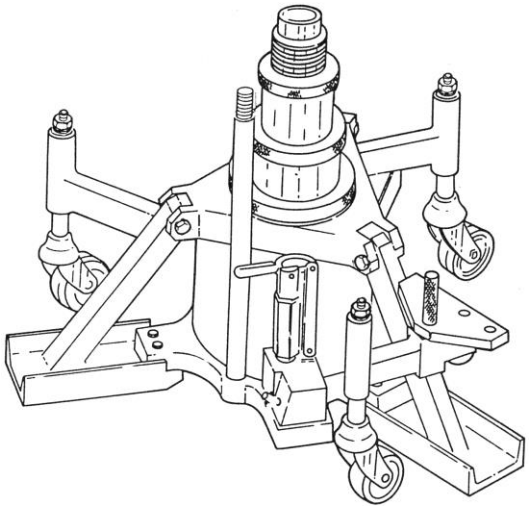
Columbus Jack
A TRONAIR COMPANY

OPERATION & SERVICE MANUAL



Model: 810D1100-G
25 Ton (22.7 Metric Ton)
Tripod Jack

03/2018 – Rev. 01

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

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REVISION	DATE	TEXT AFFECTED
01	03/2018	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.

1.0 PRODUCT INFORMATION

1.1 DESCRIPTION

25 Ton (22.7 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	25 Ton (22.7 Metric Ton)
Minimum Height	14 in (35.7 cm)
Hydraulic Lift	23 in (54.4 cm)
Screw Extension	6 in (15.2 cm)
Maximum Height	43 in (109.2 cm)
Approximate Weight	250 lbs (113 kg)
Operating Pressure	3525 psi (243 bar)
Relief Valve Pressure	3878 psi (267 bar)
Reservoir Capacity	2.49 gal (9.4 l)

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.

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 25 ton (22.7 metric ton). 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. Raise rams approximately 6 in (15.2 cm) with hand pump.
2. Open release valve on hand pump.
3. If rams fail to raise, repeat steps 1 and 2 until all air is removed and rams are 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 is in open.

5.2 LIFTING PROCEDURE

1. Extension screw should be screwed down and ram should be fully retracted.
2. Position jack under load lifting point.
3. Unscrew the extension screw as required.
4. Close release valve.
5. Operate pump to extend rams until contact is made with load lift point and extension screw adapter, with no pressure applied.
6. Rotate jack approximately 15° in any direction to minimize jack movement when load is applied to casters.
7. Operate pump to extend rams until the footpads contact the ground.

WARNING!

Maintain approximately 1 in (2.5 cm) clearance between locknut and mating surface during raising and lowering of rams. Do not touch the second (smaller) or third (smallest) stage locknuts until after the first (larger) stage is fully extended. The second and third stage locknuts must stay at the top of their stage until after the first stage is fully extended. Only when the first stage is fully extended should the second stage locknut be kept about 1 in (2.5 cm) from its mating surface. Only when the second stage is fully extended, should the third stage locknut be kept about 1 in (2.5 cm) from its mating surface.

CAUTION!

With no load applied to the jack, it is normal for any stage to extend first. Once a load is applied to the jack ensure that the first stage ram (larger) is fully extended first, before the second stage ram (smaller) begins to extend. Ensure that the second stage ram (smaller) is fully extended before the third stage ram (smallest) begins to extend. If the jack does not extend in this sequence, the jack should be disassembled to determine the cause of the excessive friction in the ram stages.

NOTE: Read load gauge (if provided) to verify that jack limits are not being exceeded.

8. Fully extend first stage ram (larger). Set first stage locknut.
9. Fully extend second stage ram (smaller). Set second stage locknut.
10. Extend third stage ram (smallest) to desired height. Set third stage locknut.
11. Open release valve to release hydraulic pressure.

5.2 Lifting procedure continued on following page.

5.0 OPERATION *(continued)*

5.3 LOWERING PROCEDURE

1. Close release valve.
2. Operate pump to raise rams until third stage ram (smallest) locknut is free to rotate.

WARNING!

DO NOT remove any locknut during ram retraction.

3. Slowly open jack release valve and allow third stage ram (smallest) to fully retract.

NOTE: Speed of lowering is controlled by how far release valve is open.

CAUTION!

Always keep first stage locknut within 1 in (2.5 cm) of cylinder, second stage locknut within 1 in (2.5 cm) of first stage ram and third stage locknut within 1 in (2.5 cm) of second stage ram as each stage is lowered.

4. With third stage ram fully retracted, rotate second stage locknut up.
5. Allow second stage ram (smaller) to fully retract.
6. With second stage ram fully retracted, rotate first stage locknut up.
7. Allow first stage ram (larger) to fully retract.
8. Lower extension screw completely.

