

HANDBOOK
OPERATION AND SERVICE INSTRUCTIONS

35 TON HYDRAULIC AIRCRAFT HAND JACK

(TYPE F2)

PART NO. 53D22046

(Regent Jack)

2931

USAF Contract No. AF33(600)-19371

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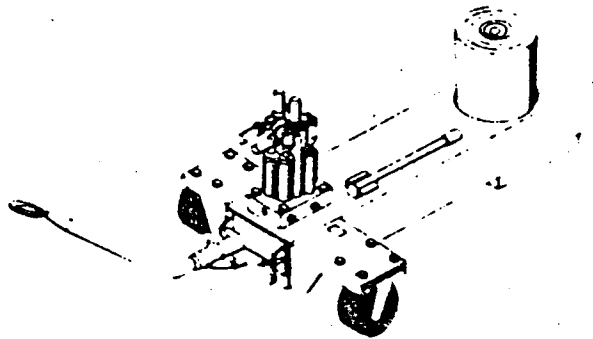


Figure 1-1. Typical View

SECTION I

INTRODUCTION AND DESCRIPTION

1-1. GENERAL. (See figure 1-1.) This publication is issued as the basic Handbook of Operation and Service Instructions for Type F2 Thirty-five Ton Hydraulic Aircraft Hand Jack, USAF Part/Dwg. No. 53D22046, manufactured by the Regent Jack Manufacturing Co., Inc., Downey, California.

1-2. DESCRIPTION. (See figures 1-1 and 2-1.) The jack is a portable, self-contained unit with double two-speed manually operated pumps mounted to the "operating" end of the jack frame. The lift consists of three rams and an extension screw, all encased within an outer cylinder which is integral with its base. The hydraulic jack unit, with rams and outer cylinder, is spring-mounted to the "load" end of the jack frame. The fluid reservoir is integral with the jack frame.

1-3. PURPOSE. This jack is used for vertical lifting of loads up to 35 tons (70,000 pounds). The jack will not lift loads exceeding the maximum allowable load of thirty-eight and one-half tons (77,000 pounds), because at that load the hydraulic operating fluid is by-passed within the jack pumps by an automatic valve, and the jack will not continue to lift.

1-4. LEADING PARTICULARS.

Use	Vertical Load Lift
Rated Load	70,000 lb
Maximum Allowable Load	77,000 lb
Operating Force (at rated load).	75 lb (approx)

Operating Fluid Specification:

Above -28.89°C (-20°F) MIL-O-5606

Below -28.89°C (-20°F) 60% MIL-O-5606,
40% MIL-F-5616

Hydraulic System Fluid Capacity 2.3 gal.

Pump Handle Length 24 in.

Hydraulic Lift (rams extended) 20 in.

Extension Screw Lift
(fully extended) 7 in.

Height of Rams (collapsed
under load) 11 in.

Height Overall (less extension screw lift):

Collapsed (no load) 13 in.

Fully Extended (under load) 31 in.

Weight (with fluid) 375 lb (approx)

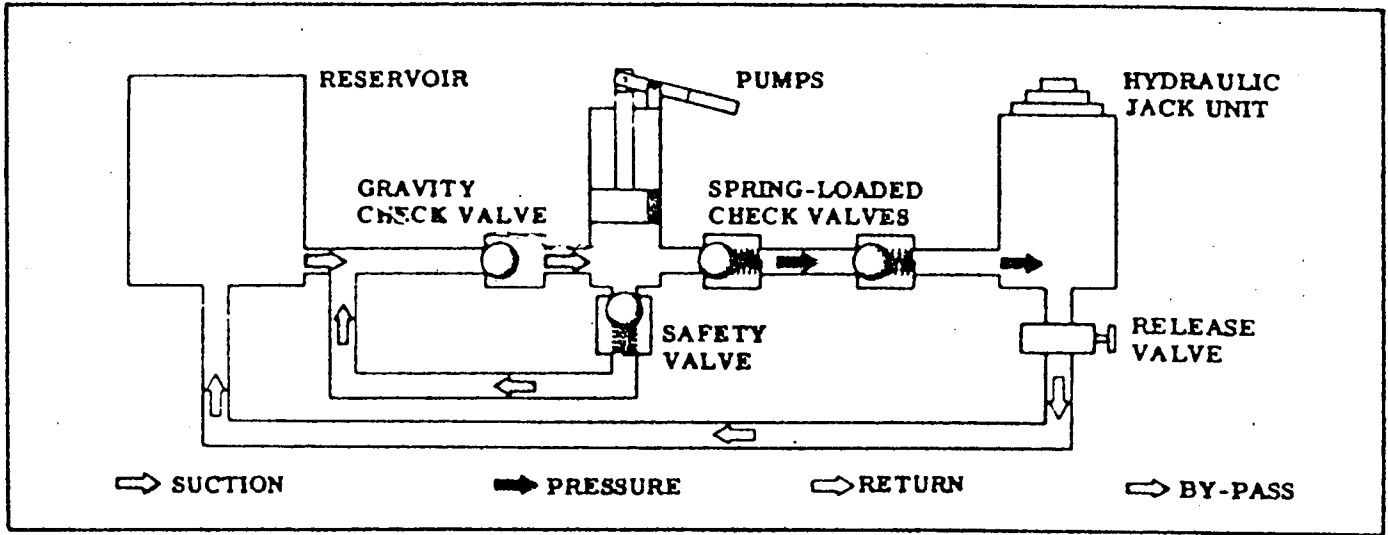


Figure 2-1. Operational Schematic Diagram.

SECTION II

OPERATION

2-1. PRINCIPLE OF OPERATION. (See figure 2-1.) A valve assembly (21, figure 6-3) is located beneath each pump body (14, 19, figure 6-3). The valve assembly contains a gravity check valve, one spring-loaded check valve and safety by-pass valve. Another spring-loaded check valve is located at the cylinder assembly (29, figure 6-3). On the "up" stroke each pump piston (11, 16, figure 6-3) draws hydraulic fluid from the reservoir, and on the "down" stroke forces fluid under pressure through the spring-loaded check valves and into the hydraulic jack unit (see figure 6-2). This fluid pressure is retained in the hydraulic jack unit by the spring-loaded check valve at the cylinder assembly. Pressure may be released, and fluid returned to the reservoir by opening the release valve. The safety by-pass valve is operative when pumps are operated with load to the hydraulic jack unit in excess of the maximum allowable load of 38-1/2 tons (10% greater than 35 ton rated load).

