

Model: 8943-N2
4 Bottle Nitrogen Delivery Cart

07/2019 – Rev. 01

REVISION
01

DATE
07/2019

TEXT AFFECTED
Original release

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
1.5 OPTIONAL EQUIPMENT SPECIFICATIONS.....	1
2.0 SAFETY INFORMATION.....	1
2.1 USAGE AND SAFETY INFORMATION	1
3.0 PREPARATION PRIOR TO FIRST USE	1
4.0 TRAINING	2
4.1 TRAINING REQUIREMENTS	2
4.2 TRAINING PROGRAM	2
4.3 OPERATOR TRAINING	2
5.0 OPERATION.....	2
5.1 PRE OPERATION INSPECTION.....	2
5.2 OPERATING INSTRUCTIONS	2
6.0 MAINTENANCE.....	3
6.1 SERVICING	3
6.2 DISASSEMBLY INSTRUCTIONS.....	3
6.3 REPAIR AND REPLACEMENT	3
7.0 PROVISION OF SPARES.....	4
7.1 SOURCE OF SPARE PARTS.....	4
7.2 RECOMMENDED SPARE PARTS LISTS	4
8.0 IN SERVICE SUPPORT.....	5
9.0 GUARANTEES/LIMITATION OF LIABILITY	5

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 8943 is a mobile unit designed for low and high pressure nitrogen service. Low pressure nitrogen can be used to fill tires and operate aircraft jacks. High pressure nitrogen can be used to fill accumulators and landing gear struts. The unit is equipped with tow handle & front wheel parking brake, four 16 inch diameter wheels, 12 foot low pressure nitrogen service hose with Schrader air chuck, 24 foot high pressure nitrogen service hose with safety chuck, nitrogen regulator assembly with Tescom regulators, a 275 psig nitrogen relief valve for low pressure nitrogen operation and an optional nitrogen boost pump system. The cart is designed to handle US-DOT and other standard nitrogen bottles. APPROVED NITROGEN ONLY- NO OTHER GAS.

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 (w/out nitrogen bottles) 440 lbs (199.6 kg)
Unit Weight (with nitrogen bottles)..... 1240 lbs (562.5 kg)
Low Pressure Nitrogen Service 0-250 psig
High Pressure Nitrogen Service 0-4000 psig
Maximum Towing Speed..... 20 mph
Standard Finish Yellow skydrol resistant paint

1.5 OPTIONAL EQUIPMENT SPECIFICATIONS

Nitrogen Boost Pump System:

Additional Boost Pump Weight..... 40 lbs (18 kg)
Drive Inlet 60 to 125 psig
Nitrogen Inlet 350-3000 psig
Nitrogen Outlet 4500 psig maximum

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.

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 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 for any gas leaks.
3. Check front wheel parking brake for proper operation by raising tow handle upright.
4. Check bottle rack assembly for proper operation.
5. Check manifold assembly components for proper operation

5.2 OPERATING INSTRUCTIONS

1. To load gas bottles:
 - a. Pull back upper Slide Latch and rotate bottle rack to vertical position. Ensure lower Slide Latch engages to lock rack into position.
 - b. Secure gas bottles to rack using the safety belt.
 - c. Disengage lower Slide Latch from bottle rack and rotate rack to engage upper Slide Latch in stowage position.



CAUTION!

Shutoff valves on gas bottles must be closed when not in use or when making hose connections.

- d. Attach tailpiece hose assemblies to bottles.



CAUTION!

DO NOT rotate bottle rack assembly with tailpiece hose assemblies connected.

2. To run nitrogen boost pump from shop air:
 - a. Switch the "N2 SUPPLY" valve located on the front side to the "ON" position.
 - b. Switch the "N2 SUPPLY TO RUN BOOST PUMP" valve located on the front side to the "OFF" position.
 - c. Connect shop air line to the boost pump.
 - d. Flip the power switch located on the back side of the boost pump to the "ON" position.
3. To run nitrogen boost pump from nitrogen bottles:
 - a. Switch the "N2 SUPPLY" valve located on the front side to the "ON" position.
 - b. Switch the "N2 SUPPLY TO RUN BOOST PUMP" valve located on the front side to the "ON" position.
 - c. Flip the power switch located on the back side of the boost pump to the "ON" position
4. To dispense nitrogen without the oxygen boost pump:
 - a. Flip the power switch located on the back side of the boost pump to the "OFF" position.
 - b. Switch the "N2 SUPPLY" valve located on the front side to the "OFF" position.
 - c. Switch the "N2 SUPPLY TO RUN BOOST PUMP" valve located on the front side to the "OFF" position.

6.0 MAINTENANCE

6.1 SERVICING

Servicing the unit consists primarily of the following:

1. Grease wheel hubs and all pivot parts.
2. Inflate tires to proper pressure.

6.2 DISASSEMBLY INSTRUCTIONS

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

1. Check for corrosion, wear and condition of bottle rack.
2. Inspect condition of all hoses.
3. Check frame structure for damage.
4. Check service hose tie-down straps for wear.