5.4 RELIEF VALVE

1. Position jack under a jack tester. Fully extend the first and second stage rams and partially extend the third stage.
2. Remove the plug from under the hand pump piston.
3. Set the relief valve at 26.25 – 27.50 tons as described in RJM 117. (See Appendix)

CAUTION!

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

WARNING

DO NOT exceed 27.50 tons.

4. Reinstall plug.

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 rings, packing, piston or pump body	Remove affected piston and inspect piston and pump body for damage. Replace defective parts. Replace removed packing and backup ring
External fluid leakage at rams	Damaged backup ring, packing or inner cylinder wall	Withdraw rams as a unit from cylinder. Inspect for defective parts. Replace o-ring
Jack fails to lift rated load with operation of manual or pneudraulic pump	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 per RJM 117
	Broken compression spring	Remove pump rocker and link details, unscrew pump body. Remove and replace defective valve assembly; test and adjust by-pass valve
	Airlock 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
	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 bypass valve. (RJM 117)
Rams will not support load after manual or pneudraulic pump up	Internal pressure leakage at ram static or dynamic seals	Check for external leakage, if present, replace defective seal
	Leaking pump discharge valve	Remove the check valve 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 the obstruction.
Pump-up satisfactory, but pump pressure fails to by-pass at maximum ram extension or with overload applied	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
	By-pass valve improperly adjusted	Test and adjust by-pass valve per RJM 117

7.0 MAINTENANCE

7.1 SPECIAL MAINTENANCE INSTRUCTIONS

7.1.1 Third Stage Locknut

It is very important that the top of the third stage ram thread be staked to prevent the removal of the third stage locknut (see photo).

WARNING!

The third stage locknut must not be able to be removed by the operator.

7.2 SHOP AIDS KITS AVAILABLE

Ram Removal Tool 9380-1

7.3 Overhaul Kits Available

Soft Kit 120A1540
Repair Kit 120A1541

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.

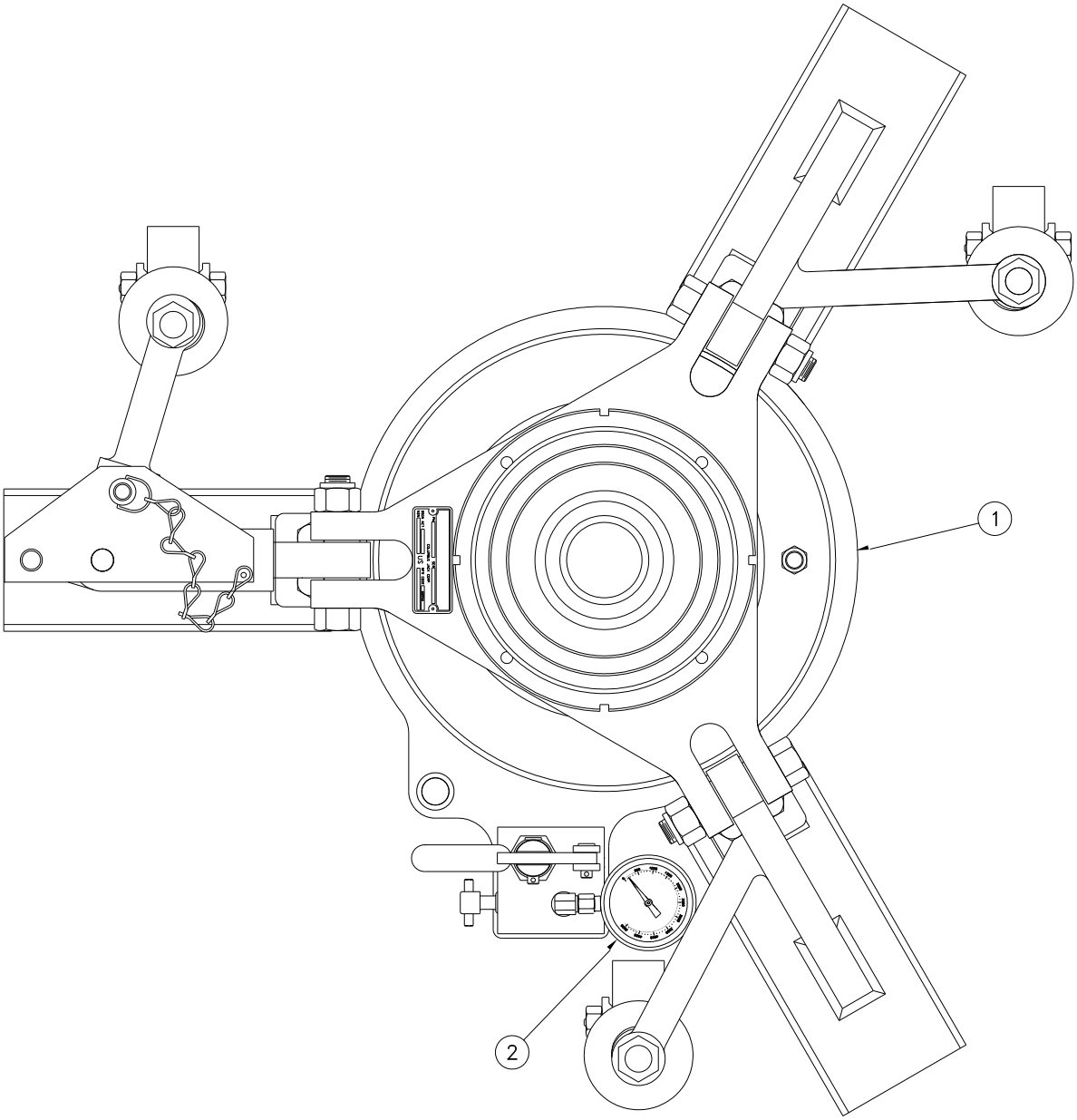
The obligations of ColumbusJACK expressly stated herein are in lieu of all other warranties or conditions expressed or implied. **Any unauthorized modification of the ColumbusJACK products or use of the ColumbusJACK products in violations of cautions and warnings in any manual (including updates) or 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	810D1100	25 Ton Tripod Jack	Ref
2	450C1840	Gauge Kit	1

