

MALABAR

INTERNATIONAL

AIRCRAFT MAINTENANCE & SUPPORT EQUIPMENT

OWNER'S MANUAL FOR MALABAR MODEL

761

**SINGLE STAGE VARIABLE HEIGHT
HYDRO - MECHANICAL
AVIATION TRIPOD JACK**

**READ
AND
SAVE**

**THIS
INSTRUCTION
MANUAL**

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

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OVER 65 YEARS OF SERVICE & EXPERIENCE

GENERAL DESCRIPTION, OPERATION, SERVICE AND PARTS BREAKDOWN

MALABAR MODEL 761 SINGLE STAGE VARIABLE HEIGHT HYDRO-MECHANICAL AVIATION TRIPOD 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-----	60 tons	(54.4 m. tons)
Side Load-----	15% of vertical load	
Roll Under Height without legs extended -----	187.6 inches	(4765 mm)
Roll Under Height with legs extended-----	223.1 inches	(5667 mm)
Low Height without legs extended -----	186.1 inches	(4727 mm)
Low Height with legs extended -----	221.6 inches	(5629 mm)
Hydraulic Lift-----	72 inches	(1829 mm)
Extension Screw-----	24 inches	(610 mm)
Total Extended Height without legs extended-----	282.1 inches	(7165 mm)
Total Extended Height with legs extended-----	317.6 inches	(8067 mm)
Oil Pressure at Rated Capacity-----	2430 psig	(171 kg/sq cm)
Safety Pop-off Valves		
System Relief Valve set at-----	66 tons	(59.9 m. tons)
Thermal Relief Valve set at-----	75 tons	(68.0 m. tons)
Hydraulic Caster Relief Valves set at-----	900 psig	(63.3 kg/sq cm)
Proof Load -----	90 tons	(81.6 m. tons)
Reservoir Capacity-----	20.6 gallons	(78.0 liters)
Hydraulic Fluid -----	MIL-H-5606 or equivalent	
Maximum Towing Speed -----	5 mph	(8 km/h)
Approximate Jack Net Weight-----	4400 lbs	(1996 kg)

GENERAL DESCRIPTION:

The Malabar Variable Height Tripod Jack Model 761 is a 60 ton capacity single stage hydraulic jack designed primarily for use in aircraft maintenance. It consists of a tripod structure, hydraulic cylinder assembly, reservoir, valve block assembly, hand pump assembly, tow handle, swivel casters and the following optional equipment:

- *Air pump
- *Load gauge
- *Adjustable swivel foot
- *Adjustable swivel foot with hydraulic caster
- **Shock absorber for hydraulic caster option
- *Ladder
- *Remote control (platform operated)

The jack tow handle readily connects to tow vehicle for ease of transport. The jack should never be used as a personnel carrier while being towed or in motion. On jacks equipped with spring loaded swivel casters, the jack leg pads are raised off the ground. The casters will retract and the pads rest on the ground when a load is applied to the jack. On jacks equipped with adjustable swivel foot, the jack leg pads have adjustable leveling feet for slightly uneven or sloping floors. On jacks equipped with hydraulic

casters, leveling of the jack is faster and easier by selectively extending or retracting the caster plungers utilizing the caster hand pump or release valve. Extending the casters also increases the towing ground clearance. For extended towing over rough surfaces, a hydro-pneumatic shock absorber is provided to cushion against towing loads and improve caster life.

PREPARATION FOR USE:

Disregard the following erection procedure if the jack is shipped fully assembled. If the jack is shipped partially assembled, erection is accomplished by following the suggested sequence below (also see figures 1A & 1B):

1. Install sling under tripod head of cylinder assembly and support from a crane or forklift capable of lifting 6000 pounds to a height of 28 feet.
2. Install legs, tripod head pins and retaining rings.
3. Install braces.
4. Tighten all bolts.

The low height of the jack can be increased from 186.1 inches to 221.6 inches by extending the adjustable legs, erection is accomplished by following the suggested sequence below (also see figure 1A):

1. Install sling under tripod head of cylinder assembly and support from a crane or forklift capable of lifting 6000 pounds to a height of 28 feet
2. Remove the inner two 1 inch bolts from each of the extendible lower braces (12 bolts) items 26, 32 and 36, figure 1B.
3. Loosen the end bolts on these braces.
4. Loosen the bolts on the upper braces.
5. Remove item 13, figure 1B (total of 3).
6. Lift the jack approximately 3 feet.
7. Install leg clamps (stored on top of reservoir lug) in the leg grooves provided.
8. Lower tripod head so upper legs are seated against leg clamps.
9. Install item 13, figure 1B (total of 3)
10. Attach lower ladder (stored on ladder) with bolts provided.
11. Replace bolts in extendible braces.
12. Tighten all bolts.
13. Reverse procedure to lower jack from 221.6 inches to 186.1 inches.

If jack is equipped with adjustable swivel feet, perform the following procedure to calibrate bubble level:

1. Hang 2 plumb bobs (at 90°) from the tripod head with the plumb bob strings approximately parallel to the cylinder assembly (dial indicator magnetic bases work well as supports for the plumb bobs).
2. Stand on jack footpads and screw the footpad locknuts up to the end of the legs, continue turning footpad locknuts until weight of jack is off casters (one end of the pump handle fits into the footpad locknuts to provide extra leverage if required). Adjust footpad locknuts so both plumb bob strings are parallel to the cylinder assembly (carefully measure top and bottom from cylinder assembly to strings). Alternately, if jack is equipped with hydraulic casters, operate hydraulic caster hand pumps and/or release valves to extend or retract casters until both plumb bob strings are parallel to the cylinder assembly.
3. Remove cover from bubble level and adjust screws to center bubble. Lock adjustment screws and replace cover. Tag with date of calibration.
4. Raise footpads fully to stow position and reinsert pump handle in handle holder. Remove plumb bobs.
5. Bubble level should be checked periodically as directed by cognizant quality control department.

Before placing jack in operation, perform the following procedure:

1. Remove filler cap from the filler spout located at the side of the reservoir.
2. Fill jack reservoir to mark on dipstick with MIL-H-5606 hydraulic fluid or approved equivalent (reservoir capacity is approximately 20.6 gallons/78.0 liters). Jack plunger must be fully retracted before filling reservoir. Replace filler cap.
3. Open release valve and operate hand pump a few strokes to bleed all air trapped under hand pump.
4. Close release valve and operate hand pump to raise plunger approximately 1 inch.
5. Open release valve to retract plunger fully to bleed all air trapped under jack plunger. Close release

valve.

6. If jack is equipped with hydraulic casters, perform the following procedure:
 - a. Remove the elbow/breather located on top of the reservoir.
 - b. Open release valve and fully retract caster plunger.
 - c. Fill reservoir to the top with MIL-H-5606 hydraulic fluid or approved equivalent. Replace elbow/breather.
 - d. Open release valve and operate hydraulic caster hand pump a few strokes to bleed all air trapped under hand pump.
 - e. Close release valve and operate hand pump to extend caster approximately 1 inch.
 - f. Open release valve to retract caster fully to bleed all air trapped under plunger. Close release valve.
 - g. Repeat for other hydraulic casters.
7. If jack is equipped with shock absorbers for the hydraulic casters, remove valve cap at end of unit and charge with nitrogen gas to 275 psig (19.3 kg/sq cm) using accumulator test gauge assembly (P/N 872845).

PRE-OPERATION INSPECTION:

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

1. Check the tripod 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 base, reservoir, tripod head, hand pump, air pump (if so equipped), hydraulic casters (if so equipped) and shock absorber (if so equipped).
4. Check hand pumps for proper operation.
5. Check swivel casters for proper operation.
6. Check jack reservoir fluid level with plunger fully retracted.
7. Check hydraulic caster reservoir fluid levels with caster plungers fully retracted (if so equipped).
8. Check nitrogen charge in shock absorbers (if so equipped).

OPERATION:

CAUTION: PRIOR TO TOWING, ENGAGE THE TWO TRAILING SWIVEL CASTER LOCKS. ON JACKS EQUIPPED WITH ADJUSTABLE SWIVEL FOOT, ALWAYS FULLY RETRACT THE FOOTPADS BEFORE MOVING OR TOWING THE JACK. ON JACKS WITH HYDRAULIC CASTERS, FULLY EXTEND CASTERS BEFORE MOVING OR TOWING JACK.

1. Position the jack under the jacking pad of the aircraft. For maximum maneuverability, verify all swivel caster locks are disengaged.
2. Raise the extension screw by turning counterclockwise until the ship adapter contacts the jacking pad or as far as the screw will travel (24 inches maximum). NOTE: Use the 3/4 inch spherical radius ship adapter when jacking B747 aircraft. Use the 1 1/4 inch spherical radius ship adapter when jacking B777 aircraft.
3. Verify the jack is leveled (shim footpads if necessary). The jack plunger should be plumb during lifting. On jacks equipped with adjustable swivel foot, check level using the bubble level mounted on the jack. Adjust the footpads to contact the ground and plumb the jack. The footpads are adjusted by standing on the footpad and adjusting the footpad locknut as required to extend the footpad. One end of the pump handle fits the footpad locknut for final adjusting. On jacks equipped with hydraulic casters, operate hydraulic caster hand pumps to extend casters to plumb the jack and then adjust the footpads to contact the ground.

CAUTION: OPEN HYDRAULIC CASTER RELEASE VALVES TO ENSURE THE WEIGHT IS TAKEN THROUGH THE FOOTPADS

CAUTION: ON JACKS 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 jacks equipped with air pump, connect air supply (90-110 psig) to the 1/2 NPT air inlet at the air valve (a minimum of 56 scfm is required). Air relief valve must be properly installed. Do not attempt to remove air relief valve.

CAUTION: LOCKNUT MUST BE INSTALLED AND OPERABLE ON JACK AT ALL TIMES. ALWAYS MAINTAIN LESS THAN 2 INCHES BETWEEN THE LOCKNUT AND THE TRIPOD HEAD IN ALL PHASES OF LOAD RAISING AND LOWERING.

5. To raise the load:
 - a. The jack is equipped with an adjustable hand pump. The hand pump handle length can be varied by inserting the quick release pin through the clamp and appropriate hole along the handle (see figure 4). A longer handle length provides greater pumping leverage for high pressure pump operation. A shorter handle will increase the plunger stroke and allow more oil pumped per stroke. This permits a more rapid raising of the jack plunger under a light or no load.
 - b. Close release valve located on the panel.
 - c. Operate the air valve or hand pump until the ship adapter contacts the jacking pad. Insure the ship adapter and the jacking pad are correctly mated (Use the 3/4 inch spherical radius ship adapter when jacking B747 aircraft. Use the 1 1/4 inch spherical radius ship adapter when jacking B777 aircraft). The load may now be raised by operating the air valve or hand pump.
 - d. Do not lift a load greater than the rated capacity of 60 tons.
 - e. Do not attempt to raise the plunger beyond the rated hydraulic lift (72 inches maximum).
 - f. Avoid lifting with excessive side load on the jack.
 - g. Spin the locknut down to the tripod head, as plunger is extending.
 - h. Keep the release valve closed at all times.
6. To lower the load:
 - a. Operate the air valve or hand pump to relieve pressure on the locknut.
 - b. Spin the locknut out of the way.
 - c. Slowly open the release valve located on the panel to lower the load. The speed of lowering is controlled by the amount the release valve is opened.
 - d. Close release valve after the plunger is fully retracted.
 - e. Lower the extension screw by turning clockwise.
 - f. Fully retract the adjustable footpads (if so equipped).
 - g. Fully extend hydraulic casters (if so equipped).
 - h. Cover the jack when not in use to prevent entrance of contaminants and water into the cylinder.

SERVICING:

Servicing the jack consists primarily of the following:

1. When in use, the jack and hydraulic caster (if so equipped) reservoirs should be kept at the proper level with hydraulic fluid MIL-H-5606 or approved equivalent. Always check fluid levels with jack and hydraulic caster plungers fully retracted.
2. When in use, the nitrogen precharge in the hydraulic caster shock absorbers (if so equipped) should be maintained at 275 psig (19.3 kg/sq cm).
3. Grease the swivel casters.
4. Lubricate hand pump pivot pins.
5. Fill pump lubricator with SAE #10 oil.
6. If the jack has been put into storage or has not been used, the plunger 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 (if so equipped) and a portion by the hand pump. Also, the hydraulic caster plungers must be fully extended and retracted by operating the hydraulic caster hand pumps and release valves.