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
893204	Tow handle	1
893205	Brake latch	1
495-052	Spring	1
893274	Front hub assembly	1
893275	Wheel hub assembly	4
492-252	Tire & wheel	4
410-020	Flange bearing	2
394-103	Shaft collar	2
491-098	Safety belt	1
390-116	Slide bolt	2
394-095	Holding Screw	2
494-006	Handle	1
837724	Hose strap	2
9-7035	Nameplate	1
55998	Sticker, Malabar	3
75939	Sticker, towing	1
473-002	N2 High pressure regulator	1
473-047	N2 Low pressure regulator	1
482-009	N2 High pressure gauge	2
482-010	N2 Low pressure gauge	1
421-007	N2 Air relief valve	1
837721-1	N2 Low pressure service hose, 12' lg	1
837721-23	N2 Low pressure service hose, 15' lg	1
837721-2	N2 High pressure service hose, 24' lg	1
719-010	N2 Schrader air chuck	1
719-009	N2 Safety chuck	1
837695-7	N2 Tailpiece hose	4
894340	N2 Placard, instruction	1
837735-1	N2 Sticker, low pressure	1
837735-2	N2 Sticker, high pressure	1
893245	N2 Sticker	2
893260	N2 Sticker, N2 supply	1
893261	N2 Sticker, N2 supply for boost pump	1

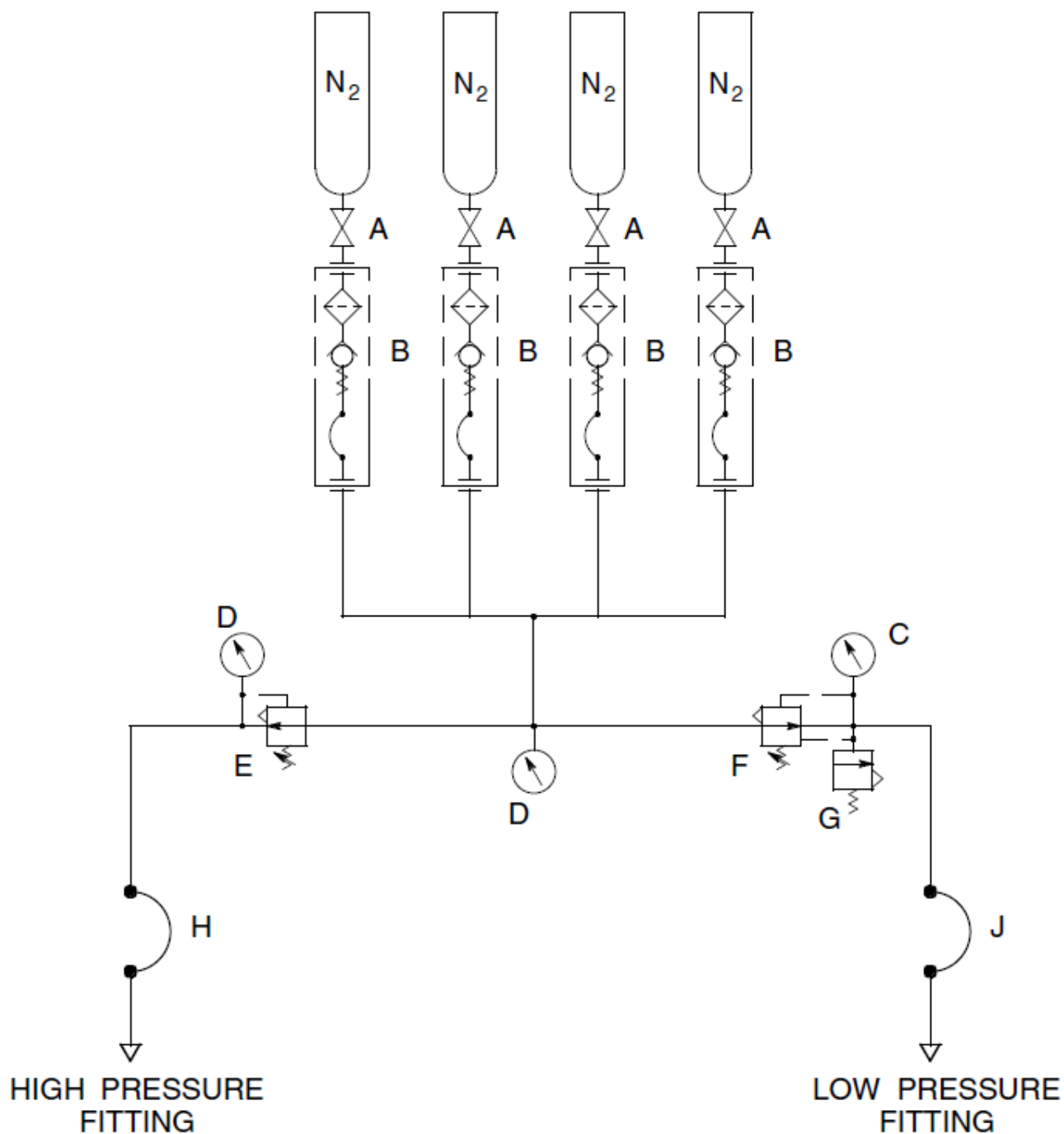
8.0 IN SERVICE SUPPORT

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.

