

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

ORGANIZATIONAL MAINTENANCE
MANUAL

RELINER, BRAKE AND

CLUTCH, FLOOR

MOUNTED, 6 TO 24

INCH BRAKE SHOE

DIAMETER; 1/8 TO 1/4

INCH DRILL CAPACITY;

1/3 HORSEPOWER, 115

VOLTS, 60 CYCLE,

SINGLE-PHASE

(STAR MACHINE AND

TOOL CO. MODEL 80V)

(4910-802-1423)

HEADQUARTERS, DEPARTMENT OF THE ARMY

OCTOBER 1964

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C. 29 October 1964

TM 9-4910-443-12 is published for the information and use of all concerned.

By Order of the Secretary of the Army:

HAROLD K. JOHNSON,
General, United States Army,
Chief of Staff.

Official:

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

Change }
No. 2 }

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, D.C., 3 July 1973

**Operator's and Organizational Maintenance Manual
(Including Repair Parts and Special Tools Lists)
for
RELINER, BRAKE AND CLUTCH:
FLOOR MOUNTED, 6- TO 24-INCH BRAKE SHOE DIAMETER,
1/8- TO 1/4-INCH DRILL CAPACITY; 1/3 HORSEPOWER,
115 VOLTS, 60-CYCLE, SINGLE-PHASE
(STAR MACHINE AND TOOL COMPANY, MODEL 80V)
(4910-802-1423)**

TM 9-4910-443-12, 29 October 1964 is changed as follows:

submitted on DA Form 2028 (Recommended Changes to Publications) and forwarded direct to: Commander, US Army Weapons Command, ATTN: AMSWE-MAS-SP, Rock Island, IL 61201.

Change the title to read as above.

Page 16. Add the following paragraphs:

Reporting of Equipment Publication Improvements

The reporting of errors, omissions, and recommendations for improving this publication by the individual user is encouraged. Reports should be

Components of the End Item

Parts included with the end item and considered as components of the end item configuration are listed in the following table:

Table. Components of the End Item

Components	Part No.	(FSCM)	Quantity
ANVIL, BRAKE AND CLUTCH RELINER: Hollow, w/channel, knockout.	863	(57127)	2
ANVIL, BRAKE AND CLUTCH RELINER: Plain, 1/4 in. hd size.	110A	(57127)	2
ANVIL, BRAKE AND CLUTCH RELINER: Plain, 5/16 in. hd size.	126	(57127)	2
ANVIL, BRAKE AND CLUTCH RELINER: Plain, 3/8 in. hd size.	127	(57127)	2
ANVIL, BRAKE AND CLUTCH RELINER: Plain, 1/2 in. hd size.	128	(57127)	2
BUSHING, ANVIL: For use w/No. 863 anvil and 5/16 rivet hd.	811A	(57127)	2
BUSHING, ANVIL: For use w/No. 863 anvil and 3/8 rivet hd.	811	(57127)	2
CLINCHER, RIVET, BRAKE AND CLUTCH: Relining machine for 3/16 clutch rivets.	901	(57127)	2
CLINCHER, RIVETING MACHINE: For blocks, 3/16 in. rivet size.	903	(57127)	2
CLINCHER, RIVETING MACHINE: Roll, stght for 1/8 in. rivet size	100	(57127)	2
CLINCHER, RIVETING MACHINE: Roll, stght for 9/64 in. rivet size.	102	(57127)	2

Table. Components of the End Item--Continued

Components	Part No.	(FSCM)	Quantity
CLINCHER, RIVETING MACHINE: Roll, stght for 3/16 in. rivet size.	103	(57127)	2
CLINCHER, RIVETING MACHINE: Roll, stght for 1/4 in. rivet size.	104	(57127)	2
CLINCHER, RIVETING MACHINE: Star type.	105	(57127)	2
COUNTERSINK AND DRILL: Tungsten carbide, brake lining rivet, 1/8 drill dia, 1/4 rivet hd size.	90	(57127)	2
COUNTERSINK AND DRILL: Tungsten carbide, brake lining rivet, 9/64 drill dia, 5/16 rivet hd size.	91	(57127)	2
COUNTERSINK AND DRILL: Tungsten carbide, brake lining rivet, 5/32 drill dia, 5/16 rivet hd size.	92	(57127)	2
COUNTERSINK AND DRILL: Tungsten carbide, brake lining rivet, 5/32 drill dia, 3/8 rivet hd size.	93	(57127)	2
COUNTERSINK AND DRILL: Tungsten carbide, brake lining rivet, 3/16 drill dia, 3/8 rivet hd size.	94	(57127)	2
COUNTERSINK AND DRILL: Tungsten carbide, brake lining rivet, 3/16 drill dia, 1/2 rivet hd size.	94H	(571271)	2
COUNTERSINK AND DRILL: Tungsten carbide, brake lining rivet, 1/4 drill dia, 1/2 rivet hd size.	95	(57127)	2
DRILL, TWIST: flatted shank, rh cut, fractional series, 1/8 drill size, 1 5/16 lg o/a.	88	(57127)	4
DRILL, TWIST: flatted shank, rh cut, fractional series, 9/64 drill size, 1 3/8 lg o/a.	96	(57127)	4
DRILL, TWIST: flatted shank, rh cut, fractional series, 5/32 drill size, 1 3/8 lg o/a.	97	(57127)	8
DRILL, TWIST: flatted shank, rh cut, fractional series, 3/16 drill size. 1 3/8 lg o/a.	98	(57127)	4
DRILL, TWIST: flatted shank, rh cut, fractional series, 1/4 drill size, 1 3/8]go/a.	99	(57127)	4
POINT, PUNCH: Knockout 1/8 in.	89	(57127)	2
PUNCH, KNOCKOUT: Offset w/removable point, 9/64 size.	106	(57127)	2
PUNCH, KNOCKOUT: Offset w/removable point, 3/16 size.	108	(57127)	2
PUNCH, RIVETING: Point only, 9/64 size.	553	(57127)	5
PUNCH, RIVETING: Point only, 3/16 size.	555	(57127)	5
PUNCH, RIVETING: Point only, 1/4 size,	556	(57127)	5
SETSCREW, HEXAGON SOCKET: 1/4-20x3/16, S, cd-or zn-pltd.	432750	(24617)	4
SETSCREW, HEXAGON SOCKET: 1/4-20x1/4, S, cd-or zn-pltd.	15G404	(12603)	4
SLEEVE, GRINDING: 3x7 1/2.	775	(57127)	10

**APPENDIX I
BASIC ISSUE ITEMS LIST
AND
ITEMS TROOP INSTALLED OR AUTHORIZED LIST**

Section I. INTRODUCTION

1. Scope

This appendix lists basic issue items and troop installed or authorized required by the crew/operator for operation of the brake and clutch reliner.

2. General

This basic issue items list and items troop installed or authorized list is divided into the following sections:

a. Basic Issue Items List-Section II. A list, in alphabetical sequence, of items which are furnished with, and must be turned in with, the end item.

b. Items Troop Installed or Authorized List. Not applicable.

3. Explanation of Columns

The following provides an explanation of columns found in the tabular listings:

a. Federal Stock Number. This column indicates the Federal stock number assigned to the item which will be used for requisitioning purposes.

b. Description. This column indicates the Federal item name and a minimum description required to identify the item. The last line indicates the reference number followed by the applicable Federal supply code

for manufacturer (FSCM) in parentheses. The FSCM is used as an element in item identification to designate the manufacturer, distributor, or Government agency; etc., and is identified in SB 708-42.

c. Unit of Measure (U/M). This column indicates the standard or basic quantity by which the listed item is used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation; e.g., ea, in., pr; etc., and is the basis used to indicate quantities. When the unit of measure differs from the unit of issue, the lowest unit of issue that will satisfy the required units of measure will be requisitioned.

d. Quantity Furnished with Equipment. This column indicates the quantity of the item furnished with the equipment.

e. Illustration. This column is divided as follows:

(1) *Figure Number.* This column indicates the figure number of the illustration in which the item is shown.

(2) *Item Number.* This column indicates the item number used to identify each item called out in the illustration.

Section II. BASIC ISSUE ITEMS LIST

(1)			(2)	(3)	(4)	(5)	(6)	
Source, maint. and recov. code			Federal stock No.	Description	Unit of issue	Qty. inc. unit	Illustration	
(a)	(b)	(c)					(a) Fig. No.	(b) Item No.
Source	Maint.	Recov.						
PF-CZ-Z			5120-242-7410	KEY, SOCKET HEAD SCREW: L type hdl, 2 working ends, 3/32 w across flats, 3/4 short arm lg, 2 3/32 long arm lg GGGK00275 (81348).	ea	2	2	32

Page 21, figure 2. Delete the following item numbers from figure 2: 1 through 31, and 33 through 36.

By Order of the Secretary of the Army:

CREIGHTON W. ABRAMS
General, United States Army
Chief of Staff

Official:

VERNE L. BOWERS

Major General, United States Army
The Adjutant General

Distribution:

Active Army: To be distributed in accordance with DA Form 12-38 (qty rqr Block No. 250) Organization Maintenance Requirements for Truck, Utility, 1/4-Ton, M151 and DA Form 1240 (qty rqr block No. 136) Organizational Maintenance Requirements for Rifle, 5.56MM, M16, M16A1.

NG and USAR: None.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1973-769752/5221

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No. 1 }

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, D.C., 3 May 1965

Organizational Maintenance Manual

**RELINER, BRAKE AND CLUTCH, FLOOR MOUNTED, 6- TO 24-INCH BRAKE SHOE
DIAMETER; 1/8- TO 1/4-INCH DRILL CAPACITY; 1/3 HORSEPOWER, 115
VOLTS, 60 CYCLE, SINGLE-PHASE (STAR MACHINE AND TOOL CO. MODEL
80V) (4910-802-1423)**

TM 9-4910-443-12, 29 October 1964, is changed as follows:
Page 17.

* * * * *
Pages 19 and 20. Delete all materiel codes in (col 1a).

Add Federal stock numbers to the following items in Section II. BASIC ISSUE ITEMS LIST.

3. Explanation of Columns

a. *Source, Maintenance, and Recoverability Codes* (col 1).

- (1) (Superseded) Materiel numerical codes (col 1a). This column is not required.