DISASSEMBLY INSPECTION:

CAUTION: *THE JACK THERMAL RELIEF VALVE AND SYSTEM RELIEF VALVE, LOCATED IN THE JACK VALVE BLOCK ASSEMBLY, SHOULD NOT BE REMOVED UNLESS ABSOLUTELY NECESSARY. THE JACK THERMAL RELIEF VALVE IS SET TO BY-PASS HYDRAULIC FLUID BACK TO THE RESERVOIR AT 20-25% ABOVE THE RATED CAPACITY OF 60 TONS. THE JACK SYSTEM RELIEF VALVE IS SET TO BY-PASS HYDRAULIC FLUID BACK TO THE RESERVOIR AT 5-10% ABOVE THE RATED CAPACITY OF 60 TONS. IF ADJUSTMENT IS REQUIRED, SEE PROCEDURE UNDER TESTING (SEE SHEET 6).*

CAUTION: *THE HYDRAULIC CASTER RELIEF VALVES (IF SO EQUIPPED), LOCATED IN THE HYDRAULIC CASTER VALVE BLOCK ASSEMBLIES, SHOULD NOT BE REMOVED UNLESS ABSOLUTELY NECESSARY. THE HYDRAULIC CASTER RELIEF VALVES ARE SET TO BY-PASS HYDRAULIC FLUID BACK TO THE RESERVOIRS AT 900 ± 20 psig (63.3 ± 1.4 kg/sq cm) IF ADJUSTMENT IS REQUIRED, SEE PROCEDURE UNDER TESTING (SEE SHEET 6).*

When necessary to disassemble the jack and/or the hydraulic casters (if so equipped), open all release valves, drain all hydraulic fluid from reservoirs and carefully inspect the following:

1. Inspect interior walls of cylinders for smoothness and freedom from rust, nicks, scratches and excessive wear.
2. Check plungers, extension screw, cylinders, tripod head, etc., for corrosion, wear and condition of threads.
3. Verify that the extension screw has a positive stop to prevent it from being extended beyond its safe thread engagement.
4. Inspect packings, seals, gaskets and wipers in the cylinder assembly, hand pumps and hydraulic caster assemblies for cuts, scratches, deterioration and distortion.
5. Inspect upper and lower bearings for excessive scoring and/or wear.
6. Check oil screen located in the valve block for cleanliness.
7. Inspect valves and valve seats in the hand pump bodies and valve blocks for scratches, dents and proper seating of the balls.
8. Inspect all pivot pins for wear, cracks, pits or evidence of damage or pending damage.
9. Check tripod structure for damages.
10. Inspect all areas for excessive dirt, oil, dust and chips.

REPAIR AND REPLACEMENT:

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 (◆) and (⊕) in the parts breakdown. A repair parts kit (P/N 761PK) which contains all of the parts marked with (◆) and a hydraulic caster repair parts kit (P/N 8818PK) which contains all of the parts marked with (⊕) are available and recommended to keep on hand at your facility. Coat all O-rings and back-up rings with hydraulic fluid MIL-H-5606 prior to assembly. Clean all metal parts with clean solvent and dry with compressed air. Lubricate all threads. Use teflon tape carefully on all pipe threads. Remove excess tape because it can clog valves and passages. If ball valves, located in valve blocks, do not seat properly, they may need to be resealed by tapping the ball into the valve seat with a brass rod cupped at one end.

TESTING:

Place jack in a load indicating test fixture. Make sure the test adapter and jack ship adapter are the same size spherical radius. Operate jack hand pump to extend plunger against the test adapter. Make sure ship adapter and test adapter are correctly mated. Load test the jack at rated capacity of 60 tons. If the jack fails to operate properly, check for trouble as indicated in the Trouble Shooting Chart (see sheet 12). With the plunger 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 jack thermal relief valve, perform the following procedure:

1. Remove plug (figure 3, item 8) to expose thermal relief valve. Close release valve (figure 3, item 2).
2. Place jack in a load indicating test fixture. Make sure the test adapter and jack ship adapter are the same size spherical radius. Operate hand pump to extend plunger against the test adapter. Make sure ship adapter and test adapter are correctly mated.
3. While operating the hand pump, adjust set screw (figure 3, item 9) until the thermal relief valve by-passes hydraulic fluid back to the reservoir at 72.0 to 75.0 tons.
4. Replace plug (figure 3, item 8). Once more operate hand pump to verify correct setting.
5. Open release valve to relieve pressure.

If adjustment is required for the jack system relief valve, perform the following procedure:

1. Remove plug (figure 3, item 8) to expose system relief valve. Close release valve (figure 3, item 2).
2. Place jack in a load indicating test fixture. Make sure the test adapter and jack ship adapter are the same size spherical radius. Operate hand pump to extend plunger against the test adapter.
3. While operating the hand pump, adjust set screw (figure 3, item 9) until the system relief valve by-passes hydraulic fluid back to the reservoir at 63.0 to 66.0 tons.
4. Replace plug (figure 3, item 8). Once more operate hand pump to verify correct setting.
5. Open release valve to relieve pressure.

If adjustment is required for the hydraulic caster relief valves (if so equipped), perform the following procedure:

1. Remove plug (figure 10, item 12) to expose relief valve. Close release valve (figure 10, item 6).
2. Remove plug (figure 10, item 33) and install a 0-1000 psig test gauge.
3. Operate the hydraulic caster hand pump (figure 10, item 17) to fully extend caster. Continue to operate hand pump until the relief valve by-passes hydraulic fluid back to the reservoir at 900 ± 20 psig (63.3 ± 1.4 kg/sq cm).
4. Replace plug (figure 10, item 12). Once more operate hand pump to verify correct setting.
5. Open release valve to relieve pressure, remove test gauge and replace plug (figure 10, item 33).
6. Repeat for other hydraulic casters.

SPECIAL TOOLS:

The following special tools are necessary to disassemble/reassemble the cylinder assembly, the hydraulic casters (if so equipped) and the shock absorber assembly (if so equipped). These tools may be purchased upon request:

<i>Part No.</i>	<i>Description</i>	<i>Qty</i>
76389	Spanner wrench, retaining nut-----	1
490-028	Spanner wrench, hydraulic caster cap-----	1
76105	Lifting tool, extension screw-----	1
76384	Lifting tool, plunger-----	1
76104	Lifting tool, tripod head-----	1
76106	Lifting tool, cylinder-----	1
872845	Accumulator test gauge assembly, 0-300 psig-----	1

RECOMMENDED SPARE PARTS:

The following spare parts are recommended and available upon request.

<u>Part No.</u>	<u>Description</u>	<u>Qty</u>
<u>Standard Spare Parts</u>		
761PK	Repair parts kit-----	1
56010-1	Valve block assembly-----	1
79366	Release valve knob-----	1
79365	Release valve stem-----	1
65228	Release valve lockscrew-----	1
55155	Safety pop-off valve assembly-----	2
79571-1	Hand pump assembly-----	1
55762-7	Pump handle-----	1
76347	Reservoir gasket-----	1
79562	Filler cap with dipstick-----	1
424-005	Drain cock valve-----	1
55991-12	Placard, tonnage, 60 ton-----	1
79596	Placard, instruction-----	1
55998	Sticker, Malabar-----	2
55994	Sticker, fluid-----	1
75940	Sticker, towing-----	1
79536A	Spring loaded swivel caster with swivel lock-----	3
76307	Lower bearing-----	1
76314	Upper bearing-----	1
76318	Ship adapter, 3/4 spherical radius-----	1
76180	Ship adapter, 1 1/4 spherical radius-----	1
79595	Rain hat-----	1
<u>Air Pump Kit Spare Parts</u>		
441-005	Air pump-----	1
441-032	Seal kit, air pump-----	1
421-004	Air valve-----	1
425-001	Air relief valve-----	1
471-001	Lubricator-----	1
499-002	Muffler-----	1
481-002	Oil screen-----	1
<u>Load Gauge Kit Spare Parts</u>		
76351	Load gauge-----	1
424-001	Shutoff valve-----	1
<u>Adjustable Foot Kit Spare Parts</u>		
75941	Sticker, footpad-----	3
79225	Level assembly-----	1
<u>Hydraulic Caster Kit Spare Parts</u>		
8818PK	Hydraulic caster repair parts kit-----	3
881802-1	Swivel caster-----	1
881802-2	Swivel caster with swivel lock-----	2
483-006	Breather-----	3
79366	Release valve Knob-----	3
79365	Release valve stem-----	3
65228	Release valve lockscrew-----	3
881816	Safety pop-off valve assembly-----	3
<u>Shock Absorber Kit Spare Parts</u>		
490-029	Shock Absorber-----	3
MS28778-6	O-ring-----	6