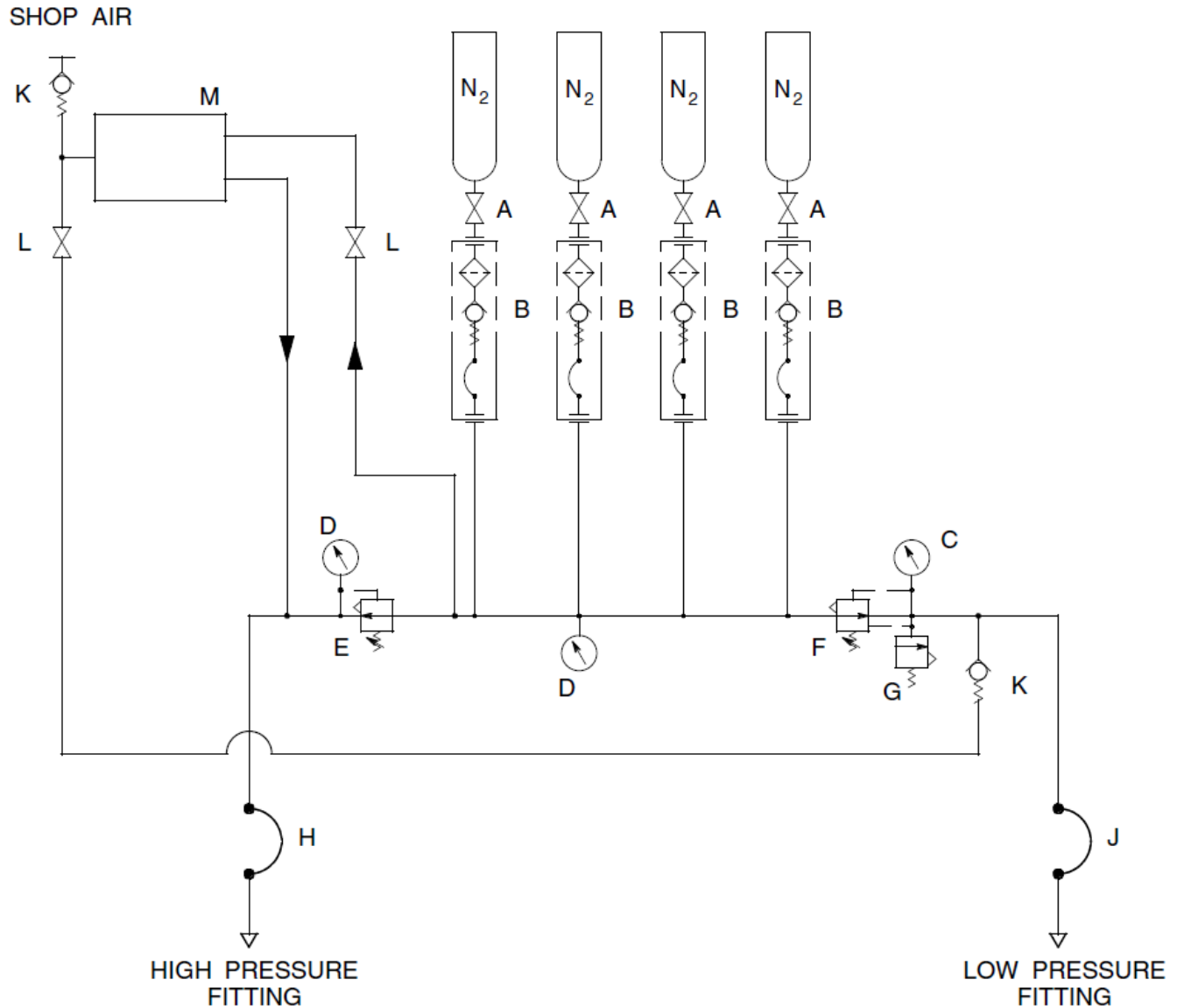
Nitrogen Delivery Cart - Without Boost Pump
Pneumatic / Hydraulic Diagram



A – SHUTOFF VALVE
B – GN2 TAILPIECE HOSE ASSEMBLY
C – LOW PRESSURE GAUGE
D – HIGH PRESSURE GAUGE
E – HIGH PRESSURE NITROGEN REGULATOR

F – LOW PRESSURE NITROGEN REGULATOR
G – PRESSURE RELIEF VALVE
H – HIGH PRESSURE SERVICE HOSE
J – LOW PRESSURE SERVICE HOSE

