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MALABAR

INTERNATIONAL

AIRCRAFT MAINTENANCE & SUPPORT EQUIPMENT

OWNER'S MANUAL FOR MALABAR MODEL

65P10ARUAL

***TWO STAGE HYDRAULIC
AVIATION AUTO-RETRACT
AXLE JACK***

S/N 251 AND UP

- * GENERAL DESCRIPTION
- * OPERATION
- * SERVICE
- * PARTS BREAKDOWN

***READ
AND
SAVE***

**THIS
INSTRUCTION
MANUAL**

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OVER 50 YEARS OF SERVICE & EXPERIENCE

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GENERAL DESCRIPTION, OPERATION, SERVICE AND PARTS BREAKDOWN

***MALABAR MODEL 65P10ARUAL
TWO STAGE HYDRAULIC AVIATION FLOATING AUTO-
RETRACT AXLE JACK***

CAUTION: AIRCRAFT MANUFACTURER'S SPECIFICATIONS AND INSTRUCTIONS MUST BE FOLLOWED. IN THE EVENT OF CONTRADICTION BETWEEN AIRCRAFT MANUFACTURER'S SPECIFICATIONS AND MALABAR'S, AIRCRAFT MANUFACTURER'S SPECIFICATIONS WILL PREVAIL.

SPECIFICATIONS:

Rated Capacity-----	65 tons	(59.0 m. tons)
Low Height -----	10.69 inches	(272 mm)
Hydraulic Lift-----	11 inches	(279 mm)
Extension Screw-----	4.75 inches	(121 mm)
Total Extended Height -----	26.44 inches	(672 mm)
Oil Pressure at Rated Capacity -----	7000 psig	(492 kg/sq cm)
Safety Pop-off Valve set at -----	68.9 tons	(62.5 m. tons)
Proof Load -----	97.5 tons	(88.5 m. tons)
Floor Loading at Rated Capacity-----	825 psi	(58 kg/sq cm)
Reservoir Capacity-----	5.5 gallons	(20.8 liters)
Hydraulic Fluid -----	DTE-13 (OIL 4509-2)	
Maximum Towing Speed -----	5 mph	(8 km/h)
Approximate Jack Net Weight-----	500 lbs	(227 kg)

GENERAL DESCRIPTION:

The Malabar Floating Auto-Retract Axle Jack Model 65P10ARUAL is a 65 ton capacity two stage telescoping hydraulic jack designed primarily for use in jacking the main and/or nose landing gear of various aircraft. With "floating" feature, this jack mates with the Malabar 65L4.5 "floating" beam assembly for jacking certain aircraft in a dual flat or on-the-rims condition. The hydraulic cylinder retracts automatically after each use. Simple and easy single valve control for aircraft raising and lowering. The jack consists of a two stage cylinder assembly mounted on a spherical bearing (this bearing allows the jack ship adapter to follow the arc of the aircraft jack point, thus greatly reducing the stress on the jack's cylinder assembly as well as the aircraft axle and strut), base assembly, frame/reservoir assembly, valve block assembly, hand pump assembly, control console and the following optional equipment:

- * Air pump
- * Load gauge
- * Lubricator
- * Rain hat
- * Electroless nickel plated jack

Leaf centering springs retain cylinder assembly in the center position while under no load. The jack is mounted on two swivel casters at the rear and a retractable wheel at the front to provide portability. A tow handle readily connects to tow vehicle for ease of transport. Raising or lowering the tow handle retracts or extends the front wheel through a linkage, thus controlling ground clearance for towing. The jack is rated at 5 mph (8 km/h) towing speed. Excessive speed may cause excessive wear and/or damage to the jack.

PROTECTION DEVICES:

1. A safety pop-off valve is incorporated in the jack (located in the valve block) to prevent lifting of loads in excess of 68.9 tons (62.5 m. tons).
2. A velocity fuse is incorporated in the jack to prevent rapid retraction of the plungers in the event of hydraulic line rupture.
3. The extension screw has a positive stop to prevent it from being extended beyond its safe thread engagement.
4. An optional load gauge can be installed in order to monitor the approximate load being raised.
5. An accumulator relief valve is incorporated in the accumulator hydraulic system to prevent over pressurizing of this system.

PREPARATION FOR USE:

1. The accumulator system does not require any preparation for use.
2. The jack is shipped without hydraulic fluid in the reservoir. Do not operate air or hand pumps until reservoir is filled with hydraulic fluid DTE-13 or approved equivalent. Remove filler cap and fill reservoir to mark on dipstick (reservoir capacity is approximately 5.5 gallons/20.8 liters). Plungers must be fully retracted before filling reservoir. Replace filler cap.
3. Open release valve and operate hand pumps a few strokes to bleed all air trapped under hand pumps.
4. Close release valve and operate hand pump to raise plungers approximately 1 inch.
5. Open release valve to retract plungers fully to bleed all air trapped under jack plungers. Close release valve.
6. Loosen bleed plug to prime air pump. Slowly operate air pump to bleed trapped air and re-tighten bleed plug.

PRE-OPERATION INSPECTION:

Each time the jack is to be used, inspect the following:

1. Check jack structure for rigidity. Make sure all bolts are tightened.
2. Check hydraulic line connections for leaks. Tighten as required.
3. Check for hydraulic fluid leaks around the cylinder assembly, reservoir, air pump and hand pumps.
4. Check hand pumps for proper operation.
5. Check caster wheels for proper operation.
6. Check reservoir fluid level with jack plungers fully retracted.
7. Check tow handle let-down feature for proper operation.

OPERATION:

1. Position the jack under the appropriate jacking pad of the aircraft. Positioning of tow handle in either full-up or full-down position will lower jack for minimum ground clearance.
2. Raise the extension screw by turning counterclockwise until the ship adapter contacts the jacking pad or as far as the screw will travel (4.75 inches maximum).
3. Close the release valve located on control console.

CAUTION: ON JACK EQUIPPED WITH AIR PUMP, AIR RELIEF VALVE MUST BE INSTALLED AT ALL TIMES. IF AIR RELIEF VALVE IS REMOVED, IT IS POSSIBLE TO OVER PRESSURIZE THE PNEUMATIC SYSTEM WHICH COULD CAUSE EQUIPMENT FAILURE AND POSSIBLE BODILY INJURY.

4. On jack equipped with air pump, connect air supply (90-110 psig) to the 3/8 NPT air inlet located near the air valve on the control console (A minimum of 28 scfm is required for the air pump). Air relief valve must be properly installed. Do not attempt to remove air relief valve.
5. The jack is equipped with two hand pumps. One with 3/4 inch diameter pump plunger for rapid raising of jack plungers under low pressure and one with 7/16 inch diameter pump plunger for high pressure operation. The hand pumps can be operated by placing pump handle over the end of the pump fulcrum and operating either the low or high pressure hand pump.
6. Operate air valve or either hand pump to raise plungers until the ship adapter contacts the jacking pad. Note: A small amount of fluid wetting is normal on manual hand pump plungers. Periodically clean to remove accumulated grease or foreign material.
7. Insure ship adapter and jacking pad are correctly mated.
8. To raise the load:
 - a. Operate the air valve or either hand pump as required.
 - b. Do not lift a load greater than the rated capacity of 65 tons (59.0 m. tons). The approximate load being lifted can be read in tons on the load gauge. Read load on lower stage scale when only outer plunger is extended. Read load on upper stage scale when inner plunger is extended. Fluid pressure in psig may be read on outer scale for gauge calibration.
9. To lower the load:
 - a. Slowly open the release valve to lower the load. The speed of lowering is controlled by the amount the release valve is open. Note: It is important to lower the load slowly. Retracting the plungers too fast will cause the velocity fuse to close and prevent plungers from retracting. Should this occur, close release valve, operate either pump to reset velocity fuse and then open release valve again slowly. Plungers will retract fully, automatically.
10. Lower extension screw. Close release valve. Cover jack when not in use.

SERVICING:

Servicing the jack consists primarily of the following:

1. When in use, the reservoir should be kept at the proper hydraulic fluid level. Check with plungers fully retracted.
2. Grease casters and wheel as required.
3. Lubricate hand pump pivot pins and tow handle linkage.
4. On jack equipped with pump lubricator, fill lubricator with SAE #10 oil.
5. If the jack has been put into storage or has not been used, the plungers must be fully extended and retracted every 90 days to exercise the seals. A portion of the lift should be operated by the air pump and a portion by the hand pumps.
6. Procedure to verify or recharge GN2 pressure in accumulator (Note: Under normal operating conditions, the accumulator system should not require servicing for 3 years):
 - a. Open release valve on control console.
 - b. Open accumulator shutoff valve located underneath the frame.
 - c. Attach accumulator test gauge assembly, Malabar tool P/N 872845 (0-300 psig) to accumulator charging valve located on top of the accumulator. Verify test gauge reads 140 ± 5 psig. If necessary, charge accumulator using GN2 until test gauge reads 140 ± 5 psig.
 - d. Close accumulator shutoff valve.
 - e. Close release valve on control console.
 - f. Disconnect Malabar tool P/N 872845 from accumulator.
 - g. Immediately proceed to step 7 below.
7. Procedure to recharge hydraulic fluid pressure in accumulator:
 - a. Open release valve on control console.
 - b. Open accumulator shutoff valve located underneath the frame.
 - c. Remove cap from test port located behind control console.
 - d. Attach hose and test gauge assembly, Malabar tool P/N 872839 (0-600 psig) to test port.
 - e. Close release valve on control panel.
 - f. Operate air pump or either hand pump to extend plungers to near full extended height. Now slowly operate hand pump only until plungers just reach full extension. At this point pressure will build up rapidly so proceed cautiously. Slowly operate hand pump until test gauge reads 320 ± 10 psig.

CAUTION: RAPID PUMPING AT THIS TIME WILL OVER PRESSURIZE AND DAMAGE THE TEST GAUGE.

- g. Firmly close accumulator shutoff valve. Verify that the test gauge reads 320 ± 10 psig just prior to the valve fully seating.
- h. Open release valve on the control console.
 - i. Remove hose and test gauge assembly tool P/N 872839.
 - j. Replace cap on test port.
- 8. Procedure to verify or adjust accumulator relief valve:

CAUTION: THE ACCUMULATOR RELIEF VALVE, LOCATED UNDER THE RESERVOIR, SHOULD NOT BE DISTURBED UNLESS ABSOLUTELY NECESSARY. THE RELIEF VALVE IS SET AT THE FACTORY TO BY-PASS HYDRAULIC FLUID TO ATMOSPHERE AT 550 ± 25 PSIG.

- a. Open release valve on control console.
- b. Open accumulator shutoff valve located underneath the frame.
- c. Remove cap from test port located behind the control console.
- d. Attach hose and test gauge assembly tool, Malabar P/N 872839 (0-600 psig) to test port.
- e. Remove accumulator relief valve deflector cap.
- f. Close release valve on control panel.
- g. Operate air pump or either hand pump to extend plungers to near full extended height. Now slowly operate hand pump only until plungers just reach full extension. At this point pressure will build up rapidly, so proceed cautiously. Slowly operate hand pump and verify accumulator relief valve by-passes hydraulic fluid to atmosphere at 550 ± 25 psig.

