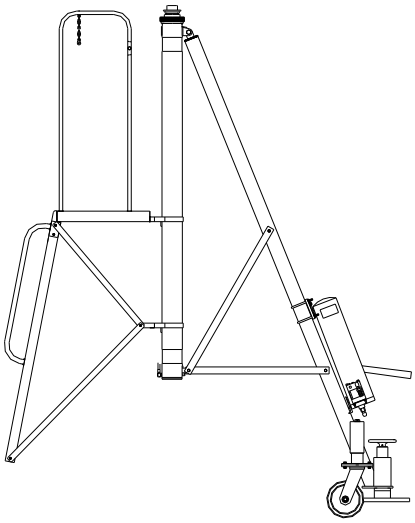
OPERATION & SERVICE MANUAL



Model: 153D1100 (10110-35)
10 Ton (9 Metric Ton)
Tripod Jack

03/2018 – Rev. 01

ColumbusJACK/Regent
1 Air Cargo Pkwy East
Swanton, OH 43558

Phone: 614.443.7492
Web: www. columbusjack.com
Email: sales@ columbusjack.com

REVISION	DATE	TEXT AFFECTED
01	03/2018	Original release

TABLE OF CONTENTS

PAGE

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.

1.0 PRODUCT INFORMATION

1.1 DESCRIPTION

10 Ton (9 Metric Ton) Tripod Jack

1.2 MODEL & SERIAL NUMBER

Reference nameplate on unit

1.3 MANUFACTURER

ColumbusJack/Regent
1 Air Cargo Pkwy East
Swanton, Ohio 43558 USA

Telephone: 614.443.7492
Fax: 614.444.9337
E-mail: sales@columbusjack.com
Website: www. columbusjack.com

1.4 SPECIFICATIONS

Capacity	10 Ton (9 Metric Ton)
Minimum Height	110 in (279.4 cm)
Hydraulic Lift	70 in (177.8 cm)
Screw Extension	18 in (45.72 cm)
Maximum Height	198 in (502.92 cm)
Operating Pressure	2079 psi (143.3 bar)
Relief Valve Pressure	2280 psi (157.2 bar)
Reservoir Capacity	5 gal (18.9 l)
Air Requirements	Pressure : 80 psi (5.5 bar) minimum Flow: 40 Scfm minimum

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, or substantial property damage*** if the warning notice is ignored.

CAUTION! — Caution is used to indicate the presence of a hazard that ***will or can cause minor personal injury or property damage*** if the caution notice is ignored.

2.2 PRODUCT SAFETY

Make sure all personnel involved with this jack read and understand these instructions before using.

CAUTION!

Do Not Exceed 5 miles per hour when towing jack.

WARNING!

Each jack is operated independently and aircraft must be raised evenly to provide stability. Failure to use safe jacking practices may result in equipment damage and injury to personnel. Personnel not involved in jacking the aircraft must remain clear of the immediate area. Other work should not be performed until jacking is completed and aircraft is stabilized. Do not work under suspended loads unless required. Failure to follow strict safety precautions may result in equipment damage and injury or death to personnel. When jacking operations are completed and aircraft is stabilized, necessary personnel may complete required maintenance actions under aircraft.

The jack is designed to lift only vertical loads with a maximum weight of 10 tons (20,000 pounds). Do not use jack for lifts exceeding the weight or design limits. Failure to comply can result in injury or death to personnel and/or severe damage to the jack and aircraft.

Casters will carry only weight of jack. Ensure casters compress under aircraft load to prevent injury to personnel and equipment damage.

3.0 PREPARATION PRIOR TO FIRST USE

3.1 GENERAL INSPECTION

If the jack is crated, uncrate and remove shipping straps or packing material. Inspect for physical damage and missing parts.

3.2 SYSTEM BLEED PROCEDURE

1. Break hydraulic line at base of cylinder.
2. Operate pump until oil comes out freely with no air bubbles. Retighten hydraulic line at base of cylinder.
3. Raise ram approximately six (6) inches with hand pump.
4. Open release valve.
5. If ram fails to raise, repeat steps 1 thru 2 until all air is removed and ram is able to raise upon using hand pump.

4.0 TRAINING

4.1 TRAINING REQUIREMENTS

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

4.2 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.

4.3 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.

5.0 OPERATION

5.1 PRE-OPERATION PROCEDURE

1. Perform visual inspection, by checking for oil leakage.
2. Check for loose, damaged or missing parts.
3. Check oil level.
4. Ensure air vent (Item 28) is open, if applicable.

5.2 LIFTING PROCEDURE

1. Extension screw should be screwed down and ram should be fully retracted.
2. Verify that caster locks are unlocked.
3. Position jack under load lifting point. Verify that jack footpads will rest on level concrete foundation. If not on concrete, it may be necessary to place a flat steel plate under footpads to distribute jack bearing pressure.
4. Unscrew the extension screw as required.
5. Close release valve.
6. Adjust leveling footpads as required to level jack.

CAUTION!

To prevent caster damage, adjust leveling footpads to the ground and level jack prior to jacking aircraft.

Always keep locknut within 1 inch of top of cylinder.

7. Operate pump until load is raised to the required height.
8. Screw locknut down against cylinder head to mechanically secure the lifted load.
9. Open release valve to release hydraulic pressure.

5.0 Operation continued on following page.

5.0 OPERATION *(continued)*

5.3 LOWERING PROCEDURE

1. Close release valve.
2. Operate pump to raise ram enough to allow locknut to rotate freely.
3. While rotating locknut up the ram, slowly open release valve and allow ram to fully retract.

CAUTION!

Always keep locknut within 1 inch of top of cylinder.

4. Lower extension screw completely.
5. Raise leveling footpads completely prior to removing jack from under aircraft.
6. Ensure (2) trailing caster locks are engaged before towing.

5.4 RELIEF VALVE SETTING

1. Position jack under a jack tester. Partially extend the ram.
2. Remove pipe plug (Item 30).
3. Insert a screwdriver into plug hole and align with adjusting screw (Item 31).
4. Operate hand pump and verify that safety valve is set at 10.50 – 11 tons. Increase pressure setting by using screwdriver to adjust safety valve screw clockwise. To decrease pressure setting, adjust safety valve screw counterclockwise.

CAUTION!

Use care not to set valve more than 10% above rated capacity.

DO NOT exceed 11 tons.

5. Remove screwdriver and reinstall pipe plug (Item 30).

6.0 TROUBLE SHOOTING

If operational troubles are encountered, refer to the Trouble Shooting Chart which lists the most commonly occurring problems and gives information which will facilitate location of trouble source and determination of remedial action.

