Date: October 9, 2015

MALABAR

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AIRCRAFT MAINTENANCE & SUPPORT EQUIPMENT

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THIS INSTRUCTION MANUAL

OWNER'S MANUAL FOR MALABAR MODEL

8487A

SINGLE STAGE VARIABLE HEIGHT HYDRO - MECHANICAL AVIATION TRIPOD JACK

* 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 8487A 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	5 tons	(4.5 m. tons)
Side Load	15% of vertical load	
Low Height	160 inches	(4064 mm)
Low Height with 28" Leg Extension	188 inches	(4775 mm)
Roll Under Height	161.5 inches	(4102 mm)
Roll Under Height with 28" Leg Extension	189.5 inches	(4813 mm)
Hydraulic Lift	32 inches	(813 mm)
Extension Screw	8 inches	(203 mm)
Total Extended Height	200 inches	(5080 mm)
Total Extended Height with 28" Leg Extension	228 inches	(5791 mm)
Oil Pressure at Rated Capacity	1030 psig	(72 kg/sq cm)
Safety Pop-off Valve set at	5.5 tons	(5.0 m. tons)
Proof Load	7.5 tons	(6.8 m. tons)
Reservoir Capacity	1.8 gallons	(6.8 liters)
Hydraulic Fluid	MIL-H-5606 or equivalent	
Maximum Towing Speed	5 mph	(8 km/h)

GENERAL DESCRIPTION:

The Malabar Variable Height Tripod Jack Model 8487A is a 5 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, swivel casters and the following optional equipment:

- *Air pump
- *Load gauge
- *Ladder
- *28" leg extension
- *Tow handle
- *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. The 28" leg extensions are readily interchangeable for increasing the extended height as required. The jack leg pads are raised off the ground by spring loaded casters. The casters will retract and the pads rest on the ground when a load is applied to the jack.

PREPARATION FOR USE:

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 4000 pounds to a height of 16 feet.
2. Install legs, tripod head pins and retaining rings.
3. Install braces.
4. Install ladder.
5. Tighten all bolts.

With optional 28" leg extension equipment, erection is accomplished by following the suggested sequence below (also see figure 8):

1. Install sling under tripod head of cylinder assembly and support from a crane or forklift capable of lifting 4000 pounds to a height of 18 feet.
2. Remove all three leg-to-leg braces by removing six 3/4 inch dia. bolts at tripod legs.
3. Remove all six 3/4 inch dia. bolts from leg-to-leg braces.
4. Remove all three footpads by removing the remaining three 3/4 inch dia. bolts at tripod legs.
5. Install extension tubes, footpads and braces.
6. Install and tighten all bolts.

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 1.8 gallons/6.8 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.

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, air pump (if so equipped) and hand pump.
4. Check hand pump for proper operation.
5. Check swivel casters for proper operation.
6. Check reservoir fluid level with jack plunger fully retracted.

OPERATION:

CAUTION: PRIOR TO TOWING, ENGAGE THE TWO TRAILING SWIVEL CASTER LOCKS.

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 (8 inches maximum).
3. Verify the jack is leveled (shim footpads if necessary). The jack plunger should be plumb during lifting.

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 (90-125 psig) to the 1/4 NPT air inlet at the air valve (A minimum of 17 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 (also 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 the release valve located on the valve block assembly.
   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. 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 5 tons.
   e. Do not attempt to raise the plunger beyond the rated hydraulic lift (32 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 valve block assembly 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. 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 reservoir should be kept at the proper level with hydraulic fluid MIL-H-5606 or approved equivalent. Always check fluid level with jack plunger fully retracted.
2. Grease the swivel casters.
3. Lubricate hand pump pivot pins.
4. 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.

DISASSEMBLY INSPECTION:

CAUTION: SAFETY POP-OFF VALVE, LOCATED IN THE VALVE BLOCK, SHOULD NOT BE REMOVED UNLESS ABSOLUTELY NECESSARY. THE VALVE IS SET TO BY-PASS HYDRAULIC FLUID BACK TO THE RESERVOIR AT 5-10% ABOVE THE RATED CAPACITY OF 5 TONS. IF ADJUSTMENT IS REQUIRED, SEE PROCEDURE UNDER TESTING (SEE BELOW).

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

1. Inspect interior walls of jack cylinder and hand pump cylinder for smoothness and freedom from rust, nicks, scratches and excessive wear.
2. Check plunger, extension screw, cylinder, 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 and hand pump 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 body and valve block 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 (♦) in the parts breakdown. A repair parts kit (P/N 8487APK) which contains all of the parts marked with (♦) is 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 block, do not seat properly, they may need to be reseated 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 is 3/4 inch male spherical radius. Operate 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 5 tons. If the jack fails to operate properly, check for trouble as indicated in the Trouble Shooting Chart. 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 safety pop-off valve, perform the following procedure:

1. Remove plug (figure 3, item 9). Close release valve (figure 3, item 3).
2. 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 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 10) until the safety pop-off valve by-passes hydraulic fluid back to the reservoir at 5.3 to 5.5 tons.
4. Replace plug (figure 3, item 9). Once more operate hand pump to verify correct setting.
5. Open release valve to relieve pressure.

SPECIAL TOOLS:

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

Part No.	*Description*	*Qty*
71413	Spanner wrench, stop ring	1
71489	Lifting tool, plunger	1

RECOMMENDED SPARE PARTS:

The following spare parts are recommended and available upon request.

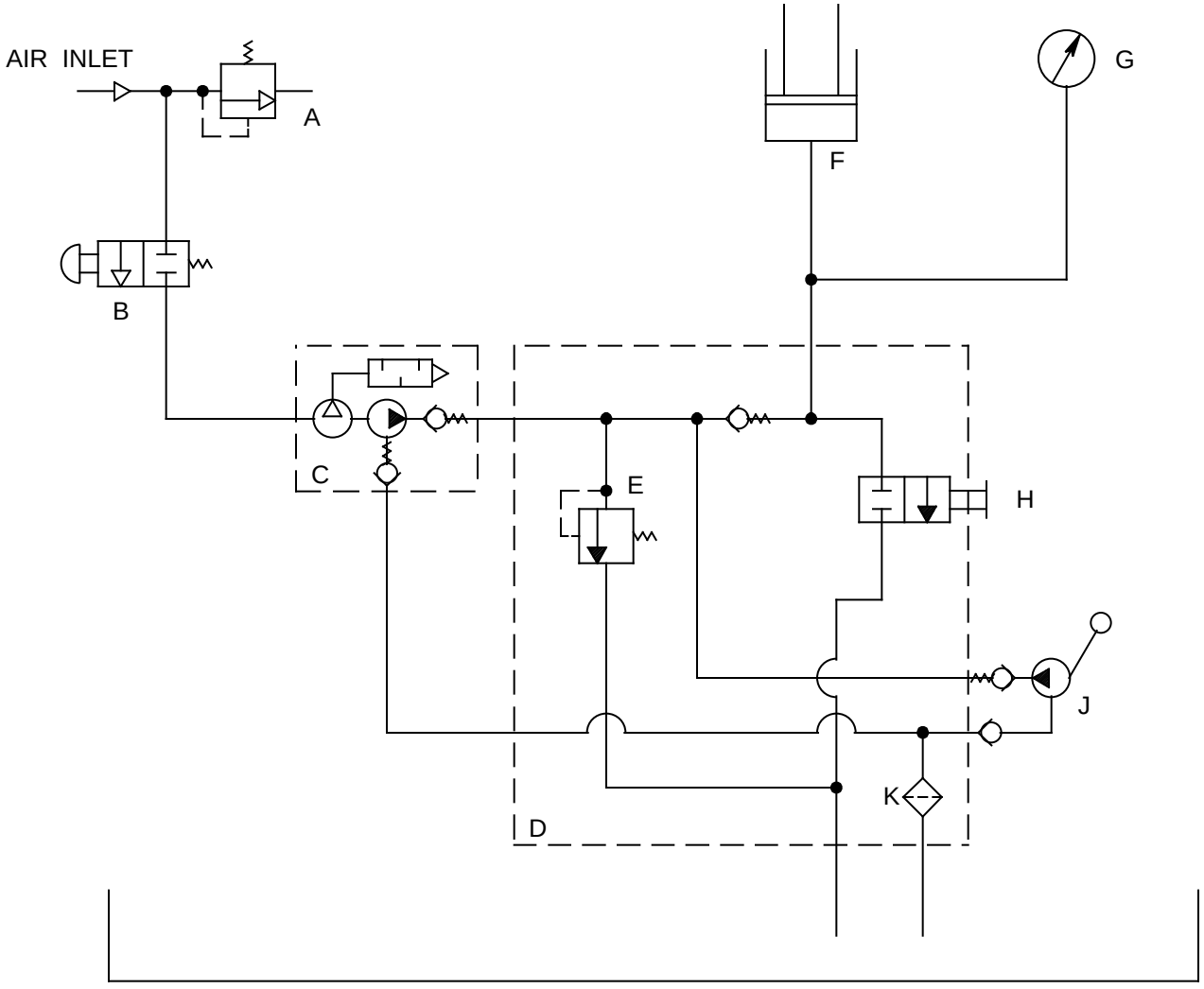
Part No.	*Description*	*Qty*
8487APK	Repair parts kit	1
56012-1	Valve block assembly	1
79366	Release valve knob	1
79365	Release valve stem	1
65228	Release valve lockscrew	1
55148	Set screw	1
55153	Spring guide	1
55320B	Hand pump assembly	1
55762-9	Pump handle	1
79562	Filler cap with dipstick	1
55997-2	Nameplate	1
55991-1	Placard, tonnage, 5 ton	1
55998	Sticker, Malabar	1
55994	Sticker, fluid	1
75940	Sticker, towing	1
73334A	Swivel caster	3
70012	Bearing	1
70017	Stop ring	1
51580	Ship adapter	1
79595	Rain hat	1
* 441-021	Air pump	1
* 441-037	Air drive seal kit, air pump	1
* 441-050	Hydraulic seal kit, air pump	1
* 421-006	Air valve	1
* 425-001	Air relief valve	1
* 848778	Load gauge	1
* 76378	Safety chain assembly	1
* 848793	Air valve	1
* 76158	Placard, caution	1

