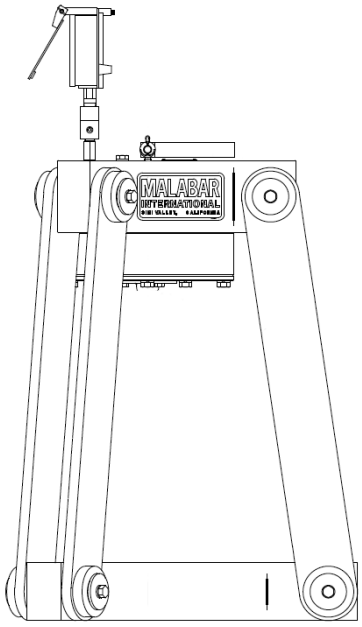
OPERATION & SERVICE MANUAL



Model: 8833
Universal Axle Jack Test Stand

07/2019 – Rev. 01

Malabar International
1 Air Cargo Pkwy East
Swanton, OH 43558

Phone: (419) 866-6301 | 800-426-6301
Web: www.malabar.com
Email: sales@malabar.com

REVISION	DATE	TEXT AFFECTED
01	07/2019	Original release

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This product can not be modified without the written approval of Tronair, Inc. Any modifications done without written approval voids all warranties and releases Tronair, Inc., it suppliers, distributors, employees, or financial institutions from any liability from consequences that may occur. Only Tronair OEM replacement parts shall be used.

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 will prevail.

1.0 PRODUCT INFORMATION

1.1 DESCRIPTION

The Malabar Universal Axle Jack Test Stand Model 8833 is designed to test all Malabar Axle Jacks up to 110% of their rated capacity thus allowing checking of safety pop-off valve settings. This test stand is also designed to test structural and hydraulic system integrity and verify load gauge accuracy. The test stand is easily transportable utilizing a lifting device such as a crane or engine hoist and the lifting bar located in the upper hat section. It lends itself equally well to a fixed installation with the top of the base either above or flush with the floor.

CAUTION!

The test stand is not designed for proof testing of tripod jacks.

The test stand consists of two 'Y' shaped plates, an upper hat and a lower base, connected together by six test bars and associated tripod head test pins, retaining washers and bolts. The upper hat is designed to accept either the hydraulic or the electronic head assemblies. The hydraulic head assembly consists of a cylinder and a hydraulic gauge that reads in tons and psig. The electronic head assembly consists of:

1. 150 ton capacity load cell (Sensotec Model 060-C237-01).
2. Portable Digital Indicator (Sensotec Model NK) with built-in 59K ohm shunt-cal resistor.
3. 15 foot long cable with mating connectors at each end for the load cell and indicator respectively.
4. Four 'D' size alkaline batteries.

The unit also comes equipped with three test adapters to accommodate all sizes of Malabar Axle Jacks.

1.2 MODEL & SERIAL NUMBER

Reference nameplate on unit

1.3 MANUFACTURER

Malabar International
1 Air Cargo Pkwy East
Swanton, Ohio 43558 USA

Telephone: (419) 866-6301 or 800-426-6301
E-mail: sales@malabar.com
Website: www.malabar.com

1.4 SPECIFICATIONS

Rated Capacity	100 tons (90.7 m. tons)
Roll Under Height (standard adapter)	8.38 in (467 mm)
Roll Under Height (extended adapter)	11.88 in (302 mm)
Hydraulic Fluid (for hydraulic head assembly)	MIL-PRF-5606 or equivalent
Battery (for electronic head assembly)	Four 'D' cells
Approximate Test Stand Weight	775 lbs (352 kg)

2.0 SAFETY INFORMATION

2.1 USAGE AND SAFETY INFORMATION

To insure safe operations please read the following statements and understand their meaning. Also refer to your equipment manufacturer's manual for other important safety information. This manual contains safety precautions which are explained below. Please read carefully.

WARNING!
Warning is used to indicate the presence of a hazard that can cause ***severe personal injury, death, and/or substantial property damage*** if the Warning Notice is ignored.

CAUTION!
Caution is used to indicate the presence of a hazard, which will or can cause ***minor personal injury or property damage*** is the Caution Notice is ignored.

3.0 TRAINING

3.1 TRAINING REQUIREMENTS

The employer of the operator is responsible for providing a training program sufficient for the safe operation of the unit.

3.2 TRAINING PROGRAM

The employer provided operator training program should cover safety procedures concerning use of the unit in and around the intended aircraft at the intended aircraft servicing location.

3.3 OPERATOR TRAINING

The operator training should provide the required training for safe operation of the unit.

NOTE: Maintenance and Trouble Shooting are to be performed by a skilled and trained technician.

4.0 OPERATION

4.1 PREPARATION FOR USE

1. Position test stand using lifting device in desired location preferably on a level paved surface. This step may be omitted for a fixed installation.
2. Remove lifting device if used.
3. Rotate hydraulic gauge (if so equipped) and open cover.
4. Ensure hydraulic head assembly (if so equipped) is full of hydraulic fluid. If hydraulic head assembly needs hydraulic fluid, see filling and bleeding procedure under the servicing section of this manual (see sheet 3).
5. Prior to each use of the Model 8833 Test Stand, the electronic load measuring system (if so equipped) must be properly set up and calibrated.
   a. Open lid of portable digital indicator.
   b. Lift panel out of case by loosening all four of the captive fasteners.
   c. Install the four 'D' size batteries in the battery holder, matching polarities to those indicated on the holder. (Note: Remove batteries when not using the instrument for a long time).
   d. Replace panel and tighten all fasteners. (Note: Steps a. thru d. only required on first use).
   e. Connect load cell to indicator using furnished cable with mating connectors.
   f. Flip indicator toggle switch to ON and allow digital meter to stabilize for approximately 30 seconds.
   g. Make sure that no load is applied to the load cell.
   h. With no load on the load cell the digital meter should read 000.00. If not, use a small screwdriver to turn the ZERO potentiometer screw on face of indicator (CW to increase reading and CCW to decrease reading).
   i. Press SHUNT-CAL button. The meter should read the value listed on page 1. If not, adjust reading by using small screwdriver to adjust the SPAN potentiometer screw on the face of the indicator to obtain desired reading.
   j. Release SHUNT-CAL button. The meter should read 000.00. If not, repeat steps h. & i. until zero and shunt-cal readings are achieved. The system is now ready to take test stand load measurements.