TROUBLE	PROBABLE CAUSE	REMEDY
External fluid leakage at manual pump piston or pump body	Damaged backup ring, packing, piston or fiber washer.	Remove piston and inspect piston and pump body for damage. Replace defective parts. Replace removed packing and backup ring.
External fluid leakage at ram	Damaged backup ring, packing or inner cylinder wall	Withdraw ram as a unit from cylinder. Inspect defective parts. Replace o-ring
Jack fails to lift rated load with operation of manual pump or air	Incomplete closure of release valve	Fully tighten release valve.
	Obstructed fluid suction passages	Remove pump rocker and link details. Unscrew pump body; remove assembled valve assembly. Blow passage clear with compressed air; flush with clean fluid, reassemble and fill with hydraulic fluid
	Low fluid level	Fill to correct fluid level
	By-pass valve improperly adjusted	Test and adjust by-pass valve.
	Broken compression spring	Remove pump rocker and link details, unscrew pump body. Remove and replace defective valve assembly; test and adjust by-pass valve
Rams will not fully elevate when manual or air pump is operated	Low fluid level	Inspect and fill to correct level
	Leaking pump discharge valve or leaking pump suction valve	Remove pump rocker and link details, unscrew pump body. Remove and replace defective valve assembly; test and adjust by-pass valve
	Air lock or vacuum in reservoir due to clogged breather passage in air vent; clogged intake oil screen	Remove air vent assembly and/or oil screen and clear the obstruction
Rams will not support load after pump up	Internal pressure leakage at ram static or dynamic seals	Check for external leakage. If present, replace defective seal. If no external leakage is observed then remove screw extension and check for oil inside of chamber. Oil here can be from a weld leak
	Leaking pump discharge valve	Remove the check valves and verify holding capacity on test stand. If leakage occurs, replace
	Pressure leakage past release valve ball	Remove release valve, inspect ball and ball seat in pump block. Replace defective parts
Rams elevate and fall with each manual pump stroke	Incomplete closure of release valve	Fully tighten release valve
	Check valve next to cylinder and in hand pump, both are defective	Remove and replace defective check valve
	Pressure leakage past release valve ball	Remove release valve. Inspect ball and ball seat in pump block. Replace defective parts
Manual pump inoperative or difficult to operate	Air lock or vacuum in reservoir due to clogged breather passage in air vent assembly, clogged intake oil screen	Remove air vent assembly, and/or oil screen and clear obstruction
Pump-up satisfactory, but pump pressure fails to by-pass at maximum ram extension or with overload applied	By-pass valve improperly adjusted	Test and adjust by-pass valve
	Defective or jammed by-pass valve spring, rivet or ball	Remove pump rocker and link details, unscrew pump body. Remove and replace defective valve assembly; test and adjust by-pass valve

7.0 MAINTENANCE

7.1 SPECIAL MAINTENANCE INSTRUCTIONS

There are no special maintenance instructions for this jack.

7.2 SHOP AIDS AVAILABLE

Contact Columbus**JACK**/Regent Sales for any shop aids.

7.3 OVERHAUL KITS AVAILABLE

Soft Kit 120A1648
Repair Kit 120A1742

8.0 PROVISION OF SPARES

8.1 SOURCE OF SPARE PARTS

Spare parts may be obtained from the manufacturer:

Columbus**Jack**/Regent
1 Air Cargo Pkwy East
Swanton, Ohio 43558 USA

Telephone: 614.443.7492
Fax: 614.444.9337
E-mail: sales@columbusjack.com
Website: www. columbusjack.com

8.2 RECOMMENDED SPARE PARTS LISTS

Reference the following page(s) for Replacement Parts and Kits available.

9.0 IN SERVICE SUPPORT

Contact Columbus Jack. for technical services and information. See Section 1.3 – Manufacturer.

10.0 GUARANTEES/LIMITATION OF LIABILITY

1. ColumbusJACK Corporation, (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, and for a period of twelve (12) months after date of shipment from Seller's Swanton, OH. USA facility.
2. 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 twelve (12) months form date of original shipment. This warranty and liability of the Seller is expressly limited solely to replacement of repair of defective parts or goods, and return at Buyer's expense to Seller after find by Seller the product was defective prior to original shipment or, at the option of Seller, to making refund to Buyer of the purchase price for said product.
3. 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 MERCHANT-ABILITY OR OF FITNESS) EXCEPT THAT THE MATERIAL SHALL BE OF THE QUALITY SPECIFIED HEREIN, 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. The Buyer's sole and exclusive remedy shall be repair or replacement of defective parts 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 the 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. The 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 where, 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 pertinent to 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.

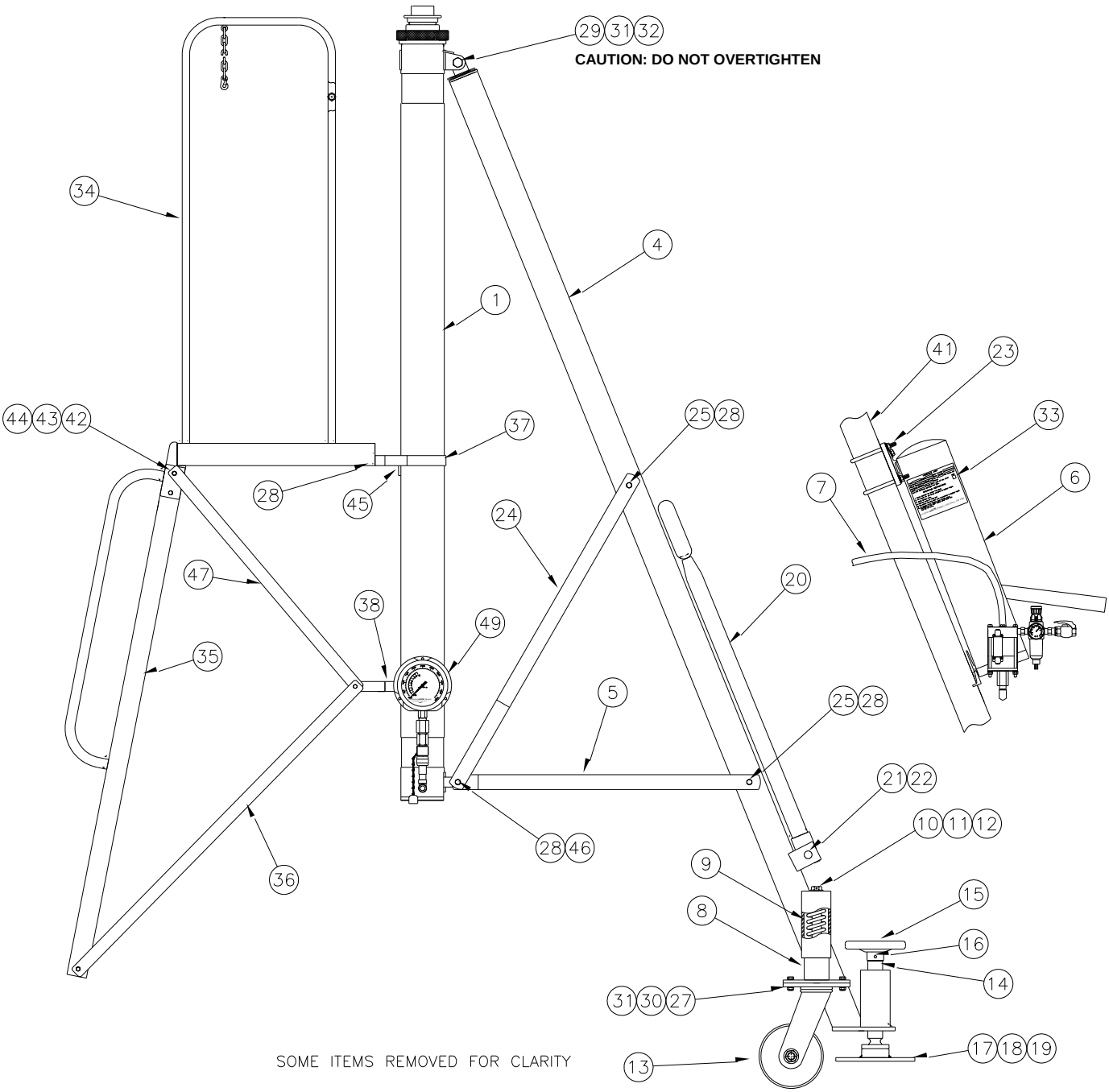
The obligations of ColumbusJACK expressly stated herein are in lieu of all other warranties or conditions expressed or implied. **Any unauthorized modification of the ColumbusJACK products or use of the ColumbusJACK products in violations of cautions and warnings in any manual (including updates) or safety bulletins published or delivered by ColumbusJACK will immediately *void any warranty, express or implied* and ColumbusJACK *disclaims any and all liability for injury (WITHOUT LIMITATION and including DEATH), loss or damage arising from or relating to such misuse*.**