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

TROUBLE SHOOTING CHART

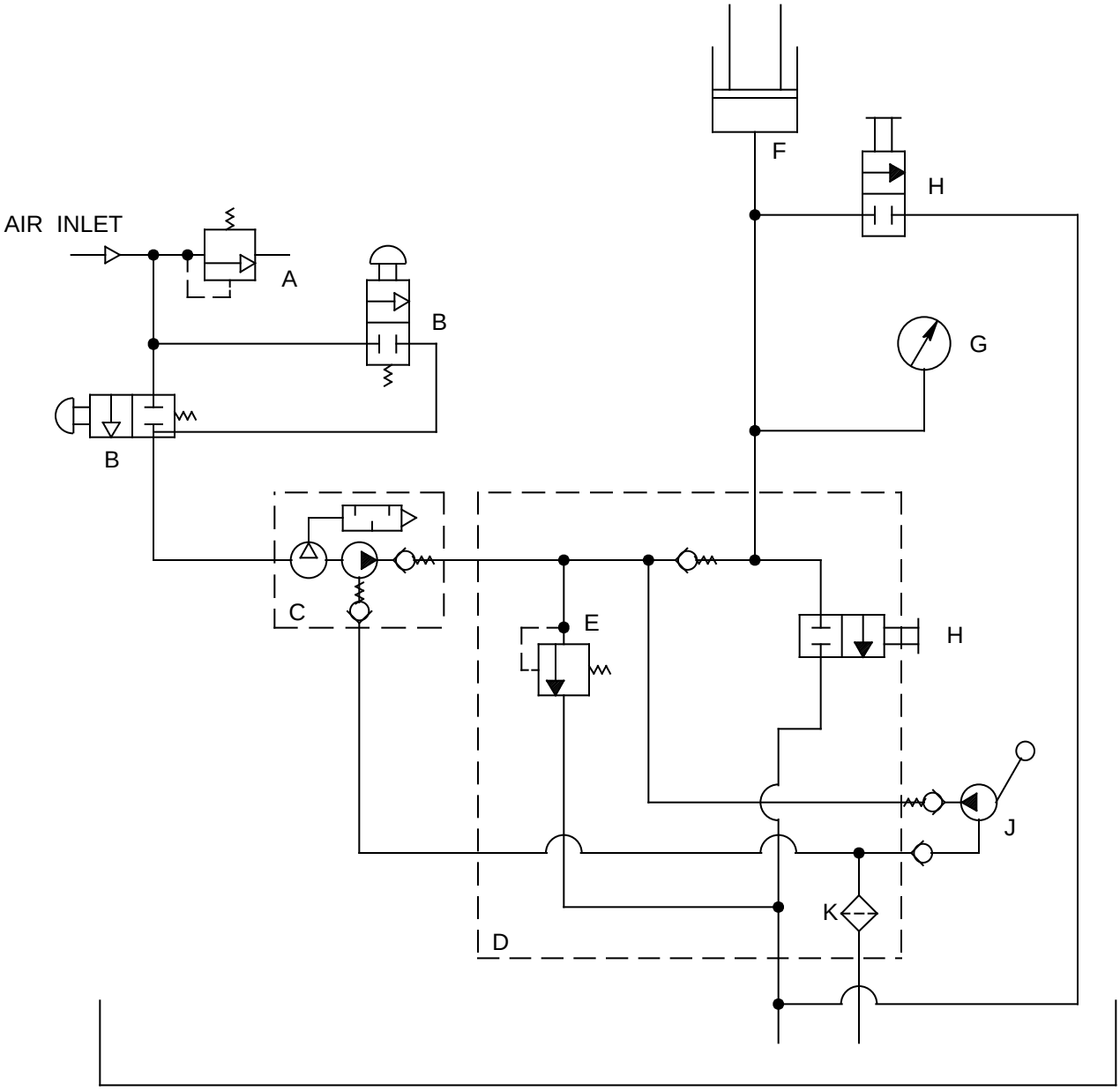
TROUBLE	PROBABLE CAUSE	REMEDY
Jack will not raise.	Release valve open. (Oil passing back into reservoir.)	Close valve firmly.
	Intake valve open. (Oil passing back into reservoir.)	Pump rapidly to flush dirt off.
	Discharge valve open. (Oil passing back into pump chamber.)	Pump rapidly to flush dirt 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.

PNEUMATIC / HYDRAULIC DIAGRAM



A - AIR RELIEF VALVE
B - AIR VALVE
C - AIR PUMP
D - VALVE BLOCK
E - SAFETY POP-OFF VALVE
F - CYLINDER ASSEMBLY
G - LOAD GAUGE
H - RELEASE VALVE
J - HAND PUMP
K - OIL SCREEN

PNEUMATIC / HYDRAULIC DIAGRAM WITH REMOTE CONTROL



A - AIR RELIEF VALVE
B - AIR VALVE
C - AIR PUMP
D - VALVE BLOCK
E - SAFETY POP-OFF VALVE
F - CYLINDER ASSEMBLY
G - LOAD GAUGE
H - RELEASE VALVE
J - HAND PUMP
K - OIL SCREEN

