

# OPERATION & SERVICE MANUAL



**Model: 8844C**  
**Landing Gear Strut Service Unit**

01/2022 – Rev. 02

REVISION	DATE	TEXT AFFECTED
01	06/2019	Original release
02	01/2022	Updated 4.3 Operator Training and 5.1 Pre Operation Inspection



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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., its 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 Model 8844C is a nitrogen and hydraulic mobile unit designed primarily for servicing and maintaining aircraft landing gear struts. The unit is equipped with four 24 inch diameter foam filled wheels, control panel assembly, reservoir and frame assembly including an air operated hydraulic pump, two 25 foot service hoses and hose racks.)

The unit is designed to handle 3000 psig maximum regulated nitrogen. The unit comes equipped with a 3" lunette eye for ease of towing.

**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**

Unit Weight without optional equipment (dry) .....	265 lbs (120 kg)
Shipping Weight without optional equipment (dry) .....	365 lbs (165.6 kg)
Hydraulic Fluid Weight .....	140 lbs (63.5 kg)
Hydraulic Fluid .....	MIL-PRF-5606 or equivalent
Hydraulic Bypass Relief Valve set at.....	300 psig
Reservoir Capacity .....	18 gal (68 l)
Air Inlet .....	90-110 psig
Fluid Delivery Rate .....	5 gpm @ 150 psig
Suction Fluid Filter.....	10 micron nominal
Discharge Fluid Filter .....	10 micron nominal
Maximum Towing Speed.....	20 mph (32.2 kph)

**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** if the Caution Notice is ignored.

### 3.0 PREPARATION PRIOR TO FIRST USE

The unit is shipped fully assembled and ready to use. Before placing unit in operation, perform the following procedure:

1. Remove filler cap located on top of the reservoir.
2. Open air vent valve located on top of reservoir.
3. Fill reservoir to arrow on "fill to here only" placard located next to lower liquid level gauge with MIL-PRF-5606 hydraulic fluid (approximately 12 gallons) or approved equivalent. Replace filler cap. Close vent valve.



**DO NOT overfill reservoir**

**CAUTION!**

4. Fill pump lubricator with SAE #10 oil
5. Prime air operated hydraulic pump as follows:
  - a. Connect air supply to Air Inlet on side of control panel.
  - b. Open hydraulic supply valve located between reservoir and suction filter.
  - c. Open ball valve in pump outlet bypass for PRIME PUMP operation.
  - d. Close Strut Control Valves.
  - e. Set Air Supply Valve on control panel to the TO RUN HYDRAULIC PUMP position. If the pump does not self-prime, perform the following procedure:
    - f. Remove the gauge on the pump suction filter.
    - g. Add hydraulic fluid into the port while running the pump.
    - h. Replace the gauge after the pump starts to prime.
    - i. Close ball valve in pump outlet bypass for NORMAL operation

### 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 trained technician.**

## 5.0 OPERATION

### 5.1 PRE OPERATION INSPECTION

Each time the unit is to be used, inspect the following:

1. Check the frame structure for rigidity. Make sure all bolts are tightened.
2. Check system for any leaks. Fix or tighten as required.
3. Check gauges for physical damage. Replace if necessary



#### CAUTION

**DO NOT overfill reservoir (12 gallon capacity).**

### 5.2 OPERATING INSTRUCTIONS

**NOTE: The following procedures (steps 1 thru 3) should be used only as a guide. Contact your Aircraft Maintenance Department for the approved procedure.**

1. To remove hydraulic oil and nitrogen gas from landing gear strut(s):
  - a. Close VENT and FILL Strut Control Valves.



#### CAUTION!

**Air pump air relief valve must be installed at all times. If air relief valve is removed, it is possible to over pressurize the pneumatic system which could cause equipment failure and possible bodily injury.**