11.0 APPENDICES

APPENDIX I Routine Jack Maintenance Bulletins

Parts List

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



Item	Part Number	Description	Qty
1	153D1200	Cylinder Assembly	1
3	153D1300	Leg Weldment (Not Shown)	1
4	153D1301	Leg Weldment, Towbar	1
5	153D1306	Leg Brace	6
6	567-1010	Pump Assembly	1
7	450A4100-49.5	Hose Assembly	1
8	53C6272	Caster Mount	3

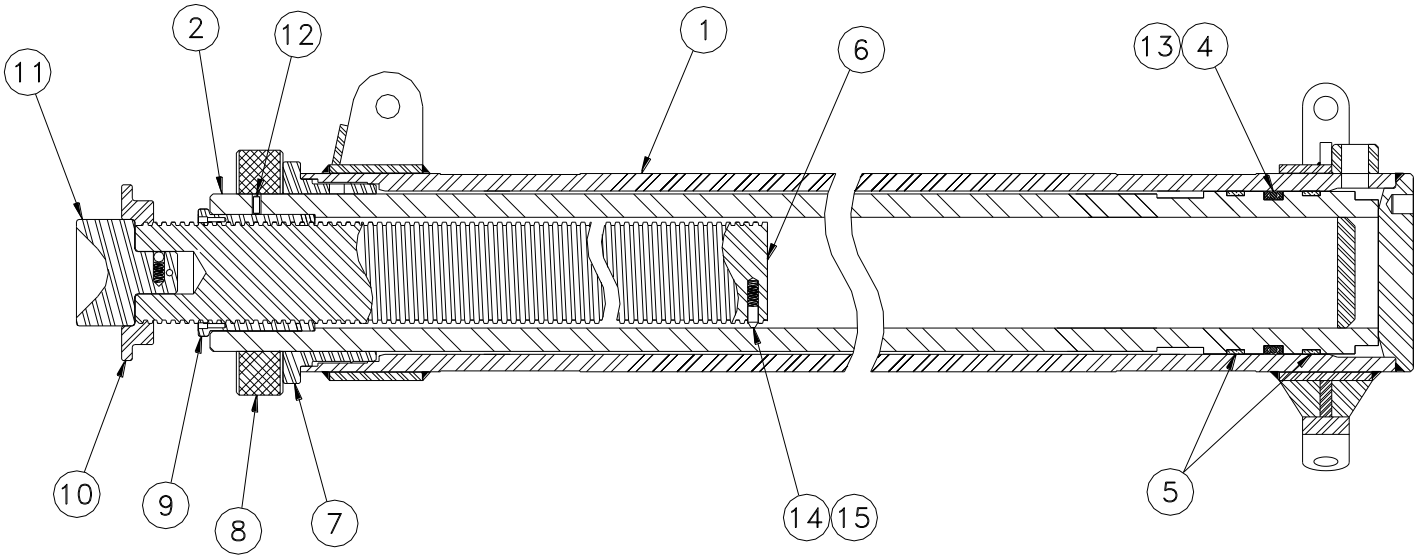
Parts List

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

Item	Part Number	Description	Qty
9	CJ66A0160	Spring	3
10	AN320-10	Castellated Nut	3
11	345-11048	Flat Washer	3
12	322-04320-SS	Cotter Pin	3
13	450A3800	Caster, Swivel Lock	3
14	077B1305	Ball Screw	3
15	932B1311	Hand Wheel	3
16	325-12240	Spring Pin	3
17	932B1306	Pad Weldment	3
18	932B1307	Retainer	3
19	377-10030	Socket Head Cap Screw	
20	077C1321	Towbar	1
21	704B1324	Pin, Towbar	1
22	322-06480	Cotter Pin	2
23	270AS204-3	Clamp Assembly	1
24	153D1307	Brace, Upper Leg	6
25	371-20400	Hex Head Cap Screw	6
26	487-50025	Lube Fitting	3
27	372-20120	Hex Head Cap Screw	
28	450A3933	Hex Locknut	
29	375-20160	Hex Head Cap Screw	3
30	333-52000	Hex Nut	
31	346-10032	Lockwasher.	
32	333-32000	Hex Locknut	3
33	160B603	Plate, Operating Instructions	1
34	153D3200	Platform	1
35	153D3010	Ladder	1
36	153C3114-1	Ladder Brace, Lower RH	1
37	153C3008	Clamp Strap	2
38	755C1707-29	Clamp Bracket	1
39	153C3114-2	Ladder Brace, Lower LH, (Not Shown)	1
40	153C3011-2	Ladder Brace, Upper LH, (Not Shown)	1
41	153D1302	Leg Weldment, Pump Mount	1
42	371-16120	Hex Head Cap Screw	8
43	333-41600	Hex Nut	8
44	346-10024	Lockwasher.	8
45	806A1709	Stop Block	2
46	371-20160	Hex Head Cap Screw	6
47	153C3011-1	Ladder Brace, Upper RH	1
48	450B9000	Universal Cover, (Not Shown)	1
49	153-3000	Load Gauge Assembly	1

