2-45976
FEB. 10, 1988

TRANSMISSION LIFT

AUTO SPECIALTIES MANUFACTURING COMPANY
2303 PIPESTONE ROAD, P. O. BOX 8787
BENTON HARBOR, MICHIGAN 49022-8787
616-926-0700

INSTRUCTION MANUAL

MODEL NO. 24-51404-7
NSN 4910-00-585-3622
CONTRACT NO. DAAA09-87-C-0692
FSCM 04720

Additional copies can be obtained from:

Commander
U. S. Army Armament, Munitions, and Chemical Command
Attention AMSMC-MAS
Rock Island, IL 61299-6000

2,000 lb CAPACITY
TRANSMISSION LIFT
Model No. 24-51404-7

NSN: 4910-00-585-3622
Part Sheet: 2-45976

OPERATING INSTRUCTIONS

Operating Instructions

1. Upon receiving jack, open release valve and pump handle several times. This will eliminate any airbound condition that may have occurred during shipment.
2. To raise jack, close release valve and operate pump handle.
3. To lower, open release valve.

Find Center of Gravity

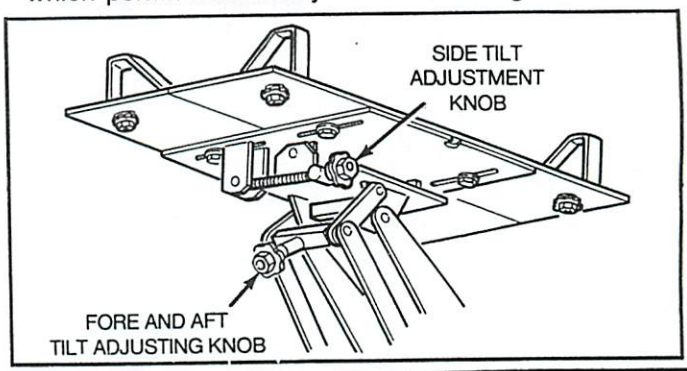
In handling the newer large transmission, it will be noted that they have grown considerably in length. It is important, first, to gauge as accurately as possible the center of gravity of the unit to be removed where you will want to place the jack adapter. On many transmissions this center of gravity is identified by small projecting lugs on the bottom of the case. On others it is located on the drawing of the transmission included in the truck service manual. In any case, you will find it to be toward the rear of the case, from the center. It is important that the transmission be generally in balance when being supported by the jack.

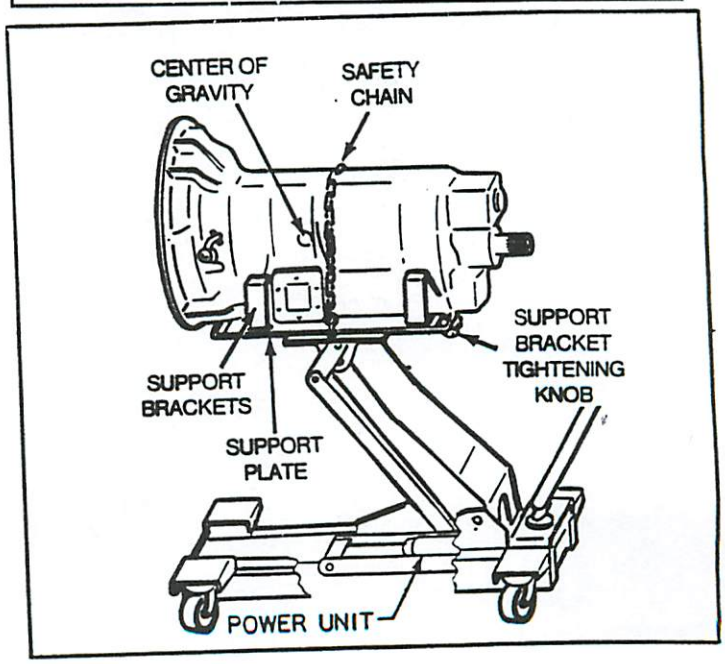
Prepare Transmission For Removal

1. Prepare transmission for removal in normal manner, by dropping drive shaft, removing projecting levers, accessories, ect., and other components of the truck which might interfere when the transmission is lowered. If desired, the parking brake assembly may be removed also.
2. Remove all but three or four bell housing bolts, leaving those near the top, which can be reached when the jack is in place.