- b. Connect VENT hose with safety chuck from service unit to the nitrogen service valve on aircraft strut.
  - c. Slowly open nitrogen service valve on aircraft strut.
  - d. Slowly open the Vent Control Valve. Nitrogen and hydraulic fluid will be vented into the reservoir where they will be separated if strut is pressurized or overfilled. Nitrogen will vent out of the reservoir via the Nitrogen exhaust silencer. Fluid flow can be observed in the fluid sight control panel.
  - e. Close Strut Control Valve.
2. To deliver hydraulic fluid to landing gear strut:
  - a. Close VENT and FILL Control Valves.
  - b. Connect FILL hose with 7/16-20 swivel end to oil charging service valve and VENT hose with safety chuck to nitrogen service valve on aircraft strut.
  - c. Slowly open nitrogen service valve on aircraft strut.
  - d. Open FILL Control Valve.
  - e. Set Air Supply Valve to the HYDRAULIC FLUID TO STRUT SYSTEM position until fluid appears in fluid sight.
  - f. Set Air Supply Valve to OFF position.
  - g. Close VENT and FILL Control Valve.
3. To vent for storage:
  - a. Make sure nitrogen and oil charging service valves on strut are closed.
  - b. Open VENT and FILL Control Valves. This will vent the hoses
  - c. Disconnect the service hoses from the strut. Re-coil service hoses onto hose racks and fasten hose straps.
  - d. Disconnect air supply hose to service unit. Set all Control Panel Valves to off or closed position.

## 6.0 MAINTENANCE

### 6.1 SERVICING

Servicing the unit consists primarily of the following:

1. Fill pump lubricator with SAE #10 oil.
2. Replace desiccant dryer silica gel when necessary (color changes from blue to pink).
3. Replace fluid filters every 13 weeks or sooner.
4. Tires are foam filled. Do not attempt to inflate tires

### 6.2 DISASSEMBLY INSTRUCTIONS

When necessary to disassemble the unit, carefully inspect the following:

1. Check for corrosion and wear.
2. Inspect condition of all hoses.
3. Check frame structure for damage.
4. Drain and clean out reservoir.

### 6.3 REPAIR AND REPLACEMENT

No definite time schedule can be established for the overhaul of the unit for replacement of the various moving parts. The number of times the unit is used materially affects the life of the working parts. Each time the unit is disassembled, carefully repair or replace the following:

1. Replace all defective parts and missing parts.
2. Clean metal parts with cleaning solvent and dry with compressed air.
3. Lubricate all threads and bearings.



## 7.0 PROVISION OF SPARES

### 7.1 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

### 7.2 RECOMMENDED SPARE PARTS LISTS

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

The following spare parts are recommended and available upon request.

Part Number	Description	Qty
492-214	Foam filled mag style wheel	4
441-193	Seal kit, air pump	1
481-072	Suction filter assembly	1
481-143	Suction filter element	1
481-092	Discharge spin-on filter assembly	1
481-093	Discharge filter element	1
481-074	Desiccant dryer	1
WF174195	Desiccant dryer silica gel	4 oz
471-001	Lubricator	1
481-076	Silencer/mist eliminator	1
484-025	Liquid level gauge	2
482-083	Pressure gauge	1
423-030	Bypass relief valve	1
424-037	Manual 4-way valve	1
85416	Release valve	2
425-001	Air relief valve	1
423-052	Pressure relief valve	1
422-056	Check valve	1
421-045	Check valve	1
422-059	Ball valve	1
424-005	Drain cock valve	1
424-033	Ball Valve	1
422-039	Shutoff Valve	1
483-005	Breather	1
884467	Control panel placard	1
9-7035	Nameplate	1
75939	Sticker, towing	1
55998	Sticker, Malabar	1
884455	Placard, bleed	1
PF55561	Placard, fill	1
719-009	Safety chuck	1
837721-19	Service hose	1
884468	Delivery hose	1
484-015	Flow sight	1
884453	Placard	1