Nitrogen Delivery Cart - With Boost Pump Pneumatic / Hydraulic Diagram

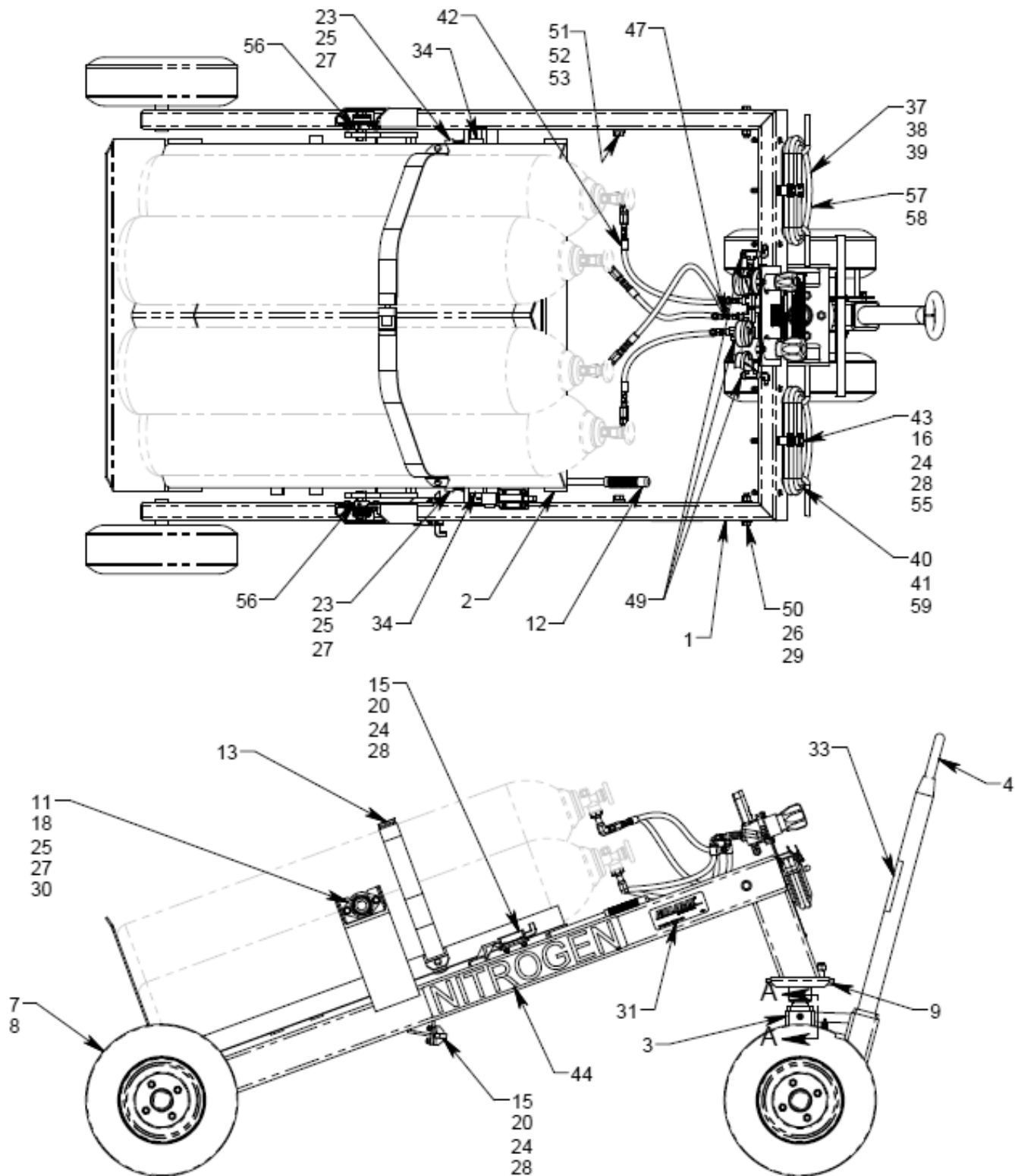


A – SHUTOFF VALVE
B – GN2 TAILPIECE HOSE ASSEMBLY
C – LOW PRESSURE GAUGE
D – HIGH PRESSURE GAUGE
E – HIGH PRESSURE NITROGEN REGULATOR
F – LOW PRESSURE NITROGEN REGULATOR

G – PRESSURE RELIEF VALVE
H – HIGH PRESSURE SERVICE HOSE
J – LOW PRESSURE SERVICE HOSE
K – CHECK VALVE
L – TWO WAY BALL VALVE
M – NITROGEN BOOST PUMP