4.2 PRE OPERATION INSPECTION

Each time the test stand is to be used, inspect the following:
1. Check that there is no loose or missing hardware.
2. Check for any material deformation.
3. Check for obvious weld cracks.
4. Check for excessive corrosion.

CAUTION!

If any of the above conditions cannot be immediately corrected, the test stand should be tagged with an "out-of-service" tag and corrective action taken prior to further use and/or testing.

4.0 OPERATION *(continued)*

4.3 OPERATING PROCEDURES

1. Select appropriate test adapter for jack being tested as indicated in Table 1.
2. Install test adapter.
3. Position axle jack ship adapter under test adapter.
4. On jacks equipped with air pump, connect air supply (90-110 psig) to the air inlet at the air valve. Air relief valve must be properly installed. Do not attempt to remove air relief valve.
5. Set extension screw height (see Table 1, sheet 5).
6. Operate air valve or hand pump to raise plungers until the ship adapter contacts test adapter.
7. Ensure ship adapter and test adapter are correctly mated.
8. To apply load:
   a. Increase load to final value using hand pump only.
   b. Do not apply a load greater than the rated capacity of the jack under test. The load being applied can be read on the test stand readout.
9. To read load:
   a. Hydraulic load cell readings are read on pressure gauge located at top of test stand. Major divisions are in 1 ton increments. Operator can easily estimate to the nearest 1/2 ton.
   b. Electronic load cell readings are displayed on the digital readout in the portable case. The meter indicates load in tons to the nearest .01 ton
10. The following major tests can be performed on the test stand:
    a. Structural and hydraulic system integrity test:
    Close jack release valve. Apply axle jack rated capacity load as indicated by test stand readout and record. Hold load for 10 minutes. Check all lines, fittings, air pump (if so equipped), cylinder components, valve block and hand pump(s) for leakage. Should test stand reading drop by more than 2% or leaks found, corrective action must be taken in accordance with procedures outlined in the specific axle jack owner's manual prior to further use and/or testing.
    b. Safety pop-off valve setting:
    Malabar axle jack safety pop-off valves are typically set to bypass hydraulic fluid back to the reservoir at approximately 4-10% above the rated capacity of the jack. Check specific axle jack owner's manual for exact setting. Gradually increase applied load using hand pump until no increase is observed

CAUTION!

Never increase load more than the upper tolerance limit of safety pop-off valve setting.

If setting does not fall within this range, readjust safety pop-off valve in accordance with procedures in the specific axle jack owner's manual.

    c. Load gauge accuracy verification:
    Accuracy of axle jack load gauge can be quickly verified by comparing readings at five equally spaced intervals over the scale of the instrument with those of the test stand. This does not constitute formal gauge calibration and is only intended to serve as a quick check.

5.0 MAINTENANCE

5.1 SERVICING

Servicing the test fixture consists primarily of the following:

1. When in use, the structure should be periodically examined for loose hardware and signs of weld cracks, permanent deformation or corrosion. Corrective action should be immediately taken.
2. Head assembly hydraulic fluid should be topped off and bled periodically. The following filling and bleeding procedure should be followed:
   a. Place test fixture head assembly in upright position with gauge at the top and pressure disc extended to the retaining ring (see figure 4B).
   b. Rotate test gauge to vertical position (see figure 4B).
   c. Remove plug (figure 4A, item 18).
   d. Fill hole to the top with MIL-PRF-5606 hydraulic fluid or equivalent.
   e. Replace plug loosely and shake test fixture head assembly to bleed.
   f. Repeat steps c. and d. if necessary.
   g. Replace plug and tighten.
3. Electronic load cell indicator batteries should be replaced when low. Four 'D' size cells are required.

5.2 REPAIR AND REPLACEMENT

The hydraulic head assembly may require periodic overhaul to refurbish worn or damaged seals. No definite time schedule can be established for this procedure since it is dependent on frequency of usage and environmental conditions. Leaks that cannot be stopped by normal tightening procedures are a good indication that overhaul is due. During overhaul, replace all parts that do not pass visual inspection. Regardless of apparent condition replace all parts marked with (♦) in the parts breakdown. A repair parts kit (P/N 8833PK) which contains all 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-PRF-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.

An electronic load measurement system repair parts kit (P/N 8833EPK) which contains all the parts marked with (✚) is available and recommended to keep on hand at your facility. In the event of failure of the electronic load measurement system it may be necessary to replace either the load cell or the portable digital indicator. When the original load cell is replaced by one with the same Model No., the system must be set up identical to steps 5a thru 5j from section 5.1 Preparation for Use, except that a new SHUNT-CAL value as specified by the manufacturer's factory certificate of calibration must be used. If a new portable digital indicator is used with the existing load cell, the replacement unit will be properly adjusted and scaled prior to shipment to you so that only the set-up defined in steps 5a. thru 5j from section 5.1 Preparation for Use,will be necessary.

CAUTION!

Using a different model load cell or indicator will require significant system calibration changes and is not recommended by Malabar.

5.3 CALIBRATION:

The test stand load measurement system must be periodically calibrated using standards traceable to NIST or other equivalent National Standard. The interval of calibration is generally based on frequency of usage and compliance with the user's internal quality standards.

1. Hydraulic load cell is calibrated by comparison against a dead weight tester or secondary pressure standard.
2. Electronic load cell is calibrated by comparing against a known load in a laboratory equipped to perform the calibration. In-place shunt calibration using a built-in precision resistor is done at every use of the instrument

5.4 SPECIAL TOOLS:

No special tools are necessary to disassemble/reassemble the test stand.

6.0 PROVISION OF SPARES

6.1 SOURCE OF SPARE PARTS

Spare parts may be obtained from the manufacturer:

Malabar International
1 Air Cargo Pkwy East
Swanton, Ohio 43558 USA

Telephone: (419) 866-6301 or 800-426-6301
E-mail: sales@malabar.com
Website: www.malabar.com

6.0 PROVISION OF SPARES *(continued)*

6.2 RECOMMENDED SPARE PARTS LISTS

The following spare parts are recommended and available upon request. Reference the following page(s) for Replacement Parts and Kits available.