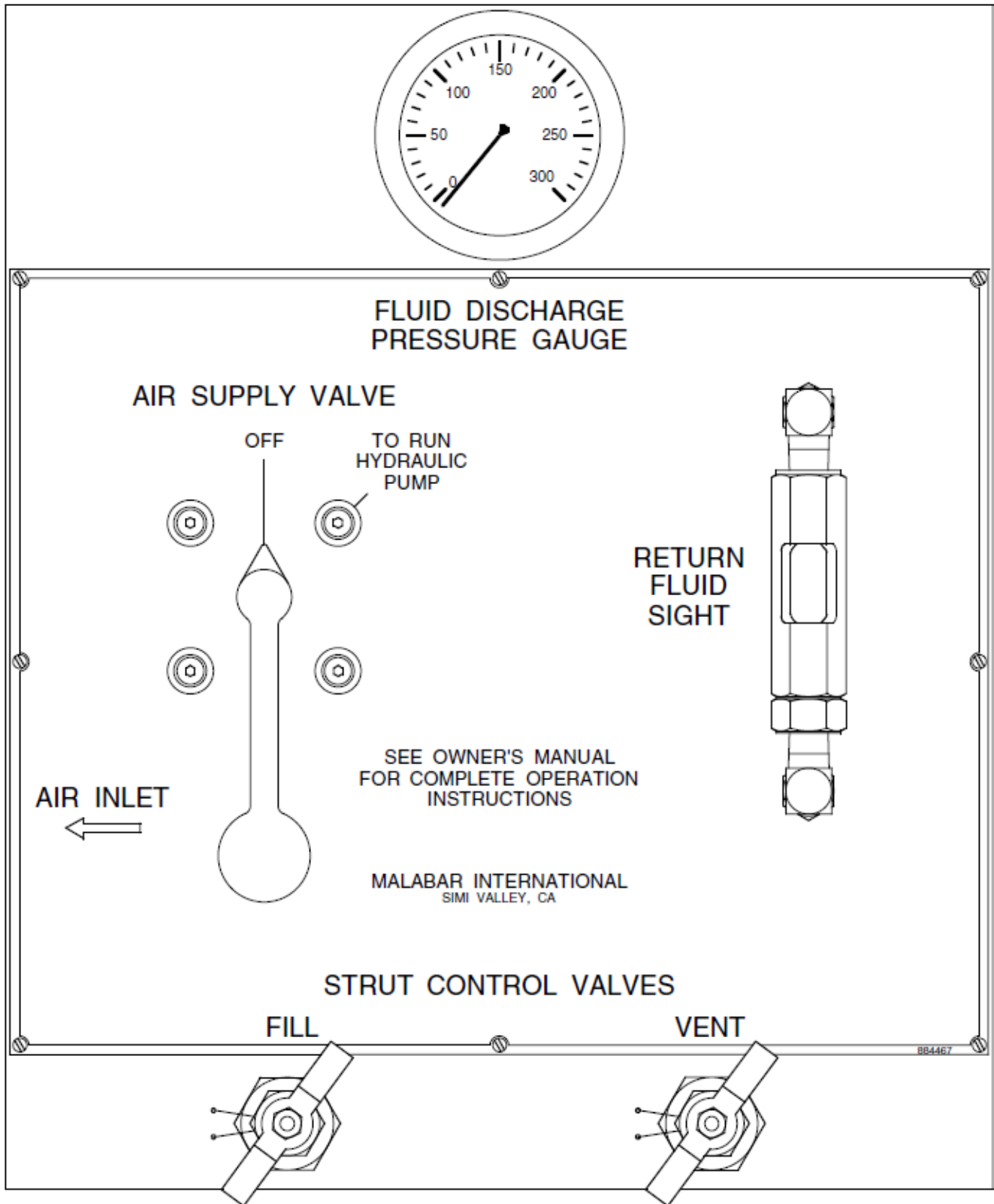
## 8.0 IN SERVICE SUPPORT

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

