



Model: 9706-010
Aircraft Pneudraulic Manifold System



07/2023 – Rev. 03

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REVISION	DATE	TEXT AFFECTED
01	09/2022	Original release
02	03-2023	Major revision
03	07/2023	Modified Parts Lists

TABLE OF CONTENTS

	<u>PAGE</u>
1.0 PRODUCT INFORMATION	1
1.1 DESCRIPTION.....	1
1.2 MODEL & SERIAL NUMBER.....	1
1.3 MANUFACTURER.....	1
1.4 SPECIFICATIONS	1
2.0 SAFETY INFORMATION.....	1
2.1 USAGE AND SAFETY INFORMATION	1
3.0 INITIAL PREPARATION FOR SERVICE.....	2
4.0 TRAINING	2
4.1 TRAINING REQUIREMENTS	2
4.2 TRAINING PROGRAM	2
4.3 OPERATOR TRAINING	2
5.0 OPERATION.....	3
5.1 LIFTING PROCEDURE	3
5.2 LOWERING PROCEDURE.....	3
6.0 PACKAGING AND STORAGE	4
7.0 MAINTENANCE.....	4
7.1 MAINTENANCE SCHEDULE.....	4
7.2 RELIEF VALVE SETTING	4
8.0 PROVISION OF SPARES.....	4
8.1 SOURCE OF SPARE PARTS.....	4
8.2 RECOMMENDED SPARE PARTS LISTS	4
9.0 IN SERVICE SUPPORT.....	4
10.0 GUARANTEES/LIMITATION OF LIABILITY	5

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1.0 PRODUCT INFORMATION

1.1 DESCRIPTION

The Model 9706-010, Aircraft Pneudraulic Manifold System is a portable self contained mobile unit consisting of an air driven hydraulic pump, reservoir, and control panel that provides for the control of four tripod jacks to simultaneously lift an aircraft from a single operator position.

Each hydraulic outlet for the starboard and port wing jacks have their own hose with a pressure compensated flow regulator to maintain a constant flow rate to each jack. The nose jack hose, also containing a pressure compensated flow control, is split into two output hoses for simultaneous control of dual nose jacks.

Two air input safety relief valves protect the air pump from over-pressurization. One is fixed at 200 psi (13.8 bars), while the other is adjustable and set at the factory at 90 psi (6.2 bars). An air inlet filter ensures that clean, dry air is provided to the air pump.

1.2 MODEL & SERIAL NUMBER

Reference nameplate on unit

1.3 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

1.4 SPECIFICATIONS

Hydraulic Output:

Pressure..... 5000 psig (345 bars)
Flow..... .5 gpm (.03 liter/sec)
Fluid MIL-PRF-5606 or Equivalent
Reservoir Capacity 16 gal (60 liters)

Air Input Required:

Pressure..... 80 psi min (5.5 bars)
Flow..... 50 scfm min (394 cc/min)
Gas Type..... Shop Air

Safe Operating Conditions:

Operating Temp -20° F – 120° F
Winds Speeds less than 40 knots (20.58 m/s, 46 mph)
Surface..... Flat, Level Ground

Height..... 50 in (127 cm)
Width..... 32 in (81 cm)
Length 29 in (74 cm)
Weight, wet 500 lbs (227 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.

