

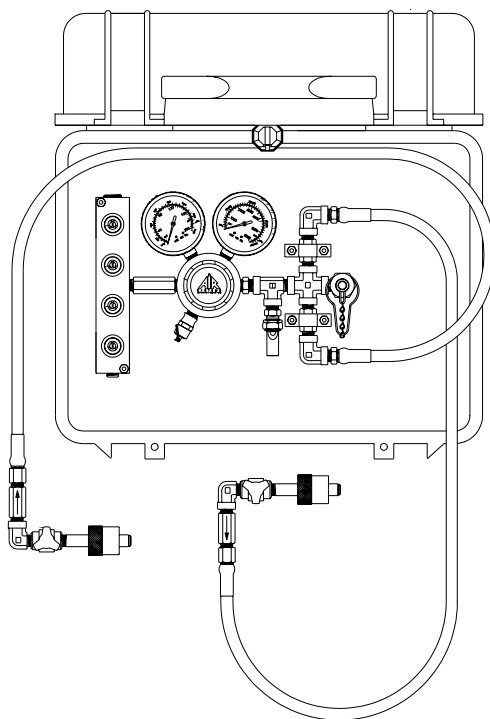
## Models

MACK-1, MACK-2, MACK-3,  
MACK-NFPA1, MACK-NFPA3, MACK-NFPA3Q, &  
MACK-1-6K

Manual No. POA051  
(Rev 1 March 2005)



## Operating Manual



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## **OVERVIEW**

The MACK series has been designed as a portable multifunctional air distribution system. All MACK units are rated for 5000psi.

### **MACK-1**

This version allows for one or two high pressure cylinders to be attached to the supply inlet whips. A CGA-347 male inlet is provided for direct attachment to a bank of air cylinders. All MACK series units have at least one air outlet manifold with pressure adjustments from 0-125psi.

### **MACK-2**

This version has the same features as the MACK-1, with the addition of an adjustable fill regulator, pressure gauge, and fill whip. An optional second fill whip is available.

### **MACK-3**

The MACK-3 contains two independent low pressure manifolds and regulator systems that each have their own cylinder supply hoses. An isolation valve is located between the regulators to isolate the systems, as well as provide common air flow from a single bottled air source. One regulator is set to provide low pressure air (0-125psi) for respirators, and one for medium pressure air (0-250psi) for air shores and other rescue tools. This medium pressure manifold has an additional low pressure regulator/manifold system for additional respirators and tools. A total of eleven outlets are provided. The MACK-3FA version contains all of the above items, with the addition of a complete bottle fill assembly, model number MACK-FA.

### **MACK-NFPA1**

This version contains two independent MACK-1 manifold and regulator systems, so that each one has its own cylinder supply hoses and low pressure whistle. A total of 6 low pressure outlets are provided.

### **MACK-NFPA3**

This version of the MACK-NFPA1 contains two independent low pressure manifold and regulator systems, so that each has its own cylinder supply hoses. An isolation valve is added between the systems to isolate the regulators, as well as provide common air flow from a single bottled air source. A CGA-347 high pressure inlet is provided on this version to allow for an external bank of air cylinders to operate the unit.

## **MACK-1 SETUP/OPERATION**

### **Step 1)**

Install the universal CGA-347 hand tight nuts (Item #7) to the cylinder valves and tighten.

### **Step 2)**

Close all bleeder valves (Item #8) by turning the knobs fully clockwise.

### **Step 3)**

Open one cylinder. At this time the low pressure warning alarm will sound until it sets itself at approximately 1000psi (69bar). Check reading on gauge (Item #1) to verify that cylinder is full. Close the cylinder.

### **Step 4)**

Set the required respirator pressure with the regulator control knob (Item #10). Turn clockwise to increase pressure, counterclockwise to decrease pressure.

### **Step 5)**

Bleed the pressure at either the relief valve (Item #9), or by partially engaging a male plug into one of the respirator couplings (Item # 11/12). This depressurizes the manifold and simulates low cylinder pressure. The low pressure warning alarm (Item #6) will sound at approximately 500psi (35bar). Open the other cylinder. At this time the low pressure warning alarm (Item #6) will re-sound until it sets itself at approximately 1000psi (69 bar). Check reading on gauge (Item #1) to verify cylinder is full.