Jack Placement and Operation

1. Place jack beneath transmission case as near to the center of balance as possible. This normally is rearward of the dimensional center of the unit.
2. Place triangle support brackets against transmission. Insert four bolts in nearest support plate holes and fasten with four tightening knobs.
3. Transmission case bottom must rest firmly on jack support plates. If necessary, due to transmission case irregularities, the jack adaptor may be tilted forward, backward, or from side to side to match bottom contour of transmission case. This tilt adjustment is accomplished through adjustment screw, located on the end of the lift arm below the adaptor.
4. With transmission bottom on adapter plate, slide triangle support to firmly support transmission. (It is important to secure bolt knobs with wrench.) Securely fasten safety chain to hold transmission firmly in place while removing.
5. With jack firmly supporting transmission, complete bell housing bolt removal. Frequently this joint is firmly stuck together and must be forced slightly to break loose. This may be done with the jack by raising then lowering slightly.
6. When transmission has been lowered, it may be necessary, depending on the size of the unit, to jack up the front or rear axle of the truck to get the transmission out from under the truck.
7. Replacement of the transmission is performed in reverse order to removal. Keep in mind the adaptor tilt features which permit minute adjustments for alignment.





Safety Instructions

1. Do not overload. Overloading can cause damage to or failure of the jack.
2. This jack is designed for use only on hard level surfaces capable of sustaining the load. Use on other than hard level surfaces can result in jack instability and possible loss of load.
3. When the jack is used for transporting a load, the lift arm must be in its lowest position. Roll only on hard level surface free of excessive crevices or obstructions.
4. Failure to heed these warnings may result in loss of load, damage to jack and/or failure resulting in personal injury or property damage.

Failure to Operate

1. Release may not be completely closed.
2. Air-bound-See instruction No.1.
3. Foreign matter in valve line - Repeat instruction No. 1.
4. Too much oil - Lower to filler screw level.
5. Interior parts may be worn allowing oil to bypass. Contact nearest franchised service depot.

Maintenance Instructions:

1. Periodically check fluid level in power unit. Filler plug is behind back cover which is removable with four screws. Fluid level should be checked with lift arm in lowest position and with unit on a level surface. Fill to pipe plug level with recommended hydraulic fluid.
2. Keep all moving parts clean and well lubricated. Screw threads on tilt mechanisms require periodic cleaning and lubricating if used in extremely dirty areas.
3. Check all links and structural members for damage or excessive wear.

To Remove Power Unit

1. Remove roll pin on bridge block at front of ram.
2. Disconnect handle socket pin on top of pump piston assembly.
3. Disconnect release knob by removing groove pin.
4. Remove "U" bolt at front of power unit.
5. Remove two (2) bolts holding base to frame.

To Order Parts

Order parts from your franchised service depots by part number, giving complete name of part.

LIMITED WARRANTY

AUTO SPECIALTIES MANUFACTURING COMPANY (AUSCO®) warrants its **hydraulic jacks, pumps and rams,** and its **mechanical jacks,** against defects in material or workmanship, as follows:

1. If the product you purchased is a **D-Series hydraulic hand jack,** for a period of one year from the date of purchase, AUSCO will repair, or at its option replace, the defective product through one of its authorized service depots. To obtain warranty service, you must take the product, or deliver the product prepaid, with evidence of the date of purchase, to an AUSCO authorized service depot. For the name of your nearest authorized service depot, refer to the Parts List that came with the product. **DO NOT RETURN TO THE FACTORY.**

2. If the product you purchased is a **D-Series hydraulic service (floor) jack, one end lift jack, transmission jack, wheel dolly, crane, press, pump or ram,** or a **D-51400 transmission jack,** for a period of 90 days from the date of purchase, AUSCO will repair, or at its option replace, the defective product through one of its authorized service depots. To obtain warranty service, you must take the product, or deliver the product prepaid, with evidence of the date of purchase, to an AUSCO authorized service depot. For the name of your nearest authorized service depot, refer to the Parts List that came with the product. **DO NOT RETURN TO THE FACTORY.**

3. **If the product you purchased is an H-Series** or a **J-Series hydraulic jack, pump or ram,** for a period of 90 days from the date of purchase an over-the-counter exchange is allowable from your original supplier for defects in material and workmanship. To obtain a replacement, you must return the product, with evidence of the date of purchase, to the dealer from whom you purchased the product.

4. If the product you purchased is a **mechanical jack** (other than the D-51400 transmission jack noted above), for a period of 90 days from the date of purchase, AUSCO will, through the dealer, replace the defective product without charge. To obtain a replacement, you must return the product, with evidence of the date of purchase, to the dealer from whom you purchased the product.