Parts List

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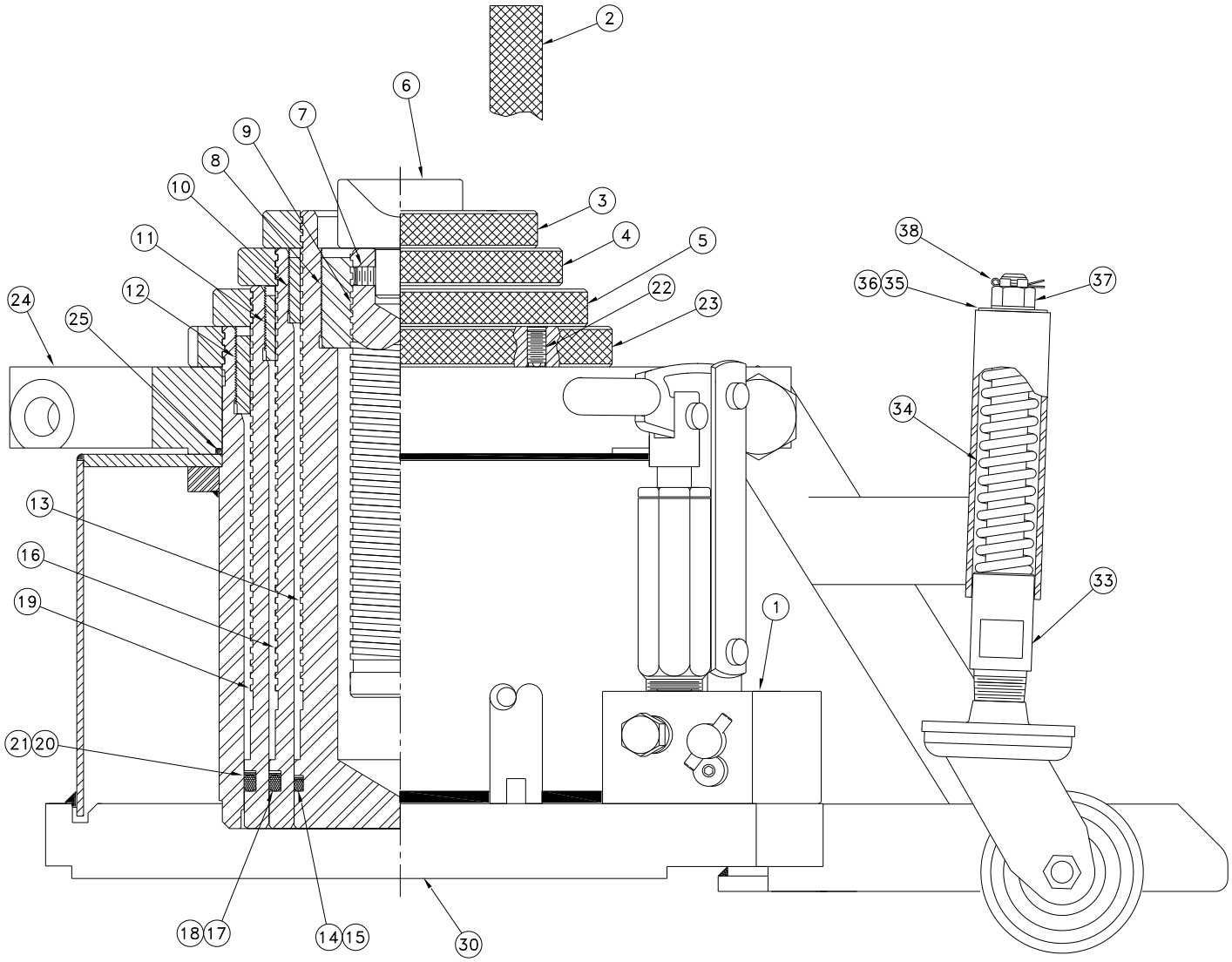