2-2. OPERATING PREPARATION. Proceed as follows to prepare the jack for use:

- a. Apply a light film of lubricating oil, Specification MIL-L-7870, to outer bearing surfaces of rams. Wipe away excess oil with a clean, lint-free cloth to prevent dust and grit accumulation on ram surfaces.
- b. Open release valve approximately one-half turn and manually collapse rams until flush with base cylinder.
- c. Remove vent assembly and inspect reservoir fluid level to ascertain that fluid is within 1/2 inch of reservoir filler hole boss.

d. If fluid level is low, add sufficient operating fluid (refer to Leading Particulars, paragraph 1-4, for proper fluid specification) to fill reservoir to correct fluid level.

NOTE

Reservoir shall be filled with fresh, clean fluid. Fluid that has been filtered to remove dirt, sand and all other solid matter may be used only in emergency cases.

Immediately after emergency operation, flush jack with clean hydraulic fluid, and fill reservoir to correct level.

e. Replace vent assembly. Open release valve one complete turn. Operate jack handle for ten to twenty pressure strokes to expel all trapped air.

f. Close release valve.

2-3. LIFTING PROCEDURE. Proceed as follows to use jack for lifting of vertical loads:

a. Close release valve fully.

b. Ascertain that jack base will rest on a firm, level foundation. If necessary, place a flat metal plate under hydraulic jack unit cylinder assembly to provide secure footing for the jack.

c. Operate jack handle to partially lift rams.

WARNING

Do not attempt to lift loads exceeding 70,000 pounds with this jack.

d. Position jack under load. Fully depress tow bar to lower hydraulic jack unit, providing two inches additional clearance for low-clearance loads.

e. If necessary, partially unscrew extension screw to contact the load and to provide additional lift.

CAUTION

Extension screw is internally limited to seven inches lift by an internal stop. Do not attempt to unscrew against resistance of the stop.

Operate handle to lift rams to contact the load if maximum extension screw lift is insufficient.

f. After jack is firmly positioned under load, operate jack pumps as follows:

(1). Operate jack handle with all four pumps connected while first stage (largest) ram is lifting load.

(2). Operate jack handle, using only the two high-speed pumps (right-hand pair, viewed from handle) while second stage (medium-size) ram is lifting load.

(3). Operate jack handle, using only the two high-pressure pumps while third stage (smallest) ram lifts load, and until load has been lifted as required.

NOTE

If jack lifting stops before rams are fully extended, an overload is indicated, and by-pass valve is relieving fluid pressure (refer to paragraph 2-1). In this event, a jack with greater capacity shall be used to lift the load.

2-4. LOWERING PROCEDURE. Proceed as follows to lower the jack under load:

a. Open release valve slowly until jack begins to lower under load. The rate of load descent is proportionate to the degree of release valve opening.

NOTE

Do not open release valve more than two complete turns.

b. With release valve open, rams will lower under load until load supports itself. Withdraw jack from load. If necessary, fully depress tow bar to lower hydraulic jack unit, facilitating removal from low-clearance loads. Lower extension screw, and manually press rams flush with hydraulic jack unit base cylinder.

c. Fully close and tighten release valve.

SECTION III
SPECIAL SERVICE TOOLS

3-1. No special service tools are required.

SECTION IV
PERIODIC INSPECTION AND LUBRICATION

4-1. PERIODIC INSPECTION. No specific schedule of inspection is required. However, the following visual checks shall be made:

a. After each lift, inspect for evidence of fluid leaks, especially in the areas around pump packing nuts and pistons, between rams, and inside diameter of cylinder bushing.

b. Prior to using jack, inspect vent assembly for dirt or other obstructions in air passage, and remove and inspect pump intake screen for accumulations of dirt, metallic particles, or other foreign material.

4-2. PERIODIC LUBRICATION. No specific schedule of lubrication is required. All internal parts operate in system fluid, providing adequate internal lubrication. When extension screw, rams, rocker arms or link pins appear dry or in need of lubrication, wipe clean of accumulated dirt and grit, and apply a light film of lubricating oil, Specification MIL-L-7870. Wipe away excess oil with a clean, lint-free cloth.

SECTION V
MAINTENANCE

5-1. TROUBLE SHOOTING. (See figures 6-1 through 6-3.) If any operational troubles are encountered, locate the probable cause and remedy, using Table I.

5-2. REMOVAL OF VALVE ASSEMBLIES. (See figure 6-3.) Proceed as follows to remove valve assemblies (21):

a. Remove pins (1, 2) securing pistons (11, 16) to links (6) and link assemblies (7).

b. Unscrew pump bodies (14) with associated assembled parts (10 through 13), and pump bodies (19) with associated assembled parts (15 through 18).

c. Screw a 1-1/2 inch long, 1/4-20 UNC-2B screw into threaded hole atop each valve (28) and remove valve assemblies (21).

NOTE

For service and repair purposes, do not disassemble valve assemblies beyond the point necessary for each service or repair problem. Removal or rotation of screw (22) will necessitate readjustment and testing of jack pressure by-pass setting (refer to paragraph 5-18).

5-3. DISASSEMBLY. (See figures 6-1 through 6-3.)

5-4. DISASSEMBLY OF JACK ASSEMBLY. (See figure 6-1.) Disassemble in the same order as the index numbers assigned to the exploded view illustration, noting the following:

a. Handle assembly (7) is assembled to valve stem (6) with press-fitted pin (5). Remove these parts from jack assembly (25) as a unit, but do not disassemble unless parts are damaged.

NOTE

Place a pan under jack assembly to receive hydraulic fluid when handle assembly and valve stem are removed.

b. Prior to removing pins (21), secure tow bar assembly (3) in an elevated position. Relieve spring (23) load by lifting jack assembly (25) with wedges, or a jack with a maximum collapsed height of two inches, and using standard compression tools until washers (22) float free on guides (24).

CAUTION

Do not remove pins until spring compression is relieved.

Removal of pins against spring pressure will cause sudden distension and possible breakage of springs.

c. Do not remove nameplate (45), screws (46) or decal (47) unless parts are damaged.

5-5. DISASSEMBLY OF HYDRAULIC JACK UNIT. (See figure 6-2.)