Section II. BASIC ISSUE ITEMS LIST

(1) Source, main- tenance and recoverability code		(2) Federal stock No.	(3) Description	(4) Unit of issue	(5) Quantity author- ized	(6) Illustration	
(b) Source	(c) Main- tenance level					(a) Fig- ure No.	(b) Item No.
			<i>Page 19.</i>				
			SPARE PARTS				
C	O	3030-528-4640	BELT, V: rubberized fabric * * * 40 deg angle (24161:3610)	1	1	2	1
			TOOLS AND EQUIPMENT FOR RELINER, BRAKE AND CLUTCH (57127)				
C	O	4910-378-3762	BUSHING, ANVIL: for * * * 5/16 rivet hd (57127:811A)	1	2	2	21
C	O	4910-378-3763	BUSHING, ANVIL: for * * * 3/8 rivet hd (57127:811)	1	2	2	22
			<i>Page 20.</i>				
			TOOLS AND EQUIPMENT FOR RELINER, BRAKE AND CLUTCH (57127:80V)--Continued				
C	O	5133-357-0151	COUNTERSINK AND DRILL: * * * 1/4 rivet hd size (57127:90).	1	2	2	17
C	O	5133-357-0152	COUNTERSINK AND DRILL: * * * 5/16 rivet hd size (57127:91).	1	2	2	18
C	O	5133-357-0153	COUNTERSINK AND DRILL: * * * 5/16 rivet hd size (57127:92).	1	2	2	14
C	O	5133-378-3815	COUNTERSINK AND DRILL: * * * 1/2 rivet hd size (57127:94H).	1	2	2	16
C	O	5133-357-0478	DRILL, TWIST: flatted * * * 1 5/16 lg o/a (57127:88)	1	2	2	34
C	O	5133-357-0479	DRILL, TWIST: flatted * * * 1 3/8 lg o/a (57127:96)	1	2	2	30
C	O	5133-357-0480	DRILL, TWIST: flatted * * * 1 3/8 lg o/a (57127:97)	1	2	2	27
C	O	5133-357-0481	DRILL, TWIST: flatted * * * 1 3/8 lg o/a (57127:98)	1	2	2	35
C	O	5133-357-0482	DRILL, TWIST: flatted * * * 1 3/8 lg o/a (57127:99)	1	2	2	28
C	O	4910-474-8018	POINT, PUNCH: knockout 1/8 in. (57127:89)	1	2	2	33
C	O	5120-474-8030	PUNCH, KNOCKOUT: offset * * * point 9/64 size (57127: 106).	1	2	2	11
C	O	5120-474-8031	PUNCH, KNOCKOUT: offset * * * point 3/16 size (57127: 108).	1	2	2	12

3. Explanation of Columns

a. *Source, Maintenance, and Recoverability Code* (col 1).

(1) (Superseded) *Materiel numerical codes* (col 1a). This column is not required.

Pages 23 and 24. Delete all materiel codes in (col 1a).

Page 23. Add the Federal stock number to the V-Belt in Section II. REPAIR PARTS AND SPECIAL TOOLS.

Section II. REPAIR PARTS AND SPECIAL TOOLS

Page No.	Action	(2) Federal stock No.	(3) Description	(4) Unit of issue	(5) Quantity incorporated in unit	(6) 15 day maintenance allowance per 5 equipments	(7) Illustration	
							(a) Figure No.	(b) Item No.
23	Add Federal stock number.	3030-528-4640	BELT, V: rubberized * * * 40 deg angle (24161: 3610).	1	1	1	1	311

3. Maintenance Functions

* * * * *

SYMBOLS (Superseded).
MAINTENANCE LEVEL

The arabic numerals placed in the appropriate column indicates the level responsible for performing that particular maintenance function.

By Order of the Secretary of the Army:

HAROLD K. JOHNSON,
General, United States Army,
Chief of Staff.

Official:

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

Distribution:

Active Army:

DCSLOG (1)	USAOC&S (3)	9-7	29-21
CNGB (1)	USAAVCOM (10)	9-9	29-25
CofEngrs (G)	GENDEP (1)	9-25	29-26
CofSptS (2)	Army Dep (1) except LXAD	9-26	29-35
Dir of Trans (1)	(10) TEAD (5)	9-65	29-36
OCC-E (1)	Arsenals (2) except Rocky	9-66	29-41
TSG (1)	Mount Cml (3)	9-75	29-51
USACDCOA (1)	DPG (1)	9-127	29-55
USCONARC (3)	JPG (1)	9-197	29-56
USAMC (12)	USATCFE (1)	9-217	29-66
USASMC (6)	USA Engr Cen, Ft Belvoir	9-227	29-75
USAWECOM (75)	QM Fld Maint Shops (15)	9-357	29-79
USAMUCOM (5)	Engr Fld Maint Shops (15)	9-500 CA,	29-86
ARADCOM (2)	WSMR (2)	CC, DA	29-105
ARADCOM Rgn (2)	MAAG, Iran, Vietnam (1)	10-445	29-109
LOGCOMD (3)	USATAC (5)	10-448	29-311
OS Maj Comd (1)	OART (1)	17	37
Armies (3) except Seventh and EUSA (5)	Units organized under following TOE's (2 each):	17-100	37-100
Corps (2)	5-600	29-11	47
USAC (2)	5-605	29-15	57
Ft Eustis (2)	5-607	29-16	57-100
Ft Belvoir (2)	6-630	9	

NG: None.

USAR: None.

For explanation of abbreviations used, see AR 320-50.

TAGO 1610A

☆ U.S. GOVERNMENT PRINTING OFFICE: 1984 O - 421-302 (10811)

Distribution:

Active Army:

DCSLOG (1)	Arsenals (2) except	9-227
CNGB (1)	Rocky Mount Cml (3)	9-357
CofEngrs (6)	Dugway PG (1)	9-500 (CA, CC, DA)
CofSptS (2)	Jefferson PG (1)	10-445
CofT (1)	USAPRDC (1)	10-448
CC-E (1)	Engr Cen, Ft Belvoir (2)	17
TSG (1)	QM Fld Maint Shops (15)	17-100
USAOCDA (1)	Engr Fld Maint Shops (15)	29-1
USCONARC (3)	WSMR (2)	29-11
USAMC (12)	MAAG Iran, Vietnam (1)	29-15
USASMC (6)	USA Tk-Autmv Cen (5)	29-16
USAWECOM (75)	Trans Tng Comd (1)	29-21
USAMUCOM (5)	Oakland Army Tml (1)	29-25
ARADCOM (2)	Units org under fol TOE's	29-26
ARADCOM Rgn (2)	(2 copies each):	29-35
LOGCOMD (3)	5-600	29-36
OS Maj Comd (1)	5-605	29-41
OS Base Comd (2)	5-607	29-51
Armies (3) except	6-630	29-55
Seventh USA (5)	6-635	29-56
EUSA (5)	7	29-66
Corps (2)	7-1	29-75
USA Corps (2)	9	29-79
Ft Eustis (2)	9-7	29-86
Ft Belvoir (2)	9-9	29-105
USA Ord Sch (3)	9-25	29-109
USAAVCOM (10)	9-26	29-311
USA Spt Cen (Richmond (1))	9-65	37
GENDEP (OS) (1)	9-66	37-100
Army Dep (1) except	9-75	39-61
LXAD (10)	9-127	47
TEAD (5)	9-197	57
	9-217	57-100

NG: None.

USAR: None.

For explanation of abbreviations used, see AR 320-50.

TAGO 10313-A

Operating Instructions for the STAR No. 80V, 80, and 80-LC BRAKE RELINING MACHINE

The following instructions, together with parts drawing and parts list is of great value for the operation, maintenance, and ordering of parts for this machine. When replacing tools, refer to separate tool list.

This machine is shipped without oil in the crankcase. Before operating, remove the filler plug on the right side of head and pour sufficient oil into the crankcase until the bottom level cup on left side of crankcase bottom shows 3/4's full. This level should be maintained. Do not use oil heavier than S.A.E. 10. The oil should be changed and the crankcase cleaned every six months.

IMPORTANT - Use the proper length rivet. To determine the length of the rivet to be used, measure the thickness of the lining and shoe or band combined. For example, a brake band 1/16" thick on which a 3/16" lining is to be applied, requires only a 4/16" length rivet and in no case longer than 5/16", which depends largely on depth of the countersink in the lining. This should not exceed 2/3 of lining thickness. Countersinking depth is controlled by adjusting knurled nut at front of countersinker - See instructions below.

DERIVETING - Select either (#106) knockout holder with (#553) punch point for 9/64" shank rivets or (#108) knockout holder with (#555) punch point for 3/16" shank rivets. To remove 1/4" shank rivets, use (#556) punch point in the 3/16" No. 108 knockout punch holder. Place holder in upper plunger. Place (#863) knockout hollow anvil in lower adjustable holder. Start motor, trip machine and adjust bushing so that punch enters approximately 1/2" into knockout anvil. Then, hold rivet (clinched end) up to punch. Trip machine and readjust lower anvil to position that will allow old rivet to drop out. Same method is used for deriveting full circle drive shaft bands.

CLUTCH PLATE DELINING - Insert knockout reducing bushing (#811) for 3/8" head rivets or (#811-A) for 5/16" head rivets in top of knockout anvil (#863). (Tighten allen-head screw.) These bushings prevent bending of metal parts.

TO COUNTERSINK - Be sure to follow the chart on next page in selecting the countersink for the correct size rivet.

IMPORTANT - To determine the correct depth to countersink, always place your work on front of the saddle and depress against the edge of the countersink until adjustment can be made for proper depth. This eliminates spoilage-of lining by drilling too deep on start of job.

<u>Countersink No.</u>	<u>Rivet No.</u>	<u>Rivet Head Size</u>	<u>Rivet Shank Size</u>
No. 90		1/4"	1/8"
No. 91	3	5/16"	9/64"
No. 92	3 & 4	5/16"	9/64"
No. 93	5	3/8"	9/64"
No. 94	7	3/8"	3/16"
No. 94-H	8	1/2"	3/16"
No. 95	10	1/2"	1/4"

TO GRIND - Set brake shoe on top of the four rollers, make first adjustment so that the shoe clears both the grinding spool as well as the two outside rollers.

2nd - Adjust two outside rollers until shoe contacts all four rollers.

3rd - Make final adjustment lowering the work until the brake shoe is ground to the desired finish or diameter.

IMPORTANT - On machines having the High Speed Vacuum Dust Collector, it is advisable to disconnect the belt while countersinking, deriveting or riveting, for due to the high speed of the dust collector this will greatly prolong its life.

RIVETING - When riveting brake shoes, bands or clutch plates, the anvils are always used in the lower adjustable holder and the desired clincher in the upper plunger. The proper combination of tools are listed below:

	<u>Rivet Size</u>	<u>Clincher</u>	<u>Anvil</u>
	1/4" head, 1/8" shank	No. 100	No. 110-A
No. 3 & 4	5/16" head, 9/64" shank	No. 102	No. 126
No. 5	3/8" head, 9/64" shank	No. 102	No. 127
No. 7	3/8" head, 3/16" shank	No. 103	No. 127
No. 8	1/2" head, 3/16" shank	No. 103	No. 128
No. 10	1/2" head, 1/4" shank	No. 104	No. 128

For clutch riveting, follow the above instructions except use star clincher (#105) when a roll clinch cannot be used.