Parts List

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

Item	Part Number	Description	Qty
1	CJ69D1208	Pump Assembly	1
2	CJ69B0317	Pump Handle	1
3	CJ69C1245	Safety Nut, Second	1
4	CJ69C1242	Safety Nut, First	1
5	810C1204	Safety Nut	1
6	56B6129	Socket	1
7	AN565A624H6	Set Screw	1
8	810B1205	Nut, Extension Screw	1
9	CJ69B1250	Extension Screw	1
10	CJ69B1244	Bushing, Cylinder	1
11	810C1206	Bushing, Ram	1
12	810C1207	Bushing, Ram	1
13	810C1208	Ram, Third Stage	1
14	MS28775-344	O-Ring	1
15	MS28782-47	Backup Ring	1
16	810C1210	Ram, Second Stage	1
17	MS28775-425	O-Ring	1
18	MS28782-54	Backup Ring	1
19	810C1211	Ram, First Stage	1
20	MS28775-433	O-Ring	1
21	MS28782-62	Backup Ring	1
22	AN565D624H12	Set Screw	4
23	810C1212	Nut, Cylinder	1
24	810D1213	Support Ring	1
25	MS28775-262	O-Ring	1
30	810D1200	Cylinder Weldment	1
33	CJ69B1258	Stem, Caster Mount	3
34	CJ69B1259-1	Spring	3
35	AN960-816	Flat Washer	3
36	MS35338-48	Lockwasher	3
37	MS35692-37	Hex Nut, Slotted	3
38	MS24665-283	Cotter Pin	3

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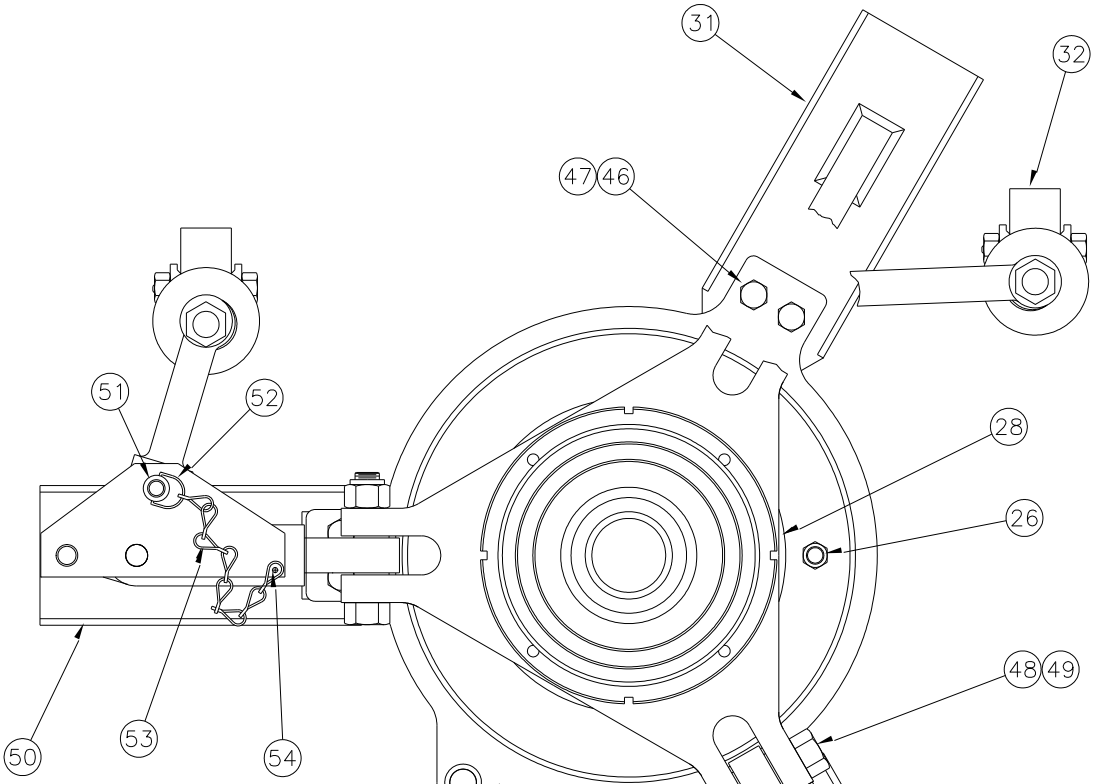
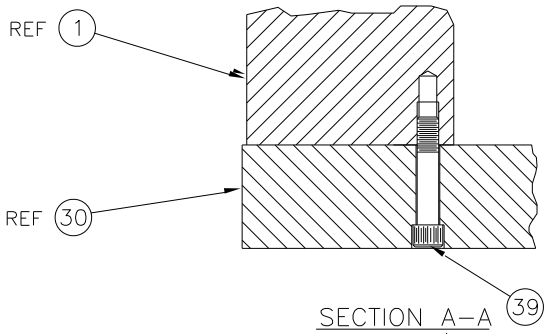
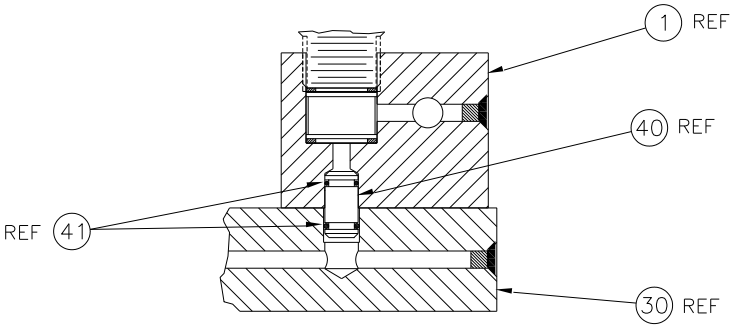
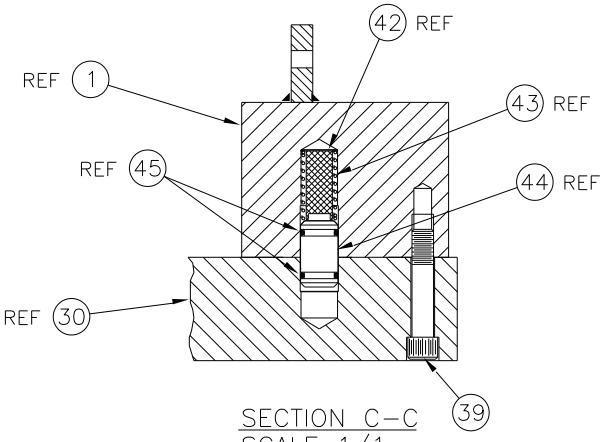