Disassembly in the same order as the index numbers assigned to the exploded view illustration, noting the following:

a. Collapse rams (9, 14) and ram assembly (19) fully. Remove bushing (6). Manually unscrew extension screw (34) until resistance to rotation is evidenced.

CAUTION

Extension screw is internally limited to a predetermined height by plunger (25) and spring (26). Forceful rotation of extension screw against resistance of internal plunger will distort or shear the plunger.

b. Exert a steady, upward pulling force to extended screw (24) to raise rams (9, 14) and ram assembly (19), and remove rams with associated parts (7 through 28) as a unit from bore of cylinder assembly (29).

c. Remove rings (7, 8). Telescope rams with associated parts (9 through 28) to "inside-out" position. Remove each ram with its bearing, packing and rings in place, removing third stage ram assembly (19) with its bearing, packing, rings and extension screw (24) in place. Remove packings (12, 17, 22), rings (13, 18, 23), screw (27) and socket (28).

CAUTION

Handle rams and associated parts with care to avoid damaging critical bearing surfaces.

d. To remove bearing (11), remove retainer ring (10), immerse bearing end of ram (9) in boiling water and rap lightly at inner edge of bearing at several points, using a hardwood dowel and a mallet, until bearing emerges free from ram. To remove bearing (16) and bearing (21), remove ring (15) and ring (20), respectively, and proceed in the same manner as outlined for bearing (11).

e. Do not remove extension screw (24) from third stage ram assembly (19) unless either part is damaged (refer to CAUTION, paragraph 5-5a).

f. If extension screw (24) removal is necessitated, clamp ram assembly

(19) in a vise, using wood blocks to protect outer ram surfaces. Unscrew extension screw forcibly, shearing internal plunger (25). Install new plunger with spring (26) in extension screw prior to reassembling ram assembly and screw.

5-6. PUMP DISASSEMBLY. (See figure 6-3.) Disassemble in the same order as the index numbers assigned to the exploded view illustration, noting the following:

- a. Do not remove pins (4) from arms (5) unless damaged.
- b. Do not disassemble valve assemblies (21) unless defective valve operation is indicated (refer to Table I and NOTE, paragraph 5-2c).
- c. If disassembly of valve assemblies (21) is necessitated, carefully note exact thread and hex socket positions of screws (22) relative to valves (28) for reference during reassembly. Disassembled parts of each valve assembly shall be kept separately in a cellophane or plastic container. Each part shall be tagged or otherwise identified with relative assembled position for reference during reassembly.
- d. Do not remove support (36) from base (37). These parts are mutually welded.

5-7. CLEANING. Clean disassembled parts as follows:

- a. Wash all parts except casters (39, 42, figure 6-1) with dry cleaning solvent, Federal Specification P-S-681, and dry thoroughly.
- b. Wipe accumulated dust and grit from casters with a clean, lint-free cloth.

WARNING

Handle cleaning solvent with precautions as outlined in

AFR160-59.

5-8. MAINTENANCE LUBRICATION. (See figures 6-1 through 6-3.)

Prior to reassembly, lubricate parts as follows:

- a. Coat all packings and gaskets, and internal bearing surfaces of all functional hydraulic parts with hydraulic oil, Specification MIL-O-5606.
- b. Lightly coat pins (2, 15, 16, figure 6-1; 2, 3, 4, figure 6-3), rod assembly (13, figure 6-1) ends, guides (24, figure 6-1), extension screw (24, figure 6-2), and plungers (25, figure 6-2; 9, figure 6-3) with oil, Specification MIL-L-7870.

NOTE

Protect oil-wet surfaces from dust accumulation pending reassembly.

5-9. REPAIR AND REPLACEMENT. (See figures 6-1 through 6-3.)

5-10. JACK REPAIR. (See figure 6-1.) Tow bar assembly (3) and handle assemblies (7, 29) may be repaired by welding. Non-critical areas of frame assembly (48) may be welded, ascertaining that mounting faces and holes will not be distorted by the weld. Before attempting to weld any portion of frame assembly, wash, flush and thoroughly drain fluid reservoir with a non-combustible solvent.

WARNING

All weld repairs shall be performed in a well-ventilated area.

5-11. HYDRAULIC JACK UNIT REPAIR. (See figure 6-2.) Defective release valve ball (9, figure 6-1) and check valve ball (5) seats in cylinder assembly (29) shall be refaced, using a standard seat facing tool. Using a brass dowel and mallet and a ball of same size used with seat being repaired, form a new seat by rapping lightly at seated ball until a 1/64

inch wide seat if formed. Discard ball used for seating operation. Wash repaired seat with cleaning solvent, Federal Specification P-S-661, and dry thoroughly (refer to WARNING, paragraph 5-7). Install a new ball of appropriate size at each refaced seat.

5-12. PUMP REPAIR. (See figure 6-3.) Defective ball (24, 27) seats in valves (28) shall be repaired as outlined in paragraph 5-11.

5-13. REPLACEMENT. All damaged or defective parts, other than repairable items covered in paragraphs 5-10 through 5-12 shall be replaced (refer to "REMEDY", Table I). Replace all packings, gaskets and back-up rings removed during disassembly of the jack for service, repair or overhaul.

5-14. REASSEMBLY. (See figures 6-1 through 6-3.)

5-15. PUMP REASSEMBLY. (See figure 6-3.) Reassemble in the reverse order of disassembly, noting the following:

a. Reassemble each valve assembly (21) individually, carefully positioning each part in its correct relative position, and installing screws (22) in exact positions noted during disassembly (refer to paragraph 5-6c).

b. Install valve assemblies (21) with gaskets (20) so that screw (22) holes in valves (28) align with screw (29) holes in base (37). Maintain hole alignment with wood dowel and install pump bodies (14, 19) tightening snugly.

c. If pins (4) are replaced, press into place in arms (5).

5-16. HYDRAULIC JACK UNIT REASSEMBLY. (See figure 6-2.)

Reassemble in the reverse order of disassembly, noting the following:

a. If extension screw (24), plunger (25), spring (26) or ram assembly (19) are replaced, assemble plunger and spring to screw. Depress plunger

against spring pressure and guide screw and ram threads into engagement, carefully screwing these parts together fully.

b. If bearings (11, 16) are replaced, immerse in boiling water and install on rams (9, 14), rapping lightly at circumference of each bearing being replaced with a soft-head mallet until bearing is fully seated against ram shoulder. Proceed in the same manner to install bearing (21) on ram assembly (19).

c. If bushings (10, 19) are replaced, install rings (11, 20). Immerse rams (12, 21) in boiling water and press bushings into place, "bottoming" on rings.