We suggest that you retain the dealer's dated bill of sale as evidence of the date of purchase.

This warranty is limited to the original consumer purchaser. This warranty does not cover damage due to accident, neglect, or misuse (such as overloading), or products that have been altered or modified, or to which attachments not recommended by the manufacturer have been added. Use of any fluid other than hydraulic jack oil will also void this warranty.

Repair or replacement as provided under this warranty is the exclusive remedy of the consumer. AUSCO shall not be liable for any incidental or consequential damages for breach of any express or implied warranty on this product. Except to the extent prohibited by applicable law, any implied warranty of merchantability or fitness for a particular purpose on this product is limited in duration to the duration of this warranty.

Some states do not allow the exclusion or limitation of incidental or consequential damages, or allow limitations on how long an implied warranty lasts, so the above limitations or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

SETTING THE RELIEF VALVE

(See Figure 1)

To set the relief valve, turn in the relief valve screw until tight. Pump the power unit until the support plates are at a height of 10 inches. Place a load of 2500 lbs. on the support plates. Lift the load to see if the unit is functioning properly. While pumping, slowly turn out the relief valve screw until the load cannot be lifted. The unit is now set to lift a maximum of 2500 lbs. Place the expansion plug in the relief valve hole to cover the screw and prevent tampering.

After the unit has been rebuilt, an extended load test should be run to determine if all parts have been assembled and tightened correctly. The support plates should be loaded with 2000 lbs. and the lift arm placed at a height of 10 inches. The drop of the support plates after a 30 minute period should not exceed .008 inches.