Ladder Assembly Kit Spare Part

76378 Safety chain assembly----- 1

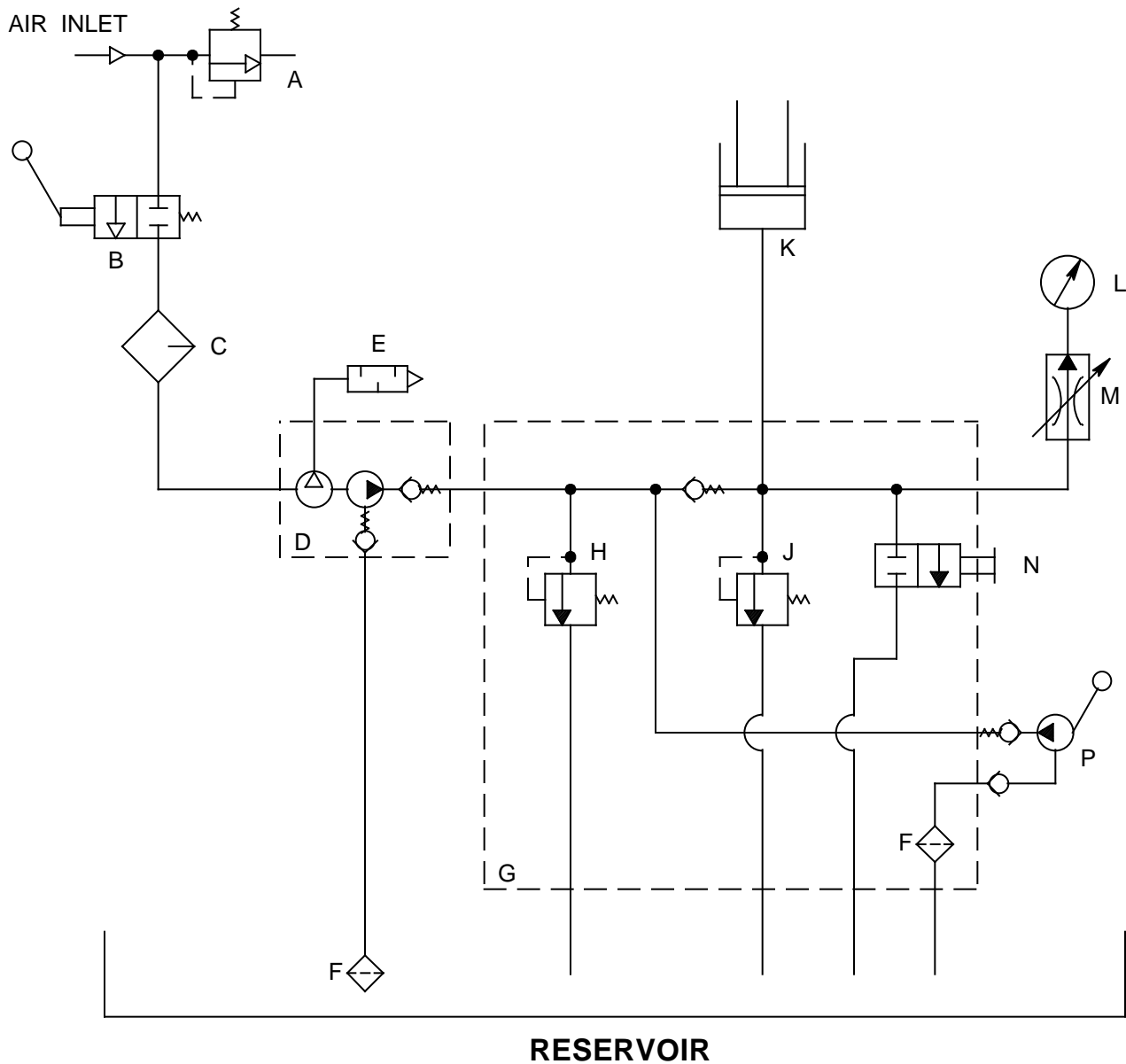
Remote Control Kit Spare Parts

421-004 Air valve ----- 1

85416 Release valve----- 1

76158 Placard, caution ----- 2

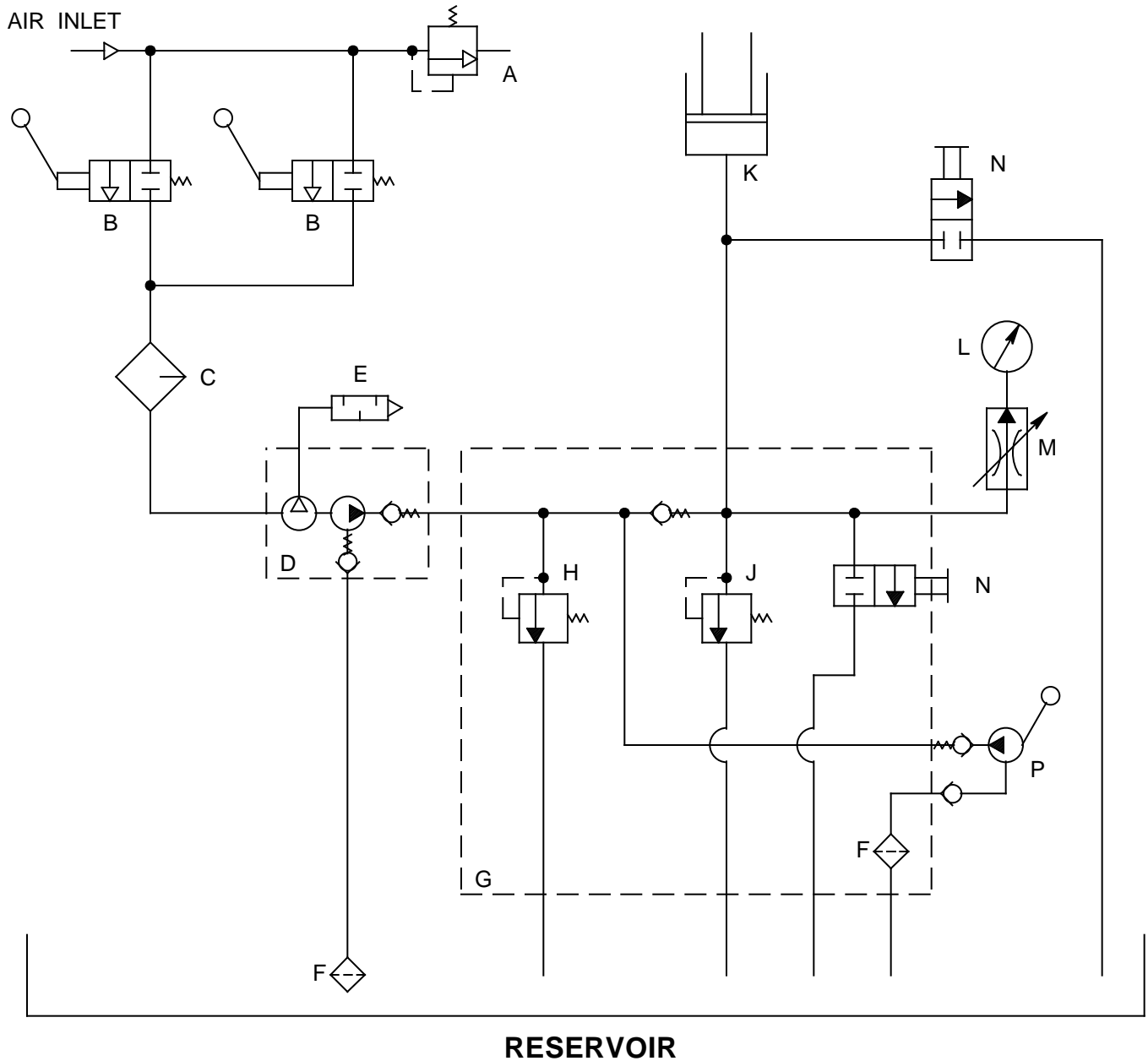
PNEUMATIC / HYDRAULIC DIAGRAM



A - AIR RELIEF VALVE
 B - AIR VALVE
 C - LUBRICATOR
 D - AIR PUMP
 E - MUFFLER
 F - OIL SCREEN
 G - VALVE BLOCK

H - SYSTEM RELIEF VALVE
 J - THERMAL RELIEF VALVE
 K - CYLINDER ASSEMBLY
 L - LOAD GAUGE
 M - SHUTOFF VALVE
 N - RELEASE VALVE
 P - HAND PUMP

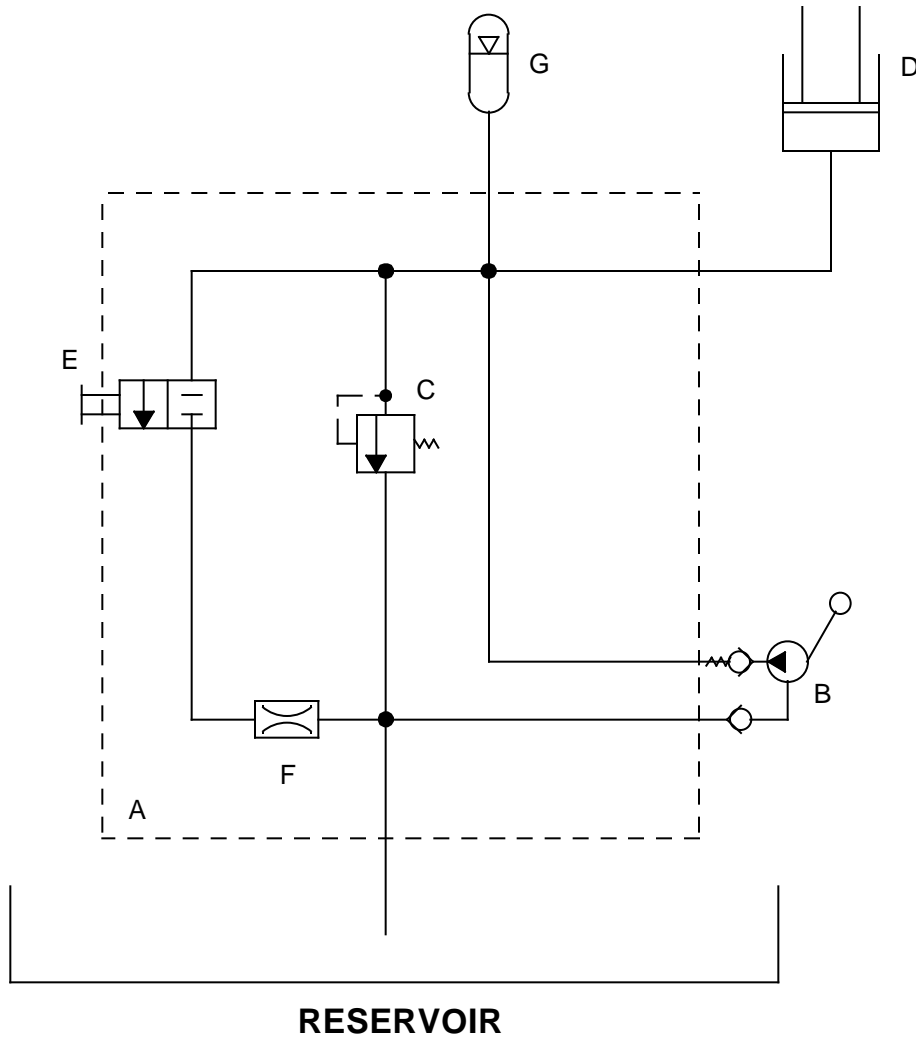
PNEUMATIC / HYDRAULIC DIAGRAM WITH REMOTE CONTROL



- A - AIR RELIEF VALVE
- B - AIR VALVE
- C - LUBRICATOR
- D - AIR PUMP
- E - MUFFLER
- F - OIL SCREEN
- G - VALVE BLOCK

- H - SYSTEM RELIEF VALVE
- J - THERMAL RELIEF VALVE
- K - CYLINDER ASSEMBLY
- L - LOAD GAUGE
- M - SHUTOFF VALVE
- N - RELEASE VALVE
- P - HAND PUMP