5-17. JACK REASSEMBLY. (See figure 6-1.) Reassemble in the reverse order of disassembly, noting the following:

a. Collapse jack assembly (25) rams. Install guides (24) in jack assembly. Using a wood block, elevate jack assembly to two inches height from floor surface. Raise the frame assembly (48) into position over jack assembly, using another jack.

WARNING

Frame assembly with associated assembled parts and jack assembly weigh approximately 175 and 200 pounds, respectively. Do not attempt to handle these components manually with less than four men.

b. Compress springs (23), using standard ring compressing tools. Gradually lower frame assembly (48) onto jack assembly (25). Position compressed springs over guides as they project through holes in frame assembly bracket. When frame assembly has "bottomed" on jack assembly,

install washers (22) and pins (21).

c. Install handle assembly (7), stem (6) and pin (5) as an assembled unit (refer to paragraph 5-4a).

5-18. BY-PASS VALVE ADJUSTMENT. (See figures 6-1 through 6-3.)

Adjust by-pass valves in valve assemblies (21, figure 6-3) as follows:

a. Ascertain that jack reservoir is filled with proper operating fluid, and that jack rams (9, 14, figure 6-2) and ram assembly (19, figure 6-2) extend when pump handle assembly (29, figure 6-1) is operated.

b. Using test cylinder (refer to paragraph 5-21a), apply a 35-ton load to jack. Operate high-pressure pumps (left-hand pair, viewed from operating end) to lift the load until third-stage ram assembly (19, figure 6-2) is partially extended.

c. Increase load to 38-1/2 tons. Resume operation of high-pressure pumps. At the first, and then the second (alternate) pressure stroke with the increased load, the pump handle assembly (29, figure 6-1) shall "drop" or "go soft", indicating by-pass valve operation and correct valve adjustment. If by-pass valve fails to operate at first pumping stroke, and jack continues to operate, lifting the increased load, cease pumping immediately and adjust valves as outlined in paragraph 5-18d.

WARNING

Continued operation of jack pumps with excessively high by-pass valve pressure adjustment may result in serious injury. Continued operation will cause excessive pressure build-up with full ram extension or excessive loading.

d. Remove two screws (29, figure 6-3) under bodies (19, figure 6-3) and

rotate hex socket head screws (22, figure 6-3) one-half turn counterclockwise. Replace plugs and repeat load test outlined in paragraphs 5-18b and 5-18c. If necessary, repeat adjustment of applicable screw (22, figure 6-3) until each by-pass valve is operative at the increased load at each initial alternating stroke.

e. Adjust by-pass valves under high-speed pumps (right-hand pair, viewed from operating end) in the same manner as outlined for high-pressure pumps (refer to paragraphs 5-18b through 5-18d), with the exception that the maximum load setting shall be 15 tons, and screws (22, figure 6-3) in valve assemblies (21, figure 6-3) under right-hand bodies (14, figure 6-3) shall be adjusted to provide maximum load by-pass settings.

5-19. INSTALLATION OF VALVE ASSEMBLIES. (See figure 6-3.)

Install valve assemblies (21) as outlined in paragraph 5-15b.

5-20. FUNCTIONAL TEST.

5-21. TEST EQUIPMENT. Adjustments and tests shall be conducted with the following test equipment:

a. A hydraulic or pneumatic actuating cylinder with 38-1/2 ton (maximum) load capacity and a source of hydraulic or air pressure equipped with an adjustable relief valve to operate the cylinder.

b. A platform type weighing scale calibrated to 77,000 pounds for load measurement. Mount the cylinder (refer to paragraph 5-21a) in a stationary, vertical position, and place the scale directly beneath, so that the jack can be positioned between the cylinder and the scale. These components shall be positioned so that 20-inch compression of cylinder piston is permitted.

5-22. LEAKAGE TEST. (See figures 6-1 through 6-3.) Place jack under test cylinder (refer to paragraph 5-21a). Operate pump handle assembly (29, figure 6-1) until jack rams (9, 14, figure 6-2) and ram assembly (19, figure 6-2) contact the cylinder. Apply 35-ton load to jack with test cylinder. Operate handle assembly until rams have lifted to full ram extension of 20 inches. Visually inspect for fluid leakage at nuts (10, 15, figure 6-3), valve stem (6, figure 6-1) and rams. There shall be no fluid leakage at any point.

5-23. OPERATING FORCE TEST. (See figure 6-1.) Apply 35-ton load to jack. Operate handle assembly (29), actuating pumps as outlined in paragraph 2-3f. Maximum operating force required during each compression stroke shall be 75 pounds.

5-24. SETTLING TEST. (See figure 6-1.) Test jack for settling as follows, noting that settling rate shall not exceed 0.020 inch per hour:

a. Apply 35-ton load to jack, and operate handle assembly (29) to raise jack against load.

b. Observe jack for settling during a 30-minute test period, recording settling rate at each end of two 15-minute periods. Settling shall not exceed 0.005 inch at the end of each 15-minute period, or 0.010 inch at the end of the 30-minute period.

c. Open release valve by rotating handle assembly (7) counterclockwise to lower jack after testing.

TABLE I. TROUBLE SHOOTING (See figures 6-1 through 6-3.)