Same method is used for riveting full circle drive shaft hands.

Optional Methods of Riveting and Deriveting Brake Shoes and Clutch Plates

**The following two paragraphs describe optional methods
which can be employed by using special tools**

OTHER METHOD OF RIVETING - Each machine may be operated with tube rivet holders. When riveting 5/16" head rivets insert plunger (#456-A) in the lower plunger and tube rivet holder (#455) into the plunger. The proper size clincher to be placed in the upper plunger. Drop the rivet into the cup of the tube rivet holder, placing the work over it and pressing down until rivet shank is exposed after which the machine can be tripped - the same procedure to be followed when 3/8" head rivets are used except tube rivet holder (#456) should be used.

FOR REMOVING SOLID CLUTCH PLATE RIVETS - Use stripper knockout punch (#909) for 5/16" countersunk holes in the clutch facing and stripper knockout punch (#910) for 3/8" countersunk holes. The stripper knockout punches must be placed in the lower plunger and knockout anvil (#915-A) in the upper plunger. The clutch plate having the rivet removed is to be placed head down on the stripper knockout punch after which the machine can be tripped. This same procedure to be repeated for all remaining rivets.

NOTE

While the stripper knockout punches are designed particularly for removal of solid rivets, equal results can be obtained for removal of tubular rivets.

Maintenance Instructions

This machine is precision in construction. Therefore, it is recommended after each days' use that the operator remove all grit, grease and dust from the countersinker spindle and lower riveting plunger.

If rivets cannot be set tight enough with adjustment all the way up, it would indicate that the hydraulic cylinder needs adding of oil. This can be accomplished by removing the filler plug which can be located through the inspection plate on right side of machine. Use only S.A.E. 10 oil, filling cylinder with any ordinary spout oil can.

The dust collector bag should be emptied frequently to secure the full benefit of its use.

Lubrication

Since this machine is shipped without oil in the crankcase, before operating, remove the filler plug on right side of head and pour sufficient oil into the crankcase until the bottom level cup on left side of crankcase bottom shows 3/4" full. This level should be maintained. Do not use oil heavier than S.A.E.10. The oil should be changed and the crankcase cleaned every six months.

The countersinker is shipped filled to the proper level with Philube No. F (winter), or equal. It is recommended that the filler plug in front of the countersinker be removed at least every thirty days and checked for proper level, adding Philube No. F (winter), or equal, if necessary.

Oil No. 10 should be inserted monthly with a spout oil can into the two oil holes for the cross beam pin on top of riveting head.

Repair Instructions

The following repair instructions will assist users in making repairs to their machines in the field. It is important when ordering replacement parts to specify the part description, the six digit part number, and the model number of the machine. The following numbers are item numbers shown in the parts drawing and parts list.

A. RIVETING HEAD

1. Installing beam (#130)
 - a. Remove four screws from top cover (#40)
 - b. Remove six screws from left side cover (#28)
 - c. Remove two screws holding small flywheel guard (#50)
 - d. Remove two hex head bolts holding rivet tray (#47) to stand (#2)
 - e. Remove six screws from right side cover (#29)
 - f. The internal parts are now accessible
 - g. Remove roller pin (#123) from bottom of hydraulic cylinder assembly (#105). This should be tapped out with a hammer and punch.

- h. Remove beam pin (#137) by loosening collar (#138)
- i. Now lift beam assembly (#126) and hydraulic cylinder assembly (#105) from machine
- j. Remove rear clevis pin (#128) and front plunger pin (#133) to separate components
- k. Reverse procedure to reassemble

2. Installing upper plunger (#131)

- a. Follow instructions a through k under A-1. (installing beam)

3. Installing hydraulic cylinder assembly (#105)

- a. Follow instructions a through j under A-1. (installing beam)
- b. The following parts may be replaced if necessary while hydraulic cylinder assembly (#105) is out of machine - roller pin (#123), connecting rod yoke assembly (#67), and roller bearing (#73). For replacing these alone see A-4 below
- c. Be sure that oil filler screw (#116) in hydraulic cylinder assembly (#105) faces filler cover hole (#345) on right side of head when reassembling

NOTE:

The following components of hydraulic cylinder assembly (#105) are precision fitted at the factory, therefore we recommend that they not be purchased separately - (#106) through (#122)

4. Installing roller bearing (#73), roller pin (#123), and connecting rod yoke assembly (#67)

- a. Follow instructions b through g under A-1. (installing cross beam)
- b. Remove two allen screws from connecting rod yoke assembly (#67) and remove yoke and roller bearing (#73) from head

5. Installing clutch shaft (#87)

- a. Follow instructions b through e under A-1. (installing beam)
- b. Remove clutch shaft screw (#91) at end of clutch shaft spring (#93)
- c. Loosen set screw (#100) in clutch fork sub-assembly (#95)
- d. Remove clutch shaft insert (#88)
- e. Remove screw (#37) from clutch shaft plate (#36) and pull clutch shaft (#87) through
- f. Reverse procedure to reassemble

6. Installing rear bearing (#77)
 - a. Follow instructions a through i under A-1 [installing beam(#130)]
 - b. Remove flywheel (#166) by loosening two set screws in hub and pulling off end of spline shaft (#76)
 - c. Remove Woodruff keys (#167) from spline shaft (#76)
 - d. Remove six screws from bearing retainer sub-assembly (#79)
 - e. The rear bearing (#77) may now be driven rearward out of the machine
 - f. Tap new bearing into place and reassemble machine. There should be .015" clearance between rear bearing (#77) and eccentric (#63)

7. Installing front bearing (#74)
 - a. Follow instructions b through e under A-1 (installing beam)
 - b. Remove used rivot box (#337) from front of machine and remove six screws from front bearing cover (#32)
 - c. Use spanner wrench to remove spline shaft lock screw (#85)
 - d. Remove single screw (#35) holding bearing retainer washer (#33)
 - e. The front bearing (#74) may now be driven forward out of the machine
 - f. Tap new bearing into place and reassemble machine

8. Installing clutch (#75)
 - a. Follow instructions b through g under A-1 (installing beam)
 - b. Follow instructions b through e under A-5 (installing clutch shaft)
 - c. Follow instructions b through e under A-6 (installing rear bearing)
 - d. Follow instructions b through e under A-7 (installing front bearing)
 - e. Remove clutch(#75) and spline shaft (#76) through rear bearing housing bore
 - f. Install new clutch by reassembling in reverse order

9. Installing spline shaft (#76)
 - a. Follow instructions a through e under A-8 (installing clutch)
 - b. Reverse procedure to install new shaft

10. Installing eccentric (#63) and eccentric pin (#64)

- a. Follow instructions a through e under A-8 (installing clutch)
- b. The eccentric sub-assembly (#62) may now be taken from the machine. The eccentric pin (#64) may be replaced independently
- c. Reverse procedure to install new eccentric and pin

B. COUNTERSINKER

1. Installing spiral gears (#212) and (#221)

- a. Remove four allen-head screws from front cover (#235)
- b. Let grease run from inside countersinker
- c. Remove nut (#223) from end of countersinker shaft (#217)
- d. Spiral gear (#221) may now be pulled off shaft (#217). Be sure not to lose the Woodruff key (#222)
- e. Remove two screws from bearing cover (#208)
- f. Remove alien head screw (#198) from countersink (#196). This screw is located directly below spindle (#203)
- g. Now drive upward through the hole left by removing the allen head screw and the complete spindle assembly (#201) can be removed.
- h. Unscrew the nut (#215) from the bottom of spindle assembly (#201) and slide the lower ball bearing (#214), spacer (#211), and spiral gear (#212) from the shaft. Again be sure not to lose the Woodruff key (#213) under spiral gear (#212)
- i. Reassemble with new gears by reversing procedure above.
- j. Refill countersinker with Philube No. F winter grease, or equal, until grease reaches level of square head screw (#238) in front cover (#235)

2. Installing lower ball bearing (#214), upper ball bearing (#209), and spindle (#203)

- a. Follow instructions a through h under B-1 (installing spiral gears)
- b. Remove second spacer (#211) and upper ball bearing (#209) from spindle (#203)

Figure 1. Brake and clutch reliner, disassembled view.

(Located at back of manual)