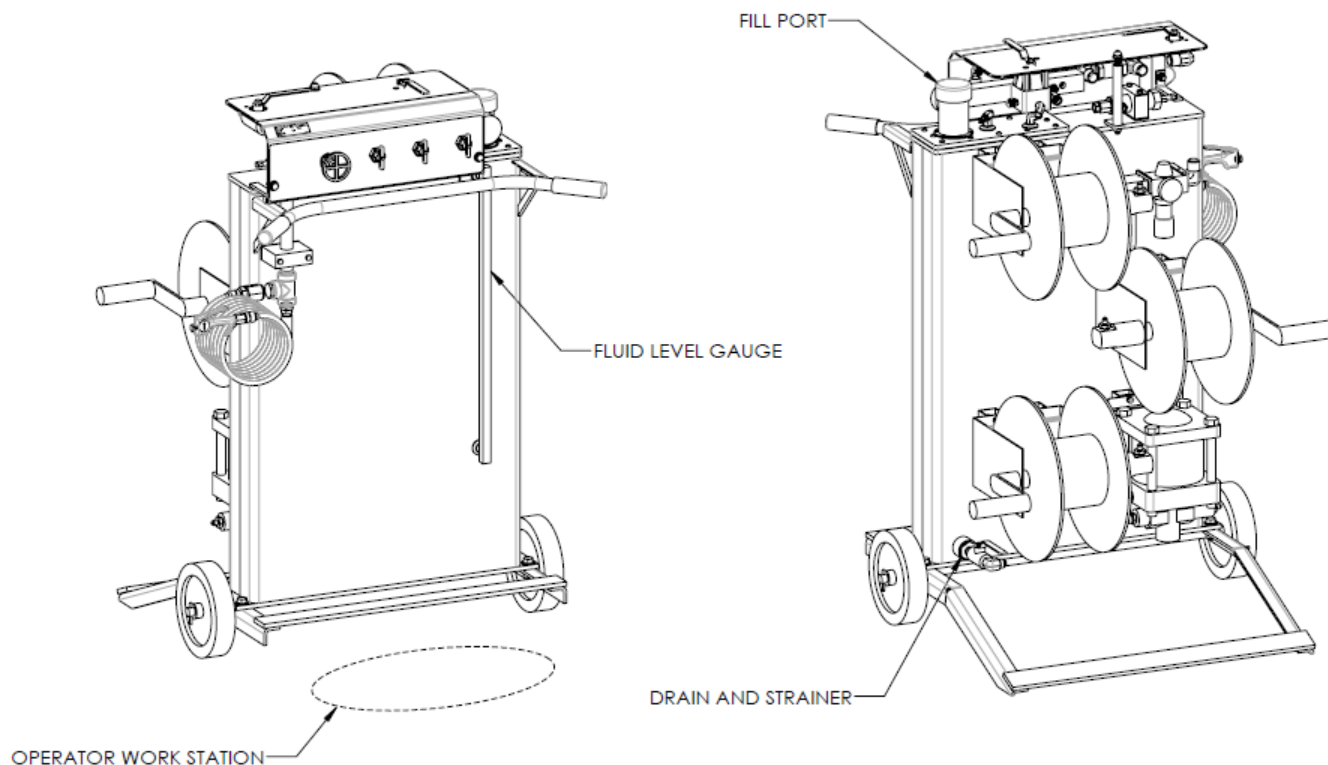


WARNING! — Warning is used to indicate the presence of a hazard that **can cause severe personal injury, death, or substantial property damage** if the warning notice is ignored.

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.

3.0 INITIAL PREPARATION FOR SERVICE

1. Fill reservoir with clean hydraulic fluid to the top of the sight gauge.
2. Connect blowgun assembly to air inlet on front of reservoir.
3. Connect air supply to the blowgun inlet pump.
4. Loosen quick disconnect on starboard hose.
5. Rotate directional control valve to the "UP" position.
6. Rotate air control valve to the "ON".
7. Slowly open the starboard control valve until oil starts to flow at the end of the hose.
8. Close the starboard control valve.
9. Repeat for each hose quick disconnect.
10. When all hoses have been bled of air, check fluid level in reservoir and fill as needed.



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 LIFTING PROCEDURE**

1. Position jacks in their respective lifting positions and connect the hoses to applicable jacks. (Refer to jack Operation and Maintenance Manual)

**WARNING!**

Release valve on each jack must be closed when using manifold system.

2. Close release valve on each jack.
3. Connect air supply.
4. Ensure reservoir isolation valve is open.
5. Close all jack control valves.
6. Rotate the directional control valve to "UP".
7. Rotate the air control valve to "ON".
8. Hold blowgun handle closed to run.

**WARNING!**

Maintain approximate 1 inch clearance between locknut and cylinder head during raising and lowering of ram on each jack.

9. Open the jack control valves as required to make a uniform lift of the aircraft.

NOTE: System lift speed can be controlled by rotating the lift speed control valve as indicated.

10. When the aircraft has been raised to the desired height, rotate the air control valve to "OFF".
11. Rotate the direction control valve to "OFF".
12. After the jack locknuts are set, rotate the directional control valve to "DOWN" and open fully each jack control valve.
13. Disconnect the air supply.