TROUBLE	PROBABLE CAUSE	REMEDY
Rams fail to lift when pumps are operated, or jack fails to lift rated load	Incomplete closure of release valve stem (6, figure 6-1)	Rotate handle assembly (7, figure 6-1) clockwise to tighten stem.
	Obstructed fluid suction passages	Disassemble pump assembly (see figure 6-3). Blow passages clear with compressed air. Reassemble and flush with clean fluid.
	Low fluid level	Inspect, and fill to correct fluid level if necessary (refer to paragraphs 2-2c and 2-2d).
	By-pass valves improperly adjusted	Remove screws (29, figure 6-3). Adjust by-pass valves as outlined in paragraph 5-18. Install screws.
	Broken by-pass valve spring (23, figure 6-3)	Remove screws (22, 29, figure 6-3). Replace broken spring. Install screws (22, figure 6-3) and adjust by-pass valves as outlined in paragraph 5-18. Install screws (29, figure 6-3).
Rams will not fully elevate	Low fluid level	Inspect and fill to correct fluid level if necessary (refer to paragraphs 2-2c and 2-2d).
	Leaking discharge valve	Remove valve assemblies (21, figure 6-3). Inspect ball (27, figure 6-3) and ball seating surfaces of valves (28, figure 6-3). Replace balls if defective. Reseat if necessary as outlined in paragraph 5-11.
Rams will not support load	Oil leaks at rams (9, 14, figure 6-2) or ram assembly (19, figure 6-2)	Remove rams. Inspect bearings (11, 16, 21, figure 6-2) and rams for damage, grooving and uneven wear. Replace defective parts. Replace packings (12, 17, 22, figure 6-2) and back-up rings (13, 18, 23, figure 6-2).

TABLE I. TROUBLE SHOOTING (See figures 6-1 through 6-3.) (Cont)

TROUBLE	PROBABLE CAUSE	REMEDY
	Leaking discharge valve	Remove valve assemblies (21, figure 6-3). Inspect ball (27, figure 6-3) and ball seating surfaces of valves (28, figure 6-2). Replace balls if defective. Reseat if necessary as outlined in paragraph 5-11.
	Leaking release valve ball (9, figure 6-1) or its seat in cylinder assembly (29, figure 6-2)	Remove, inspect and replace ball if defective. Inspect seat in cylinder assembly for damage, and reseat if necessary (refer to paragraph 5-11).
Rams rise and fall with each stroke	Incomplete closure of release valve stem (6, figure 6-1)	Rotate handle assembly (7, figure 6-1) clockwise to tighten stem.
	Leaking discharge valve	Remove valve assemblies (21, figure 6-3). Inspect ball (27, figure 6-3) and ball seating surfaces of valves (28, figure 6-2). Replace balls if defective. Reseat if necessary as outlined in paragraph 5-11.
	Leaking release valve ball (9, figure 6-1) or its seat in cylinder assembly (29, figure 6-2)	Remove, inspect and replace ball if defective. Inspect seat in cylinder assembly for damage, and reseat if necessary (refer to paragraph 5-11).
Pump inoperative or difficult to operate	Vacuum created in reservoir due to clogged vent assembly (30 thru 38, figure 6-1)	Remove and disassemble vent assembly. Clean parts as outlined in paragraph 5-7a. Reassemble and install in frame assembly (48, figure 6-1).

TABLE I. TROUBLE SHOOTING (See figures 6-1 through 6-3.) (Cont)

TROUBLE	PROBABLE CAUSE	REMEDY
<p>Pump operates, fluid pressure falls to by-pass at maximum ram extension or with overload applied</p>	<p>By-pass valves improperly adjusted.</p> <p>Defective by-pass spring (23, figure 6-3) or ball (24, figure 6-3)</p>	<p>Remove screws (29, figure 6-3). Adjust by-pass valves as outlined in paragraph 5-18. Install screws.</p> <p>Remove screws (22, 28, figure 6-3). Remove spring and balls. Inspect parts and replace if damaged or defective. Install screws (22, figure 6-3) and adjust by-pass valves as outlined in paragraph 5-18. Install screws (29, figure 6-3).</p>
<p>Rams will not lower</p>	<p>Loose retainer ring (10, 15, 20, figure 6-2) lodged beneath ram (9, 14, figure 6-2) or ram assembly (19, figure 6-2)</p>	<p>Remove rams. Inspect, and replace retainer rings if damaged or defective.</p>
	<p>Excessively worn rams (9, 14, figure 6-2) or ram assembly (19, figure 6-2) have jammed</p>	<p>Relieve load with another jack. Remove inspect, and replace rams if necessary.</p>

SECTION VI
PARTS LIST

FIG. & INDEX NO.	PART NO.	1	2	3	4	5	6	7	DESCRIPTION	UNITS PER ASSY	USABLE ON CODE
6-1-	53D22046								JACK ASSY, 35 ton hydraulic aircraft hand (Type F-2)	1	
-1	AN380-4-5								PIN	2	
-2	53A22167								PIN, Pivot	1	
-3	53C22168								BAR ASSY, Tow (welded)	1	
-4	53A22043								SCREW, Release valve lock	1	
-5	53B22155-2								HANDLE ASSY, Valve release	1	
-6	53A22156								PIN, Release valve	1	
-7	53B22042								STEM, Release valve	1	
-8	53B22082-2								HANDLE ASSY, Release valve (welded)	1	
-9	AN6227B6								PACKING	1	
-10	216-1-24								BALL	1	
-11	9030								HOSE ASSY, 50 in. lg (Eastman Mfg. Co., Manitowoc, Wisconsin)	1	
-12	4034								HOSE ASSY, 24 in. lg (Eastman Mfg. Co., Manitowoc, Wisconsin)	1	
-13	AN380-3-3								PIN	2	
-14	53C22171-1								ROD ASSY, Lowering (welded)	1	
-15	AN380-3-3								PIN	16	
-16	AN398-17								PIN	12	
-17	AN398-25								PIN	4	
-18	53A22172								LINK, No. 4 lowering	2	
-19	53A22170								LINK, No. 3 lowering	2	
-20	53A22163								LINK, No. 2 lowering	2	
-21	53A22162								LINK, No. 1 lowering	8	
-22	COML								PIN, Cotter 5/16 x 2 in. lg steel	4	
-23	COML								WASHER, 1-1/4 in. ID	4	
-24	53A22175								SPRING, 35 ton hydraulic aircraft axle jack base	4	
-25	53A22173								GUIDE, 35 ton hydraulic aircraft axle jack base spring	4	
-26	53D22050								JACK ASSY, 35 ton hydraulic aircraft axle (see figure 6-2 for details)	1	
-27	53D22140								PUMP ASSY (See figure 6-3 for details)	1	