PARTS LIST FOR MODEL 80V BRAKE RELINING MACHINE

March, 1963

Item no.	Ass'y. no.	Part no.	DESCRIPTION	Quan per Assy	Quan per Mach	Item no.	Ass'y. no.	Part no.	DESCRIPTION	Quan per Assy	Quan per Mach
1	850038		Housing Subassembly		1	49		990066	Tray, Tool	1	1
2		800036	Stand	1	1	50		170018	Guard, Flywheel, Small	1	1
3	850108		Pedal Subassembly		1	51		800037	Bracket, Side arm	1	1
4		370109	Pedal	1	1	52		170020	Guard, Flywheel, Large	1	1
5		400079	Arm	1	1				END Housing Assembly		
6		450112	Pin, Hinge	1	1						
7		400011	Connector	2	2	53			Screw, Hexagon Head, 5/16-18 x 1 1/8	2	2
8		450087	Pin, Connector	2	2						
9			Pin, Cotter, 3/32 diameter x 1 inch	4	4	54			Screw, Hexagon Head, 5/16-18 x 2 3/4	2	2
10		400012	Link, Rod	1	1	55			Washer, Lock, 5/16	4	4
11			Screw, Set, Socket, 1/4-20 x 1/4" long	2	2	56		300026	Bushing, Plunger, Lower	1	1
						57		700066	Screw, Adjusting	1	1
12		450347	Pin, Spring, Rod	2	2	58		650071	Plunger, Lower	1	1
13		370053	Lever	1	1	59		750040	Spring, Plunger	1	1
14		450086	Shaft, Treadle	1	1	60			Screw, Set, Socket, 1/4-20 x 3/16"	1	1
15			Screw, Set, Socket, 1/4-20 x 1/4" long	2	2	61	100364		Eccentric and Yoke Assembly	1	1
16		450089	Shaft, Treadle lever	1	1	62	850137		Eccentric Subassembly	1	1
17		300025	Head	1	1	63		990062	Eccentric	1	1
18	850133		Bracket Subassembly		1	64		450119	Pin, Eccentric	1	1
19		130205	Bracket	1	1	65			Screw, Socket head, 1/4-20 x 3/4	1	1
20		450340	Pin, Guide	1	1				Washer, Lock, 1/4	1	1
21		450341	Pin, Bracket	1	1	66			END Eccentric Subassembly		
22		450342	Pin, Spring	1	1				Connecting Rod Yoke Assembly		
23		450345	END Bracket Subassembly			67	100302		Yoke, Top	1	1
24			Pin, Dowel	2	2	68		400056	Yoke, Bottom	1	1
			Screw, Round head, 5/16-18 x 3/4"	2	2	69		400057	Screw, Socket cap, 1/4-20 x 5/8"	2	2
25			Washer, Lock, 5/16"	2	2	70			Washer, Lock, 1/4"	2	2
26		450346	Pin, Dowel, Tapered	1	1	71			Nut, Square head, 1/4"	2	2
27		450335	Pin, Lever	1	1	72			END Connecting Rod Yoke Assembly		
28		170047	Cover, Side, Left	1	1						
29		170103	Cover, Side, Right	1	1						
30			Screw, Round head, 10-24 x 1/2	10	10	73		150083	Bearing, Roller	1	1
31			Screw, Flat head, 10-24 x 1/2	2	2				END Eccentric and Yoke Assembly		
32		170041	Cover, Bearing	1	1						
33		700222	Washer, Retainer	1	1	74		150021	Bearing, Front	1	1
34			Screw, Round head, 6-32 x 1"	6	6	75		370054	Clutch	1	1
						76		600019	Shaft, Spline	1	1
35			Screw, Fillister head, 6-32 x 1/2"	1	1	77		150022	Bearing, Rear	1	1
36		130184	Plate, Clutch shaft	1	1	78		250051	Gasket, Bearing Cover	1	1
37			Screw, Hexagon head, 1/4-20 x 5/8	1	1	79	850138		Bearing Retainer Subassembly		1
38			Washer, Lock, 1/4"	1	1	80		130178	Retainer, Bearing	1	1
39		300037	Bushing, Bronze	1	1	81		250014	Seal, Oil	1	1
40		170014	Cover, Top	1	1				END Bearing Retainer Subassembly		
41			Screw, Fillister head, 1/4-20 x 3/4	4	4	82		250052	Gasket, Bearing Spacer	1	1
42		700221	Screw, Jack	4	4	83		250053	Gasket, Bearing Seal	1	1
43		130174	Cover, Seal	1	1	84			Screw, Round head, 6-32 x 1/2"	6	6
44			Screw, Hexagon head, 5/16-18 x 5/8	4	4	85		700064	Screw, Shaft	1	1
45			Washer, Lock, 5/16	4	4	86	850139		Clutch Shaft Subassembly		1
46		250050	Gasket, Seal Cover	1	1	87		600020	Shaft, Clutch	1	1
47		990065	Tray, Rivet	1	1	88		130306	Insert, Clutch Shaft	1	1
48			Screw, Fillister head, 1/4-20 x 1/4" long	1	1	89			Screw, Round head, 6-32 x 1/2	2	2

PARTS LIST FOR MODEL 80V BRAKE RELINING MACHINE

March, 1963

Item no.	Ass'y. no.	Part no.	DESCRIPTION	Quan per Assy	Quan per Mach	Item no.	Ass'y. no.	Part no.	DESCRIPTION	Quan per Assy	Quan per Mach
90			Washer, Lock, 5/32 END Clutch Shaft Sub-assembly	2	2	133		450126	Pin, Plunger, Front	1	1
						134		450127	Pilot, Spring	1	1
						135			Screw, Socket head 1/4-20 x 3/4 END Cross Beam Assembly	1	1
91		700218	Screw, Shaft	1	1						
92		700219	Washer, Shaft	1	1						
93		750038	Spring, Shaft, Clutch	1	1						
94		700194	Nut, Stop	1	1	136		750077	Spring, Beam	1	1
95	850117		Clutch Fork Assembly		1	137		450128	Pin, Beam	1	1
96		650194	Cam, Clutch	1	1	138		650073	Collar, Pin	2	2
97		650070	Fork, Clutch	1	1	139			Screw, Set, Socket 1/4-20 x 3/16"	2	2
98		650195	Pin, Dowel, Clutch	1	1	140	100366		Trip Rod Assembly		1
99		650196	Bushing, Clutch END Clutch Fork Assembly	1	1	141	850135		Lever Subassembly		1
						142		370049	Lever, Trip, Pawl	1	1
						143		450123	Pin, Lever, Trip END Lever Subassembly	1	1
100			Screw, Set, Socket, 5/16-18 x 5/16"	1	1						
101	850136		Pawl Subassembly		1	144		450120	Pin, Clevis	2	2
102		370048	Pawl	1	1	145			Pin, Cotter, 1/16" x 3/4"	3	3
103		450202	Pin, Spring, Pawl END Pawl Subassembly	1	1	146			Nut, 1/4-28	2	2
						147			Washer, 1/4"	1	1
						148		750039	Spring, Rod, Trip	1	1
104		750076	Spring, Pawl	1	1	149		400036	Clevis, Rod, Trip	1	1
105	100150		Hydraulic Cylinder Assembly		1	150		400073	Clevis, Rod, Trip, Short	1	1
106	850132		Cylinder Cap Subassembly		1	151		600021	Rod, Trip	1	1
107		330020	Cap	1	1	152		370051	Lever, Trip END Trip Rod Assembly	1	1
108		450339	Pin, Stop END Cylinder Cap Subassembly	1	1						
						153		170015	Cover	1	1
						154			Screw, Round head, 1/4-20 x 5/16"	2	2
109	850112		Rod Subassembly		1	155			Washer, Shakeproof, 1/4"	2	2
110		330021	Rod	1	1	156		370050	Lever, Toggle	1	1
111		650208	Collar, Rod	1	1	157		700104	Screw, Lever	1	1
112		450350	Pin, Spring, Collar END Rod Subassembly	1	1	158	850141		Treadle Rod Subassembly		1
						159		400043	Rod, Treadle	1	1
113		750042	Spring, Piston	1	1	160			Nut, 1/4-28	2	2
114		330015	Piston	1	1	161		400025	Clevis, Rod, Treadle	1	1
115		300039	Cylinder	1	1	162		400034	Clevis, Rod	1	1
116		700067	Screw, Filler	1	1	163		450120	Pin, Clevis	1	1
117		250005	Gasket, Cap	1	1	164		450091	Pin, Clevis, Rod	1	1
118		700229	Screw, Slotted	1	1	165			Pin, Cotter, 1/16" x 3/4" END Treadle Rod Subassembly	3	3
119		250002	Seal, Oil, Cap	1	1						
120		750041	Spring, Rod	1	1						
121		650072	Collar, Push Rod	1	1						
122		450346	Pin, Tapered END Hydraulic Cylinder Assembly	1	1	166		500058	Flywheel	1	1
						167		350028	Key, Flywheel	2	2
						168			Screw, Set, Socket 5/16-18 x 1/2"	2	2
123		450331	Pin, Roller	1	1	169	850116		Craddle Support Finish Subassembly		1
124			Pin, Cotter 1/16" diameter x 1"	1	1	170	850115		Craddle support Rough Subassembly		1
125		700069	Nut, Rod	1	1						
126	100288		Beam Assembly		1	171		800038	Support, Craddle	1	1
127		400029	Clevis, Push Rod	1	1	172		800048	Craddle	1	1
128		450125	Pin, Clevis, Rear	1	1	173		300030	Bracket, Roller	2	2
129			Pin, Cotter 3/32" diameter x 1" long	2	2	174		450095	Pin, Roller, Short END Craddle Support Subassembly	2	2
130		370052	Beam	1	1						
131		500040	Plunger, Upper	1	1	175		450132	Pin, Roller, Long	2	2
132			Screw, Set, Socket 1/4-20 x 1/4	1	1	176		450095	Pin, Roller	2	2
						177	850144		Short Roller Subassembly		2

PARTS LIST FOR MODEL 80V BRAKE RELINING MACHINE

March, 1963

Item no.	Ass'y no.	Part no.	DESCRIPTION	Quan per Assy	Quan per Mach	Item no.	Ass'y no.	Part no.	DESCRIPTION	Quan per Assy	Quan per Mach
178		990071	Roller, Short	2	2	221		500042	Gear, Spiral	1	1
179		150084	Bushing, Roller	4	4	222		350004	Key, Gear	1	1
			END Short Roller Sub-assembly			223			Nut, 1/2-20	1	1
						224		150085	Bearing,	1	1
180	850145		Long Roller Subassembly		2	225		500043	Pulley, Shaft	1	1
181		990072	Roller, Long	2	2	226		350027	Key, Pulley	1	1
182		150084	Bushing, Roller	4	4	227		650078	Spacer, Shaft, Countersink	1	1
			END Long Roller Sub-assembly			228		990070	Washer, Spool	1	1
						229		990069	Spool	1	1
183		700084	Screw, Adjusting	2	2	230		700227	Washer, Spool, End	1	1
184		750047	Spring, Screw	2	2	231		700138	Nut, Shaft	1	1
185	850142		Shaft Subassembly		1	232		170045	Cover, Bearing, Rear	1	1
186		600024	Shaft, Adjusting	1	1	233		250009	Gasket, Cover	1	1
187		700085	Nut, Adjusting	1	1	234			Screw, Round head, 6-32 x 5/16"	4	4
188		700226	Washer, Shaft	1	1	235		300031	Cover, Front	1	1
189		750048	Spring, Shaft, Cradle	1	1	236		250007	Gasket, Cover, Front	1	1
			Pin, Cotter 3/32" x 3/4"	1	1	237			Screw, Cap, Socket, 1/4-20 x 5/8	4	4
			END Shaft Subassembly			238			Plug, Pipe, Cover, 1/4-18 END Countersink Assembly	1	1
191		450348	Pin, Spring, Cradle Shaft	1	1						
192		990074	Box	1	1	239	850140		Saddle Subassembly	1	1
193			Screw, Round head, 10-24 x 3/8"	3	3	240		130172	Saddle	1	1
194			Washer, Lock, 3/16"	3	3	241		650074	Pin, Pilot, Spring	1	1
			END Cradle Support			242		450221	Pin, Guide, Front	1	1
			Finish Subassembly			243			Screw Fillister Head, 5/16-18 x 5/8"	1	1
195	199152		Countersink Assembly		1	244		300032	Arm, Locator	1	1
196		300029	Housing, Countersink	1	1	245			Screw, Hexagon Head, 5/16-18 x 7/8"	2	2
197		990267	Plug, Countersink	1	1	246			Washer, Lock 5/16" END Saddle Subassembly	2	2
198			Plug, Pipe, Socket, 1/8-27 x 5/16"	1	1						
199		450220	Pin, Guide, Rear	1	1	247		750043	Spring, Saddle Return	1	1
200		650074	Pin, Pilot	1	1	248		700082	Screw, Saddle	1	1
201	100368		Spindle Assembly		1	249		750046	Spring, Saddle	1	1
202	850118		Spindle Subassembly		1	250		700083	Nut, Adjusting, Saddle	1	1
203		600023	Spindle	1	1	251	100371		Locator Shaft Assembly	1	1
204		450349	Pin, Spring, Spindle	1	1	252	750044		Spring, Locator	1	1
205			Screw, Set, Socket, 1/4-20 x 1/4	1	1	253	100365		Fan Housing Assembly	1	1
206		250008	Washer, Dust	1	1	254		300033	Housing, Fan	1	1
207		650224	Spacer, Bearing	1	1	255		450344	Pin, Dowel, Housing	2	2
208		130173	Cover, Bearing, Spindle	1	1	256		600025	Shaft, Fan	1	1
209		150024	Bearing, Upper	1	1	257		500045	Belt, Fan	1	1
210		990068	Washer, Throw, Oil	1	1	258		150027	Bearing, Fan	2	2
211		650076	Spacer, Gear	2	2	259		170021	Cover, Housing	1	1
212		500042	Gear, Spiral	1	1	260		250049	Gasket, Cover, Fan	1	1
213		350004	Key, Gear	1	1	261			Screw, Round Head, 6-32 x 5/16"	3	3
214		150025	Bearing, Lower	1	1	262		990076	Fan	1	1
215			Nut, 1/2-20	1	1	263		650079	Nut, Shaft, Fan	1	1
			END Spindle Assembly			264			Washer, Lock, 1/4"	1	1
216			Screw, Round head, 10-24 x 1/4	2	2	265			Pin, Cotter, 1/16" x 3/4"	1	1
217		600022	Shaft, Countersink	1	1	266		800039	Elbow	1	1
218		150024	Bearing, Shaft	1	1	267			Screw, Round Head, 10-24 x 1/2"	4	4
219		990068	Washer, Throw, Oil	1	1	268			Washer, Lock, 3/16" END Fan Housing Assembly	4	4
220		650077	Spacer, Gear, Shaft	1	1						