**WARNING!**

Jacks must be lowered using the same hydraulic system that was used to raise jacks. If jacks were raised using an external power supply, they must be lowered using the same external power supply. Failure to use the same source will result in over-pressurization of the jack's reservoir.

NOTE: Hydraulic system pressure is maintained while air supply is disconnected.

5.2 LOWERING PROCEDURE

1. Connect the air supply.
2. Close all jack control valves.
3. Ensure reservoir isolation valve is open.
4. Rotate the air control valve to "ON".
5. Hold blowgun handle closed to run.
6. Rotate the direction control valve to "UP".
7. Open each jack control valve enough to allow locknut to rotate freely.

**WARNING!**

Maintain approximate 1 inch clearance between locknut and cylinder head during raising and lowering of ram on each jack.

8. Rotate the air control valve to "OFF".
9. Rotate the direction control valve to "DOWN".
10. Open each jack control valve as required to lower aircraft.
11. When aircraft is supported on ground, open all the jack control valves fully until all jack rams are fully collapsed.
12. Disconnect hoses and store on hose reels.
13. Rotate the direction control valve to "OFF".
14. Disconnect the air supply.

6.0 PACKAGING AND STORAGE

Store pneudraulic assembly in a cool, dry location. If storing for an extended period (90 days) drain and replace hydraulic fluid before placing back in service. Use only recommended hydraulic fluid.

7.0 MAINTENANCE

7.1 MAINTENANCE SCHEDULE

EVERY USE
Check Fluid Level - Proper oil level for most efficient operation is at the top of the sight gauge when all jack rams are completely collapsed. The following hydraulic oils, compatible with Buna-N seals, are recommended for use:
– MIL-PRF-5606 (H-515)
– MIL-PRF-83282 (H-537)
– H-576
MONTHLY
Inspect hoses for wear and replace as required
RETURNING TO SERVICE AFTER STORAGE (90 DAYS)
Drain and replace hydraulic fluid before placing back in service. Use only recommended hydraulic fluid

7.2 RELIEF VALVE SETTING

1. Disconnect the pneudraulic Manifold from any jacks.
2. Operate air pump and verify that relief valve is set at 5250 – 5500 psi. Increase pressure setting by using a wrench to adjust screw clockwise. To decrease pressure setting, adjust screw counterclockwise.



CAUTION!

USE CARE NOT TO SET VALVE MORE THAN 10% ABOVE RATED CAPACITY.



WARNING!

DO NOT EXCEED 5500 PSI.

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

For Spare Parts, Operations & Service Manuals or Service Needs:
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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.