Part Number	Description	Qty
8833PK	Repair parts kit (hydraulic)	1
8833EPK	Repair parts kit (electric)	1

TABLE 1

MALABAR AXLE JACK MODEL NO.	CAPACITY (TONS)	NO. OF STAGES	TEST ADAPTER PART NO.	EXTENSION SCREW SETTING (INCHES) *
641	5	3	883304	0
640R	5	3	883305	3.0
642S	10	3	883305	0
648A	10	3	833603	0
649A	10	3	Requires special test bars (contact Malabar)	
649BP	10	3	Requires special test bars (contact Malabar)	
8693A	12	2	833304	0
215	15	2	833603	2.0
219	15	2	833603	0.5
8772	15	2	883305	2.25
652	20	4	833603	1.75
8732	20	3	883305	0.5
825T	25	2	833603	0.5
8685	35	2	833603	2.25
832R	35	2	833603	0.5
836A	35	2	833603	0
8782	35	2	833603	2.25
8842	45	3	833603	1.5
8919	45	3	833603	1.5
8728AR	50	2	833603	1.5
50P9AR	50	2	833603	1.0
50P10	50	2	833603	0
60P9	60	2	833603	1.5
60P10	60	2	833603	0
8714	65	2	833603	0
65P9	65	2	833603	1.5
65P9AR	65	2	833603	1.25
65P10	65	2	833603	0
65P10AR	65	2	833603	0
85P10AR	85	2	833603	0
95P10AR	95	2	833603	0

CAUTION!

Correct extension screw setting is critical. Prior to applying load, always verify that all outer plungers are fully extended and inner plunger is partially extended. Inner plunger must be partially extended but never against its stop.

7.0 IN SERVICE SUPPORT

Contact Malabar, Inc. for technical services and information. See Section 1.3 – Manufacturer.

8.0 GUARANTEES/LIMITATION OF LIABILITY

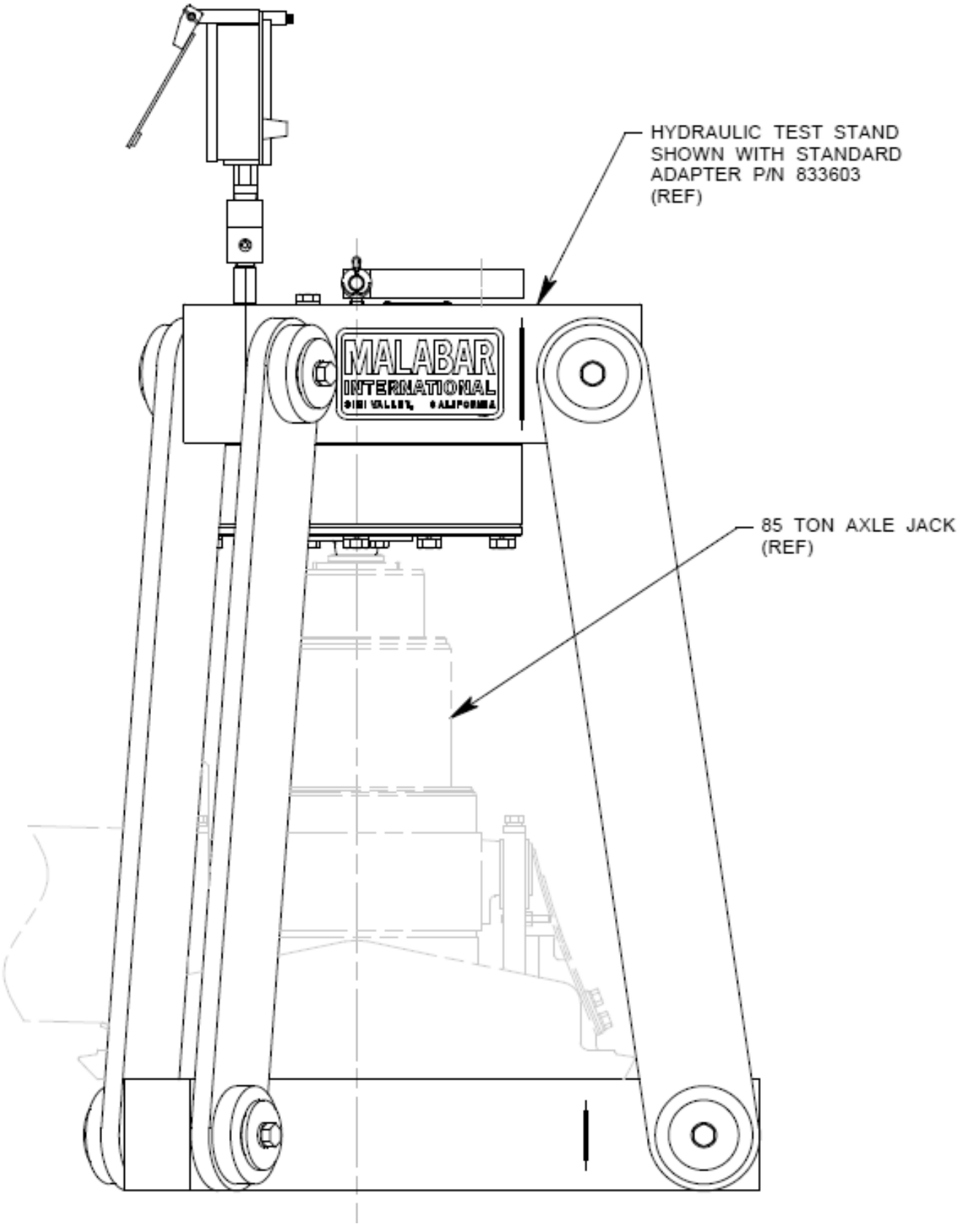
I. Seller warrants each new product of its manufacture to be free from defects in material or workmanship, under proper, reasonable, and normal use and service.

II. The warranty period shall be as follows:
   A. For Malabar equipment, with the exception of Tripod Jacks, the warranty period is one (1) year after date of shipment.
   B. For Malabar Tripod Jacks, the warranty period is three (3) years after date of shipment.