PARTS LIST FOR MODEL 80V BRAKE RELINING MACHINE

March, 1963

Item no.	Ass'y no.	Part no.	DESCRIPTION	Quan per Assy	Quan per Mach	Item no.	Ass'y no.	Part no.	DESCRIPTION	Quan per Assy	Quan per Mach
269			Screw, Cap, Socket	4	4	315			Screw, Round head, 8-32 x 1/2"	1	1
270			Washer, Lock, 5/16"	4	4						
271	100370		Bag Assembly		1	316			Screw, Hexagon head, 5/16-18 x 2"	1	1
272		990077	Bag	1	1				Spring, Tray	1	1
273		650080	Connector, Bag	1	1	317		750141	Cover, Tray	1	1
274		990057	Clamp, Top	1	1	318		170016	Screw, Round head, 6-32 x 1/4"	4	4
275	100372		Clamp Assembly		1	319			Gasket, Cover, Side	2	2
276		990268	Clamp Halves	2	2			250006	Bracket, Housing	1	1
277		750110	Spring, Clamp	1	1	320			Screw, Hexagon cap, 5/16-18 x 1"	3	3
278		600083	Rod, Clamp	1	1	321		800040	Washer, Lock, 5/16"	3	3
			END Clamp Assembly			322			Cover Assembly		
			END Bag Assembly			323			Spacer, Cover	1	1
279		250010	Gasket, Bag	1	1	324	100360		Screw, Hexagon cap, 1/4-28 x 3 1/2"	1	1
280			Screw, Hexagon Cap, 5/16-18 x 1/2	3	3	325		650228	Washer, Flat, 1/4	1	1
281			Nut, 5/16-18	3	3	326			Screw, Round head, 1/4-20 x 1/2"	1	1
282			Washer, Lock, 5/16"	3	3	327			Screw, Round head, 1/4-20 x 1/2"	1	1
283			Washer, 5/16"	3	3	328			Screw, Round head, 1/4-20 x 5/17"	1	1
284			Screw, Hexagon Cap, 5/16-18 x 1"	6	6	329			Toolbox	1	1
285			Washer, Lock, 5/16"	6	6	330		170100	Tray, Toolbox	1	1
286		990075	Pipe	1	1	331		990269	Spacer, Short	2	2
287	100361		Cover Assembly			332		990270	Spacer, Long	2	2
288		170101	Cover, Spool	1	1	333		990271	Screw, Hexagon head, 1/4-20 x 3/4	2	2
289		990098	Handle	1	1	334			Screw, Hexagon head, 1/4-20 x 1 1/4"	2	2
290			Screw, Round head, 8-32 x 3/8"	2	2	335			Washer, Shakeproof, 1/4"	4	4
			END Cover Assembly			336			Box, Rivet	1	1
291	100354		Storage Box Assembly		1	337		990064	Screw, Fillister head	2	2
292	850143		Storage Box Subassembly			338		700075	Guide Bracket Assembly		1
293		170099	Plate, Box	1	1	339			Screw, Round head, 1/4-20 x 1/2"	2	2
294		990102	Box, Storage	1	1	340			Washer, Shakeproof, 1/4"	2	2
295			Screw, Flat head, 6-32 x 5/16"	4	4	341			Plug, Pipe	2	2
			END Storage Box Sub-assembly			342			Cover, Inspection	1	1
296		990098	Handle, Box	1	1	343		130206	Screw, Knurled	1	1
297			Screw, Round head, 8-32 x 3/8"	2	2	344		700072	Cover, Filler Hole	1	1
			END Storage Box Assembly			345		170017	Screw, Cover	1	1
						346		700076	Cup	1	1
						347		230020	Plate, Name, Star	1	1
						348		990018	Screw, Drive, #2 1/4" long	6	6
298		300078	Motor	1	1	349			Plate, Oil	1	1
299		200053	Cord	1	1	350		990273	Plate, Name	1	1
300		200052	Plug	1	1	351		990274	Pin, Cotter, 1/16" x 1/2"	1	1
301		200051	Switch	1	1	352					
302		200049	Nut, Switch	1	1						
303		990150	Ring, Switch	1	1						
304		200050	Adapter	1	1						
305			Screw, Hexagon Cap, 5/16-18 x 3/4"	4	4						
306			Washer, Flat, 5/16"	4	4						
307			Washer, Lock, 5/16"	4	4						
308		500129	Pulley, Motor	1	1						
309		350025	Key	1	1						
310			Screw, Set, Socket	1	1						
311		500037	Belt	1	1						
312			Screw, Round head, 1/4-20 x 1 1/8"	1	1						
313			Screw, Round head, 1/4-20 x 5/8"	1	1						
314		990073	Knob	1	1						

TAGO 10313-A

- c. Reassemble by reversing procedure
3. Installing countersink shaft (#217) and ball bearing (#224)
 - a. Follow instructions a through d under B-1 (installing spiral gears)
 - b. Remove gear spacer (#220) from countersink shaft (#217)
 - c. Remove Tit (#231) and washer (#230) from external end of countersink shaft (#217) and pull off sleeve and rubber spool (#229) and washer (#228). Also remove shaft spacer (#227) and pulley (#225) being careful not to lose Woodruff key (#226) under pulley
 - d. Remove four screws from rear bearing cover (#232)
 - e. Remove cover gasket (#233)
 - f. Tap on internal end of countersink shaft (#217) and both shaft and ball bearing (#224) will come out. Bearing can now be removed from shaft
 - g. Reassemble by reversing procedure
 4. Installing ball bearing (#218)
 - a. Follow instructions a through g under B-1 (installing spiral gears)
 - b. Follow instructions b through f under B-3 (installing countersink shaft and ball bearing)
 - c. Drive ball bearing (#218) out toward front of countersinking unit
 - d. Reassemble by reversing procedure

C. DUST COLLECTOR

1. Installing ball bearing (#258) 2 required, and fan shaft (#256)
 - a. Remove four screws holding fan housing(#254) onto fan housing bracket (#321).
This frees unit from machine
 - b. Remove four screws from elbow (#266)
 - c. Remove three screws from fan housing cover (#259)

- d. Remove cotter pin and nut from internal end of fan shaft (#256)
- e. Slide fan (#262) off fan shaft (#256)
- f. Tap fan shaft (#256) out which also brings the outer ball bearing (#258) out
- g. Tap out inner ball bearing (#258)
- h. Reverse procedure to reassemble

NOTE:

No. 80V signifies Machine with Countersinker, Grinder and Dust Collector

No. 80 signifies Machine with Countersinker and Grinder

No. 80-LC signifies Machine less Countersinker, Grinder and Dust Collector

APPENDIX I

BASIC ISSUE ITEMS LIST

Section I. INTRODUCTION

1. General

This appendix is a list of basic issue items. It is composed of those items which make up the major end item of equipment and the operator's tools and equipment that are issued with the equipment and are required for stockage. For a list of repair parts for the equipment see appendix II.

2. Requisition Notes

a. Repair Part Identified by Federal Stock Number.

- (1) If the item requisitioned is not furnished, or if other action is necessary, the nature of the action taken by the commodity command will be indicated by standard symbols on prescribed forms.
- (2) When requisitioning an item, the requesting agency will order the listed item. However, the commodity command will take necessary action to issue the exhaust stock item until stock is exhausted, whether it be an individual item, kit, set, or assembly.
- (3) Requisition for replacement of items that are the responsibility of commodity commands will be submitted to the commodity command indicated in column 1a, Materiel Code Number.

b. Part To Which FSN Has Not Been Assigned.

When requisitioning a C source (local procurement) item identified only by a manufacturer's part number, it is mandatory that the following information be furnished the supply officer:

- (1) Manufacturer's code number (5 digit number preceding the colon in the descriptive column).
- (2) Manufacturer's part number (the number, And sometimes letters, following the colon, (1) above). Dashes, commas, or other marks must be included exactly as listed.
- (3) Nomenclature exactly as listed herein, including dimensions if necessary.

- (4) Name of manufacturer of end item (from cover of TM or manufacturer's name plate).
- (5) Federal stock number of end item (from TM).
- (6) Manufacturer's model number (from TM or name/data plate, preferably name/data plate).
- (7) Manufacturer's serial number (from name/data plate).
- (8) Any other information such as type, frame number, and electrical characteristics, if applicable.
- (9) If DD Form 1348 is used, fill in all blocks except 4, 5, 6, and Remarks field, in accordance with AR 725-50. Complete form as follows:
 - (a) In blocks 4, 5, and 6, list manufacturer's code, and manufacturer's part number (as listed in description column).
 - (b) In Remarks field, list noun name (repair part), end item application (FSN of end item), manufacturer, model number (end item), serial number (end item), and any other pertinent information such as frame number, type, etc.

3. Explanation of Columns

a. Source, Maintenance, and Recoverability Code (Col. 1).