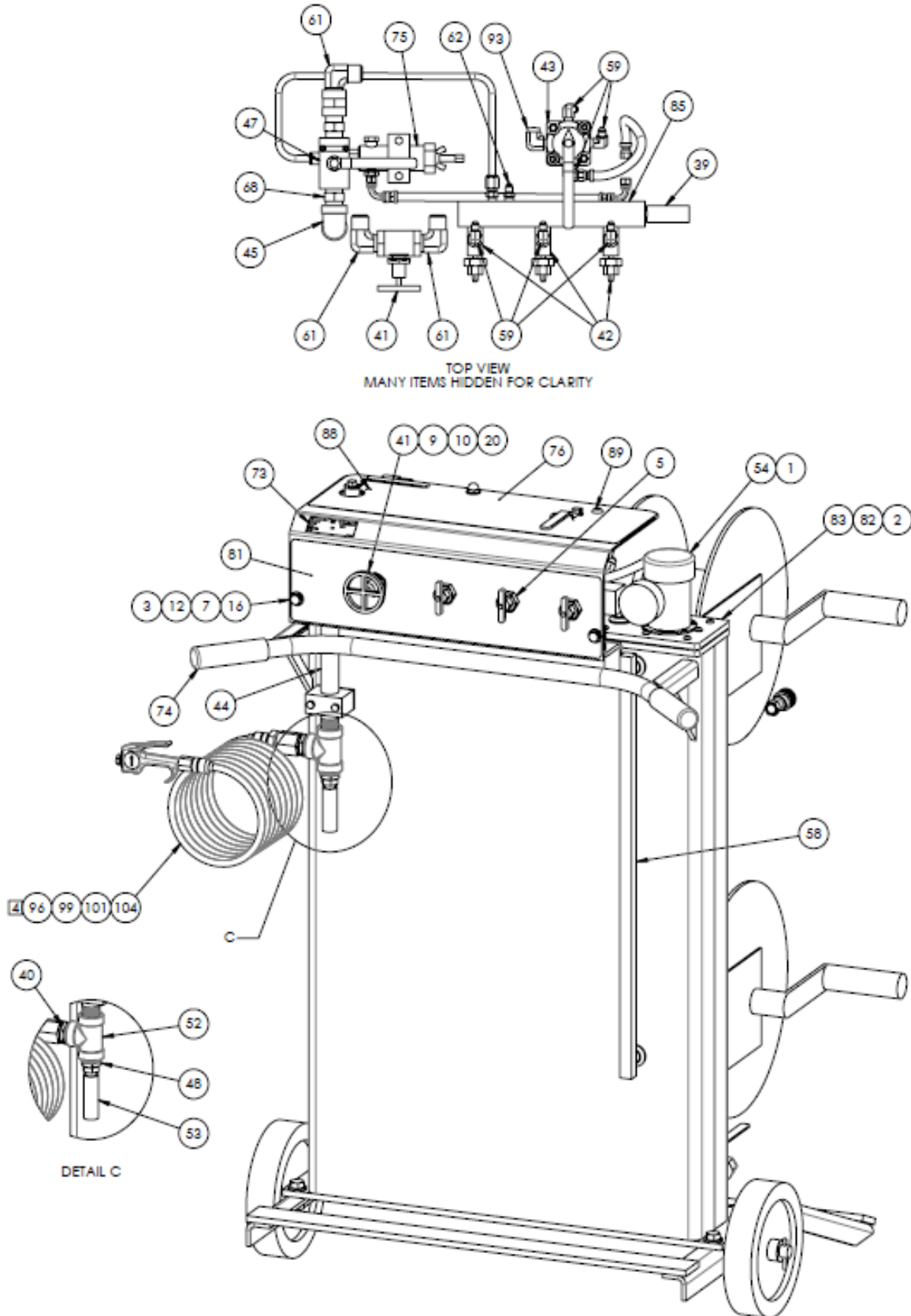
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When ordering replacement parts/kits, please specify model, serial number and color of your unit.