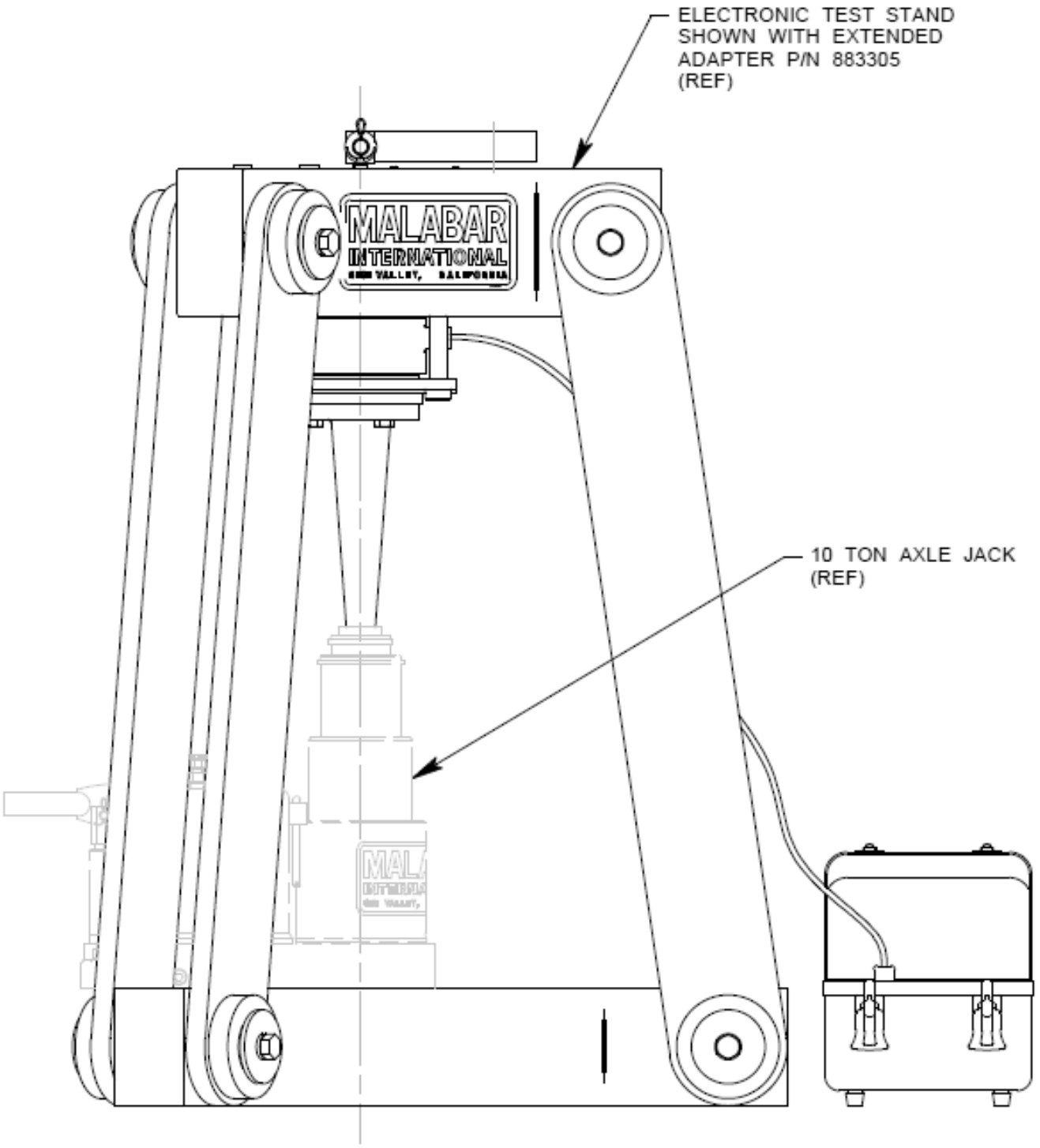
III. Where Buyer claims an alleged defect in material or workmanship and so advises Seller in writing within ten (10) days after discovery thereof, then and in such event, Buyer shall return said equipment, transportation prepaid, to the Seller, provided such return is timely and within the above-mentioned warranty period. This warranty and liability of the Seller is expressly limited solely to replacement or repair of defective parts or goods, and return at Buyer's expense to Buyer after finding by Seller the product was defective prior to original shipment or, at the option of Seller, to providing refund to Buyer of the purchase price for said product.

IV. It is further expressly understood and agreed that:
   A. THERE IS NO WARRANTY, REPRESENTATION OF CONDITION OF ANY KIND, EXPRESS OR IMPLIED, (INCLUDING NO WARRANTY OF MERCHANTABILITY OR OF FITNESS) EXCEPT THAT THE MATERIAL SHALL BE OF THE QUALITY SPECIFIED IN APPLICABLE SPECIFICATIONS, AND NONE SHALL BE IMPLIED BY LAW. Except as otherwise provided herein, quality shall be in accordance with Seller's specifications. Final determination of the material for the use contemplated by Buyer is the sole responsibility of Buyer and Seller shall have no responsibility in connection with such suitability, and
   B. Buyer's sole and exclusive remedy shall be repair or replacement of defective parts or goods by the Seller. Should the goods, in the judgment of Seller, preclude the remedying of the warranted defects by repair or replacement, the Buyer's sole and exclusive remedy shall be the refund of the purchase price, and
   C. Seller shall not be liable for prospective profits or special, indirect or consequential damages, nor shall any recovery of any kind against Seller be greater in amount than the purchase price of the specific material sold and causing the alleged loss, damage or injury. Buyer assumes all risk and liability for loss, damage or injury to persons or property of Buyer or others arising out of use or possession of any product or part sold hereunder, and
   D. Seller shall in no way be deemed or held to be obligated, liable or accountable upon or for any guarantees or warranties, express or implied, or created by statute or by operation of law or otherwise, in any manner of form beyond its express agreement above set forth, and
   E. No warranty herein shall apply to any product which shall have been repaired or altered, unless such alteration or repair has been made by Seller or if, after return to and inspection by Seller, the product is found by Seller to have been subject to misuse, negligence or accident, and
   F. No warranty of any nature is made by Seller as to any component forming a part of the product sold and Buyer shall receive only such warranties offered by such other manufacturer of such component, and
   G. Seller does not assume nor does Seller authorize any other person to assume for it any other liability or make any warranty in connection with the sale of its products.