CAUTION: RAPID PUMPING AT THIS TIME WILL OVER PRESSURIZE AND DAMAGE THE TEST GAUGE.

- h. If adjustment is required, insert a standard 5/32 inch hex key wrench into the locking screw.
 - i. Break loose locking screw counterclockwise until the hex key wrench slides into the adjusting screw.
 - j. Turn both screws together to the desired by-pass pressure of 550 ± 25 psig. (Clockwise increases by-pass pressure).
 - k. Retract hex key wrench into the locking screw.
 - l. Lock locking screw against adjusting screw by turning clockwise.
- m. Replace accumulator relief valve deflector cap.
- n. Lower pressure reading to 320 ± 10 psig by opening release valve.
- o. Firmly close accumulator shutoff valve. Verify that the test gauge reads 320 ± 10 psig just prior to the valve fully seating.
- p. Open release valve on control console.
- q. Remove hose and test gauge assembly tool P/N 872839.
- r. Replace cap on test port.

DISASSEMBLY INSPECTION:

CAUTION: THE SAFETY POP-OFF VALVE, LOCATED IN THE VALVE BLOCK, SHOULD NOT BE REMOVED UNLESS ABSOLUTELY NECESSARY. THE VALVE IS SET AND SEALED AT THE FACTORY TO BY-PASS HYDRAULIC FLUID BACK TO THE RESERVOIR AT 4-6% ABOVE THE RATED CAPACITY OF 65 TONS. IF ADJUSTMENT IS REQUIRED, SEE PROCEDURE UNDER TESTING (SEE SHEET 7).

When necessary to disassemble the jack, drain all hydraulic fluid from reservoir and carefully inspect

1. Inspect interior walls of jack cylinder and hand pump cylinders for smoothness and freedom from rust, nicks, scratches and excessive wear.
2. Inspect exterior walls of jack plungers for smoothness and freedom of rust, pits and excessive wear.
3. Check extension screw, cylinder, plungers, etc., for corrosion, wear and condition of threads.
4. Verify that the extension screw has a positive stop to prevent it from being extended beyond its safe thread engagement.
5. Inspect packings, seals, gaskets and wipers in the cylinder assembly and hand pumps for cuts, scratches, deterioration and distortion.
6. Inspect stop rings for excessive scoring and/or wear.
7. Check hand pump oil screens by removing valve block and verifying cleanliness.
8. Check air pump oil screen located inside reservoir by removing reservoir cover and verifying cleanliness.
9. Inspect valves and valve seats in the valve block for scratches, dents and proper seating of the balls.
10. Inspect all pivot pins for wear, cracks, pits or evidence of damage or pending damage.
11. Inspect all areas for excessive dirt, oil, dust and chips.

OVERHAUL INSTRUCTIONS:

No definite time schedule can be established for the overhaul of the jack for replacement of the various moving parts. The number of times the jack is raised and lowered and the amount of load raised at each operation materially affect the life of the working parts. Do not overload the jack. Overloading is dangerous, will hasten the need for overhaul and may damage the jack. During overhaul, replace all parts that do not pass disassembly inspection requirements. Regardless of apparent condition, replace all parts marked with (♦) in the parts breakdown. A repair parts kit (P/N 65P10ARUALPK) which contains all of the parts marked with (♦) is available and recommended to keep on hand at your facility

1. To disassemble cylinder assembly:
 - a. Open release valve located on control console.
 - b. Open accumulator shutoff valve located underneath the frame.
 - c. Remove outer stop ring using spanner wrench (P/N 873861) and remove outer face seal.
 - d. The inner plunger, outer plunger, and extension screw may now be carefully removed as a unit using extension screw lifting tool (P/N 873862). Do not cut or damage any of the seals.
 - e. Remove inner stop ring using spanner wrench (P/N 873860) and remove inner face seal.
 - f. Remove inner plunger and extension screw from outer plunger carefully. Do not cut or damage any of the seals.
 - g. Remove inner plunger diaphragm retaining ring and diaphragm from bottom of inner plunger.
 - h. Remove extension screw roll pins and screw extension screw down through inner plunger.
2. Should it be necessary to remove cylinder from base, proceed as follows:
 - a. Remove hydraulic hose from top portion of cylinder.
 - b. Remove hydraulic hose, velocity fuse and nipple from lower portion of cylinder.
 - c. Remove cap screws, lockwashers and bars from the top of the base (4 places).
 - d. Remove cap screws, lockwashers and centering springs from the side of the base (4 places).
 - e. Cylinder may now be removed from the base.
 - f. Remove cylinder diaphragm from cylinder using spanner wrench (P/N 86305T).
 - g. Do not loosen or remove the two setscrews and jam nuts at the side of the base.
3. Replace all worn or damaged seals. No special tools are required. If replacement of diaphragm seal (P/N 86317) is necessary, follow the installation diagram on sheet 6. Lubricate all seals and cylinder walls with hydraulic fluid DTE-13 or approved equivalent.
4. When necessary to disassemble the jack:
 - a. Replace all defective parts.
 - b. Clean all metal parts with clean solvent and dry with compressed air.
 - c. Lubricate all threads. Use teflon tape carefully on all pipe threads. Remove excess tape because it can clog valves and passages.
 - d. If ball valves, located in valve block, do not seat properly, they may be reseated by tapping the ball into the valve seat with a brass rod cupped at one end.

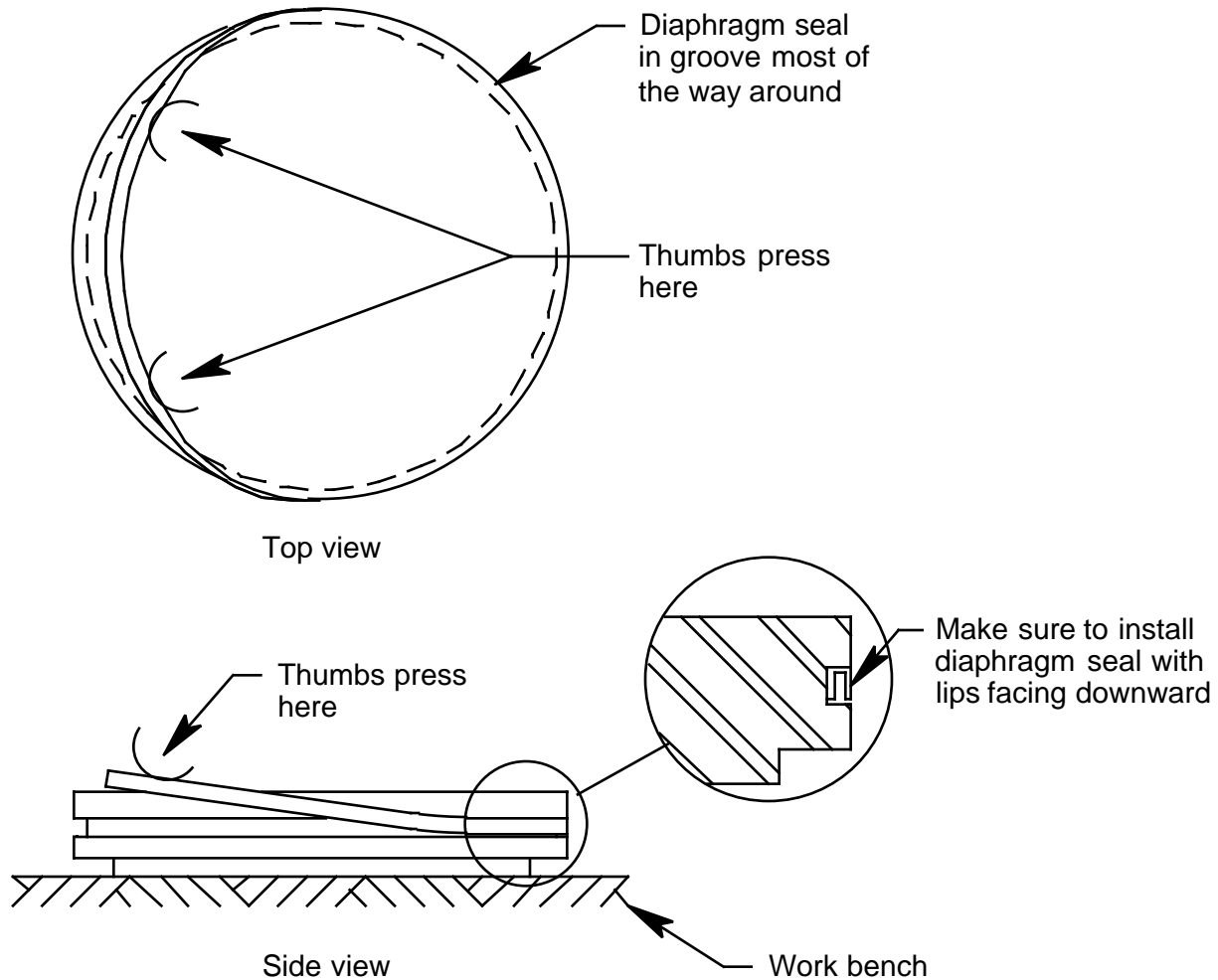
- the ball into the valve seat with a brass rod cupped at one end.
- e. Should any malfunction occur in the velocity fuse, return to factory for repair or replacement.

SPECIAL INSTALLATIONS:

Procedure to install new diaphragm seal:

1. Clean diaphragm with clean solvent and dry with compressed air. All parts and your hands should be clean for the next operation.
2. The diaphragm seal is to be installed firmly and quickly as explained in the installation diagram. Oily parts or hands will make the job more difficult.

CAUTION: THIS IS A TEFLON JACKETED SEAL WITH A THIN STAINLESS STEEL ENERGIZER SPRING. HANDLE CAREFULLY SO YOU DO NOT DAMAGE THE SEAL LIPS, JACKET AND/OR SPRING. THE SEAL MUST BE INSTALLED AS SHOWN BELOW. REMEMBER THAT THE LIPS OF THE SEAL ARE TOWARDS THE PRESSURE. RECHECK BEFORE PROCEEDING.



Installation diagram for diaphragm seal (P/N 86317)

TESTING:

Place jack in a load indicating test fixture. Make sure the test adapter is 3/4 inch male spherical radius. Operate hand pump to extend outer plunger fully and inner plunger partially. Make sure ship adapter and test adapter are correctly mated. Load test the jack at rated capacity of 65 tons. If the jack fails to operate properly, check for trouble as indicated in the Trouble Shooting Chart (see sheet 10). With plungers extended and supporting the capacity load, allow the jack to stand for 10 minutes. Any excess settling indicates leakage in the hand pump, check valves or jack packing seals. Check for hydraulic fluid leaks and replace all defective parts.

If adjustment is required for the safety pop-off valve, perform the following procedure:

1. Cut, remove and discard lead & wire seal (figure 4, item 39).
2. Remove plug (figure 4, item 35). Close release valve (figure 1C, item 31).
3. Place jack in a load indicating test fixture. Make sure the test adapter is 3/4 inch male spherical radius. Operate hand pump to extend plungers against the test adapter. Make sure ship adapter and test adapter are correctly mated.
4. While operating the hand pump, adjust set screw (figure 4, item 29) until the safety pop-off valve by-passes hydraulic fluid back to the reservoir at 67.6 to 68.9 tons.
5. Replace plug (figure 4, item 35). Once more operate hand pump to verify correct setting.
6. Install new lead & wire seal (figure 4, item 39).
7. Open release valve to relieve pressure.