### **Step 6)**

Couple respirators and lengths of hoses to the manifold and readjust pressure regulator (Item #10) if necessary. The system is now operational.

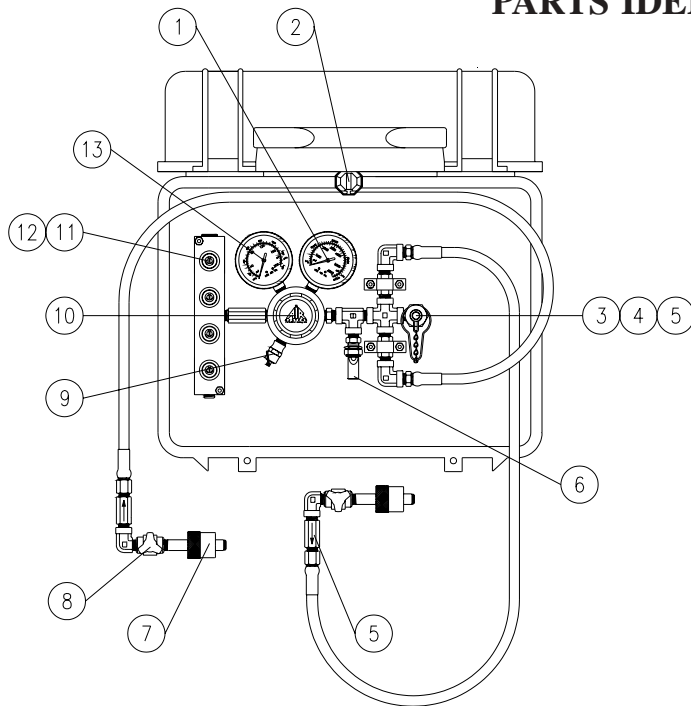
### **Step 7)**

Optional

Install a high pressure connect whip to the high pressure inlet. This step may be done after Step 5, or at anytime during operation of the system.