HYDRAULIC CASTER HYDRAULIC DIAGRAM



A - VALVE BLOCK
B - HAND PUMP
C - RELIEF VALVE

D - CYLINDER ASSEMBLY
E - RELEASE VALVE
F - METERING ORIFICE

G - SHOCK ABSORBER

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

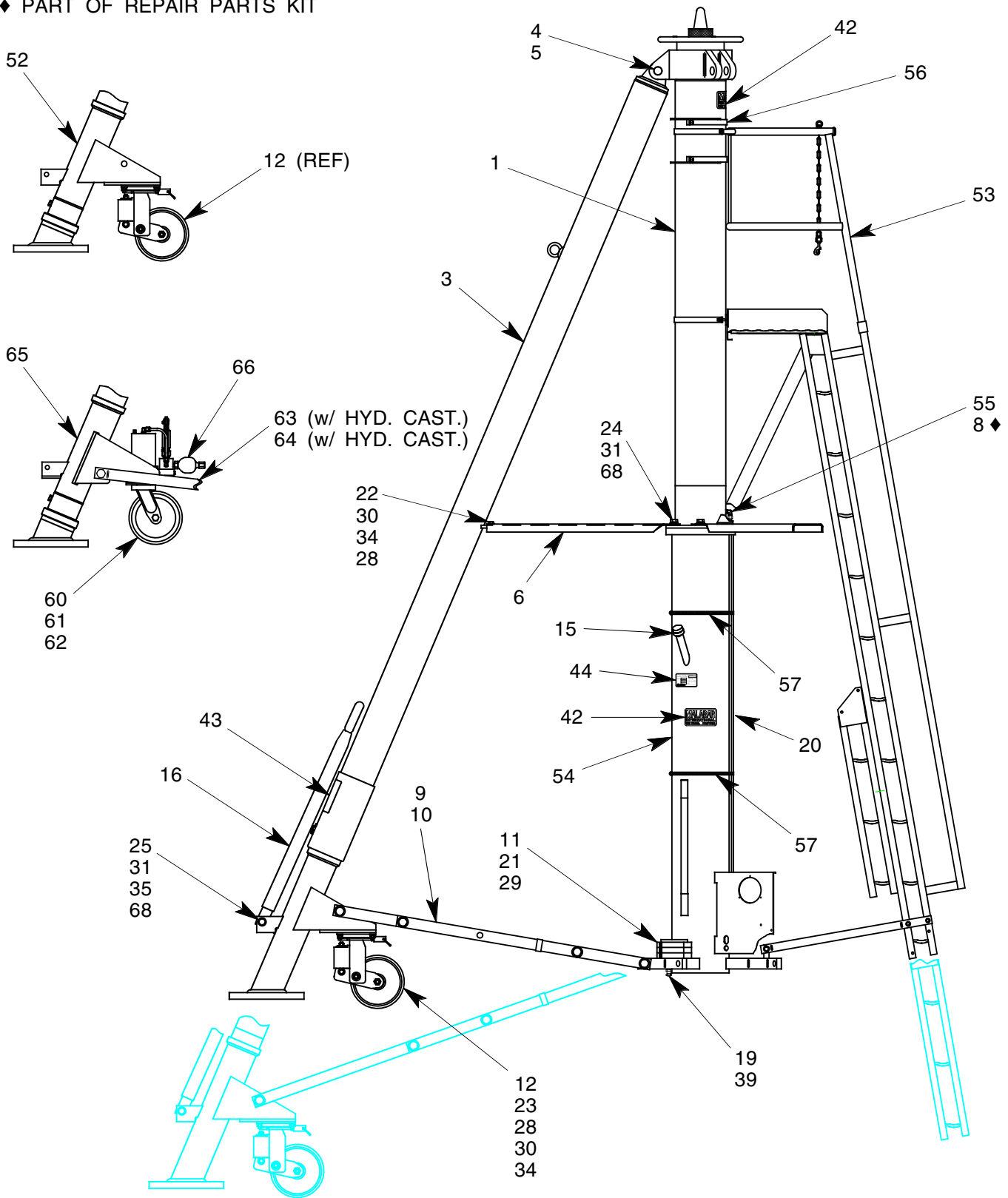


FIGURE 1A

MODEL 761 JACK ASSEMBLY

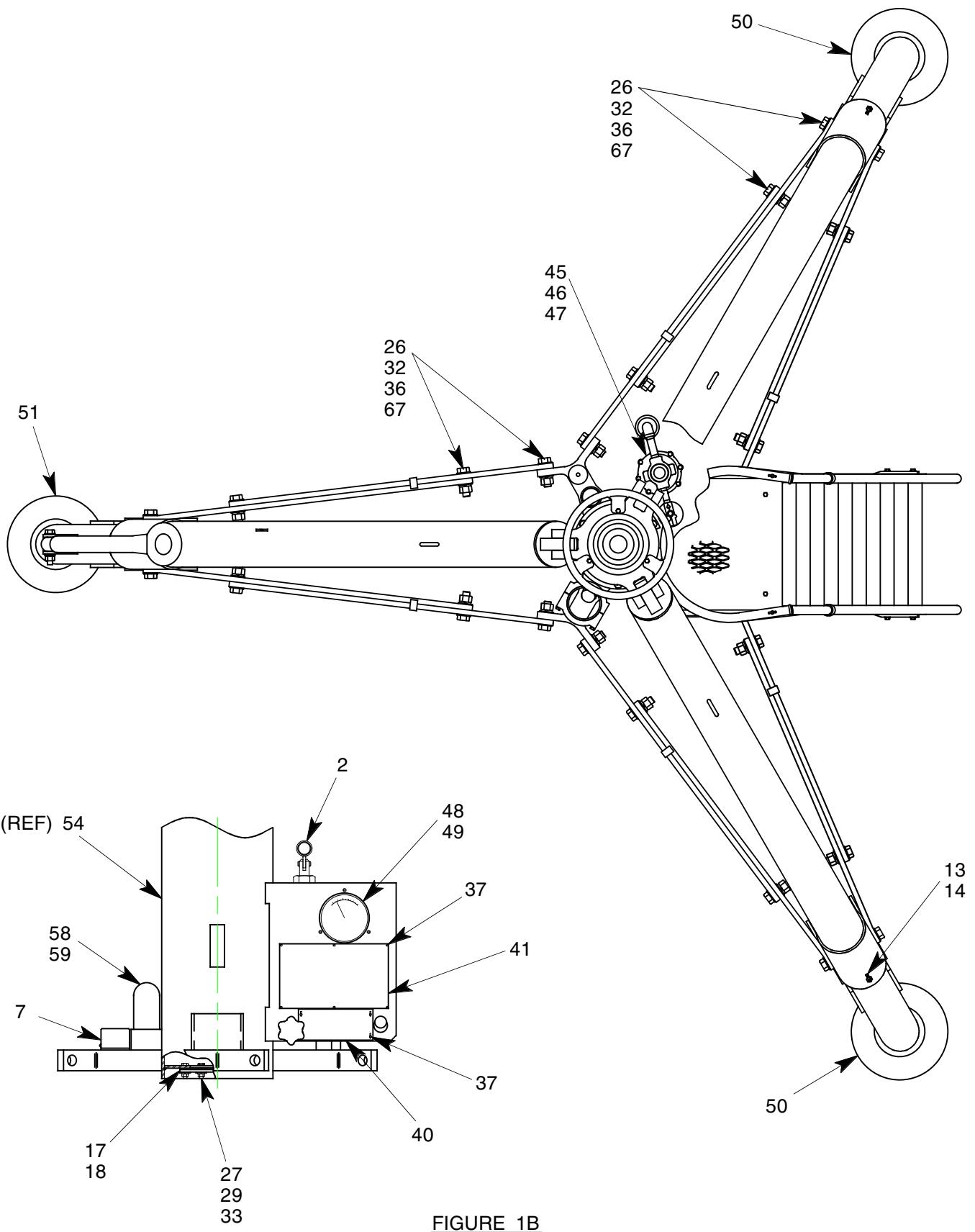


FIGURE 1B

MODEL 761 JACK ASSEMBLY

MODEL 761 JACK ASSEMBLY PARTS LIST

NO.	QTY	PART NO.	DESCRIPTION	NO.	QTY	PART NO.	DESCRIPTION
1	1	76399	CYLINDER ASSEMBLY	60	12	325-001	FSHCS, 1/2-13 x 1 3/4 LG
2	1	56010-1	VALVE BLOCK & HAND PUMP	61	1	881802-1	SWIVEL CASTER
3	3	76109	UPPER LEG	62	2	881802-2	SWIVEL CASTER W/ LOCK
4	3	76319	TRIPOD HEAD PIN	63	6	76193	LOWER BRACE
5	6	55923-150	RETAINING RING	64	6	76194	LOWER BRACE W/ GUIDE
6	3	76336	UPPER BRACE	65	1	76187	ADJ. FOOT KIT W/ HYD. CAST.
7	1	79225	LEVEL ASSEMBLY	66	1	881818	SHOCK ABSORBER KIT
8	1	MS28778-6	O-RING (PART OF ITEM 55)	67	48	361-013	FLAT WASHER, 1" SAE
9	6	76113	LOWER BRACE	68	8	361-007	FLAT WASHER, 3/4 SAE
10	6	76114	LOWER BRACE W/ GUIDE				
11	3	79338	LEG STOP RING				
12	3	79536A	SWIVEL CASTER				
13	3	78980-1	BOLT / CHAIN ASSEMBLY				
14	3	393-001	DRIVE SCREW				
15	1	79562	BREATHER CAP W/ DIPSTICK				
16	1	79535	TOW HANDLE				
17	1	76346	RESERVOIR COVER				
18	1	76347	RESERVOIR GASKET				
19	1	424-005	DRAIN COCK VALVE				
20	A/R	732-010	TUBE, 3/8 OD x .065 WALL				
21	6	321-007	HHCS, 3/8-16 x 3 1/4 LG				
22	6	321-006	HHCS, 1/2-13 x 1 3/4 LG				
23	12	321-005	HHCS, 1/2-13 x 1 2" LG				
24	6	321-070	HHCS, GR 5, 3/4-10 x 2" LG				
25	1	321-306	HHCS, 3/4-10 x 4 1/2 LG				
26	24	321-075	HHCS, GR 5, 1"-8 x 3 1/2 LG				
27	12	362-003	FLAT WASHER, 3/8 SAE				
28	36	362-005	FLAT WASHER, 1/2 SAE				
29	9	363-003	SPLIT LOCKWASHER, 3/8				
30	18	363-004	SPLIT LOCKWASHER, 1/2				
31	7	363-006	SPLIT LOCKWASHER, 3/4				
32	24	363-008	SPLIT LOCKWASHER, 1"				
33	6	351-002	HEX NUT, 3/8-16				
34	18	351-003	HEX NUT, 1/2-13				
35	1	351-004	HEX NUT, 3/4-10				
36	24	351-005	HEX NUT, 1"-8				
37	10	397-005	SELF TAPPING SCREW, #4				
38	1	79595	RAIN HAT (NOT SHOWN)				
39	1	712-011	ELBOW, STREET, 1/2 NPT				
40	1	55991-12	PLACARD, TONNAGE, 60 TON				
41	1	79596	PLACARD, INSTRUCTION				
42	2	55998	STICKER, MALABAR				
43	1	75940	STICKER, TOWING				
44	1	55994	STICKER, FLUID				
45	1	717-003	PLUG (NO AIR PUMP KIT)				
46	1	717-008	PLUG (NO AIR PUMP KIT)				
47	1	76139	AIR PUMP KIT				
48	1	717-001	PLUG (NO GAUGE KIT)				
49	1	76138	LOAD GAUGE KIT				
50	2	76110	LEG (NO ADJ. FOOT KIT)				
51	1	76111	LEG W/ BRACKET (NO AFK)				
52	1	76137	ADJUSTABLE FOOT KIT				
53	1	76147	LADDER				
54	1	76123	RESERVOIR (NO R/C KIT)				
55	1	722-018	ELBOW (NO R/C KIT)				
56	1	76162	REMOTE CONTROL KIT				
57	2	394-040	HOSE CLAMP				
58	1	76180	SHIP ADAP., 1 1/4 SPHER. R				
59	1	311-001	SQUARE HD SET SCR, 3/8-16				

♦ PART OF REPAIR PARTS KIT

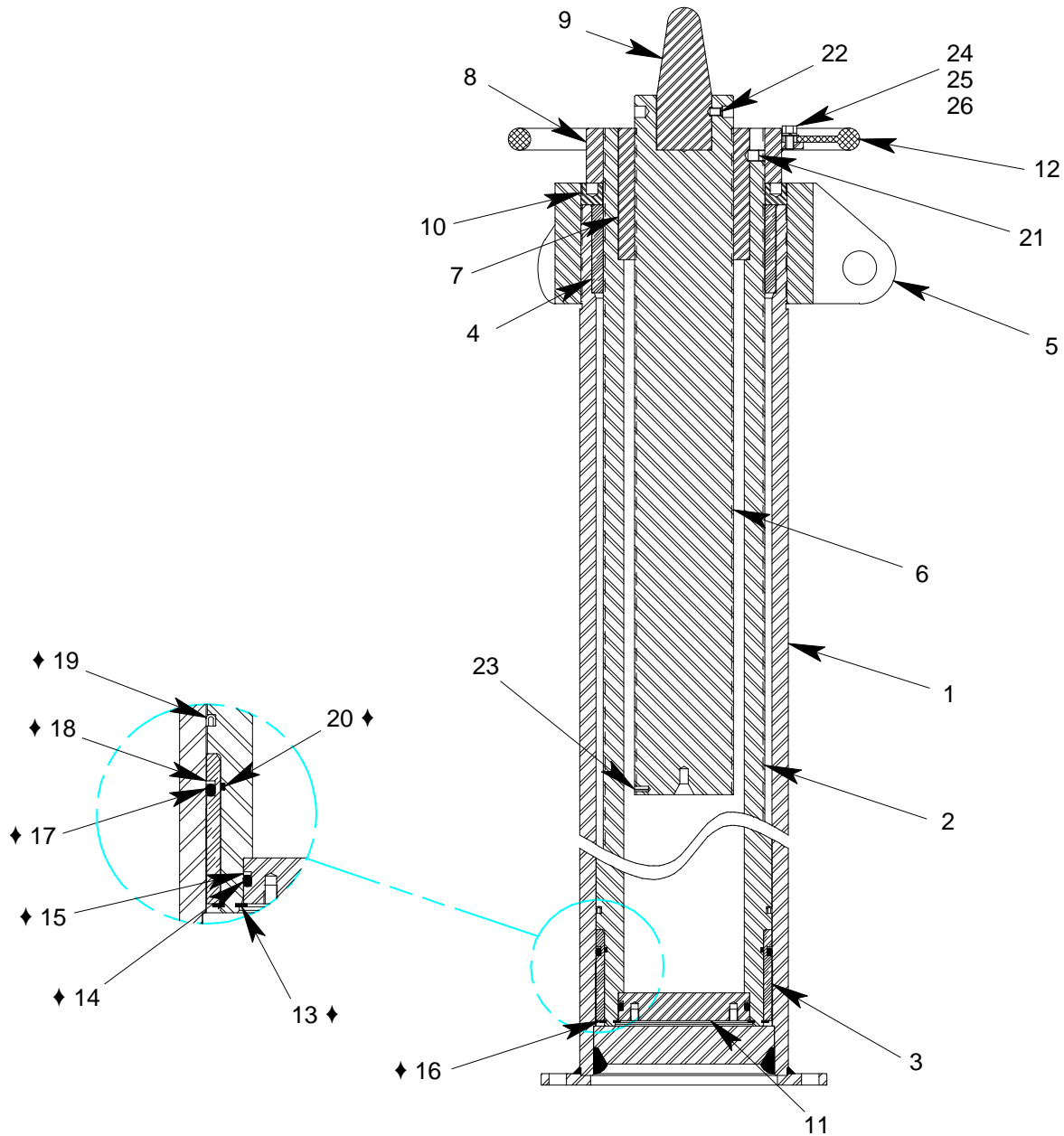


FIGURE 2

76399 CYLINDER ASSEMBLY

NO.	QTY	PART NO.	DESCRIPTION	NO.	QTY	PART NO.	DESCRIPTION
1	1	76301	CYLINDER	14	1	55925-433	O-RING
2	1	76309	PLUNGER	15	1	55929-433	BACK-UP RING
3	1	76307	LOWER BEARING	16	1	55924-725	RETAINING RING
4	1	76314	UPPER BEARING	17	1	55925-443	O-RING
5	1	76313	TRIPOD HEAD	18	1	55929-443	BACK-UP RING
6	1	76315	EXTENSION SCREW	19	1	55931-443	O-RING WITH GROOVE
7	1	76316	EXTENSION SCREW NUT	20	1	55932-262	O-RING
8	1	76322	LOCKNUT	21	1	331-001	SHSS, 1/2-20 x 1/2 LG
9	1	76318	SHIP ADAPTER	22	1	331-002	SHSS, 3/8-16 x 1/2 LG
10	1	76320	RETAINING NUT	23	1	371-014	ROLL PIN, 1/4 x 5/8 LG
11	1	76311	PLUNGER DIAPHRAGM	24	3	321-026	HHCS, 3/8-16 x 3/4 LG
12	1	79315	HANDWHEEL	25	3	363-003	SPLIT LOCKWASHER, 3/8
13	1	55928-625	RETAINING RING	26	3	362-003	FLAT WASHER, 3/8 SAE