SECTION A–A
SCALE 1/1



SECTION B–B
SCALE 1/1



SECTION C–C
SCALE 1/1

Parts List

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

Item	Part Number	Description	Qty
26	CJ69B1233	Air Vent Assembly	1
28	CJ69B0335	Decal, Air Vent Instruction	1
31	CJ69D1255	Leg Assembly, Stationary	2
32	CJ69B1279	Caster	3
39	MS16997-82	Socket Head Cap Screw	2
40	CJ69B1229	Tube Connector	Ref
41	MS28775–012	O-Ring	Ref
42	CJ69B1253	Screen	Ref
43	CJ69B1225	Spring	Ref
44	CJ69B1228	Tube Connector	Ref
45	MS28775-013	O-Ring	Ref
46	MS90726-114	Hex Head Cap Screw	6
47	MS35338-48	Lockwasher	6
48	MS90727-194	Hex Head Cap Screw	3
49	MS21044-N12	Hex Nut, Self-Locking	3
50	CJ69D1256	Leg Assembly, Pivot	1
51	CJ69B1257	Pin, Indexing	1
52	450A5314	D-Ring	1
53	450A5315	Jack Chain	1
54	AN535-8-6	Drive Screw	1

Parts List

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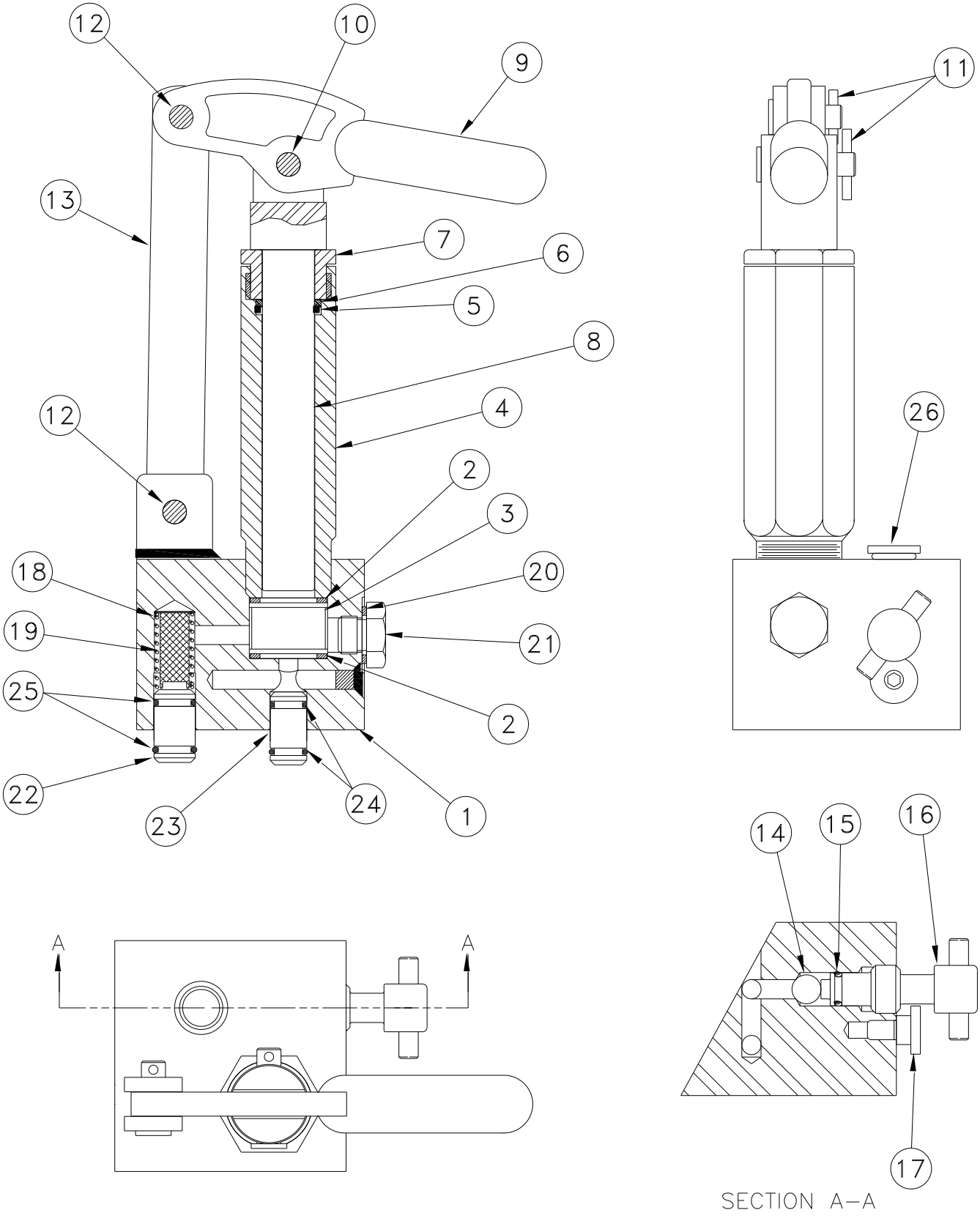