Typical Axle Jack/Test Stand Installation – Figure 1

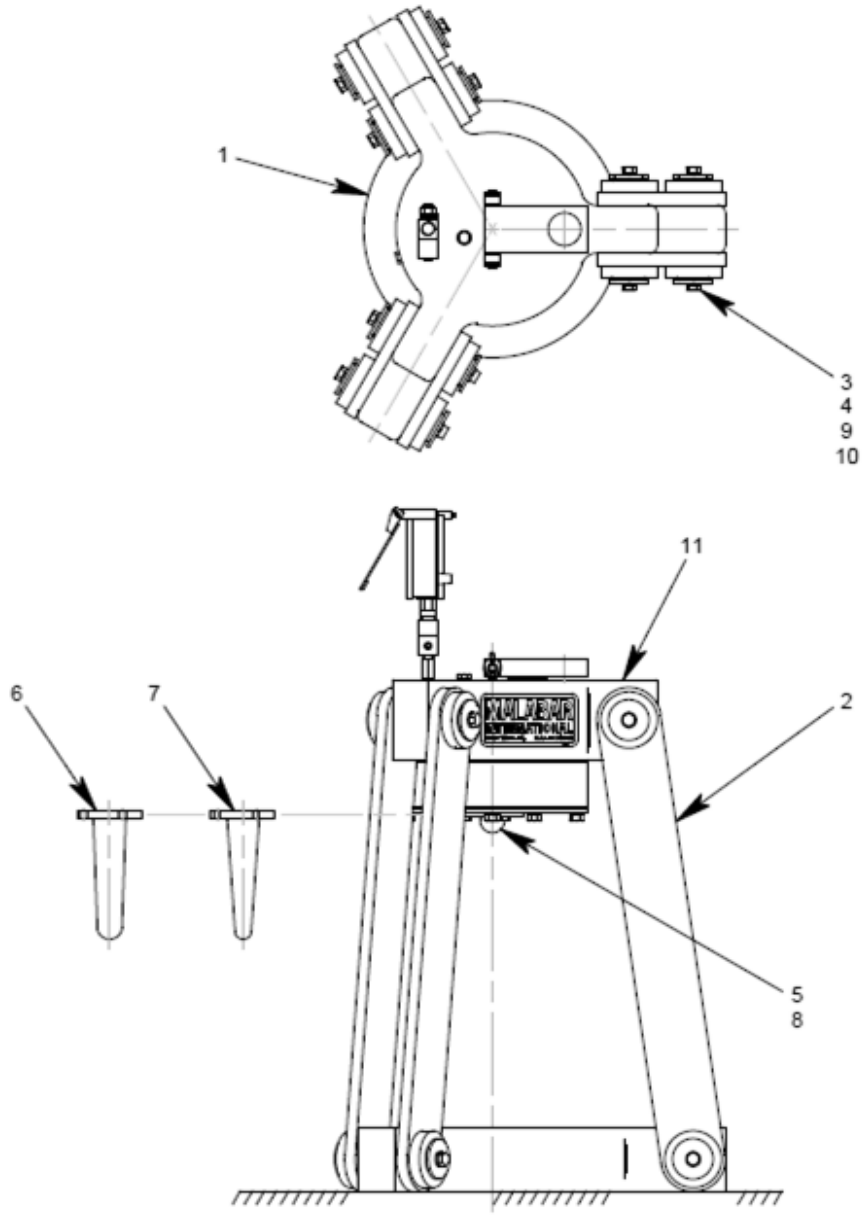


Safety Pop-Off Valves – Figure 2



Parts List – Figure 3A

When ordering replacement parts/kits, please specify model, serial number and color of your unit.

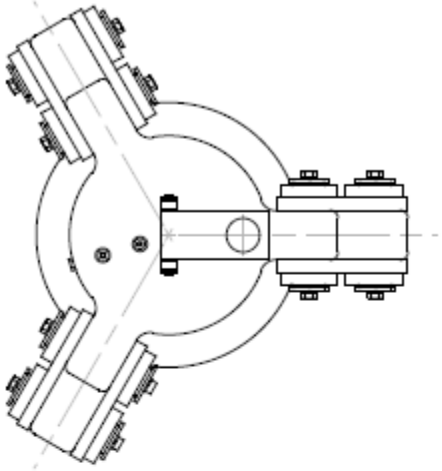


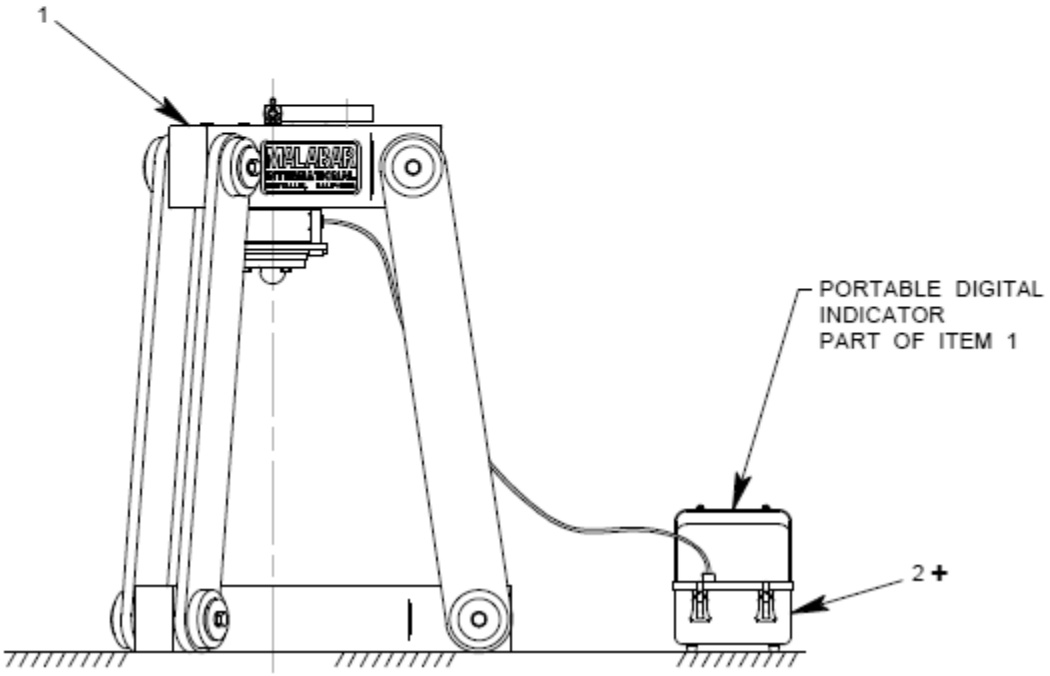
Item	Part Number	Description	Qty
1	883370	BASE	1
2	883375	TEST BAR	6
3	842920	TRIPOD HEAD TEST PIN	6
4	833607	WASHER	12
5	833603	ADAPTER	1
6	883304	ADAPTER	1
7	883305	ADAPTER	1
8	321-011	HHCS, 3/8-16 x 1" LG	3
9	321-051	HHCS, 1/2-13 x 1" LG	12
10	363-004	SPLIT LOCKWASHER, 1/2	12
11	842801	HEAD ASSY (HYDRAULIC)	1

Parts List – Figure 3B

When ordering replacement parts/kits, please specify model, serial number and color of your unit.