◆ PART OF REPAIR PARTS KIT

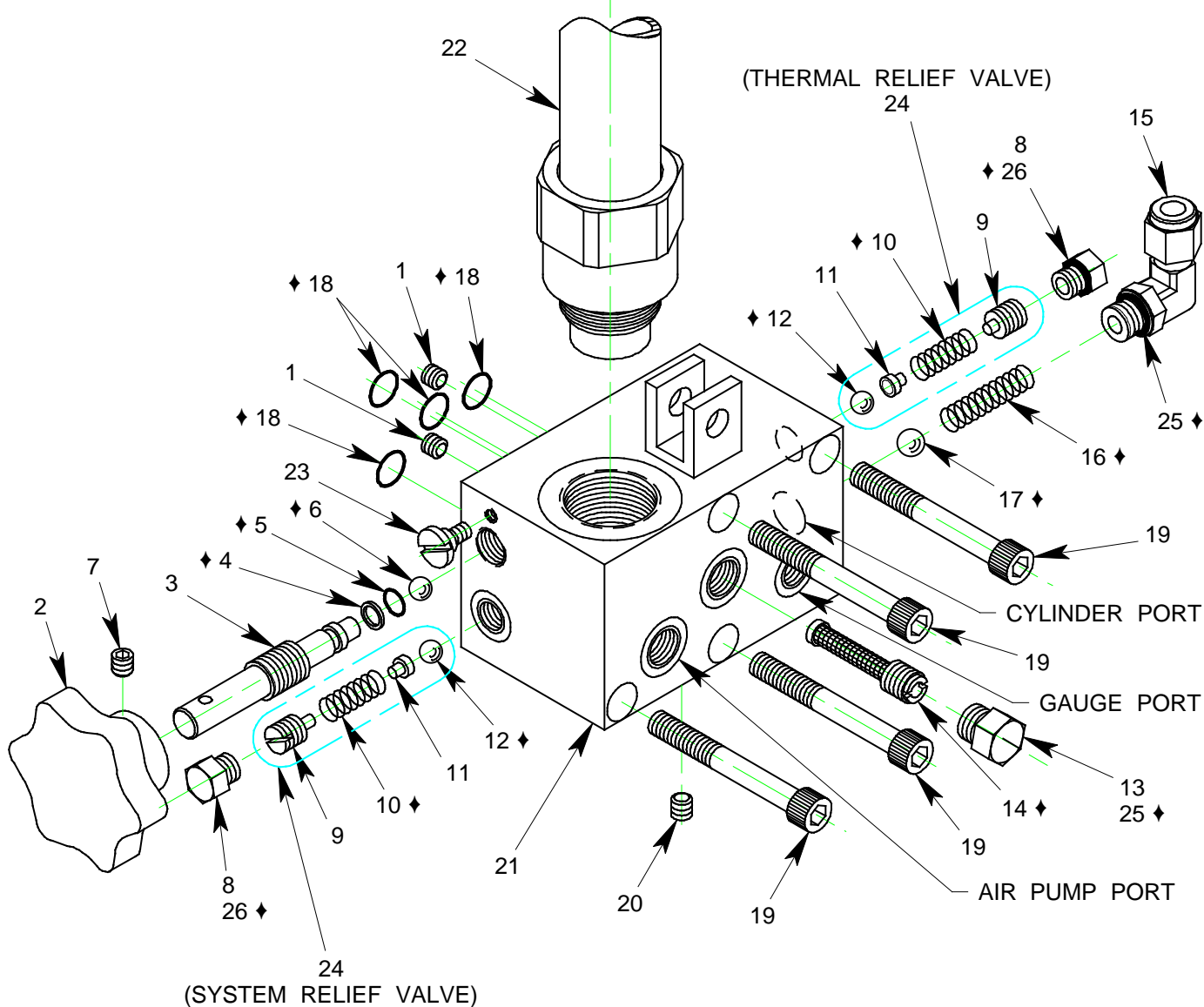


FIGURE 3

56010-1 VALVE BLOCK ASSEMBLY

NO.	QTY	PART NO.	DESCRIPTION	NO.	QTY	PART NO.	DESCRIPTION
1	2	717-048	PLUG, FLUSH, 1/16 NPT	14	1	55568	OIL SCREEN
2	1	79366	RELEASE VALVE KNOB	15	1	722-018	ELBOW, 3/8 T x 3/8 SAE
3	1	79365	RELEASE VALVE STEM	16	1	79367	SPRING
4	1	55929-011	BACK-UP RING	17	1	412-001	STEEL BALL, 3/8 DIA
5	1	55925-011	O-RING	18	4	55925-014	O-RING
6	1	412-002	STEEL BALL, 5/16 DIA	19	4	323-009	SHCS, 3/8-24 x 3" LG
7	1	331-004	SETSCREW, 5/16-24 x 5/16 LG	20	1	717-010	PLUG, SOC HD, 1/16 NPT
8	2	717-001	PLUG, 1/4 SAE	21	1	76345	VALVE BLOCK
9	2	55148	SAFETY BYPASS SCREW	22	1	79571-1	HAND PUMP ASSY
10	2	55154H	SPRING	23	1	65228	RELEASE VALVE LOCKSCREW
11	2	55153	SPRING GUIDE	24	2	55155	SAFETY POP-OFF VALVE ASSY
12	2	412-004	STEEL BALL, 1/4 DIA	25	2	MS28778-6	O-RING (PART OF ITEM 13 & 15)
13	1	717-003	PLUG, 3/8 SAE	26	2	MS28778-4	O-RING (PART OF ITEM 8)

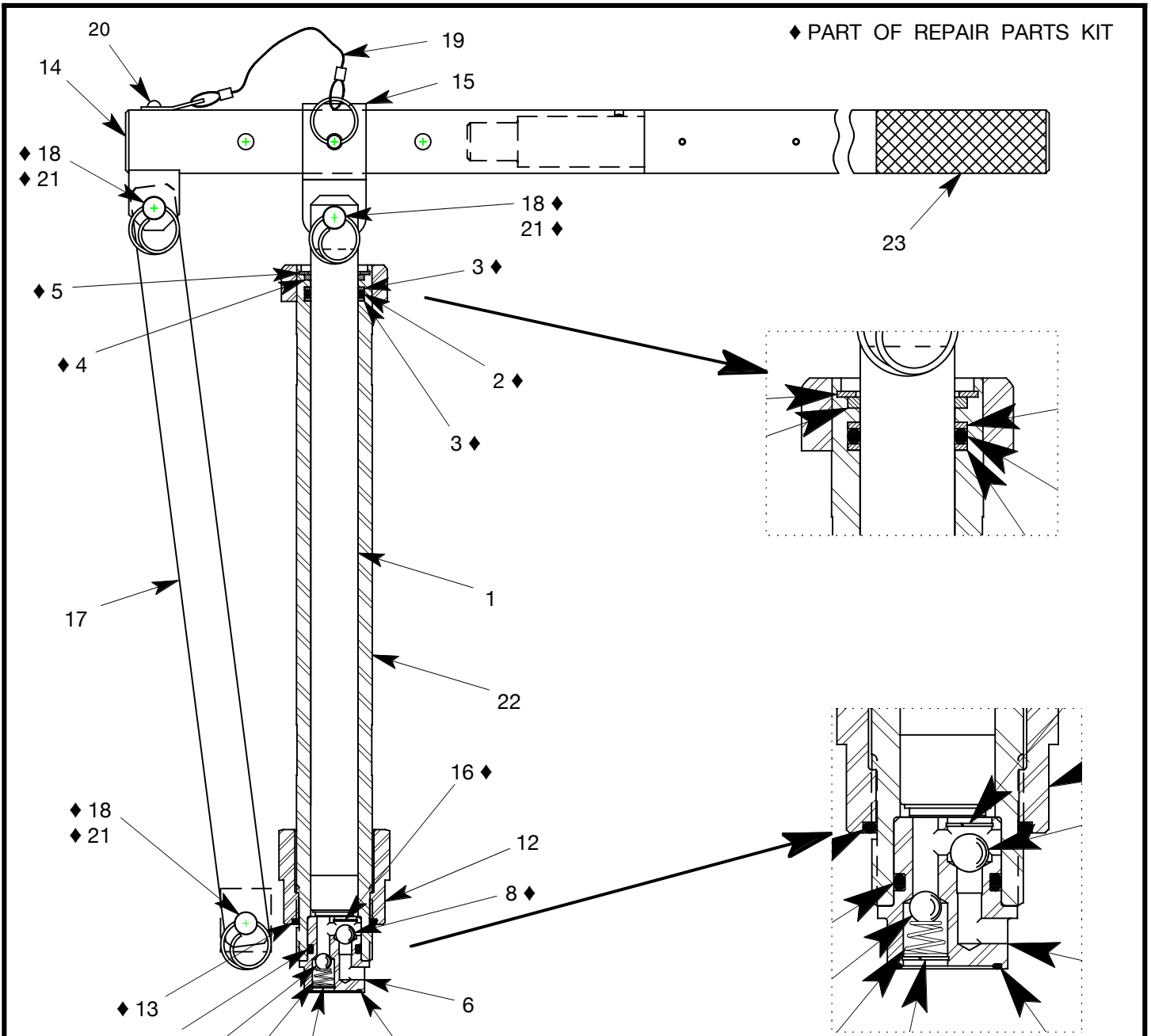


FIGURE 4

79571-1 HAND PUMP ASSEMBLY

NO.	QTY	PART NO.	DESCRIPTION	NO.	QTY	PART NO.	DESCRIPTION
1	1	55738	PISTON	13	1	55925-220	O-RING
2	1	55925-213	O-RING	14	1	55761	FULCRUM
3	2	55922-18	BACK-UP RING	15	1	55745	PUMP HANDLE CLAMP
4	1	55728	SCRAPER RING	16	2	55927-43	RETAINING RING
5	1	55729	RETAINING RING	17	1	55739	LINK
6	1	55753	PUMP BODY	18	3	372-031	COTTER RING, 7/16 PIN DIA
7	1	55925-211	O-RING	19	1	370-001	QUICK RELEASE PIN, 1/4 DIA
8	1	412-001	STEEL BALL, 3/8 DIA	20	1	MS51861-44C	SELF TAPPING SCREW, #10
9	1	412-002	STEEL BALL, 5/16 DIA	21	3	373-001	CLEVIS PIN, 7/16 DIA
10	1	55754	SPRING	22	1	79563	CYLINDER
11	1	55925-021	O-RING	23	1	55762-7	PUMP HANDLE
12	1	79564	PUMP CYLINDER NUT				

◆ PART OF REPAIR PARTS KIT

* PART IS LOCATED INSIDE RESERVOIR TANK

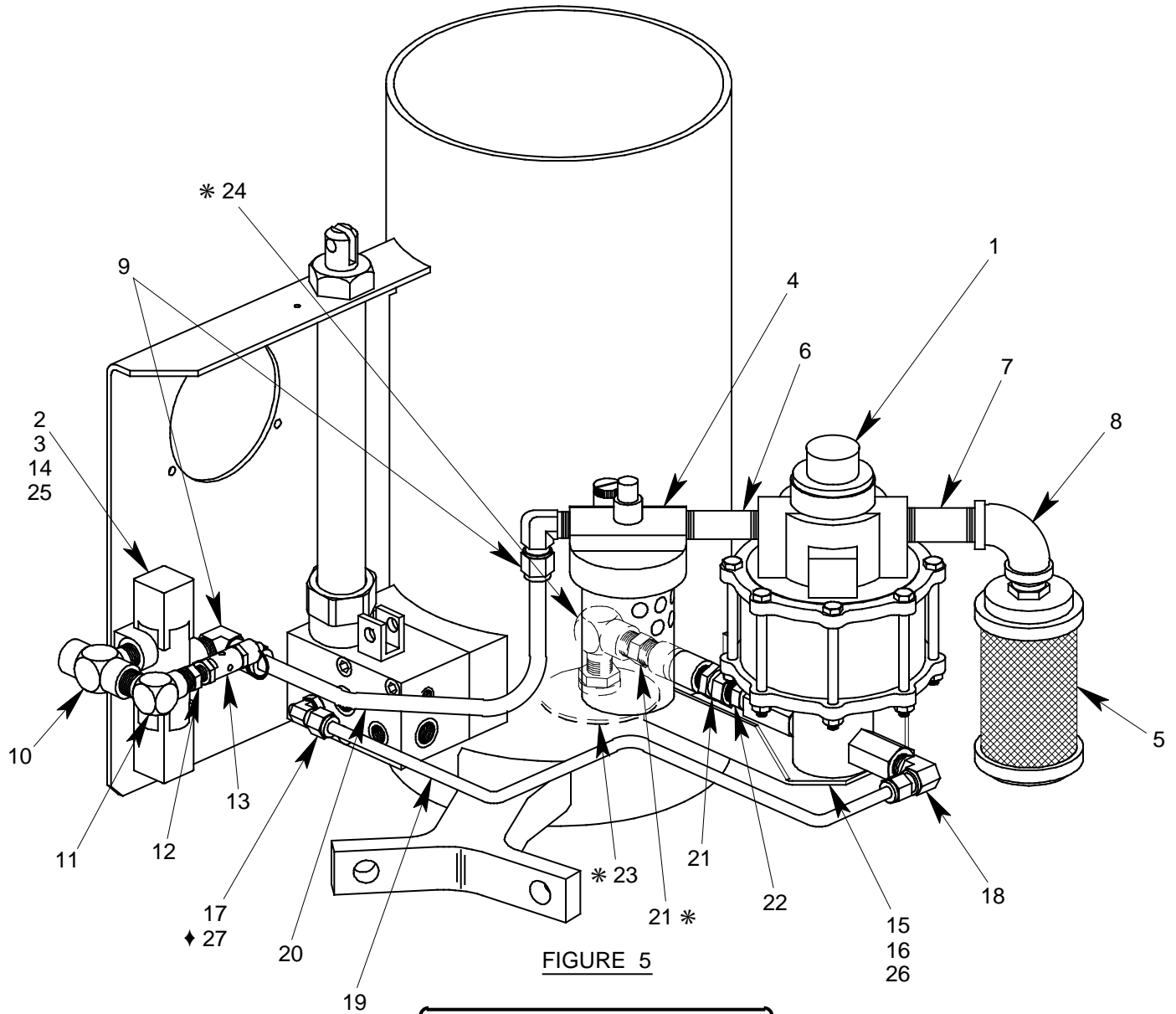


FIGURE 5

76139 AIR PUMP KIT

NO.	QTY	PART NO.	DESCRIPTION	NO.	QTY	PART NO.	DESCRIPTION
1	1	441-005	AIR PUMP	15	2	321-013	HHCS, 3/8-24 x 1" LG
2	2	392-001	STUD	16	2	363-003	SPLIT LOCKWASHER, 3/8
3	1	421-004	AIR VALVE	17	1	722-018	ELBOW, 3/8 T x 3/8 SAE
4	1	471-001	LUBRICATOR	18	1	722-015	ELBOW, 3/8 T x 1/2 MPT
5	1	499-002	MUFFLER	19	A/R	732-010	TUBE, 3/8 O.D. x .065 WALL
6	1	711-006	NIPPLE, BRASS, 1/2 x 3" LG	20	A/R	732-001	TUBE, 1/2 O.D. x .049 WALL
7	1	711-010	NIPPLE, BRASS, 3/4 x 3" LG	21	2	711-004	NIPPLE, 1/2 MPT
8	1	712-063	ELBOW, BRASS, 3/4 FPT	22	1	719-001	SWIVEL ADAPTER
9	2	722-013	ELBOW, 1/2 T x 1/2 MPT	23	1	481-002	OIL SCREEN
10	1	713-021	TEE, BRANCH, 1/2 NPT	24	1	712-011	ELBOW, STREET, 1/2 NPT
11	1	712-032	ELBOW, 1/2 MPT x 3/8 FPT	25	2	363-002	SPLIT LOCKWASHER, 5/16
12	1	714-009	REDUCER, 3/8 MPT x 1/4 FPT	26	2	361-001	FLAT WASHER, 3/8
13	1	425-001	AIR RELIEF VALVE	27	1	MS28778-6	O-RING (PART OF ITEM 17)
14	2	359-001	ALLEN NUT, 5/16-18				