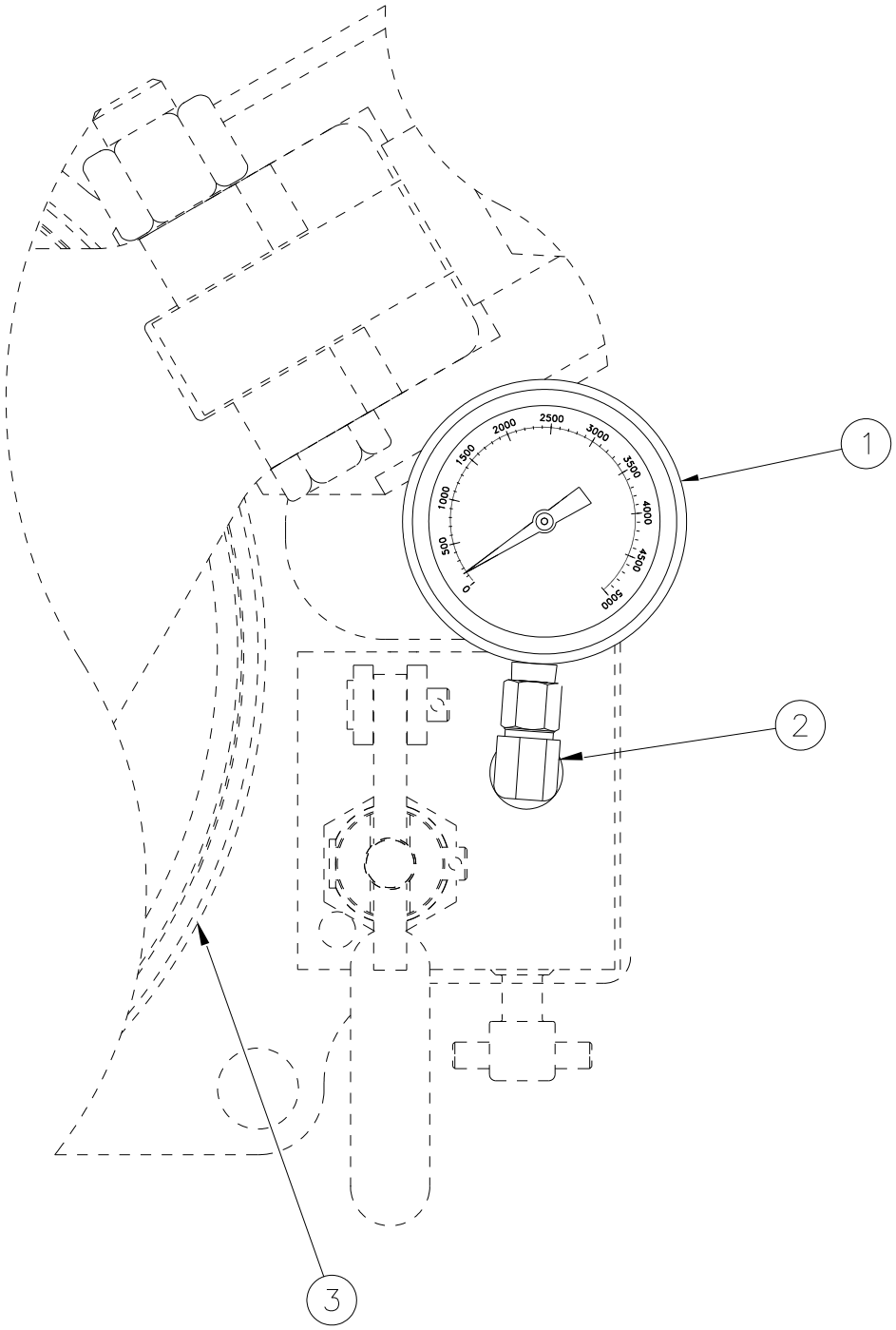
Parts List

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

Item	Part Number	Description	Qty
	CJ69D1208	**Pump Assembly;** consists of:	
1	CJ69D2209	Pump Block	1
2	CJ69B1211	Gasket, Valve	2
3	CJ69C1212	Valve Assembly	1
4	CJ69B1217	Pump Body	1
5	611-11511	O-Ring	1
6	CJ69B1218	Backup Ring	1
7	CJ69B1219	Nut, Packing	1
8	CJ69B1220	Piston, Pump	1
9	CJ69B1221	Rocker Arm	1
10	321-14330	Pin, Flat Head	1
11	322-03240	Cotter Pin	3
12	321-14250	Pin, Flat Head	2
13	CJ69B1222	Link, Pump	2
14	216-1-24	Ball, Steel	1
15	611-01101	O-Ring	1
16	CJ69B1223	Release Valve	1
17	CJ69B1224	Lock Screw	1
18	CJ69B1225	Spring	1
19	CJ69B1253	Screen Filter	1
20	CJ69B1226	Gasket, Plug	1
21	CJ69B1227	Plug, Valve Adjusting	1
22	CJ69B1228	Tube Connector	1
23	CJ69B1229	Tube Connector	1
24	611-01201	O-Ring	2
25	611-01301	O-Ring	2
26	488-20006	Hollow Hex Plug	1
1	CJ69D2209	Pump Block	1
2	CJ69B1211	Gasket, Valve	2
3	CJ69C1212	Valve Assembly	1
4	CJ69B1217	Pump Body	1
5	611-11511	O-Ring	1
6	CJ69B1218	Backup Ring	1
7	CJ69B1219	Nut, Packing	1
8	CJ69B1220	Piston, Pump	1
9	CJ69B1221	Rocker Arm	1
10	321-14330	Pin, Flat Head	1
11	322-03240	Cotter Pin	3

Parts List

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



Item	Part Number	Description	Qty
	450C1840	**Gauge Kit;** consists of:	
1	501-99705	Gauge	1
2	489-00604	Male Elbow	1
3	810-3002	Conversion Chart	1

APPENDIX I

Routine Jack Maintenance Bulletins

Columbus Jack
A TRONAIR COMPANY

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.

Columbus Jack
A TRONAIR COMPANY

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.

Columbus Jack
A TRONAIR COMPANY

Routine Jack Maintenance Bulletin

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

BULLETIN RJM 117 – PROCEDURE FOR ADJUSTING CARTRIDGE STYLE RELIEF VALVES

It is imperative that safety relief valves on all jacks always be set between rated capacity, and rated capacity plus 10% maximum. The following procedure describes how to adjust cartridge style relief valves.