+ PART OF REPAIR PARTS KIT



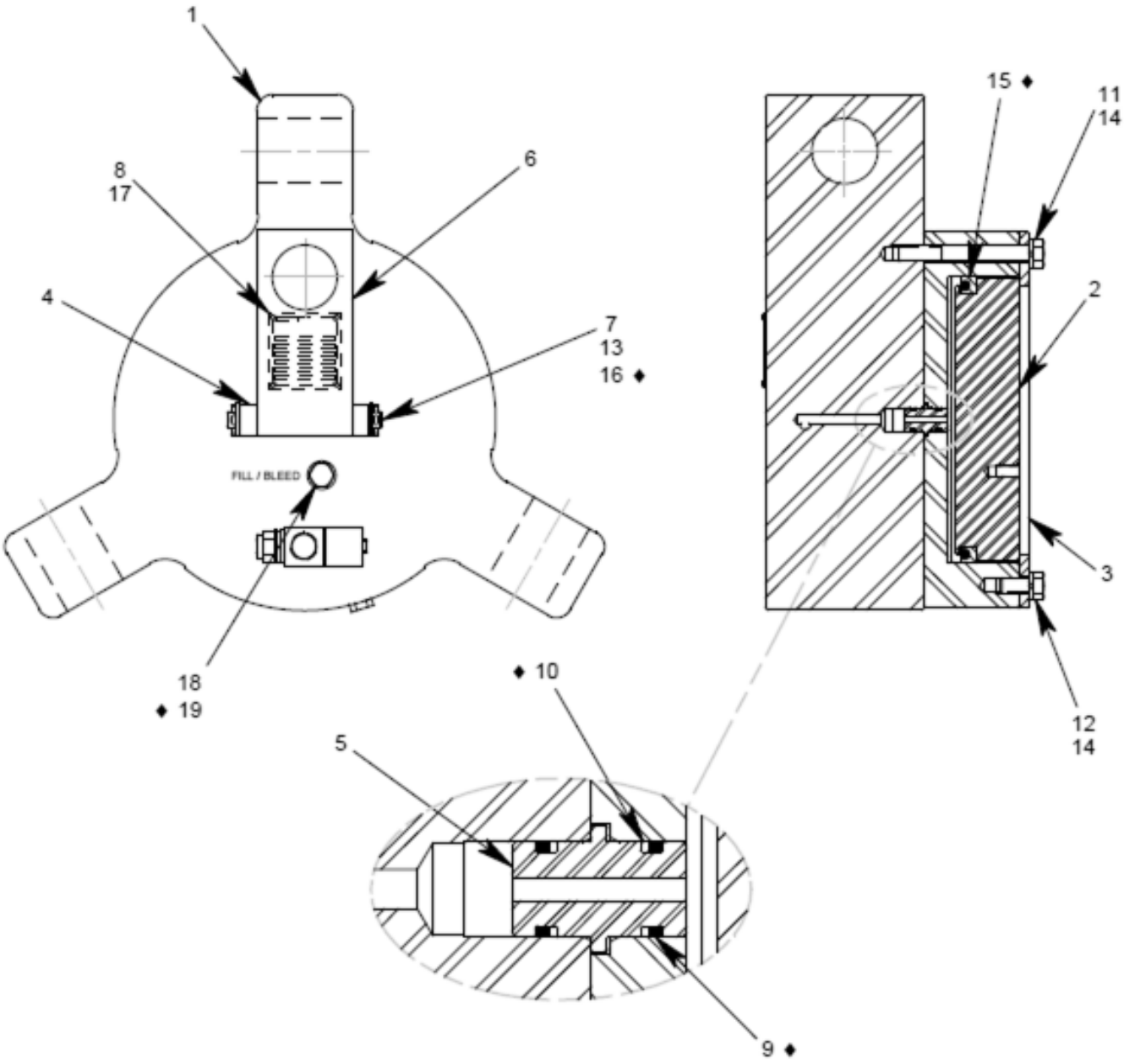


Item	Part Number	Description	Qty
1	883301	HEAD	1
2	499-043	BATTERY, 'D' CELL ALKALINE	4

Parts List – Figure 4A

When ordering replacement parts/kits, please specify model, serial number and color of your unit.