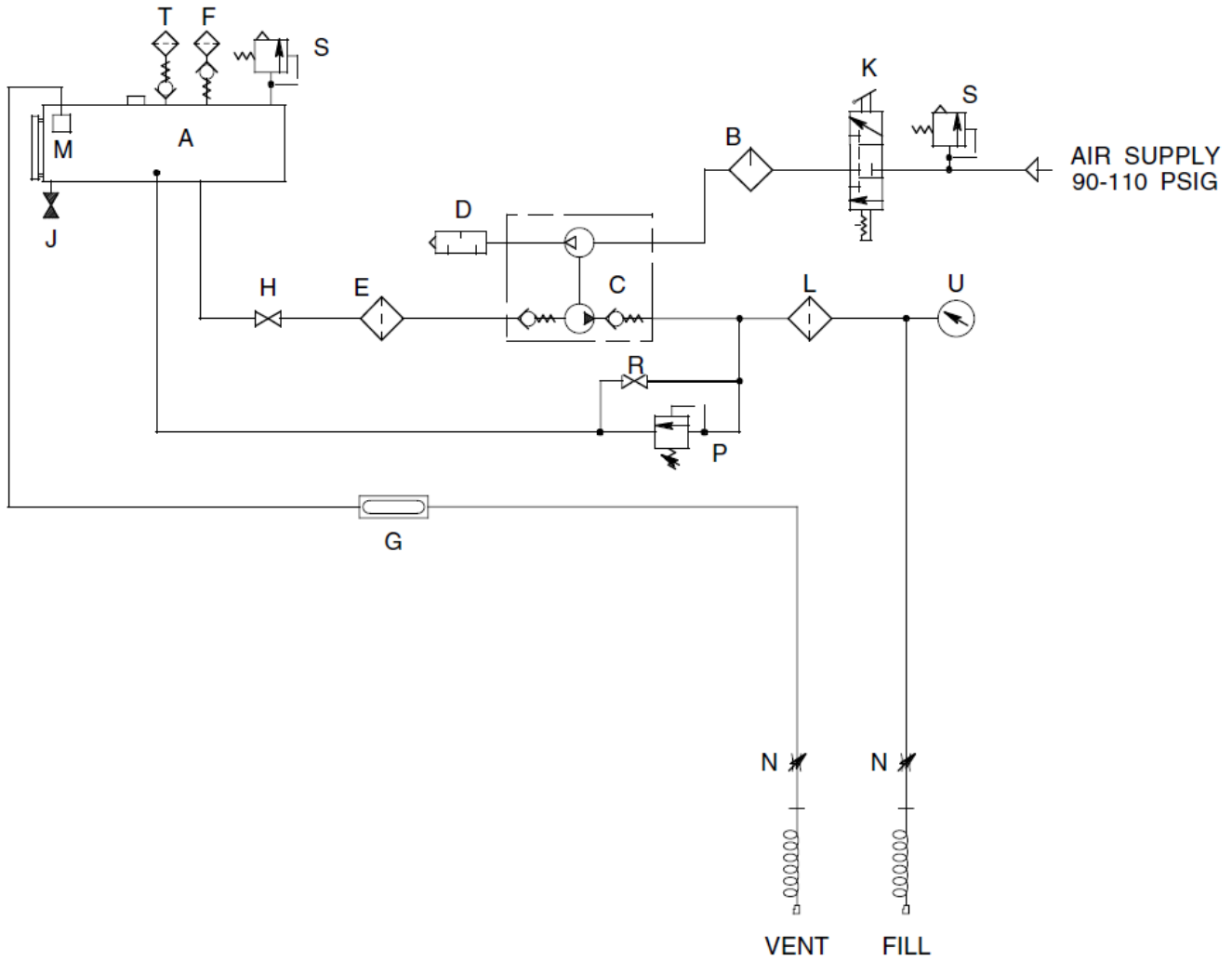
## 9.0 GUARANTEES/LIMITATION OF LIABILITY

- 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.