Parts List

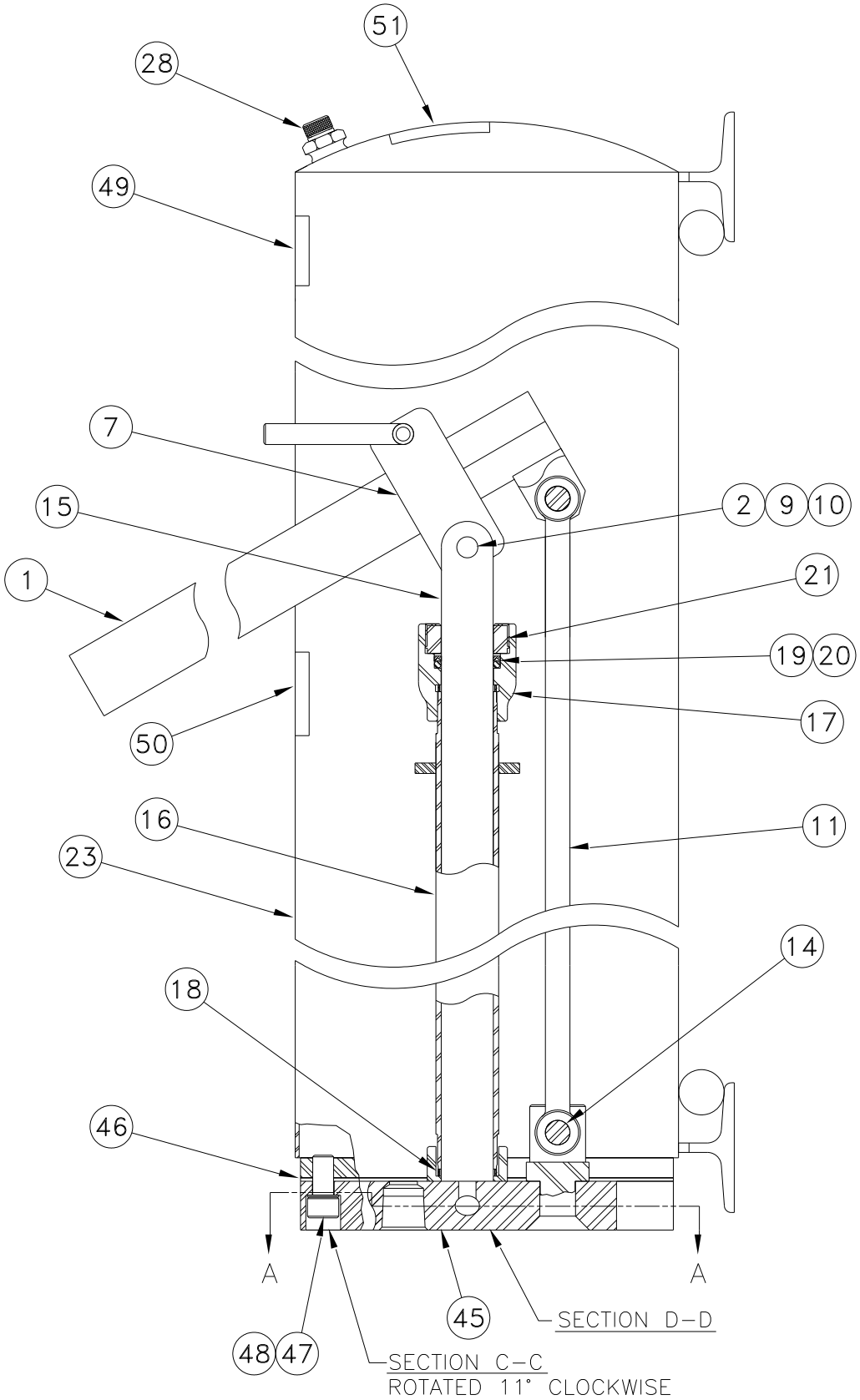
When ordering replacement parts/kits, please specify model, serial number and color of your unit.



Item	Part Number	Description	Qty
	153D1200	**Cylinder Assembly;** consists of:	
1	153D1220	Cylinder Weldment	1
2	153D1205	Ram Weldment	1
4	611-33833	O-Ring	1
5	153B1213	Wear Ring	2
6	50C25201	Extension Screw	1
7	153B1212	Bearing, Ram	1
8	153A1210	Locknut, Ram	1
9	50B25227	Nut, Extension Screw	1
10	51B7332	Locknut	1
11	56B6129	Socket	1
12	312-12020	Set Screw, Cup Point	1
13	618-10411	Backup Ring	2
14	42A12988	Plunger	1

Parts List

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



Parts List

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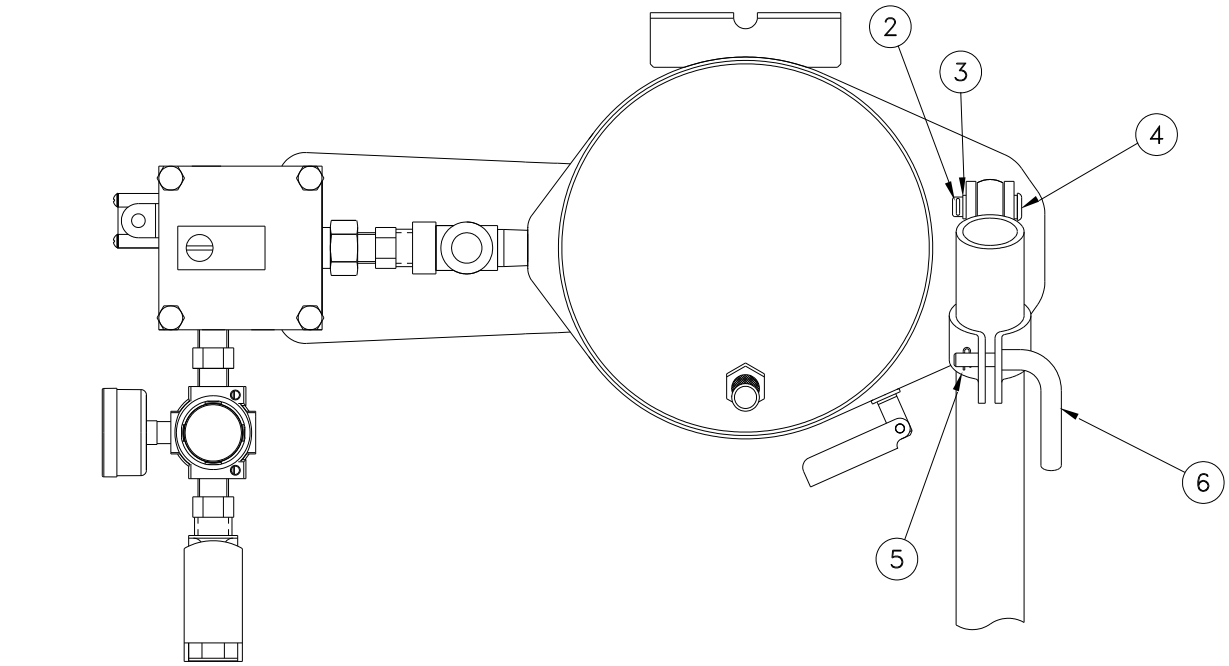