- (1) Materiel numerical codes (col. 1a). This column indicates the responsible commodity command for the materiel. The commodity commands responsible for supply of items in this list are:

Code	Type materiel
5	Engineer Materiel
9	Ordnance Materiel
10	Quartermaster Materiel

(2) *Source* (col. 1b). This column indicates the selection status and source for the listed item. Source code used in this list is:

<i>Code</i>	<i>Explanation</i>
C	Obtain through local procurement. If not obtainable from local procurement, requisition through normal supply channels with a supporting statement of nonavailability from local procurement.

(3) *Maintenance level* (col. 1c). This column indicates the category of maintenance authorized to install the listed item. Maintenance level code used in this list is:

<i>Code</i>	<i>Explanation</i>
O	Organizational maintenance

(4) *Recoverability* (col. 1d). This column indicates whether unserviceable items should be returned for recovery or salvage. When no code is indicated, the item will be considered expendable. Recoverability code used in this list is:

<i>Code</i>	<i>Explanation</i>
R	Items which are economically repairable at direct and general support maintenance activities and are normally furnished by supply on an exchange basis.

b. *Federal Stock Number* (Col. 2). This column indicates the Federal stock number which has been assigned by the Cataloging Division, Defense Logistics Services Center.

c. *Description* (Col. 3). This column indicates the Federal item name (shown in capital letters) and any additional description required for supply operations. The manufacturer's code and part number are also included for reference.

<i>Code</i>	<i>Explanation</i>
24161	Gates Rubber company
57127	Star Machine and Tool Company

d. *Unit of Issue* (Col. 4). This column indicates the quantity to be requisitioned.

e. *Quantity Authorized* (Col. 5). This column indicates the quantity of the listed item authorized for stockage to constitute the prescribed load.

4. Abbreviations

c.....	cycle
cd.....	cadmium
cap.....	capacity
circ.....	circumference
cntr	center
deg.....	degree(s)
dia.....	diameter
fl	flat
hex.....	hexagon
hd	head
hdl.....	handle
hor	horizontal
hp	horsepower
in.....	inch (inches)
lg.....	long (length)
mtd	mounted
No.....	number(s)
nom	nominal
o/a	overall
od	outside diameter
ph	phase
pltd.....	plated
rh	right hand
S.....	steel
sgle	single
spdl	spindle
stght.....	straight
v	volt (s)
vert	vertical
w.....	wide (width)
w/.....	with
zn.....	zinc

5. Suggestions and Recommendations

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Commanding General
 Headquarters, U.S. Army Weapons Command
 ATTN: AMSWE-SMM-P
 Rock Island Arsenal
 Rock Island, Ill. 61202

One information copy will be provided to the individual's immediate supervisor (e.g., officer, noncommissioned officer, supervisor, etc.).

Section II. BASIC ISSUE ITEMS LIST

(1) Source, Maintenance, and Recoverability Code				(2)	(3)	(4)	(5)	(6) Illustration	
(a)	(b)	(c)	(d)	Federal stock No.	Description	Unit of issue	Quantity author- ized	(a)	(b)
Material Code	Source	Mainten- ance level	Recover- ability					Figure No.	Item No.
					MAJOR COMBINATION				
					The following item is to be requisitioned for initial issue only.				
9	.....	.....	R	4910-802-1423	RELINER, BRAKE AND CLUTCH: floor mtd, hor or vert spdl, 6 to 24 brake shoe dia, 7 1/2 brake shoe cap., 1/8 to 1/4 drill cap., 1/3 hp, 115-V, 60 c, sgle-ph (57127:80V).				
					COMPONENTS OF MAJOR COMBINATION				
					None authorized				
					SPARE PARTS				
5	C	O	.....	3030-230-6818	BELT, V: rubberized fabric, 22 od circ, 13/32 top w, 40 deg angle (24161:1220).	1	1	2	2
5	C	O	.....	.....	BELT, V: rubberized fiber, 61 od circ, 21/32 top w, 40 deg angle (24161:3610).	1	1	2	1
					TOOLS AND EQUIPMENT FOR RELINER, BRAKE AND CLUTCH (57127:80V)				
9	C	O	.....	4910-378-2139	ANVIL, BRAKE AND CLUTCH RELINER: hollow, w/channel, knockout (57127:863).	1	2	2	13
9	C	O	.....	4910-378-2140	ANVIL, BRAKE AND CLUTCH RELINER: plain, 1/4 in. hd size (57127:110A).	1	2	2	26
9	C	O	.....	4910-378-2141	ANVIL, BRAKE AND CLUTCH RELINER: plain, 5/16 in. hd size (57127:126).	1	2	2	23
9	C	O	.....	4910-378-2142	ANVIL, BRAKE AND CLUTCH RELINER: plain, 3/8 in. hd size (57127:127).	1	2	2	25
9	C	O	.....	4910-378-2143	ANVIL, BRAKE AND CLUTCH RELINER: plain, 1/2 in. hd size (57127:128).	1	2	2	24
9	C	O	.....	.....	BUSHING, ANVIL: for use w/No. 863 anvil and 5/16 rivet hd (57127:811A).	1	2	2	21
9	C	O	.....	.....	BUSHING, ANVIL: for use w/No. 863 anvil and 3/8 rivet hd (57127:811).	1	2	2	22
9	C	O	.....	.....	CLINCHER, RIVETING MACHINE: for blocks, 3/16 in. rivet size (57127:903).	1	2	2	8
9	C	O	.....	4910449-9248	CLINCHER, RIVETING MACHINE: roll, stght for 1/8 in. rivet size (57127:100).	1	2	2	4
9	C	O	.....	4910-449-9249	CLINCHER, RIVETING MACHINE: roll, stght for 9/64 rivet size (57127:102).	1	2	2	6
9	C	O	.....	4910-449-9250	CLINCHER, RIVETING MACHINE: roll, stght for 3/16 rivet size (57127:103).	1	2	2	7
9	C	O	.....	4910-449-9251	CLINCHER, RIVETING MACHINE: roll, stght for 1/4 rivet size (57127:104).	1	2	2	9
9	C	O	.....	4910-4499252	CLINCHER, RIVETING MACHINE: star type (57127:105).	1	2	2	10
9	C	O	.....	4910-378-3796	CLINCHER, RIVET, BRAKE AND CLUTCH: relining machine for 16 clutch rivets (57127:901).	1	2	2	5

Section II. BASIC ISSUE ITEMS LIST (CONT)

(1) Source, Maintenance, and Recoverability Code				(2)	(3)	(4)	(5)	(6) Illustration	
(a)	(b)	(c)	(d)	Federal stock No.	Description	Unit of issue	Quantity author- ized	(a)	(b)
Material Code	Source	Mainten- ance level	Recover- ability					Figure No.	Item No.
					TOOLS AND EQUIPMENT FOR RELINER, BRAKE AND CLUTCH (57127:80V) --Continued				
9	C	O	.....		COUNTERSINK AND DRILL: tungsten carbide, brake lining rivet, 1/8 drill dia, 1/4 rivet hd size (59127:90).	1	2	2	17
9	C	O	.....		COUNTERSINK AND DRILL: tungsten carbide, brake lining rivet, 9/64 drill dia, 5/16 rivet hd size (57127:91).	1	2	2	18
9	C	O	.....		COUNTERSINK AND DRILL: tungsten carbide, brake lining rivet, 5/32 drill dia, 5/16 rivet hd size (57127:92).	1	2	2	14
9	C	O	.....	5133-357-0154	COUNTERSINK AND DRILL: tungsten carbide, brake lining rivet, 5/32 drill dia, 3/8 rivet hd size (57127:93).	1	2	2	15
9	C	O	.....	5133-357-0155	COUNTERSINK AND DRILL: tungsten carbide, brake lining rivet, 3/16 drill dia, 3/8 rivet hd size (57127:94).	1	2	2	19
9	C	O	.....		COUNTERSINK AND DRILL: tungsten carbide, brake lining rivet, 3/16 drill dia, 1/2 rivet hd size (57127:94H).	1	2	2	16
9	C	O	.....	5133-357-0156	COUNTERSINK AND DRILL: tungsten carbide, brake lining rivet, 1/4 drill dia, 1/2 rivet hd size (57927:95).	1	2	2	20
9	C	O	.....		DRILL, TWIST: flatted shank, rh cut, fractional series, 1/8 drill size, 1 5/16 lg o/a (57127:88).	1	4	2	34
9	C	O	.....		DRILL, TWIST: flatted shank, rh cut, fractional series, 9/64 drill size, 1 3/8 lg o/a (57127:96).	1	4	2	30
9	C	O	.....		DRILL, TWIST: flatted shank, rh cut, fractional size series, 5/32 drill size, 1 3/8 lg o/a (57127:97).	1	8	2	27
9	C	O	.....		DRILL, TWIST: flatted shank, rh cut, fractional series, 3/16 drill size, 1 3/8 lg o/a (57127:98).	1	4	2	35
9	C	O	.....		DRILL, TWIST: flatted shank, rh cut, fractional series, 1/4 drill size, 1 3/8 lg o/a (57127:99).	1	4	2	28
10	C	O	.....	5120-240-5242	KEY, SOCKET HEAD SCREW: hex type, 1/8 across fl, L-type hdl, 2 in. nom lg arm lg.	1	2	2	32
.....	.....	.....	.....	.....	MANUAL, OPERATING INSTRUCTIONS: for models 80-V, 80, and 80-LC brake relining machine.	1	2		
10	C	O	.....		POINT, PUNCH: knockout 1/8 in. (57127:89)	1	2	2	33
10	C	O	.....		PUNCH, KNOCKOUT: offset w/removable point, 9/64 size (57127:106).	1	2	2	11
10	C	O	.....		PUNCH, KNOCKOUT: offset w/removable point, 3/16 size (57127:108).	1	2	2	12
9	C	O	.....	4910-378-4058	PUNCH, RIVETING: point only, 9/64 size (57127:553)	1	5	2	36
9	C	O	.....	4910-378-4059	PUNCH, RIVETING: point only, 3/16 size (57127:555)	1	5	2	29
9	C	O	.....	4910-378-4060	PUNCH, RIVETING: point only, 1/4 size (57127:556)	1	5	2	31
9	C	O	.....	5305-012-7782	SETSCREW, HEXAGON SOCKET: 1/4-20 x 1/4, S, cd- or zn-pltd.	1	4		
9	C	O	.....	5305-043-2750	SETSCREW, HEXAGON SOCKET: 1/4-20 x 3/16, S, cd- or zn-pltd.	1	4		
9	C	O	.....	5305-012-7782	SETSCREW, HEXAGON SOCKET: 1/4-20 x 3/16, S, cd- or zn-pltd.	1	4		
9	C	O	.....	4910-378-4145	SLEEVE, GRINDING: 3 x 7 1/2 (57127:775)	1	10	2	3

