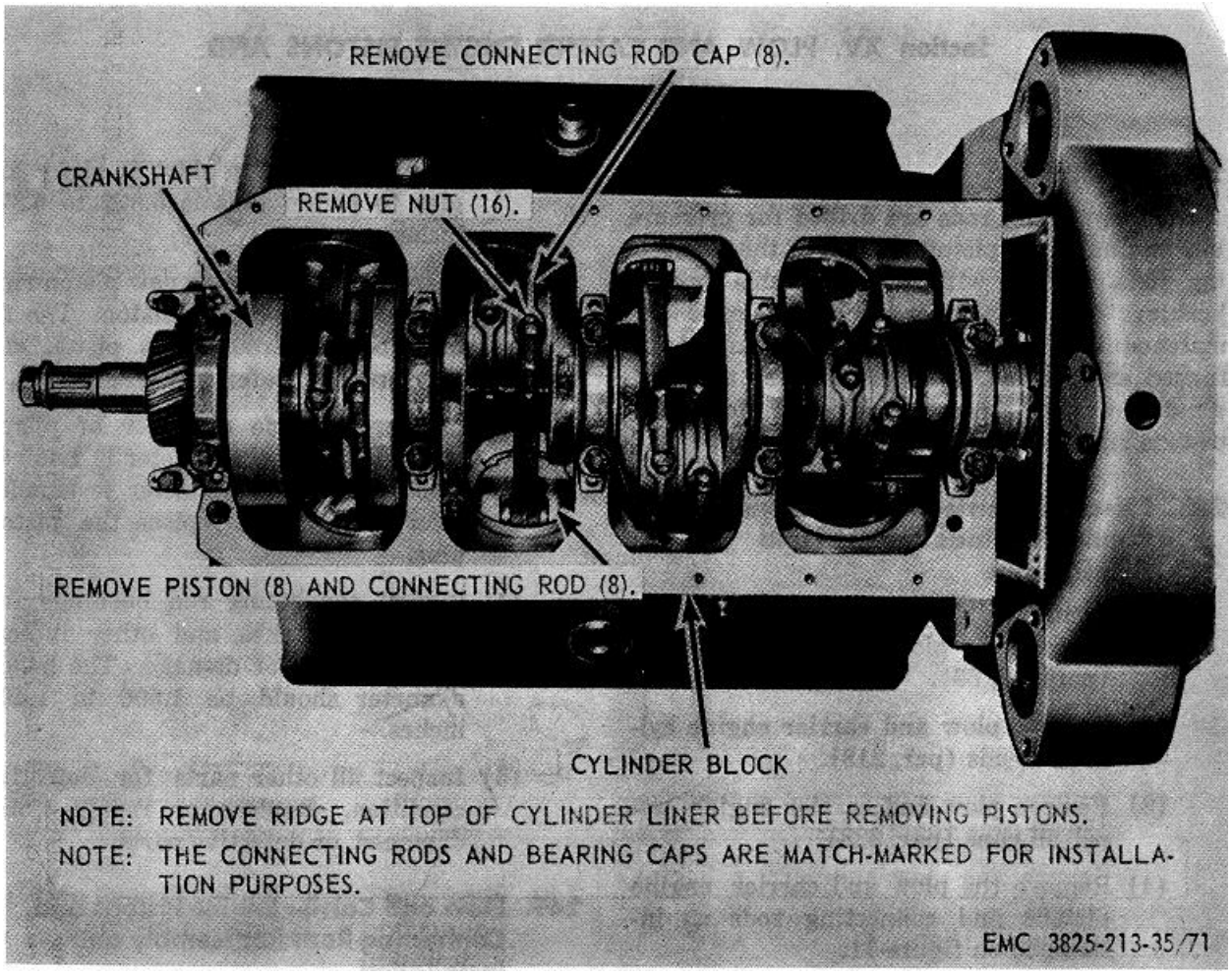


Figure 71. Plows and carrier engine pistons and connecting rods, removal and installation.

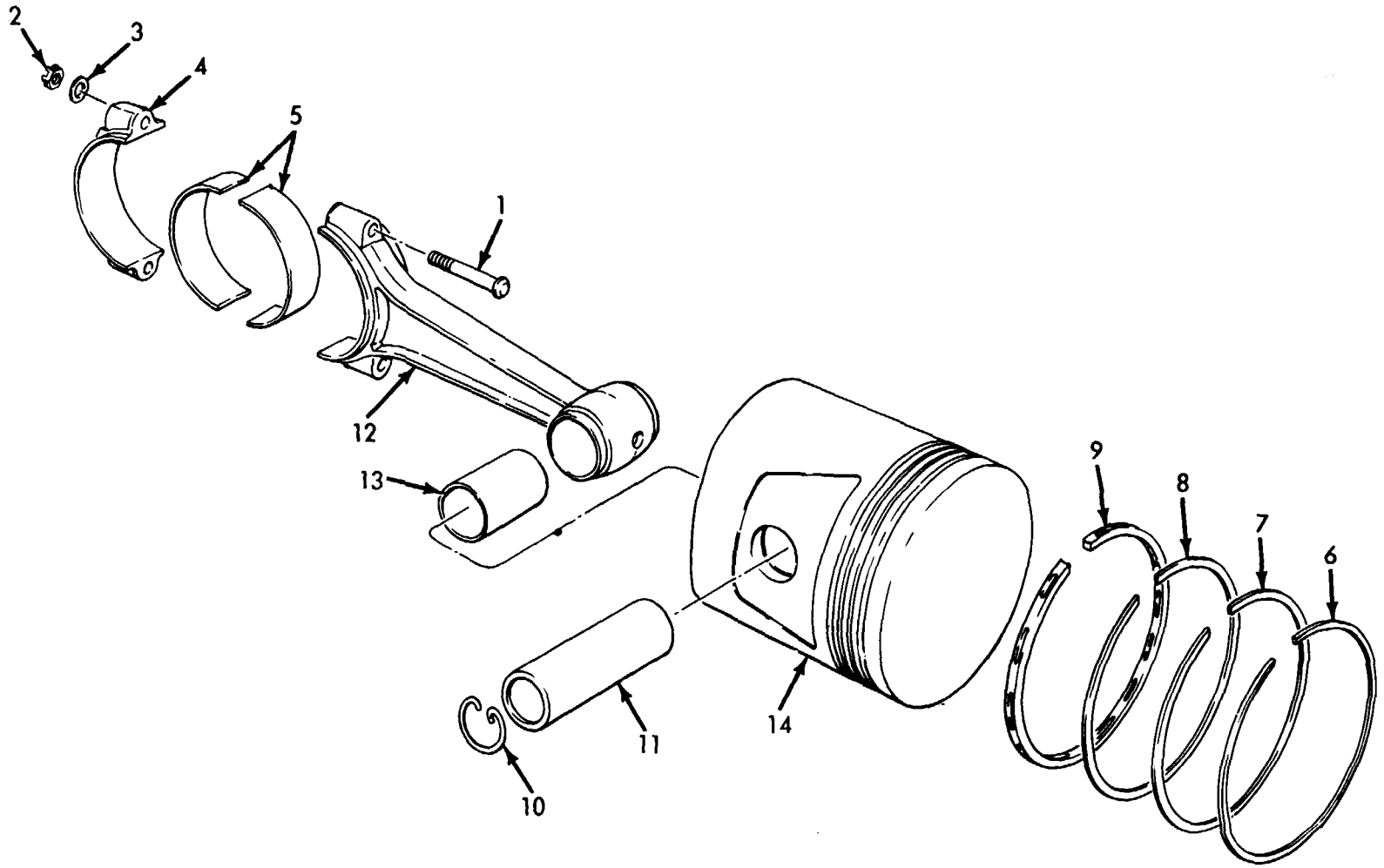


Figure 72. Plow and carrier engine piston and connecting rods, disassembly and reassembly, exploded view.

1 Connecting rod bolt (16 rqr)
2 Nut, self-locking, 1/2-20 (16 rqr)
3 Washer, lock, 1/2 in. (16 rqr)
4 Connecting rod cap (8 rqr)
6 Connecting rod bearing (16 rqr)
6 Top compression piston ring (8 rqr)
7 Compression ring (8 rqr)
8 Compression ring (8 rqr)
9 Oil control piston ring (8 rqr)
10 Piston pin retaining ring (16 rqr)
11 Piston pin (8 rqr)
12 Connecting rod (8 rqr)
13 Sleeve bearing (8 rqr)
14 Piston (8 rqr)

Figure 72-Continued.

Section XVI. PLOW AND CARRIER ENGINE CRANKSHAFT AND MAIN BEARINGS

250. General

The crankshaft is counterweighted and supported in the engine by five main bearings. The main bearings are of the cap and -shell type. The main bearings are precision fit with replaceable inserts. The crankshaft gears are helical cut.

251. Plow and Carrier Engine Crankshaft and Main Bearings Removal

a. Remove the plow and carrier engine (pars. 49, 50).

b. Remove the fan blade and pulley (TM 5-3825-213-20).

c. Remove the intake and exhaust manifolds (TM 5-3825-213-20).

d. Remove the plow and carrier engine cylinder heads (par. 218).

e. Remove the plow and carrier engine crankcase covers and timing gear covers (pars. 240, 243).

f. Remove the plow and carrier engine flywheel and housing (par. 236).

g. Remove the plow and carrier engine up per oil pan (par. 228).

h. Remove the plow -and carrier engine pistons and connecting rods (par. 247).

i. Remove the crankshaft main bearings and crankshaft as instructed on figure 73.

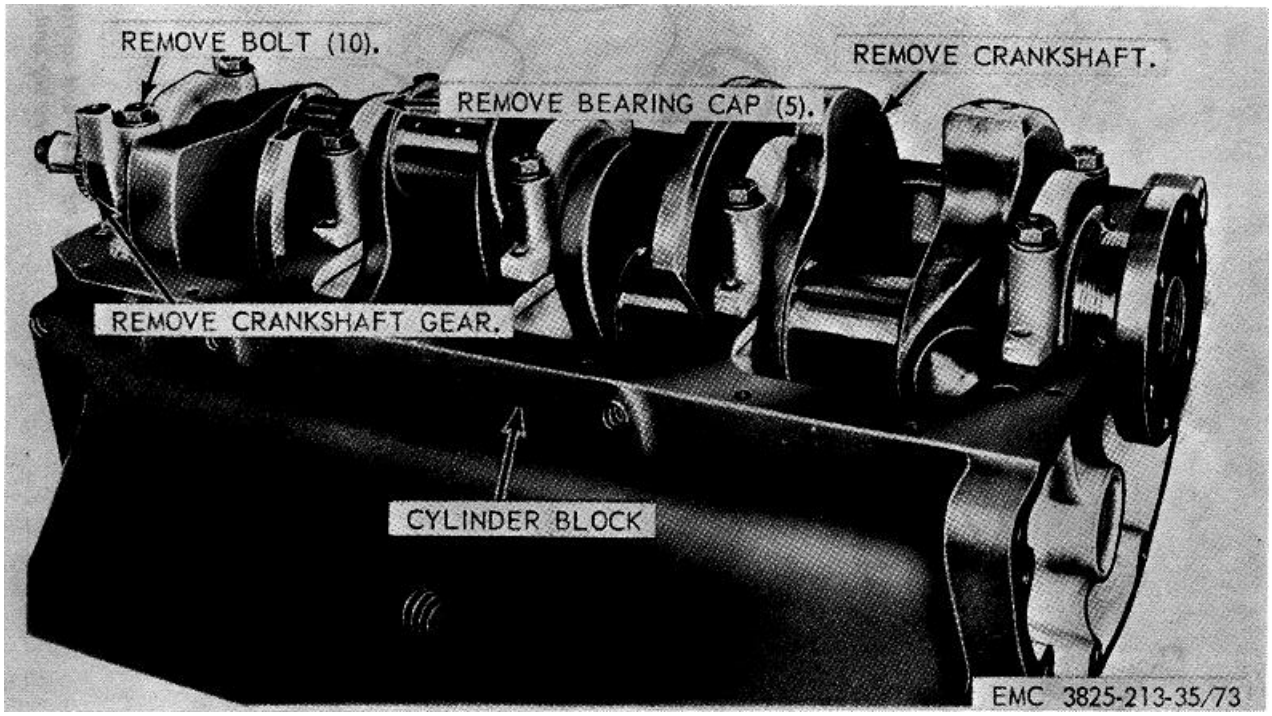


Figure 73. Plow and carrier engine crankshaft and main bearings, removal and installation.

252. Plow and Carrier Engine Crankshaft and Main Bearings Cleaning, Inspection, and Repair

a. Cleaning. Clean all parts with an approved cleaning solvent and dry thoroughly.

b. Inspection and Repair.

(1) Inspect crankshaft journals for wear and out-of-round. The main bearing journals are 3.748 to 3.749 inches. The connecting rod bearing journals are 3.250 to 3.252 inches. Replace crankshaft or regrind the respective set of crankshaft journals if wear exceeds 0.007 inch on any journal.

(2) Inspect all other parts for defective condition. Replace or repair worn, damaged, or defective parts.

(3) Position crankshaft in a lathe and use a dial indicator to measure for runout or sprung shaft.

253. Plow and Carrier Engine Crankshaft and Main Bearings Installation

a. Install the crankshaft and main bearings as instructed on figure 73.

b. Install the piston and connecting rods (par. 249).

c. Install the lower and upper oil pan (par. 230).

d. Install the flywheel housing and flywheel assembly (par. 238).

e. Install the crankcase and timing gear covers, vibration damper, and crankshaft pulley (pars. 242, 245).

f. Install the cylinder heads (par. 220).

g. Install the intake and exhaust manifolds (TM 5-3825-213-20).

h. Install the fan blade and pulley (TM 5-3825-213-20).

i. Install the plow and carrier engine (pars. 49 and 50).

Section XVII. PLOW AND CARRIER ENGINE CAMSHAFT ASSEMBLIES

254. General

The camshaft is a one-piece, alloy steel, precision machined shaft. It is driven by the crankshaft gear and operates in bronze bearings in the crankcase.

255. Plow and Carrier Engine Camshaft Assembly Removal

a. Remove the plow and carrier engine (pars. 49, 50).

b. Remove the timing gear cover (par. 243).

c. Remove the rocker arms, push rods, and lifters (par. 218).

d. Remove the camshaft assembly as illustrated on figure 74.

256. Plow and Carrier Engine Camshaft Assembly Cleaning, Inspection, and Repair

a. Cleaning. Clean all parts with an approved cleaning solvent and dry thoroughly.

b. Inspection and Repair. Inspect all parts for defective condition. Replace or repair worn, damaged, or defective parts.

257. Plow and Carrier Engine Camshaft Assembly Installation

a. Install the plow and carrier engine camshaft assembly as illustrated on figure 74.

b. Install the plow and carrier engine rocker arms, push rods, and lifters (par. 220).

c. Position the No. 1 piston on compression stroke and aline the match marks of the camshaft gear with crankshaft gear.

d. Install the plow and carrier engine timing gear cover (par. 245).

e. Install the plow and carrier engine (pars. 49, 50).

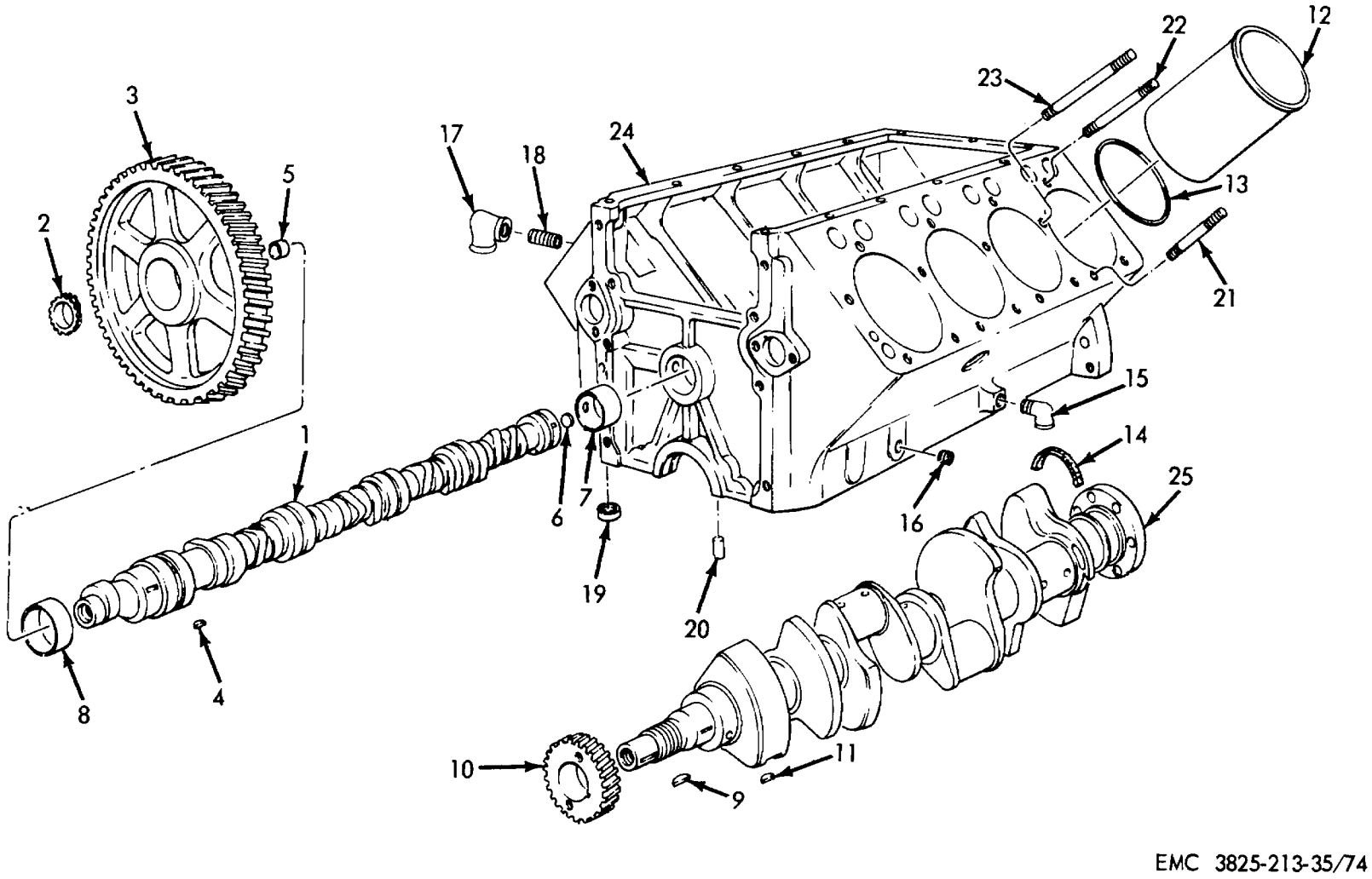


Figure 74. Camshaft and gear, crankshaft gear, cylinder sleeve and cylinder block, removal and installation.

1 Camshaft
2 Gear
3 Camshaft gear
4 Key
5 Plug, pipe, 3/8 in.
6 Plug, pipe, 3/8 in.
7 Bearing (3 rqr)
8 Bearing (3 rqr)
9 Key
10 Crankshaft gear
11 Key
12 Cylinder sleeve (8 rqr)
13 Preformed packing (2 rqr)
14 Oil seal (2 rqr)
15 Street ell
16 Plug, pipe, 1-11-1/2
17 Elbow
18 Nipple
19 Ring
20 Main bearing cap headless pin (10 rqr)
21 Stud, cylinder-head, 1/2 x 4 1/2 in. (6 rqr)
22 Stud, cylinder-head, 1/2 x 5 7/8 in. (10 rqr)
23 Stud, cylinder-head, 1/2 x 8 1/2 in. (8 rqr)
24 Cylinder block
25 Crankshaft

Figure 74. Continued.

Section XVIII. PLOW AND CARRIER ENGINE CYLINDER BLOCK AND SLEEVES

258. General

The cylinder block is a rigid, compact 90° V-block machined to house the major components of the engine.

259. Plow and Carrier Engine Cylinder Block and Sleeves Removal and Disassembly

a. Removal.

(1) Remove the plow and carrier engine (pars. 49, 50).

(2) Remove the plow and carrier timing gear cover (par. 243).

(3) Remove the plow and carrier engine flywheel and housing (par. 236).

(4) Remove the plow and carrier engine piston and connecting rods (par. 247).

(5) Remove the plow and carrier engine crankshaft and main bearings (par. 251).

(6) Remove the plow and carrier engine camshaft (par. 255).

b. Disassembly. Disassemble the plow and carrier engine cylinder block in numerical sequence as illustrated on figure 74.

260. Plow and Carrier Engine Cylinder Sleeves Cleaning, Inspection, and Repair

a. Cleaning. Clean the cylinder block and sleeves with an approved cleaning solvent and dry thoroughly.

b. Inspection and Repair. Inspect all cylinder block and sleeves for a damaged condition. Replace or repair worn, damaged, or defective cylinder sleeve. Measure the cylinder block in accordance with specifications prescribed in paragraph 4, and all parts that require dimensions.

261. Plow and Carrier Engine Cylinder Block and Sleeves Reassembly and Installation

a. Reassembly. Reassemble the plow and carrier engine cylinder block and sleeves in reverse order of numerical sequence as illustrated on figure 74.

b. Installation.

(1) Install the plow and carrier engine camshaft (par. 257).

(2) Install the plow and carrier engine crankshaft (par. 253).

(3) Install the plow and carrier engine piston and connecting rods (par. 249).

(4) Install the plow and carrier engine flywheel and housing (par. 238).

(5) Install the plow and carrier engine timing gear and cylinder-head covers (par. 245).

(6) Install the plow and carrier engine (pars. 49, 50).

CHAPTER 9

CARRIER REPAIR INSTRUCTIONS

Section I. CARRIER TORQMATIC CONVERTER ASSEMBLY

262. General

The torqmatic converter automatically adjusts the output torque to the load demand, and permits the engine to operate at its most effective output. The converter employs the rotating housing principle. It is a single-stage, polyphase-type of converter with four elements, pump, turbine, and two stators. The quick shift torqmatic transmission is designed to operate with the torqmatic converter in applications that need the advantages of torqmatic drive with high torque ratio. The combination of the converter and the full-power shifting transmission provides torque ratios up to 16:1. The torqmatic drive protects the engine from damaging shock loads and harmful engine lugging and stalling. The torqmatic transmission quick shifts under full load at wide open throttle without intercepting the power flow engine to load.

263. Torqmatic Converter Assembly Removal and Disassembly

a. *Removal.* Remove the torqmatic converter assembly (par. 50).

b. *Disassembly.* Disassemble the torqmatic converter assembly in numerical sequence as illustrated on figure 75.

264. Torqmatic Converter Assembly Cleaning, Inspection, and Repair

a. Cleaning. Clean all parts with an approved cleaning solvent and dry thoroughly. Remove metallic residue from the converter hub, turbine, pump, and stators.

b. Inspection and Repair.

(1) Inspect and measure the oil pump drive gear bore. The proper bore is 4.162 inches with a maximum of 0.010 inch wear. Inspect and measure the oil pump drive gear thickness. Limit is 0.006 inch wear per face.

Note.

Gear may be reversed to equalize wear.

(2) Inspect and measure the stator thrust washer thickness. The proper thickness is 0.127 inch, with 0.010 inch maximum wear, measured evenly over face.

(3) Inspect and measure the stator free wheel side washers thickness. The proper thickness is 0.058 inch, with 0.010 inch maximum wear, measured evenly over face.

(4) Inspect and measure the stators bore. The proper bore is 4.764 inches, with 0.003 inch maximum wear.

(5) Inspect and measure the stator race outside diameter. The proper diameter is 4.749 inches, with 0.010 inch maximum wear. Test the stator freewheel roller springs, proper tension is 1.17 lb at 0.94 operating height.

(6) Inspect and measure the stator backplate thickness. The proper thickness is 0.298 inch, with 0.010 inch maximum wear.

(7) Inspect and measure the turbine hub. The proper measurement is 0.570 inch, with 0.010 inch maximum wear.

(8) Inspect and measure the converter flywheel pilot diameter. The proper diameter is 2.435 inches with a limit of 0.010 inch wear.