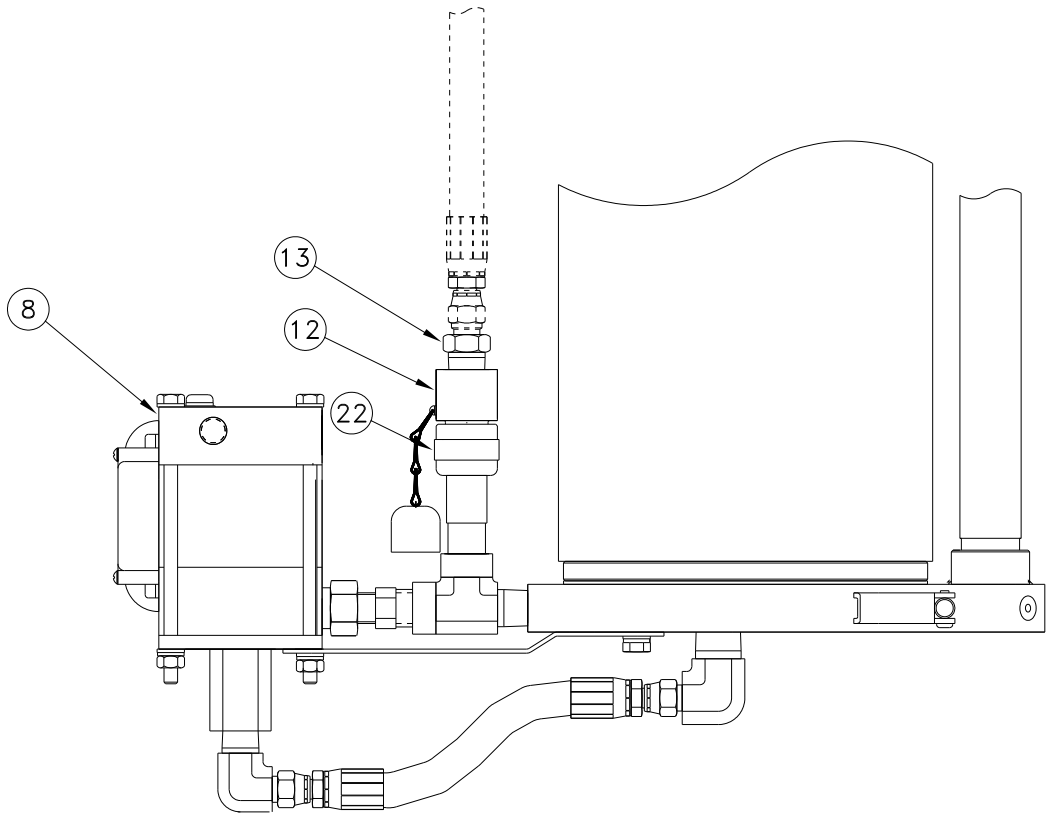

Parts List

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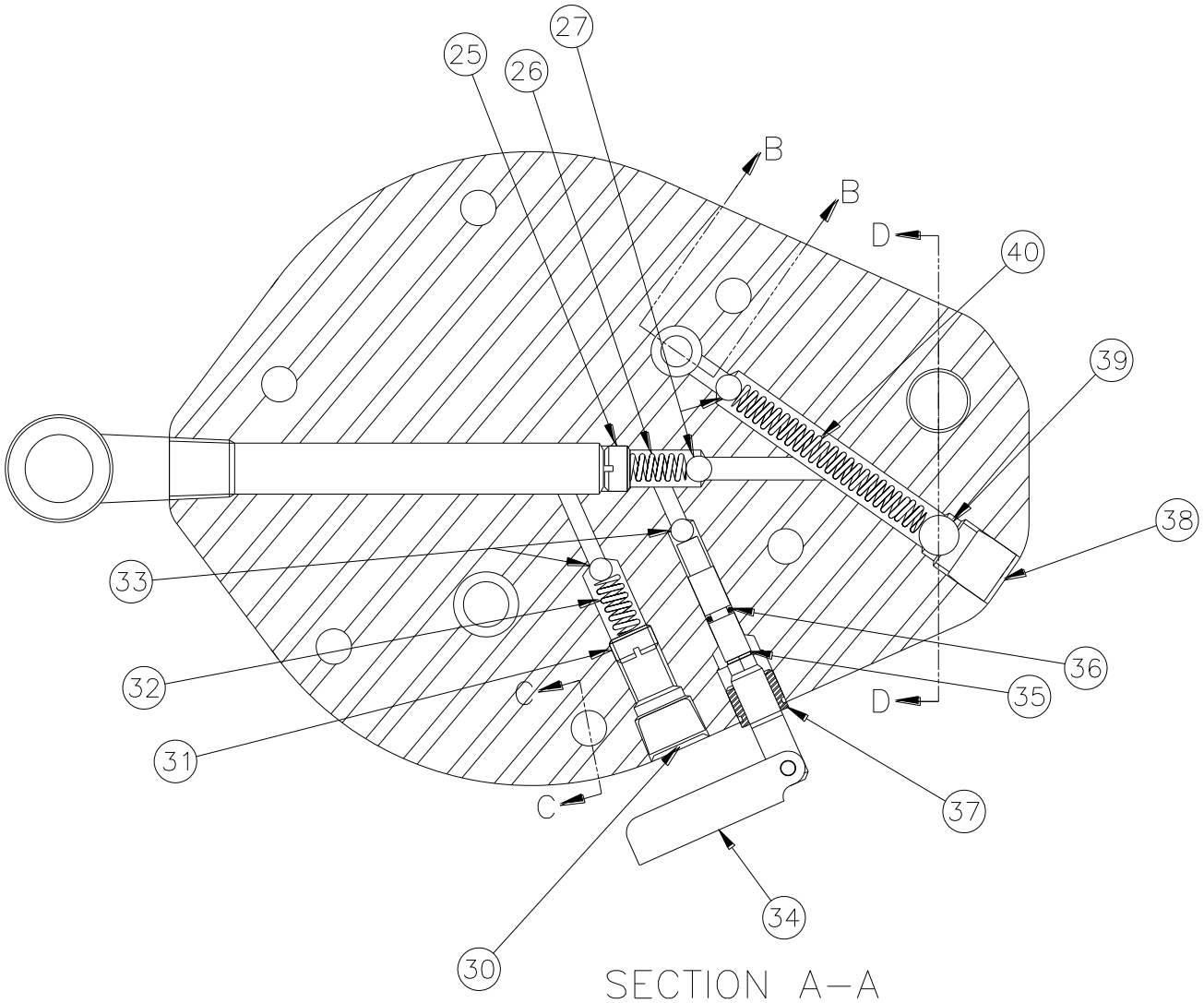
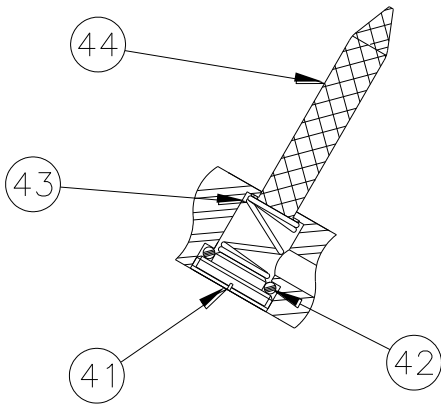