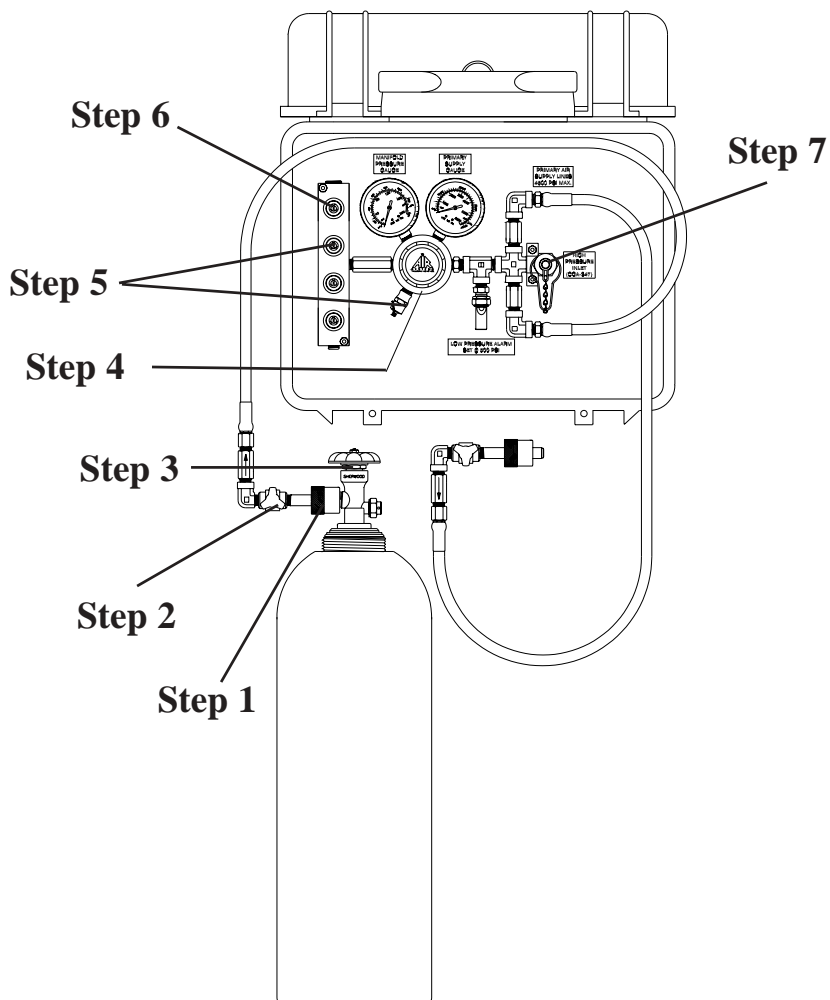
# MACK-1

## PARTS IDENTIFICATION



ITEM #	DESCRIPTION	PART #
1	INCOMING PRESSURE GAUGE (0-200PSI)	GA256KS
2	LIGHT ASSEMBLY	MACKLIGHT
3	PRESSURE CAP	SS347CAP
4	CGA-347 MALE ADAPTER	SS4F347AM
5	1/4" MALE/MALE CHECK VALVE	VC4MMSS
6	LOW PRESSURE WHISTLE	AC-PA25
7	CGA-347 HAND TIGHT NUT/NIPPLE	SS347HT
8	BLEED VALVE	VAL030
9	RELIEF VALVE	VR4150BR
10	REGULATOR	REG-5000
11	RESPIRATOR FITTING--HANSEN	QDH3SL6M
11A	DUST CAP--HANSEN	QDH3DCAP
12	RESPIRATOR FITTING--SCHRADER	QDSSL6M
12A	DUST CAP--SCHRADER	QSDDCAP
13	OUTGOING PRESSURE GAUGE (0-6000PSI)	GA25200S

## SETUP/OPERATION



## **MACK-2 SETUP/OPERATION**

### **Step 1)**

Install the universal CGA-347 hand tight nuts (Item #3) to the cylinder valves and tighten.

### **Step 2)**

Close all bleeder valves (Item #2) by turning the knobs fully clockwise.

### **Step 3)**

Open one cylinder. At this time the low pressure warning alarm (Item #7) will sound until it sets itself at approximately 1000psi (69bar). Check reading on gauge to verify that cylinder is full. Close the cylinder.

### **Step 4)**

Set the required respirator pressure with the regulator control knob (Item #11). Turn clockwise to increase pressure, counterclockwise to decrease pressure.

### **Step 5)**

Bleed the pressure at either the relief valve (Item #9), or by partially engaging a male plug into one of the respirator couplings (Item 13/14). This depressurizes the manifold and simulates low cylinder pressure. The low pressure warning alarm (Item #7) will sound at approximately 500psi (35bar). Open the other cylinder. At this time the low pressure warning alarm (Item #7) will re-sound until it sets itself at approximately 1000psi (69 bar). Check reading on gauge (Item #8) to verify cylinder is full.

### **Step 6)**

Couple respirators and lengths of hoses to the manifold and readjust pressure regulator if necessary. The system is now operational.

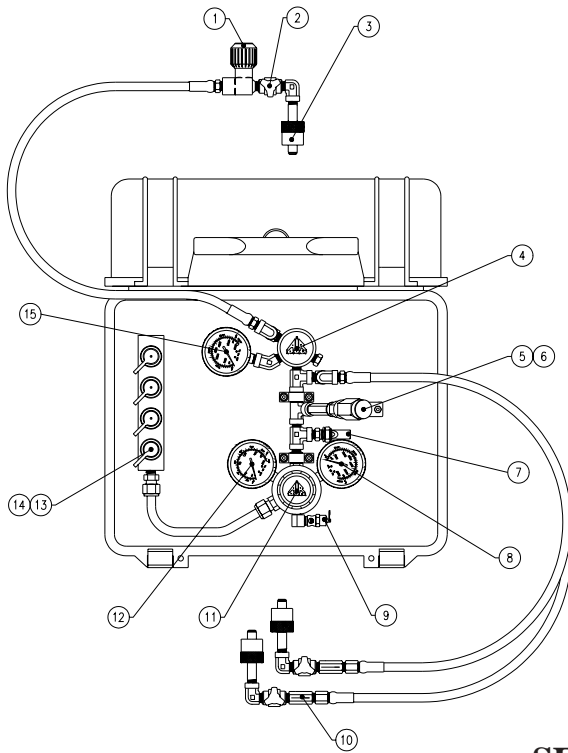
### **Step 7)**

Optional

Install a high pressure connect whip to the high pressure inlet. This step may be done after Step 5, or at anytime during operation of the system.