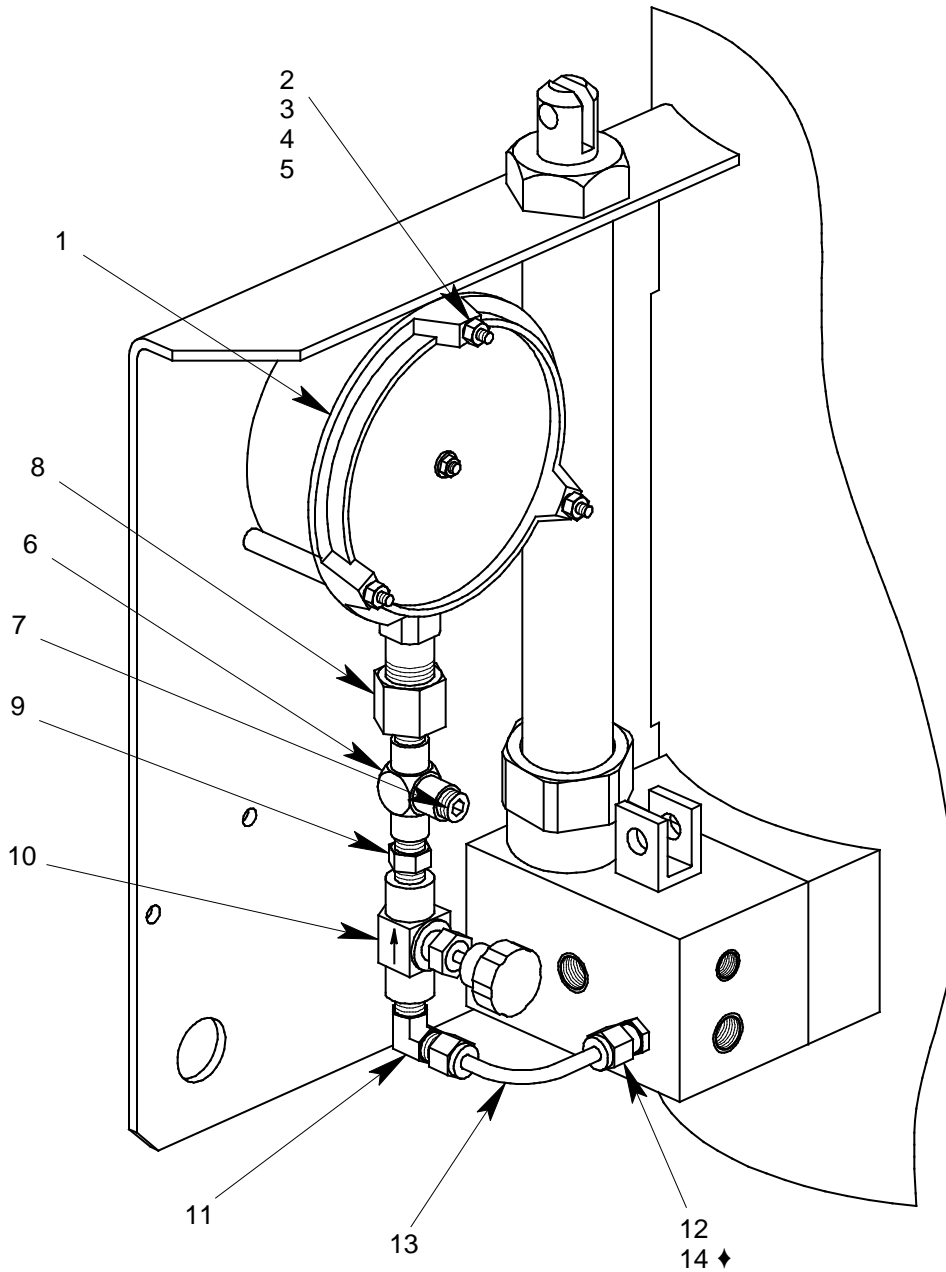


FIGURE 6

76138 LOAD GAUGE KIT

NO.	QTY	PART NO.	DESCRIPTION	NO.	QTY	PART NO.	DESCRIPTION
1	1	76351	LOAD GAUGE	8	1	714-001	REDUCER, 1/2 FPT x 1/4 MPT
2	3	323-072	SHCS, 10-32 x 3 1/2 LG	9	1	711-003	NIPPLE, 1/4 MPT
3	3	363-009	SPLIT LOCKWASHER, # 10	10	1	424-001	SHUTOFF VALVE
4	3	351-008	HEX NUT, 10-32	11	1	722-021	ELBOW, 1/4 T x 1/4 MPT
5	3	876025	SPACER	12	1	721-011	CONNECTOR, 1/4 T x 1/4 SAE
6	1	713-002	TEE, 1/4 FPT	13	A/R	732-003	TUBE, 1/4 O.D. x .035 WALL
7	1	717-006	PLUG, 1/4 MPT	14	1	MS28778-4	O-RING (PART OF ITEM 12)

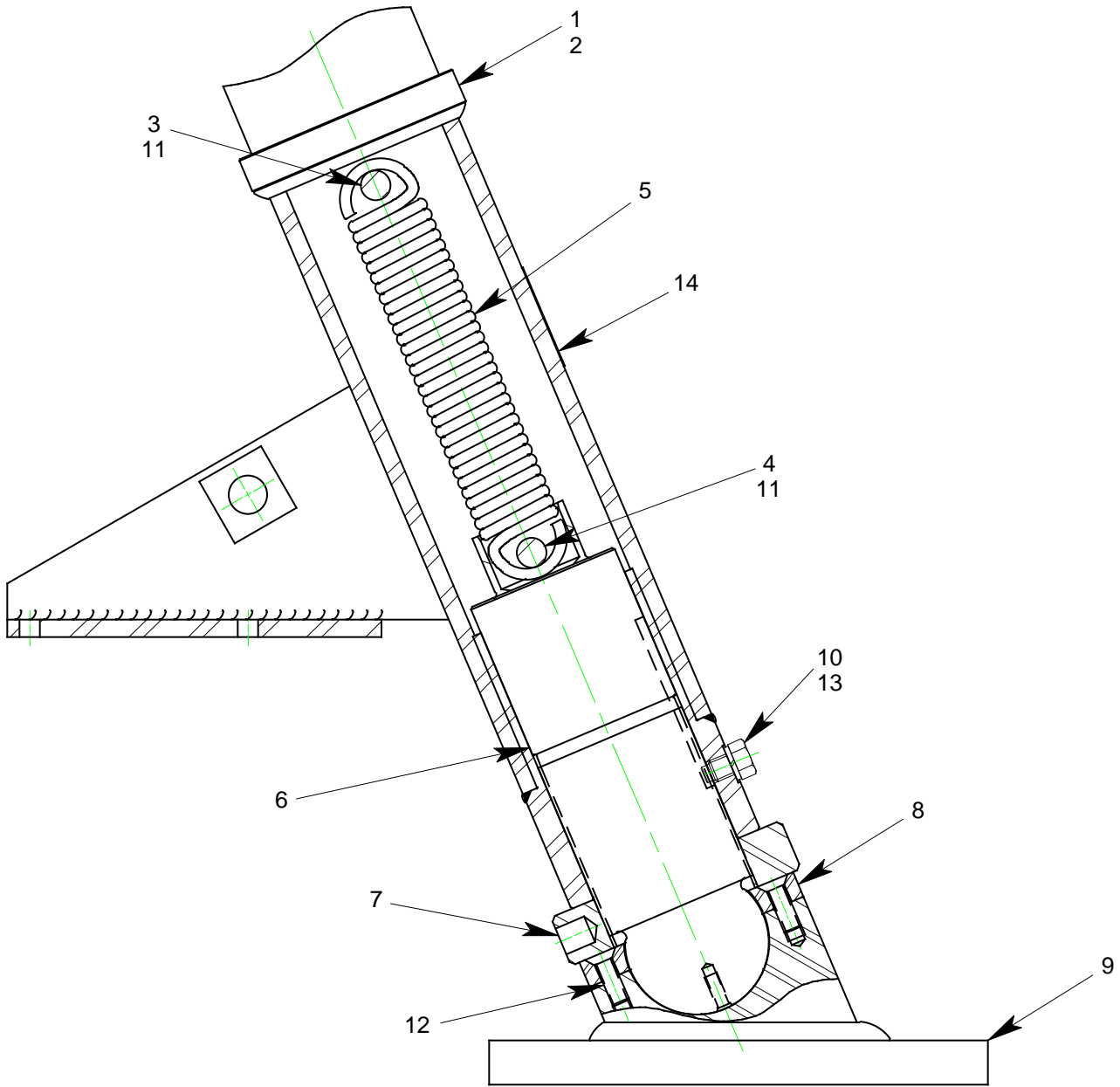


FIGURE 7

76137 ADJUSTABLE FOOT KIT

NO.	QTY	PART NO.	DESCRIPTION	NO.	QTY	PART NO.	DESCRIPTION
1	2	76126	TRIPOD LEG	8	3	79346	RETAINING RING
2	1	76125	TRIPOD LEG w/ TOW BRKT	9	3	76374	FOOT PAD
3	3	79345	LONG PIN	10	3	79347	GUIDE SCREW
4	3	79348	SHORT PIN	11	12	55923-75	RETAINING RING
5	3	79344	SPRING	12	18	325-001	FHCS, 1/2-13 x 1 1/2 LG
6	3	79339	FOOT SCREW	13	3	363-005	SPLIT LOCKWASHER, 5/8
7	3	79343	LOCKNUT	14	3	75941	STICKER, FOOTPADS