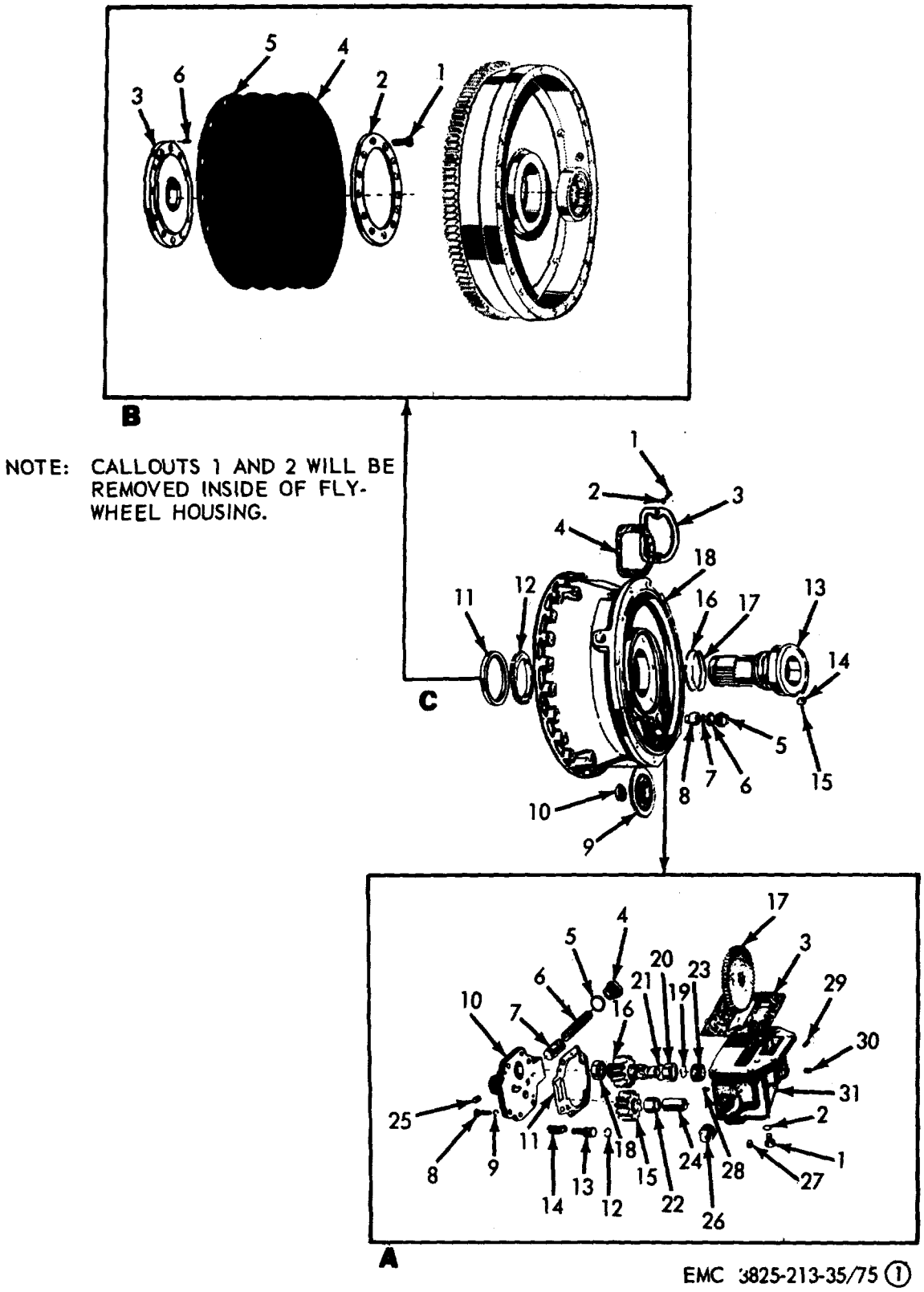


Figure 75. Torqmatic converter assembly, disassembly and reassembly, exploded view.

1 Screw, cap, 3/8-16 x 1 3/8 in. (6 rqr)
2 Washer, lock, 3/8 in. (6 rqr)
3 Gasket
4 Plug, 1 1/4-12 x 9/16 in.
5 Gasket
6 Converter pressure regulating spring
7 Converter pressure regulating valve
8 Screw, cap, 3/8-16 x 1 3/8 in. (6 rqr)
9 Washer, lock, 3/8 in. (6 rqr)
10 Cover
11 Gasket
12 Ring, retaining
13 Clutch pressure regulating valve
14 Clutch pressure regulating valve spring
15 Driven gear
16 Driving gear shaft
17 Oil pump driving gear
18 Bearing
19 Seal
20 Bearing
21 Seal
22 Bearing
23 Sleeve bearing
24 Driven gear shaft
25 Plug, pipe, 1/2 in.
26 Plug, pipe, 3/4 in.
27 Plug, pipe, ctsk hd, 3/8 in.
28 Dowel
29 Plug, pipe, socket-hd, 1/8 in.
30 Plug, pipe, socket-hd, 1/8 in.
31 Oil pump body.

A. Torqmatic converter charging oil pump.

1 Bolt, hex hd, 1/2-20 x 1-1/4 in. (12 rqr)
2 Flexible flywheel disk plate
3 Flexible flywheel disk hub
4 Flexible flywheel disk (4 rqr)
5 Flexible flywheel disk
6 Dowel pin

B. Torqmatic converter flexible flywheel disk assembly.

1 Bolt, hex hd, 3/816 x 3/4 in. (2 rqr)
2 Washer, lock, 3/8 in. (2 rqr)
3 Cover
4 Gasket
5 Plug, sq hd, 1 1/2-8
6 Seal
7 Washer, lock, 1/2 in.
8 Oil pump idler gear shaft
9 Oil pump idler gear
10 Bearing
11 Oil seal
12 Oil pump drive gear
13 Converter ground sleeve
14 Converter ground sleeve key
15 Dowel pin
16 Seal ring, hook-type
17 Seal ring, hook-type
18 Converter housing

C. Torqmatic converter housing.

Figure 75. Continued.

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(9) Inspect and measure converter pressure regulating valve clearance with pump cover. The maximum clearance is 0.006 inch. Test the converter pressure regulating spring. Proper tension is 88.6 lbs ± five percent load at 3.52 operating height.

265. Torqmatic Converter Assembly Reassembly and Installation

a. Reassembly. Reassemble the torqmatic converter -assembly in reverse numerical sequence illustrated on figure 75.

b. Installation. Install the torqmatic converter assembly (par. 50).

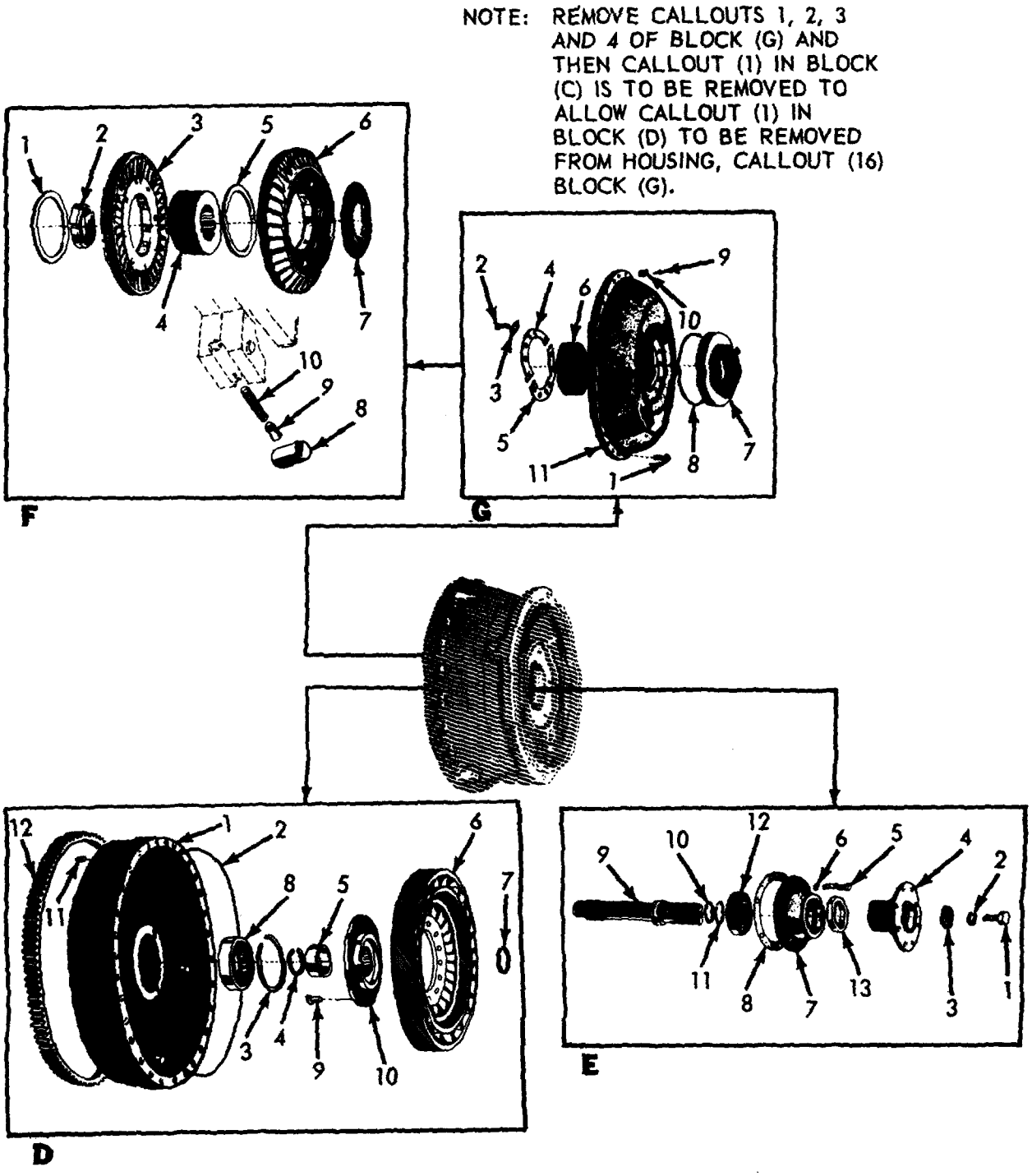

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Figure 75. Continued.

1 Flywheel
2 Seal
3 Snap ring
4 Snap ring
5 Bearing race
6 Converter turbine
7 Snap ring
8 Bearing, roller
9 Rivet, 6/16 x 1 1/4 in. (16 rqr)
10 Turbine hub
11 Flywheel flex disk indexing dowel pin
12 Ring gear.

D. Torqmatic converter flywheel and turbine.

1 Bolt, hex hd, 3/416 (8 rqr)
2 Washer, lock, 3/4 in. (8 rqr)
3 Output flange washer
4 Output flange
5 Bolt, hex hd, 1/2-13 x 1 1/2 in. (6 rqr)
6 Washer, lock, 1/2 in. (6 rqr)
7 Bearing container
8 Gasket
9 Converter output shaft
10 Seal
11 Seal
12 Bearing
13 Output flange dual oil seal

E. Output shaft.

1 Thrust washer, special
2 Nut, special
3 Stator, first
4 Stator freewheel
5 Thrust washer, special
6 Stator, second
7 Stator backplate
8 Stator freewheel roller
9 Pin, 0.250 dia x 0.70 in., special
10 Freewheel roller spring

F. Torqmatic converter stators.

1 Bolt, hex hd, 3/824 x 1 3/4 in. (31 rqr)
2 Bolt, hex hd, 3/824 x 1 1/8 in. (8 rqr)
3 Lock strip
4 Bearing retainer
5 Bearing retainer
6 Bearing, double low
7 Converter pump hub
8 Seal
9 Screw, rd hd, drive, No. 6 x 3/8 in. (6 rqr)
10 Converter balance weight (3 rqr)
11 Converter pump

G. Torqmatic converter pump.

Figure 75. Continued.

Section II. CARRIER TORQMATIC TRANSMISSION ASSEMBLY

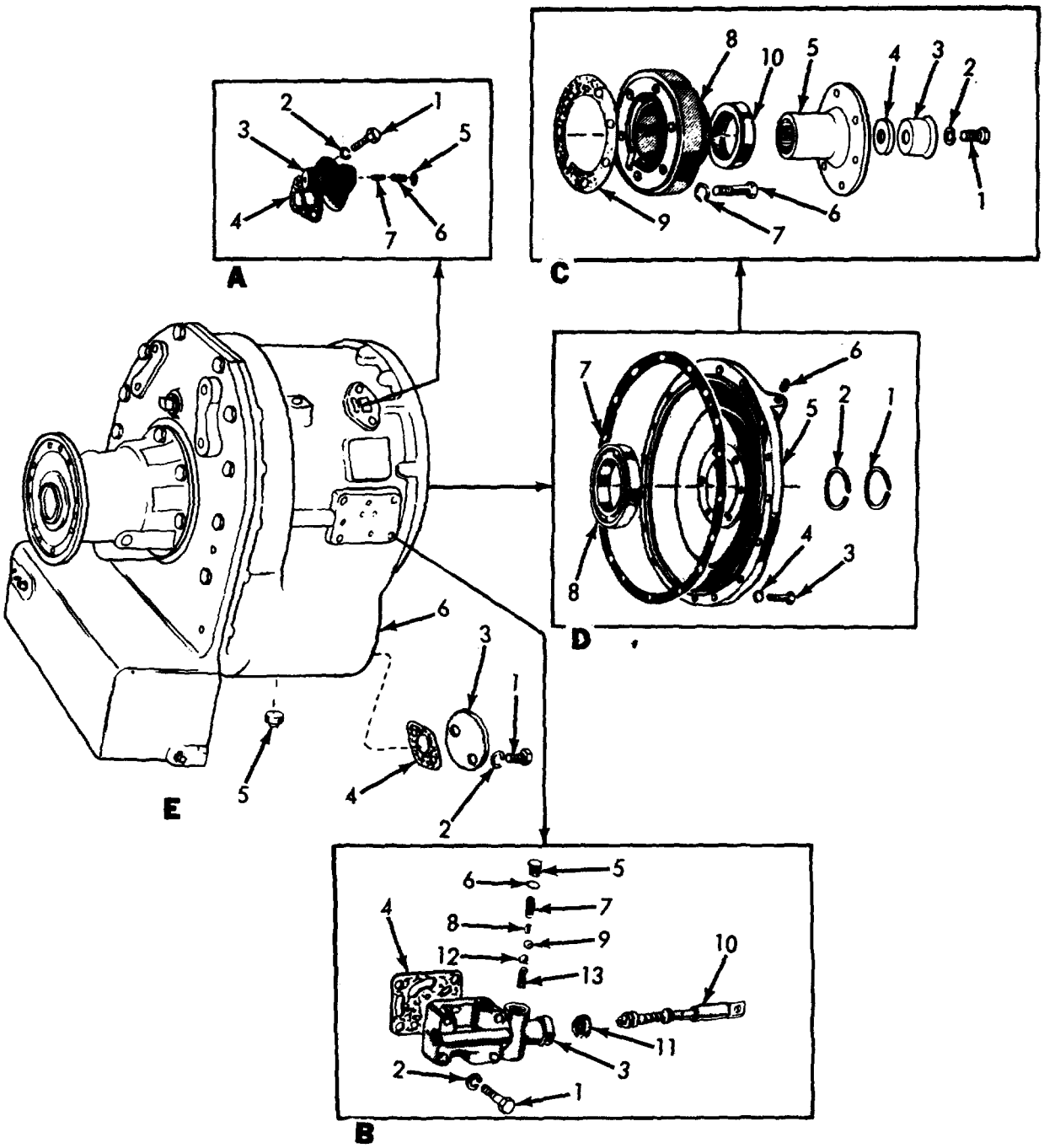
266. General

The torqmatic transmission assembly is designed to work in conjunction with the torqmatic converter. Four multiple disk, oil cooled, friction clutches, which are hydraulically applied and spring released, control the planetary gear train. The planetary gearing is a compound planetary gear train in constant mesh. The friction plates are steel with sintered bronze facings and the reaction plates are plain steel. An auxiliary pump, integral with the transmission, provides the hydraulic pressure to engage the range clutches. The transmission has three speeds forward and one reverse. The transmission is capable of quick shifting at full power at wide open throttle.

267. Torqmatic Transmission Assembly Removal and Disassembly

a. Removal. Remove the torqmatic transmission assembly (par. 51).

b. Disassembly. Disassemble the torqmatic transmission assembly in numerical sequence as illustrated on figure 76.



EMC 3825-213-35/76 ①

Figure 76. Torqmatic transmission assembly, disassembly and reassembly, exploded view.

1 Screw, cap, 3/816 x 1 1/4 in. (2 rqr)
2 Washer, lock, 3/8 in. (2 rqr)
3 Manifold
4 Gasket
5 Valve
6 Spring
7 Pin, straight headless

A. Manifold assembly

1 Screw, cap, 1/213 x 3 1/4 in. (4 rqr)
2 Washer, lock, 1/2 in. (4 rqr)
3 Housing
4 Housing gasket
5 Cap
6 PREFORMED packing
7 Spring
8 Pin, straight headless
9 Ball
10 Valve
11 Oil seal
12 Ball
13 Spring

B. Selector valve.

1 Screw, cap, 1/213 x 1 1/4
2 Washer, lock, special
3 Cap, dust
4 Washer, flat, special
5 Driving flange, output
6 Screw, cap, 1/213 x 3 (6 rqr)
7 Washer, lock, 1/2 in. (6 rqr)
8 Retainer, bearing
9 Gasket
10 Bearing

C. Retainer group.

1 Ring, retaining
2 Ring, retaining
3 Screw, cap, 1/2-13 x 1 1/2 in. (16 rqr)
4 Washer, lock, 1/2 in. (16 rqr)
5 Cover
6 Plug, pipe
7 Gasket
8 Bearing

D. Transmission front cover.

1 Screw, cap, 5/16-18 x 7/8 in. (2 rqr)
2 Washer, lock, 5/16 in. (2 rqr)
3 Cover
4 Gasket
5 Plug, pipe
6 Housing

E. Cover and plug.

Figure 76-Continued.

268. Torqmatic Transmission Assembly Cleaning, Inspection, and Repair

a. Cleaning. Clean all parts with an approved cleaning solvent and dry thoroughly.

b. Inspection and Repair.

(1) Inspect all splined shafts and bearings surfaces for wear, distortion, and chipped or broken splines.

(2) Replace all performed packing and gaskets.

(3) Inspect all springs for wear and distortion. Replace as necessary.

(4) Inspect all gears for wear, chipped, cracked, or broken teeth. Replace as necessary.

(5) Inspect -all other parts for defective condition. Replace or repair worn, damaged, or defective parts. Refer to table III, torqmatic transmission replacement standards, for maximum variations from the original parts dimensions at which the transmission can be expected to function satisfactorily.

269. Torqmatic Transmission Assembly Reassembly and Installation

a. Reassembly. Reassemble the torqmatic transmission assembly in the reverse of numerical sequence illustrated on figure 76.

b. Installation. Install the torqmatic transmission assembly (par. 51).

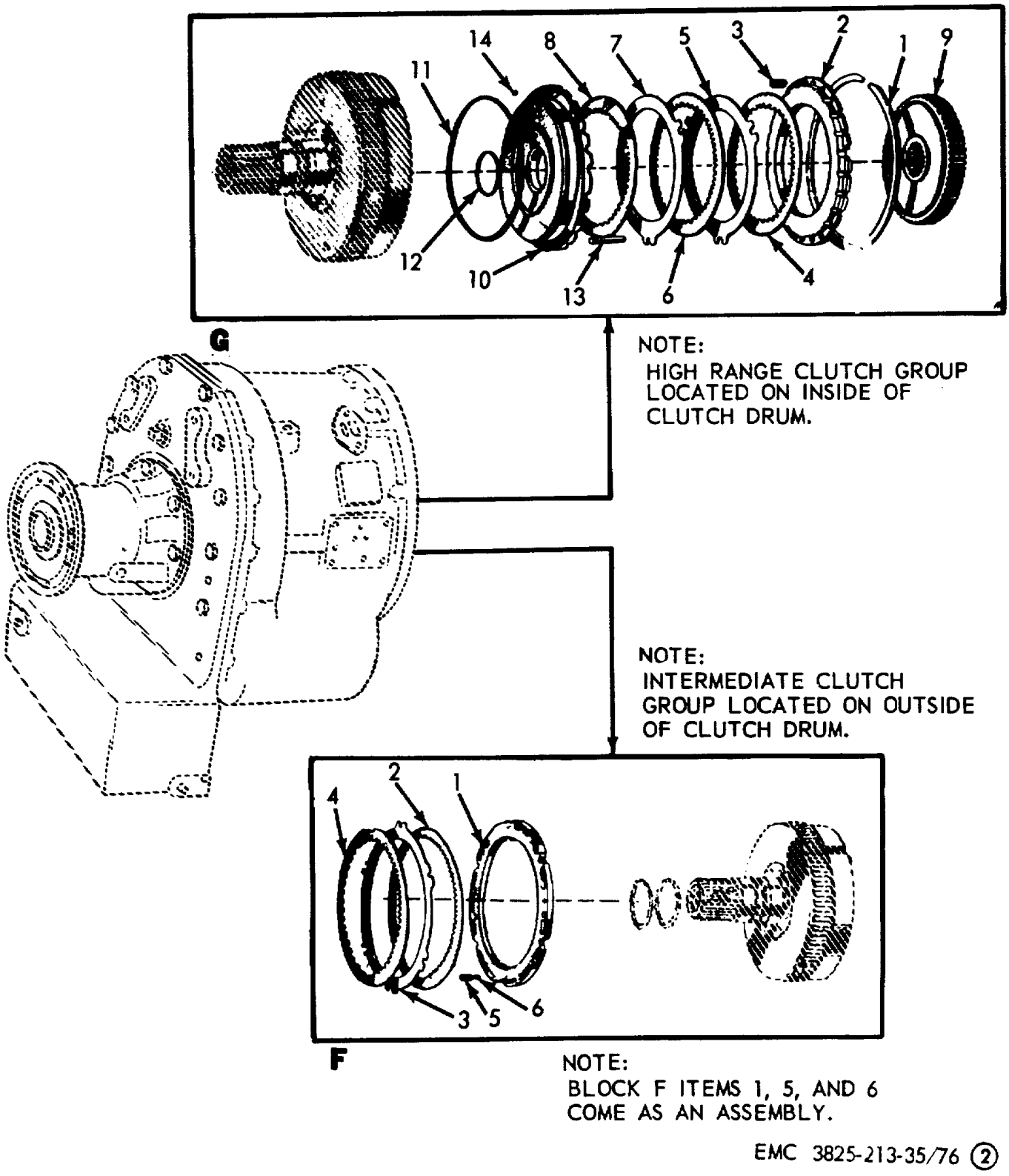


Figure 76-Continued.

1 Backplate
2 Friction plate
3 Reaction plate
4 Friction plate
5 Release spring (12 rqr)
6 Spring retainer (12 rqr)

F. Intermediate range clutch plates and springs.

1 Ring, retaining
2 Backplate
3 Release spring (21 rqr)
4 Friction plate
6 Reaction plate
6 Friction plate
7 Reaction plate
8 Friction plate
9 Hub
10 piston
11 Preformed packing
12 Preformed packing
13 Clutch pin
14 Ball

G. High range clutch group.

Figure 76-Continued

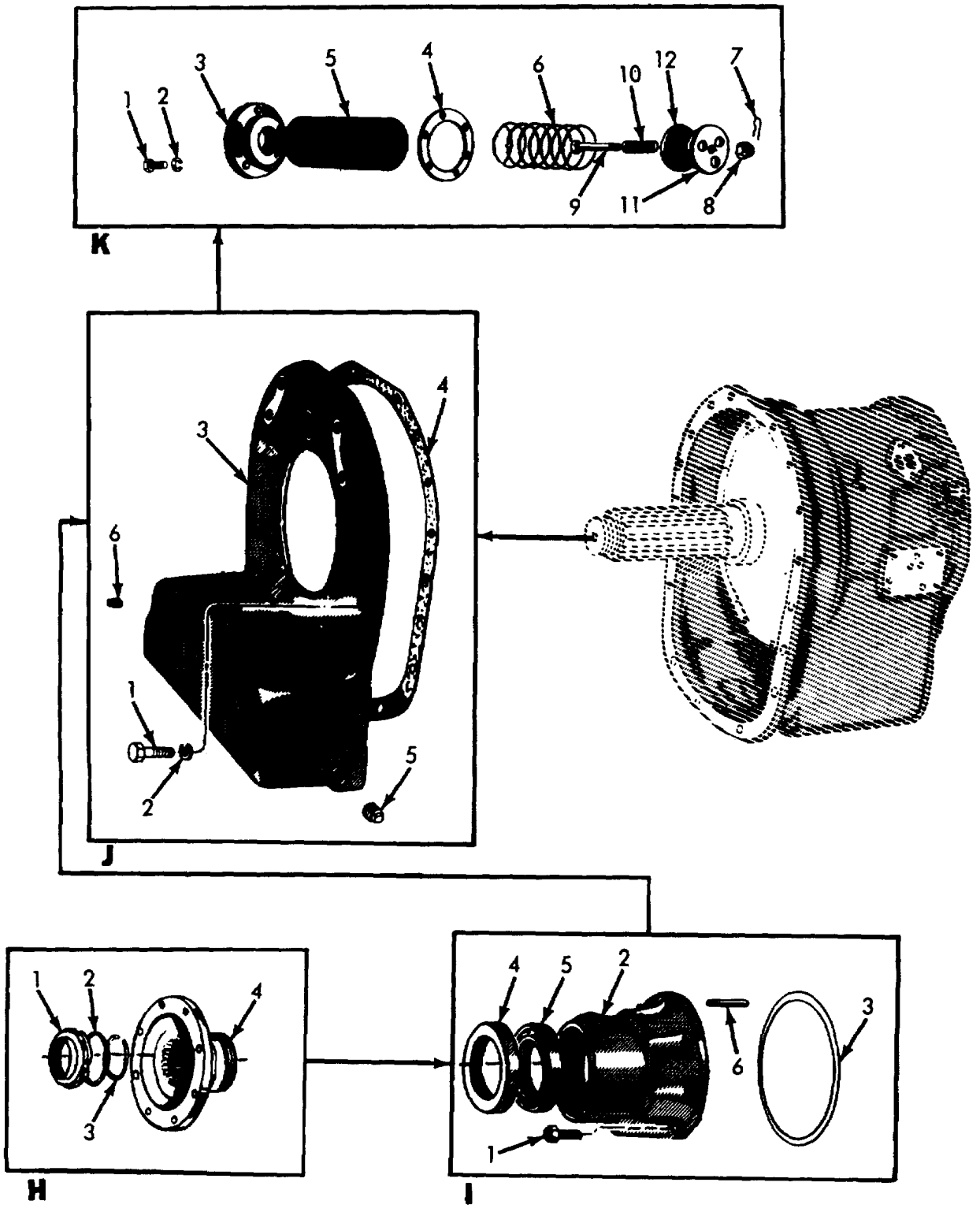


Figure 76-Continued.