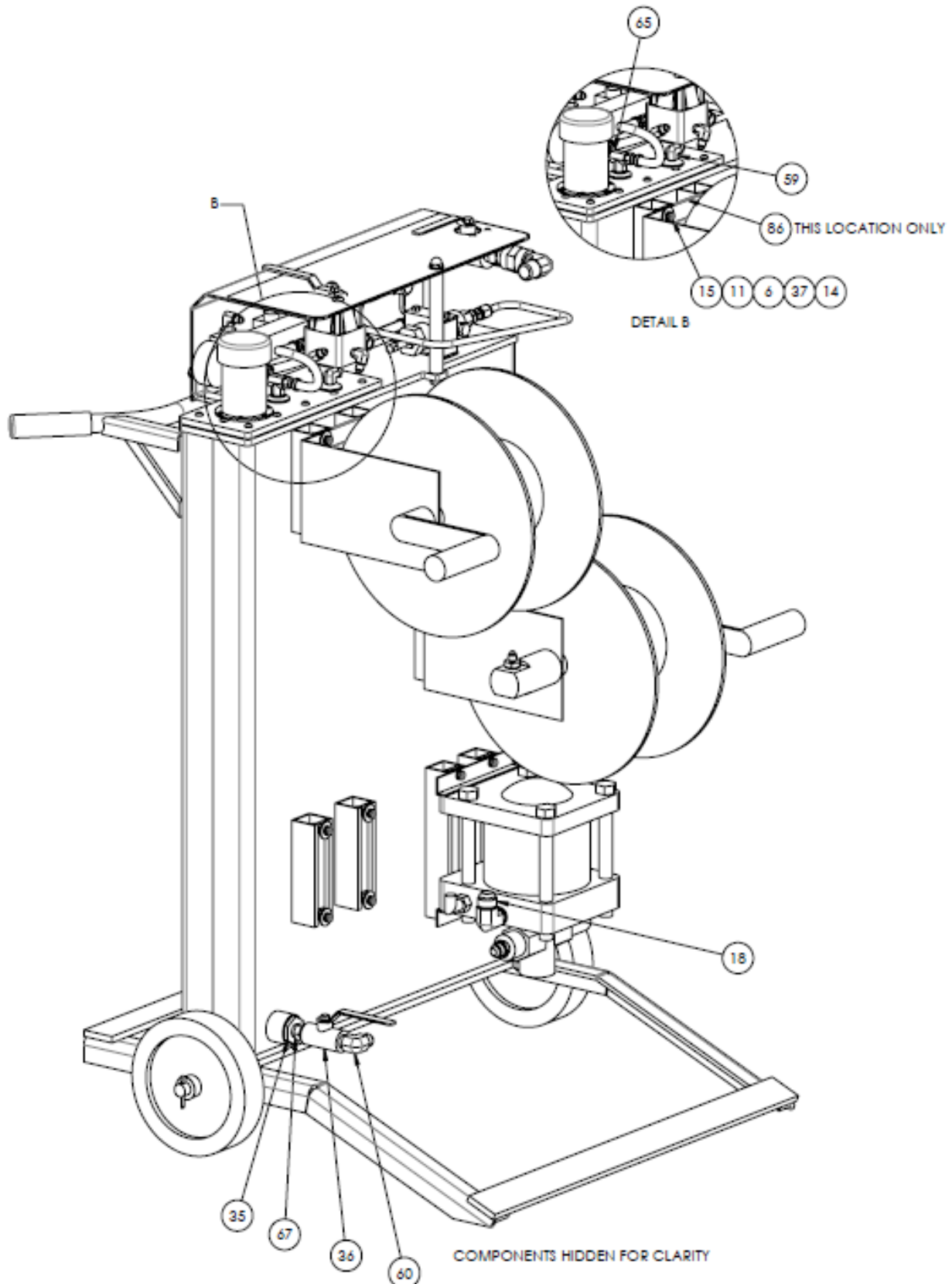
Parts List Illustration

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



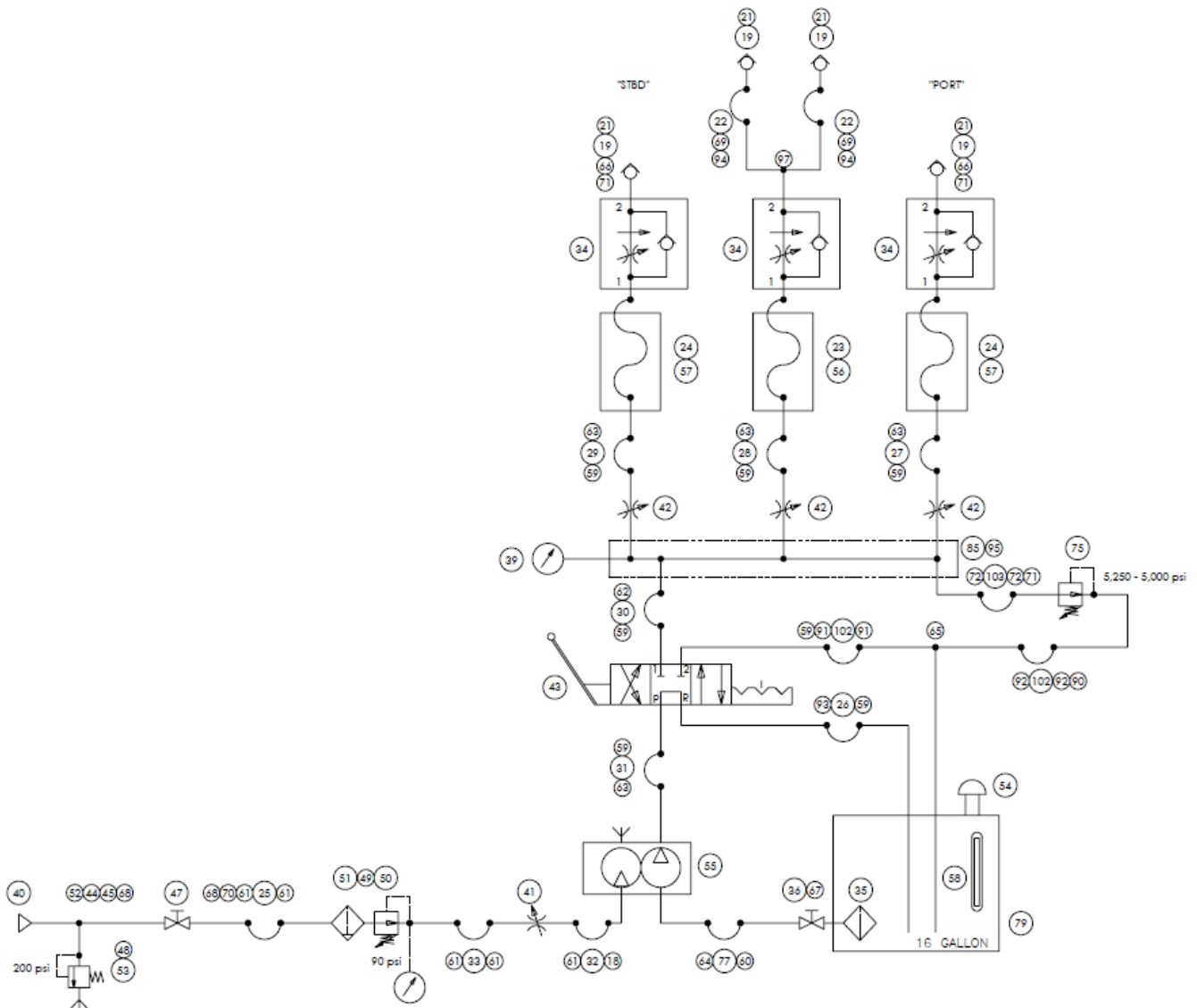
Parts List Illustration

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



NOTES:

1. See BOM for balloons callouts and illustrations for assembly views
2. Larger balloons represent parts shown with symbols on hydraulic schematic
3. Smaller balloons represent fittings required for assembly/connection of hydraulic circuit



Parts List

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

Item	Part Number	Description	Qty
1	314-08030	BHCS, #8-32 X 3/8 LG.	6
2	314-12060	BHCS, 1/4-20 X 3/4 LG.	12
3	333-41600	HEX NUT, 3/8-16 UNC-2B	3
4	333-42000	HEX NUT, 1/2-13 UNC-2B	4
5	335-52500	HEX JAM NUT, 3/4-16UNF	3
6	345-11016	1/4" FLAT WASHER	16
7	345-11024	3/8" FLAT WASHER	4
8	345-11032	FLAT WASHER, 1/2" NOM.	4
9	345-11040	FLAT WASHER, 5/8 NOM	2
10	345-11048-T	FLAT WASHER, 3/4" NOM	1