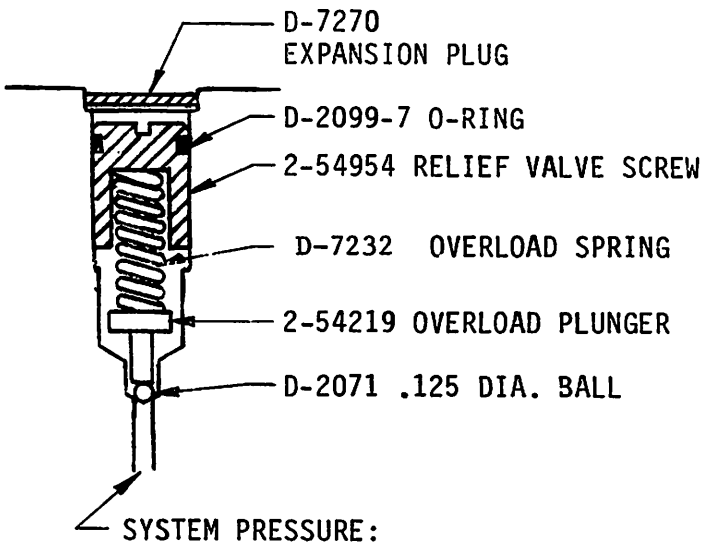


FIGURE 1

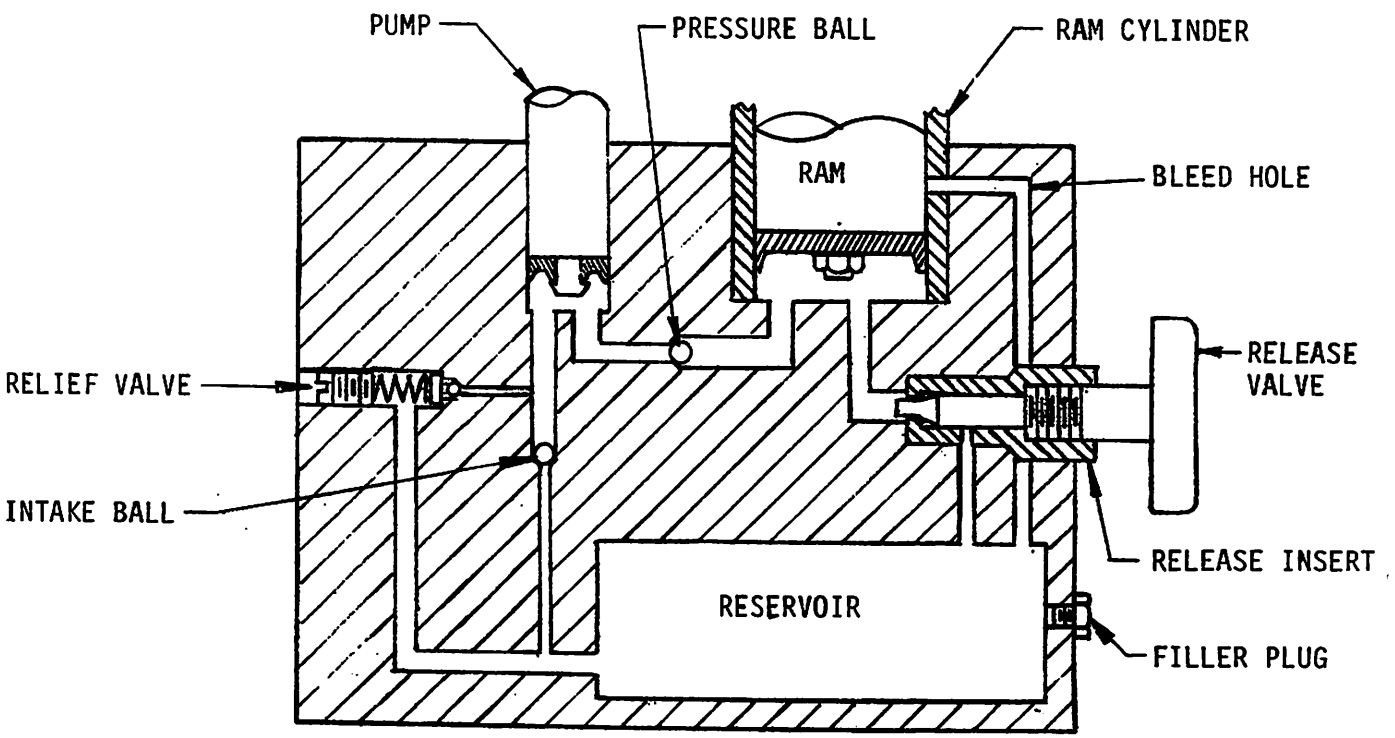


FIGURE 2

TROUBLESHOOTING THE POWER UNIT

The following schematic drawings and reasons for malfunction are a guide for solving power unit operation problems. (See Figures 2 and 3)

A. POWER UNIT WILL NOT HOLD THE LOAD.

When the power unit is under a load, the oil that is supporting the load is trapped in the cavity bounded by the ram, the release valve, and the discharge ball. If the oil is escaping from that cavity, the jack will slowly retract.

Places from which oil can be escaping are:

1. THE RELEASE VALVE, if it is not fully closed or if the seat is damaged.

2. THE RAM PACKING, if it is worn out or damaged.

3. THE DISCHARGE VALVE, if the seat is damaged or a foreign particle is holding the ball off its seat. If the suction valve is working, this normally results in a "handle raiser".

4. THE VALVE BLOCK CASTING, if it is porous and incapable of confining high pressure fluids.

5. THE RAM CYLINDER, if it is not turned in tight enough to seal on the base.

6. THE RELEASE INSERT, if it is not turned in tight enough to seal in the base.

7. THE RELIEF VALVE, if it is not properly set or if the seat is damaged.

B. RAM WILL NOT MOVE WHEN HANDLE IS PUMPED.

This could be due to one of the following:

1. There is no oil in the reservoir or oil is low in the reservoir. The oil level should be up to the filler plug hole.

2. The intake valve is not functioning. The ball is either jammed into the seat and will not dislodge or the ball is being held off the seat by foreign materials and the oil merely swishes back and forth.

3. Power unit is air bound. Every jack has air in the reservoir, along with the oil. As long as the air stays at that location, it does not cause any trouble. However, if air finds its way to any other part of the system, the jack might become air bound.

When a large air bubble forms between the intake and pressure ball, the jack usually becomes inoperable. As the pump moves up and down trying to pump oil, the bubble just expands and contracts, preventing the formation of a vacuum in the pump chamber and halting the flow of oil from the reservoir.

A large bubble under the ram is not nearly as damaging, but it gives the ram an annoying "bouncy" action.

To bleed the system of air, make sure the unit is on a level surface. With no load on the unit, pump to full height and open the relief valve wide to lower the unit. Remove the reservoir plug to allow any excess air to escape. Repeat this several times and all air should be removed from the pumping chamber.