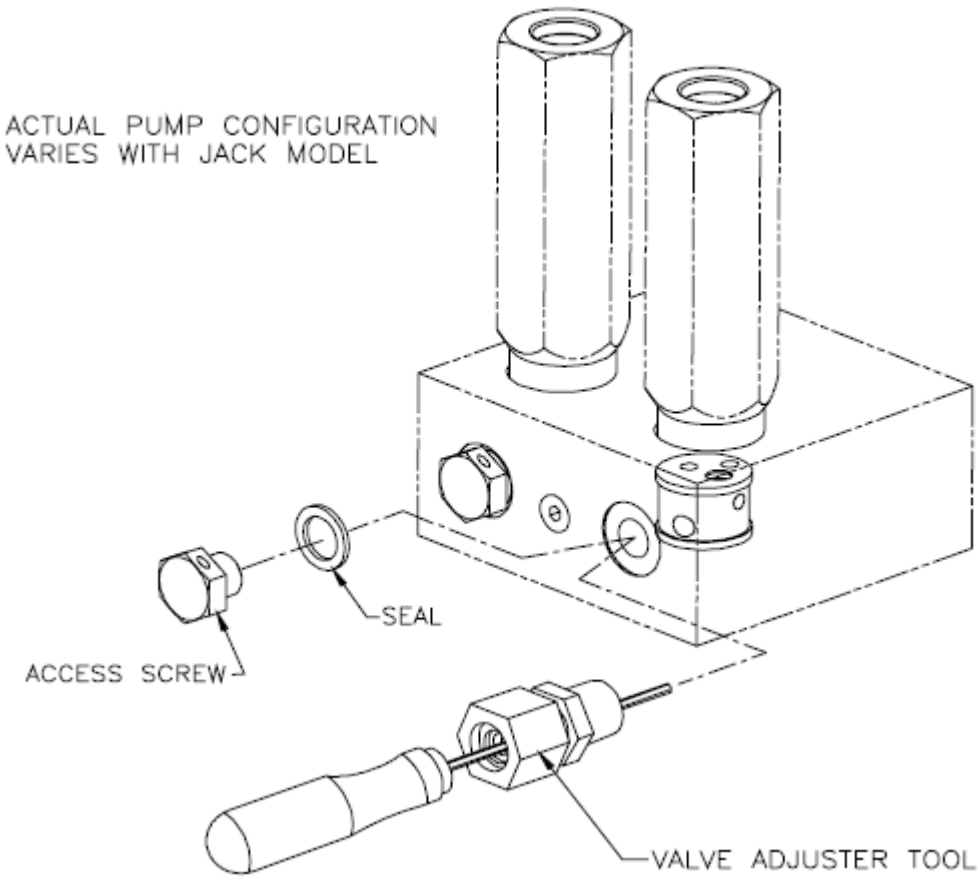
1. Position jack under jack tester.
2. Fully close release valve.
3. Remove access screw and seal. Install valve adjusting tool, Part No. 915-EB. (See illustration)

NOTE: If tool is not available, disregard this step.

4. Extend cylinder ram(s):
   a. On single stage jacks, extend the ram approximately half way.
   b. On multiple stage jacks, extend all rams until the smallest ram is extended approximately half way.
5. To set valves:
   a. Using smooth, uniform pump handle strokes, manually pressurize the cylinder while monitoring either jack load gauge or load gauge on tester.
   b. Pump handle shall "drop" or "go soft" at an indicated load between rated load and rated load plus 10% (ex: 50 ton jack should be between 50 and 55 tons).
   c. If safety relief valve is set too high, release pressure and rotate adjusting screw counterclockwise. Repeat above steps until valve is adjusted in range.
   d. If safety relief valve is set too low, release pressure and rotate adjusting screw clockwise. Repeat steps until valve is adjusted in range.

NOTE: If adjusting tool is not available, it is necessary to relieve pressure completely before removing valve access screw and seal. Then valve set screw can be adjusted using a 1/8 Inch Allen wrench. Valve access screw and seal must be Re-installed before jack can be re-pressurized.

6. After manual safety relief valve is adjusted, repeat above steps for air of electric pump if applicable.



Columbus Jack
A TRONAIR COMPANY

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.

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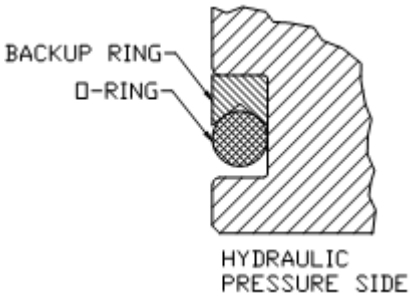
Routine Jack Maintenance Bulletin

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)



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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.

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Routine Jack Maintenance Bulletin

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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)