1 Nut, special
2 Preformed packing
3 Ring, retaining
4 Output flange

H. Output flange assembly.

1 Screw, cap, 1/2-13 x 1 1/2 (7 rqr)
2 Bearing retainer
3 Preformed packing
4 Seal
5 Bearing
6 Dowel pin

I. Bearing retainer.

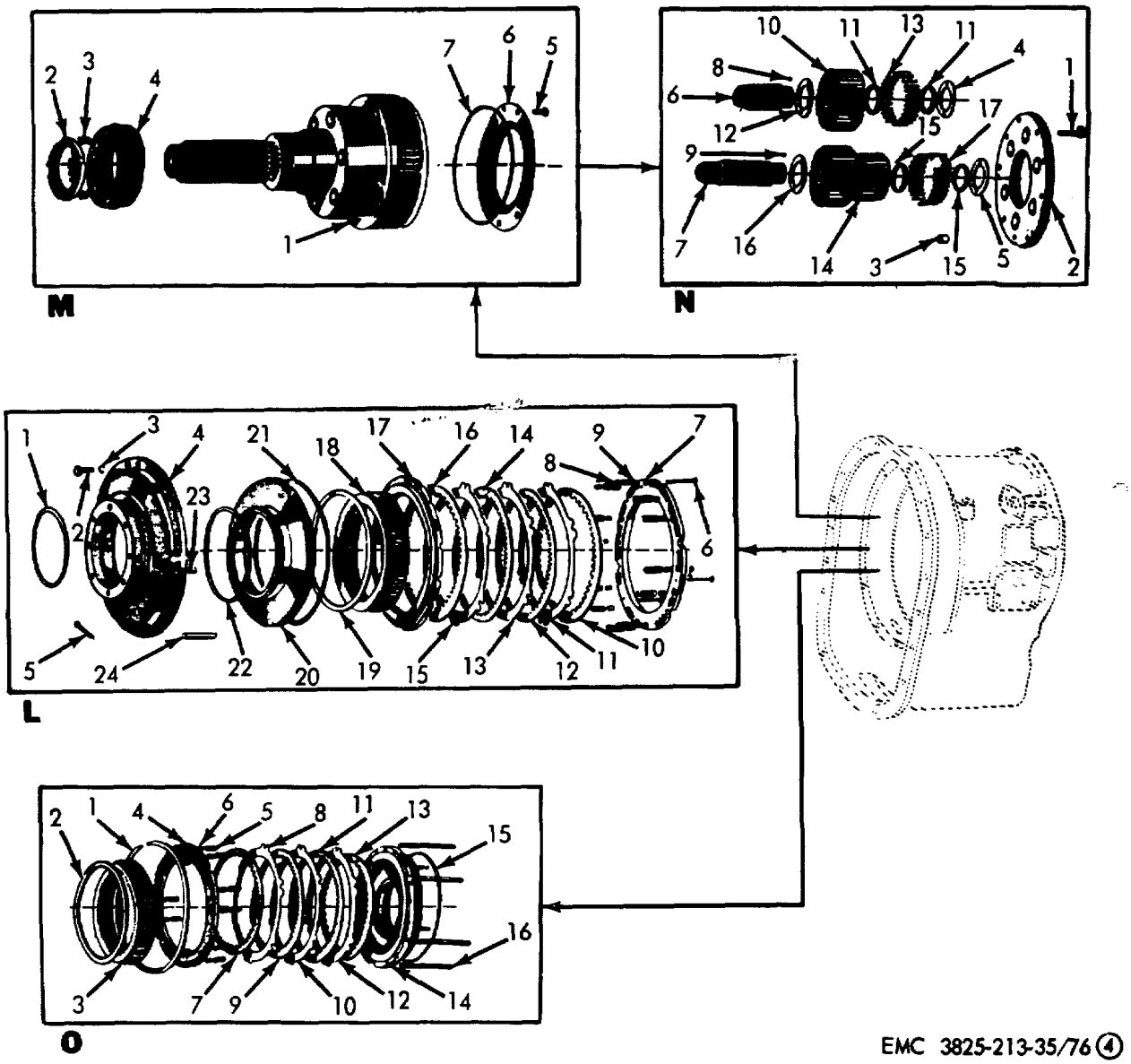
1 Screw, cap, 1/2-13 x 1 1/2 in. (20 rqr)
2 Washer, lock, 1/2 in. (20 rqr)
3 Rear cover
4 Gasket
5 Plug, pipe, 3/4 in.
6 Plug, pipe, 1/4 in.

J. Rear cover assembly.

1 Screw, cap, 3/8-16 x 1 1/2 in. 1(6 rqr),
2 Washer, lock, 3/8 in. (6 rqr)
3 Flange
4 Flange
5 Screen
6 Spring
7 Pin, cotter, 3/32 in. x 3/4 in. lg
8 Nut, 3/8-24
9 Screw, cap, 3/8-24 x 2 1/2 in.
10 Spring
11 Valve body
12 Plate

K. Strainer screen assembly.

Figure 76-Continued,



1 Ring, retaining
2 Screw, cap, 3/8-16 x 1 1/4 in. (14 rqr)
3 Washer, lock, 3/8 in. (14 rqr)
4 Internal cover
5 Pin, cotter, 1/8 x 3/4 in. lg (3 rqr)
6 Pin, headed (3 rqr)
7 Backplate
8 Spring
9 Spring retainer
10 Friction plate
11 Reaction plate
12 Friction plate
13 Reaction plate
14 Friction plate
15 Reaction plate
16 Friction plate
17 Piston plate
18 Ring gear
19 External snap ring
20 Piston
21 Preformed packing
22 Seal
23 Oil transfer tube
24 Pin, headless (6 rqr)

L. Internal cover and law range clutch group.

Figure 76-Continued.

1 Planetary carrier
2 Nut, special
3 Washer, lock, special
4 Bearing
5 Screw, cap, 3/8-16 x 1/2 in. (9 rqr)
6 Collector ring
7 Seal

M. Planetary carrier assembly.

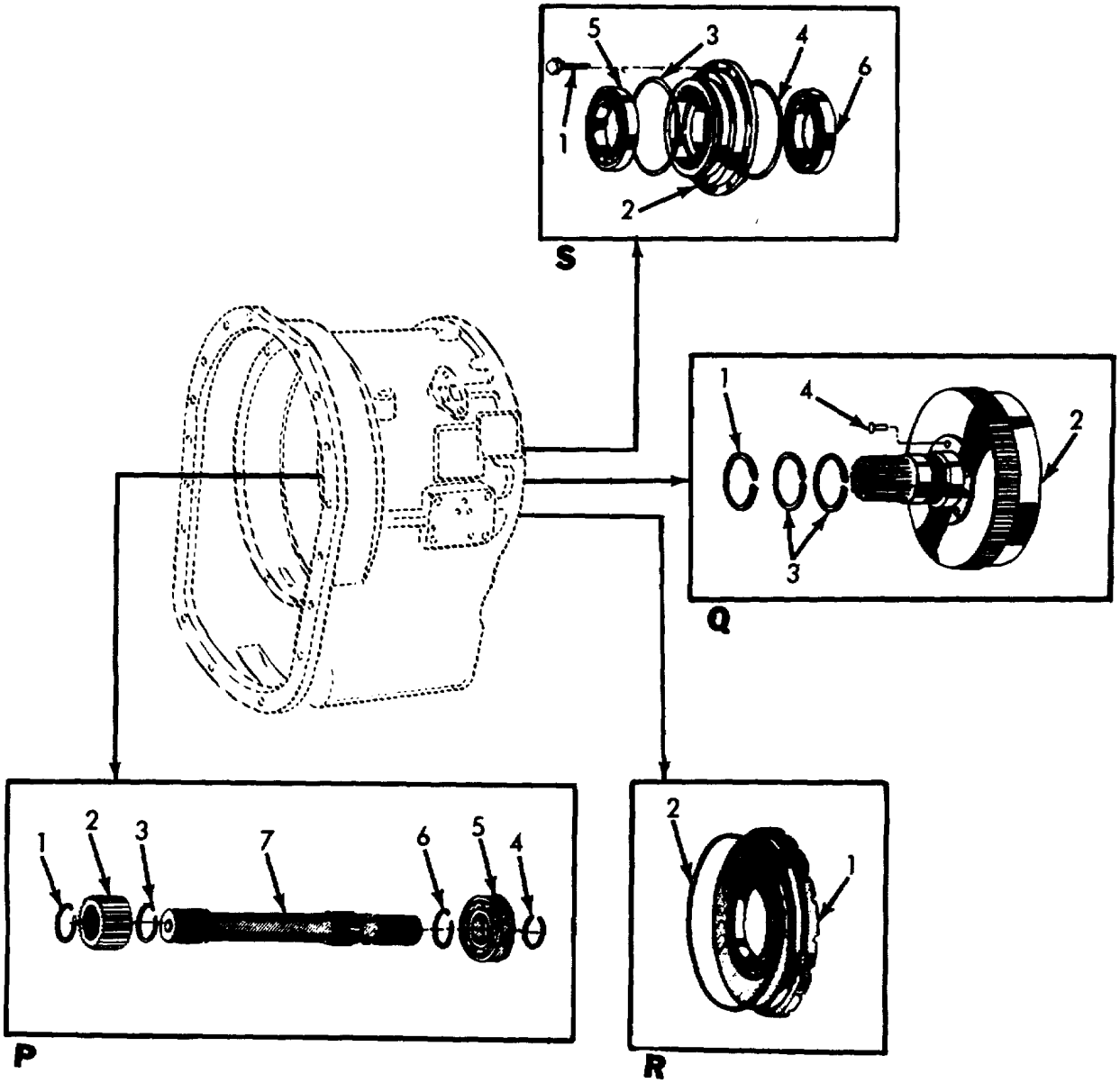
1 Screw, cap, 3/8-16 x 1 3/8 in. (6 rqr)
2 Cover
3 Pin, headless (3 rqr)
4 Washer, special (3 rqr)
5 Washer, special (3 rqr)
6 Pinion pin (3 rqr)
7 Cluster pinion pin (3 rqr)
8 Locking ball (3 rqr)
9 Locking ball (3 rqr)
10 Planetary pinion (3 rqr)
11 Spacer (12 rqr)
12 Washer, special (3 rqr)
13 Needle bearing, 3/16 x 1 3/8 in. (84 rqr)
14 Planetary cluster pinion (3 rqr)
15 Spacer (6 rqr)
16 Washer, special (3 rqr)
17 Needle bearing, 3/16 x 1 3/16 in. (1252 rqr)

N. Planetary pinion gears.

1 Ring, retaining
2 Ring, retaining
3 Ring, gear
4 Backplate
5 Spring
6 Retainer
7 Friction plate
8 Reaction plate
9 Friction plate
10 Reaction plate
11 Friction plate
12 Reaction plate
13 Friction plate
14 Piston
15 Seal
16 Pin, headless (6 rqr)

O. Reverse range clutch group.

Figure 76-Continued.



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1 Ring, retaining
2 Sun gear
3 Ring, retaining
4 Ring, retaining
5 Bearing
6 Ring, retaining
7 Rain shaft

P. Main shaft and sun gear.

1 Ring, retaining
2 Clutch drum
3 Seal ring (2 rqr)
4 Rivet (12 rqr)

Q. Clutch drum.

Figure 76 continued.

1 Seal
2 Intermediate range piston

R. Intermediate range piston.

1 Screw, cap, special (8 rqr)
2 Housing
3 Seal
4 Seal
5 Bearing
6 Bearing

S. Bearing housing assembly.

Figure 76-Continued.

Section III. PARKING BRAKE ASSEMBLY

270. General

The parking brake assembly is mounted on the front output shaft of the transfer case. The parking brake is mechanically controlled by the operator in the cab. The parking brake assembly consists of the brakebands, pins, springs, and cam.

271. Parking Brake Assembly Removal

a. Remove the parking brake cable (TM-5-3825-213-20).

b. Remove the drum and brakeband as instructed on figure 77.

272. Parking Broke Assembly Cleaning, Inspection, and Repair

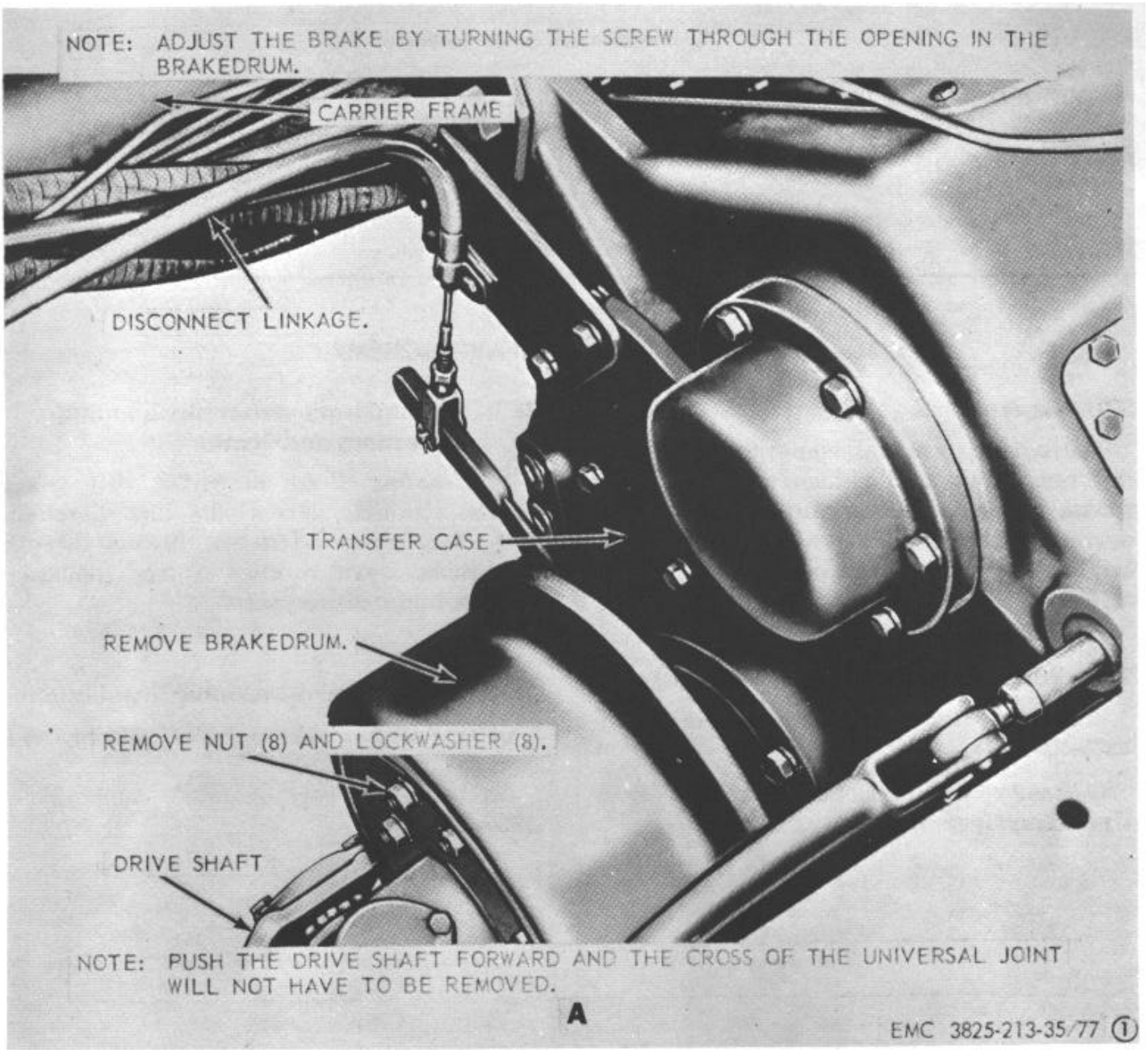
a. Cleaning. Clean all parts with an approved cleaning solvent and dry thoroughly.

b. Inspection and Repair. Inspect the parts for breaks, wear, or other damage. Replace defective lining as necessary.

273. Parking Brake Assembly Installation

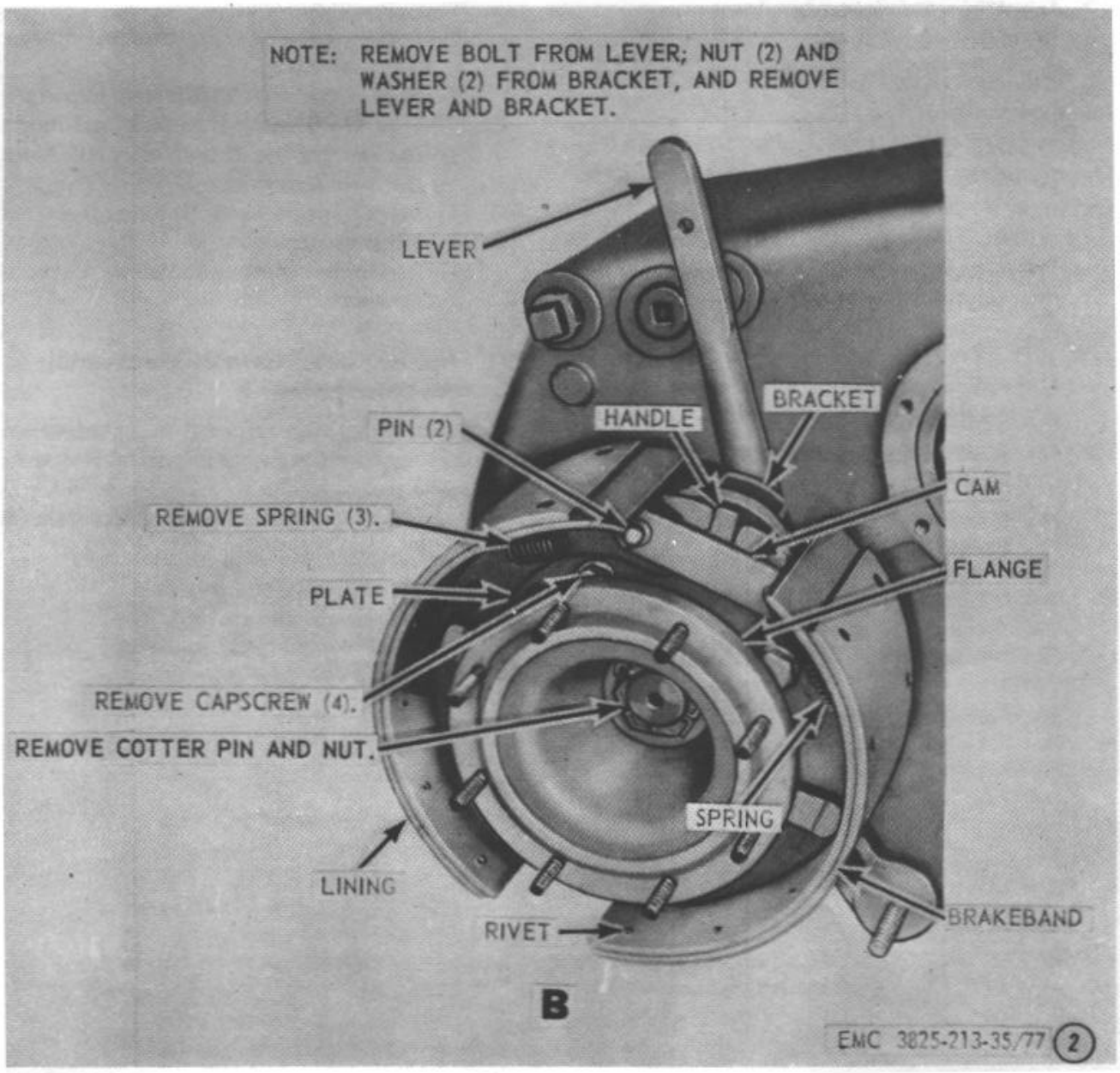
a. Install the parking brake assembly as instructed on figure 77.

b. Install the parking brake cable (TM-5-3825-213-20).



A. Brakedrum removal points.

Figure 77. Transfer case assembly brakeband, removal and installation.



B. Brakeband removal points.

Figure 77-Continued.

Section IV. TRANSFER CASE ASSEMBLY

274. General

The transfer case assembly contains an input shaft, countershaft, and front and rear output shaft integral with gears and lockout clutch, transmitting power from the primary transmission to the front and rear axles. The operator controls the shift range selection with a lever within the cab. The governor attached to the transfer case idle shaft controls a switch which will break the circuit to the rear steering lock solenoid valve when the vehicle speed exceeds 10 miles per hour. This rear steering cannot be used at speeds exceeding 10 miles per hour.

275. Transfer Case Assembly Removal and Disassembly

a. Removal. Remove the transfer case assembly (par. 52).

b. Disassembly. Disassemble the transfer case assembly in numerical sequence as illustrated on figure 78.

276. Transfer Case Assembly Cleaning, Inspection, and Repair

a. Cleaning.

(1) Clean all parts with an approved cleaning solvent and dry thoroughly.

(2) Remove gasket residue from mating surface.

(3) Remove hardened oil deposits within the case.

b. Inspection and Repair.

(1) Inspect all gears for breaks, chipped teeth, or wear.

(2) Inspect the shafts for scoring, nicks, or burrs. Remove the nicks and burrs.

(3) Inspect the bearings for nicks, pits, and free movement.

(4) Inspect the lockout clutches for wear or other damage.

(5) Repair or replace defective parts as necessary.

277. Transfer Case Assembly Reassembly and Installation

a. Reassembly. Reassemble the transfer case assembly in the reverse of numerical sequence illustrated on figure 78.

b. Installation. Install the transfer case assembly (par. 52).