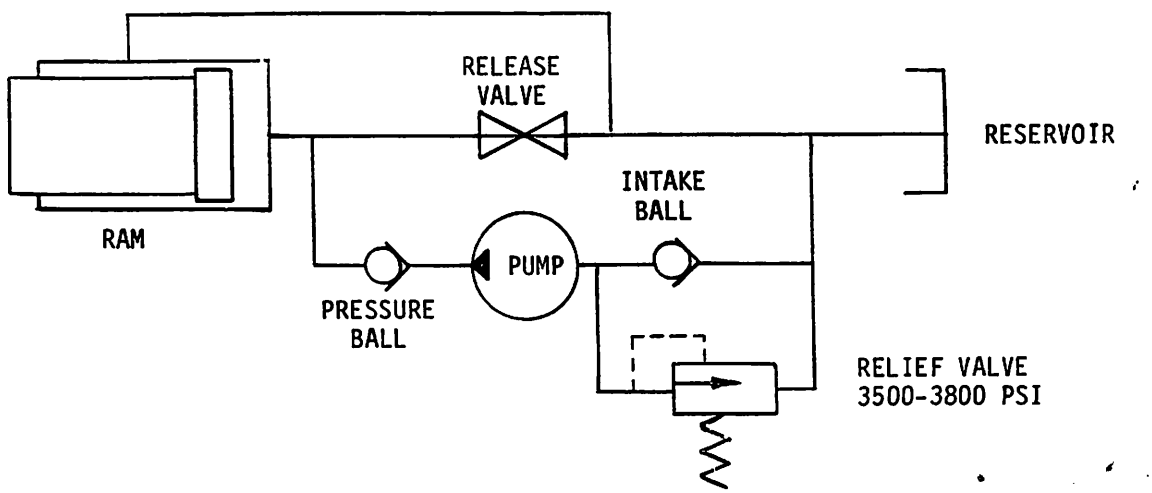
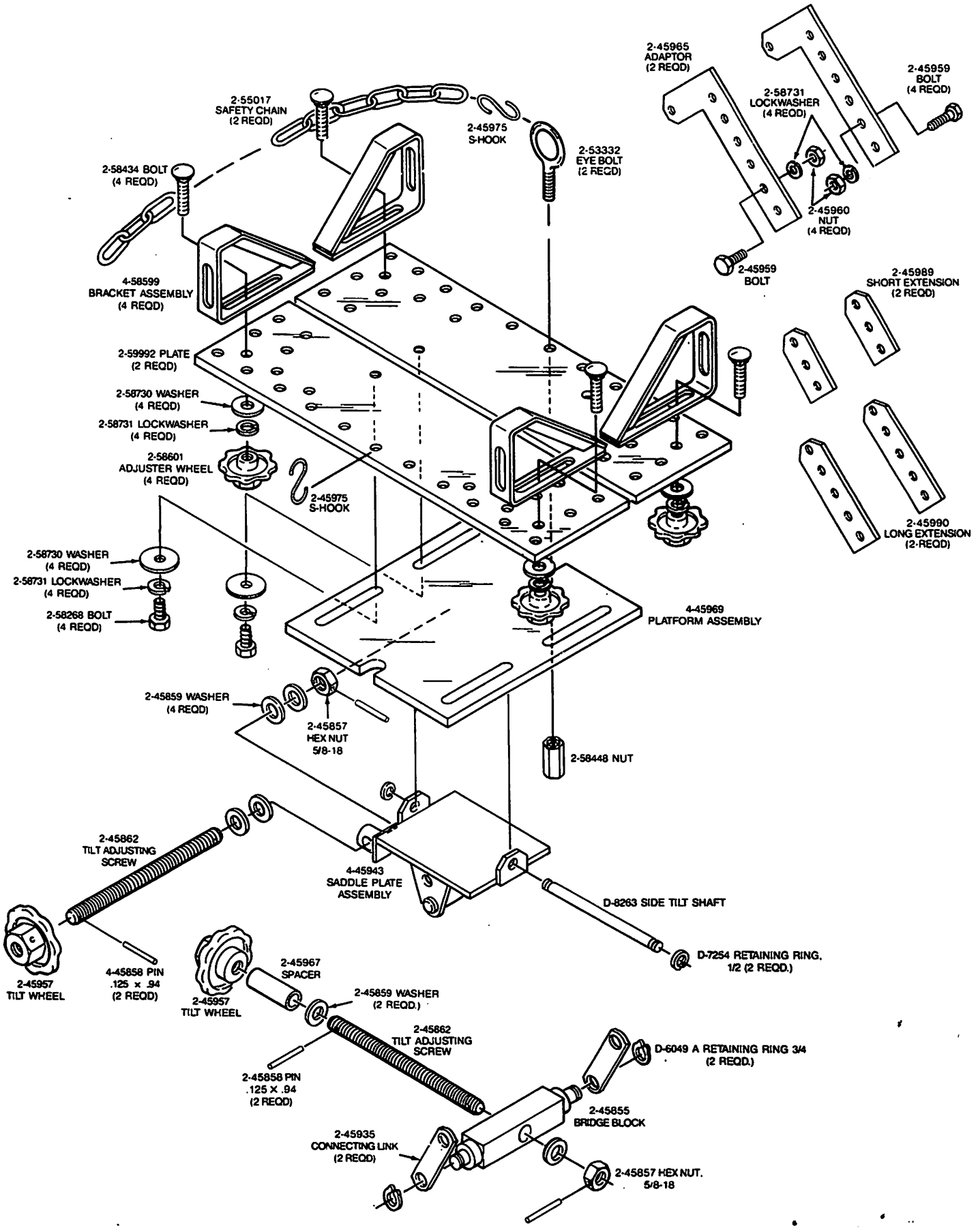