SPECIAL TOOLS:

The following special tools are necessary to disassemble/reassemble the cylinder assembly and adjust the accumulator system. These tools may be purchased upon request:

<i>Part No.</i>	<i>Description</i>	<i>Qty</i>
873860	Spanner wrench, inner stop ring-----	1
873861	Spanner wrench, outer stop ring -----	1
86305T	Spanner wrench, diaphragm-----	1
873862	Lifting tool, extension screw -----	1
872845	Accumulator test gauge assembly, 0-300 psig -----	1
872839	Hose and test gauge assembly, 0-600 psig-----	1

RECOMMENDED SPARE PARTS:

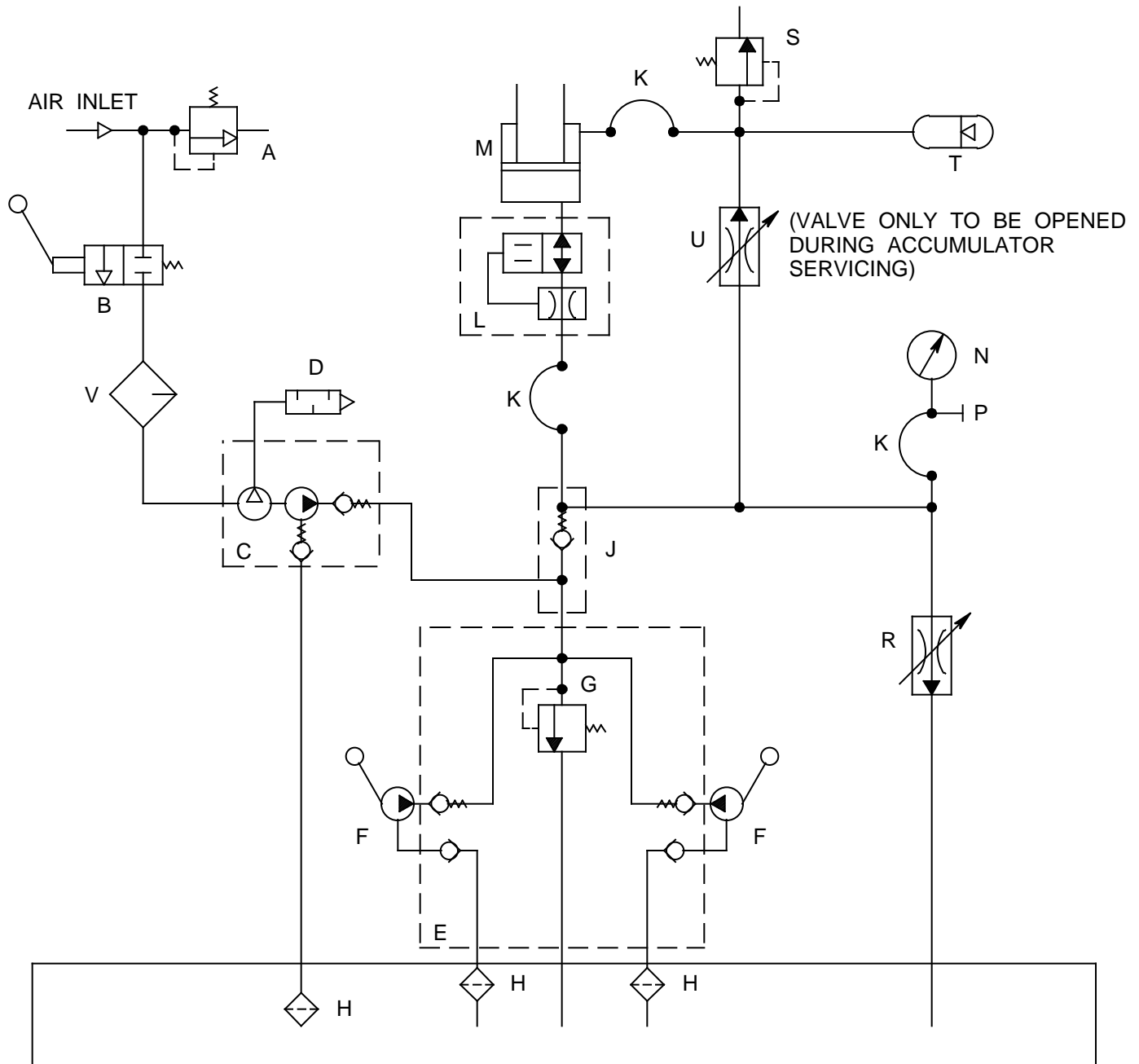
The following spare parts are recommended and available upon request.

<i>Part No.</i>	<i>Description</i>	<i>Qty</i>
65P10ARUALPK	Repair parts kit-----	1
492-012	Swivel Caster -----	2
492-002	Wheel-----	1
86399C	Valve block and hand pump assembly-----	1
55001	Fulcrum-----	2
55007	Plunger, 7/16 dia-----	1
55006	Body, 7/16 dia-----	1
55005	Gland, 7/16 dia-----	1
55047	Plunger, 3/4 dia-----	1
55046	Body, 3/4 dia-----	1
55045	Gland, 3/4 dia-----	1
86376	Pump handle-----	1
86392	Bumper-----	1
52526	Spring-----	1
86350	Yoke -----	1
86351	Yoke pin-----	1

86371	Cushion tube -----	1
86329	Hydraulic hose -----	1
873840	Hydraulic hose -----	1
86339	Breather cap & dipstick -----	1
85416	Release valve -----	1
424-004	Bypass valve-----	1
86367	Cross check valve -----	1
424-005	Drain cock valve-----	1
423-037	Relief valve -----	1
423-038	Deflector cap-----	1
86320	Ship adapter-----	1
873815	Inner stop ring-----	1
873816	Outer stop ring-----	1
86323	Centering spring set-----	2
495-043	Spring-----	2
85415	Velocity fuse -----	1
86321	Base pad-----	1
55991-16	Placard, tonnage, 65 ton -----	1
872835	Placard, instruction-----	1
86396	Placard, release valve-----	1
86595	Placard, aircraft-----	1
55998	Sticker, Malabar -----	1
PFISU-1615-1	Sticker, fluid (DTE-13)-----	1
75940	Sticker, towing-----	1
75942	Sticker, floating-----	2
* 86387	Air pump-----	1
* 441-022	Seal kit, air pump-----	1
* 421-005	Air valve-----	1
* 425-001	Air relief valve-----	1
* 472-001	Muffler -----	1
* 481-002	Oil screen-----	1
* 873850	Load gauge-----	1
* 870437	Hydraulic pressure hose-----	1
* 471-002	Lubricator-----	1

* Optional equipment – These parts required only when supplied with jack

PNEUMATIC / HYDRAULIC DIAGRAM



RESERVOIR

- | | |
|--------------------------|-------------------------------|
| A - AIR RELIEF VALVE | L - VELOCITY FUSE |
| B - AIR VALVE | M - CYLINDER ASSEMBLY |
| C - AIR PUMP | N - LOAD GAUGE |
| D - MUFFLER | P - TEST PORT |
| E - VALVE BLOCK | R - RELEASE VALVE |
| F - HAND PUMP | S - ACCUMMLATOR RELIEF VALVE |
| G - SAFETY POP-OFF VALVE | T - ACCUMULATOR |
| H - OIL SCREEN | U - ACCUMULATOR SHUTOFF VALVE |
| J - CROSS CHECK VALVE | V - LUBRICATOR |
| K - HYDRAULIC HOSE | |

TROUBLE SHOOTING CHART

TROUBLE	PROBABLE CAUSE	REMEDY
Jack will not raise.	Release valve open. (Oil passing back into reservoir.)	Close valve firmly.
	Intake valve open. (Oil passing back into reservoir.)	Pump rapidly to flush dirt off.
	Discharge valve open. (Oil passing back into pump chamber.)	Pump rapidly to flush dirt off.
	Sticking intake valve.	Remove pump from jack base. Unscrew valve block. Clean or replace valve.
	Clogged screen.	Remove and clean.
	Lack of oil. Air under plunger.	Refill. Check for leaks. Bleed air out by opening release valve. Pump rapidly a few times and close release valve.
Jack will not raise to full height.	Lack of oil.	Refill, check for leaks.
	Sticking intake valve.	Remove pump from jack base. Unscrew valve block. Clean or replace ball valves. Re-tighten or repair.
Jack will not raise capacity load.	High pressure leaks. (At pump or release valve.)	Reseat valve.
	Leaky release valve.	Reseat valve and clean valve block.
Jack raises and falls during each stroke.	Leaky discharge valve.	Tighten or replace ball valve or packing.
Jack will not hold up load.	Leaky release valve.	Reseat valve.
	Defective "O" ring and back up ring.	Remove plunger and replace "O" ring and back up ring.
Jack will not lower the load.	Damaged release valve.	Remove and replace parts as needed.
	Bent plunger.	Replace.
Jack will not close completely.	Air under plunger.	Bleed air out. Open release valve and pump rapidly several times. Close valve.
Handle stroke only partly effective.	Air in pump chamber.	Open release valve and pump rapidly several times. Close valve.
	Sticking intake valve.	Remove pump and clean valve block.
	Clogged screen.	Remove and clean.
Handle raises without effort.	Leaky intake valve.	Remove pump and clean valve block.
Handle snaps back.	Sticking intake valve.	Open release valve. Pump rapidly several times. close valve.
	Clogged screen.	Remove and clean.