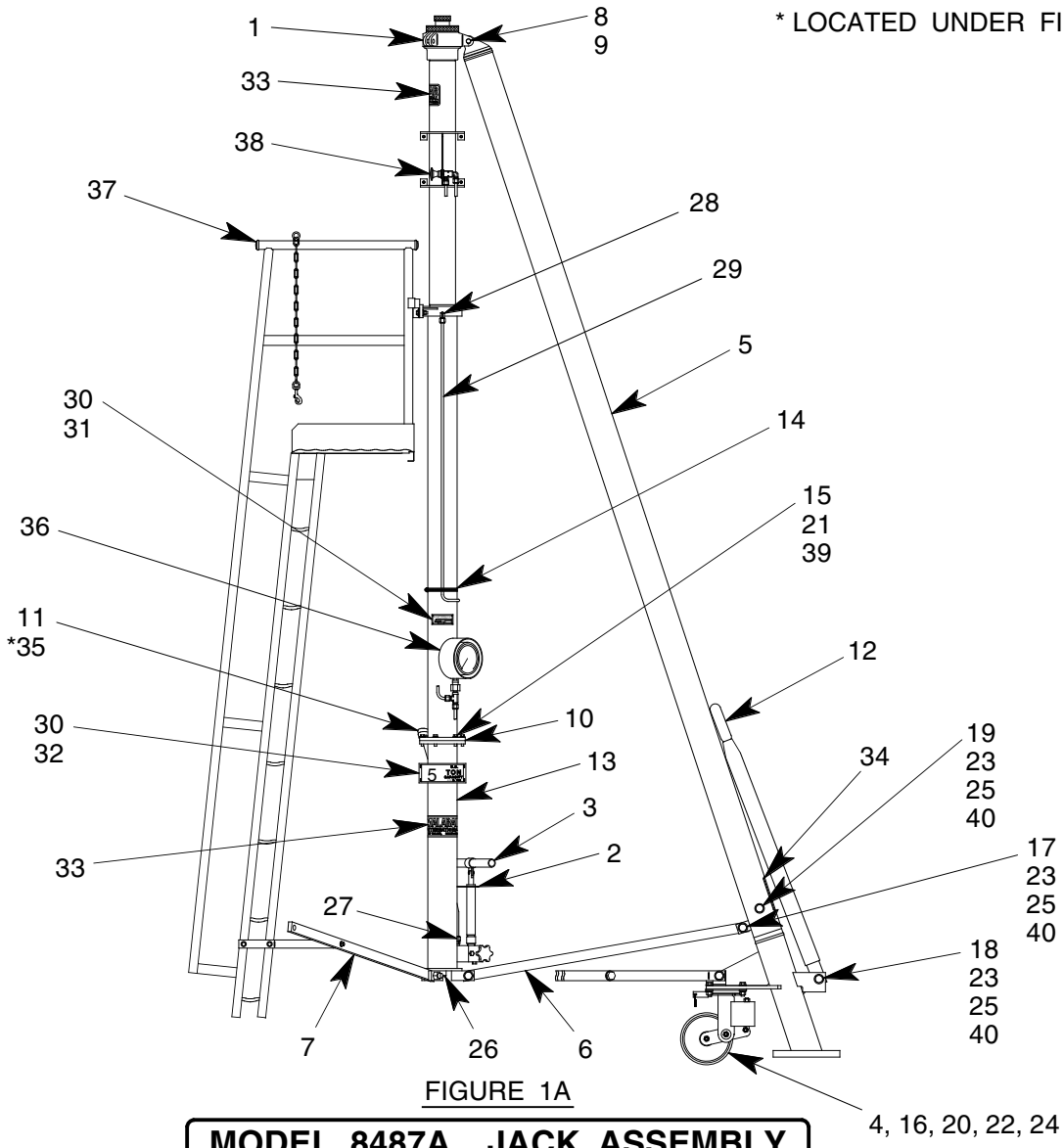


FIGURE 1A

MODEL 8487A JACK ASSEMBLY

NO.	QTY	PART NO.	DESCRIPTION	NO.	QTY	PART NO.	DESCRIPTION
1	1	848799	CYLINDER ASSEMBLY	21	6	363-003	SPLIT LOCKWASHER, 3/8
2	1	848717	HAND PUMP BRACKET	22	12	363-004	SPLIT LOCKWASHER, 1/2
3	1	56012-1	VALVE BLOCK & HAND PUMP	23	10	363-006	SPLIT LOCKWASHER, 3/4
4	3	73334A	SWIVEL CASTER	24	12	351-003	HEX NUT, 1/2-13
5	3	848710	UPPER LEG	25	10	351-004	HEX NUT, 3/4-10
6	1	848747	BRACE	26	1	717-008	PIPE PLUG, 1/2 NPT
7	2	848726	BRACE	27	1	721-009	CONN., 3/8 TUBE x 1/4 MPT
8	3	71476	TRIPOD HEAD PIN	28	1	722-014	ELBOW, 3/8 TUBE x 1/4 MPT
9	6	55923-62	RETAINING RING	29	A/R	732-002	TUBE, 3/8 OD x .049 WALL
10	1	848736	GASKET	30	8	397-005	SELF TAPPING SCREW, #4
11	1	79562	BREATHER CAP & DIPSTICK	31	1	55997-2	NAMEPLATE
12	1	79535	TOW HANDLE	32	1	55991-1	PLACARD, TONNAGE, 5 TON
13	1	848702	RESERVOIR, USED w/NO R/C	33	2	55998	STICKER, MALABAR
14	1	394-040	HOSE CLAMP, USED w/NO R/C	34	1	75940	STICKER, TOWING
15	6	321-028	HHCS, GR 5, 3/8-16 x 1 1/2 LG	35	1	55994	STICKER, FLUID
16	12	321-006	HHCS, GR 5, 1/2-13 x 1 3/4 LG	36	1	848773	LOAD GAUGE KIT
17	6	321-219	HHCS, GR 5, 3/4-10 x 3" LG	37	1	848757	LADDER KIT
18	1	321-306	HHCS, GR 5, 3/4-10 x 4 1/2 LG	38	1	848790	REMOTE CONTROL KIT
19	3	321-197	HHCS, GR 5, 3/4-10 x 6" LG	39	6	362-003	FLAT WASHER, 3/8 SAE
20	24	362-005	FLAT WASHER, 1/2 SAE	40	20	362-007	FLAT WASHER, 3/4 SAE