♦ **PART OF REPAIR PARTS KIT**



Parts List – Figure 4A

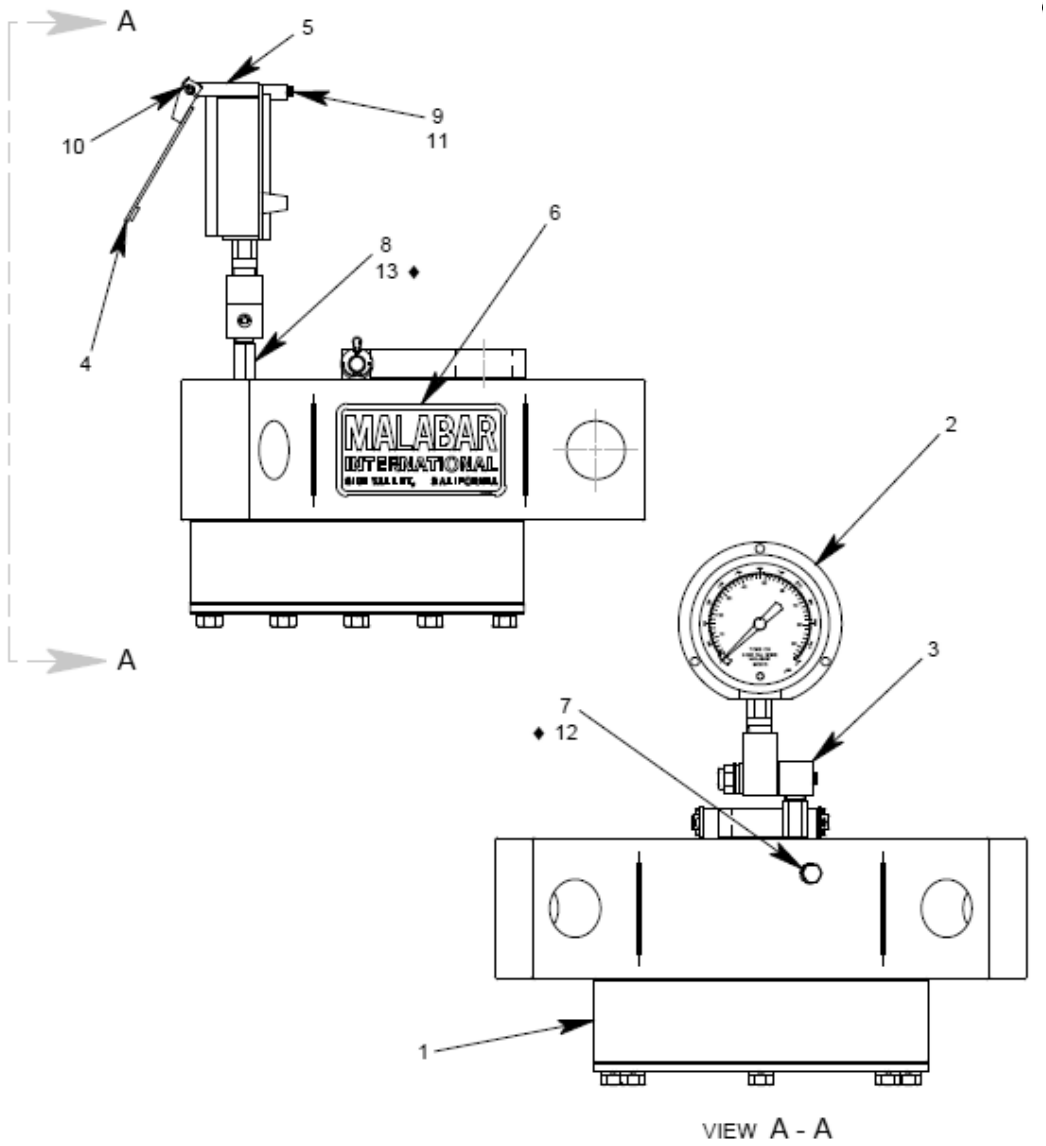
When ordering replacement parts/kits, please specify model, serial number and color of your unit.

Item	Part Number	Description	Qty
1	842902	HAT	1
2	842907	PRESSURE DISC	1
3	842909	RETAINER RING	1
4	842904	EAR	2
5	842910	CONNECTOR	1
6	842915	LIFT BAR	1
7	842916	LIFT RING PIN	1
8	WF9-7035	NAMEPLATE	1
9	55925-113	O-RING	2
10	55929-113	BACK-UP RING	2
11	321-034	HHCS, 1/2-13 x 4 1/4 LG	6
12	321-040	HHCS, 1/2-13 x 1" LG	2
13	362-005	FLAT WASHER, 1/2 SAE	2
14	363-004	SPLIT LOCKWASHER, 1/2	8
15	749-012	SEAL	1
16	372-002	COTTER PIN, 3/32 x 1" LG	2
17	393-007	DRIVE SCREW, #4 x 1/8 LG	4
18	717-003	PLUG, 3/8 SAE	1
19	55925-906	O-RING (PART OF ITEM 18)	1

Parts List – Figure 4B

When ordering replacement parts/kits, please specify model, serial number and color of your unit.

♦ **PART OF REPAIR PARTS KIT**



VIEW A - A

Item	Part Number	Description	Qty
1	842905	BASE	1
2	842815	LOAD GAUGE	1
3	842911	SWIVEL ELBOW ASSEMBLY	1
4	842928	GAUGE COVER PLATE	1
5	842929	SUPPORT PIN	1
6	55998	STICKER, MALABAR	1
7	717-009	PLUG, 3/16 SAE	1
8	721-046	CONN, LG, 3/8 37° x 3/8 MPT	1
9	323-073	SHCS, 10-32 x 1 1/4 LG	1
10	329-003	THUMB SCREW, 1/4-20	1
11	363-009	SPLIT LOCKWASHER, # 10	1
12	55925-903	O-RING	1
13	55925-906	O-RING	1