♦ PART OF REPAIR PARTS KIT

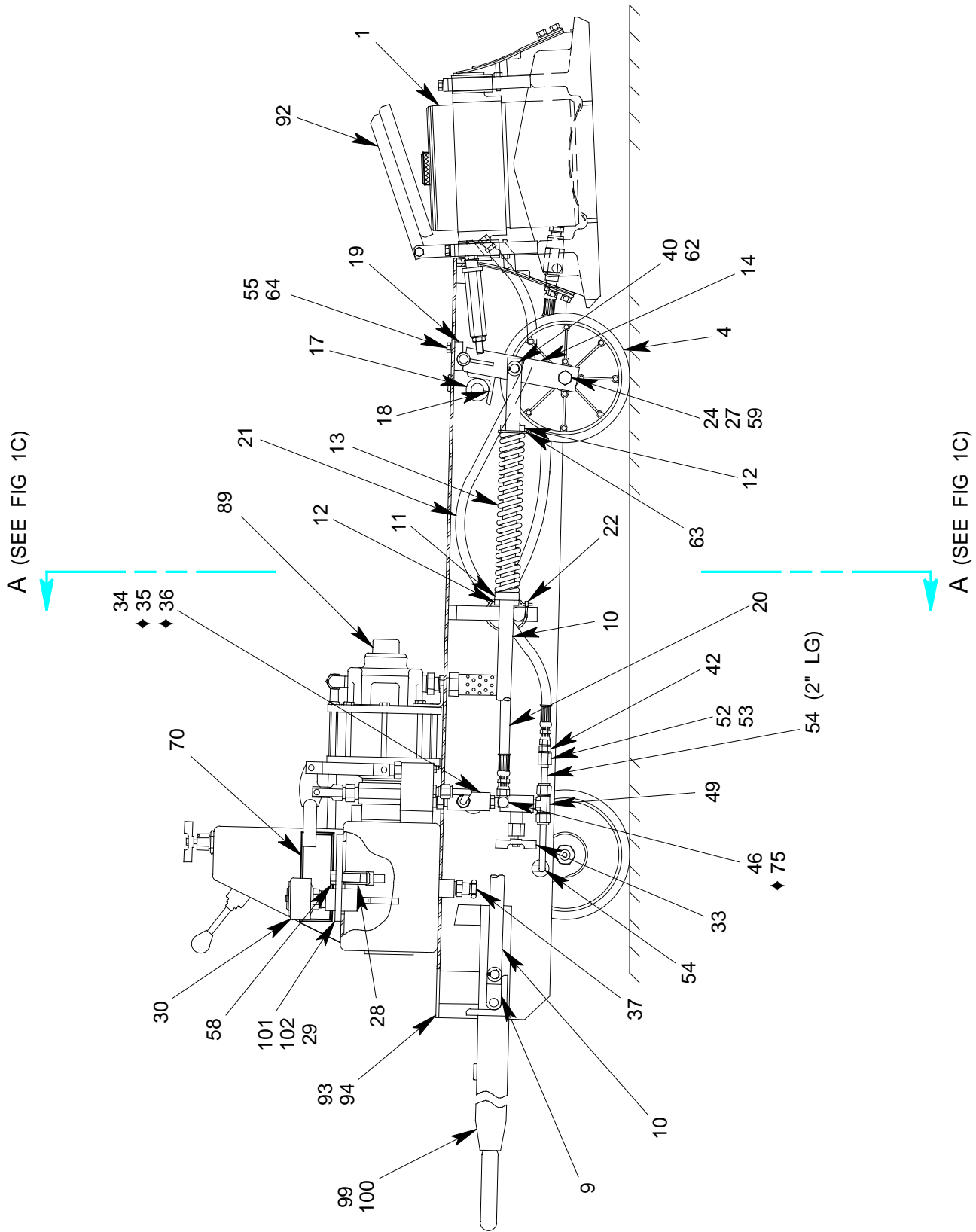


FIGURE 1A

MODEL 65P10ARUAL 65 TON FLOATING AUTO RETRACT AXLE JACK

◆ PART OF REPAIR PARTS KIT

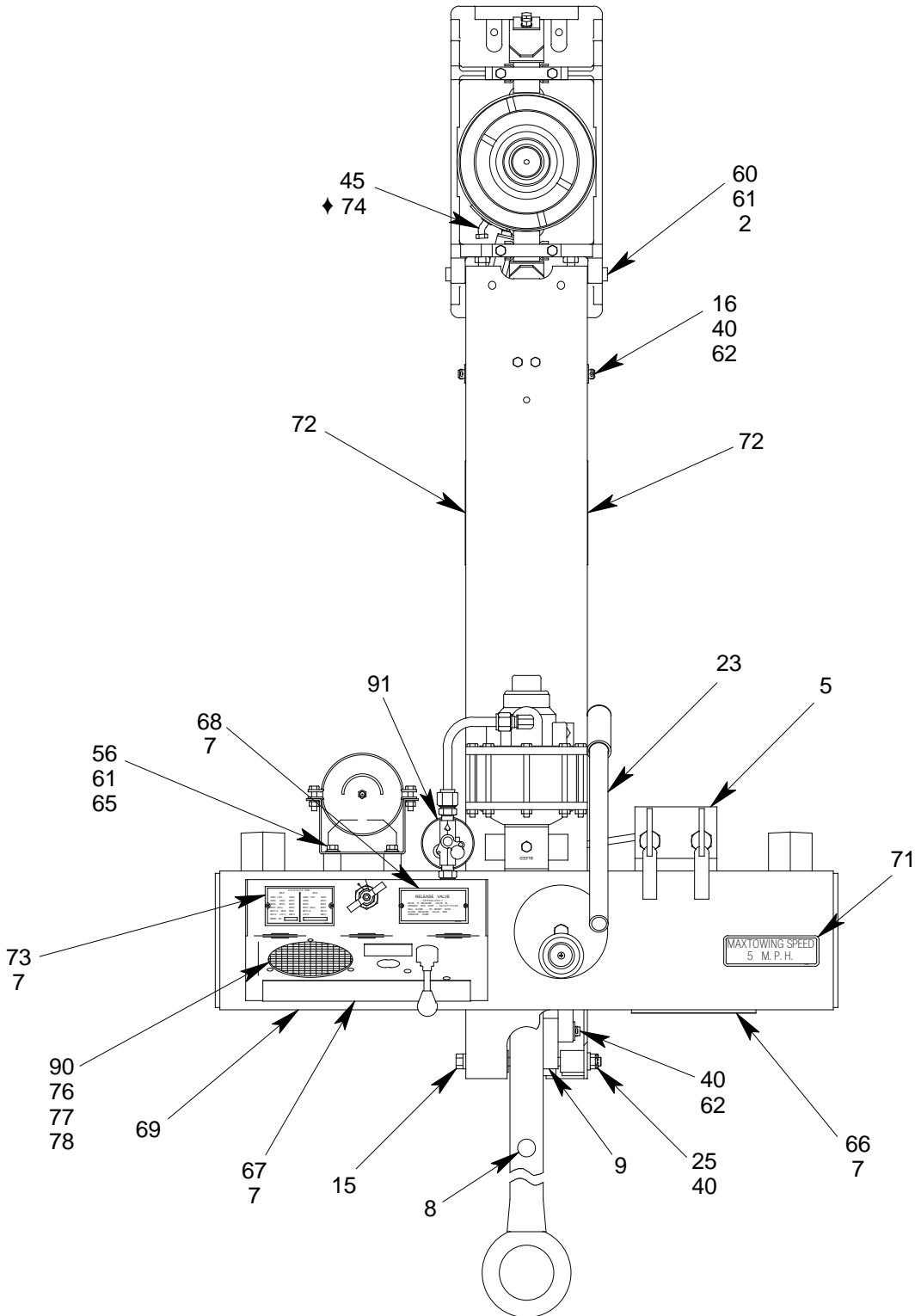


FIGURE 1B

MODEL 65P10ARUAL 65 TON FLOATING AUTO RETRACT AXLE JACK

♦ PART OF REPAIR PARTS KIT

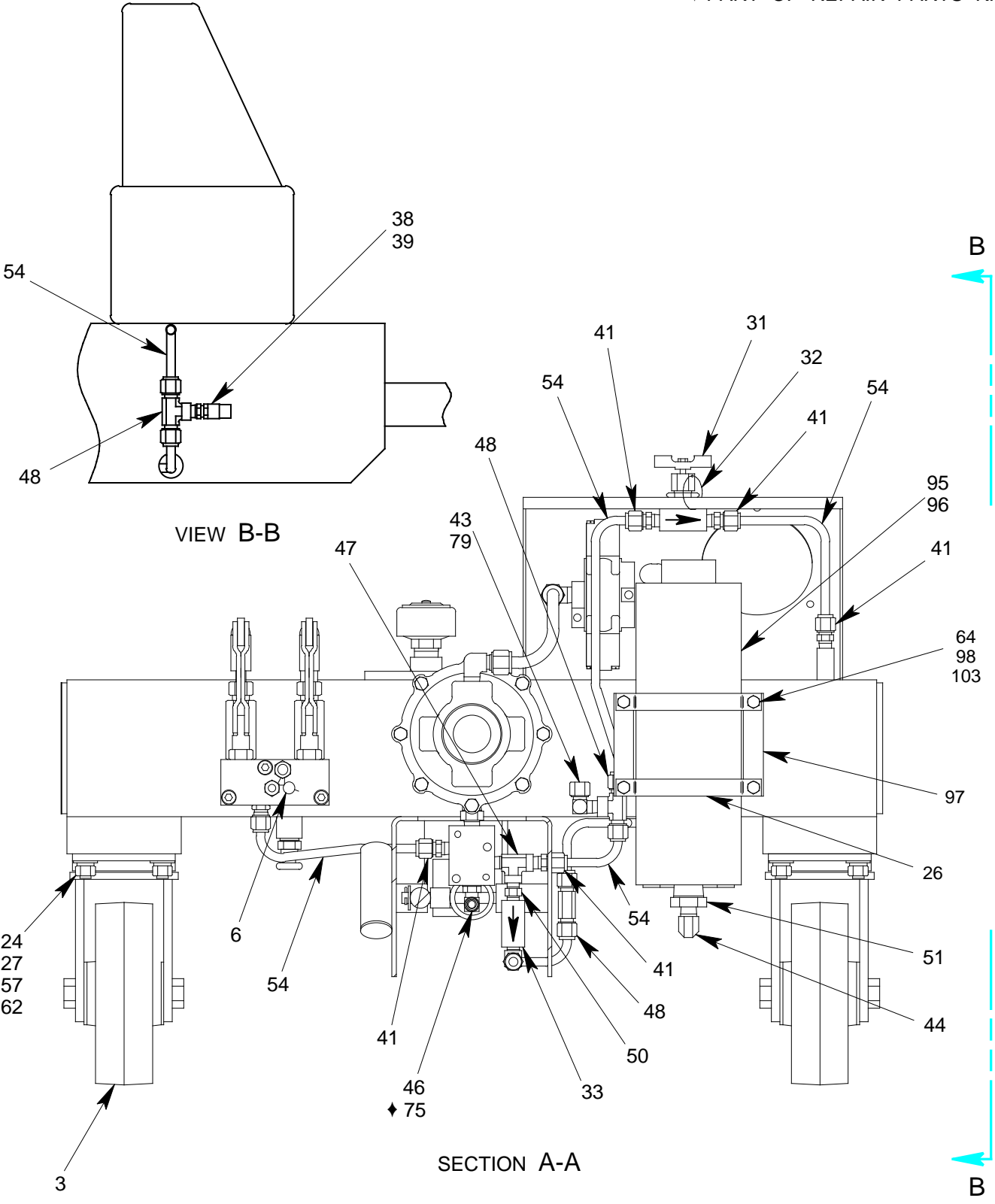
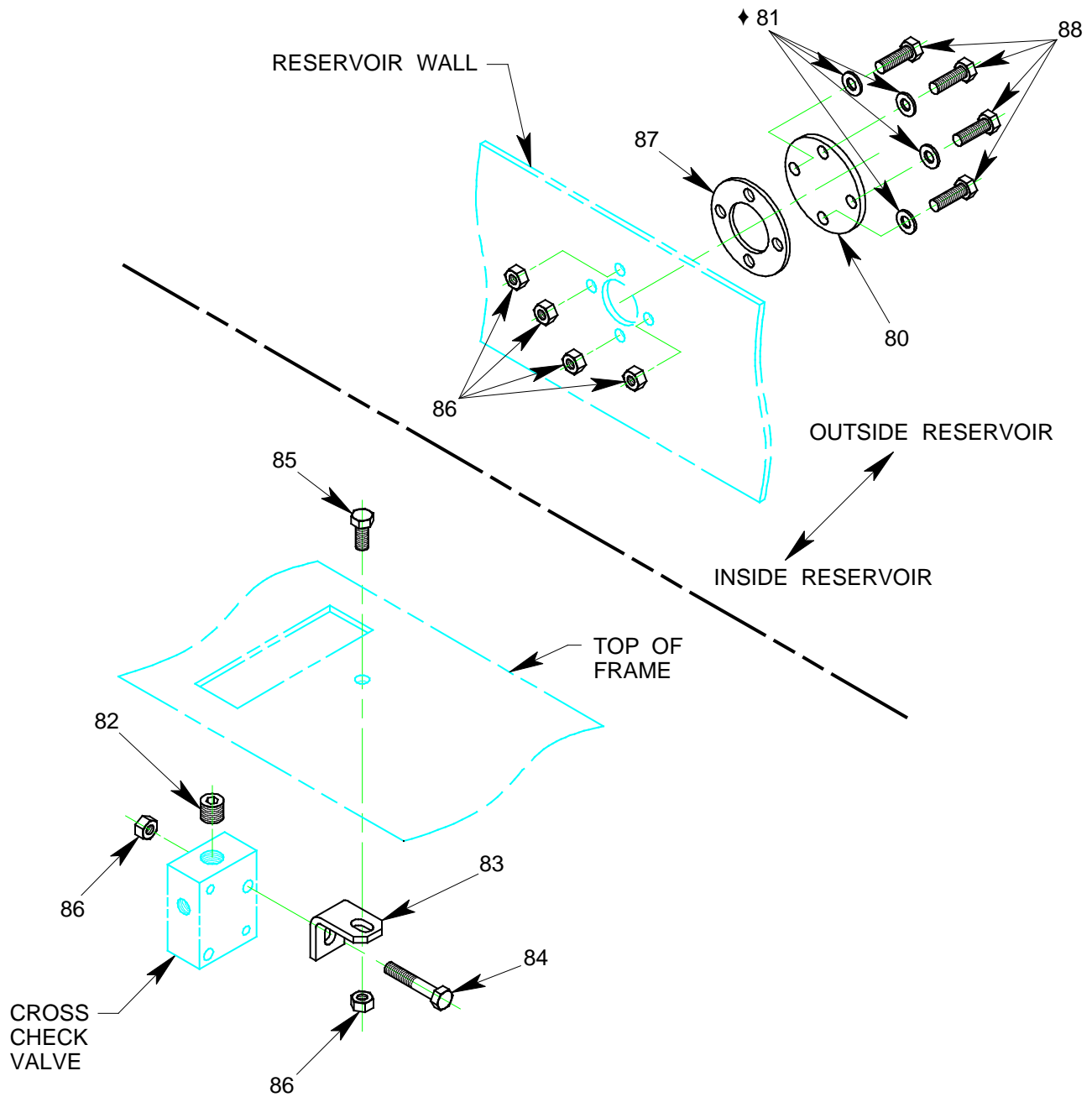