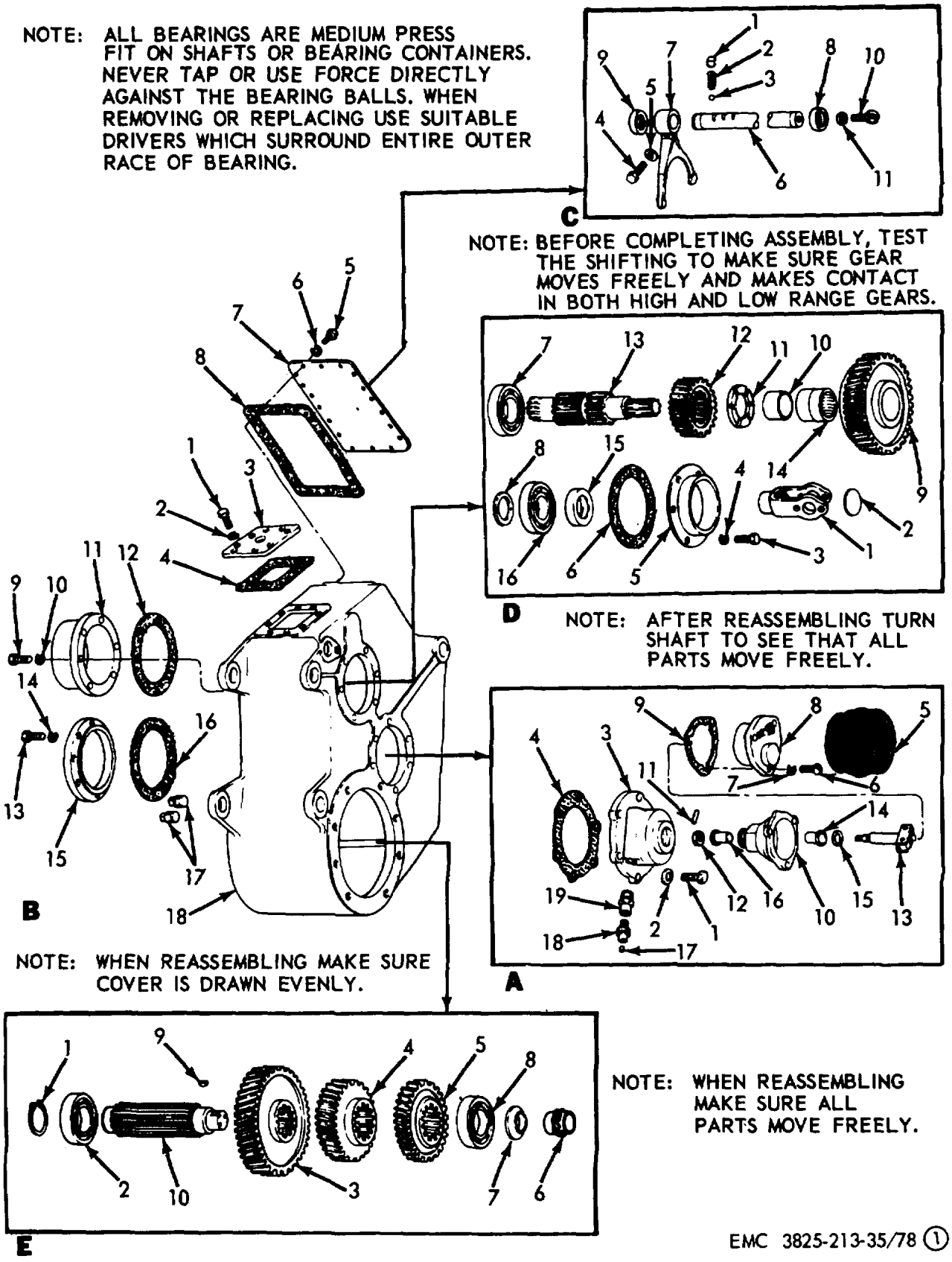


Figure 78. Transfer case assembly- disassembly and reassembly, exploded view.

1 Screw, cap, 7/16-14 x 1 1/4 in. (6 rqr)
2 Washer, lock, 7/16 in. (6 rqr)
3 Housing
4 Gasket
5 Boot
6 Screw, machine, 6-32 x 1/2 in. (8 rqr)
7 Washer, lock, No. 6 (3 rqr)
8 Switch assembly
9 Gasket
10 Governor housing
11 Pin, straight headless, 8/32 x 1/2 in.
12 Nut, 5/16-24
13 Shaft and flyweight assembly
14 Bushing, lower
15 Seal
16 Bushing, upper
17 Bushing
18 Gear, drive
19 Sleeve

A. Governor, exploded view.

1 Screw, cap, 1/4-20 x 1/2 in. (8 rqr)
2 Washer, lock, 1/4 in. (8 rqr)
3 Cover
4 Gasket
5 Screw, cap, 1/4-20 x 1/2 in. (16 rqr)
6 Washer, lock, 1/4 in. (16 rqr)
7 Cover
8 Gasket
9 Screw, cap, 7/16-14 x 1 1/2 in. (8 rqr)
10 Washer, lock, 7/16 in. (6 rqr)
11 Shaft cover
12 Gasket
18 Screw cap, 7/16-14 x 1 1/4 in. (6 rqr)
14 Washer, lock, 7/16 in. (6 rqr)
15 Countershaft cover
16 Gasket
17 Plug, pipe, 3/4 in. (8 rqr)
18 Transfer case

B. Transfer case.

1 Plug
2 Spring
3 Ball
4 Screw, shoulder, special
5 Washer, lock
6 Gearshift shaft
7 Fork
8 Seal
9 Seal
1I End, rod
11 Nut, lock

C- Power transfer case gearshift shaft.

1 Yoke
2 Cover
3 Screw, cap, 7/16-14 x 1/4 in. (6 rqr)
4 Washer, lock, 7/16 in. (4 rqr)
5 Bearing retainer
6 Gasket
7 Bearing
8 Gear spacer
9 Gear (46T and 28T) helical
10 Spacer
11 Spacer
12 Gear, shift helical, 23T
13 Shaft, input
14 Bearing (2 rqr)
15 Seal
16 Bearing

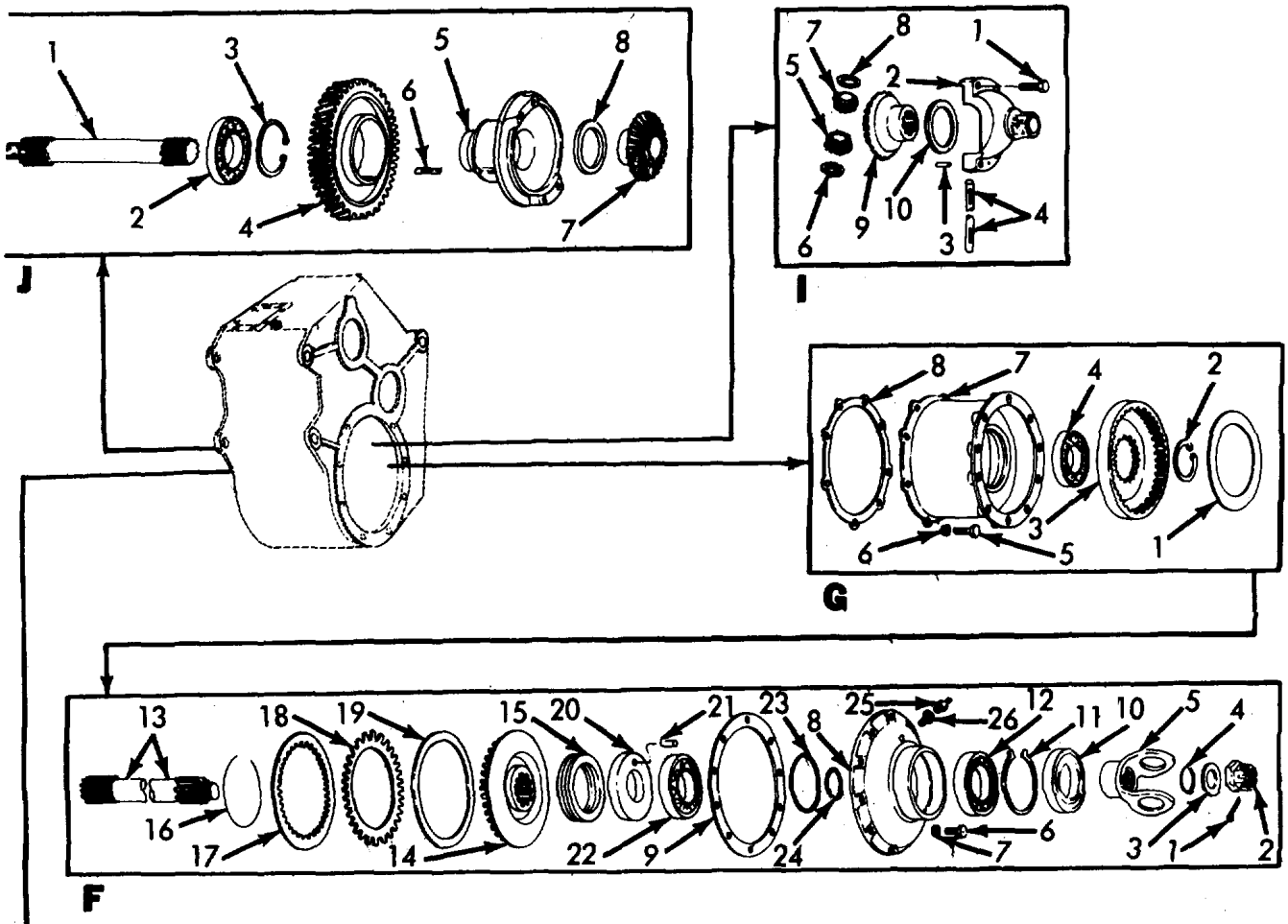
D. Input shaft.

1 Snap ring
2 Bearing
3 Gear, helical, 58T
4 Gear, driver
5 Gear, helical, 35T
6 Speedometer drive gear
7 Spacer
8 Bearing
9 Key
10 Shaft

E. Countershaft.

Figure 78-Continued.

NOTE: WHEN REASSEMBLING, HEAT GEAR (4) TO APPROXIMATELY 300° F IN QUENCHING OIL AND PRESS ON DIFFERENTIAL HOUSING (6) WITH KEY (7) IN PLACE, SO THAT SNAP RING (3) CAN BE INSTALLED NEXT TO GEAR ON HOUSING (6).



NOTE: WHEN REASSEMBLING, MAKE SURE COVER (8) IS DRAWN EVENLY.

NOTE: USE AIR PRESSURE APPLIED TO ITEM 26 TO REMOVE PISTON (20) FROM COVER (8).

NOTE: WHEN ASSEMBLING, ALTERNATE ITEMS (17) AND (18) AND SECURE WITH LOCKWIRE (16). THE OPPOSING DISKS (17) SHOULD BE FREE ENOUGH SO THEY CAN BE TURNED BY HAND.

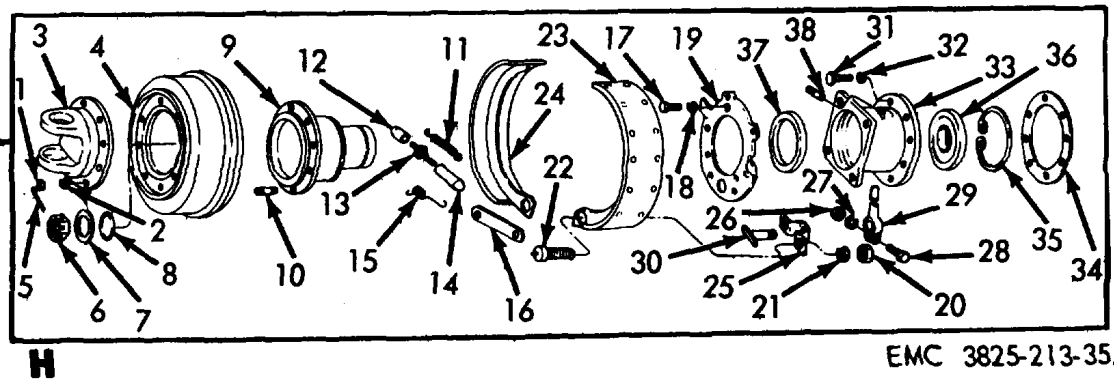


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Figure 78-Continued.

1 Pin, cotter
2 Nut, special
3 Washer, special
4 0-ring
5 Yoke
6 Screw, cap, 7/16-14 x 1 1/2 in. (10 rqr)
7 Washer, lock, 7/16 in. (10 rqr)
8 Cover
9 Gasket
10 Seal
11 Snap ring
12 Bearing
13 Front output shaft
14 Friction disk
15 Clutch cone
16 Lockwire
17 Friction lockout disk
18 Opposing lockout disk
19 Friction disk spacer
20 Piston
21 Piston pin
22 Bearing
23 0-ring
24 0-ring
25 Bleeder
26 Adapter

F. Housing cover and brake piston.

1 Friction disk spacer
2 Snap ring
3 Outer ring clutch disk
4 Bearing
5 Screw, cap, 1/2-13 x 1 1/2 in. (8 rqr)
6 Washer, lock, 1/2 in. (8 rqr)
7 Housing
8 Gasket

G. Lockout clutch housing.

1 Nut, 3/8-16 (8 rqr)
2 Washer, lock, 3/8 in. (8 rqr)
3 Flanged yoke
4 Brakedrum
5 Pin, cotter, 5/32 x 2 1/4 in.
6 Nut, slotted, special
7 Washer, special
8 0-ring
9 Companion flange
10 Stud, 3/8-16 x 2 in. (8 rqr)
11 Spring
12 Adjusting nut
13 Adjusting screw end
14 Adjusting screw, special
15 Spring (2 rqr)
16 Link
17 Screw. cap, 1/2-13 x 3/4 in. (4 rqr)
18 Washer, lock, 1/2 in. (4 rqr)
19 Backing plate
20 Nut, 3/4-10
21 Washer, lock, 3/4 in.
22 Screw, special (2 rqr)
23 Brakeshoe
24 Brakeshoe
25 Bracket
26 Nut, 3/8-16
27 Washer, lock, 3/8 in.
28 Screw, cap, 3/8-16 x 1 in.
29 Lever
30 Pin
31 Screw, cap, 1/2-13 x 1 in. (6 rqr)
32 Washer, lock, 1/2 in. (6 rqr)
33 Bearing retainer
34 Gasket
35 Snap ring
36 Bearing
37 Seal
38 Fitting

H. Brakedrum and companion flange.

1 Screw, cap, 1/2-13 x 2 in.
2 Housing
3 Roll pin
4 Pinion shaft
5 Pinion gear
6 Thrust washer
7 Pinion gear
8 Thrust washer
9 Side gear
10 Thrust washer

I. Differential housing.

1 Rear output shaft
2 Bearing
3 Snap ring
4 Gear, driven
6 Housing
6 Key, straight (2 rqr)
7 Side gear
8 Thrust washer

J. Rear output shaft and driven gear.

Figure 78-Continued.

Section V. STEERING GEAR ASSEMBLY

278. General

The steering gear assembly consists of the steering wheel, steering gearbox, and tube column. The steering gear is a seni-reversible cam and twin lever-type. Both studs of the twin lever engage the cam for normal, straight-ahead driving, and also act as a dual ratio gear which automatically changes from one ratio to another to suit the requirements of steering stability at a high speed range, and provides easy wheel turn for sharp turns.

279. Steering Gear Assembly Removal and Disassembly

a. Removal.

(1) Remove the steering sector gearbox shield (TM 53825-213-20).

(2) Remove the control valve (TM 53825-s213-20).

(3) Remove the turn signal assembly (TM 53825-213-20).

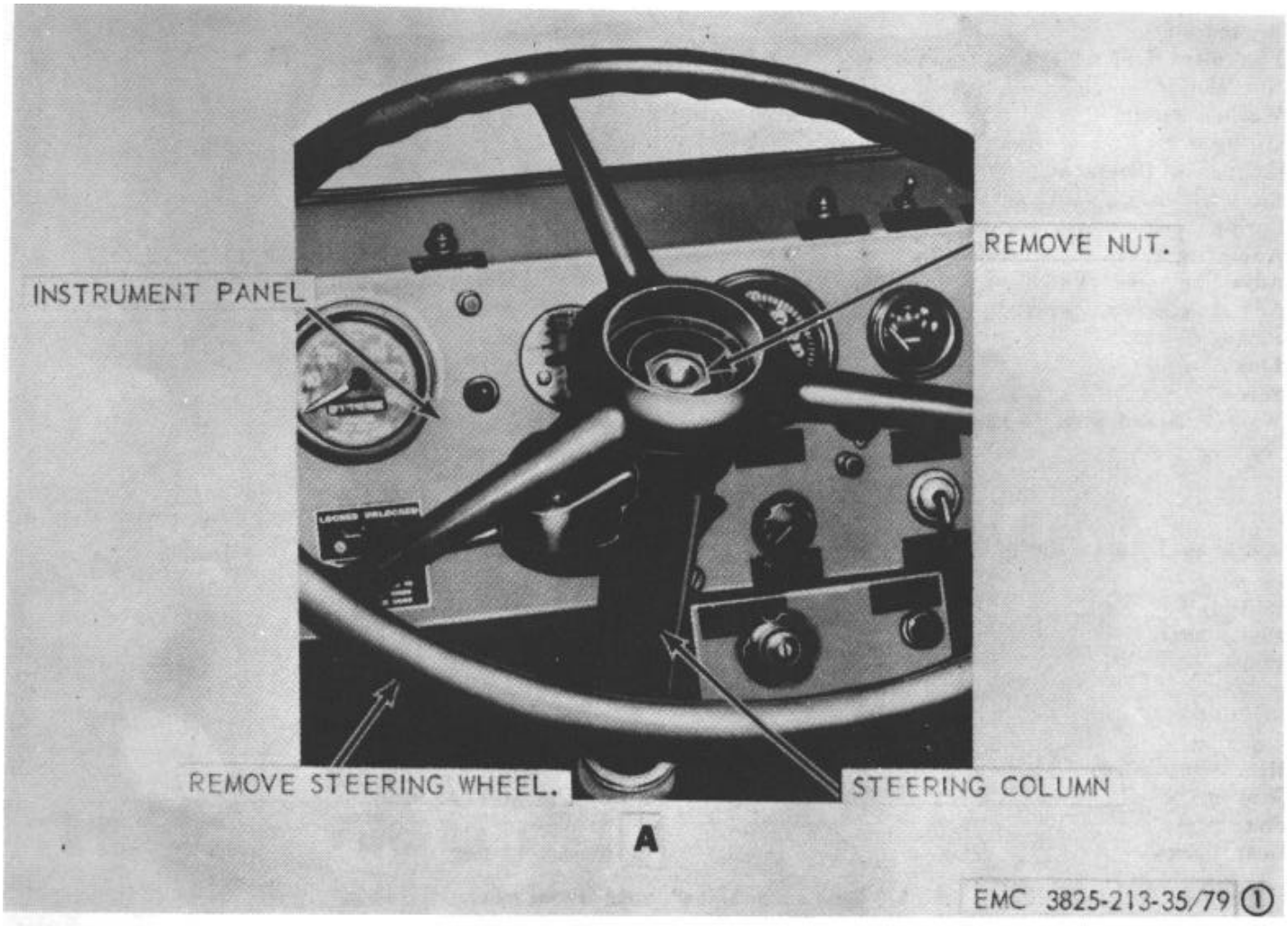
(4) Remove the horn button assembly (TM 53825-213-20).

(5) Remove the steering wheel, steering column, and gearbox assembly as instructed on figure 79.

b. Disassembly. Disassemble the steering assembly in numerical sequence as illustrated on figure 80.

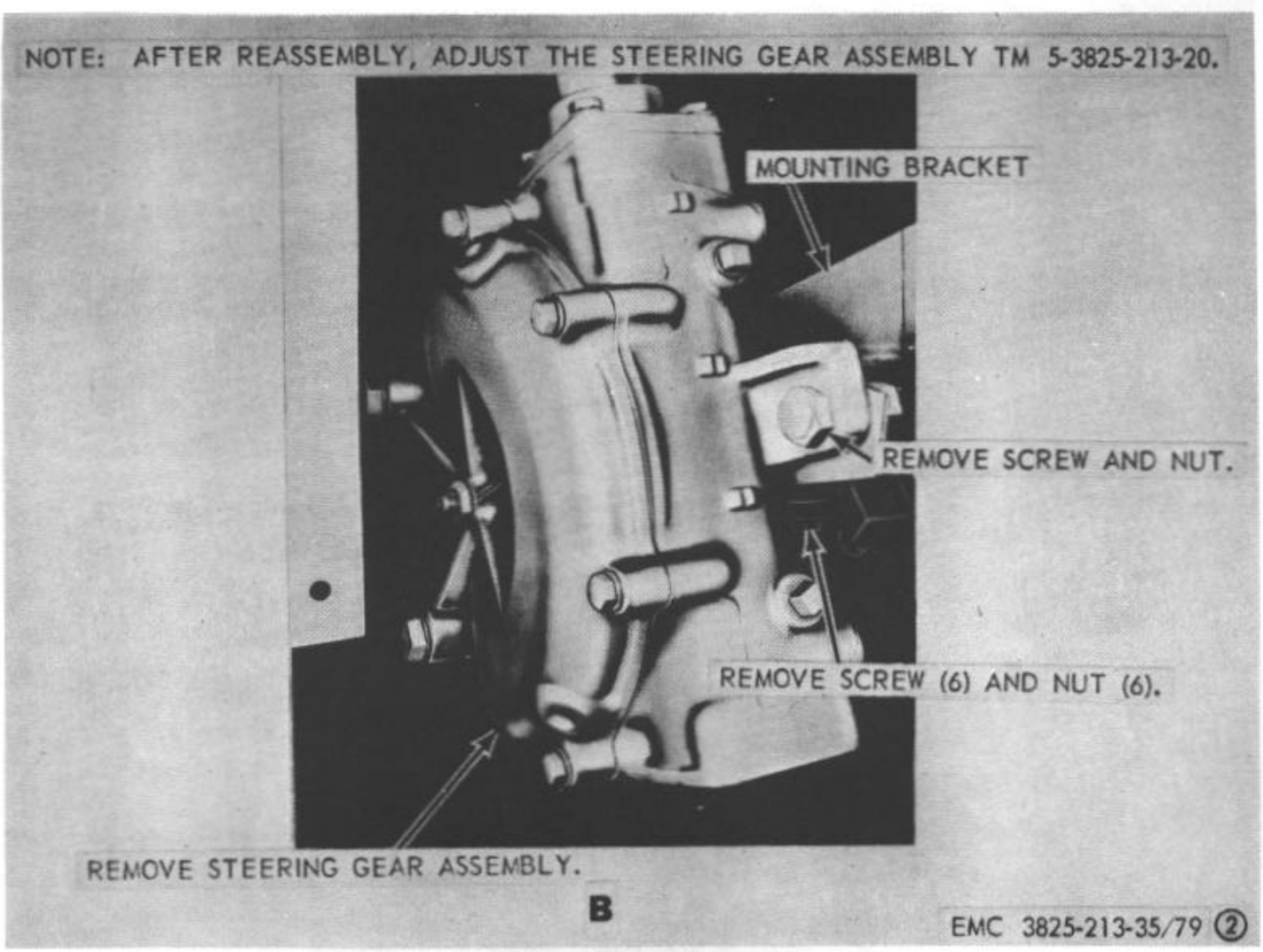
280. Steering Gear Assembly Cleaning, Inspection, and Repair

a. Cleaning. Clean all parts with an approved cleaning solvent and dry thoroughly.



A. Upper removal points.

Figure 79. Steering gear assembly, removal and installation.



B. Gearbox removal points.

Figure 79-Continued.

b. Inspection and Repair. Inspect all parts for defective condition. Replace or repair worn, damaged, or defective parts.

281. Steering Gear Assembly Reassembly and Installation

a. Reassembly. Reassemble the steering gear assembly in the reverse of numerical sequence illustrated on figure 80.

Note.

Shaft bushing should be reamed to 0.0005 inch clearance. The maximum allowable clearance is 0.0025 inch.

b. Installation.

(1) Install the steering gear assembly is instructed on figure 79.
(2) Install the horn button assembly (TM 5-3825-213-20).
(3) Install the turn signal assembly (TM5-3825-218-20).
(4) Install the control valve (TM 5-3825-213-20).
(5) Install the steering sector gearbox shield (TM 5-3825-213-20).