SECTION A–A



SECTION B–B

Parts List

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

Item	Part Number	Description	Qty
	567-1010	**Pump Assembly - Booster;** consists of:	
1	52C22938	Pump Handle	1
2	322-03240-SS	Cotter Pin	3
3	AN960-716	Flat Washer	2
4	321-18400	Clevis Pin	1
5	322-02160-SS	Cotter Pin	1
6	52A22940	Lever Clamp	1
7	52B22939	Clamp, Pump	1
8	450C1829	Booster Pump Kit	1
9	AN960-616	Flat Washer	1
10	321-16410	Clevis Pin	1
11	44A9858	Link, Pump	1
12	43A13906	Male Connector Assembly	1
13	457-10606	Male Connector	1
14	321-18480	Clevis Pin	1
15	52B22890	Piston, Pump	1
16	44A9859	Cylinder, Pump	1
17	44B9849	Bearing	1
18	45A21336	Washer, Fiber	2
19	611-21321	O-Ring	1
20	49B6412-18	Backup Ring	1
21	44A9868	Nut, Pump	1
22	43A13905	Connector Assembly, Female	1
23	50B7759-1	Reservoir Weldment	1
24	Not Used		
25	44A9864	Plug, Retaining	1
26	42A13004	Spring	1
27	216-1-22	Steel Ball.	2
28	50B7763	Air Vent Assembly	1
29	Not Used		
30	488-00006	Pipe Plug	1
31	50B7769	Screw, Adjusting	1
32	50B7770	Spring	1
33	216-1-16	Steel Ball	2
34	1041-1465	Release Valve Assembly	1
35	44A8562	Snap Ring	1
36	611-00800	O-Ring	1
37	44A8566	Nut, Packing	1
38	312-24041	Set Screw, Flat Point	1
39	216-1-32	Steel Ball	1
40	44A10313	Spring, Pump	1

Parts List

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

Item	Part Number	Description	Qty
41	50B7768	Plug, Screen	1
42	611-11111	O-Ring	1
43	50B7767	Spring, Screen	1
44	44A10314	Screen, Pump	1
45	567-7758C	Pump Base	1
46	50B7762	Gasket, Pump	1
47	378-16060	Socket Head Cap Screw	6
48	48A7858	Washer, Cap	6
49	44A8573	Decal, Caution	1
50	42A13047-3	Decal	1
51	44A10315	Decal, Pump Instructions	1

Parts List

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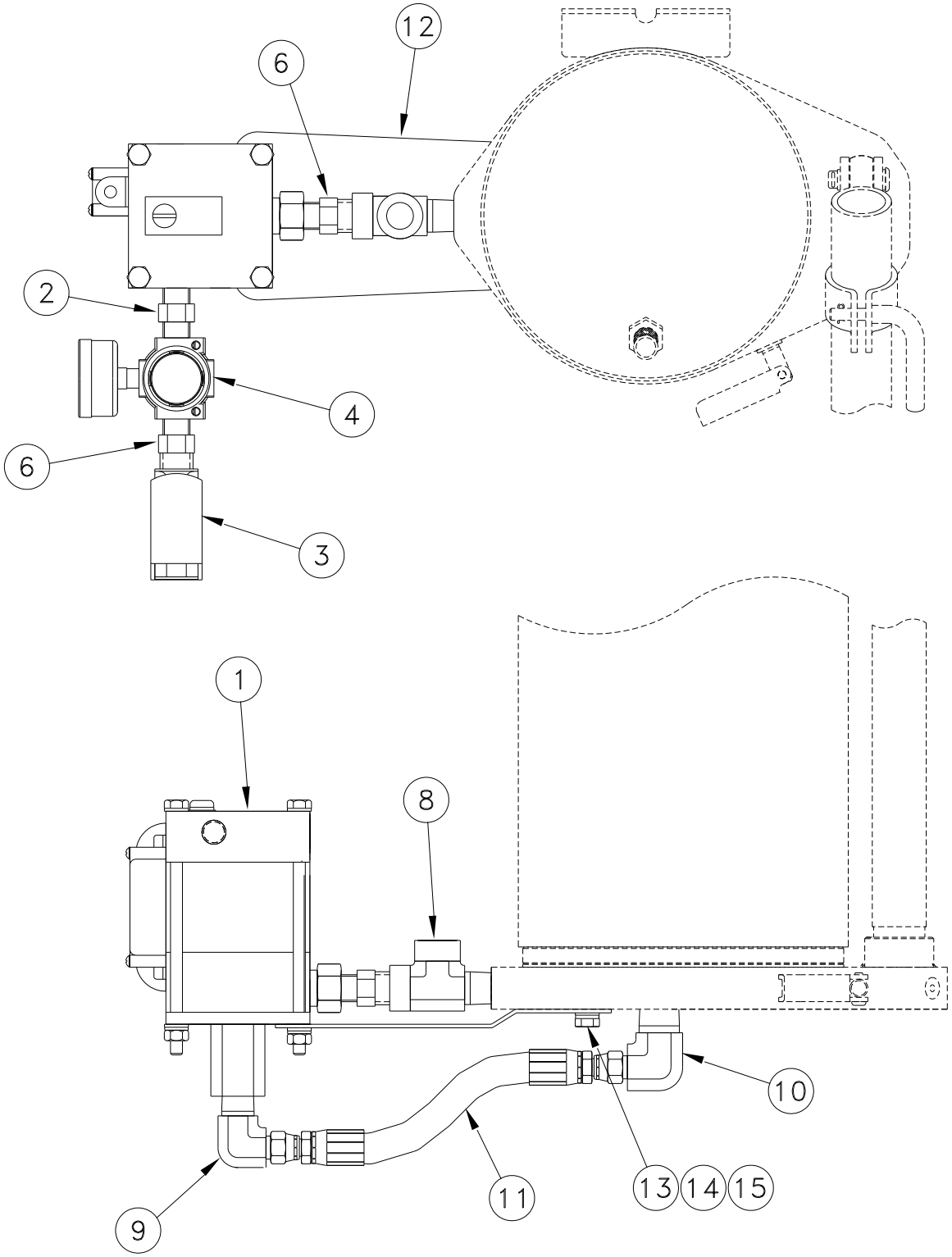

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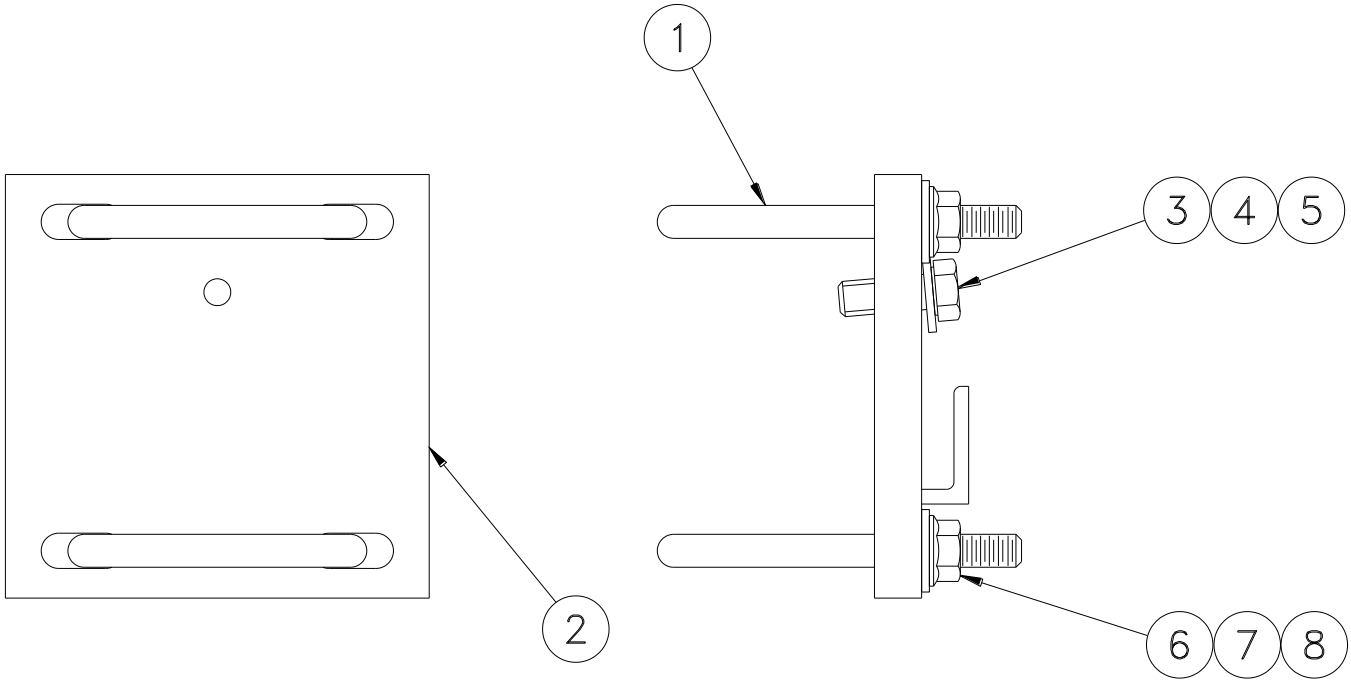
Parts List