11	346-10016	LOCKWASHER, 1/4" NOM.	16
12	346-10024	LOCK WASHER	2
13	346-10032	LOCK WASHER, 1/2	4
14	361-014	FLAT WASHER, 1/4 x 1" O.D.	12
15	371-12080	HHCS, 1/4-20 X 1 LG	16
16	371-16080	HHCS, 3/8-16 NC-2A X 1-1/8, GR	2
17	371-20120	HHCS, 1/2-13 x 1-1/2 LG.	4
18	450-11208-A	PARKR, 12-8 C5OX-S, ELBOW	1
19	450A5617	QUICK DISC. SOCKET	4
20	450A6005	NUT, SIZED TO FIT MC4600K14	1
21	450A6514	DUST PLUG	4
22	450A7176	HOSE ASSEMBLY	2
23	450A7177	HOSE ASSEMBLY	1
24	450A7178	HOSE ASSEMBLY	2
25	450A7179	HOSE ASSEMBLY	1
26	450A7180	HOSE ASSEMBLY	2
27	450A7181	HOSE ASSEMBLY	1
28	450A7182	HOSE ASSEMBLY	1
29	450A7183	HOSE ASSEMBLY	1
30	450A7184	HOSE ASSEMBLY	1
31	450A7185	HOSE ASSEMBLY	1
32	450A7186	HOSE ASSEMBLY	1
33	450A7187	HOSE ASSEMBLY	1
34	450A7189	FLOW CONTROL VALVE	3
35	450A7190	STRAINER	1
36	450A7191	BALL VALVE	1
37	450A7193	CHANNEL NUT	16
38	450A7194	ACORN NUT	1
39	450A7195	PRESSURE GAUGE	1
40	450A7199	HEX HEAD PLUG	1
41	450A7200	CONTROL VALVE	1
42	450A7201	NEEDLE VALVE	3