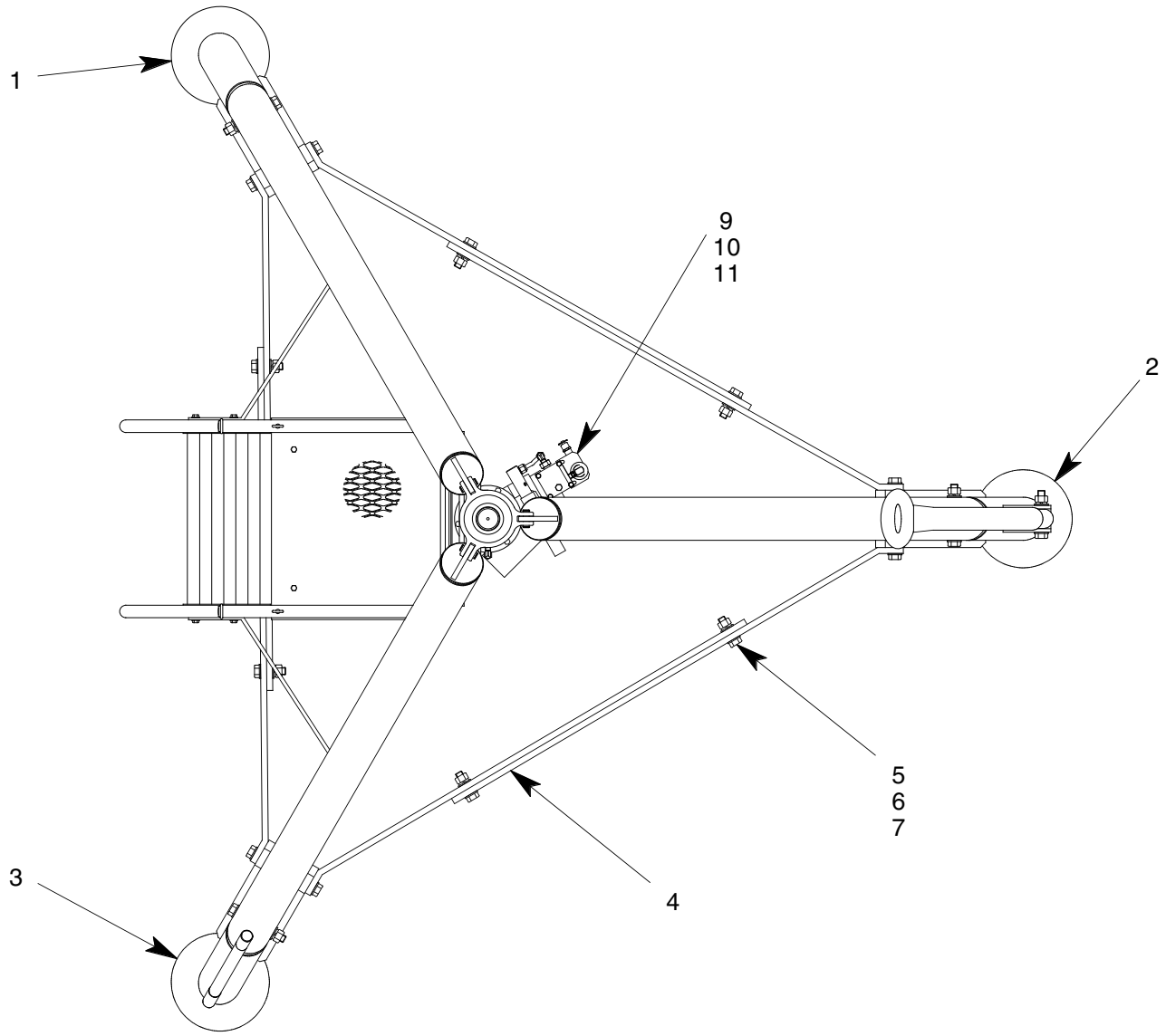


FIGURE 1B

MODEL 8487A JACK ASSEMBLY

NO.	QTY	PART NO.	DESCRIPTION	NO.	QTY	PART NO.	DESCRIPTION
1	1	848716	LOWER LEG	7	12	351-004	HEX NUT, 3/4-10
2	1	848718	LOWER LEG w / TOW BRKT	8	1	79595	RAIN HAT (NOT SHOWN)
3	1	848719	LOWER LEG w / HNDLE HLDR	9	1	848750	AIR PUMP KIT
4	6	848748	BRACE	10	1	717-006	PLUG, USED w/NO AIR PUMP
5	12	321-229	HHCS, GR 5, 3/4-10 x 2 3/4 LG	11	1	717-007	PLUG, USED w/NO AIR PUMP
6	12	363-006	SPLIT LOCKWASHER, 3/4	40	24	362-007	FLAT WASHER, 3/4 SAE

♦ PART OF REPAIR PARTS KIT

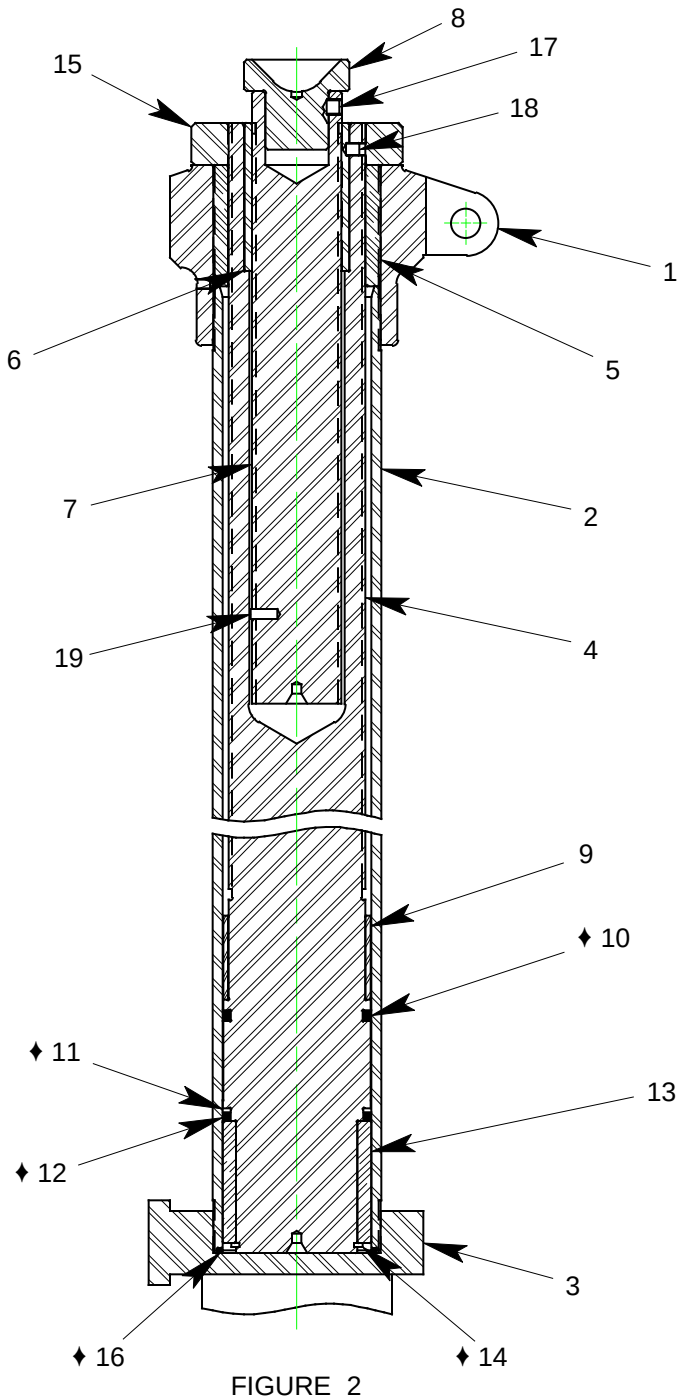


FIGURE 2

848799 CYLINDER ASSEMBLY

NO.	QTY	PART NO.	DESCRIPTION	NO.	QTY	PART NO.	DESCRIPTION
1	1	70004	TRIPOD HEAD	11	1	55916-41	BACKUP RING
2	1	71206	CYLINDER	12	1	55925-338	O-RING
3	1	848755	BASE	13	1	70012	BEARING
4	1	71211	PLUNGER	14	1	55923-287	RETAINING RING
5	1	70017	STOP RING	15	1	51516	LOCKNUT
6	1	71409	EXTENSION SCREW NUT	16	1	55925-238	O-RING
7	1	848708	EXTENSION SCREW	17	1	331-010	SHSS, 3/8-16 x 5/16 LG
8	1	51580	SHIP ADAPTER	18	1	331-004	SHSS, 5/16-24 x 5/16 LG
9	1	848727	STOP TUBE	19	1	371-014	ROLL PIN, 1/4 x 5/8 LG
10	1	70011	FELT WIPER				