### Control Panel



**Pneumatic/Hydraulic Diagram**

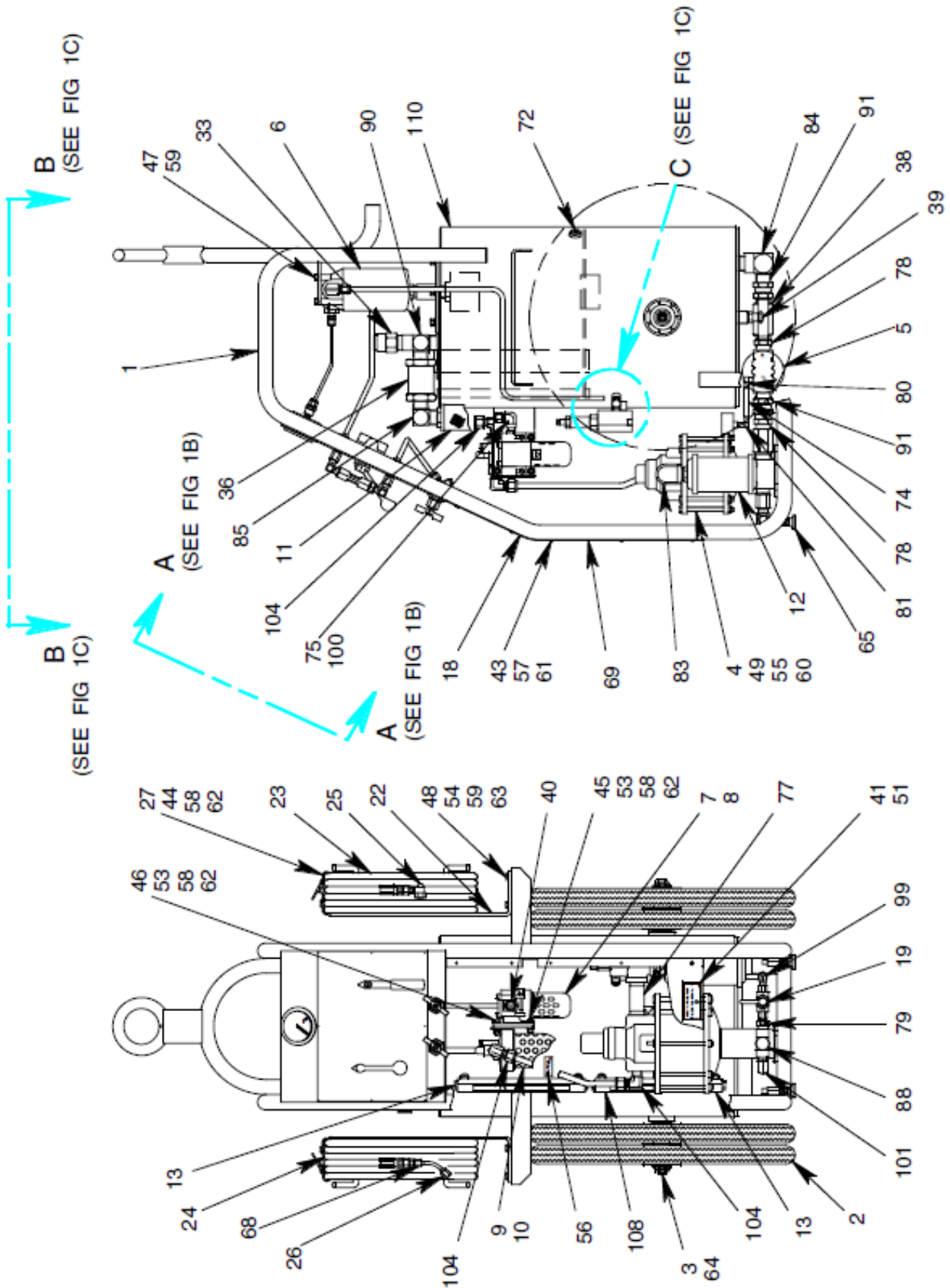


- A - 18 GALLON WASTE RESERVOIR
- B - AIR LUBRICATOR
- C - AIR OPERATED PUMP
- D - MUFFLER
- E - PUMP SUCTION FILTER
- F - DESSICANT AIR FILTER
- G - SIGHT GLASS
- H - FILTER SERVICE SHUTOFF VALVE
- J - DRAIN COCK VALVE

- K - AIR SUPPLY VALVE
- L - PUMP DISCHARGE FILTER
- M - NITROGEN DIFFUSER
- N - STRUT CONTROL VALVE
- P - HYDRAULIC PRESSURE RELIEF VALVE
- R - BALL VALVE
- S - PRESSURE RELIEF VALVE
- T - EXHAUST SILENCER/FILTER
- U - ANALOG STRUT CONTROL PRESSURE GAUGE