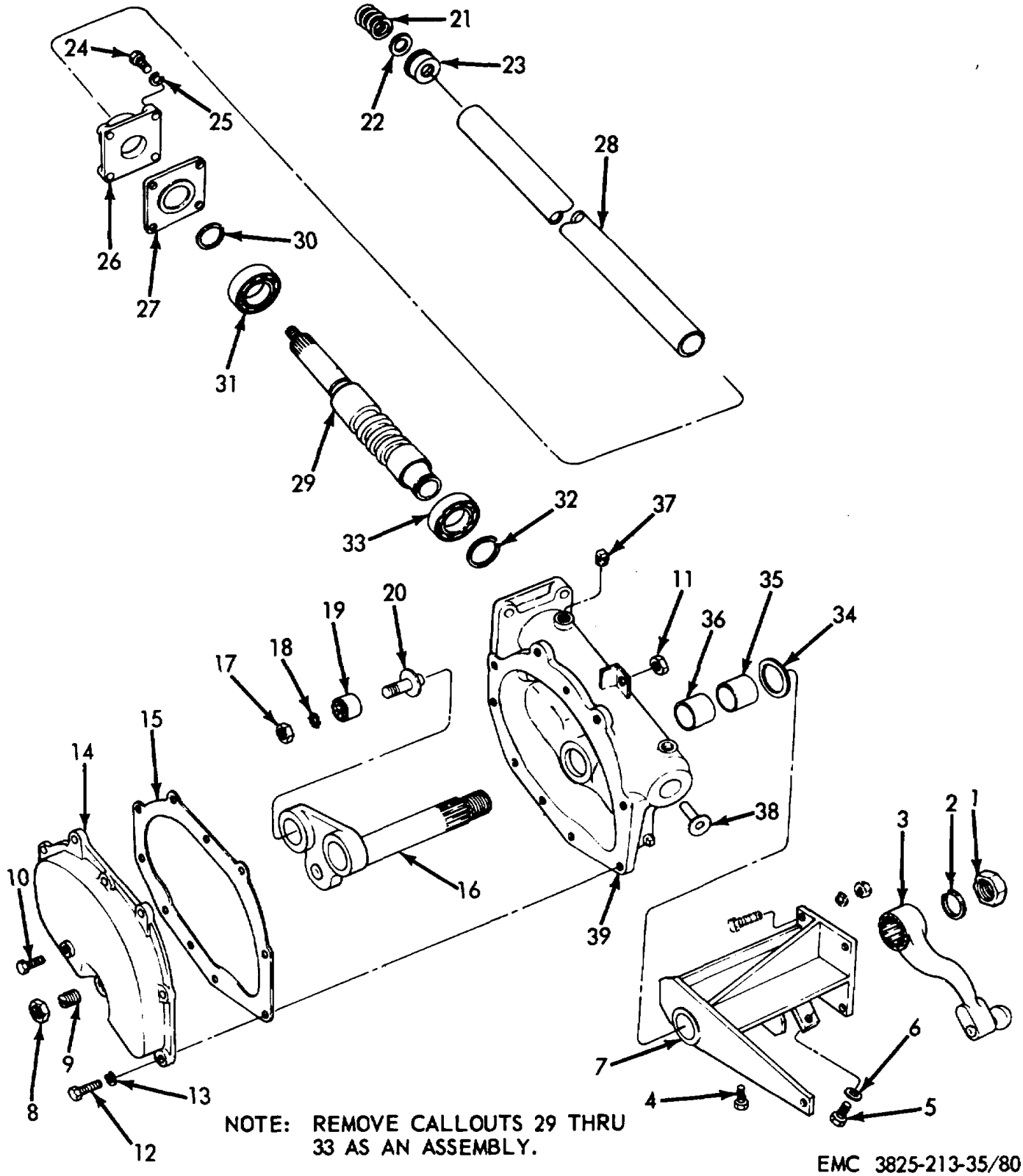


Figure 80. Steering gear assembly, disassembly and reassembly, exploded view.

1 Nut, special
2 Washer, lock, 1 1/8 in.
3 Steering arm
4 Screw, cap, 3/824 x 1 1/2 in.
5 Screw, cap, 3/824 x 1 1/4 in. (2 rqr)
6 Washer, lock, 3/8 in. (2 rqr)
7 Mounting bracket
8 Nut
9 Adjusting screw
10 Screw, cap, 5/911 x 3/4 in. (2 rqr)
11 Nut, 5/811
12 Screw, cap, 3/816 x 1 1/2 in. (4 rqr)
13 Washer, lock, 3/8 in. (4 rqr)
14 Side cover
15 Gasket
16 Lever shaft
17 Nut, special (2 rqr)
18 Washer, special (2 rqr)
19 Bearing (2 rqr)
20 Stud (2 rqr)
21 Spring
22 Seat
23 Bearing
24 Screw-, cap, 3/8-16 x 1 in. (4 rqr)
25 Washer, lock, 3/8 in. (4 rqr)
26 Cover
27 Shim
28 Tube
29 Cam and shaft tube
30 Ring, retaining
31 Bearing
32 Ring, retaining
33 Bearing
34 Seal
35 Bushing
36 Bushing
37 Plug, pipe (3 rqr)
38 Cover end
39 Housing

Figure 80-Continued.

Section VI. FRONT AND REAR BALL JOINT SUSPENSION ASSEMBLY

282. General

The front and rear ball joints are identical in parts and mounting. These serve as axle steering knuckles with trunnion bearings mounted in the ball and socket which enable the axle to be steered and powered at the same time.

283. Front and Rear Ball Joint Assembly Removal and Disassembly

a. Removal.

(1) Remove the wheel and hub (TM 53825-213-20).

(2) Remove the air brake chamber (TM 5-3825-21320).

(3) Remove the service brake and slack adjuster assembly (par. 291).

(4) Remove the tie-rod steering cylinder and control valve (TM 53825-21320).

(5) Remove the front or rear skein and axle assembly as instructed on figure 81.

Note.
Remove the rear steering lock mechanism before removing left rear ball joint assembly.

(6) Remove the front or rear ball joint assembly as instructed on figure 82.

Note.
Remove the opposite ball joint assembly in a similar manner.

b. Disassembly. Disassemble the front or rear axle and ball joint assembly in numerical sequence as illustrated on figure 83.

Note.
Disassemble the remaining ball joint assemblies in a similar manner.

284. Front and Rear Ball Joint Suspension Assembly Cleaning, Inspection, and Repair

a. Cleaning.

(1) Clean all parts in an approved cleaning solvent and dry thoroughly.

(2) Remove hardened oil deposits from the socket and ball.

b. Inspection and Repair.

(1) Inspect the socket for breaks, wear, or other damage.

(2) Inspect the ball for wear, breaks, or damage bore.

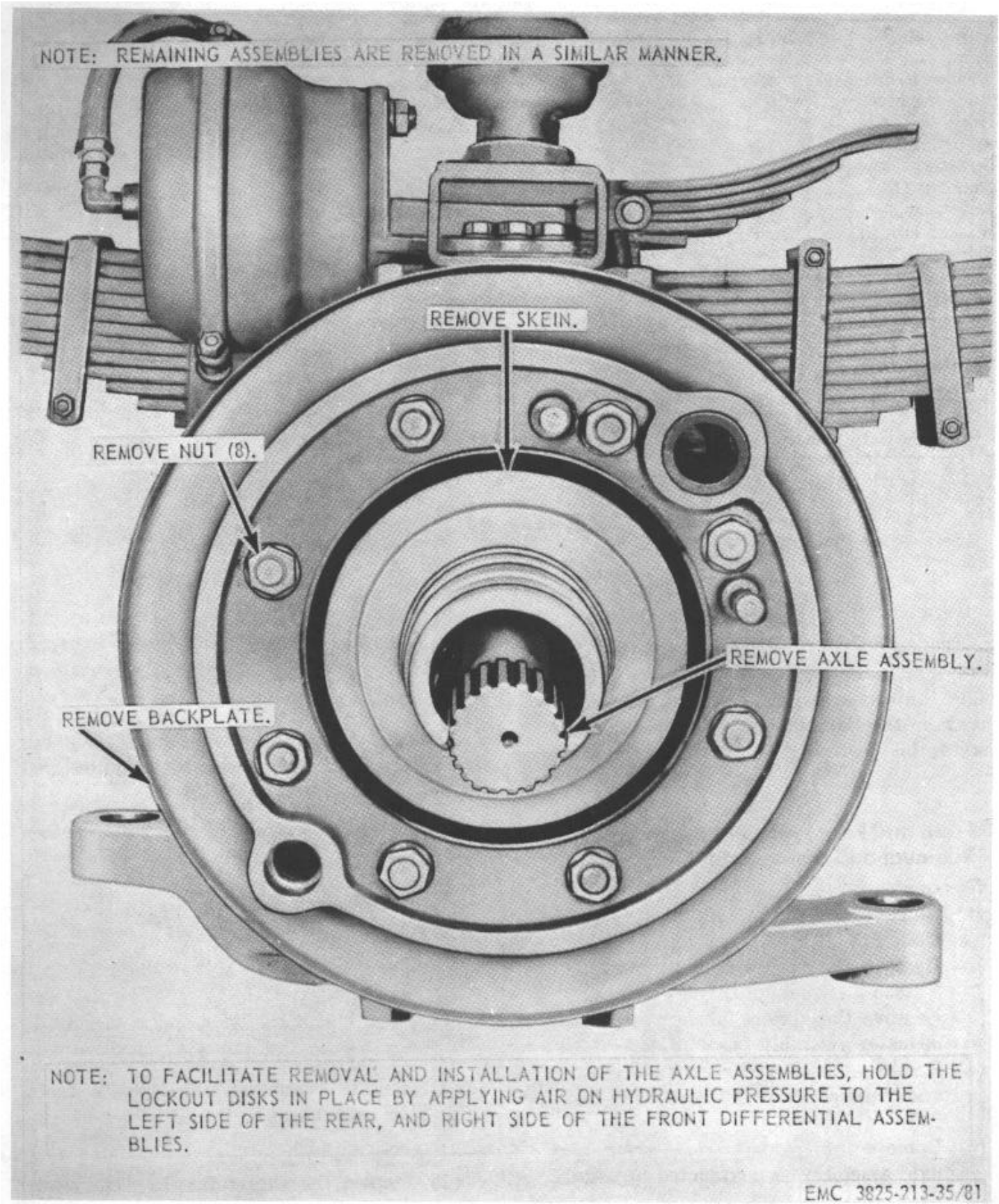


Figure 81. Front and rear skein and axle assembly, removal and installation

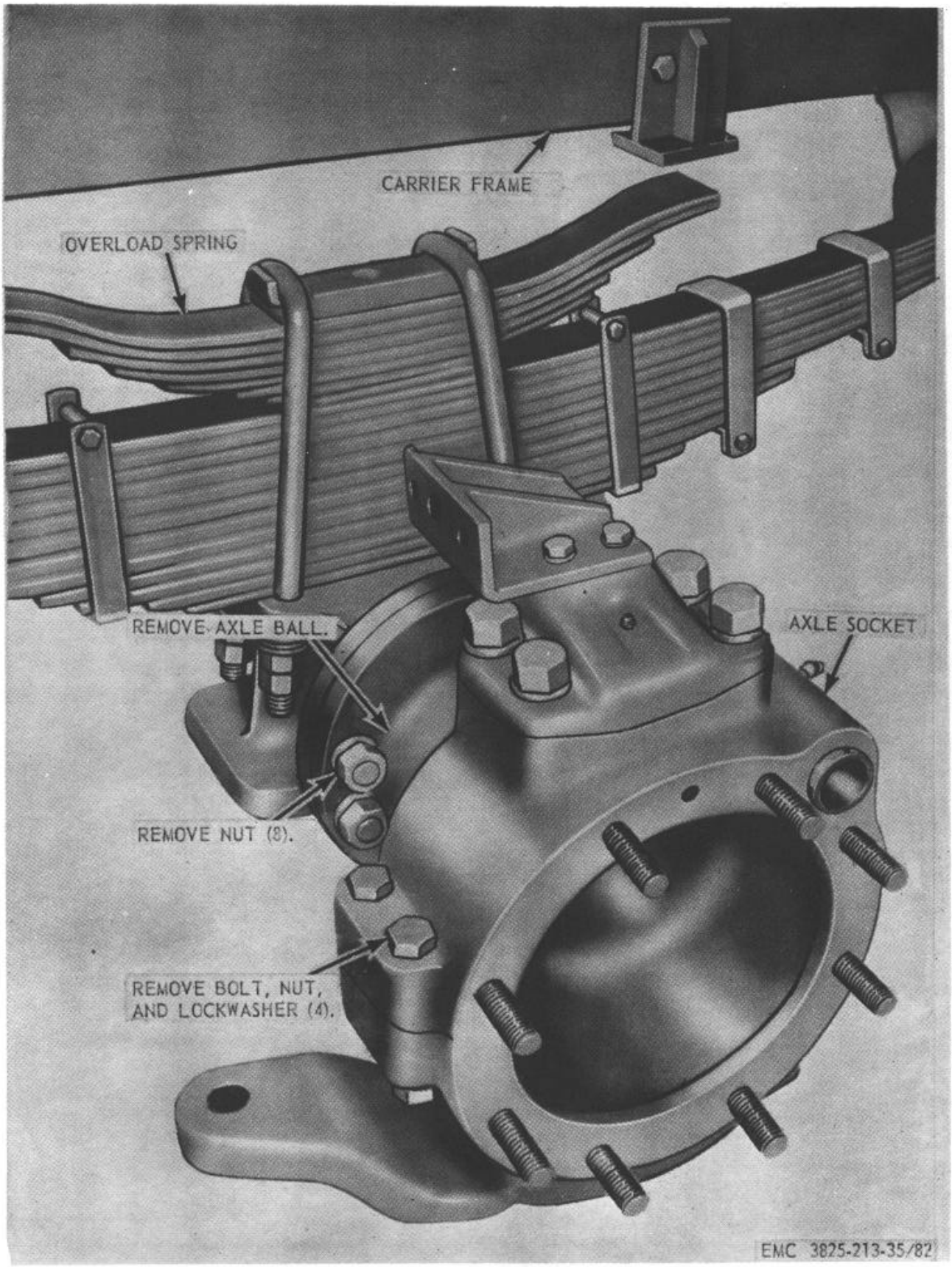
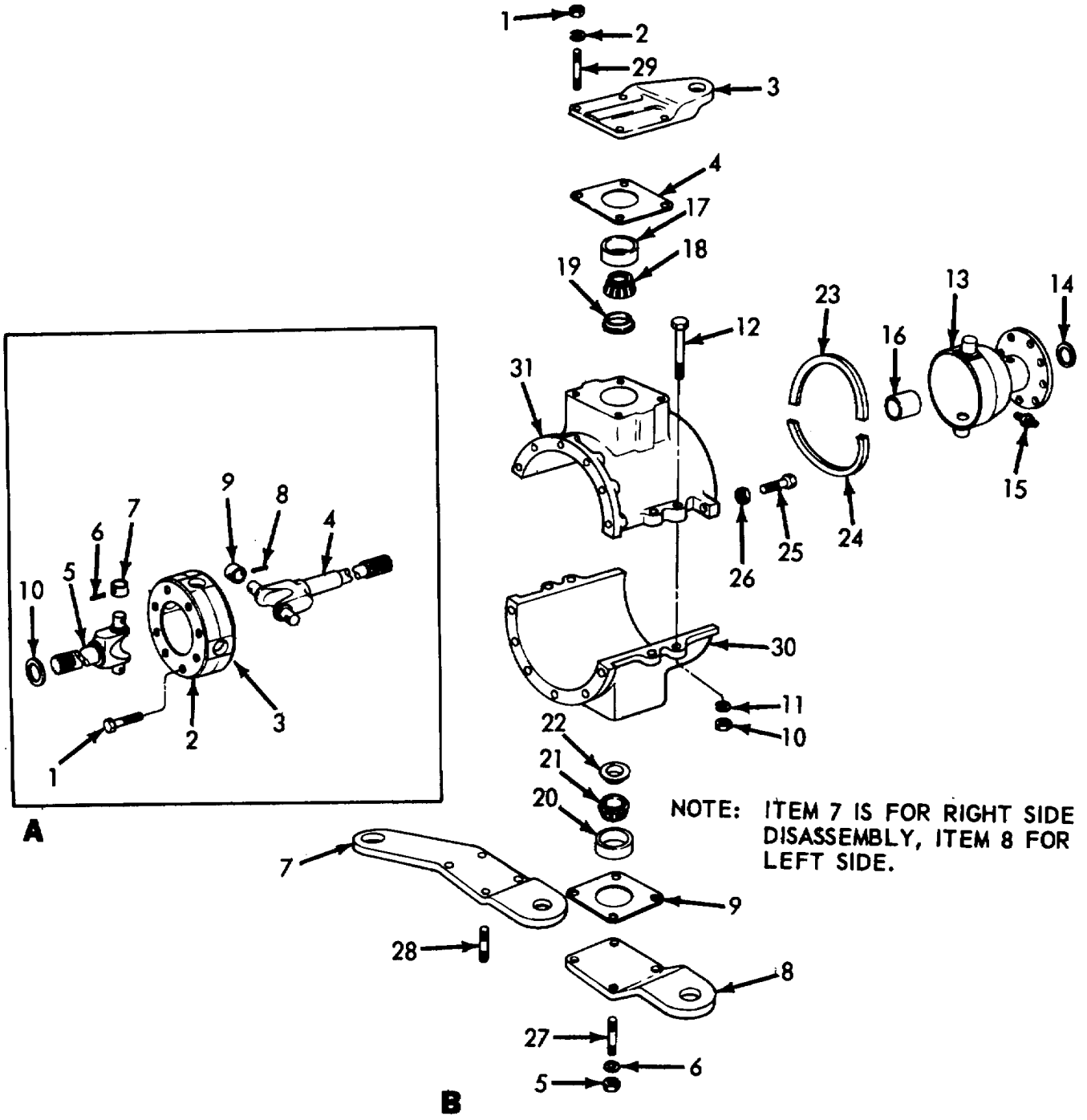


Figure 82. Ball joint assembly, removal and installation.



1 Screw-, cage ring, special
2 Cage ring
3 Cage ring
4 Inner axle shaft
5 Outer axle shaft
6 Pin, trunnion bushing (2 rqr)
7 Trunnion bushing (2 rqr)
8 Pin, trunnion bushing (2 rqr)
9 Turnnion bushing (2 rqr)
10 Thrust washer

A. Front and rear axle shaft, exploded view.

Figure 83. Front and rear ball joint and axle shaft assembly, disassembly and reassembly, exploded view.

1 Nut, 7/814 (8 rqr)
2 Washer, lock, 7/8 in. (8 rqr)
3 Bearing cap (2 rqr)
4 Shim (as rqr)
5 Nut, 7/814 (8 rqr)
6 Washer, lock, 7/8 in. (8 rqr)
7 Arm
8 Arm
9 Shim (as rqr)
10 Nut, 3/410 (8 rqr)
11 Washer, lock, 3/4 in. (8 rqr)
12 Screw, cap, 3/410 x 5 in. (8 rqr)
13 Ball
14 Seal
15 Fitting, lubrication
16 Bearing
17 Bearing cup (2 rqr)
18 Bearing cone (2 rqr)
19 Washer, trunnion grease retainer (2 rqr)
20 Bearing cup (2 rqr)
21 Bearing cone (2 rqr)
22 Washer, trunnion grease retainer (2 rqr)
23 Felt (2 rqr)
24 Felt (2 rqr)
25 Screw, cap, 5/811 x 3 1/4 in. (2 rqr)
26 Nut, 5/811 x 3 1/8 in. (2 rqr)
27 Stud, 7/8-14 x 3 1/8 in. (2 rqr)
28 Stud, 7/814 x 4 1/4 in. (2 rqr)
29 Stud, 7/814 x 3 1/4 in. (4 rqr)
30 Lower socket
31 Upper socket

B. Front and rear socket and ball assembly, exploded view.

Figure 83-Continued.

(3) Inspect the axle shaft for breaks, chipped splines, and worn bushings.
(4) Inspect the bearings for pits, breaks, and free movement.
(5) Repair or replace defective parts as necessary.

285. Front and Rear Ball Joint Suspension Assembly Reassembly and Installation

a. Reassembly. Reassemble the axle and ball joint assembly in reverse of numerical sequence illustrated on figure 83.

b. Installation.

(1) Install the front or rear ball joint assembly as instructed on figure 82.
(2) Install the front or rear axle and skein assembly as instructed on figure 81.
(3) Install the service brake and slack adjuster assembly (par. 293).
(4) Install the air brake chamber (TM 5 3825-213-20).
(5) Install the wheel and hub (TM 5 3825-213-20).
(6) Install the tie-rod steering cylinder and control valve (TM 5-3825-213-20).
(7) Adjust the toe-in (TM 5-3825-213-20).

Section VII. FRONT AND REAR AXLE HOUSING AND DIFFERENTIAL ASSEMBLY

286. General

The front and rear axle and differential are driven by means of propeller shafts from the transfer case. The front and rear axle gear ratio is 6.167: 1. The differential and gear assembly is mounted on tapered roller bearing. The straddle mounted pinion has two tapered roller bearings in front of the pinion teeth that take the forward and reverse thrust and a third bearing behind the pinion gear teeth to carry the radial load.

287. Front and Rear Axle Housing and Differential Assembly Removal and Disassembly

a. Removal.

(1) Drain the differential (LO 5-3825 213-20).

(2) Remove the ball joint assemblies (par. 283).
(3) Remove the drive shaft assembly (TM 5-3825-213-20).
(4) Remove the front or rear axle housing and differential as instructed on figure 84.

b. Disassembly. Disassemble the front or rear axle housing and differential assembly in numerical sequence as illustrated on figure 85.

288. Front and Rear Axle Housing and Differential Assembly Cleaning, Inspection, and Repair

a. Cleaning.
(1) Clean all parts in an approved cleaning solvent and dry thoroughly.
(2) Dip bearings in solvent and move them up and down slowly until they are clean.
(3) Remove bearings from solvent and strike larger side of cone flat against a block of wood to dislodge solidified particles of lubricant. Blow bearings dry with compressed air being careful to avoid spinning bearing.
(4) Inspect the bearing cones and cups for wear, chipping, or nicks.
(5) Inspect the teeth of all gears for wear, pitting, cracking, chipping, or scoring.
(6) Inspect pinion gear teeth for wear and pinion shaft for evidence of twisting, particularly at splines.