FIGURE 1C

MODEL 65P10ARUAL 65 TON FLOATING AUTO RETRACT AXLE JACK

◆ PART OF REPAIR PARTS KIT



NOTE : THESE PARTS ARE USED ONLY IN THE ABSENCE OF AN AIR PUMP

FIGURE 1D

MODEL 65P10ARUAL 65 TON FLOATING AUTO RETRACT AXLE JACK

MODEL 65P10ARUAL 65 TON FLOATING AUTO RETRACT AXLE JACK

NO.	QTY	PART NO.	DESCRIPTION	NO.	QTY	PART NO.	DESCRIPTION
1	1	874696	BASE & CYLINDER ASSY	60	2	330-001	SHSS, 1/2 x 1 1/4 LG x 3/8-16
2	2	353-003	HEX LOCKNUT, 3/8-16	61	6	362-003	FLAT WASHER, 3/8 SAE
3	2	492-012	SWIVEL CASTER	62	12	362-005	FLAT WASHER, 1/2 SAE
4	1	492-002	WHEEL	63	1	362-010	FLAT WASHER, 7/8 SAE THIN
5	1	86399C	VALVE BLOCK & HAND PUMP	64	6	363-002	SPLIT LOCKWASHER, 5/16
6	1	390-022	LEAD AND WIRE SEAL	65	4	363-003	SPLIT LOCKWASHER, 3/8
7	14	397-005	SELF TAPPING SCREW, #4	66	1	55991-16	PLACARD, TONNAGE, 65 TON
8	1	86392	BUMPER	67	1	872835	PLACARD, INSTRUCTION
9	1	86352	LINK	68	1	86396	PLACARD, RELEASE VALVE
10	1	86353	ROD	69	1	55998	STICKER, MALABAR
11	1	86354	SPRING PUSHER	70	1	PFISU-1615-1	STICKER, FLUID (DTE-13)
12	2	371-007	ROLL PIN, 5/16 DIA x 1 1/2 LG	71	1	75940	STICKER, TOWING
13	1	52526	SPRING	72	2	75942	STICKER, FLOATING
14	1	86350	YOKE	73	1	86595	PLACARD, AIRCRAFT
15	1	85414	TOW HANDLE BOLT	74	1	MS28778-4	O-RING (PART OF ITEM 45)
16	1	86351	YOKE PIN	75	1	MS28778-6	O-RING (PART OF ITEM 46)
17	1	86371	CUSHION TUBE	76	1	86391	HOLE PLATE (NO GAUGE)
18	AR	491-045	WIRE, .08 DIA x 12" LG	77	1	86391P	HOLE PLATE (NICKEL PLATE)
19	1	86316	YOKE BEARING PAD	78	3	MS51861-44C	SELF TAP SCR (NO GAUGE)
20	1	86329	HYDRAULIC HOSE	79	1	717-032	HEX CAP, 3/8 37° (NO GAUGE)
21	1	873840	HYDRAULIC HOSE	80	1	86336	COVER
22	1	491-059	CABLE TIE	81	4	365-004	O-RING SEAL WASHER, 5/16
23	1	86376	PUMP HANDLE	82	1	717-007	PLUG, SOC HD, 3/8 NPT
24	9	351-003	HEX NUT, 1/2-13	83	1	86368	PUMP BRACKET
25	1	357-002	HEX NUT, SLOTTED, 1/2-13	84	1	321-128	HHCS, 5/16-18 x 1 3/4 LG
26	4	874616	ACCUMULATOR STRAP	85	1	321-029	HHCS, 5/16-18 x 3/4 LG
27	9	363-004	SPLIT LOCKWASHER, 1/2	86	6	355-004	LOCKNUT, 5/16-18
28	1	86378	BRIDGE	87	1	86369	PUMP GASKET
29	1	86370	RESERVOIR COVER GASKET	88	4	321-083	HHCS, 5/16-18 x 1" LG
30	1	86339	BREATHER CAP & DIPSTICK	89	1	872833	AIR PUMP KIT
31	1	85416	RELEASE VALVE	90	1	873851	GAUGE KIT
32	AR	491-044	SAFETY LOCK WIRE, .025 DIA	91	1	872843	LUBRICATOR KIT
33	1	424-004	BYPASS VALVE	92	1	874688	RAIN HAT KIT
34	1	86367	CROSS CHECK VALVE	93	1	874645-2	FRAME (NO NICKEL PLATE)
35	1	79367	SPRING	94	1	874645-2P	FRAME (NICKEL PLATE)
36	1	412-001	BALL, CHROME STEEL, 3/8 DIA	95	1	490-011	ACCUMULATOR (NO NICKEL)
37	1	424-005	DRAINCOCK VALVE	96	1	873854	ACCUMULATOR (NI PLATE)
38	1	423-037	RELIEF VALVE	97	1	874615	ACCUMULATOR MOUNT BRKT
39	1	423-038	DEFLECTOR CAP	98	4	321-085	HHCS, 5/16-18 x 1 1/4 LG
40	5	372-002	COTTER PIN, 3/32 x 1" LG	99	1	86355	TOW HANDLE (NO NICKEL)
41	5	721-009	CONNECTOR, 3/8 T x 1/4 MPT	100	1	86355P	TOW HANDLE (NICKEL PLATE)
42	1	721-102	CONNECTOR, 1/4 37° x 3/8 37°	101	1	86361	COVER (NO NICKEL PLATE)
43	1	722-005	ELBOW, 3/8 37° x 1/4 MPT	102	1	86361P	COVER (NICKEL PLATE)
44	1	722-010	ELBOW, 3/8 T x 3/8 MPT	103	4	351-012	HEX NUT, 5/16-18
45	1	722-093	ELBOW, 45°, 1/4 37° x 1/4 SAE				
46	1	722-003	ELBOW, 3/8 37° x 3/8 SAE				
47	1	713-012	TEE, RUN, 1/4 NPT				
48	2	723-018	TEE, BRANCH, 3/8 T x 1/4 FPT				
49	1	723-008	TEE, BRANCH, 3/8 T x 1/4 MPT				
50	1	711-003	NIPPLE, 1/4 NPT				
51	1	714-005	REDUCER, 1" MPT x 3/8 FPT				
52	1	729-016	B-NUT, 3/8 37°				
53	1	729-010	SLEEVE, 3/8 37°				
54	AR	732-010	TUBE, 3/8 OD x .065 WALL x 96"				
55	2	321-029	HHCS, 5/16-18 x 3/4 LG				
56	4	321-011	HHCS, 3/8-16 x 1" LG				
57	8	321-015	HHCS, 1/2-13 x 1 1/4 LG				
58	1	321-039	HHCS, 1/2-13 x 3" LG				
59	1	321-055	HHCS, 1/2-13 x 3 1/2 LG				