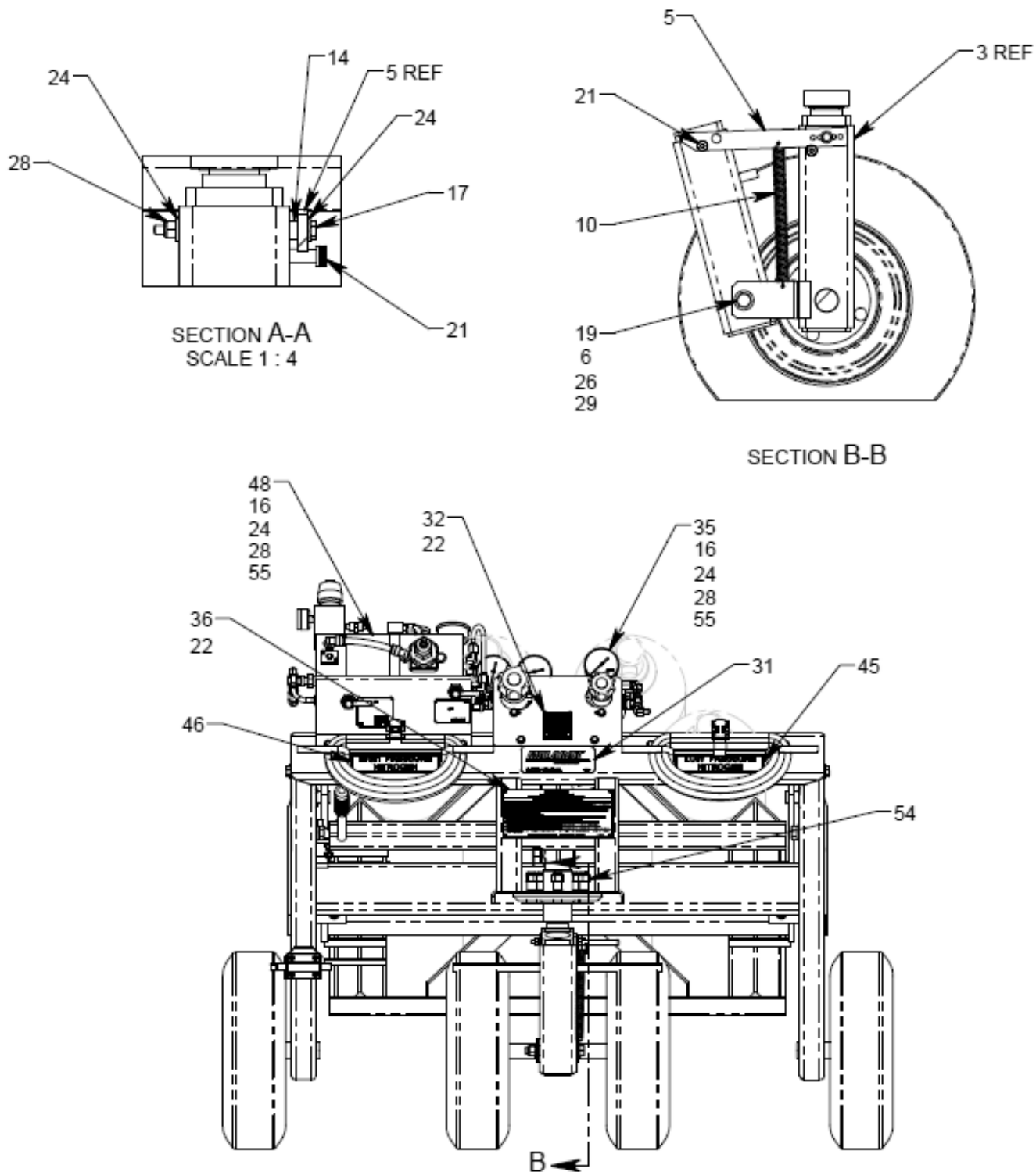
Parts List – Figure 1A

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.



(TOW HANDLE HIDDEN FOR CLARITY)

Parts List – Figure 1A & 1B

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

Item	Part Number	Description	Qty
1	893201	FRAME WELDMENT	1
2	893202	TRAY WELDMENT	1
3	893203	FRONT FORK WELDMENT	1
4	893204	TOW HANDLE WELDMENT	1
5	893205	BRAKE LATCH WELDMENT	1
6	893236	TOW HANDLE BUSHING	1
7	492-252	WHEEL ASSEMBLY	4
8	893275	HUB, PAINTED	4
9	893274	HUB, PAINTED	1
10	495-052	SPRING	1
11	410-020	FLANGE BEARING	2
12	494-006	HANDLE GRIP	1
13	491-098	SAFETY BELT	1
14	390-115	SPACER	1
15	390-116	SLIDE BOLT	2
16	321-076	HHCS, 1/4-20 x 3" LG	8
17	324-083	HHCS, 1/4-20 x 4 1/4 LG, SST	1
18	321-256	HHCS, GR 5, 3/8-16 x 3/4 LG	4
19	321-294	HHCS, GR 5, 1/2-13 x 4 1/2 LG	1
20	326-009	BHCS, 1/4-20 x 1" LG	8
21	330-022	SHSS, 3/8 BODY x 3/4 LG x 5/16-18 THREAD	2
22	397-010	SELF TAPPING SCREW, #6-32 x 3/16 LG	8
23	394-095	HOLDING SCREW, 3/8-16 x 2-1/2 LG	2
24	362-001	FLAT WASHER, 1/4 SAE	26
25	362-003	FLAT WASHER, 3/8 SAE	12
26	362-005	FLAT WASHER, 1/2 SAE	6
27	363-003	SPLIT LOCKWASHER, 3/8	6
28	353-001	HEX LOCKNUT, 1/4-20	17
29	353-012	HEX LOCKNUT, 1/2-13	3
30	352-002	HEX JAM NUT, 3/8-16	4
31	55998	STICKER, MALABAR	3
32	WF9-7035	NAME PLATE	1
33	75939	STICKER, TOWING	1
34	894313	PAD	2
35	893206	REGULATOR ASSEMBLY, N2	1
36	894340	INSTRUCTION PLACARD	1
37	837721-1	NITROGEN HOSE, 12' LG	1
38	719-010	SCHRADER AIR CHUCK (5499)	1
39	721-015	CONNECTOR, 1/4 MALE 37° x 1/4 MPT	1
40	837721-2	NITROGEN HOSE, 24' HOSE	1
41	719-009	SAFETY CHUCK	1
42	837695-7	NITROGEN TAILPIECE HOSE ASSEMBLY	4