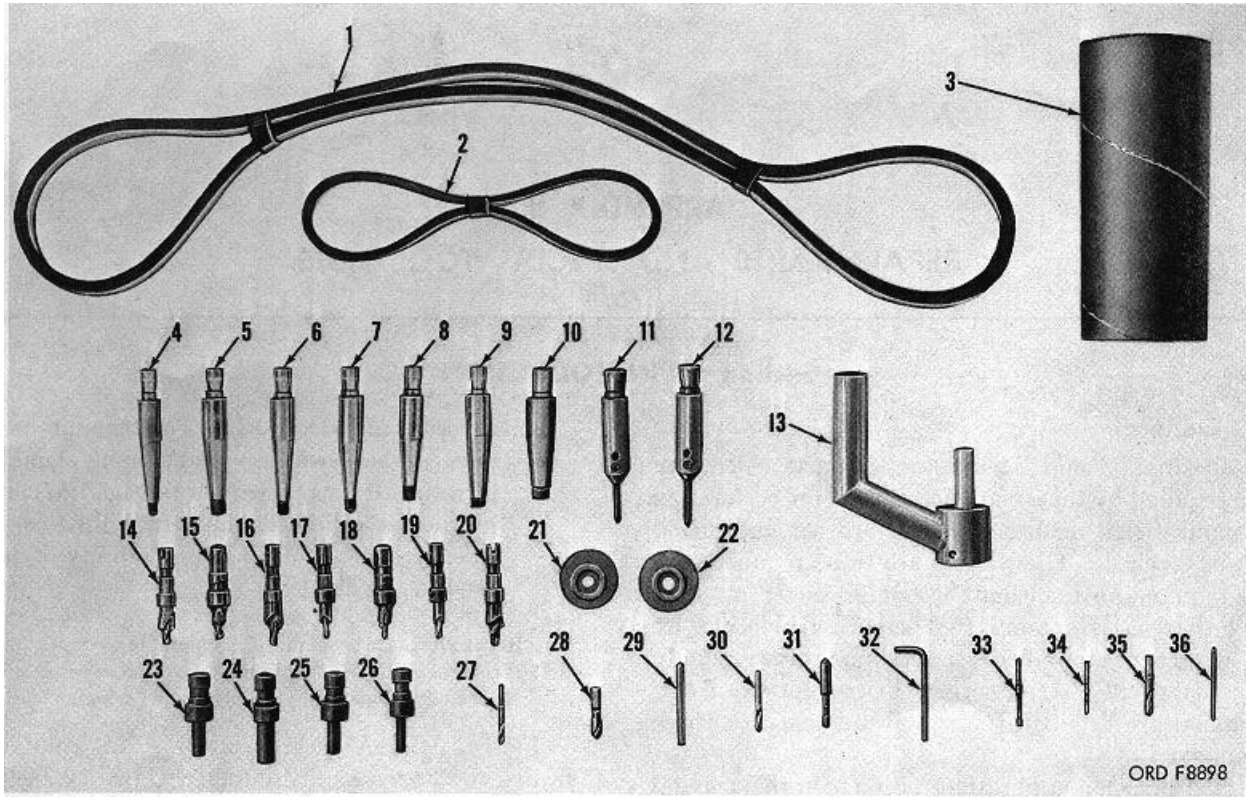


Figure 2. Tools and equipment.

APPENDIX II

REPAIR PARTS AND SPECIAL TOOL LISTS

Section I. INTRODUCTION

1. General

a. This appendix is a list of repair parts which may be required by the using organization for performing organizational maintenance but are not authorized to be stocked. These items are to be requisitioned as required for immediate use only.

b. For prices of items listed herein and identified by Federal stock number, see the appropriate supply manual of the SM 9-2-series. Prices of items in this manual are listed in the supply manuals for those commands.

c. Additional applications of items in this manual are listed in the supply manuals of the SM 9-3-series.

2. Requisition Notes

See paragraph 2a, appendix I.

3. Explanation of Columns

a. *Source, Maintenance, and Recoverability Code* (Col. 1).

(1) *Materiel Numerical Codes* (col. 1a). This column indicates the responsibility commodity command for the materiel. The commodity command responsible for supply of items in this list is:

<i>Code</i>	<i>Type materiel</i>
5	Engineer Materiel
9	Ordnance Materiel

(2) *Source* (col. 1b). This column indicates the selection status and source for the listed item. Source code used in this list is:

<i>Code</i>	<i>Explanation</i>
C	Obtain through local procurement. If not obtainable from local procurement, requisition through normal supply channels with a supporting statement of nonavailability from local procurement.

(3) *Maintenance level* (col. 1c). This column indicates the category of maintenance authorized to install the listed item. Maintenance level code used in this list is:

<i>Code</i>	<i>Explanation</i>
O	Organizational maintenance

(4) *Recoverability* (col. 1d). This column indicates whether unserviceable items should be returned for recovery or salvage. When no code is indicated, the item will be considered expendable. Recoverability code used in this list is:

<i>Code</i>	<i>Explanation</i>
R	Items which are economically repairable at direct and general support maintenance activities and are normally furnished by supply on an exchange basis.

b. *Federal Stock Number* (Col. 2). This column indicates the Federal stock number which has been assigned by the Cataloging Division, Defense Logistics Services Center.

c. *Description* (Col. 3). This column indicates the Federal item name (shown in capital letters) and any additional description required for supply operations. The manufacturer's code and part number is also included for reference.

<i>Code</i>	<i>Explanation</i>
24161	Gates Rubber Company
57127	Star Machine and Tool Company

d. *Unit of Issue* (Col. 4). This column indicates the quantity to be requisitioned.

e. *Quantity Incorporated in Unit* (Col. 5). This column indicates the total number of times the listed item is used in the end item (major item) or major combination. Where no quantity is shown, reference should be made to the first appearance of the item as indicated in the "description" column.

f. *15-Day Maintenance Allowance* (Col. 6). This column indicates the quantitative allowance for the organization maintenance category of the listed items. These allowances represent one prescribed load, for a 15-day period, for the number of major item supported. They must be on hand or on order at all times. Major commanders will determine the number of prescribed loads organizational units will carry. Units and organizations authorized additional prescribed loads will multiply the number of equipments supported by the

number of prescribed loads. Additional repair parts which may be required for performing authorized maintenance, but are not authorized for stockage in the prescribed load, are indicated by an asterisk (*). These items are to be requisitioned, as required, for immediate use only. Where no quantity is shown, reference should be made to the first appearance of the item as indicated in the "description" column.

4. Special Information

Basic issue items are listed in appendix I of this manual.

5. Abbreviations

- ac..... alternating current
- c..... cycle(s)
- circ..... circumference
- deg..... degree
- fl flat
- hp horsepower
- od outside diameter
- sgle-p..... single-phase

- v volt(s)
- w..... wide(width)
- w/..... with

6. Suggestions and Recommendations

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Commanding General
 Headquarters, U.S. Army Weapons Command
 ATTN: AMSWE-SMM-P
 Rock Island Arsenal
 Rock Island, Ill. 61202

One information copy will be provided to the individual's immediate supervisor (e.g., officer, noncommissioned officer, supervisor, etc.).

Section II. REPAIR PARTS AND SPECIAL TOOLS

(1) Source maintenance, and recoverability code				(2) Federal stock No.	(3) Description	(4) Unit of issue	(5) Quantity incorporated in unit	(6) 15-day maintenance allowance per 5 equipments	(7) Illustration	
(a) Ma- teriel Code	(b) Source	(c) Main- ten- ance level	(d) Reco- verabil- ity						(a) Figure No.	(b) Item No.
REPAIR PARTS FOR RELINER, BRAKE AND CLUTCH (57127:80V)										
5	C	O	.....	3030-230-6818	BELT, V: rubberized fabric, 22 od circ, 13/32 top w, 40 deg angle (24161:1220).	1	1	1	1	257
5	C	O	.....	.....	BELT, V: rubberized fabric, 61 od circ, 21/32 top w, 40 deg angle (24161:3610).	1	1	1	1	311
RIVETING HEAD										
9	C	O	R	.....	BEAM ASSEMBLY: riveting head, complete (57127:100228).	1	1	*	1	126
9	C	O	.....	.....	BEARING, ROLLER: eccentric and yoke assembly (57127:150083).	1	1	*	1	73
9	C	O	.....	.....	COLLAR, LOCKING: beam pin (57127:650073).	1	2	*	1	138
9	C	O	R	.....	CYLINDER, HYDRAULIC, A8SEMBLY: complete w/component parts (57127:100150).	1	1	1	1	105
9	C	O	.....	.....	PIN, BEAM: fulcrum (57127:450128)	1	1	*	1	137
9	C	O	.....	.....	PIN, BEAM, CLEVIS: rear (57127:450125)	1	1	*	1	128
9	C	O	.....	.....	PIN, PLUNGER: beam, front (57127:450126)	1	1	*	1	133
9	C	O	.....	.....	PIN, ROLLER: yoke connecting (57127:450331).	1	1	*	1	123

(1) Source maintenance, and recoverability code				(2)	(3)	(4)	(5)	(6)	(7) Illustration	
(a) Ma- teriel Code	(b) Source	(c) Main- ten- ance level	(d) Reco- ver- abil- ity	Federal stock No.	Description	Unit of issue	Quantity incorp- orated in unit	15-day main- tenance allow- ance per 5 equip- ments	(a) Figure No.	(b) Item No.
					REPAIR PARTS FOR RELINER, BRAKE AND CLUTCH (57127:80V)--Continued					
					RIVETING HEAD-Continued					
9	C	O	.....	.....	PLUNGER, RIVETING: tool holder (57127: 500040).	1	1	*	1	131
9	C	O	.....	.....	SCREW, FILLER: hydraulic cylinder (57127: (57127:700067).	1	1	1	1	116
					COUNTERSINKER ASSEMBLY (57127:19952)					
9	C	O	R	.....	COUNTERSINKER ASSEMBLY: complete w/component parts.	1	1	*	1	195
9	C	O	.....	.....	SPOOL, RUBBER: grinding (57127:990069)	1	1	1	1	229
9	C	O	.....	.....	WASHER, SPOOL: fl, front (57127:990070)	1	1	1	1	228
9	C	O	.....	.....	WASHER, SPOOL: fl, rear (57127:700227)	1	1	1	1	230
					DUST COLLECTOR					
9	C	O	R	.....	BAG, DUST, ASSEMBLY: complete w/bag, connector, and top clamp (57127:100370).	1	1	*	1	271
9	C	O	.....	.....	BAG, CLOTH: dust collector (57127:990077)	1	1	1	1	272
9	C	O	.....	.....	BEARING, BALL: blower shaft (57127: 150027).	1	2	*	1	258
9	C	O	R	.....	CLAMP ASSEMBLY: complete w/clamp halves, spring and rod (57127:100372).	1	1	1	1	275
9	C	O	.....	.....	CLAMP HALF: dust bag, lower clamp (57127:990268).	2	2	*	1	276
9	C	O	.....	.....	CLAMP, TOP: Dust bag retaining (57127: 990057).	1	1	*	1	274
9	C	O	.....	.....	CONNECTOR, BAG: fan housing (57127: 650080).	1	1	*	1	273
9	C	O	.....	.....	SPRING, CLAMP: dust bag, lower (57127: 750110).	1	1	*	1	277
9	C	O	.....	.....	ROD, CLAMP: dust bag, lower (57127: 600083).	1	1	*	1	278
					RIVET TRAY, RIVET BOX, STORAGE BOX, AND TOOL BOX					
9	C	O	.....	.....	BOX, RIVET: for catching removed rivets (57127:99064).	1	1	*	1	337
9	C	O	R	.....	BOX, STORAGE: parts and equipment (57127:100154).	1	1	*	1	291
9	C	O	R	.....	BOX, TOOL: tool storage (57127:170100)	1	1	*	1	330
9	C	O	R	.....	TRAY, TOOL BOX: tool storage (57127: 990269).	1	1	*	1	331
9	C	O	.....	.....	TRAY, RIVET: sectional, for various size rivets (57127:990065).	1	1	*	1	47
					ELECTRIC MOTOR					
9	C	O	.....	.....	MOTOR, ELECTRIC: 1/3 hp, 115-V, ac, 60 c, sgle-ph (57127:300078).	1	1	*	1	298