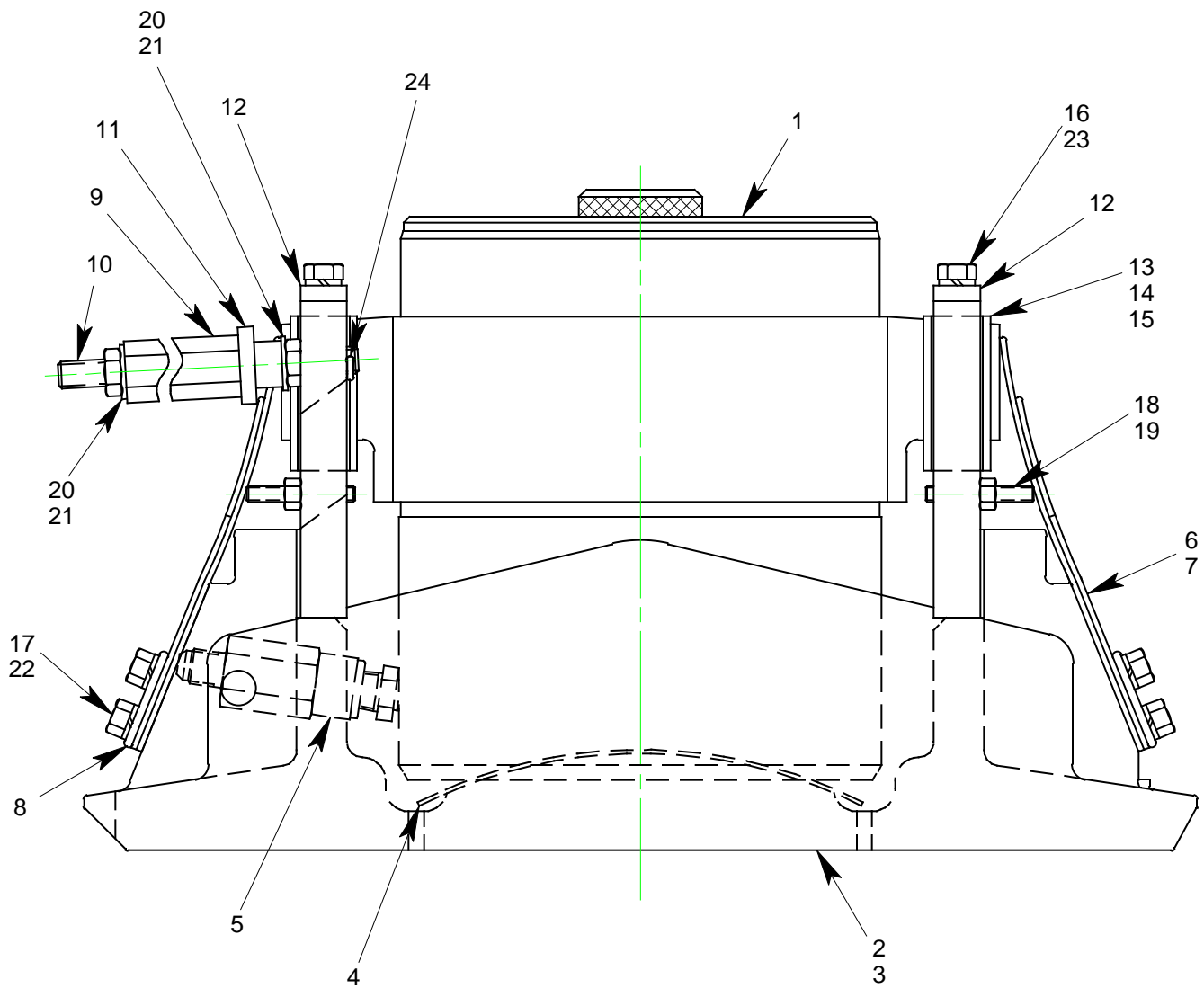
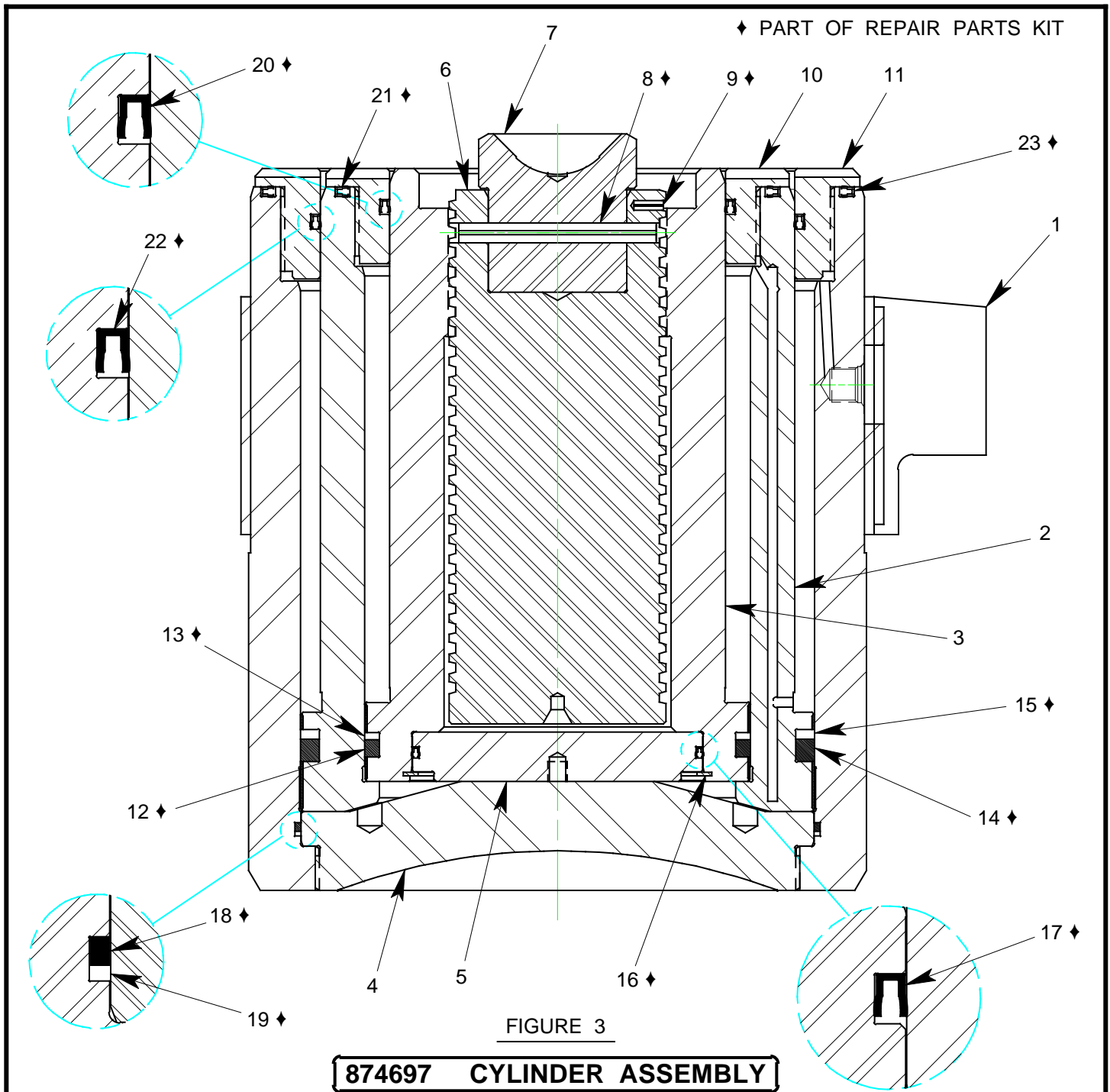


FIGURE 2

874696 BASE & CYLINDER ASSEMBLY

NO.	QTY	PART NO.	DESCRIPTION	NO.	QTY	PART NO.	DESCRIPTION
1	1	874697	CYLINDER ASSEMBLY	13	4	86611	SHOE
2	1	86613	BASE (NO NICKEL PLATE)	14	8	86612	SHIM
3	1	86613P	BASE (NICKEL PLATE)	15	6	86619	SHIM - CUSHION
4	1	86321	BASE PAD	16	4	321-011	HHCS, 3/8-16 x 1" LG
5	1	85415	VELOCITY FUSE ASSEMBLY	17	4	321-029	HHCS, 5/16-18 x 3/4 LG
6	2	86322	SHORT SPRING	18	2	331-012	SETSCREW, 1/4-20 x 1 3/4 LG
7	2	86324	LONG SPRING	19	2	351-001	HEX NUT, 1/4-20
8	2	86325	SPRING KEEPER	20	4	352-005	JAM NUT, 7/16-14
9	2	86349	SPRING	21	4	362-004	FLAT WASHER, 7/16
10	2	86347	STUD HINGE	22	4	363-002	LOCKWASHER, 5/16
11	2	86348	SPACER HINGE	23	4	363-003	LOCKWASHER, 3/8
12	2	86326	BAR	24	2	372-001	COTTER PIN, 3/32 x 3/4 LG



NO.	QTY	PART NO.	DESCRIPTION	NO.	QTY	PART NO.	DESCRIPTION
1	1	874608	CYLINDER	13	1	55929-349	BACK-UP RING
2	1	874604	OUTER PLUNGER	14	1	55925-437	O-RING
3	1	874606	INNER PLUNGER	15	1	55929-437	BACK-UP RING
4	1	873820	CYLINDER DIAPHRAGM	16	1	55904-381	RETAINING RING
5	1	86315	INNER PLUNGER DIAPHRAGM	17	1	86317	DIAPHRAGM SEAL
6	1	86318	EXTENSION SCREW	18	1	55925-165	O-RING
7	1	86320	SHIP ADAPTER	19	1	55929-165	BACK-UP RING
8	1	371-009	ROLL PIN, 1/4 x 2 1/2 LG	20	1	873821	INNER STP RNG RAD SEAL
9	2	371-015	ROLL PIN, 1/8 x 3/8 LG	21	1	873822	INNER STP RNG FACE SEAL
10	1	873815	INNER STOP RING	22	1	873823	OUTR STP RNG RAD SEAL
11	1	873816	OUTER STOP RING	23	1	873824	OUTR STP RNG FACE SEAL
12	1	55925-349	O-RING				