FIG. & INDEX NO.	PART NO	1	2	3	4	5	6	7	DESCRIPTION	UNITS PER ASSY	USABLE ON CODE
6-1-									(ATTACHING PARTS)		
-27	COML								BOLT, Hex hd 1/2-20UNF thd x 2-3/4 in. lg steel	4	
-28	COML								NUT, Hex 1/2-20UNF thd steel	4	
-29	53B22114								HANDLE ASSY, Pump (welded)	1	
-30	53B22113								VENT ASSY, Air	1	
-31	53A22109								PLUG, Air vent	1	
-32	53A22112								SPRING, Air vent exhaust	1	
-33	53A22110								PISTON, Air vent exhaust	1	
	MRQ1-Q7								RING, Quad. (Minnesota Rubber and Gasket Co., Minneapolis, Minnesota)	1	
-34	53A22111								SPRING, Air vent intake	1	
-35	53A22108								PISTON, Air vent intake	1	
-36	MRQ1-Q5								RING, Quad. (Minnesota Rubber and Gasket Co., Minneapolis, Minnesota)	1	
-37	AN6227B20								PACKING	1	
-38	53B22107								BODY, Air vent	1	
-39	52C6417-10								CASTER, Swivel	2	
-40	COML								(ATTACHING PARTS)		
-41	COML								BOLT, Hex hd 1/2-20UNF thd x 1 in. lg steel	8	
-42	52C6418-10								NUT, Hex 1/2-20UNF thd steel	8	
-43	COML								CASTER, Rigid	1	
-44	COML								(ATTACHING PARTS)		
-45	53A22176								BOLT, Hex hd 1/2-20UNF thd x 1 in. lg steel	4	
									NUT Hex 1/2-20UNF thd steel	4	
									NAMEPLATE, 35 ton hydraulic aircraft axle jack	1	

FIG. & INDEX NO.	PART NO.	1	2	3	4	5	6	7	DESCRIPTION	UNITS PER ASSY	USABLE ON CODE
6-1-											
-46	AN535-0-2	.	SCREW	.....	.....	.....	.....	.....	(ATTACHING PARTS)	4	
-47	53A22164	.	DECAL, Air vent	.....	.....	.....	.....	.....		1	
-48	53D22161	.	FRAME ASSY, 35 ton hydraulic aircraft axle jack (welded)	.....	.....	.....	.....	.....		1	

FIG. & INDEX NO.	PART NO.	DESCRIPTION					UNITS		USABLE ON CODE
		1	2	3	4	5	6	7		PER ASSY
6-2-	53D22050	JACK ASSY, 35 ton hydraulic aircraft axle (see index 25, figure 6-1 for next higher assembly)							Ref
-1	4963	UNION, Adapter (Eastman Mfg. Co., Manitowoc, Wisconsin)							1
-2	4961	UNION, Adapter (Eastman Mfg. Co., Manitowoc, Wisconsin)							1
-3	COML	PLUG, Socket hd 1/8 in. dry seal pipe steel							1
-4	53A22118	SPRING, Check valve							1
-5	216-1-16	BALL							1
-6	53B22131	BUSHING, 35 ton hydraulic aircraft axle jack cylinder							1
-7	53C22135-1	RING, Retainer							1
-8	53C22135-2	RING, Retainer							1
-9	53C22125	RAM, 35 ton hydraulic aircraft axle jack first stage							1
-10	53C22035-16	RING, Retainer							1
-11	53A22132	BEARING, 35 ton hydraulic aircraft axle jack first stage							1
-12	AN6227B63	PACKING							1
-13	53C22136-1	RING, Packing backup							1
-14	53C22126	RAM, 35 ton hydraulic aircraft axle jack second stage							1
-15	53C22035-17	RING, Retainer							1
-16	53A22133	BEARING, 35 ton hydraulic aircraft axle jack second stage							1
-17	AN6227B54	PACKING							1
-18	53C22136-2	RING, Packing backup							1
-19	53C22128	RAM ASSY, 35 ton hydraulic aircraft axle jack third stage (welded)							1
-20	53C22035-18	RING, Retainer							1
-21	53A22134	BEARING, 35 ton hydraulic aircraft axle jack third stage							1
-22	AN6227B47	PACKING							1
-23	53C22069-7	RING, Packing backup							1
-24	53C22130	SCREW, 35 ton hydraulic aircraft axle jack extension							1
-25	53A22041	PLUNGER, Extension screw retainer							1
-26	53A22040	SPRING, Jack extension screw							1

FIG. & INDEX NO.	PART NO.	1	2	3	4	5	6	7	DESCRIPTION	UNITS PER ASSY	USABLE ON CODE
6-2-27	COML	.	.	.	.	.	.	.	SCREW, Socket hd-set 1/2-13NC x 1/2 in. lg steel	1	
-28	53B22068	.	.	.	.	.	.	.	SOCKET, Ball type slot	1	
-29	53D22124	.	.	.	.	.	.	.	CYLINDER ASSY, 35 ton hydraulic aircraft axle jack (welded)	1	

FIG. & INDEX NO.	PART NO.	1	2	3	4	5	6	7	DESCRIPTION	UNITS PER ASSY	USABLE ON CODE
6-3-	53D22140								PUMP ASSY (See Index 26, figure 6-1 for next higher assembly)	Ref	
-1	AN380-3-3								PIN	8	
-2	AN395-29								PIN	6	
-3	AN396-39								PIN	2	
-4	53C22141								ARM ASSY, Rocker	2	
	COML								PIN, Dowel 5/16 dia x 1-1/4 in. lg (Almquist Bros, Los Angeles, California)	1	
-5	No Number								ARM, Rocker	1	
-6	53A22143								LINK, Pump	4	
-7	53B22142								LINK ASSY, Pump snag-in (welded)	2	
-8	53A22145								SPRING, Pump snag-in link	2	
-9	53A22144								PLUNGER, Pump snag-in link	2	
-10	53A22115								NUT, Pump packing	2	
-11	53B22146								PISTON, Pump	2	
-12	53B22036-2								RING, Packing backup	2	
-13	AN6227B13								PACKING	2	
-14	53A22070								BODY, Pump	2	
-15	53A22090								NUT, Pump packing	2	
-16	53B22147								PISTON, Pump	2	
-17	53B22036-1								RING, Packing backup	2	
-18	AN6227B10								PACKING	2	
-19	53A22089								BODY, Pump	2	
-20	53A22099								GASKET, Pump valve	2	
-21	53C22096-2								VALVE ASSY	8	
-22	COML								SCREW, Hollow hd set 1/4-28NF-2A x 3/16 in. lg steel	4	
-23	53A22094								SPRING, Valve by-pass	1	
-24	216-1-12								BALL	1	
-25	53A22095								RING, Valve retainer	1	
-26	53A22093								SPRING, Valve pressure ball	1	
-27	216-1-16								BALL	2	