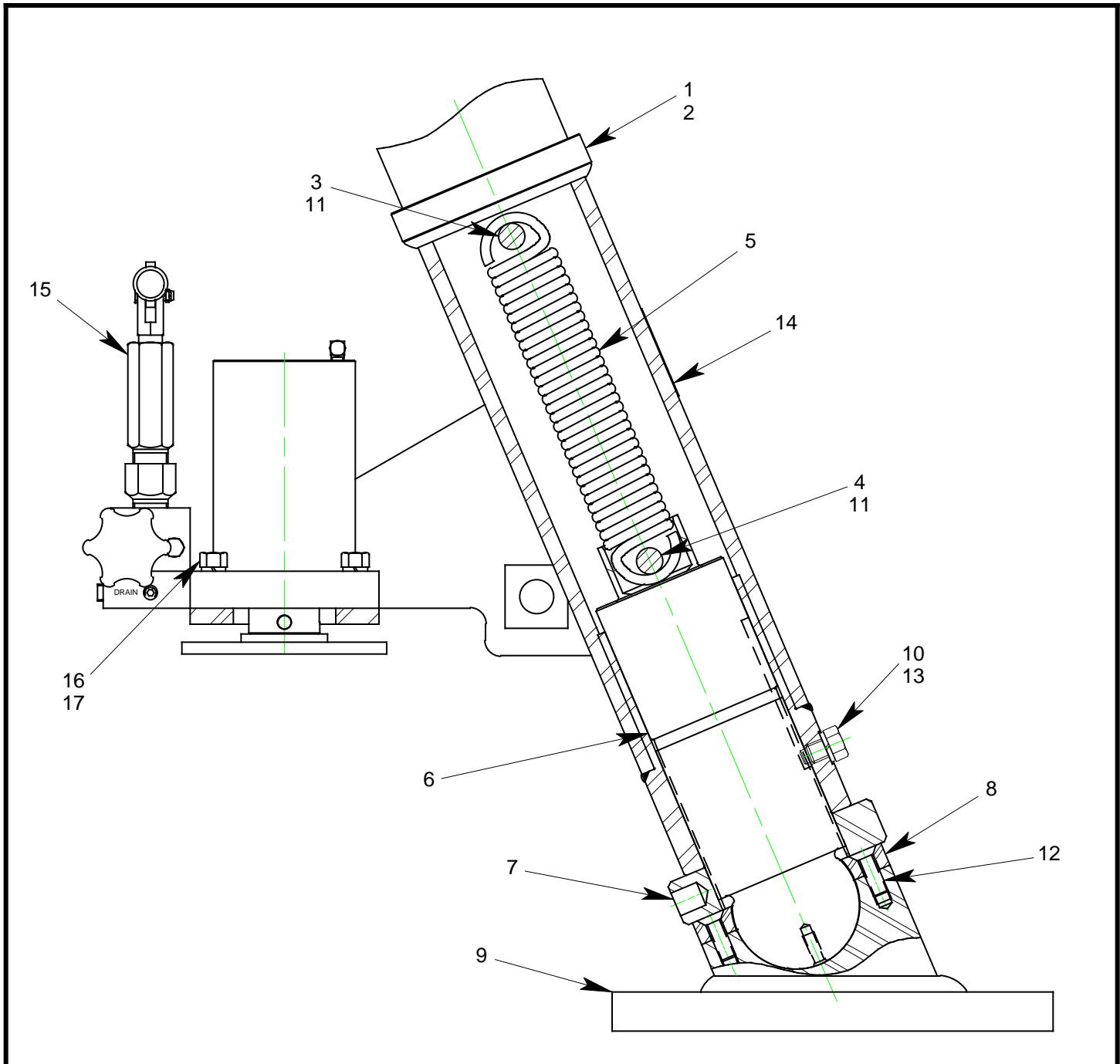
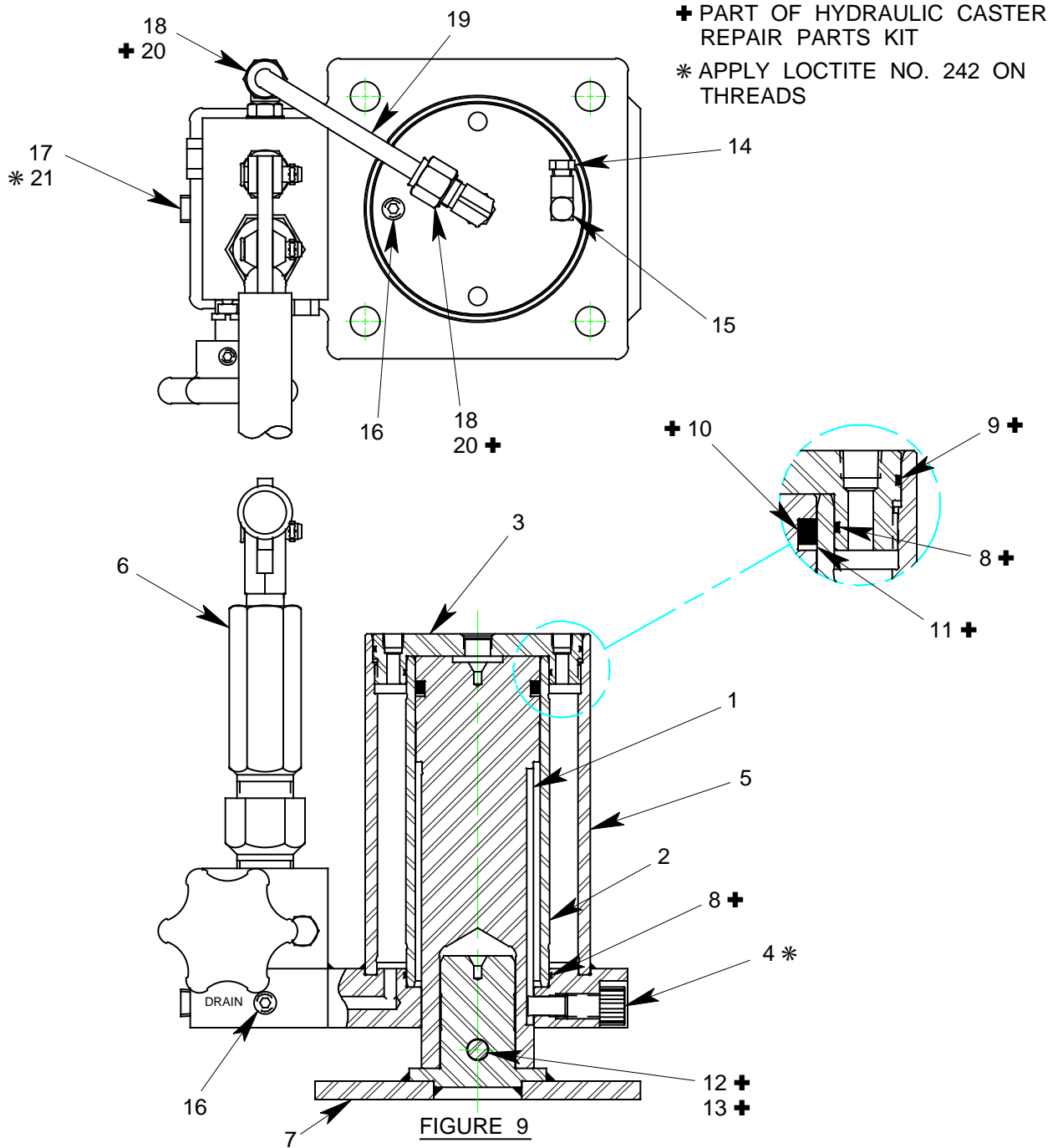


FIGURE 8

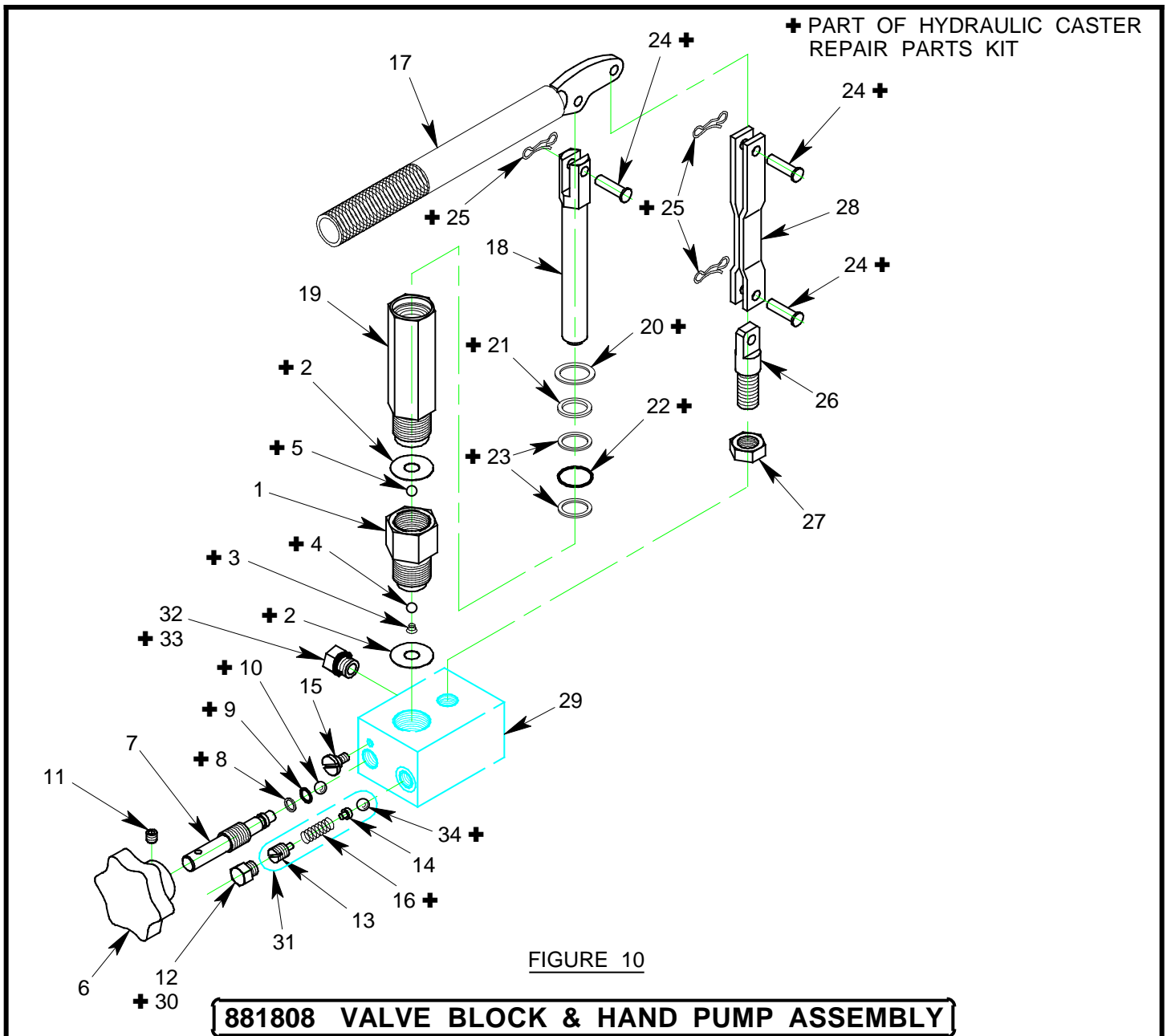
76187 ADJUSTABLE FOOT KIT WITH HYDRAULIC CASTER

NO.	QTY	PART NO.	DESCRIPTION	NO.	QTY	PART NO.	DESCRIPTION
1	2	76186	TRIPOD LEG	10	3	79347	GUIDE SCREW
2	1	76185	TRIPOD LEG w/ TOW BRKT	11	12	55923-75	RETAINING RING
3	3	79345	LONG PIN	12	18	325-001	FHCS, 1/2-13 x 1 1/2 LG
4	3	79348	SHORT PIN	13	3	363-005	SPLIT LOCKWASHER, 5/8
5	3	79344	SPRING	14	3	75941	STICKER, FOOTPADS
6	3	79339	FOOT SCREW	15	3	881800	HYDRAULIC CASTER ASS'Y
7	3	79343	LOCKNUT	16	12	321-005	HHCS, 1/2-13 x 2" LG
8	3	79346	RETAINING RING	17	12	363-004	SPLIT LOCKWASHER, 1/2
9	3	76374	FOOT PAD				



881800 HYDRAULIC CASTER ASSEMBLY

NO.	QTY	PART NO.	DESCRIPTION	NO.	QTY	PART NO.	DESCRIPTION
1	1	881803	PLUNGER	12	1	372-009	COTTER PIN, 3/32 x 1/2 LG
2	1	881804	CYLINDER	13	1	373-005	FLAT HEAD PIN, 3/8 DIA
3	1	881805	CAP	14	1	483-006	BREATHER, 1/8 MPT
4	1	881806	RETAINING SCREW	15	1	712-060	ELBOW, 1/8 MPT x 1/8 FPT
5	1	881807	RESERVOIR & BASE	16	2	717-005	PLUG, 1/8 MPT
6	1	881808	VALVE BLOCK & HAND PUMP	17	1	717-006	PLUG, 1/4 MPT
7	1	881809	CASTER MOUNTING PLATE	18	2	722-018	ELBOW, 3/8 TUBE x 3/8 SAE
8	2	55925-040	O-RING	19	A/R	732-024	TUBE, 3/8 OD x .035 WALL
9	1	55925-045	O-RING	20	2	MS28778-6	O-RING (PART OF ITEM 18)
10	1	55925-330	O-RING	21	1	881817	SETSCREW ORIFICE
11	1	55929-330	BACK-UP RING				



881808 VALVE BLOCK & HAND PUMP ASSEMBLY

NO.	QTY	PART NO.	DESCRIPTION	NO.	QTY	PART NO.	DESCRIPTION
1	1	55010	VALVE BLOCK	18	1	881847	PLUNGER, 3/4 DIA
2	2	55024	GASKET	19	1	881846	BODY, 3/4 DIA
3	1	55295	SPRING	20	1	55926-112	RETAINING RING
4	1	412-003	STEEL BALL, 7/32 DIA	21	1	55911-15	SCRAPER RING
5	1	412-004	STEEL BALL, 1/4 DIA	22	1	55925-210	O-RING
6	1	79366	RELEASE VALVE KNOB	23	2	55922-15	BACK-UP RING
7	1	79365	RELEASE VALVE STEM	24	3	55002	FLAT HEAD PIN, 5/16 DIA
8	1	55929-011	BACK-UP RING	25	3	372-028	BOW TIE COTTER
9	1	55925-011	O-RING	26	1	55011	ANCHOR
10	1	412-002	STEEL BALL, 5/16 DIA	27	1	352-004	HEX JAM NUT, 5/8-18
11	1	331-004	SHSS, 5/16-24 x 5/16 LG	28	1	55012	LINK
12	1	717-001	PLUG, 1/4 SAE	29	REF	881807	BASE
13	1	55148	SAFETY BY-PASS SCREW	30	1	MS28778-4	O-RING (PART OF ITEM 12)
14	1	55153	SPRING GUIDE	31	1	881816	SAFETY POP-OFF VALVE ASSY
15	1	65228	RELEASE VALVE LOCKSCREW	32	1	717-003	PLUG, 3/8 SAE
16	1	495-048	SPRING	33	1	MS28778-6	O-RING (PART OF ITEM 32)
17	1	881815	FULCRUM	34	1	412-007	STEEL BALL, 9/32 DIA