Parts List

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

Item	Part Number	Description	Qty
43	450A7202	SELECTOR VALVE	1
44	450A7203	PIPE NIPPLE	1
45	450A7204	PIPE ELBOW	1
46	450A7205	COUPLING	1
47	450A7207	AIR BALL VALVE	1
48	450A7208	REDUCER, 4464K384, MC	1
49	450A7209	CONNECTOR KIT, 892K77, ROSS	1
50	450A7210	REGULATOR	1
51	450A7211	FILTER	1
52	450A7212	PIPE TEE	1
53	450A7213	SAFETY VALVE	1
54	450A7214	FILLER/BREATHER	1
55	450A7215	AIR PUMP	1
56	450A7216	HOSE REEL RIGHT HAND	1
57	450A7217	HOSE REEL LEFT HAND	2
58	450A7218	SIGHT GLASS	1
59	456-10404	MALE ELBOW, 4-4 CTX-S, PARKER	7
60	456-10808	MALE ELBOW, 8-8 CTX-SS, PARKER	1
61	456-11212	MALE ELBOW, 12 CTX-S, PARKER	5
62	457-10404	STRAIGHT ADAPTER, 4-4 FTX-S	1
63	457-10408	MALE CONN, 4-8 FTX-S, PARKER	4
64	457-90808	CONNECTOR, MALE 8-8 FTX-B	1
65	459-10404	TEE, 4-4-4 STX-S, PARKER	1
66	483-10404	PIPE NIPPLE	2
67	483-10808	PARKR, 1/2 FF-S, PIPE NIPPLE	1
68	483-11212	PIPE NIPPLE, 3/4 FF-S, PARKER	2
69	484-20606	PARKR, 3/8 GG-S, COUPLING	2
70	484-21212	3/4-14 NPT COUPLING	1
71	485-50604	REDUCER, 3/8 X 1/4 PTR-S	3
72	721-009	CONNECTOR, 3/8 TUBE x 1/4 MPT	2
73	915-176-CE	NAME PLATE, CE	1
74	915-BSB-33	HAND GRIP	2
75	915-HM	RELIEF VALVE	1
76	9706-1	CONTOL PANEL, PLACARD	1
77	9706-1413	HOSE ASSEMBLY	1
78	9706-1600	FRAME ASSEMBLY	1
79	9706-1810	RESERVOIR WELDMENT (WP)	1
80	9706-1816	PLACARD BACKING PLATE	1
81	9706-2	SELECTION PANEL, PLACARD	1
82	9706-8002	CLEANOUT COVER GASKET	1
83	9706-8004	CLEANOUT COVER	1
84	450A7226	STANDOFF	1

Parts List

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

Item	Part Number	Description	Qty
85	9706-8006	MANIFOLD	1
86	9706-8007	EDGE TRIM, 2-3/8"	1
87	9706-8008	3/8-16 ALL THREAD, 7-1/4" LG	1
88	G-1154-103204	SCREW, #10-24 X 1/2" LG. SOC BUTT. HD CAP	2
89	G-1154-107206	SCREW, 3/8-16 X 3/4" LG. SOCKET BUTT HD CAP	2
90	N-2009-37-S	CONNECTOR, MALE	1
91	N-2026-01	SWIVEL, JIC 37 DEG HOSE FITTING	2
92	N-2069-01-S	ELBOW, SWIVEL	2
93	N-2200-03-S	ELBOW, STREET	1
94	N-2201-06-S	ELBOW, MALE PIPE	2
95	N-2205-03-S	HOLLOW HEX PLUG 1/4 MPT	1
96	N-2206-03-S	PLUG, HEX HEAD	1
97	N-2208-03-S	TEE MALE BRANCH	1
98	N-2210-05-S	REDUCER, PIPE THREAD	1
99	N-2210-11-S	REDUCER, PIPE, 3/4 NPT X 1/4 NPT	1
100	N-2213-03-S	ELBOW, STREET 45	1
101	N-2762-05-SS	CAP, HEX PIPE CAP, 3/4 NPT	1
102	TF-1047-01	HOSE, 1/4 GRAY PUSH-ON	21 IN.
103	TR375-05	TBG, SST 3/8 X .049 WALL	26 IN.
104	Z-12008	ASSEMBLY, BLOWGUN, NBV	1