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

Item	Part Number	Description	Qty
	450C1829	**Booster Pump Kit;** consists of:	
1	450A3355	Pneudraulic Pump	1
2	483-10404	Pipe Nipple	1
3	450A3202	Valve	1
4	450A3381	Filter Regulator	1
6	483-10604	Pipe Nipple	2
8	485-40606	Male Run Tee	1
9	456-10606	Male Elbow	1
10	456-10608	Male Elbow	1
11	450A4100-8	Hose Assembly	1
12	570-036	Pump Bracket	1
13	371-12050	Hex Head Cap Screw	2
14	345-11016	Flat Washer	2
15	346-10016	Lockwasher	2

Parts List

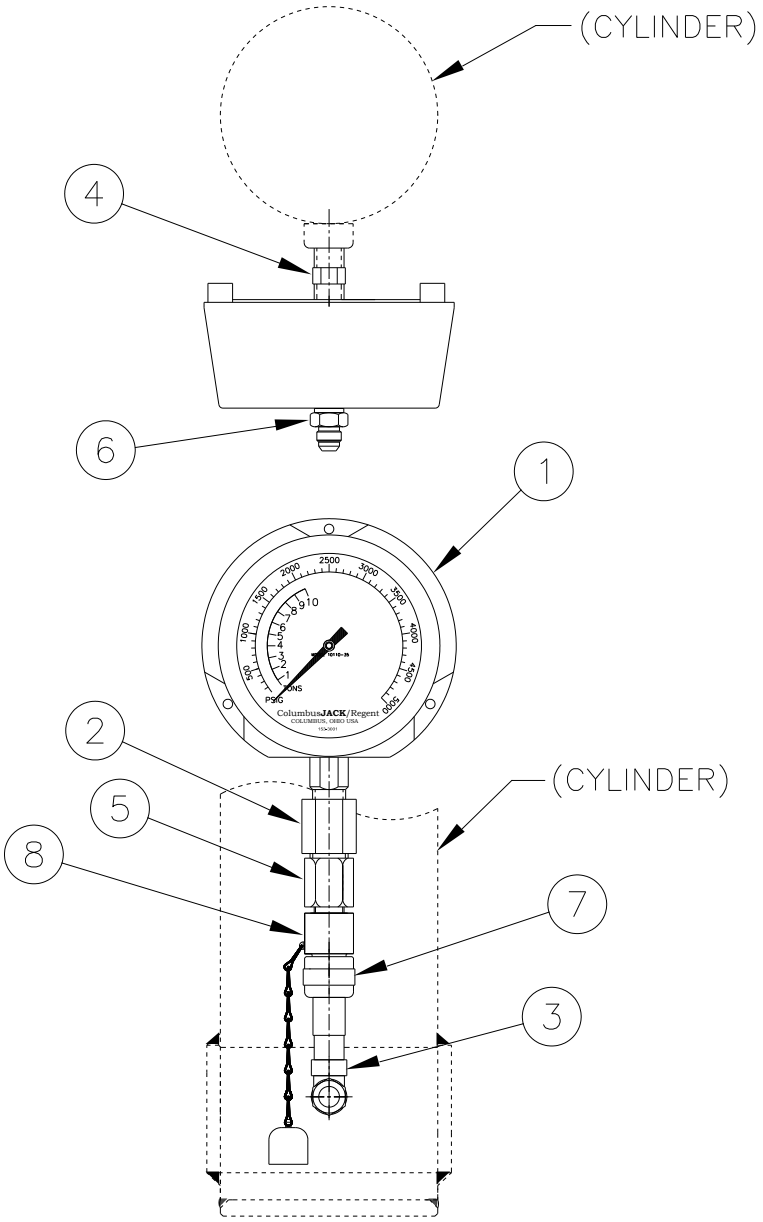
When ordering replacement parts/kits, please specify model, serial number and color of your unit.



Item	Part Number	Description	Qty
	270AS204-3	**Clamp Assembly;** consists of:	
1	450A3610	U-Bolt	2
2	270AS205-1	Plate	1
3	346-10024	Lockwasher.	1
4	371-16080	Hex Head Cap Screw	1
5	345-11024	Flat Washer	1
6	345-11020	Flat Washer	4
7	346-10020	Lockwasher.	4
8	335-14600	Hex Nut, Jam	4

Parts List

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



Item	Part Number	Description	Qty
	153-3000	**Load Gauge Assembly;** consists of:	
1	153-3001	Gauge Assembly	1
2	450A5513	Snubber	1
3	484-40606	Female Pipe Tee	1
4	483-10606	Pipe Nipple	1
5	485-20806	Expander	1
6	457-10606	Male Connector	1
7	43A13905	Female Connector Assembly	1
8	43A13906	Male Connector Assembly	

APPENDIX I

Routine Jack Maintenance Bulletins

Routine Jack Maintenance Bulletin

TO PROVIDE COMPLETE INFORMATION ON SERVICING
ColumbusJACK/REGENT QUALITY GROUND HANDLING EQUIPMENT

BULLETIN RJM 102 – PROCEDURE FOR WINTERIZATION OF HYDRAULIC AIRCRAFT JACKS

The following procedures should be utilized for optimum operational characteristics when using jacks at various temperature extremes:

1. Above 0ºF (-18ºC) Use MIL-PRF-5606, or equal, with no further additive required.
2. At 0º to -20ºF (-18ºC to 29ºC) Use a mixture of 75% MIL-PRF-5606, or equal, and 25% kerosene.
3. Below -20ºF (-29ºC) Use a mixture of 50% MIL-PRF-5606, or equal, and 50% kerosene.

Due to most company, safety, or union regulations which restrict employees from working out-of-doors below -30ºF (-34ºC), there is a lack of experience beyond this point. It is permissible, however, to increase the percentage of kerosene up to 100%. As the ambient temperature increases, MIL-PRF-5606, should be added back to the system in the appropriate mixture.