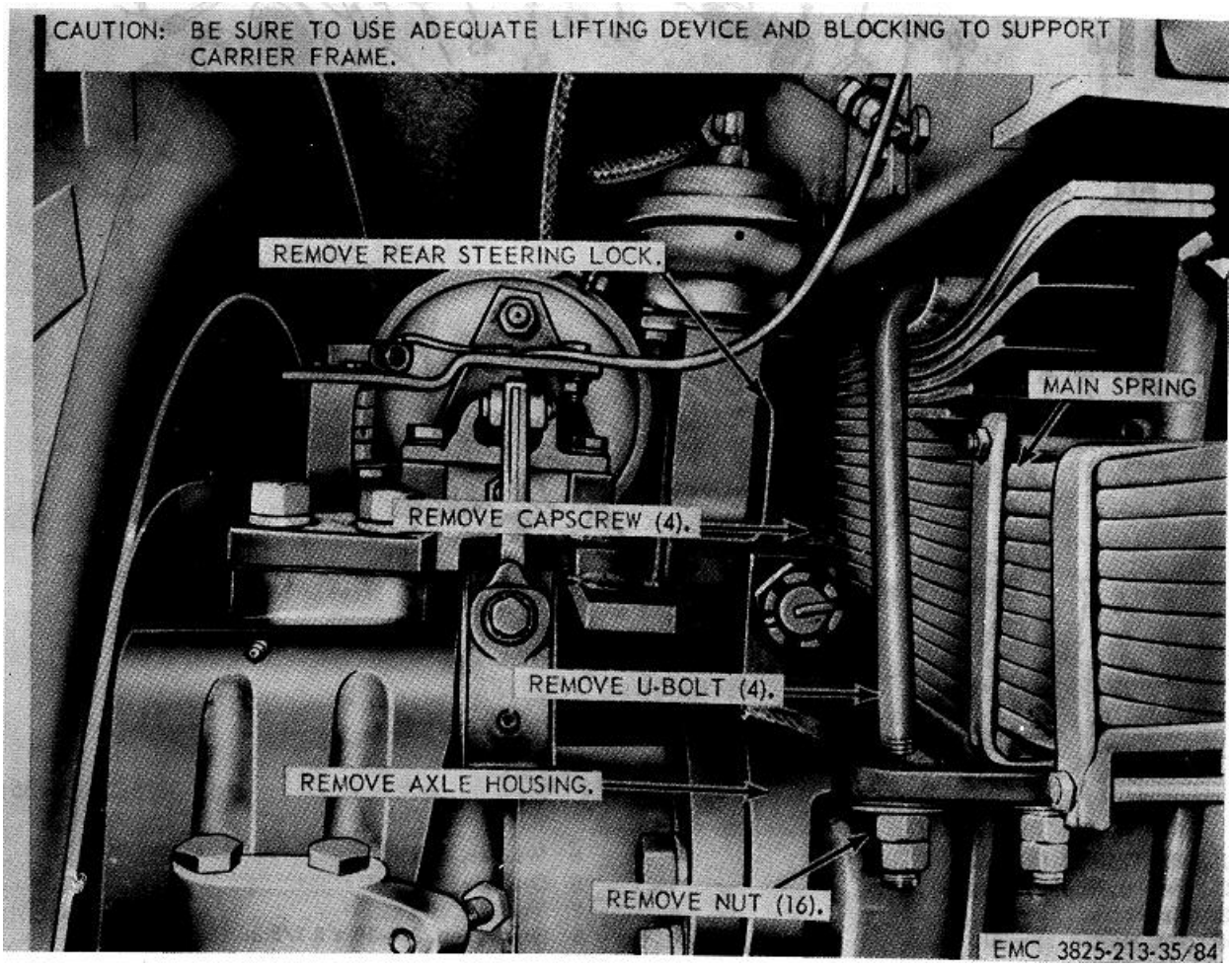
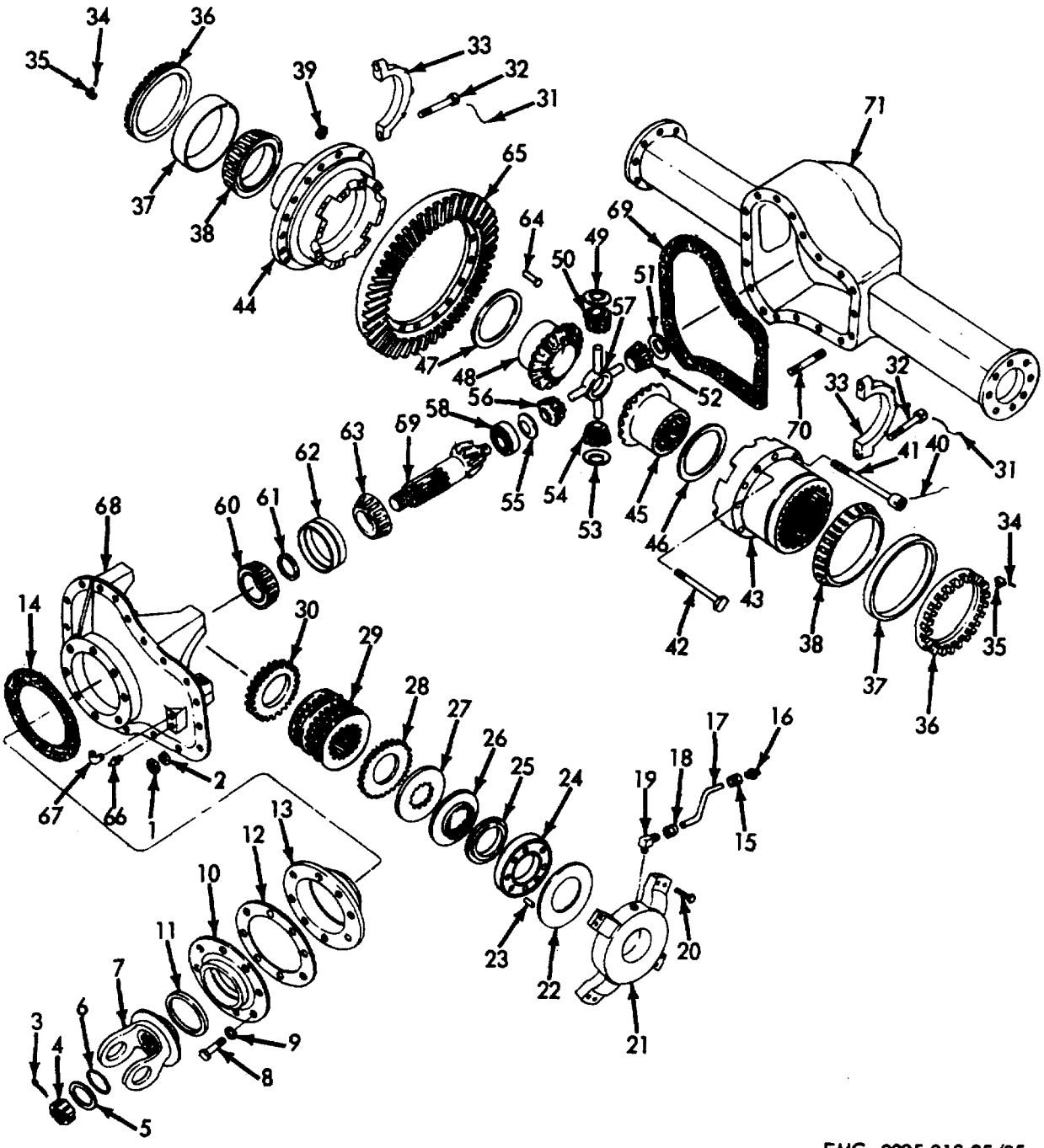


Figure 84. Front and rear axle housing and differential assembly, removal and installation.



1 Nut, 7/16-14 (21 rqr)
2 Washer, lock, 7/16 in. (21 rqr)
3 Pin, cotter
4 Nut, slotted, special
5 Washer, special
6 O-ring
7 Yoke
8 Screws cap, 3/4-10 x 2 1/2 in. (8 rqr)

Figure 85. Front or rear axle housing and differential assembly, disassembly and reassembly, exploded view.

9 Washer, lock, 3/4 in. (8 rqr)
10 Pinion bearing retainer
11 Oil seal
12 Shim (as rqr)
13 Pinion bearing housing
14 Pinion bearing gasket
15 Adapter (2 rqr)
16 Nut, special (2 rqr)
17 Hydraulic line
18 Nut, special (2 rqr)
19 Elbow, 90° (2 rqr)
20 Screw, cap, 1/2-20 x 1 5/8 in. (4 rqr)
21 Housing
22 0-ring
23 Differential lockpin (2 rqr)
24 Brake piston
25 Bearing
26 Lockout spacer
27 Lockout friction disk
28 Lockout opposing disk
29 Lockout disk assembly
30 Differential lockout spacer
31 Lockwire (2 rqr)
32 Screw, socket-hd, 1/2-20 x 1 5/8 in. (4 rqr)
33 Differential bearing cap (2 rqr)
34 Roll pin (2 rqr)
36 Adjusting nut lock (2 rqr)
36 Locknut, differential bearing (2 rqr)
37 Bearing cup (2 rqr)
38 Bearing (2 rqr)
39 Nut, 1/2-20 (8 rqr)
40 Lockwire
41 Screw, cap, ctsk hd, 1/2-20 x 7 1/8 in. (4 rqr)
42 Screw: special (8 rqr)
43 Differential case, lockout side
44 Differential case, flange side
46 Differential side gear
46 Thrust washer
47 Differential side gear
48 Thrust washer
49 Pinion gear thrust washer
50 Pinion gear
51 Pinion gear thrust washer
52 Pinion gear
63 Pinion gear thrust washer
54 Pinion gear
56 Pinion gear thrust washer
56 Pinion gear
57 Differential spider
58 Inner pinion bearing
59 Pinion gear
60 Bearing cone
61 Spacer
62 Bearing cup
63 Bearing cone
64 Rivet, 1/2 x 2 1/2 in. (16 rqr)
65 Ring gear
66 Screw, bleeder
67 Elbow
68 Carrier
69 Gasket
70 Stud, 7/16-14 x 2.15 in. (21 rqr)
71 Housing

Figure 85-Continued.

(7) Inspect the lockout clutch disks and spacers for wear or other damage.
(8) Replace defective parts as necessary.

289. Front and Rear Axle Housing and Differential Assembly Reassembly and Installation

a. Reassembly.

(1) Reassemble the front axle housing and differential assembly in reverse of numerical sequence illustrated on figure 85.

Note

Do not install oil seal with yoke until proper bearing adjustment has been made. Tighten the yoke to 800-900 foot-pounds torque. Be sure to oil and rotate bearings when torquing nut.

Note

The recommended bearing preload is 5 to 15 inch-pounds. Should the pull on the torque wrench be less than 5 inch-pounds a thinner spacer must be installed, if pull is more than 15 inch-pounds a thicker spacer should be installed.

Caution

Be sure the oil return hole in carrier and pinion bearing housing are lined up.

Note

After installing the ring gear with hot rivets, using 35 to 40 tons pressure to upset the rivets, measure the ring gear runout with a dial indicator. This runout should not exceed 0.005 inch. Any runout in excess of 0.005 inch must be corrected before assembly.

(2) Coat the side gear thrust washers with oil before assembly. Torque the pinion gear and spider cases at 100110 foot-pounds.
(3) Adjust the ring and pinion gear for proper teeth mesh pattern at 0.0100.013 inch backlash as instructed on figure 86.

Note

Preload the differential bearings 25 to 50 inch-pounds.

(4) Check the preload by turning the pinion with torque wrench and adjust the differential bearings until torque

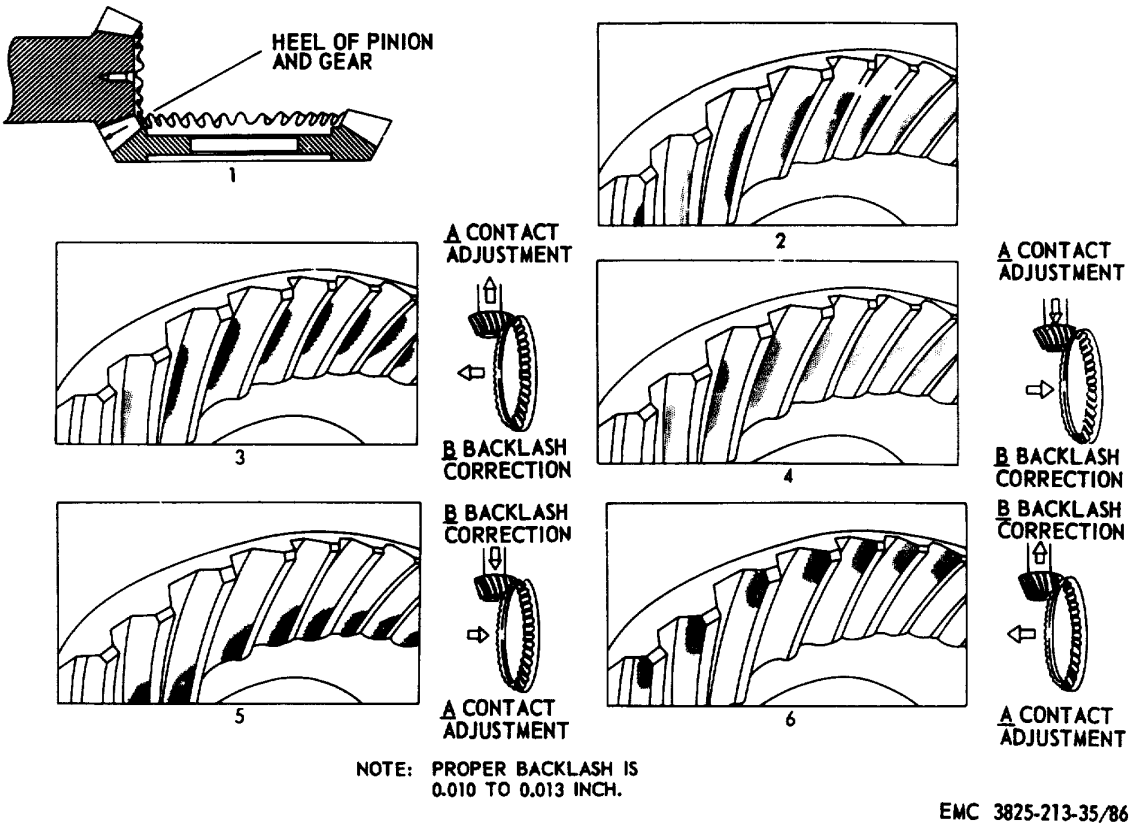


Figure 86. Ring and pinion gear adjustment pattern.

reading of 16 to 20 inch-pounds is indicated. This reading will be equivalent to 25 to 50 inch-pound bearing preload.

(2) Install the drive shaft (TM 5—3825-213-20).
(3) Install the ball joint assemblies (par.285).
(4) Fill the differential (LO 5-3825-213-20).

b. Installation.

(1) Install the front or rear axle housing and carrier assemblies as instructed on figure 84.

Section VIII. FRONT AND REAR SERVICE BRAKES AND SLACK ADJUSTERS

290. General

Located at each of the four wheels are wheel brake assemblies. They are composed of two brake shoes pivoted on anchor pins, a brake c-am, and brake shoe retracting spring. When the brakes are applied air pressure is admitted into the air chamber, which depresses the diaphragm, push rod, and slack adjuster into a downward position. This, in turn, rotates the cam and delivers the pressure to the shoes against the brake drums. When the air pressure is release, the brake shoe return spring

retracts and returns the shoes to their normal position against the cam.

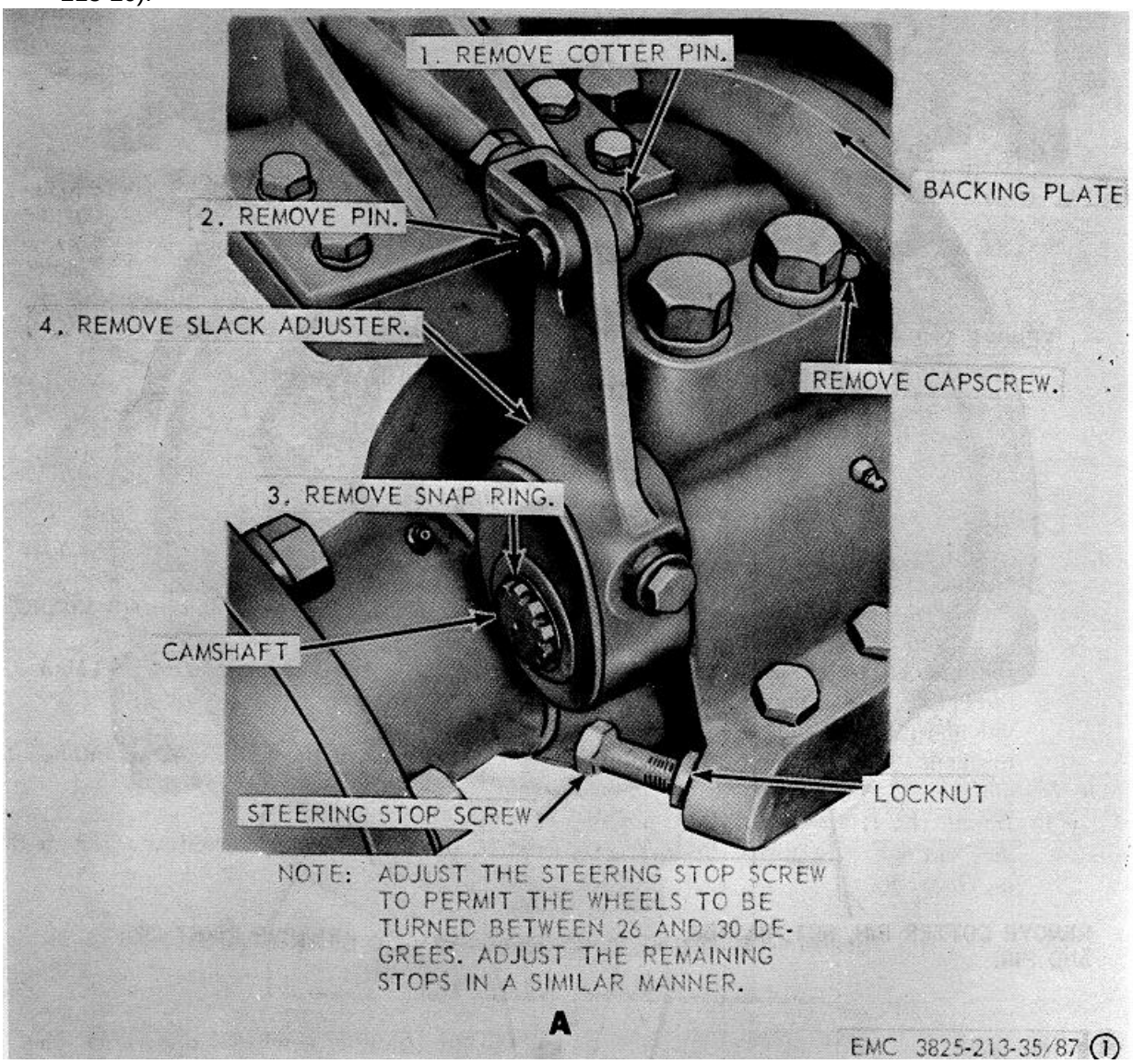
291. Front and Rear Service Broke and Slack Adjuster Assembly Removal and Disassembly

a. Removal.

(1) Remove the wheel assembly (TM 53825-213-20).

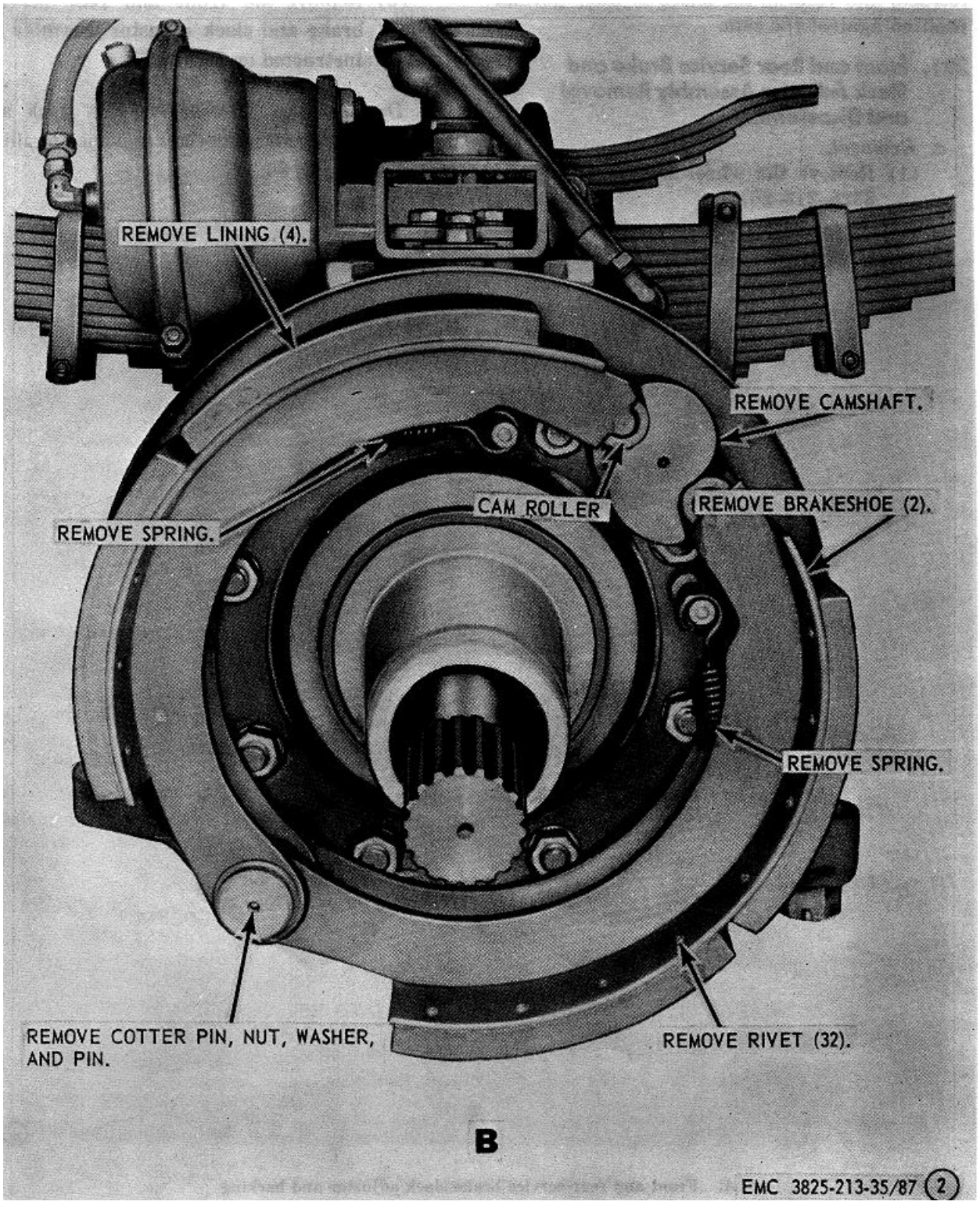
(2) Remove the front and rear service brake and slack adjuster assembly as instructed on figure 87.

b. Disassembly. Disassemble the slack adjuster assembly in numerical sequence as illustrated on figure 88.



A. Front and rear service brake slack adjuster and backing plate removal points and steering stop adjustment.

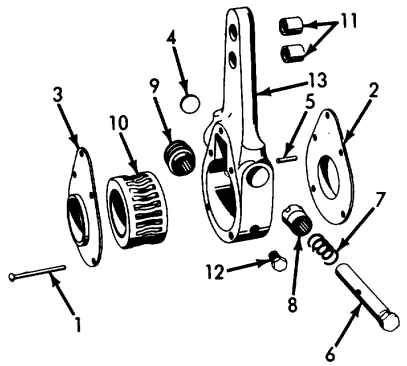
Figure 87. Front and rear service brake and slack adjuster assembly, removal and installation, and steering stop adjustment.



B. Front and rear service brake shoe and lining removal points.

Figure 87-Continued.

NOTE
PIN (5) SECURES WORM (9) TO SHAFT (6).



EMC 3825-213-35/88

1 Rivet, solid (5 rqr)
2 Body cove
3 Worm gear cover
4 Expansion plug
5 Pin, special
6 Worm gear shaft
7 Plunger lock spring
8 Locking plunger
9 Drive gear worm
10 Worm gear
11 Sleeve bearing (2 rqr)
12 Plug, pipe, 1/827
13 Slack adjuster body

Figure 88. Front and rear service brake slack adjuster assembly, disassembly and reassembly, exploded view.

292. Front and Rear Service Brake and Slack Adjuster Assembly Cleaning, Inspection, and Repair

a. Cleaning.
(1) Clean all metal parts, except brake linings, with approved cleaning solvent and dry thoroughly.
(2) Inspect the linings for cracks, grooving, or excessive wear. Replace badly worn linings or linings that have been grease-soaked.
(3) Inspect the brake hose for cracks or breaks.
(4) Inspect the cam rollers for scuffing, cracking, or wear.
(5) Inspect the camshaft for bending or cracking. Replace a damaged shaft.
(6) Inspect all other parts for defective condition. Replace or repair a worn, damaged, or defective part.

293. Front and Rear Service Brake and Slack Adjuster Assembly Reassembly and Installation

a. Reassembly. Reassemble the slack adjuster in reverse of numerical sequence illustrated on figure 88.

b. Installation.
(1) Install the front and rear service brake and slack adjuster assembly as instructed on figure 87.
(2) Install the wheel assembly (TM 5382521320).

Section IX. CARRIER MAIN AND OVERLOAD SPRING ASSEMBLY

294. General

The spring assembly consists of two groups of springs; the main spring and overload springs. The overload springs consists of six leaves mounted on top of the main spring leaves. The main spring ends are attached to a hanger which is mounted to the carrier frame. The centers of the springs are mounted to the axle with two spring clips, nuts, and lockwashers.

295. Carrier Main and Overload Spring Assembly Removal and Disassembly

a. Removal.
(1) Block and support the carrier frame and wheels.

(2) Remove the main and overload spring assembly as instructed on figure 89.

b. Disassembly. Disassemble the carrier main and overload spring assembly in numerical sequence as illustrated on figure 90.

Note

Remove and disassemble the remaining carrier main and overload spring assemblies in a similar manner.

296. Carrier Main and Overload Spring Assembly Cleaning, Inspection, and Repair

a. Cleaning. Clean all parts with an approved cleaning solvent and dry thoroughly.

b. Inspection and Repair. Inspect all parts for wear, breaks, damaged threads, or other damage. Repair or replace defective parts as necessary.

297. Carrier Main and Overload Spring Assembly Reassembly and Installation

a. Reassembly. Reassemble the carrier main and overload spring assembly in reverse of numerical sequence illustrated on figure 90.

b. Installation. Install the carrier main and overload spring assembly as instructed on figure 89.