FIG. & INDEX NO.	PART NO.	1	2	3	4	5	6	7	DESCRIPTION	UNITS PER ASSY	USABLE ON CODE
6-3-28	53C22092-2	.	.	.	VALVE, Pump	.	.	.	.....	1	
-29	53A22045	.	.	.	SCREW, Valve plug adjusting	.	.	.	.....	4	
-30	53A22098	.	.	.	GASKET, Pump adjusting plug	.	.	.	.....	4	
-31	COML	.	.	.	PLUG, Pipe 1/2 in. dry seal thd steel	.	.	.	.....	1	
-32	53A22148	.	.	.	SPRING, Oil screen	.	.	.	.....	1	
-33	53A22149	.	.	.	SCREEN, Pump intake	.	.	.	.....	1	
-34	53A22177	.	.	.	PACKING, Pump block "O" ring	.	.	.	.....	1	
-35	53A22174	.	.	.	PIPE, Hydraulic aircraft axle jack feed	.	.	.	.....	1	
	53C22139	.	.	.	BLOCK ASSY, Pump (welded)	.	.	.	.....	1	
-36	53B22138	.	.	.	SUPPORT, Rocker arm (welded detail)	.	.	.	.....	2	
-37	53D22137	.	.	.	BASE, Pump (welded detail)	.	.	.	.....	1	