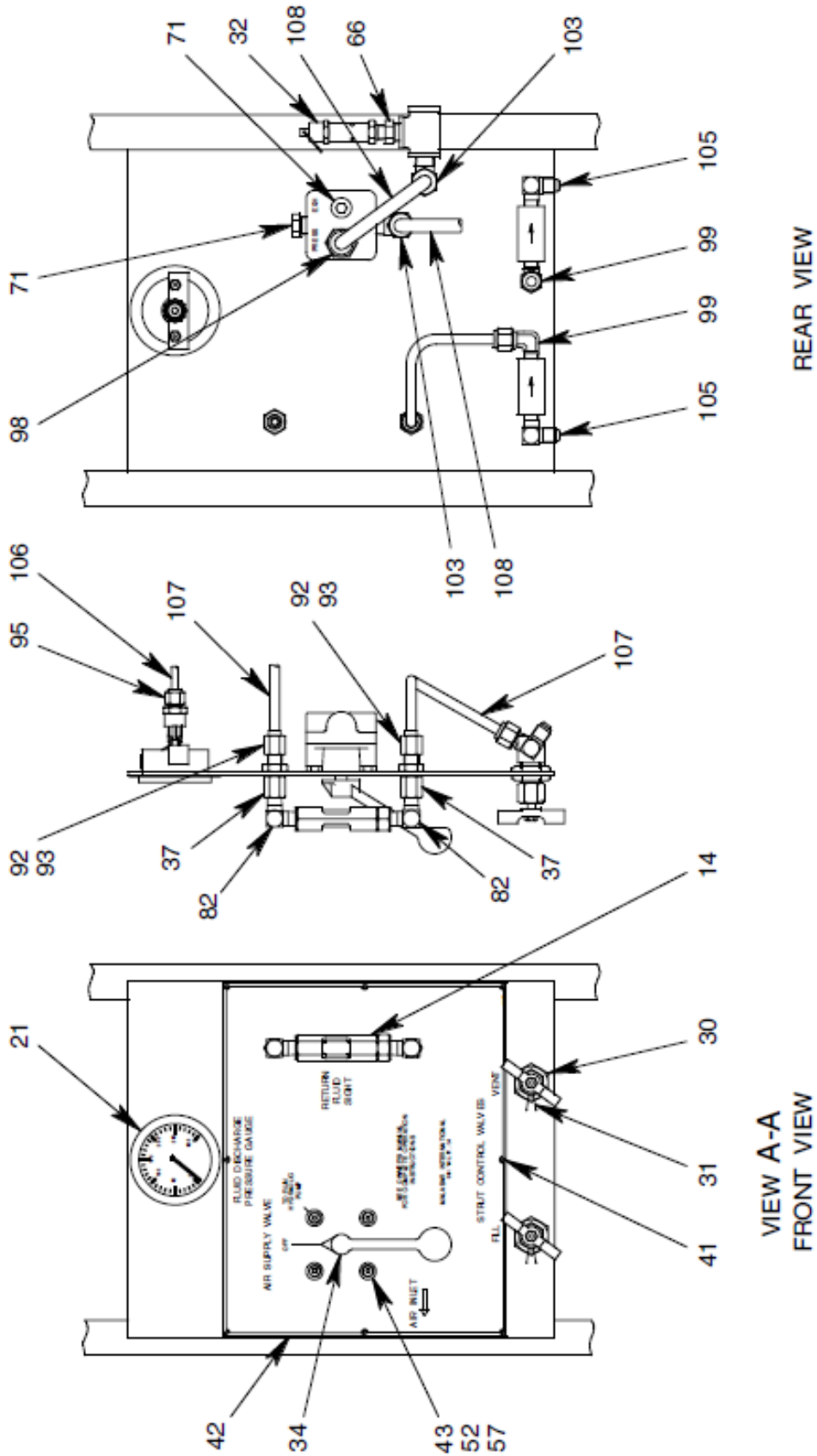
### Parts List – Figure 1A

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



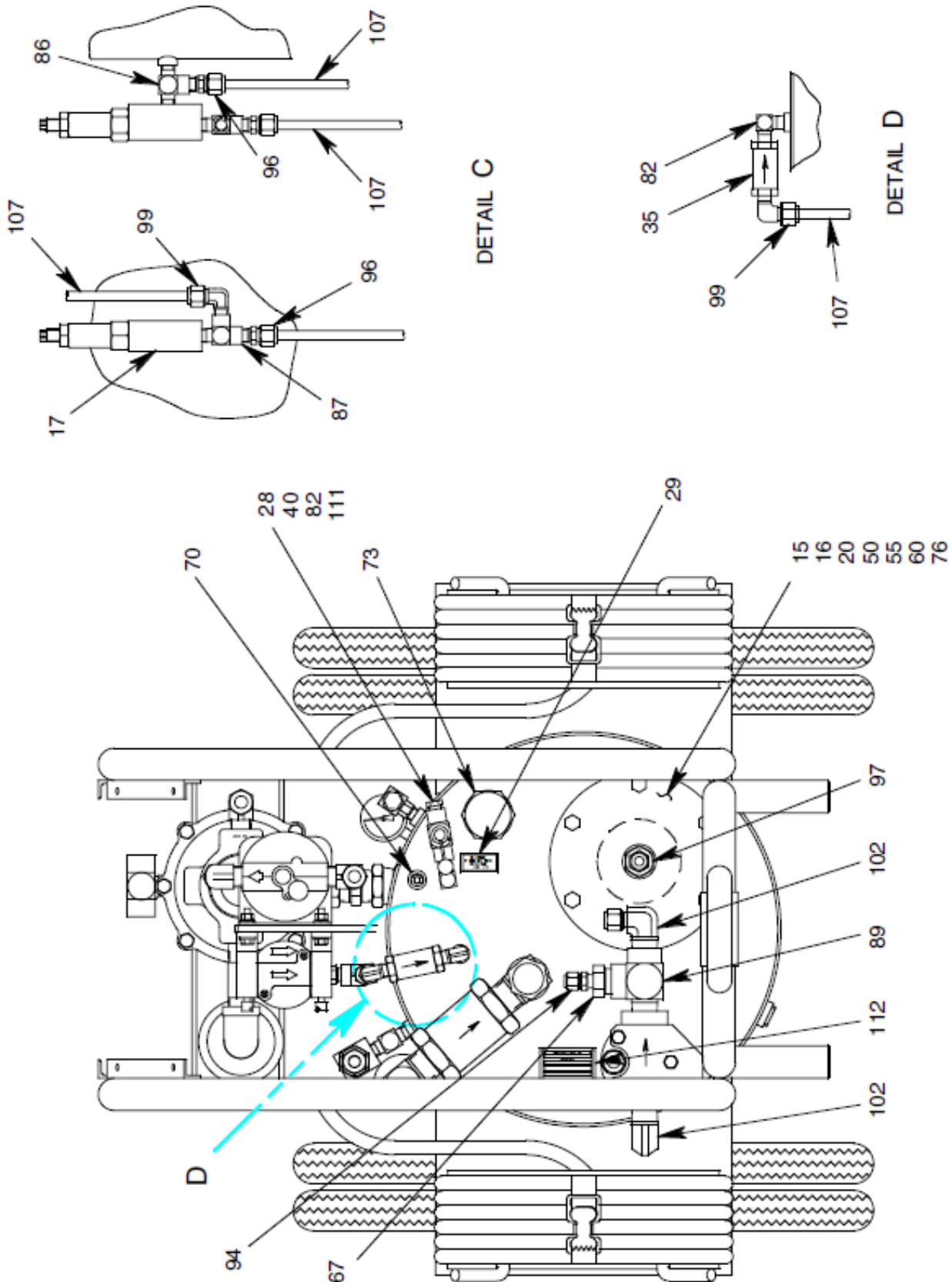
**Parts List – Figure 1B**

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



### Parts List – Figure 1C

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



### Parts List – Figure 1A – 1C

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

Item	Part Number	Description	Qty
1	884410A-1	RESERVOIR	1
2	492-214	WHEEL	4
3	492-116	THRUST WASHER	4
4	441-192	AIR PUMP	1
5	481-072	SUCTION SPIN-ON FILTER	1
6	481-092	RETURN SPIN-ON FILTER	1
7	481-074	DESSICANT DRYER, 1/4 FPT	1
8	481-087	DESSICANT MOUNTING BRKT	2
9	471-001	LUBRICATOR, 1/2 FPT	1
10	471-015	LUBRICATOR MTG BRKT	1
11	481-076	SILENCER / MIST ELIMINATOR	1
12	499-002	MUFFLER, 3/4 MPT	1
13	484-025	LIQUID LVL GAUGE, 1/4 MPT	2
14	484-015	FLOW SIGHT, 1/4 FPT	1