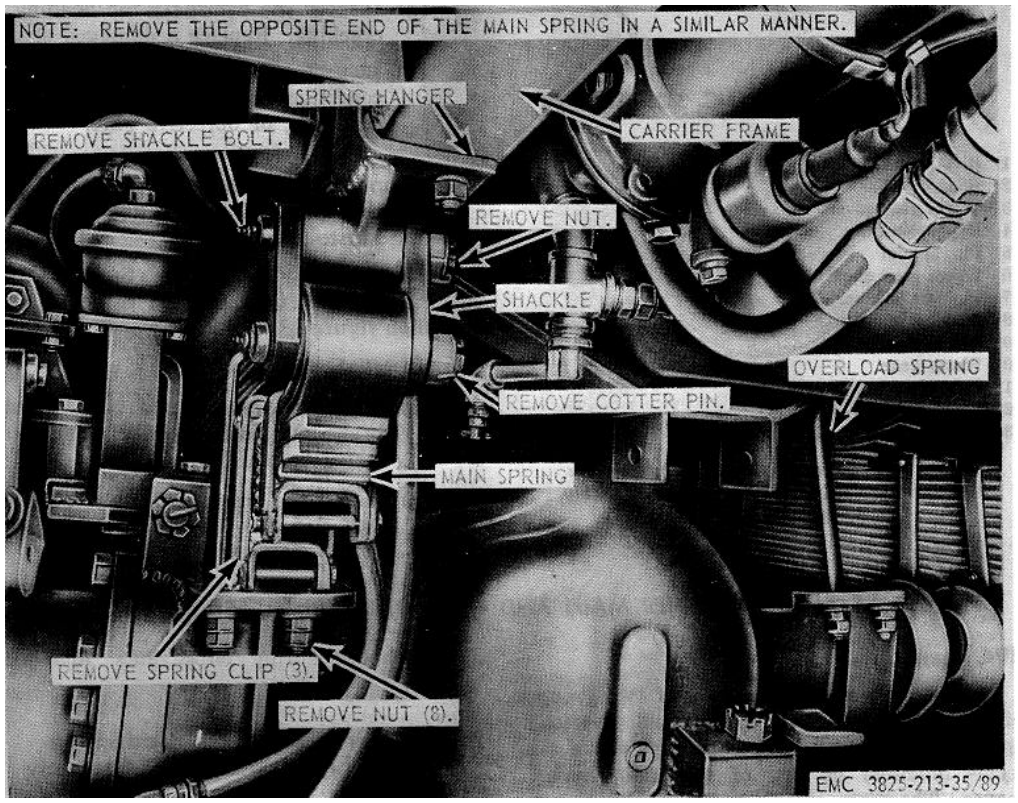
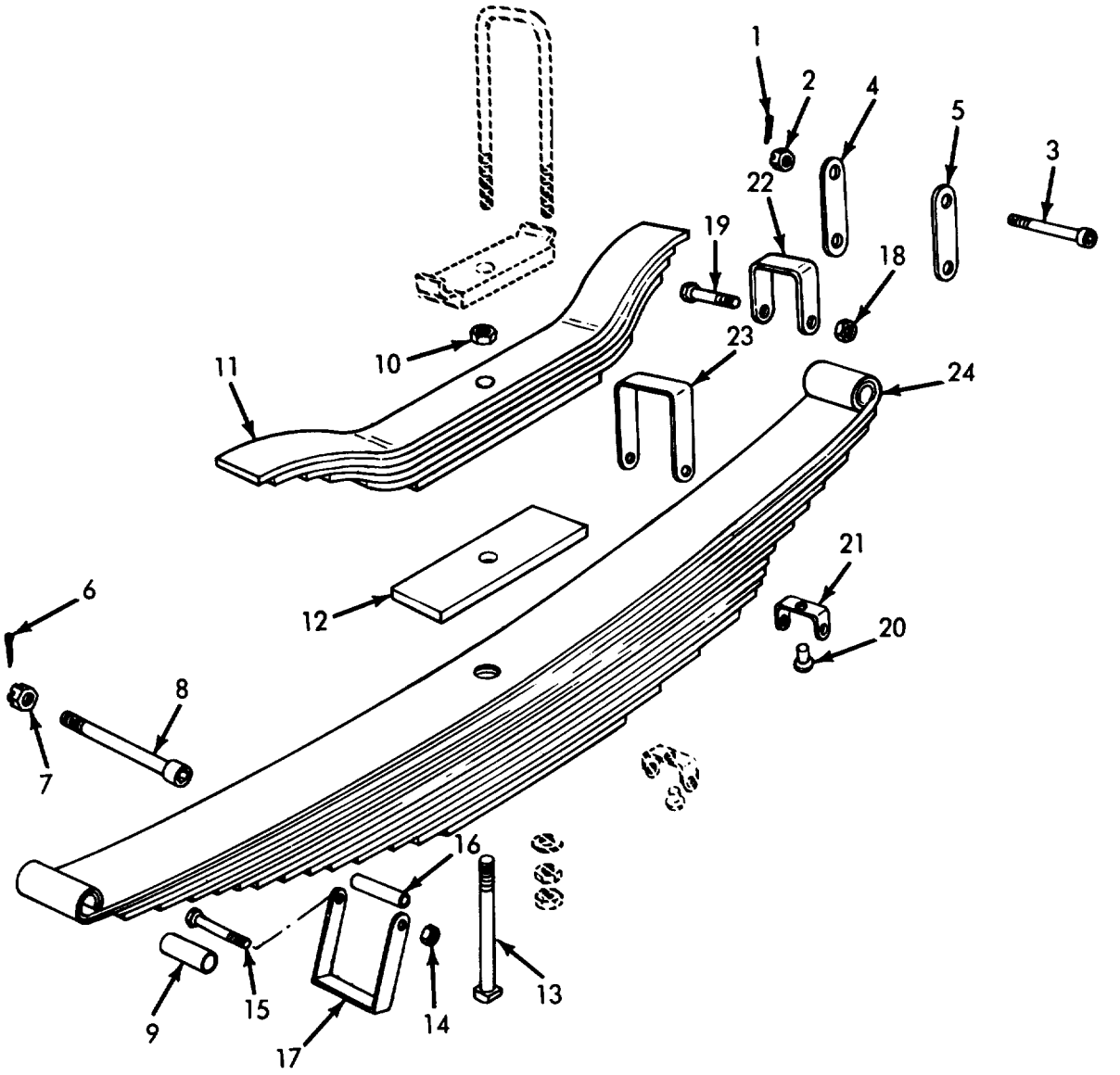


Figure 89. Carrier main and overload spring assembly, removal and installation.



EMC 3825-213-35/90

1 Pin, cotter, 1/8 x 1 1/2 in. (3 rqr)
2 Nut, 7/8-14 (3 rqr)
3 Bolt, shackle, special (3 rqr)
4 Shackle (2 rqr)
5 Shackle (2 rqr)
6 Pin, cotter, 1/8 x 1 1/2 in. (3 rqr)
7 Nut, 7/8-14 (3 rqr)
8 Bolt, shackle, special (3 rqr)
9 Bushing (2 rqr)
10 Nut, 3/8-24
11 Overload spring
12 Filler block (2 rqr)
13 Bolt, center tie, special
14 Nut, special (3 rqr)
15 Screw, cap, special (2 rqr)
16 Spacer (2 rqr)
17 Clamp (2 rqr)
18 Nut, special, (2 rqr)
19 Screw, cap, special (2 rqr)
20 Rivet, special (4 rqr)
21 Clamp (4 rqr)
22 Clamp (2 rqr)
23 Clamp (2 rqr)
24 Main spring

Figure 90. Carrier main and overload spring assembly, disassembly and reassembly, exploded view.

Section X. CARRIER CHASSIS WIRING HARNESS

298. General

Electrical components of the carrier chassis are connected in the proper circuit by a wiring harness.

299. Carrier Chassis Wiring Harness Removal

For removal of the wiring harness refer to wiring diagram (TM 5-3825-213-20).

300. Carrier Chassis Wiring Harness Inspection, Testing, Repair, and Replacement

a. Inspection. Inspect insulation for cracked or frayed material. Pay particular attention to wires passing through holes in frame and over rough edges. If inspection reveals a broken or cut wire, and break in wire is exposed and readily accessible, wire must be repaired or replaced.

b. Testing. Test for continuity by disconnecting each end of wire from component to which it is attached. Refer to TM 5-3825-21320 for wiring diagram. Touch probes of a test lamp to each end of wire. If lamp does not light, wire is defective. Repair or replace a defective wire.

c. Repair. If break in wire is exposed and is readily accessible, shave away insulation on wire to expose one-half inch of bare wire at both ends of break. Twist bare wires together and solder the connections. Cover repaired cut by wrapping electrical tape over entire area. Do not leave any bare wire exposed.

d. Replacement. If the break in a wire is not readily accessible and cannot be repaired, replace wire by disconnecting it at both ends of component, or components, and remove. Install a new wire and connect both ends to components. If a wire is part of wiring harness and is defective, disconnect both ends and cover these ends with electrical tape. Install a new wire of the same size and attach it to outside of wiring harness.

Note

Be sure to identify new wire with same identification number as one removed.

301. Carrier Chassis Wiring Harness Installation

For installation of the wiring harness refer to wiring diagram (TM 5-3825-213-20).

Section XI. CARRIER CAB, WINDOWS, AND WINDSHIELD ASSEMBLY

302. General

The carrier cab assembly consists of the panels, frame, doors, floor mats, windshield, side and rear windows. The cab serves as the housing for the operating controls, instruments, and gages and provides protection against the weather for the operator.

303. Carrier Cab, Windows and Windshield Assembly Removal

a. Carrier Cab Removal.

(1) Remove the lights and horn assemblies (TM 5-3825-213-20).
(2) Remove the defroster manifold and tubes (TM 5-3825-213-20).
(3) Remove the plow hydraulic manifold (TM 5-3825-213-20).
(4) Tag and disconnect instrument panel wiring (TM 5-3825-213-20).
(5) Tag and disconnect air and hydraulic lines (TM 5-3825-213-20).
(6) Disconnect priming aid levers (TM 5-3825-213-20).
(7) Remove the steering wheel (par. 279).
(8) Remove carrier cab doors (TM 5-3825-213-20).
(9) Remove heater ducts (TM 5-3825-213-20).
(10) Remove the operator's seat (TM 5-3825-213-20).
(11) Remove the carrier cab as instructed on figure 91.

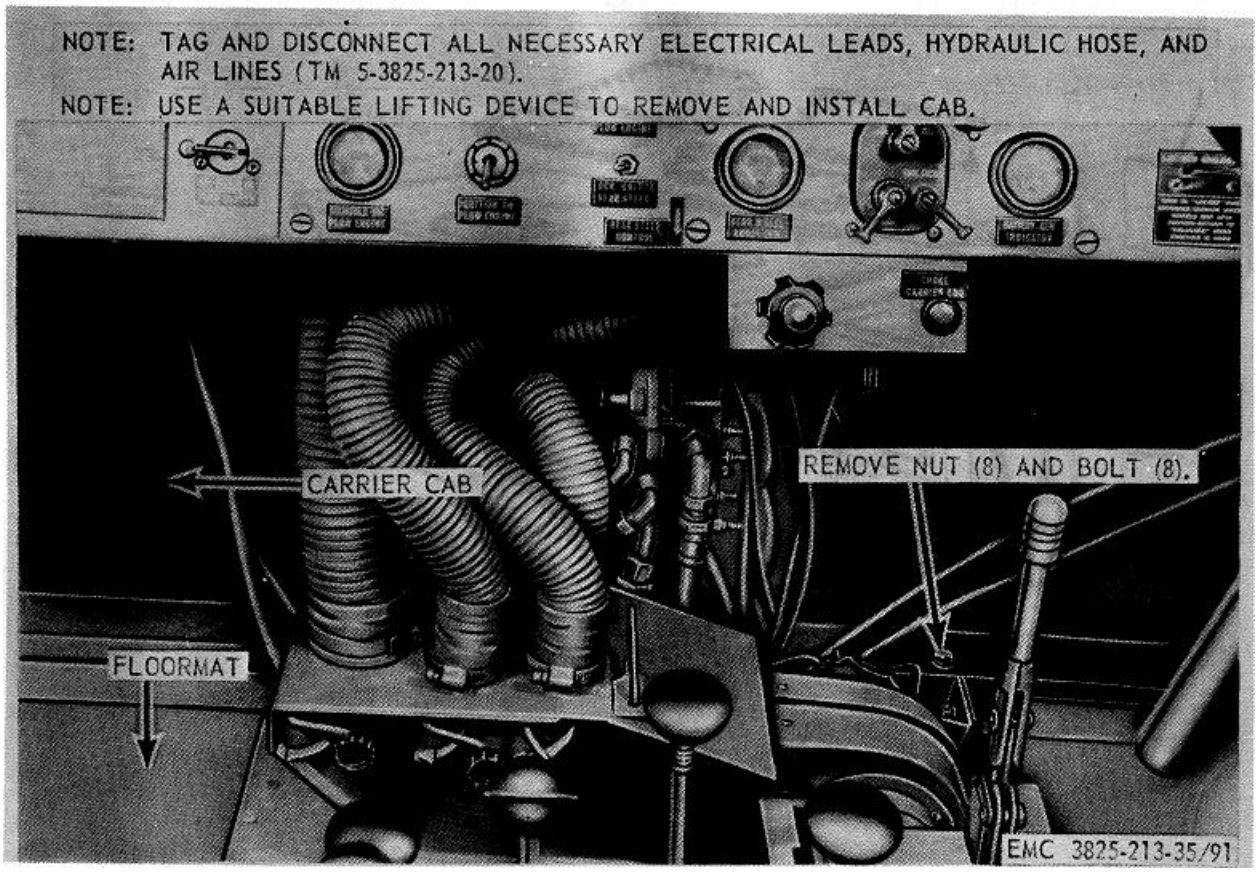


Figure 91. Carrier cab, removal and installation.

Note

Use suitable cribbing between the two side doors and cab roof to attach lifting slings when removing carrier cab. This will prevent damage to the cab roof.

b. Windshield, Side, and Rear Windows, Removal. Remove the windshield, and side and rear windows as illustrated on figure 92.

Note

Do not remove weatherstrip from cab window frames unless damaged or deteriorated.

304 Carrier Cab, Windows, and Windshield Assembly Cleaning, Inspection, and Repair

a. Cleaning. Clean all parts with an approved cleaning solvent and dry thoroughly.

b. Inspection and Repair. Inspect the carrier cab for broken weldments, and dents, and the windshield, side, or rear windows for cracks, chips, or other damage. Repair or re place defective parts as necessary.

305. Carrier Cab, Windows, and Windshield Assembly Installation

a. Windshield, Side and Rear Windows Installation. Install the windshield, side and rear windows as illustrated on figure 92.

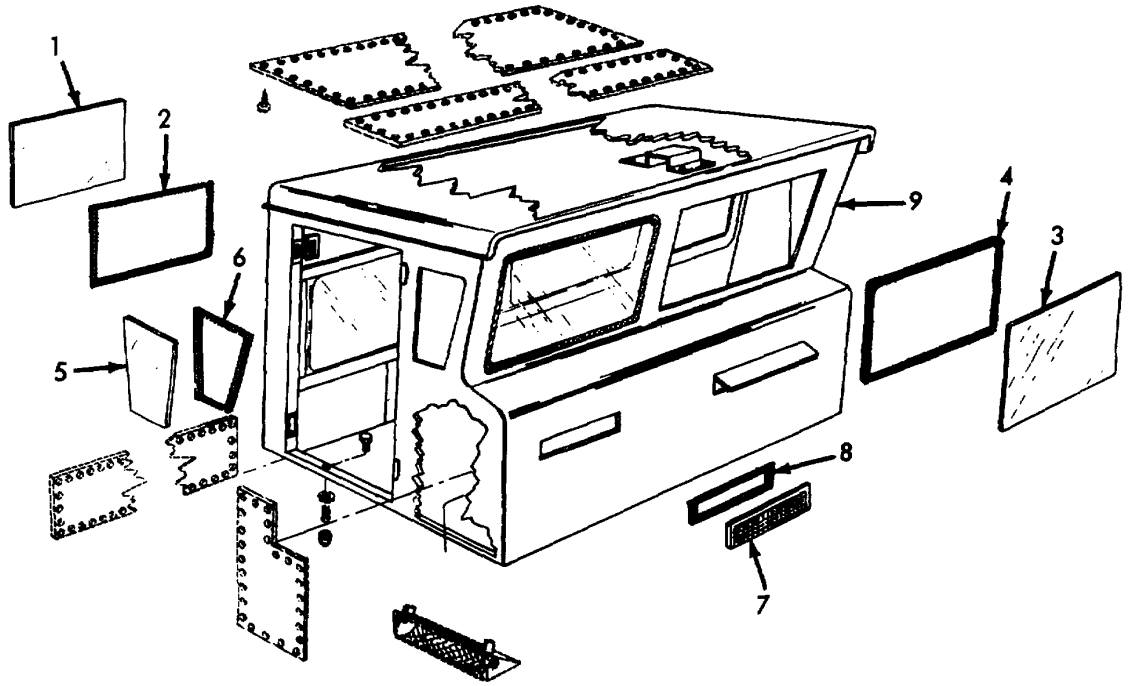
b. Carrier Cab Installation.

(1) Install the carrier cab as instructed on figure 91.

(2) Install the operator's seat (TM 5 3825-213-20).

(3) Install the heater ducts (TM 53825 213-20).

(4) Install carrier cab doors (TM 5-3825-213-20).



EMC 3825-213-35/92

1 Rear window (2 rqr)
2 Weatherstrip (2 rqr)
3 Windshield (2 rqr)
4 Weatherstrip (2 rqr)
5 Side window (2 rqr)
6 Weatherstrip (2 rqr)
7 Vent screen (2 rqr)
8 Weatherstrip (2 rqr)
9 Cab assembly

Figure 92. Windshield, side and rear windows, removal and instruction.

(5) Install the steering wheel (par. 281).
(6) Connect the primer lines (TM 5 3825-213-20).
(7) Connect all air and hydraulic lines (TM 5-3825-213-20).
(8) Connect instrument panel wiring (TM 5-3825-213-20).
(9) Install the plow hydraulic manifold (TM 5-3825-213-20).
(10) Install defroster manifold and tubes (TM 5-3825-213-20).
(11) Install the lights and horn assemblies (TM 6 3825-213-20).

Section XII. CARRIER FRONT FENDERS, FLOORBOARD, AND FLOORMAT

306. General

The front fenders are constructed of welded steel plates and braced with channel iron. The front fenders serve as the right and left side operator's cab platform. The floorboard is mounted on the carrier frame between the two

fenders. The rubber floormat is held in place by metal retainer strips.

307. Carrier Floormat Removal

a. Remove the carrier cab (par. 303).

b. Remove the treadle valve and throttle valve (TM 382-213-20).

c. Remove the torqmatic transmission, plow transmission, and transfer case levers and linkage (TM 5-3825-21320).

d. Remove the control valve assembly (TM 5-3825213-20).

e. Tag and disconnect necessary lines, leads, and hoses.

f. Remove the fire extinguisher (TM 5 3825213-2D).

g. Remove the carrier floormat as illustrated on figure 93.

308. Carrier Floormat Cleaning, Inspection, and Repair

a. Cleaning. Clean the floormat with an approved cleaning solvent.

b. Inspection and Repair. Inspect for tears or worn places. Replace or repair damaged floormat.

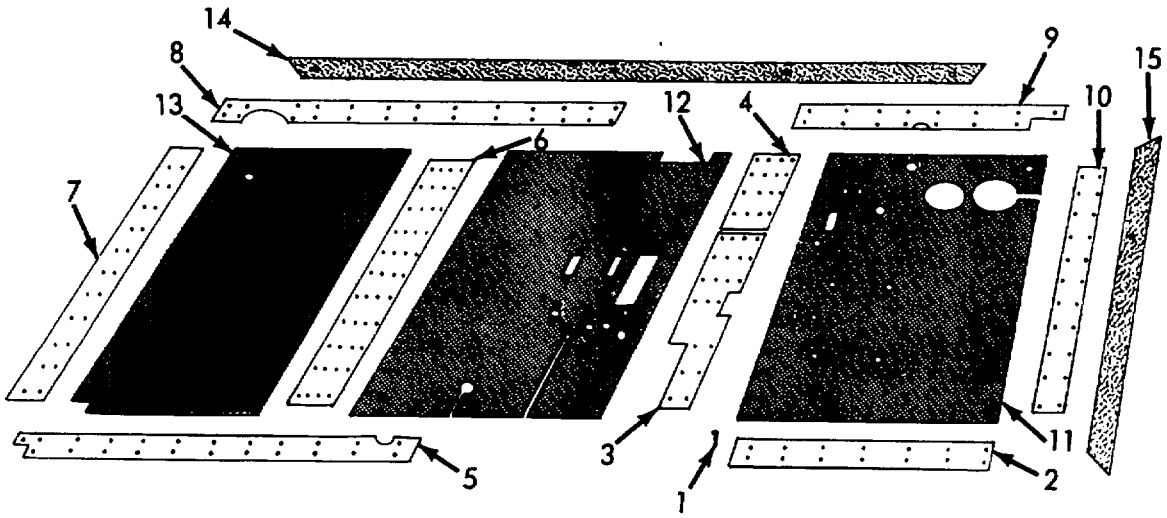
309. Carrier Floormat Installation

a. Install the floormat as illustrated on figure 93.

b. Install the fire extinguisher (TM 5-5825-213-20).

c. Connect necessary lines, leads, and hose.

d. Install the control valve assembly (TM 5-3825-213-20).



1 Screw, self-tapping, No. 10 x 1/2 in. (161 rqr)
2 Strip, right rear
3 Strip, right center
4 Strip, right center front
5 Strip, left rear
6 Strip, left center
7 Strip, left side
8 Strip, left front
9 Strip, right front
10 Strip, right side
11 Mat, right side
12 Mat, center
13 Mat, left side
14 Webbing (2 rqr)
15 Webbing (2 rqr)

Figure 93. Carrier floormat, removal and installation.

e. Install the torqmatic transmission, plow transmission, and transfer case lever and linkage (TM 5-3825-213-20).

f. Install the treadle valve and throttle valve (TM 5-3825-213-20).

g. Install the carrier cab (par. 305).

310. Carrier Front Fenders Removal

a. Remove the carrier cab (par. 303).

b. Tag and disconnect necessary lines, leads, and hoses.

c. Place a suitable support under the fuel tanks.

d. Remove the steering gear assembly (right fender only) (par. 279).

e. Remove the necessary retaining strips from the floormat.

f. Remove the front fenders as instructed on figure 94.

311 Carrier Front Fenders Cleaning, Inspection, and Repair

a. Cleaning. Clean with an approved cleaning solvent and dry thoroughly.

b. Inspection and Repair. Inspect fenders for defective condition. Replace or repair damaged fenders.

312. Carrier Front Fenders Installation

a. Install the front fenders as instructed on figure 94.

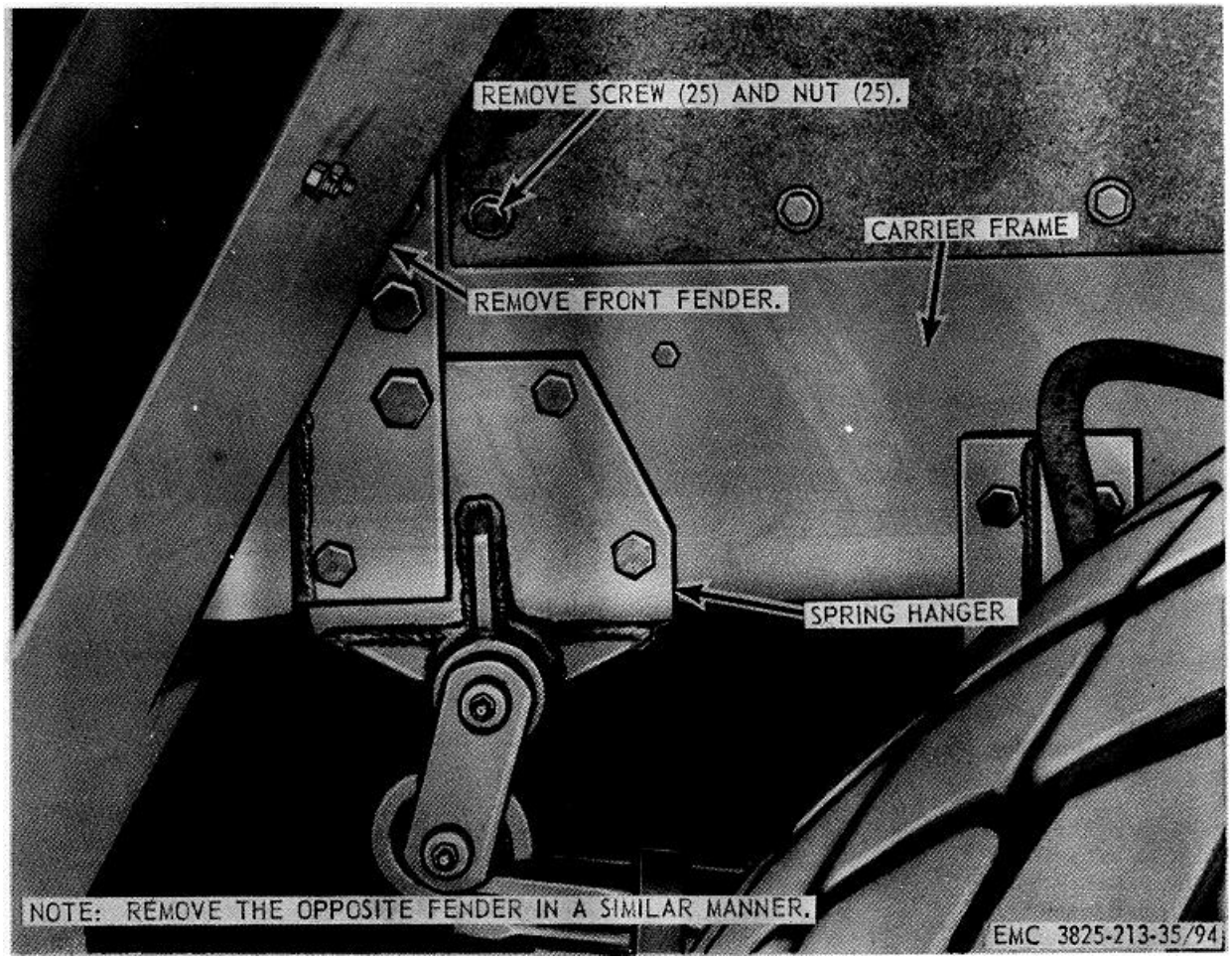


Figure 94. Front fender, removal and installation.

b. Install the necessary retaining strips on the floormat.

c. Install the steering gear assembly (right fender only) (par. 281).

d. Connect necessary lines, leads, and hoses.

e. Remove the support from the fuel tanks.

f. Install the carrier cab (par. 305).