◆ PART OF REPAIR PARTS KIT

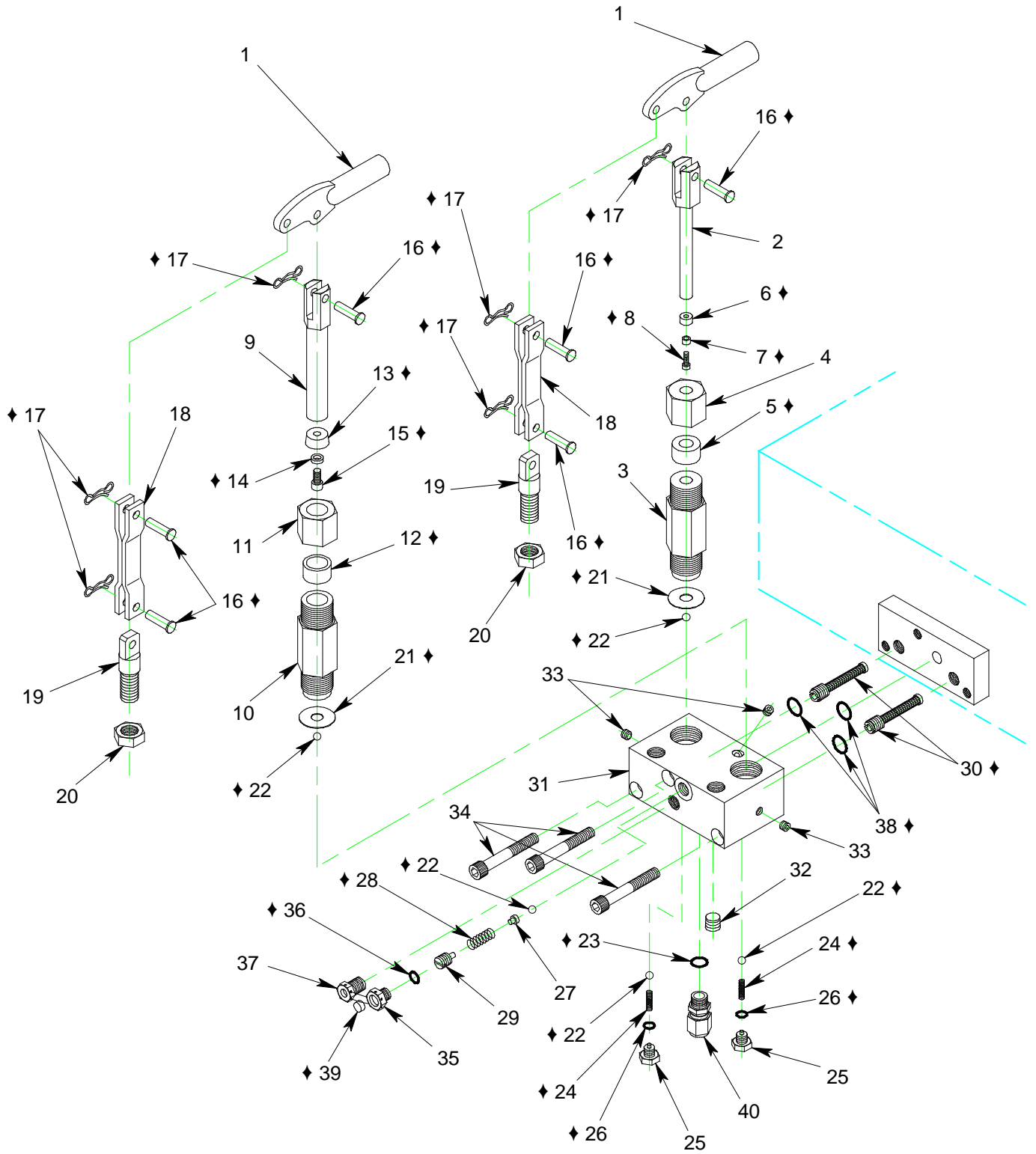


FIGURE 4

86399C VALVE BLOCK & HAND PUMP ASSEMBLY

86399C VALVE BLOCK & HAND PUMP ASSEMBLY

NO.	QTY	PART NO.	DESCRIPTION				
1	2	55001	FULCRUM				
2	1	55007	PLUNGER, 7/16 DIA				
3	1	55006	BODY, 7/16 DIA				
4	1	55005	GLAND, 7/16 DIA				
5	1	55004	PACKING, 7/16 DIA				
6	1	55031	CUP, 7/16 DIA				
7	1	55033	CUP RETAINER, 7/16 DIA				
8	1	323-055	SHCS, 8-32 x 1/2 LG				
9	1	55047	PLUNGER, 3/4 DIA				
10	1	55046	BODY, 3/4 DIA				
11	1	55045	GLAND, 3/4 DIA				
12	1	55044	PACKING, 3/4 DIA				
13	1	55048	CUP, 3/4 DIA				
14	1	55049	CUP RETAINER, 3/4 DIA				
15	1	323-056	SHCS, 1/4-20 x 1/2 LG				
16	6	55002	FLAT HEAD PIN, 5/16 DIA				
17	6	372-028	BOW TIE COTTER				
18	2	55615	LINK				
19	2	55011	ANCHOR				
20	2	352-004	HEX JAM NUT, 5/8-18				
21	2	55024	GASKET				
22	5	412-004	STEEL BALL, 1/4 DIA				
23	1	MS28778-6	O-RING				
24	2	55621	SPRING				
25	2	55620	PLUG				
26	2	55925-903	O-RING				
27	1	55153	GUIDE				
28	1	55154H	SPRING				
29	1	55148	SET SCREW				
30	2	55568	OIL SCREEN				
31	1	85425	VALVE BLOCK				
32	1	717-006	PLUG, HEX SOC, 1/4 NPT				
33	3	717-010	PLUG, HEX SOC, 1/16 NPT				
34	3	323-009	SHCS, 3/8-24 x 3" LG				
35	1	717-046	PLUG				
36	1	55925-904	O-RING				
37	1	717-035	PLUG, HEX HD, 1/4 MPT				
38	3	55925-113	O-RING				
39	1	390-022	LEAD & WIRE SEAL				
40	1	721-005	CONNECTOR				

♦ PART OF REPAIR PARTS KIT

* PART OF ITEM NO. 1 (AIR PUMP)

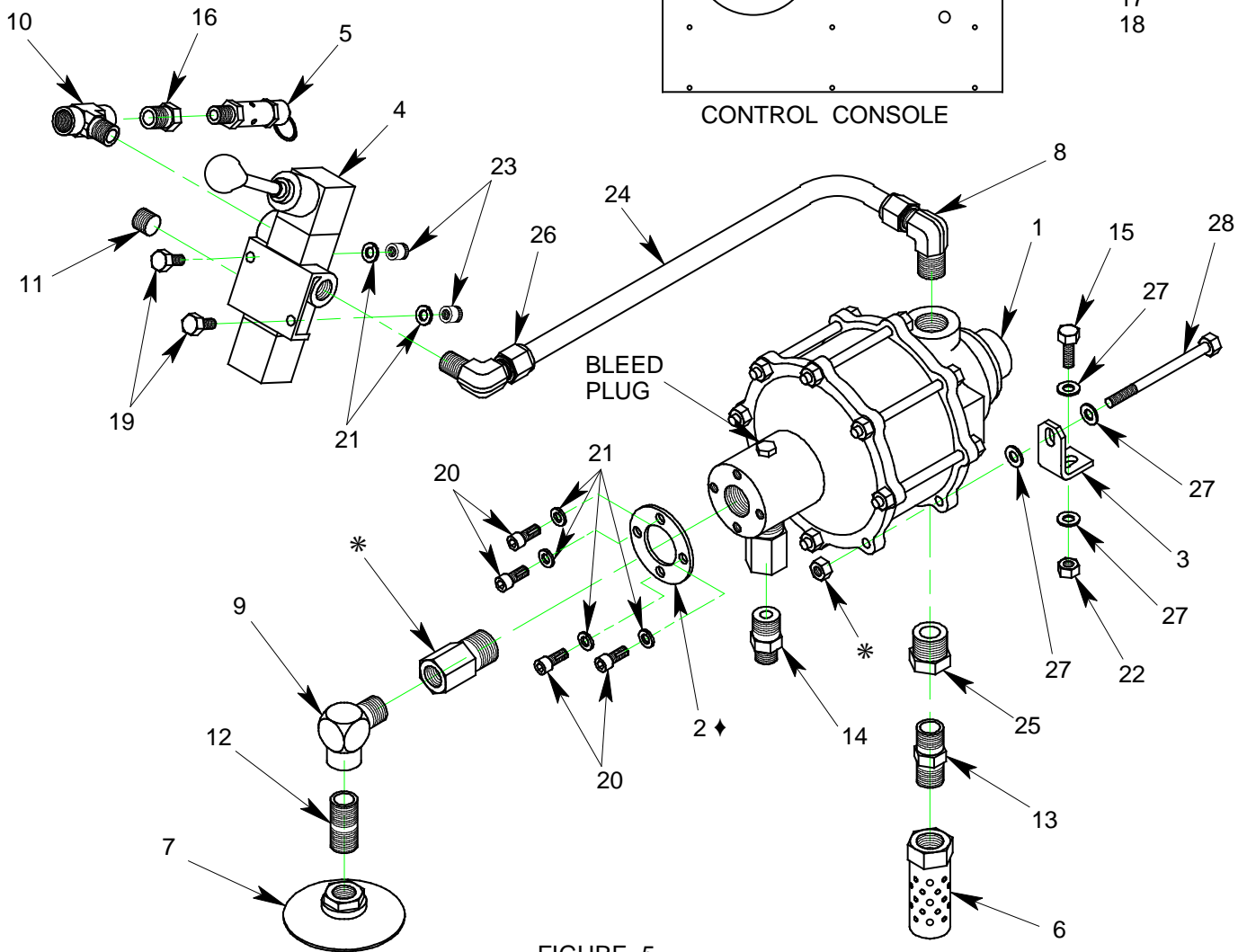


FIGURE 5

872833 AIR PUMP KIT

NO.	QTY	PART NO.	DESCRIPTION	NO.	QTY	PART NO.	DESCRIPTION
1	1	86387	AIR PUMP	15	1	321-083	HHCS, 5/16-18 x 1" LG
2	1	86369	PUMP GASKET	16	1	714-009	REDUCER, 3/8 MPT x 1/4 FPT
3	1	86368	PUMP BRACKET	17	1	86397	PLACARD, AIR
4	1	421-005	AIR VALVE, 3/8 NPT	18	2	397-005	SELF TAP SCREW, #4 x 3/16
5	1	425-001	AIR RELIEF VALVE, 1/4 NPT	19	2	321-029	HHCS, 5/16-18 x 3/4 LG
6	1	472-001	MUFFLER, 1/2 NPT	20	4	323-069	SHCS, LOCKING, 5/16-18 x 3/4
7	1	481-002	OIL SCREEN, 1/2 NPT	21	6	363-002	SPLIT LOCKWASHER, 5/16
8	1	722-013	ELBOW, 1/2 TUBE x 1/2 NPT	22	1	355-004	HEX LOCKNUT, 5/16-18
9	1	712-003	ELBOW, STREET, 1/2 NPT	23	2	359-001	ALLEN NUT, 5/16-18
10	1	713-005	TEE, BRANCH, 3/8 NPT	24	AR	732-001	TUBE, 1/2 OD x .049 W x 21"
11	1	717-007	PLUG, HEX SOC, 3/8 NPT	25	1	714-006	REDUCER, 3/4 MPT x 1/2 FPT
12	1	711-013	NIPPLE, CLOSE, 1/2 NPT	26	1	722-012	ELBOW, 1/2 TUBE x 3/8 NPT
13	1	711-001	NIPPLE, HEX CLOSE, 1/2 NPT	27	4	362-002	WASHER, FLAT 5/16 SAE
14	1	711-022	REDUCER, 1/2 MPT x 3/8 MPT	28	1	321-232	HHCS, 5/16-18 x 4 1/2 LG