♦ PART OF REPAIR PARTS KIT

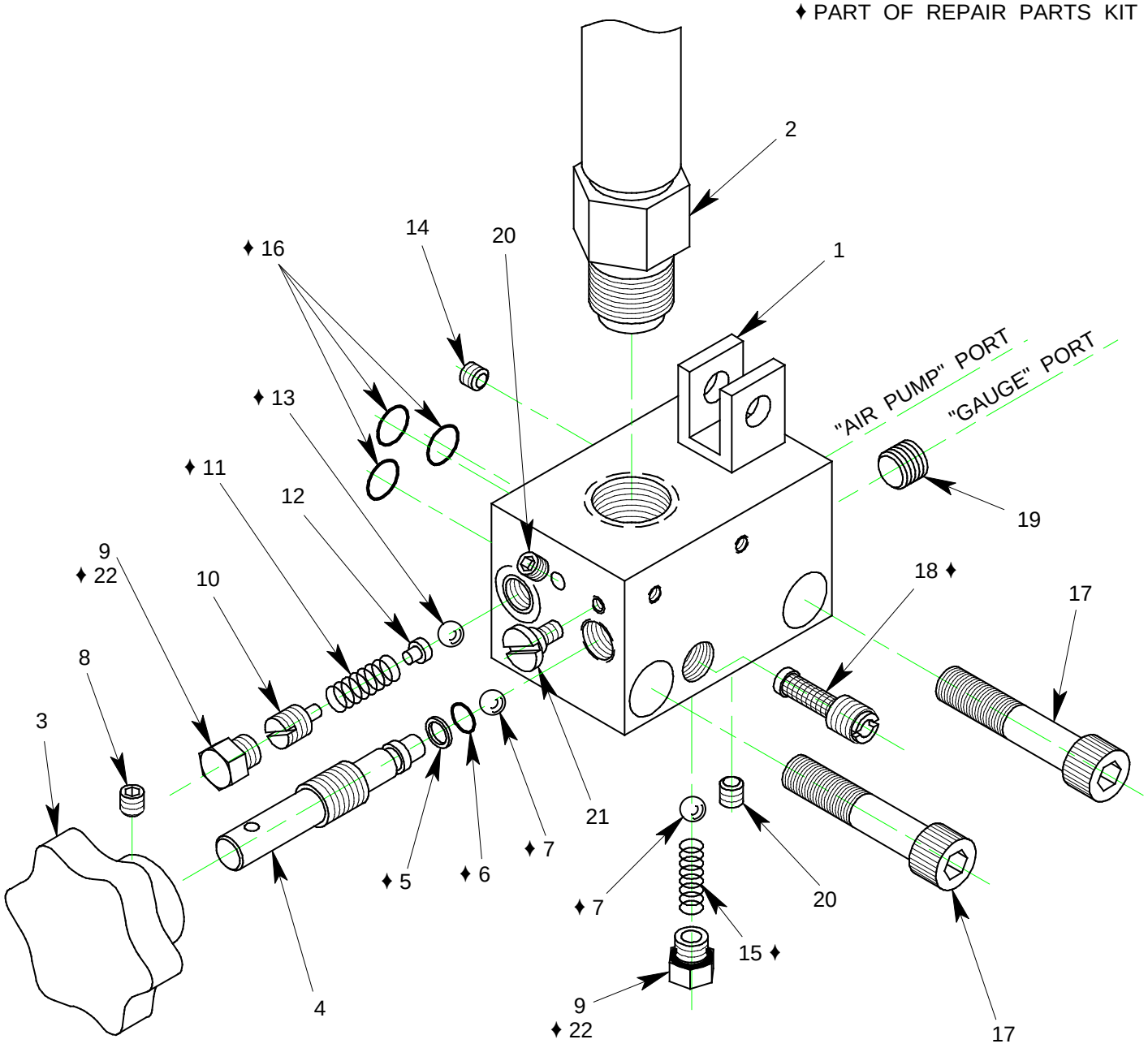


FIGURE 3

56012-1 VALVE BLOCK ASSEMBLY

NO.	QTY	PART NO.	DESCRIPTION	NO.	QTY	PART NO.	DESCRIPTION
1	1	70101	VALVE BLOCK	12	1	55153	SPRING GUIDE
2	1	55320B	3/4 ADJUSTABLE HAND PUMP	13	1	412-007	BALL, CHROME, 9/32 DIA
3	1	79366	RELEASE VALVE KNOB	14	1	717-048	FLUSH PLUG
4	1	79365	RELEASE VALVE STEM	15	1	83515	SPRING
5	1	55929-011	BACK-UP RING	16	3	55925-014	O-RING
6	1	55925-011	O-RING	17	2	323-044	SHCS, 1/2-20 x 2 1/2 LG
7	2	412-002	BALL, CHROME, 5/16 DIA	18	1	55567	OIL SCREEN
8	1	331-004	SET SCREW	19	1	717-006	PLUG, 1/4 NPT
9	2	717-001	PLUG	20	2	717-010	PLUG, 1/16 NPT
10	1	55148	SET SCREW	21	1	65228	RELEASE VALVE LOCKSCREW
11	1	55154H	SPRING	22	2	MS28778-4	O-RING (PART OF ITEM 9)

♦ PART OF REPAIR PARTS KIT

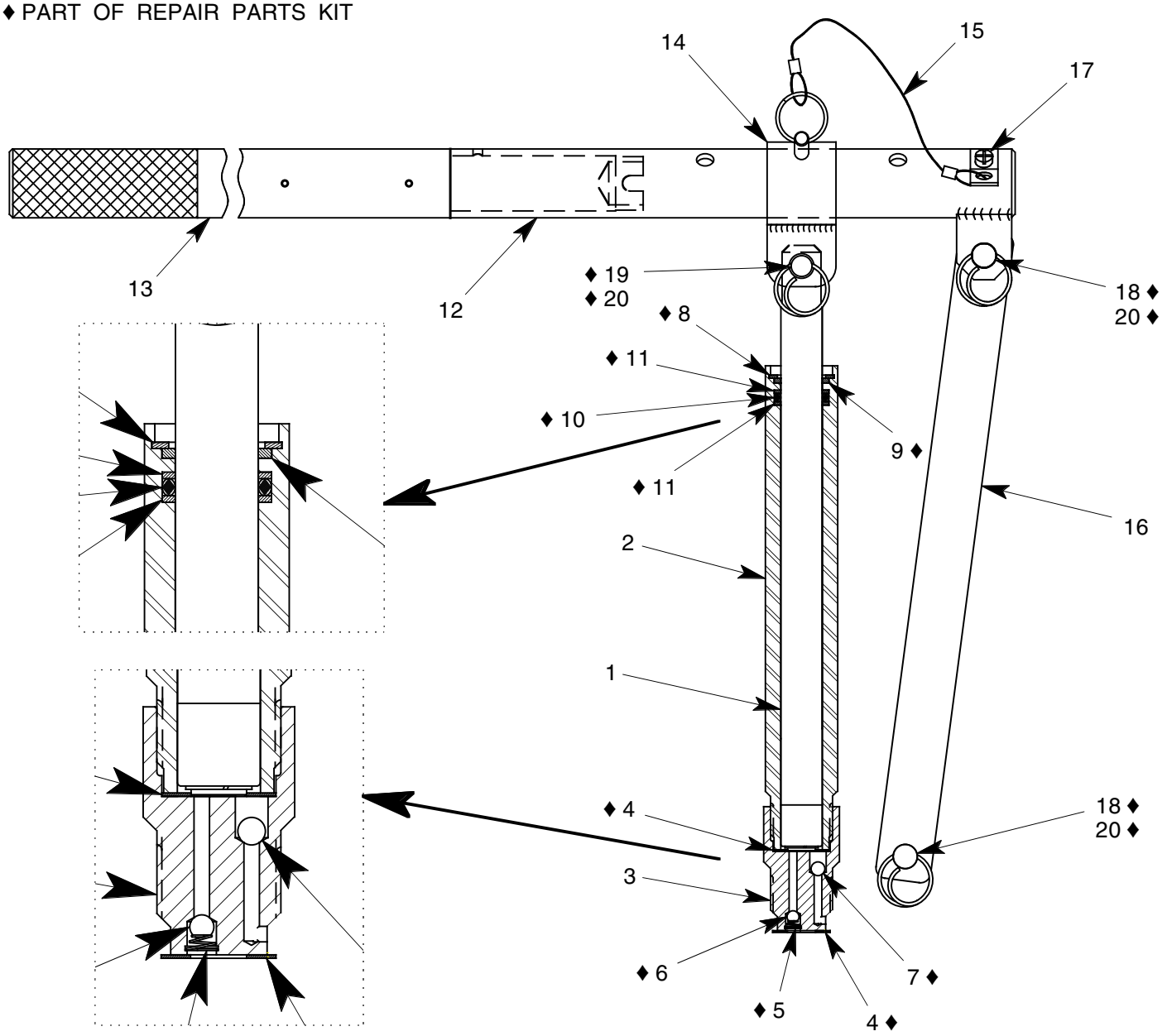


FIGURE 4

55320B HAND PUMP ASSEMBLY

NO.	QTY	PART NO.	DESCRIPTION	NO.	QTY	PART NO.	DESCRIPTION
1	1	55321	PISTON	11	2	55922-15	BACK-UP RING
2	1	55322	CYLINDER	12	1	55328	FULCRUM
3	1	55010	VALVE BLOCK	13	1	55762-9	PUMP HANDLE
4	2	55024	GASKET	14	1	55333	PUMP HANDLE CLAMP
5	1	55295	SPRING	15	1	370-001	QUICK RELEASE PIN, 1/4 DIA
6	1	412-003	STEEL BALL, 7/32 DIA	16	1	55327A	LINK
7	1	412-004	STEEL BALL, 1/4 DIA	17	1	MS51861-44C	SELF TAPPING SCREW, #10
8	1	55926-112	RETAINING RING	18	2	373-001	CLEVIS PIN, 7/16 DIA
9	1	55911-15	SCRAPER RING	19	1	373-002	CLEVIS PIN, 3/8 DIA
10	1	55925-210	O-RING	20	3	372-031	COTTER RING, 7/16 PIN DIA