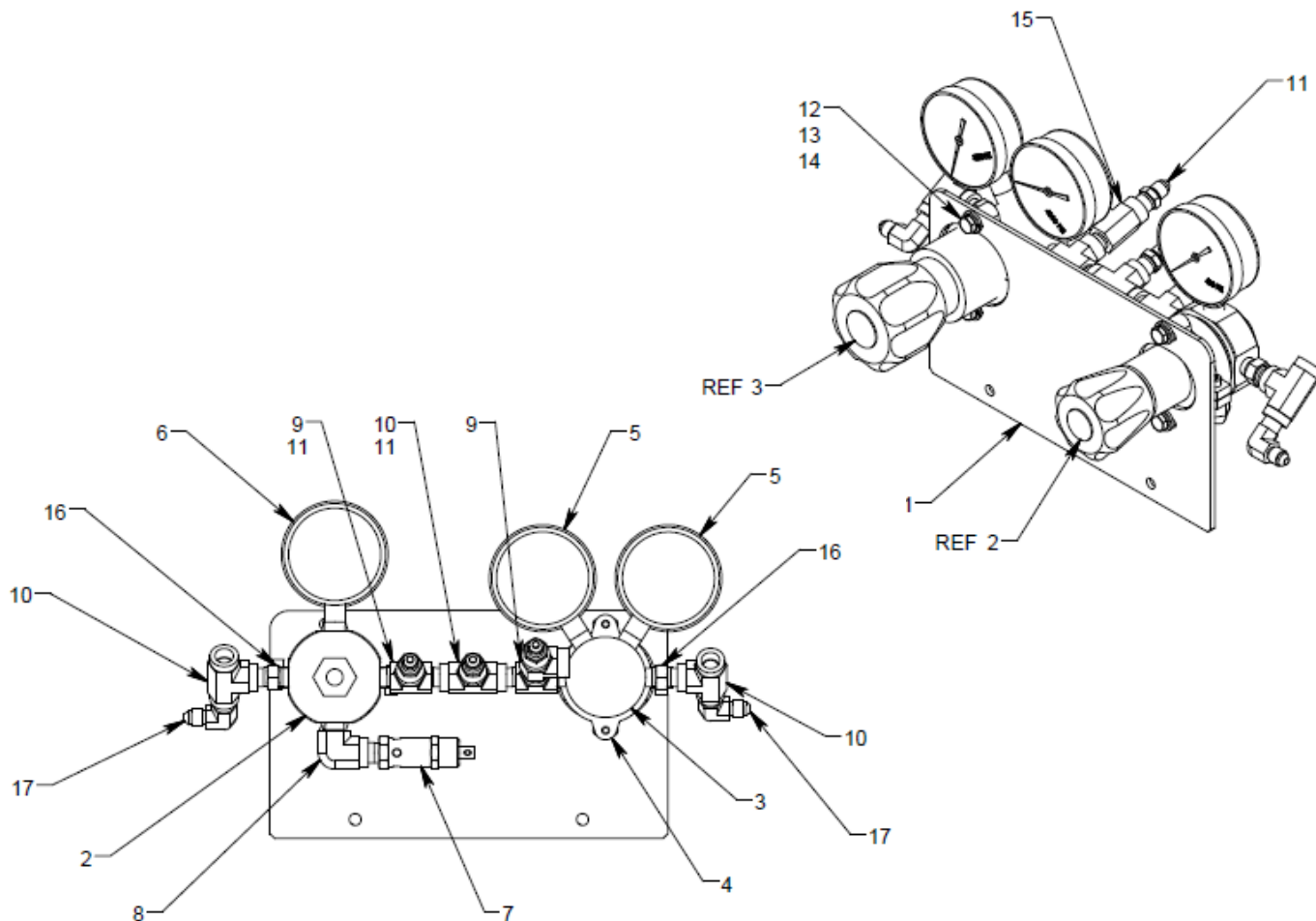
Parts List – Figure 1A & 1B

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

Item	Part Number	Description	Qty
43	837724	HOSE STRAP	2
44	893245	STICKER, NITROGEN	2
45	837735-1	STICKER, LOW PRESSURE	1
46	837735-2	STICKER, HIGH PRESSURE	1
47	723-031	TEE, 1/4 M 37° x 1/4 M 37° x 1/4 F SWIVEL 37°	1
48	893251	NITROGEN BOOST PUMP ASSEMBLY	1
49	717-006	HOLLOW HEX PLUG 1/4 MPT	3
50	321-039	HHCS, 1/2-13 x 3" LG	2
51	321-066	HHCS, 5/8-11 x 1" LG	2
52	362-006	FLAT WASHER, 5/8 SAE	2
53	363-005	SPLIT LOCKWASHER, 5/8	2
54	356-002	WHEEL NUT, 1/2-20 x 1.544 LG	5
55	356-003	CAP LOCKNUT, 1/4-20	8
56	394-103	SHAFT COLLAR, 1" BORE DIA	2
57	837721-23	NITROGEN HOSE, 15' LG	1
58	999-070	SHRINK TUBE, 18" LG, BLUE	1
59	999-071	SHRINK TUBE, 18" LG, RED	1

Parts List – Figure 2