APPENDIX III

MAINTENANCE ALLOCATION CHART

1. General

The maintenance allocation chart allocates maintenance operations to the proper category of maintenance. Allocations of maintenance operations is made on the basis of time, tools, and skills normally available to the various categories of maintenance in combat situation and influenced by maintenance policy and sound maintenance practices, as outlined in AR 750-5.

2. Explanation of Format

Purpose and use of the maintenance allocation chart format are as follows:

a. *Column 1, Group Number.* Column 1 lists group numbers, the purpose of which is to identify components, assemblies, subassemblies and modules with the next higher assembly.

b. *Column 2, Functional Group.* Column 2 lists the noun names of components, assemblies, subassemblies and modules on which maintenance is authorized.

c. *Column 3, Maintenance Functions.* Column 3 lists the category of maintenance.

d. *Column 4, Tools and Equipment.* This column will be used to specify, by code, those tools and test equipment required to perform the designated function.

e. *Column 5, Remarks.* Selfexplanatory.

3. Maintenance Functions

Maintenance functions will be limited to and defined as follows:

INSPECT To determine serviceability of an item by comparing its physical, mechanical, and electrical characteristics with established standards.

TEST To verify serviceability and to detect electrical or mechanical failure by use of test equipment.

SERVICE To clean, to preserve, to charge, and to add fuel, lubricants, cooling agents, and air.

ADJUST To rectify to the extent necessary to bring into proper operating range.

ALIGN To adjust specified variable elements of an item to bring to optimum performance.

CALIBRATE To determine the corrections to be made in the readings of instruments or test equipment used in precise measurement. Consists of the comparison of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared with the certified standard.

INSTALL To set up for use in an operational environment such as an emplacement, site, or vehicle.

REPLACE To replace unserviceable items with serviceable assemblies, subassemblies, or parts.

REPAIR To restore an item to serviceable condition. This includes, but is not limited to, inspection, cleaning, preserving, adjusting, replacing, welding, riveting, and strengthening.

OVERHAUL To restore an item to a completely serviceable condition as prescribed by maintenance serviceability standards.

REBUILD

To restore an item to a standard as nearly as possible to original or new condition in appearance, performance, and life expectancy. This is accomplished through complete disassembly of the item, inspection of all parts or components, repair elements (items) using original manufactur-

ing tolerances and specifications, and subsequent reassembly of the item.

SYMBOLS

The symbols "X" or arabic numeral, dependent on the MAC format used, placed in the appropriate column indicates the level responsible for performing that particular maintenance function.

Maintenance Allocation Chart

(1) Group No.	(2) Functional Group	(3) Maintenance function											(4) Tools & equipment	(5) Remarks
		I N S P E C T	T E S T	S E R V I C E	A D J U S T	A L I G N	C A L I B R A T E	I N S T A L L	R E P L A C E	R E P A I R	O V E R H A U L	R E B U I L D		
1	Brake and Clutch Reliner.....	1	2	1	1	3	.....	3	3	3	4	5		
2	Riveting Head	1	2	1	2	3	.....	.....	3	2	4	.....	
3	Countersinker Assembly.....	1	2	1	2	3	.....	.....	2	2	4	.....	
4	Dust Collector	1	.....	1	.....	.....	.....	.....	3	2	4	.....	
	a. Bag Assembly	1	.....	1	.....	.....	.....	.....	2	.....	.....	.....
	b. Clamp and Connector	1	1	2		
5	Rivet Tray, Rivet Box, Storage.....	1	1	2	2		
	Box, and Tool Box.													
6	Motor	1	3	1	2	3	4		

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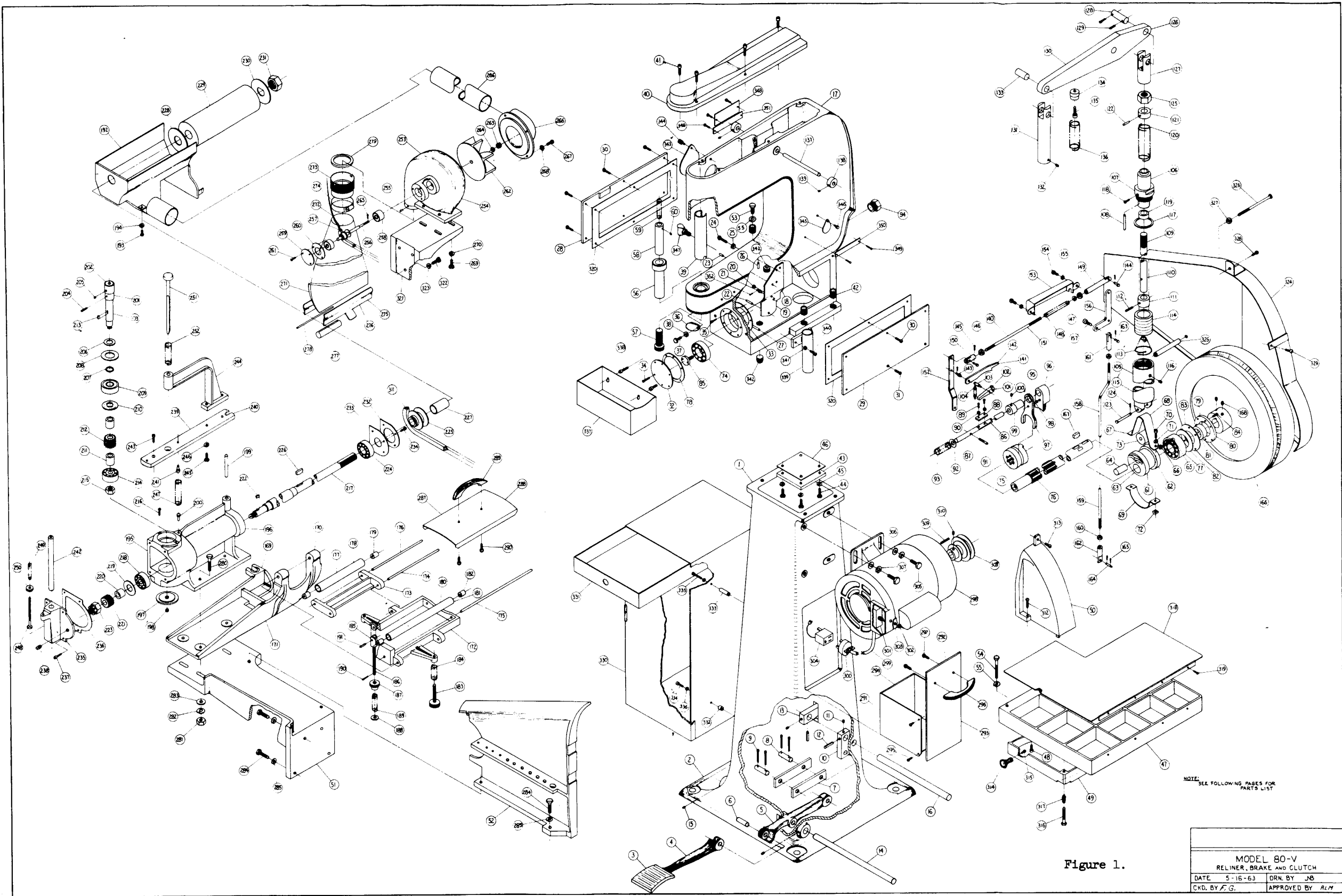


Figure 1. Brake and clutch reliner, disassembled view.

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS



*THEN...JOT DOWN THE
DOPE ABOUT IT ON THIS FORM.
CAREFULLY TEAR IT OUT, FOLD IT
AND DROP IT IN THE MAIL.*

SOMETHING WRONG WITH PUBLICATION

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER

PUBLICATION DATE

PUBLICATION TITLE

BE EXACT PIN-POINT WHERE IT IS

PAGE NO.	PARA-GRAPH	FIGURE NO.	TABLE NO.

IN THIS SPACE, TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT.

PRINTED NAME, GRADE OR TITLE AND TELEPHONE NUMBER

SIGN HERE

The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
 1 decimeter = 10 centimeters = 3.94 inches
 1 meter = 10 decimeters = 39.37 inches
 1 dekameter = 10 meters = 32.8 feet
 1 hectometer = 10 dekameters = 328.08 feet
 1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
 1 decigram = 10 centigrams = 1.54 grains
 1 gram = 10 decigrams = .035 ounce
 1 decagram = 10 grams = .35 ounce
 1 hectogram = 10 decagrams = 3.52 ounces
 1 kilogram = 10 hectograms = 2.2 pounds
 1 quintal = 100 kilograms = 220.46 pounds
 1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

1 centiliter = 10 milliliters = .34 fl. ounce
 1 deciliter = 10 centiliters = 3.38 fl. ounces
 1 liter = 10 deciliters = 33.81 fl. ounces
 1 dekaliter = 10 liters = 2.64 gallons
 1 hectoliter = 10 dekaliters = 26.42 gallons
 1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
 1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
 1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
 1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
 1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
 1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
 1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
 1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

<i>To change</i>	<i>To</i>	<i>Multiply by</i>	<i>To change</i>	<i>To</i>	<i>Multiply by</i>
inches	centimeters	2.540	ounce-inches	Newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29.573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	Newton-meters	1.356	metric tons	short tons	1.102
pound-inches	Newton-meters	.11296			

Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C
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