FIGURE 3


2-45965
ADAPTOR
(2 REQD)
2-45959
BOLT
(4 REQD)
2-58731
LOCKWASHER
(4 REQD)
2-55017
SAFETY CHAIN
(2 REQD)
2-45975
S-HOOK
2-53332
EYE BOLT
(2 REQD)
2-58434 BOLT
(4 REQD)
2-45960
NUT
(4 REQD)
2-45959
BOLT
4-58599
BRACKET ASSEMBLY
(4 REQD)
2-45989
SHORT EXTENSION
(2 REQD)
2-59992 PLATE
(2 REQD)
2-58730 WASHER
(4 REQD)
2-58731 LOCKWASHER
(4 REQD)
2-58601
ADJUSTER WHEEL
(4 REQD)
2-45975
S-HOOK
2-45990
LONG EXTENSION
(2 REQD)
2-58730 WASHER
(4 REQD)
2-58731 LOCKWASHER
(4 REQD)
2-58268 BOLT
(4 REQD)
4-45969
PLATFORM ASSEMBLY
2-45859 WASHER
(4 REQD)
2-45857
HEX NUT
5/8-18
2-58448 NUT
2-45862
TILT ADJUSTING
SCREW
4-45943
SADDLE PLATE
ASSEMBLY
D-8263 SIDE TILT SHAFT
D-7254 RETAINING RING.
1/2 (2 REQD.)
2-45957
TILT WHEEL
4-45858 PIN
.125 x .94
(2 REQD)
2-45967
SPACER
2-45957
TILT WHEEL
2-45859 WASHER
(2 REQD.)
2-45862
TILT ADJUSTING
SCREW
D-6049 A RETAINING RING 3/4
(2 REQD.)
2-45858 PIN
.125 X .94
(2 REQD)
2-45855
BRIDGE BLOCK
2-45935
CONNECTING LINK
(2 REQD)
2-45857 HEX NUT.
5/8-18