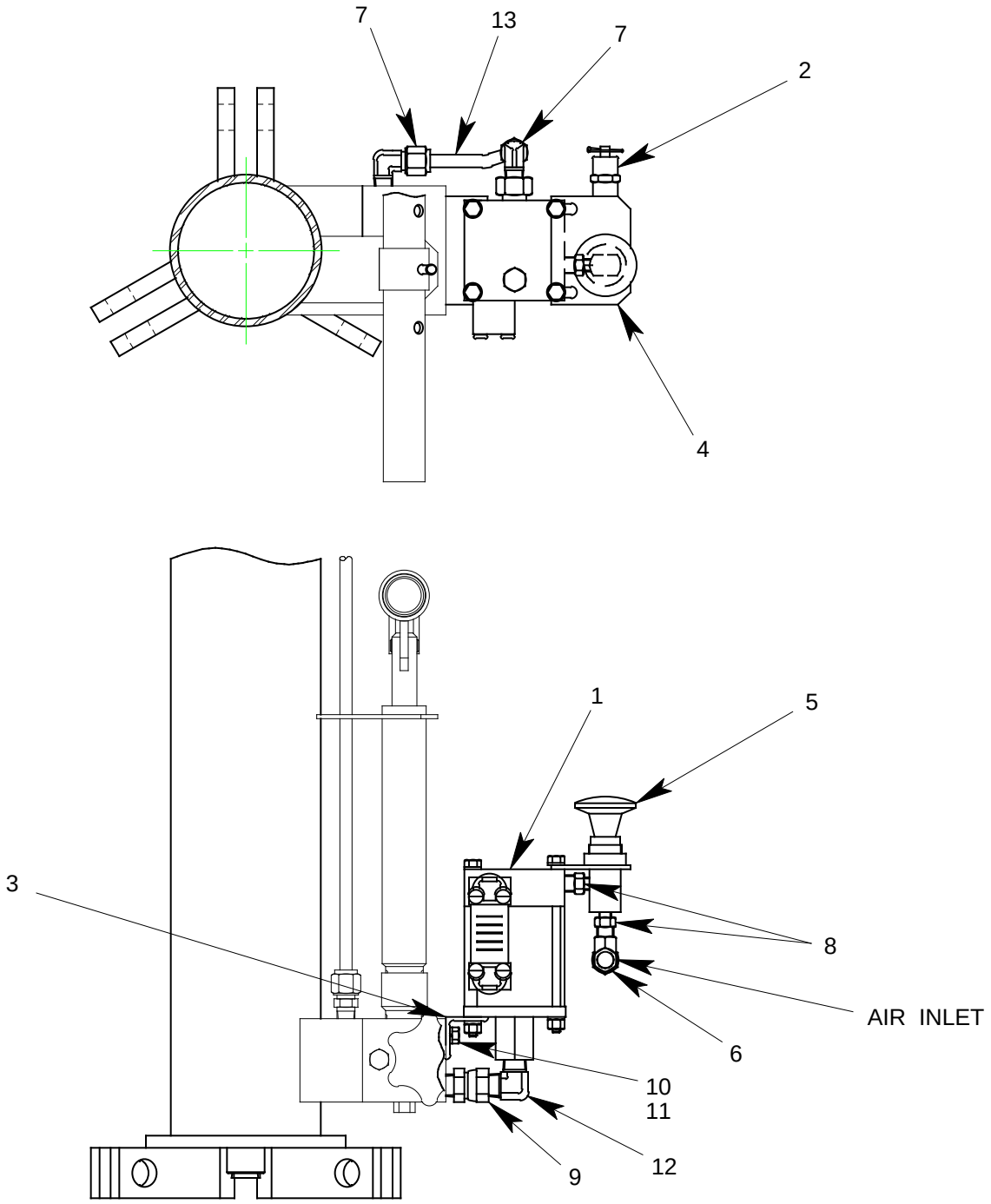


FIGURE 5

848750 AIR PUMP KIT

NO.	QTY	PART NO.	DESCRIPTION	NO.	QTY	PART NO.	DESCRIPTION
1	1	441-021	AIR PUMP	8	2	711-024	NIPPLE, 1/4 MPT x 1/8 MPT
2	1	425-001	AIR RELIEF VALVE	9	1	719-005	SWIVEL ADAPTER, 3/8 NPT
3	1	70104	PUMP BRACKET	10	2	321-036	HHCS, 1/4-20 x 3/4 LG
4	1	72585	MOUNT PLATE	11	2	363-001	SPLIT LOCKWASHER, 1/4
5	1	421-006	AIR VALVE	12	1	712-007	ELBOW, 3/8 MPT
6	1	713-013	TEE, 1/4 FPT	13	A/R	732-002	TUBE, 3/8 OD x .049 WALL
7	2	722-014	ELBOW, 3/8 T x 1/4 MPT				