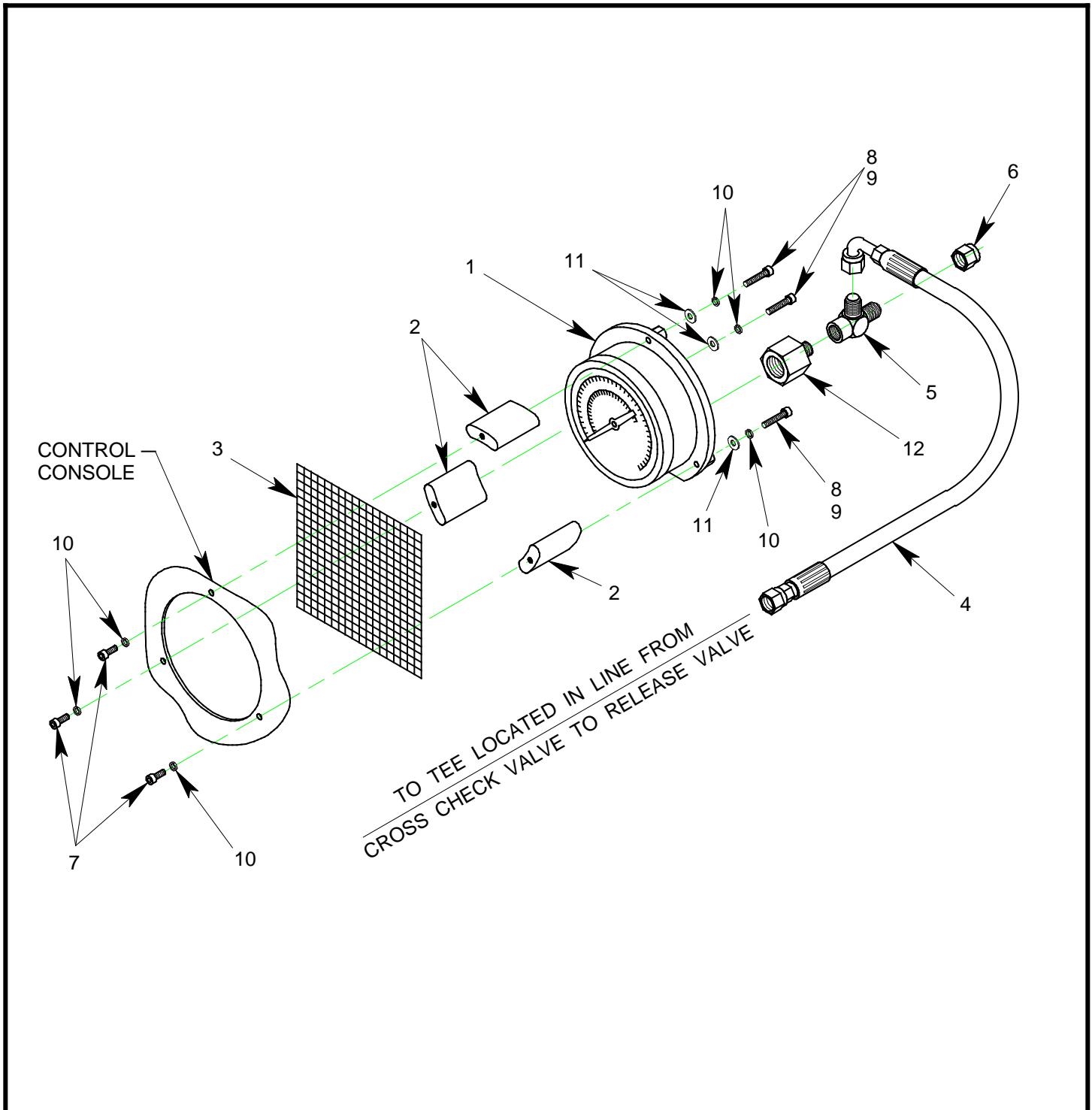


FIGURE 6

873851 LOAD GAUGE KIT

NO.	QTY	PART NO.	DESCRIPTION	NO.	QTY	PART NO.	DESCRIPTION
1	1	873850	LOAD GAUGE	7	3	323-016	SHCS, 10-32 x 1/2 LG
2	3	880435	ISOLATION BUSHING	8	3	323-075	SHCS (ASHCROFT GAUGE)
3	1	86374	GAUGE SCREEN	9	3	323-073	SHCS (MARSH GAUGE)
4	1	880437	HYDRAULIC PRESSURE HOSE	10	6	363-009	SPLIT LOCKWASHER, #10
5	1	723-046	TEE, RUN, 1/4 FPT x 3/8 37°	11	3	362-031	FLAT WASHER, #10 SAE
6	1	717-032	HEX CAP, 3/8 37°	12	1	714-001	REDUCER, 1/2 FPT x 1/4 MPT

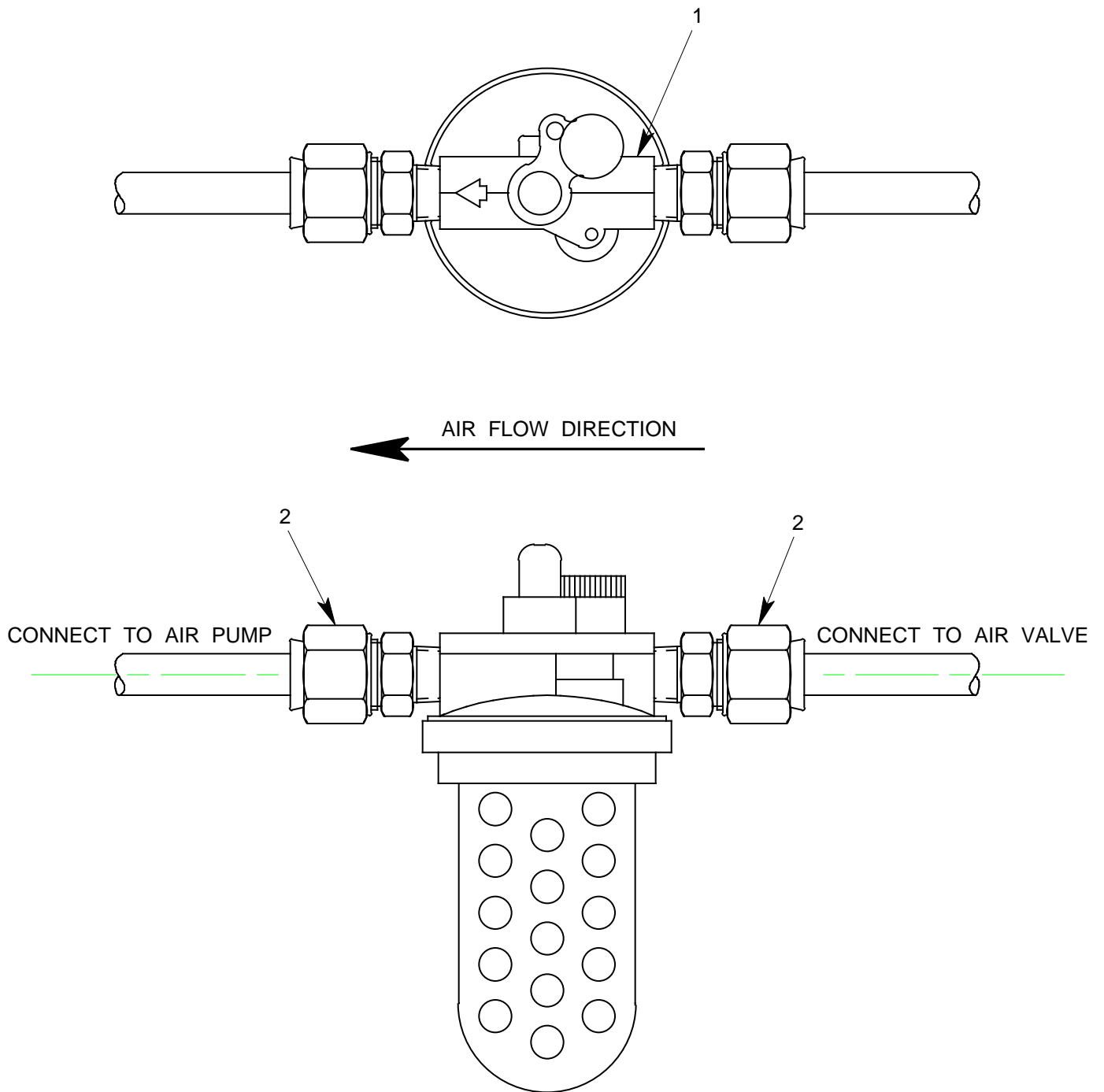


FIGURE 7

872843 LUBRICATOR KIT

NO.	QTY	PART NO.	DESCRIPTION
1	1	471-002	LUBRICATOR
2	2	721-025	CONN, MALE, 1/2 T x 3/8 NPT

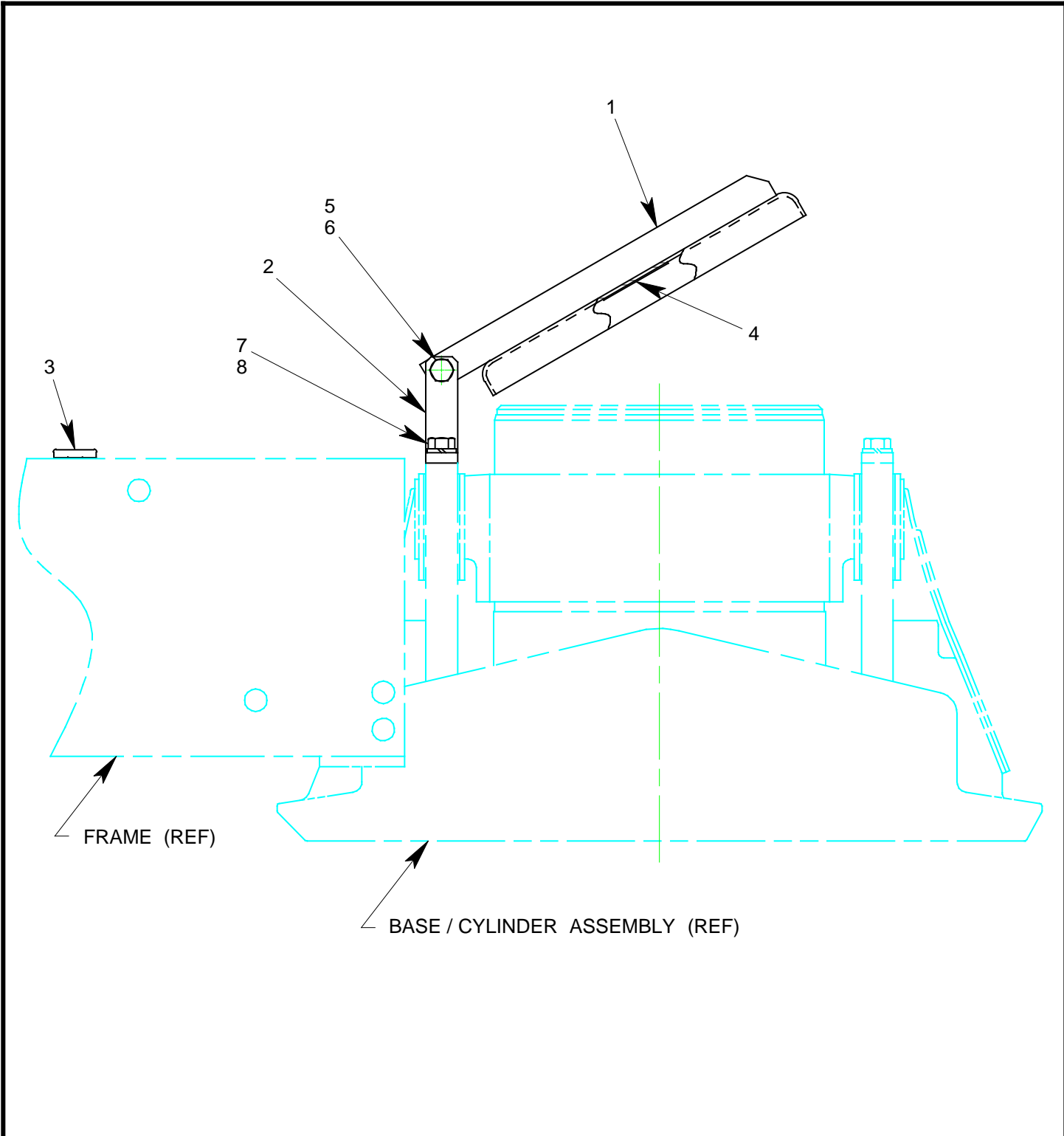


FIGURE 8

874688 RAIN HAT KIT

NO.	QTY	PART NO.	DESCRIPTION	NO.	QTY	PART NO.	DESCRIPTION
1	1	86372	RAIN HAT	5	1	321-058	HHCS, 5/16-18 x 1 1/2 LG
2	1	874609	BAR	6	1	355-004	LOCKNUT, 5/16-18
3	1	86392	BUMPER	7	2	321-011	HHCS, 3/8-16 x 1" LG
4	1	75943	STICKER, CLOSE COVER	8	2	363-003	SPLIT LOCKWASHER, 3/8