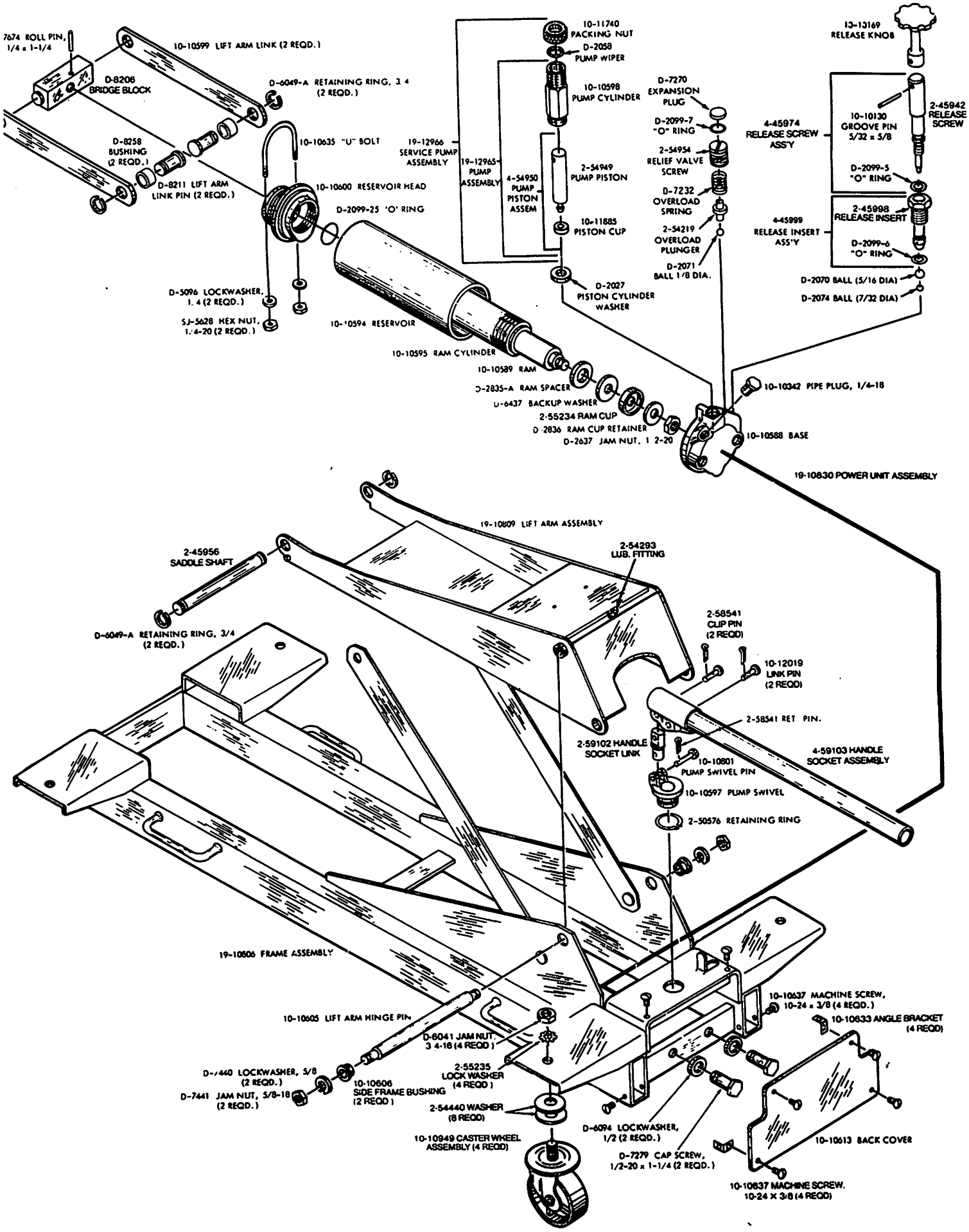

7674 ROLL PIN, 1/4 x 1-1/4
10-10599 LIFT ARM LINK (2 REQD.)
D-8206 BRIDGE BLOCK
D-6049-A RETAINING RING, 3/4 (2 REQD.)
D-8258 BUSHING (2 REQD.)
D-8211 LIFT ARM LINK PIN (2 REQD.)
10-10635 "U" BOLT
10-10600 RESERVOIR HEAD
D-2099-25 "O" RING
D-5096 LOCKWASHER, 1/4 (2 REQD.)
SJ-5628 HEX NUT, 1/4-20 (2 REQD.)
10-10594 RESERVOIR
10-10595 RAM CYLINDER
10-10589 RAM
D-2835-A RAM SPACER
D-6437 BACKUP WASHER
2-55234 RAM CUP
D-2836 RAM CUP RETAINER
D-2637 JAM NUT, 1 2-20
10-10588 BASE
10-10342 PIPE PLUG, 1/4-18
19-10830 POWER UNIT ASSEMBLY
10-11740 PACKING NUT
D-2058 PUMP WIPER
10-10598 PUMP CYLINDER
19-12966 SERVICE PUMP ASSEMBLY
19-12965 PUMP ASSEMBLY
4-54950 PUMP PISTON ASSEM
2-54949 PUMP PISTON
10-11885 PISTON CUP
D-2027 PISTON CYLINDER WASHER
D-7270 EXPANSION PLUG
D-2099-7 "O" RING
2-54954 RELIEF VALVE SCREW
D-7232 OVERLOAD SPRING
2-54219 OVERLOAD PLUNGER
D-2071 BALL 1/8 DIA.
13-13169 RELEASE KNOB
4-45974 RELEASE SCREW ASS'Y
10-10130 GROOVE PIN 5/32 x 5/8
2-45942 RELEASE SCREW
D-2099-5 "O" RING
4-45999 RELEASE INSERT ASS'Y
2-45998 RELEASE INSERT
D-2099-6 "O" RING
D-2070 BALL (5/16 DIA)
D-2074 BALL (7/32 DIA)
19-10809 LIFT ARM ASSEMBLY
2-45956 SADDLE SHAFT
D-6049-A RETAINING RING, 3/4 (2 REQD.)
2-54293 LUB. FITTING
2-58541 CLIP PIN (2 REQD)
10-12019 LINK PIN (2 REQD)
2-58541 RET PIN.
2-59102 HANDLE SOCKET LINK
4-59103 HANDLE SOCKET ASSEMBLY
10-10601 PUMP SWIVEL PIN
10-10597 PUMP SWIVEL
2-50576 RETAINING RING
19-10606 FRAME ASSEMBLY
10-10605 LIFT ARM HINGE PIN
D-6041 JAM NUT, 3 4-16 (4 REQD.)
D-7440 LOCKWASHER, 5/8 (2 REQD.)
D-7441 JAM NUT, 5/8-18 (2 REQD.)
10-10606 SIDE FRAME BUSHING (2 REQD.)
2-55235 LOCK WASHER (4 REQD.)
2-54440 WASHER (8 REQD)
10-10949 CASTER WHEEL ASSEMBLY (4 REQD)
D-6094 LOCKWASHER, 1/2 (2 REQD.)
D-7279 CAP SCREW, 1/2-20 x 1-1/4 (2 REQD.)
10-10637 MACHINE SCREW, 10-24 x 3/8 (4 REQD.)
10-10633 ANGLE BRACKET (4 REQD)
10-10613 BACK COVER
10-10637 MACHINE SCREW, 10-24 X 3/8 (4 REQD)