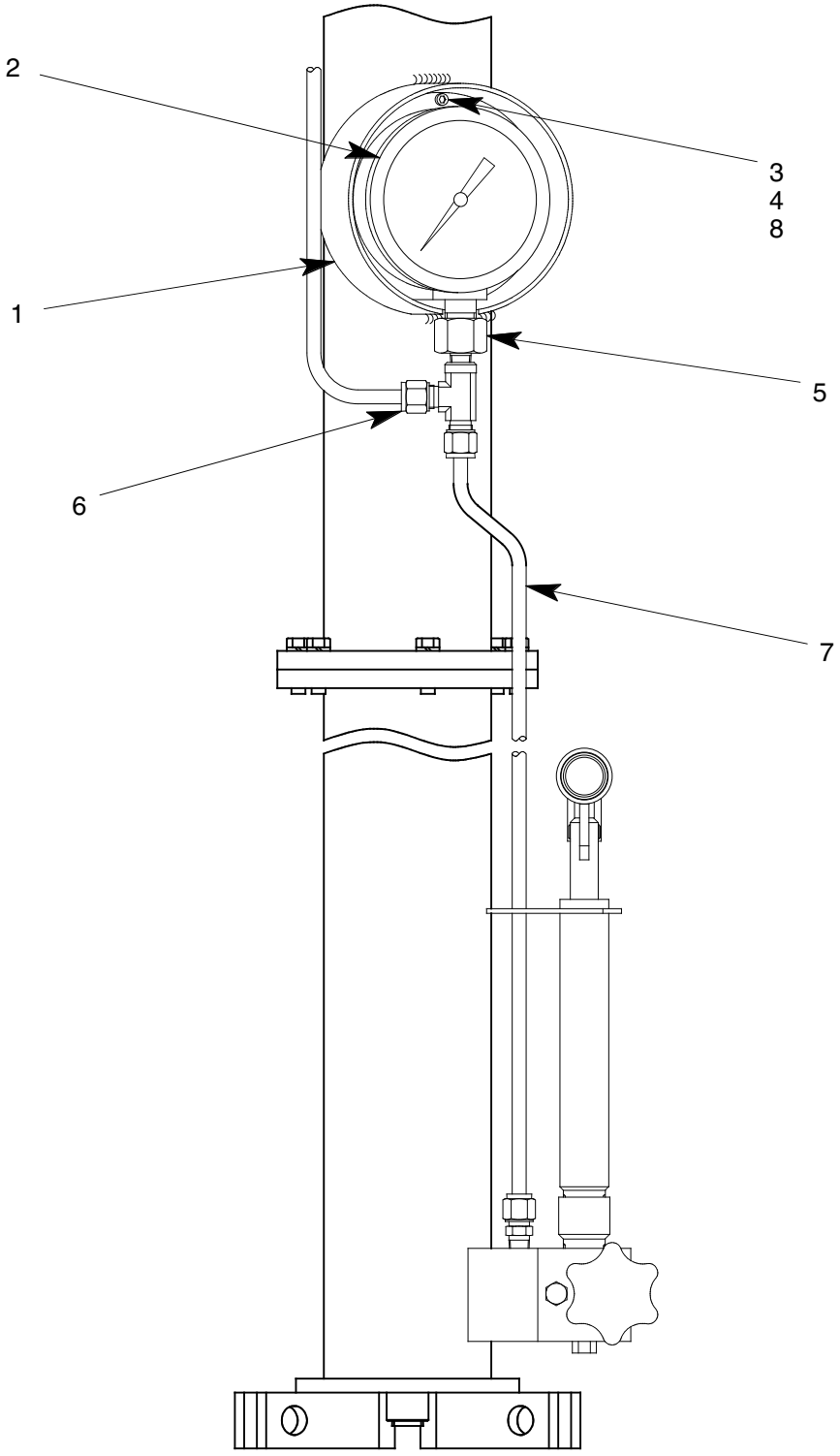


FIGURE 6

848773 LOAD GAUGE KIT

NO.	QTY	PART NO.	DESCRIPTION	NO.	QTY	PART NO.	DESCRIPTION
1	1	55957	GAUGE MOUNT	5	1	714-001	REDUCER, 1/2 FPT x 1/4 MPT
2	1	848778	LOAD GAUGE	6	1	723-010	TEE, 3/8 T x 3/8 T x 1/4 FPT
3	3	363-009	SPLIT LOCKWASHER, #10	7	A/R	732-002	TUBE, 3/8 OD x .049 WALL
4	3	323-018	SHCS (REOTEMP GAUGE)	8	3	323-071	SHCS (ASHCROFT GAUGE)

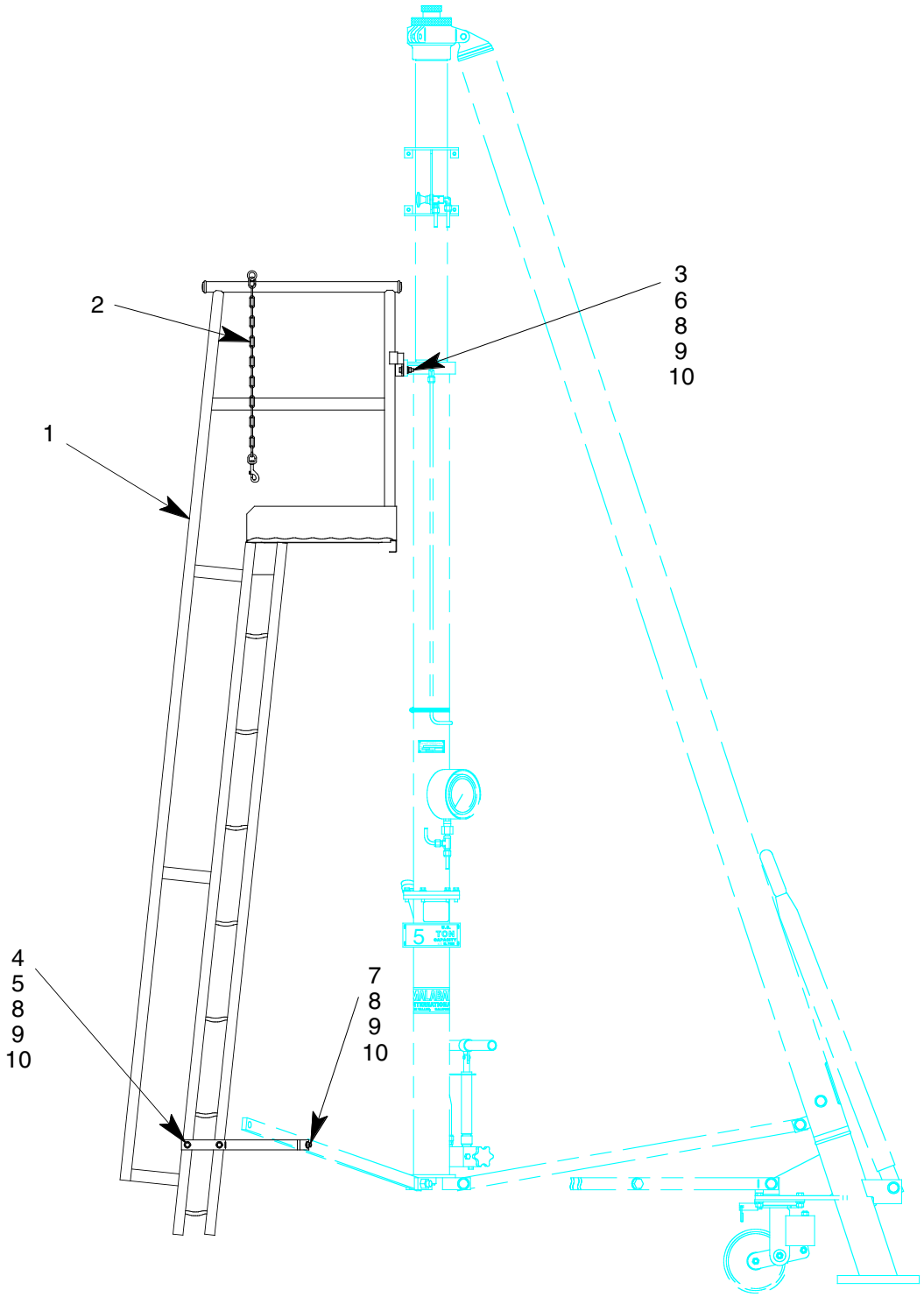


FIGURE 7

848757 LADDER ASSEMBLY KIT

NO.	QTY	PART NO.	DESCRIPTION	NO.	QTY	PART NO.	DESCRIPTION
1	1	848769	LADDER & PLATFORM	6	4	321-028	HHCS, 3/8-16 x 1 1/2 LG
2	1	76378	SAFETY CHAIN	7	2	321-024	HHCS, 3/8-16 x 1 3/4 LG
3	2	848746	BRACKET	8	10	363-003	SPLIT LOCKWASHER, 3/8
4	2	848744	LADDER BRACE	9	10	351-002	HEX NUT, 3/8-16
5	4	321-008	HHCS, 3/8-16 x 1 1/4 LG	10	20	362-003	FLAT WASHER, 3/8 SAE