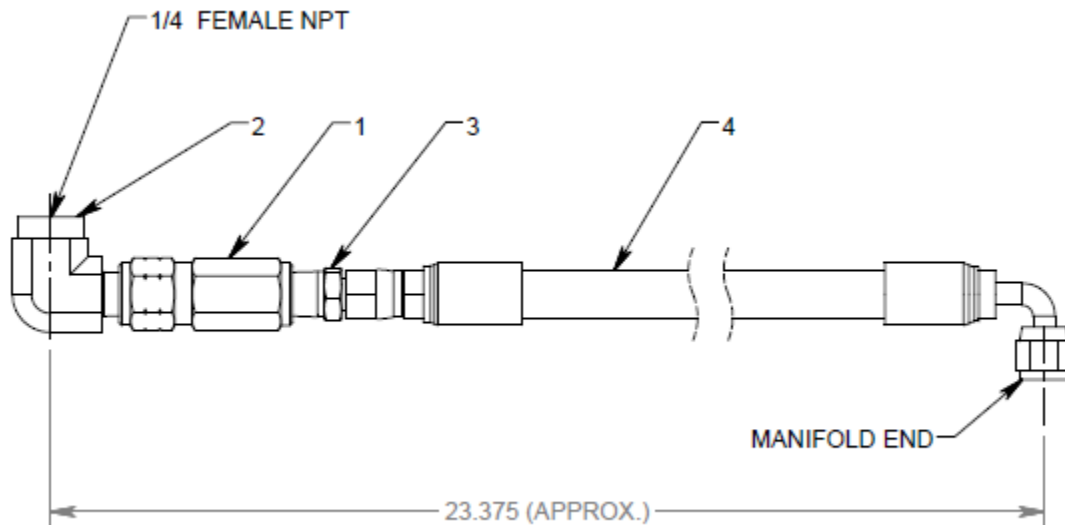
When ordering replacement parts/kits, please specify model, serial number and color of your unit.



Item	Part Number	Description	Qty
	893206	N2 Regulator Assembly; consist of:	
1	893235	N2 REGULATOR PANEL	1
2	473-047	REGULATOR, 3-250 PSIG	1
3	473-002	REGULATOR, 0-4000 PSIG	1
4	473-082	PANEL MOUNTING BRACKET	1
5	482-009	PRESSURE GAUGE, 4000 PSI	2
6	482-010	PRESSURE GAUGE, 400 PSI	1
7	421-007	AIR RELIEF VALVE	1
8	712-008	ELBOW, 90°, 1/4 MPT x 1/4 FPT	1
9	713-043	TEE, 1/4 MPT x 1/4 FPT x 1/4 MPT	2
10	713-002	TEE, 1/4 FPT	3
11	721-015	CONNECTOR, 1/4 MALE 37° x 1/4 MPT	3
12	321-036	HHCS, 1/4-20 x 3/4 LG	4
13	363-001	SPLIT LOCKWASHER, 1/4	4
14	362-001	FLAT WASHER, 1/4 SAE	4
15	713-012	TEE, 1/4 MPT x 1/4 FPT x 1/4 FPT	1
16	711-003	NIPPLE, 1/4 MPT	2
17	722-006	ELBOW 90° 1/4 MALE 37° x 1/4 MPT	2