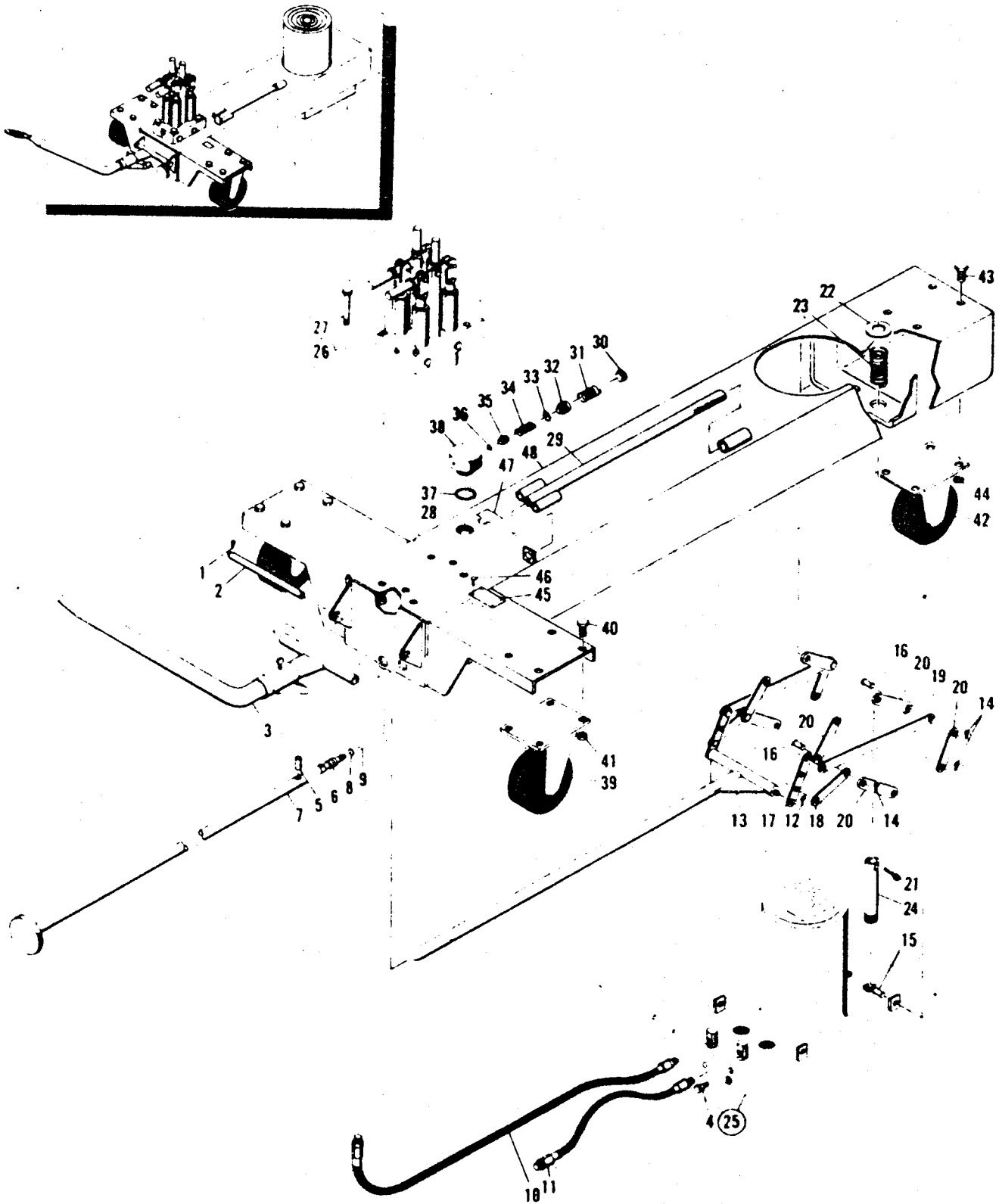


Figure 6-1. 35 Ton Hydraulic Aircraft Hand Jack Assembly,
Part No. 53D22046

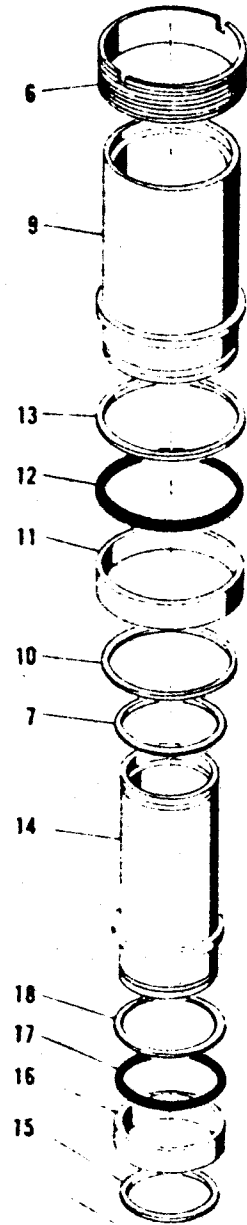
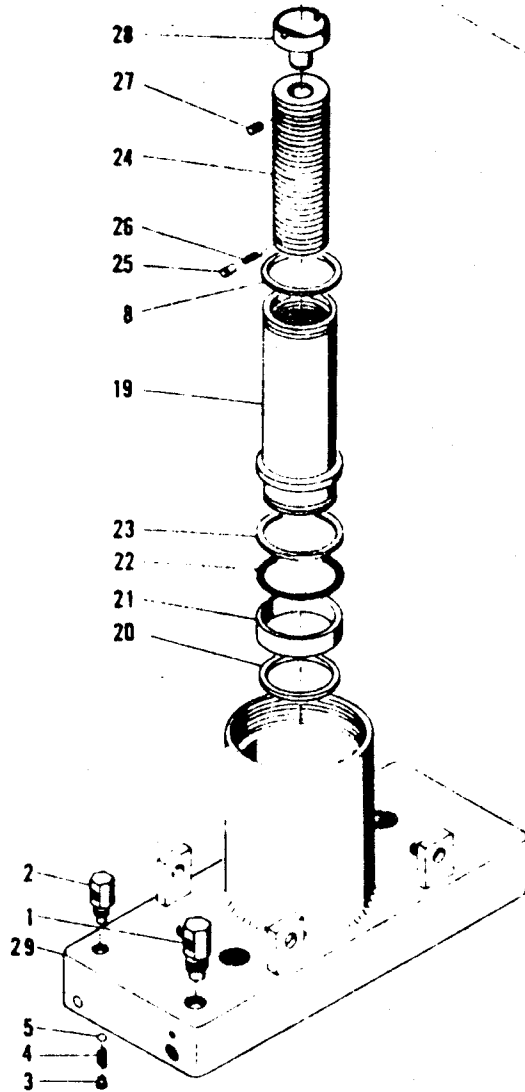
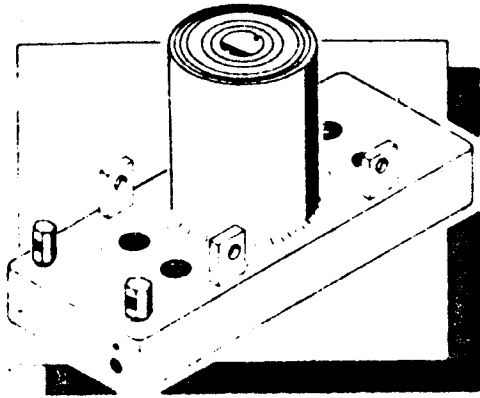


Figure 6-2. 35 Ton Hydraulic Aircraft Axle Jack Assembly,
Part No. 53D22050

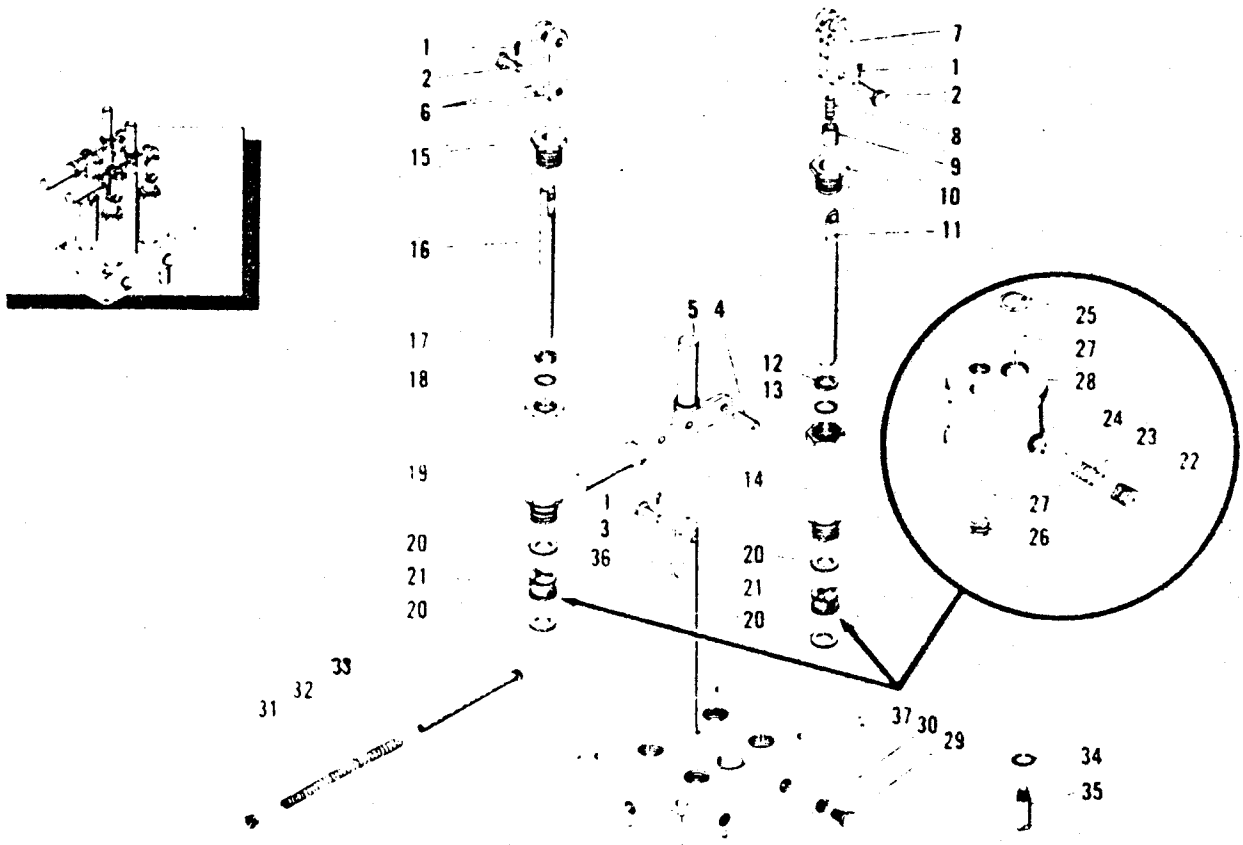


Figure 6-3. Pump Assembly, Part No. 53D22140