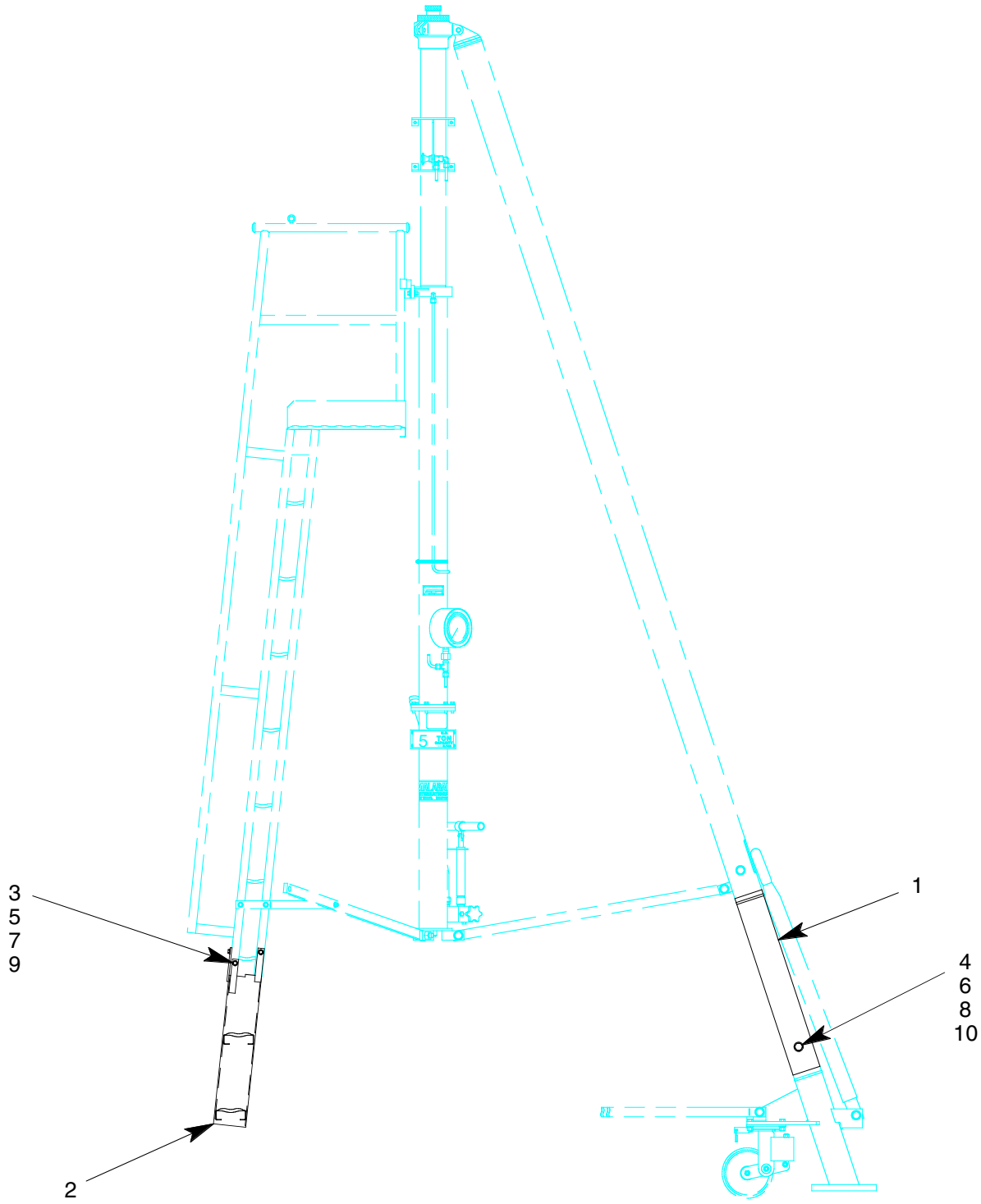


FIGURE 8

848758 28" LEG EXTENSION KIT

NO.	QTY	PART NO.	DESCRIPTION	NO.	QTY	PART NO.	DESCRIPTION
1	3	848723	LEG EXTENSION	6	3	363-006	SPLIT LOCKWASHER, 3/4
2	1	848770	LOWER LADDER	7	6	351-002	HEX NUT, 3/8-16
3	6	321-008	HHCS, 3/8-16 x 1 1/4 LG	8	3	351-004	HEX NUT, 3/4-10
4	3	321-197	HHCS, GR 5, 3/4-10 x 6" LG	9	12	362-003	FLAT WASHER, 3/8 SAE
5	6	363-003	SPLIT LOCKWASHER, 3/8	10	6	362-007	FLAT WASHER, 3/4 SAE

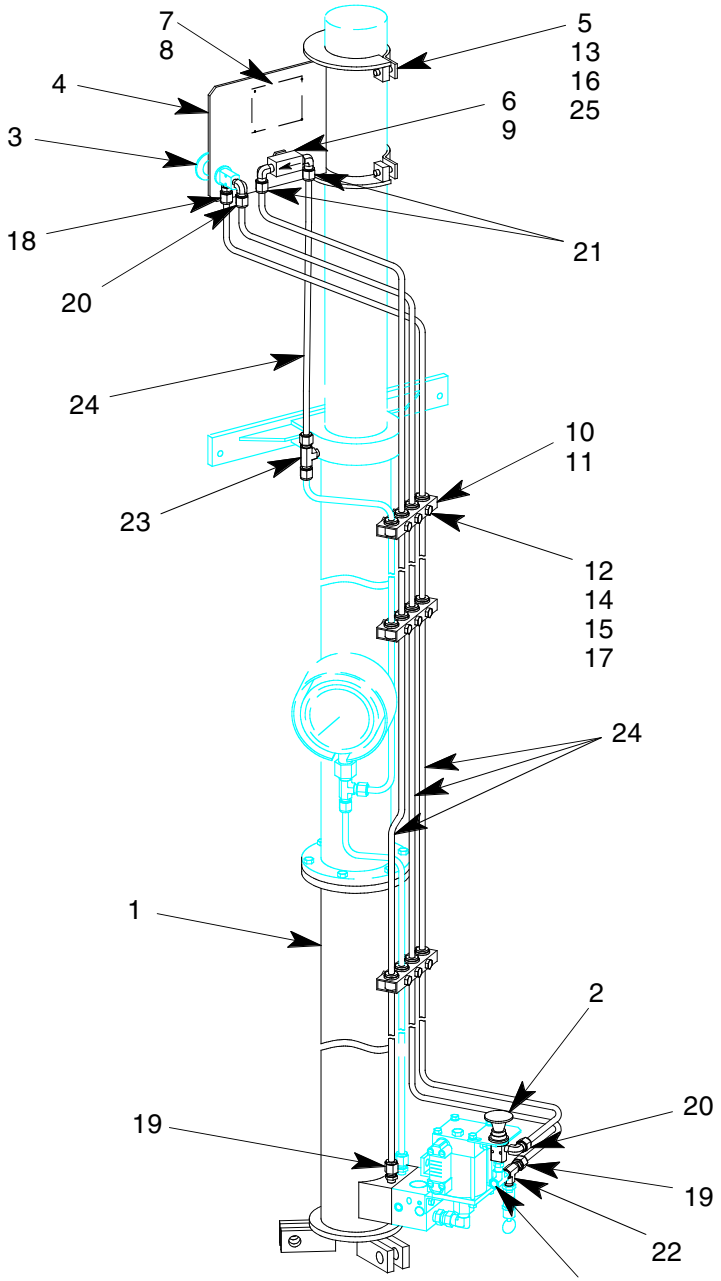


FIGURE 9 AIR INLET

848790 REMOTE CONTROL KIT

NO.	QTY	PART NO.	DESCRIPTION	NO.	QTY	PART NO.	DESCRIPTION
1	1	848792	RESERVOIR	14	9	362-002	FLAT WASHER, 5/16
2	1	848793	AIR VALVE MODIFIED	15	9	363-002	SPLIT LOCKWASHER, 5/16
3	1	421-006	AIR VALVE	16	4	363-003	SPLIT LOCKWASHER, 3/8
4	1	848797	CONTROL PANEL	17	9	351-012	HEX NUT, 5/16-18
5	2	848795	STRAP	18	1	721-018	CONN., 3/8 T x 1/8 MPT
6	1	85416	RELEASE VALVE	19	2	721-009	CONN., 3/8 T x 1/4 MPT
7	1	76158	CAUTION PLACARD	20	2	722-028	ELBOW, 3/8 T x 1/8 MPT
8	4	397-010	SELF TAPPING SCREW, #6	21	2	722-014	ELBOW, 3/8 T x 1/4 MPT
9	A/R	491-044	SAFETY LOCK WIRE	22	1	713-010	TEE, 1/4 NPT
10	3	394-031	CLAMPING UNIT	23	1	723-008	TEE, 3/8 T x 1/4 MPT
11	12	394-034	SPLIT BUSHING, 3/8 TUBE	24	A/R	732-002	TUBE, 3/8 OD x .049 WALL
12	9	321-080	HHCS, 5/16-18 x 2" LG	25	2	362-003	FLAT WASHER, 3/8 SAE
13	4	321-028	HHCS, 3/8-16 x 1 1/2 LG				