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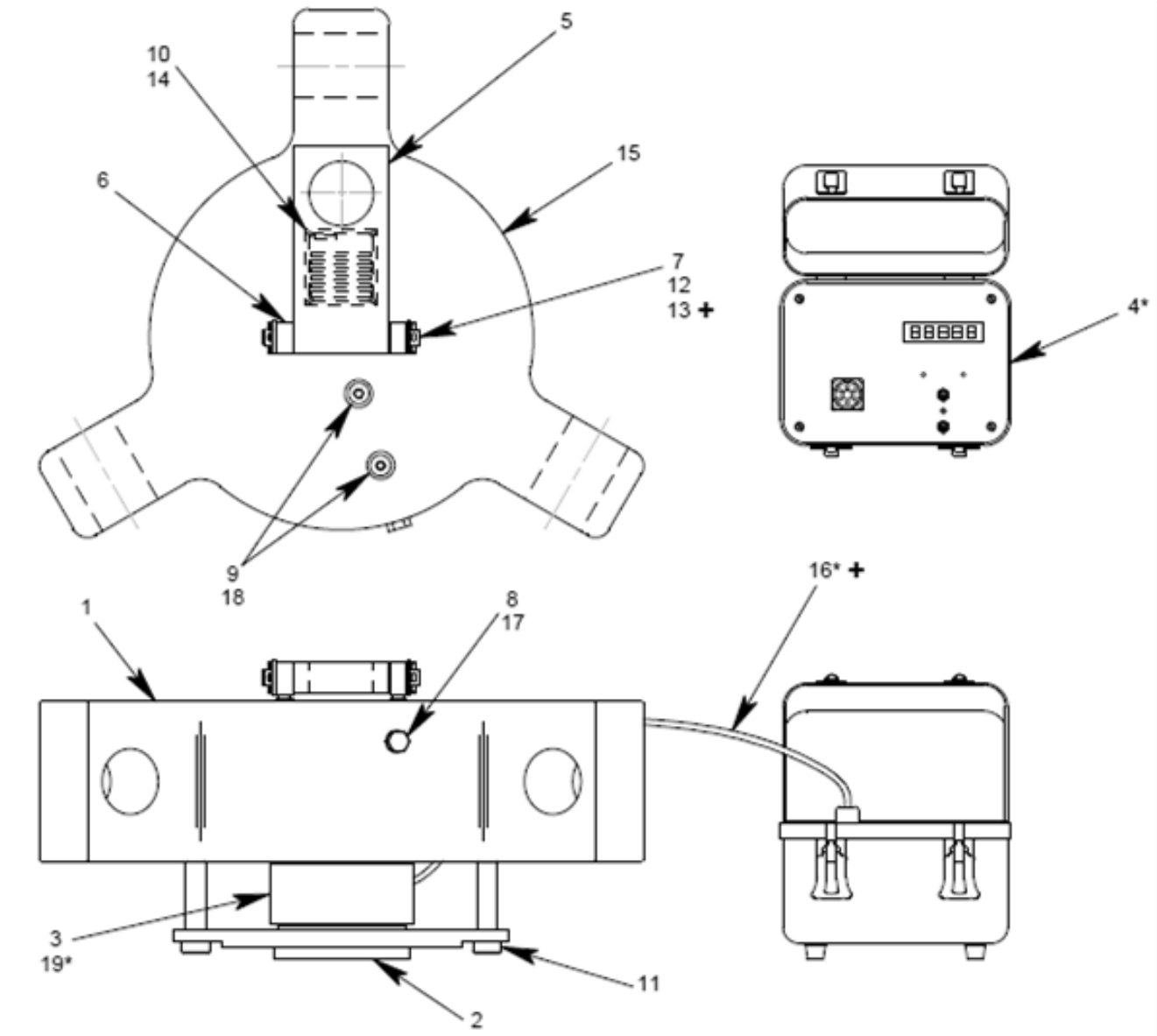
Parts List – Figure 5

When ordering replacement parts/kits, please specify model, serial number and color of your unit.

Part of electronic load cell system part no. 450-243
+ PART OF REPAIR PARTS KIT



Parts List – Figure 5

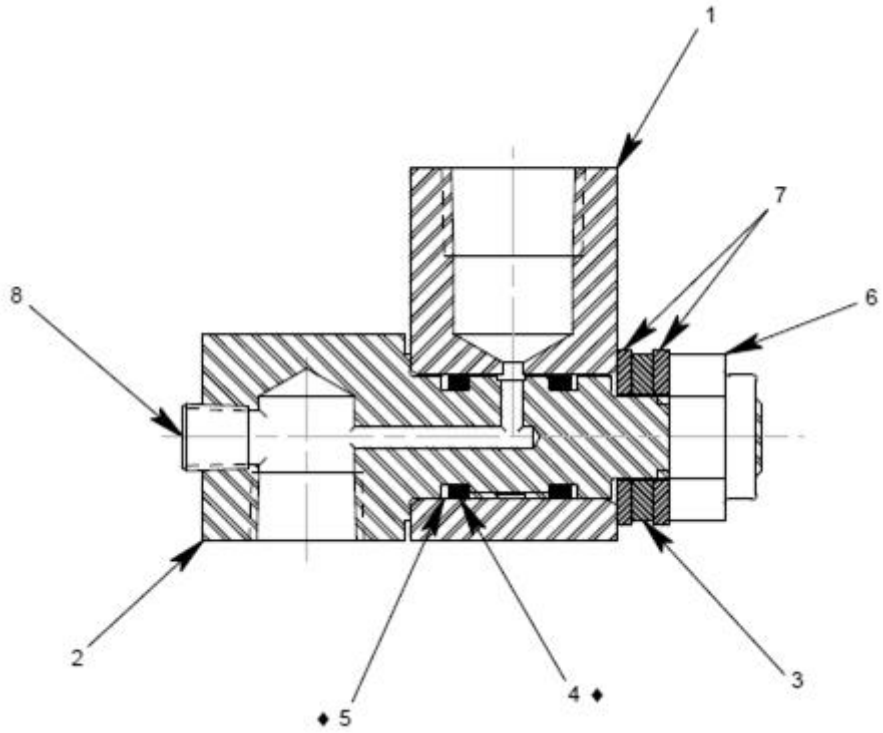
When ordering replacement parts/kits, please specify model, serial number and color of your unit.

Item	Part Number	Description	Qty
1	842902	HAT	1
2	883309	LOAD CELL RETAINER	1
3	450-243	ELECTRONIC LOAD CELL SYS	1
4	450-193	DIGITAL INDICATOR	1
5	842915	LIFT BAR	1
6	842904	EAR	2
7	842916	LIFT RING PIN	1
8	717-009	PLUG, 3/16 SAE	1
9	717-023	PLUG, 3/8 SAE	2
10	393-007	DRIVE SCREW, #4 x 1/8 LG	4
11	330-013	SHOULDER BOLT, 5/8 DIA	4
12	362-005	FLAT WASHER, 1/2 SAE	2
13	372-002	COTTER PIN, 3/32 x 1" LG	2
14	WF9-7035	NAMEPLATE	1
15	55998	STICKER, MALABAR	1
16	450-194	CABLE, 180" LG	1
17	55925-903	O-RING	1
18	55925-906	O-RING (PART OF ITEM 9)	2
19	450-192	ELECTRONIC LOAD CELL	1

Parts List – Figure 6

When ordering replacement parts/kits, please specify model, serial number and color of your unit.

♦ **PART OF REPAIR PARTS KIT**



Item	Part Number	Description	Qty
1	842912	HOUSING	1
2	842913	SHAFT	1
3	842914	WASHER	1
4	55925-113	O-RING	2
5	55929-113	BACK-UP RING	2
6	355-013	LOCKNUT, THIN, 1/2-20	1
7	362-005	FLAT WASHER, 1/2 SAE	2
8	717-005	PLUG, 1/8 NPT	1