Parts List – Figure 3

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

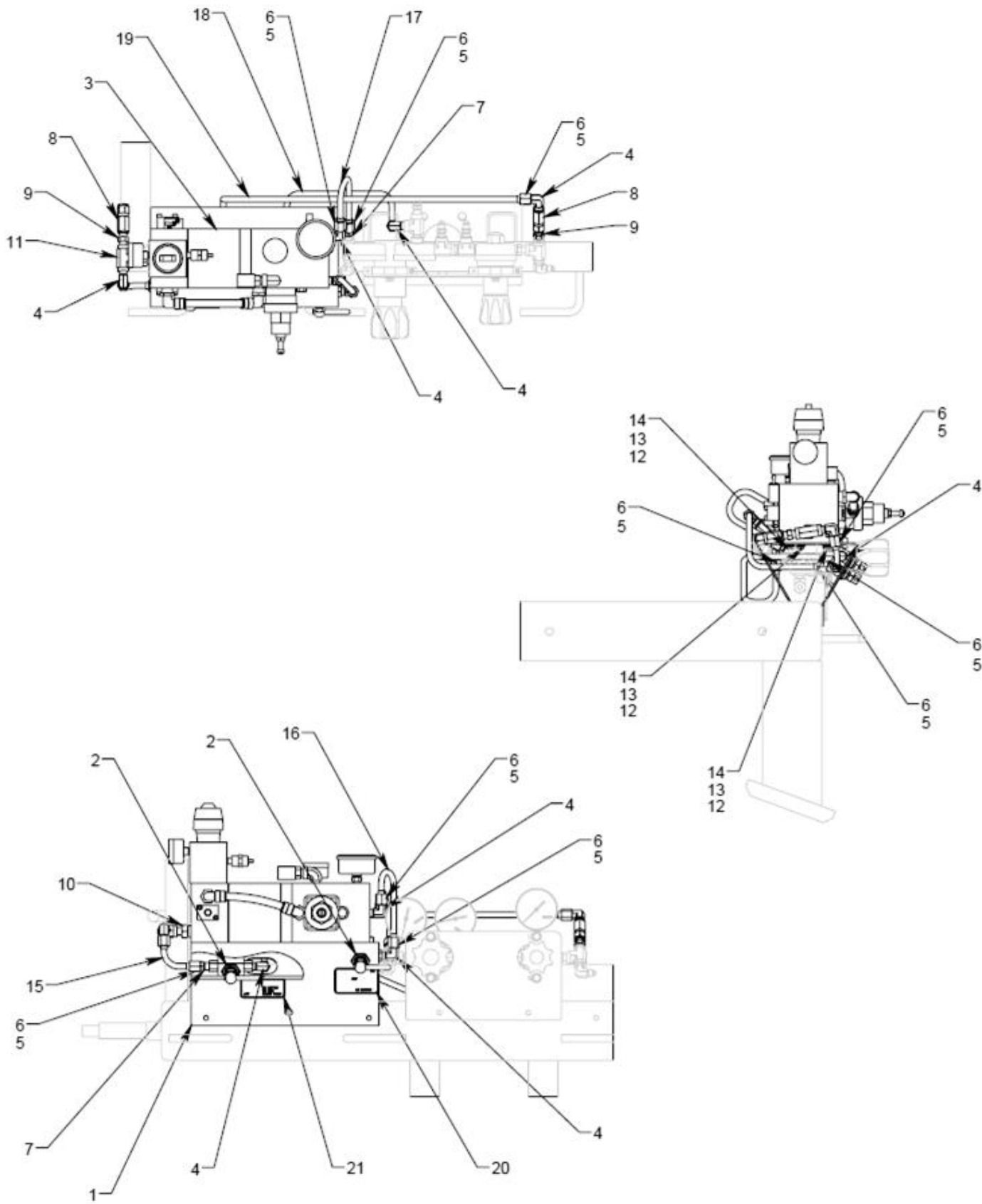


Item	Part Number	Description	Qty
	837695-7	Nitrogen Tailpiece hose Assembly; consist of:	
1	422-065	CHECK VALVE, SOFT SEAT, 1/4 FPT	1
2	712-008	ELBOW, 90°, 1/4 MPT x 1/4 FPT	1
3	721-015	CONNECTOR, 1/4 MALE 37° x 1/4 MPT	1
4	877685-18	HOSE ASSY, 5000 PSI WORKING PRESURE	1

This page left blank intentionally.

Parts List – Figure 4

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



Parts List – Figure 4

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

Item	Part Number	Description	Qty
	893251	Nitrogen Boost Pump Assembly; consist of:	
1	893250	MOUNTING BRACKET	1
2	424-033	TWO WAY BALL VALVE	2
3	441-218	N2 BOOST PUMP	1
4	722-005	ELBOW, 3/8 MALE 37° x 1/4 MPT	8
5	729-010	SLEEVE, 3/8 37°	10
6	729-016	NUT, 3/8 37°	10
7	721-004	CONNECTOR, 3/8 37° x 1/4 MPT	2
8	422-065	CHECK VALVE, SOFT SEAT, 1/4 FPT	2
9	711-003	NIPPLE, 1/4 MPT	2
10	711-079	NIPPLE, 1/2 MPT X 1/4 MPT	1
11	713-002	TEE, 1/4 FPT	1
12	362-001	FLAT WASHER, 1/4 SAE	3
13	363-001	SPLIT LOCKWASHER, 1/4	3
14	321-209	HHCS, 1/4-20 x 5/8 LG	3
15	732-002	TUBE, 3/8 OD x .049 WALL x 4"	1
16	732-002	TUBE, 3/8 OD x .049 WALL x 8.5	1
17	732-002	TUBE, 3/8 OD x .049 WALL x 9"	1
18	732-002	TUBE, 3/8 OD x .049 WALL x 17.5	1
19	732-002	TUBE, 3/8 OD x .049 WALL x 27"	1
20	893260	STICKER, N2 SUPPLY	1
21	893261	STICKER, N2 SUPPLY FOR BOOST PUMP	1