CHART I

The following chart shows some of the transmission, transfer cases and intermediate axle assemblies which this jack can accommodate and remove from vehicles.

VEHICLE	COMPONENT	MFR. & MODEL NO.	WEIGHT (LBS.)
M 816 Wrecker 5 Ton 6 x 6	Transmission	Dana 6453	421
	Transfer Case	Rockwell T138	660
M 939 5 Ton Truck	Transmission	Detroit Diesel Allison MT 654 CR	900
	Transfer Case	Rockwell T1138	578
M 35 A2 2-1/2 Ton Truck 6 x 6	Transmission	Spicer WN-7-28	250
	Transfer Case	Rockwell T 136 27	450
M 919 Cement Truck	Transmission	Caterpillar D 7155	1090
	Transfer Case	Oshkosh 1800	1800
	Intermediate Axle Assembly	Detroit Automotive	———
M 915 Al Diesel Tractor	Transmission	Detroit Diesel Allison 23014691	1350
Hemit	Transfer Case	Oshkosh 55000	882

CHART II

TRANSMISSION LIFT STRUCTURAL DIMENSIONS

Length.	.47	Inches
Width	.23.5	Inches
Low Height. . .	.10	Inches
Raised Height .	.35	Inches
Lifting Range .	.25	Inches
Plate Tilt Angle.	15°	All Directions
Total Weight. .	.300	Pounds Approx.

NOTE: Low and raised heights are measured from the floor to the top of the support plate and do not include additional height of accessories.

THEORY OF OPERATION

A single piston activated by a Lever Arm operated during the entire lifting cycle, applies hydraulic pressure to the bottom side of the ram piston at the full extension of the ram; fluid is by-passed through a bleed hole located at the top of the ram assembly, through a passageway in the shell and casting, and evacuates to the reservoir. If an operator attempts to raise a load which exceeds the capacity of the device, fluid pressure builds up on the bottom face of the ram, pump and piston and spring loaded ball and valve assembly. When the pressure exceeds the cracking pressure of the adjustable relief valve, hydraulic fluid is evacuated to the reservoir.

TO REBUILD THE POWER UNIT

Repair Kit PK-55090 is available for rebuilding the power unit. It consists of the following parts:

Part No.	Part Name	Qty.
D-2099-7	O-Ring	1
D-2058	Wiper - Pump	1
D-2099-6	O-Ring	1
D-2099-25	O-Ring	1
2-55234	Ram Cup	1
D-6437	Backup Washer	1
D-2099-5	O-Ring	1
10-11885	Cup	1
D-2027	Piston Washer	1
D-2070	5/16" Dia. Ball	1
D-2071	1/8 " Dia. Ball	1
D-2074	7/32" Dia. Ball	1
D-2075	13/32" Dia. Ball	1
D-7270	Expansion Plug	1
10-10342	Pipe Plug	1
2-58541	Retaining Pin	3
10-12109	Handle Link Pin	2

Assemble the above parts as shown in the power unit schematic drawing on the attached page.

HYDRAULIC OIL FOR POWER UNIT

Use hydraulic fluid meeting the requirements of MIL-H-5606 or MIL-H-6083.