313. Carrier Floorboard Removal

a. Remove the floormat (par. 307).

b. Remove the front fenders (par. 310).

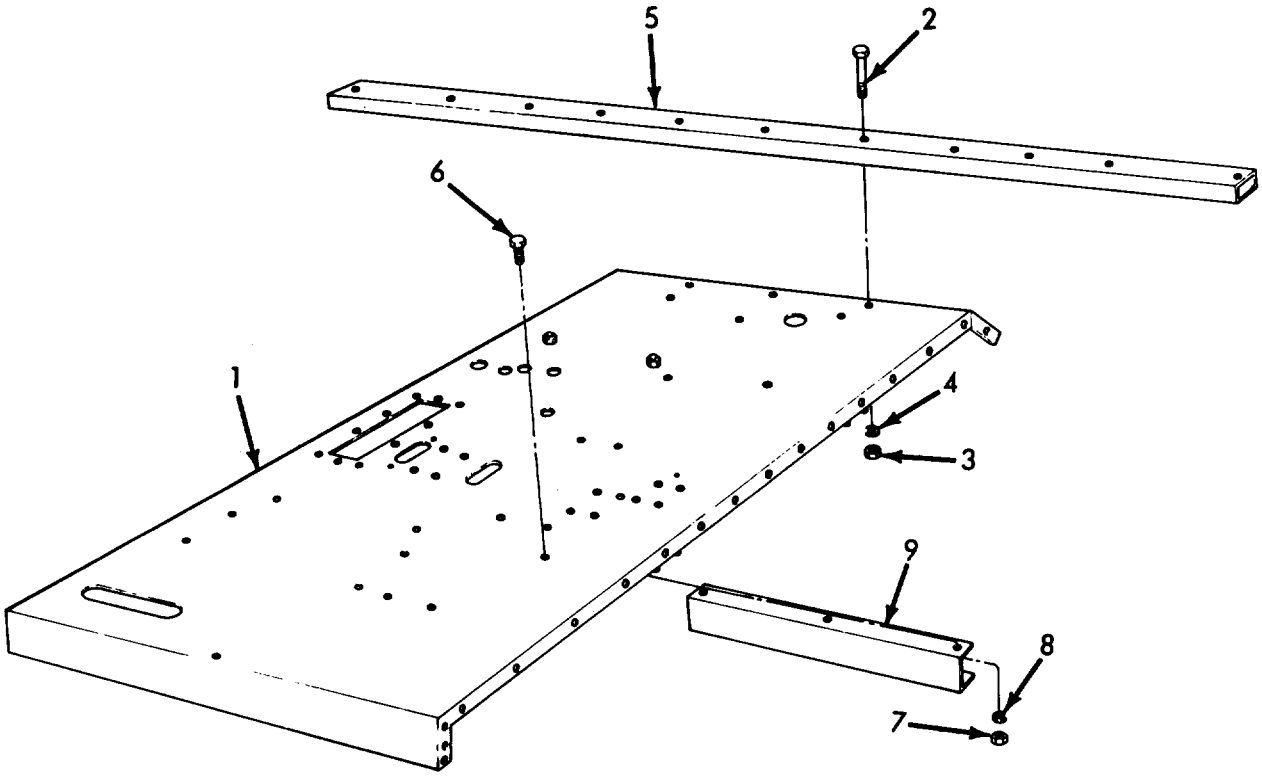
c. Remove the air reservoir tanks (TM 5 3825-213-20).

d. Remove the carrier floorboard as illustrated on figure 95.

314. Carrier Floorboard Cleaning, Inspection, and Repair

a. Cleaning. Clean the floorboard with an approved cleaning solvent.

b. Inspection and Repair. Inspect for defective condition. Replace or repair damaged floorboard.



EMC 3825-213-35/95

1 Floorboard
2 Screw, cap, 1/2-20 x 2 3/4 in. (3 rqr)
3 Nut, 1/2-20 (3 rqr)
4 Washer, lock, 1/2 in. (3 rqr)
5 Brace
6 Screw, cap, 3/824 x 3/4 in. (6 rqr)
7 Nut, 3/8-24 (6 rqr)
8 Washer, lock, 3/8 in. (6 rqr)
9 Bracket (2 rqr)

Figure 95. Carrier floorboard, removal and installation.

315. Carrier Floorboard Installation

a. Install the carrier floorboard as illustrated on figure 95.

b. Install the air reservoir tanks (TM 5-3825-213-20).

c. Install the front fenders (par. 312).

d. Install the floormat (par. 309).

Section XIII. CARRIER FRAME ASSEMBLY

316. General

The carrier frame consists of two channel beam side members and three main crossmembers with three intermediate crossmembers on which carrier components are attached. Engine mounting supports, spring hangers, and lifting eyes are bolted to the side members. The carrier frame, number C130681, is located between the bolt holes of plow hitch support on the outside of left channel frame.

317. Carrier Frame Assembly Removal and Disassembly

a. Removal.

(1) Remove the plow assembly (TM 5-3825-213-10).
(2) Remove the carrier and plow engine (pars. 49, 50).
(3) Remove the walkway and fuel tanks (TM 5-3825-213-20).
(4) Remove the torqmatic transmission (par. 51).
(5) Remove the transfer case (par. 52).
(6) Remove the plow lift frame (par. 149).
(7) Remove the carrier cab (par. 303).
(8) Remove the rear fenders (TM 5- 3825-213-20).
(9) Remove the engine and personnel heaters (TM 5-3825-213-20).
(10) Remove the front fenders (par. 310).
(11) Remove chassis wiring harness (par. 299).
(12) Remove the air and hydraulic lines (TM 5-3825-213-20).
(13) Remove the front and rear axle assembly and the main overload springs (pars. 287, 295).
(14) Remove the rear bumper (TM 5- 3825-213-20).

b. Disassembly. Disassemble the carrier frame assembly in numerical sequence as illustrated on figure 96.

318. Carrier Frame Assembly Cleaning, Inspection, and Repair

a. Cleaning. Clean all parts in an approved cleaning solvent and dry thoroughly.

b. Inspection and Repair.

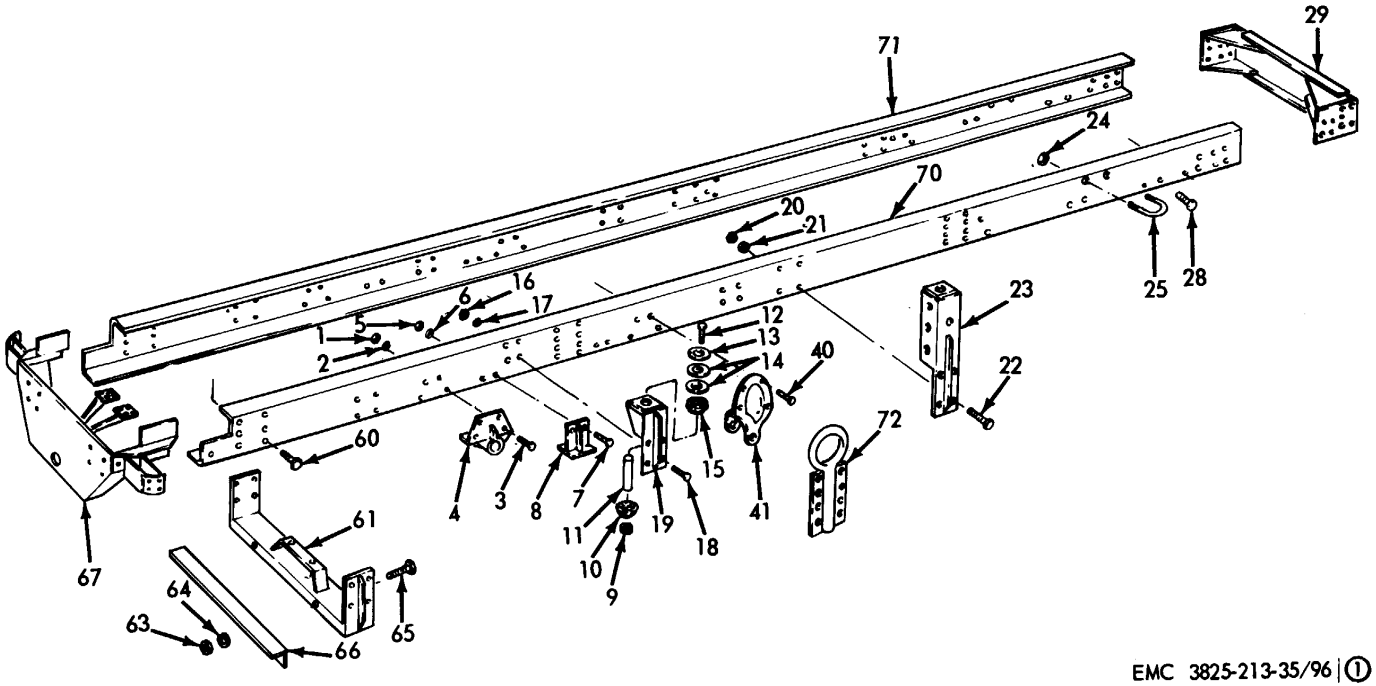
(1) Inspect all supports for broken welds, twists, bends, or other damage.
(2) Inspect the side channel frames for breaks, bends, twists, or other damage.
(3) Repair or replace all worn, defective, or damaged parts.

319. Carrier Frame Assembly Reassembly and Installation

a. Reassembly. Reassemble the carrier frame assembly in reverse of numerical sequence illustrated on figure 96.

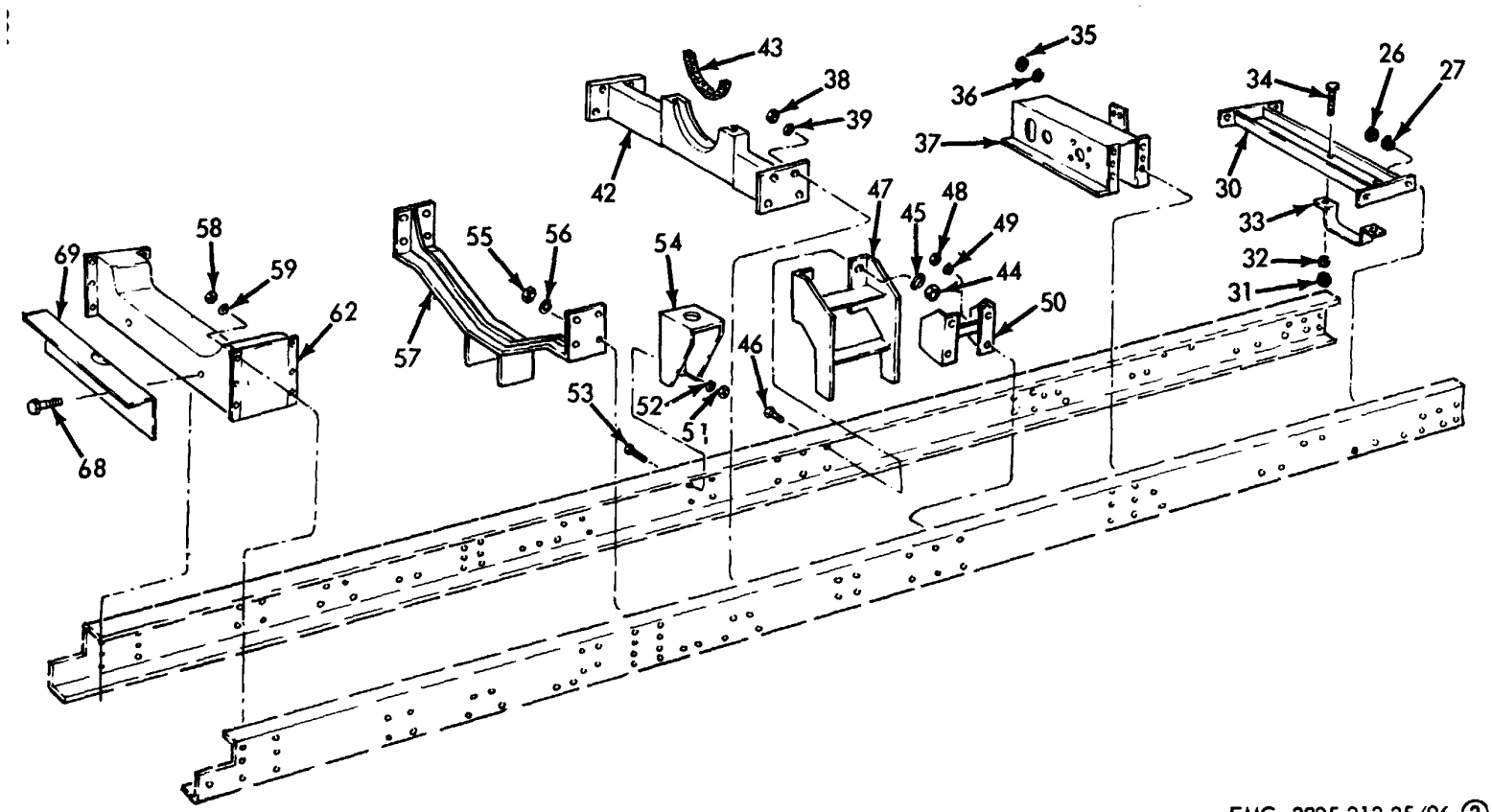
b. Installation.

(1) Install the rear bumper (TM 5-3825-213-20).
(2) Install the front and rear axle assembly and the main and overload springs (pars. 289, 297).
(3) Install the air and hydraulic lines (TM 5-3825-213-20).
(4) Install the chassis wiring harness (par. 301).
(5) Install the front fenders (par. 312).
(6) Install the engine and personnel heaters (TM 5-3825-213-20).
(7) Install the rear fenders (TM 5-3825 213-20).



1	Nut, 1/2-20 (16 rqr)	10	Grommet (8 rqr)	20	Nut, 1/2-20 (8 rqr)	60	Bolt, 5/8-15 x 2 n. (12 rqr)
2	Washer, lock, 1/2 in. (16 rqr)	11	Spacer (4 rqr)	21	Washer, lock, 1/2 in. (8 rqr)	61	Support
3	Bolt, hex hd, 1/2-20 x 1 1/8 in. (16 rqr)	12	Bolt, hex hd, 5/8-15 x 3 1/2 in. (4 rqr)	22	Bolt, hex hd, 1/2-20 x 1 1/4 in. (8 rqr)	63	Nut, 1/4-20 (2 rqr)(2rqr)
4	Spring hanger (4 rqr)	13	Washer, flat, 5/8 in. (4 rqr)	23	Support (2 rqr)	64	Washer, lock, 1/n. (2 rqr)
5	Nut, 1/2-20 (4 rqr)	14	Washer, spacer, special (8 rqr)	24	Nut, plain hex, 1 in. -24 (4 rqr)	65	Bolt, 1/4-20 x 3/4 in. (2rqr)
6	Washer, lock, 1/2 in. (4 rqr)	15	Grommet (8 rqr)	25	U-bolt (2 rqr)	66	Plate
7	Bolt, hex hd, 1/2-20 x 1 in. (4 rqr)	16	Nut, 1/2-20 (8 rqr)	28	Bolt, 1/2-20 x 1 1/4 in. (4 rqr)	67	Rear extension
8	Support bracket (2 rqr)	17	Washer, lock, 1/2 in. (8 rqr)	29	Crossmember, front	70	Side channel frame, rh
9	Nut, self-locking, hex, 5/8 16 (4 rqr)	18	Bolt, hex hd, 1/2-20 x 1 1/4 in. (8 rqr)	40	Bolt, hex hd, 1/2-20 x 1 1/8 in. (8 rqr)	71	Side channel frame, lh
		19	Support (2 rqr)	41	Spring hanger (4 rqr)	72	Bracket, lifting eye (4rqr)

Figure 96. Carrier frame assembly, disassembly and reassembly, exploded view.



EMC 3825-213-35/96 ②

26	Nut, 1/2-20 (4 rqr)	37	Intermediate crossmember	48	Washer, lock, 5/8 in. (4 rqr)	57	Support
27	Washer, lock, 1/2 in. (4 rqr)	38	Nut, 1/2-20 (8 rqr)	49	Washer, lock, 6/8 in. (4 rqr)	58	Nut, 5/8-16 (12 rqr)
30	Intermediate support	39	Washer, lock, 1/2 in. (8 rqr)	50	Bracket	59	Washer, lock, 5/8 in. (12 rqr)
31	Nut, 1/2-20 (2 rqr)	42	Transmission support	51	Nut, 1/2-20 (8 rqr)	62	Rear crossmember
32	Washer, lock, 1/2 in. (2 rqr)	43	Seal (2 rqr)	52	Washer, lock, 1/2 in. (8 rqr)	68	Screw, cap, 5/16-24 x 1 in. (2 rqr)
33	Bracket	44	Nut, 5/8-16 (4 rqr)	53	Bolt, 1/2-20 x I in. (8 rqr)	69	Plate
34	Bolt, 1/2-20 x 7/8 (2 rqr)	45	Washer, lock, 5/8 in. (4 rqr)	54	Mount support (2 rqr)		
35	Nut, 1/2-20 (6 rqr)	46	Bolt, 5/8-16 x 1 1/2 in. (4 rqr)	55	Nut, 1/2-20 (8 rqr)		
36	Washer, lock, 1/2-20 (6 rqr)	47	Support bracket	56	Washer, lock, 1/2 in. (8 rqr)		

Figure 96-Continued.

(8) Install the carrier cab (TM 5-3825213-20).
(9) Install the plow lift frame (par. 151).
(10) Install the transfer case (par. 52).
(11) Install the torqmatic transmission (par. 51).
(12) Install the walkway and fuel tanks (TM 5-3825-213-20).
(13) Install the carrier and plow engine (TM 53825-213-20).
(14) Install the plow assembly (TM 53825-21310).

APPENDIX I REFERENCES

1. Dictionary of Terms and Abbreviations

AR 320-5	Dictionary of United States Army Terms.
AR 320-50	Authorized Abbreviations and Brevity Codes.

2. Field Maintenance

TM 5-764	Electric Motor and Generator Repair.

3. Fire Protection

TM 5-687	Repairs and Utilities: Fire Protection Equipment and Appliances; Inspections, Operations, and Preventive Maintenance.
TM 9-1799	Ordnance Maintenance: Fire Extinguishers.

4. Lubrication

LO 5-3825-213-20	Snow Removal Unit, self-propelled: Gasoline Driven; Rotary; Wheel Mtd; Winterized (FWD Model S349-V) W/Two Engines Waukesha Model TH884.

5. Operating Instructions

TM 5-3825-213-10	Operator's Manual Snow Removal Unit, Self-Propelled: Gasoline Driven; Rotary; Wheel Mtd; Winterized (FWD Model S-349-V) Serial Numbers G30681 Thru G30690 and G30750 Thru G30759 FSN 3825-810-7074.

6. Organizational Maintenance

TM 5-3825-213-20	Organizational Maintenance Manual Snow Removal Unit, Self-Propelled; Gasoline Driven; Rotary; Wheel Mtd; Winterized (FWD Model S-349-V) Serial Numbers G30681 Thru G30690 and G30750 Thru G30759 FSN 3825-810-7074.

7. Painting

TM 9-2851	Painting Instructions for Field Use.

8. Preventive Maintenance

AR 700-38	Unsatisfactory Equipment Report.
AR 750-5	Maintenance Responsibilities and Shop Operation.
TB ENG 347	Winterization Techniques for Engineer Equipment.
TM 5-505	Maintenance of Engineers Equipment.

9. Publication Indexes

DA Pam 108-1	Index of Army Motion Pictures, Film Strips, Slides, and Phono-Recordings.
DA Pam 310-1	Index of Administrative Publications.
DA Pam 310-2	Index of Blank Forms.
DA Pam 310-3	Index of Training Publications.
DA Pam 310-4	Index of Technical Manuals, Technical Bulletins, Supply Bulletins, Lubrication Orders, and Modification Work Orders.
DA Pam 310-5	Index of Graphic Training Aids and Devices.
DA Pam 310-25	Index of Supply Manuals -- Corps of Engineers.

10. Radio Interference Suppression

TM 11-483	Radio Interference Suppression.

11. Supply Publications

TM 5-3825-213-20P	Organizational Maintenance Repair Parts and Special Tool Lists Snow Removal Unit, Self-Propelled: Gasoline Driven; Rotary; Wheel Mtd; Winterized (FWD Model S-349-V) Serial Numbers G30681 Thru G30690 and G30750 Thru G30759 FSN 3825-810-7074.
TM 5-3825213-35P	Field and Depot Maintenance Repair Parts and Special Tool Lists Snow Removal Unit, Self-Propelled: Gasoline Driven; Rotary; Wheel Mtd; Winterized (FWD Model S-349-V) Serial Numbers G30681 Thru G30690 and G30750 Thru G30759 FSN 3825-810-7074.

12. Training Aids

FM 5-25	Explosives and Demolition.
FM 21-5	Military Training.
FM 21-6	Techniques of Military Instruction.
FM 21-30	Military Symbols.

INDEX

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- USAREUR Engr Proc Cen (2)
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- MAAG (1)
- 3BUSMC (1)
- USA Trans Tml Comd (2)
- Army Tml (2)
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  - 5-237 (5)
  - 5-262 (5)
  - 5-267 (1)
  - 5-278 (5)
  - 5-279 (2)
  - 5-500 EA,EB (2)

NG: State AG (3).
USAR: Same as active Army except allowance is one copy to each unit.
For explanation of abbreviations used, see AR 32050.

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THE METRIC SYSTEM AND EQUIVALENTS

'NEAR MEASURE

. Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches
1 Kilometer = 1000 Meters = 0.621 Miles

'VEIGHTS

Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
1 Kilogram = 1000 Grams = 2.2 lb.
1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

SQUARE MEASURE

1 Sq. Centimeter = 100 Sq. Millimeters = 0.155 Sq. Inches
1 Sq. Meter = 10,000 Sq. Centimeters = 10.76 Sq. Feet
1 Sq. Kilometer = 1,000,000 Sq. Meters = 0.386 Sq. Miles

CUBIC MEASURE

1 Cu. Centimeter = 1000 Cu. Millimeters = 0.06 Cu. Inches
1 Cu. Meter = 1,000,000 Cu. Centimeters = 35.31 Cu. Feet

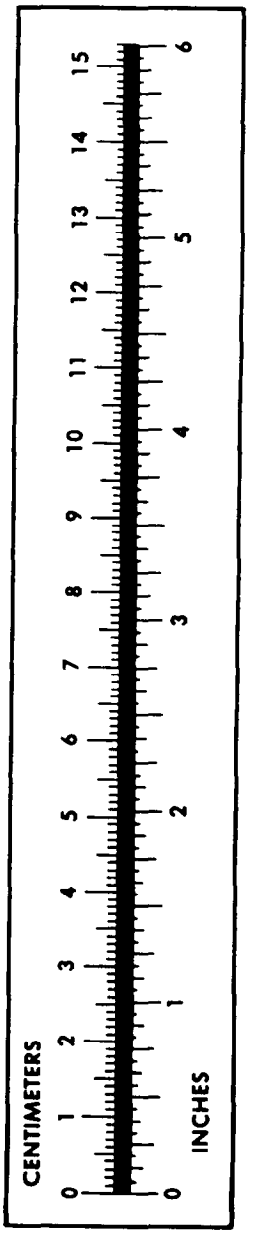
TEMPERATURE

5/9(°F - 32) = °C
212° Fahrenheit is evuivalent to 100° Celsius
90° Fahrenheit is equivalent to 32.2° Celsius
32° Fahrenheit is equivalent to 0° Celsius
9/5C° + 32 =°F

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
ıts	Liters	0.473
arts	Liters	0.946
allons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
ers	Gallons	0.264
ms	Ounces	0.035
ograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pounds-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
lometers per Liter	Miles per Gallon	2.354
meters per Hour	Miles per Hour	0.621



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