15	884456	RESERVOIR COVER	1
16	76347	RESERVOIR GASKET	1
17	423-030	BYPASS RELIEF VALVE	1
18	884435A	PANEL	1
19	424-033	BALL VALVE, 1/4 FPT	1
20	499-029	RETURN LINE DIFFUSER	1
21	482-083	PR GAUGE, 0-300 PSIG	1
22	884445	HOSE STAND	2
23	837721-19	VENT HOSE, 27' LG	1
24	884468	DELIVERY HOSE, 27' LG	1
25	719-009	SAFETY CHUCK	1
26	PF55877	ELBOW ASSEMBLY	1
27	837724	HOSE STRAP	2
28	422-039	BALL VALVE, 1/4 FPT	1
29	884453	PLACARD	1
30	85416	RELEASE VALVE, 1/4 FPT	2
31	491-044	SAFETY LOCK WIRE, .025 DIA	AR
32	425-001	AIR RELIEF VALVE, 150 PSIG	1
33	423-052	PRESSURE RELIEF VALVE	1
35	424-037	MANUAL 4-WAY VALVE	1
35	422-056	CHECK VALVE, 1/4 FPT	1
36	421-045	CHECK VALVE, 1" FPT	1
37	721-146	CONN, 3/8 37° X 1/4 FPT	2
38	422-059	BALL VALVE, 1" FPT	1
39	424-005	DRAIN COCK, 1/2 MPT	1
40	483-005	BREATHER, 1/4 MPT	1
41	397-016	SELF TAPPING SCREW, #4	10
42	884467	CONTROL PANEL PLACARD	1