* 37° FLARE END OF ITEM 2 TO BE
 INSERTED INTO ITEM 1

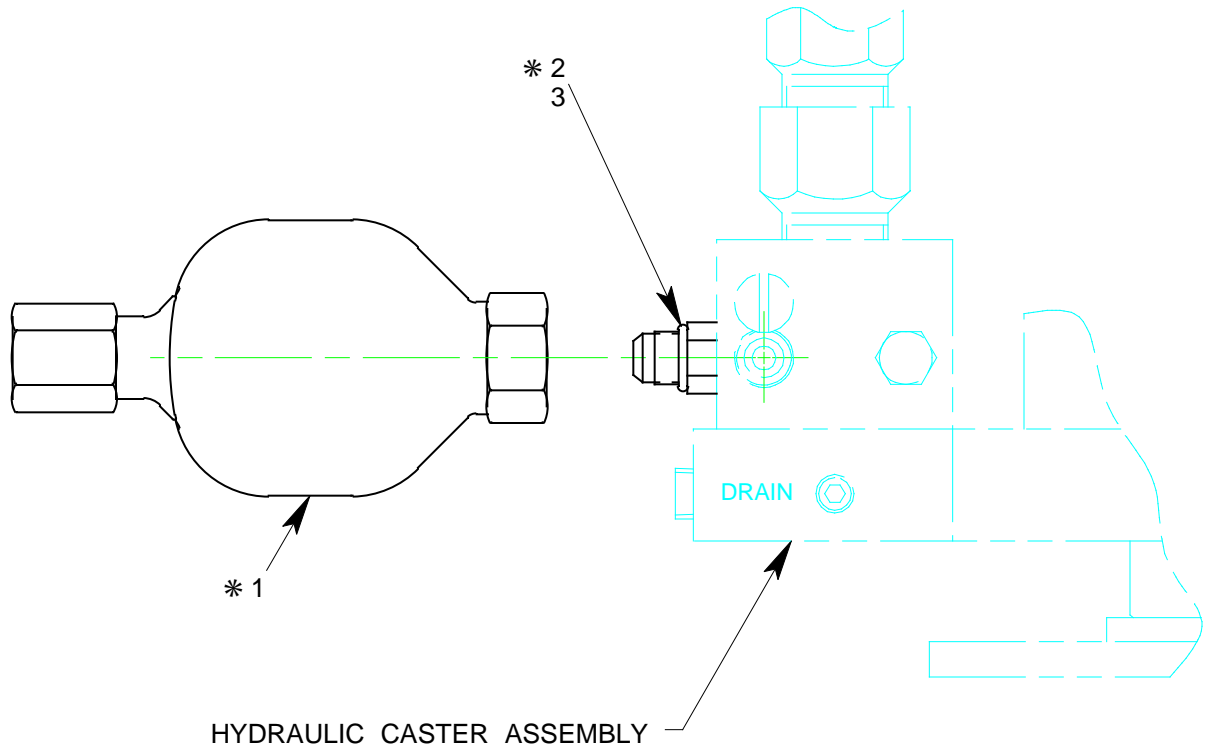


FIGURE 11

881818 SHOCK ABSORBER KIT

NO.	QTY	PART NO.	DESCRIPTION
1	3	490-029	DIAPHRAGM ACCUMULATOR
2	3	721-040	CONN, 3/8 37° x 3/8 SAE
3	6	MS28778-6	O-RING (PART OF ITEM 2)

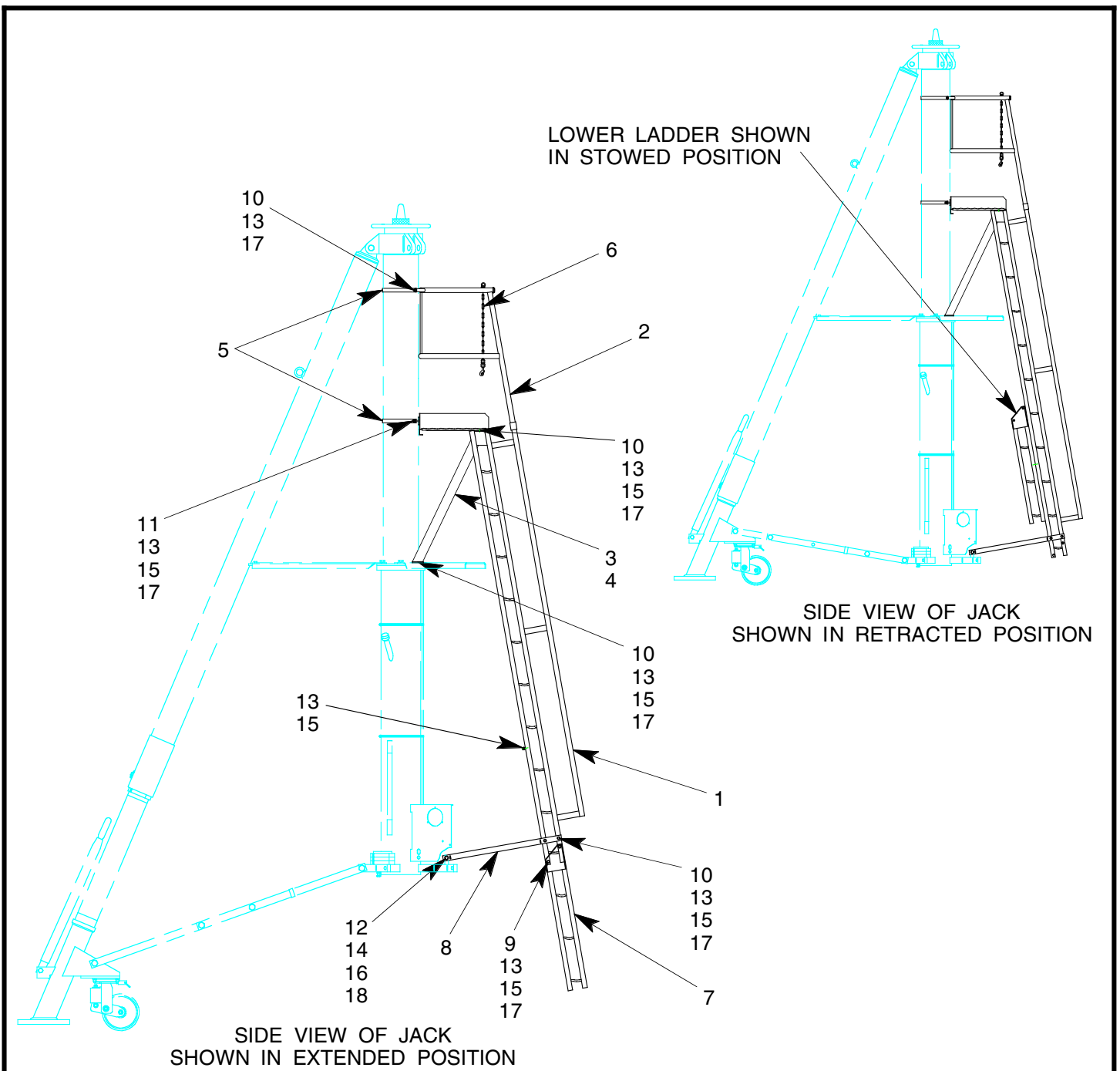
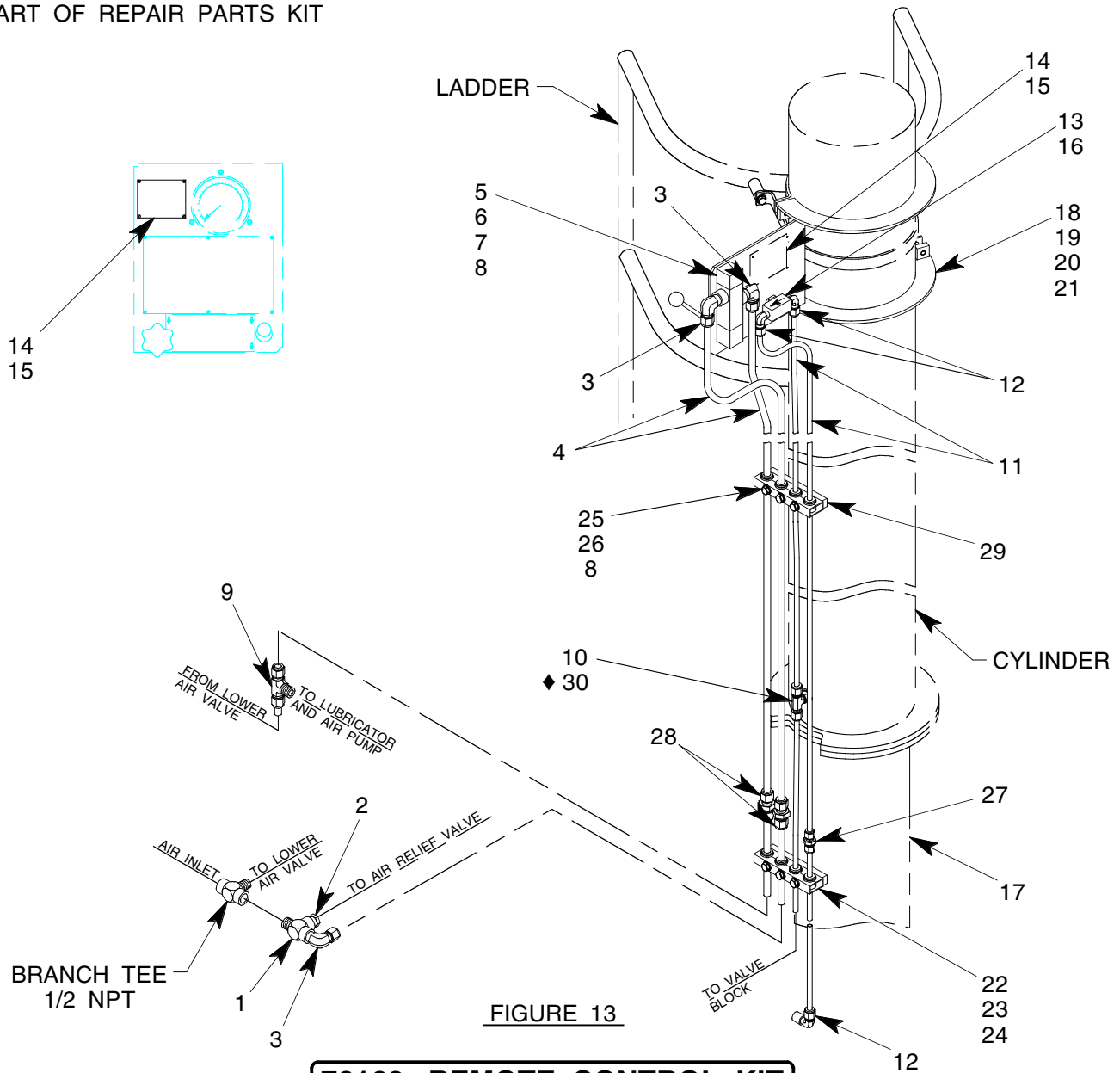


FIGURE 12

76147 LADDER ASSEMBLY KIT

NO.	QTY	PART NO.	DESCRIPTION	NO.	QTY	PART NO.	DESCRIPTION
1	1	76115	LADDER AND PLATFORM	10	12	321-008	HHCS, 3/8-16 x 1 1/4 LG
2	1	76357	RAIL	11	2	321-140	HHCS, 3/8-16 x 2" LG
3	1	76359R	PLATFORM SUPPORT	12	1	321-059	HHCS, 1/2-13 x 5" LG
4	1	76359L	PLATFORM SUPPORT	13	20	363-003	SPLIT LOCKWASHER, 3/8
5	2	76358	STRAP	14	1	363-004	SPLIT LOCKWASHER, 1/2
6	1	76378	SAFETY CHAIN	15	18	351-002	HEX NUT, 3/8-16
7	1	76116	LOWER LADDER	16	1	351-003	HEX NUT, 1/2-13
8	2	76118	LADDER BRACE	17	30	361-001	FLAT WASHER, 3/8 SAE
9	4	321-011	HHCS, 3/8-16 x 1" LG	18	2	362-005	FLAT WASHER, 1/2 SAE

◆ PART OF REPAIR PARTS KIT



76162 REMOTE CONTROL KIT

NO.	QTY	PART NO.	DESCRIPTION	NO.	QTY	PART NO.	DESCRIPTION
1	1	713-029	TEE, RUN, 1/2 NPT	17	1	76168	RESERVOIR
2	1	714-003	REDUCER, 1/2 MPT x 1/4 FPT	18	2	76166	STRAP
3	3	722-013	ELBOW, 1/2 TUBE x 1/2 MPT	19	1	78378	PANEL
4	A/R	732-001	TUBE, 1/2 O.D. x .049 WALL	20	4	321-028	HHCS, 3/8-16 x 1 1/2 LG
5	1	421-004	AIR VALVE	21	4	363-003	SPLIT LOCKWASHER, 3/8
6	2	392-001	STUD, 5/16-18 x 3/4 LG	22	6	394-033	SPLIT BUSHING, 1/2 TUBE
7	2	359-001	ALLEN NUT, 5/16-18	23	6	394-034	SPLIT BUSHING, 3/8 TUBE
8	11	363-002	SPLIT LOCKWASHER, 5/16	24	3	394-031	CLAMPING UNIT
9	1	723-033	TEE, BRANCH, 1/2 T x 1/2 MPT	25	9	321-080	HHCS, 5/16-18 x 2" LG
10	1	723-025	TEE, 3/8 TUBE x 3/8 SAE	26	9	362-002	FLAT WASHER, 5/16
11	A/R	732-010	TUBE, 3/8 O.D. x .065 WALL	27	1	723-027	UNION, 3/8 TUBE
12	3	722-014	ELBOW, 3/8 TUBE x 1/4 MPT	28	2	721-133	UNION, 1/2 TUBE
13	1	85416	RELEASE VALVE	29	1	76160	TUBE MOUNTING BRACKET
14	2	76158	CAUTION PLACARD	30	1	MS28778-6	O-RING (PART OF ITEM 10)
15	8	397-010	SELF TAPPING SCREW, #6	31	2	361-001	FLAT WASHER, 3/8 SAE
16	A/R	491-044	SAFETY LOCK WIRE, .025 DIA				