The air supply should be clean and dry. At -30ºF (-34ºC), the air pump will start to react sluggishly and continue to operate less efficiently as the temperature decreases when a normal air supply is used. The problem can be eliminated by using a dry nitrogen source of sufficient capacity.

To ease the operation of the locknut(s) and screw extension, use "Never Freeze" by Snap-On, or equal, and apply liberally to the thread surfaces.

Routine Jack Maintenance Bulletin

TO PROVIDE COMPLETE INFORMATION ON SERVICING
ColumbusJACK/REGENT QUALITY GROUND HANDLING EQUIPMENT

BULLETIN RJM 116 –SCREW EXTENSION USAGE

When using a jack that has a screw extension, it is advisable that the screw extension be extended as far as possible, and still has the jack roll under the jacking point. If the screw extension is not properly extended, the aircraft may not be able to be raised to the desired height.

A periodic check should be made to the screw extension to ensure that the stop is operating properly to prevent over-extension. To do this, rotate the screw extension counterclockwise until it stops rotating. DO NOT FORCE THE SCREW EXTENSION BEYOND THIS POINT. If the screw extension does not stop rotating, remove it and repair the stop. DO NOT USE WITHOUT THE SCREW EXTENSION STOP WORKING PROPERLY, AS THE JACK COULD FAIL WITH AN OVER-EXTENDED SCREW EXTENSION.

Routine Jack Maintenance Bulletin

TO PROVIDE COMPLETE INFORMATION ON SERVICING
ColumbusJACK/REGENT QUALITY GROUND HANDLING EQUIPMENT

BULLETIN RJM 147 – RECOMMENDED ANNUAL JACK CERTICIFATION PROCEDURE

The following Recommended Annual Jack Certification Procedure is provided as a guide to insure that hydraulic aircraft jacks are always certified for operation. An annual time interval is a general recommendation only. The actual interval used should include factors for the climatic conditions in which the equipment is stored and the frequency of equipment use. Recommendations for Suggested Preventative Maintenance can be found in RJM 170.

1. With no external load applied to the jack, fully close release valve and fully extend ram(s) to verify function and the absence of external hydraulic leakage.

WARNING!

DO NOT APPLY PRESSURE AGAINST INTERNAL RAM STOP(S).

2. Open release valve and verify ram(s) retract fully.
3. Position jack under jack tester.

NOTE: For tripod jacks, all leg extensions should be installed on the jack.

4. Close release valve, and extend ram(s) until cup adapter contacts jack tester. Make sure that the ram of a single stage jack is partially extended and that the smaller ram of a multi-stage jack is partially extended.
5. Pressurize the jack against the jack tester. Using a calibrated pressure gauge on either the jack or the jack tester, monitor the pressure until the capacity (operating pressure) of the jack is reached.
6. With the jack pressurized against the jack tester, hold in this position for 3 minutes. Verify that the jack pressure has not decreased, indicating internal leakage.
7. Open the release valve to relieve jack pressure against the jack tester.
8. Set the safety relief valve per jack operation and maintenance manual.

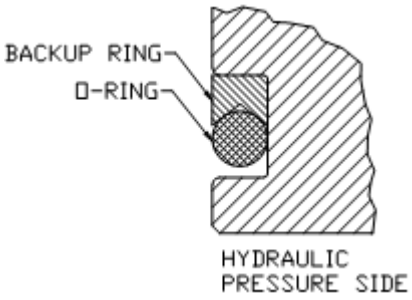
Routine Jack Maintenance Bulletin

TO PROVIDE COMPLETE INFORMATION ON SERVICING
ColumbusJACK/REGENT QUALITY GROUND HANDLING EQUIPMENT

BULLETIN RJM 149 – TEFLON BACKUP RING INSTALLATION PROCEDURE

When installing new Teflon backup rings on a ram or piston of any jack model, the following procedure should be observed to ensure correct installation of the ring. When installing a new backup ring, the corresponding o-ring should always be replaced also.

1. Cut existing o-ring and Teflon backup ring.
2. Clean and visually inspect the groove in the ram or piston for any nicks, scratches of score marks, which could cut the o-ring and backup ring during installation.
3. Check to ensure backup ring is clean and not damaged.
4. Set backup ring on a flat metal surface.
5. Using a propane torch, heat backup ring in a circular motion until backup ring is equally softened and pliable or flexible.
6. Carefully pick-up the HOT Teflon backup ring off the HOT metal plate and stretch the ring enough to fit over the end of the ram (piston).
   NOTE: Make sure the "V" cup portion of the backup ring will face the o-ring. (see figure)
7. If backup ring does not return to size after cooling, re-heat backup ring while on the part, and cool quickly with a cold, wet towel or rag.
8. Check to ensure o-ring is clean and not damaged.
9. Carefully stretch o-ring over the end of the ram (piston). Ensure that the o-ring and the "V" cup of the backup ring are facing each other. (See figure)



Routine Jack Maintenance Bulletin

TO PROVIDE COMPLETE INFORMATION ON SERVICING
ColumbusJACK/REGENT QUALITY GROUND HANDLING EQUIPMENT

BULLETIN RJM 170 – SUGGESTED PREVENTATIVE MAINTENANCE FOR JACKS

The following Preventative Maintenance Schedule is provided as a guide to insure that hydraulic aircraft jacks are always ready for operation. The time intervals listed are a general recommendation only. The actual interval used should include factors for the climatic conditions in which the equipment is stored and the frequency of equipment use.

Prior to Operation

1. Inspect for damaged or missing components.
2. Inspect for oil leakage and proper fluid level.
3. Inspect screw extension for mechanical stop.
4. Inspect all snap rings for engagement into grooves.
5. Inspect jack adapter for damage.

Every 6 Months

1. Inspect for worn snap ring grooves.
2. Change hydraulic filters if applicable.
3. If jack has not been used regularly, cycle jack without load.
4. Grease all lube fittings with a general purpose grease.
5. Wipe down ram(s) and screw extension with hydraulic oil.

Every 12 Months

1. Calibrate pressure gauge if applicable per RJM 173.
1. Perform "Recommended Annual Jack Certification Procedure" per RJM 147.

Routine Jack Maintenance Bulletin

TO PROVIDE COMPLETE INFORMATION ON SERVICING
ColumbusJACK/REGENT QUALITY GROUND HANDLING EQUIPMENT

BULLETIN RJM 171 – RECOMMENDED HYDRAULIC OILS

The following hydraulic oils are recommended for use in all ColumbusJACK/Regent products, though any oil compatible with Buna-N seals may be used. Proper oil level should be .5 to 1 inch below the fill port when all rams are collapsed.

Exxon/Mobil Aero HF (MIL-PRF-5606)
Exxon/Mobil DTE-11, -15
NATO Code No. H-538 (MIL-PRF-87257)
Phillips 66 X/C 5606
Royco 783 (Anderol) (MIL-PRF-6083)
Royco 782 (Anderol) (MIL-PRF-83282)
Shell Tellus 10, 15
Shell Aerofluid 31 (MIL-PRF-83282)
Shell Aerofluid 41 (MIL-PRF-5606)
Texaco Regal Oil R & O (32, 46, 100, 150, 220, 320, 460)