### Parts List – Figure 1A – 1C

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

Item	Part Number	Description	Qty
43	324-020	SBHCS, SS, 10-24 x 5/8 LG	14
44	321-036	HHCS, 1/4-20 x 3/4 LG	2
45	321-096	HHCS, 1/4-20 x 1" LG	2
46	321-129	HHCS, 1/4-20 x 1 1/4 LG	2
47	321-029	HHCS, 5/16-18 x 3/4 LG	3
48	321-083	HHCS, 5/16-18 x 1" LG	8
49	321-206	HHCS, 3/8-24 x 3/4 LG	2
50	321-008	HHCS, 3/8-16 x 1 1/4 LG	6
51	884455	BLEED PLACARD	1
52	362-045	FLAT WASHER, SS, #10	4
53	362-001	FLAT WASHER, SAE, 1/4	8
54	362-002	FLAT WASHER, SAE, 5/16	8
55	362-003	FLAT WASHER, SAE, 3/8	8
56	PF55561	FILL PLACARD	1
57	364-005	SPLIT LOCKWASHER, #10	14
58	363-001	SPLIT LOCKWASHER, 1/4	6
59	363-002	SPLIT LOCKWASHER, 5/16	11
60	363-003	SPLIT LOCKWASHER, 3/8	8
61	355-023	HEX LOCKNUT, 10-24	10
62	351-001	HEX NUT, 1/4-20	6
63	351-012	HEX NUT, 5/16-18	8
64	355-031	HEX LOCKNUT, 3/4-10	2
65	390-049	LEVELING FOOT	2
66	714-009	BUSHING, 3/8 MPT x 1/4 FPT	1
67	714-007	BUSHING, 3/4 MPT x 1/4 FPT	1
68	721-102	CONNECTOR, 3/8 37° x 1/4 37°	1
69	55998	STICKER, MALABAR	1
70	717-006	PLUG, 1/4 MPT	1
71	717-007	PLUG, 3/8 MPT	2
72	717-008	PLUG, 1/2" MPT	1
73	717-068	HEX PLUG, 1-1/4 SAE O-RING	1
74	711-107	NIPPLE, 1/8 MPT x 3 1/2 LG	1
75	711-003	HEX NIPPLE, 1/4 MPT	2
76	711-086	NIPPLE, CLOSE, 3/4 MPT	1
77	711-010	NIPPLE, 3/4 MPT x 3" LG	1
78	711-087	HEX NIPPLE, 1" MPT	2
79	711-079	HEX NIPPLE, 1/2 x 1/4 MPT	1
80	712-060	ELBOW, STREET, 1/8 NPT	1
81	712-052	ELBOW, 1/8 FPT	1
82	712-022	ELBOW, 1/4 MPT	3
83	712-063	ELBOW, , 3/4 FPT	1
84	712-081	ELBOW, STREET, 1 NPT	1

### Parts List – Figure 1A – 1C

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

Item	Part Number	Description	Qty
85	712-080	ELBOW, 1" MPT	1
86	713-043	TEE, BRANCH, 1/4 NPT	1
87	713-048	TEE, STREET, 1/4 NPT	1
88	713-021	TEE, BRANCH, 1/2 NPT	1
89	713-030	TEE, STREET, 3/4 NPT	1
90	713-049	TEE, STREET, 1" NPT	1
91	719-003	SWIVEL ADAPTER, 1" NPT	2
92	729-010	SLEEVE, 3/8 37°	2
93	729-016	NUT, 3/8 37°	2
94	721-012	CONNECTOR, 1/4 T x 1/4 MPT	1
95	721-070	CONNECTOR, 1/4 T x 1/4 FPT	1
96	721-009	CONNECTOR, 3/8 T x 1/4 MPT	2
97	721-008	CONNECTOR, 3/8 T x 1/4 FPT	1
98	721-025	CONNECTOR, 1/2 T x 3/8 MPT	1
99	722-014	ELBOW, 3/8 T x 1/4 MPT	5
100	722-016	ELBOW, 3/8 T x 1/4 FPT	1
101	722-015	ELBOW, 3/8 T x 1/2 MPT	1
102	722-049	ELBOW, 3/8 T x 3/4 MPT	2
103	722-012	ELBOW, 1/2 T x 3/8 MPT	2
104	722-013	ELBOW, 1/2 T x 1/2 MPT	3
105	722-005	ELBOW, 3/8 37° x 1/4 MPT	2
106	732-003	TUBE, 1/4 O.D. x .035 WALL	AR
107	732-010	TUBE, 3/8 O.D. x .065 WALL	AR
108	732-001	TUBE, 1/2 O.D. x .049 WALL	AR
109	9-7035	NAMEPLATE	1
110	75939	STICKER, TOWING	1
111	719-013	ELBOW, 1/4 MPT X 14/ SWIVEL	1