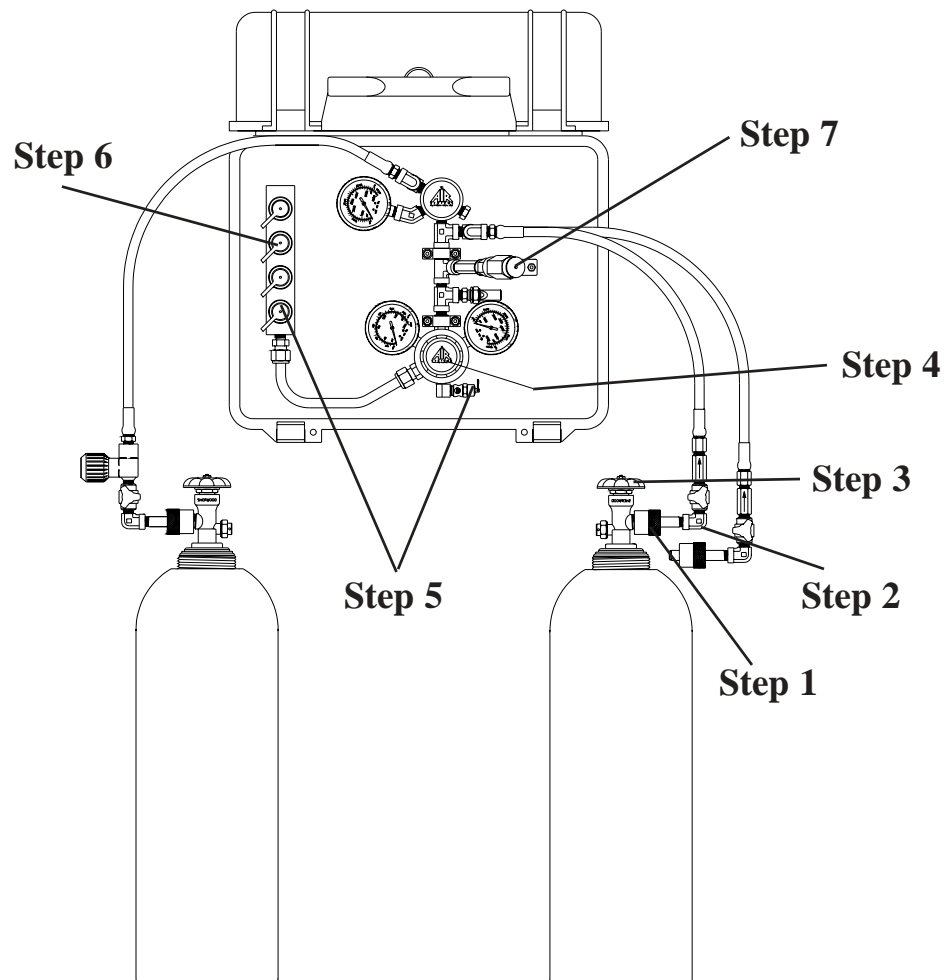
-7-  
**MACK-2**

**PARTS IDENTIFICATION**



ITEM #	DESCRIPTION	PART #
1	ON/OFF VALVE	VAL020
2	BLEEDER VALVE	VAL030
3	CGA-347 HAND TIGHT NUT AND STEM	SS347HT
4	FILL REGULATOR	REG001
5	CGA-347 MALE ADAPTER	SS4F347AM
6	PRESSURE CAP	SS347CAP
7	LOW PRESSURE WHISTLE	AC-PA25
8	INLET PRESSURE GAUGE (0-6000PSI)	GA256KS
9	RELIEF VALVE (150PSI)	VR4150BR
10	CHECK VALVE	VC4MMSS
11	PRESSURE REGULATOR	REG-5000
12	OUTLET PRESSURE GAUGE (0-200PSI)	GA25200S
13	QUICK DISCONNECT, HANSEN	QDH3SL6M
13A	QUICK DISCONNECT, SCHRADER	QDSSL6M
14	DUST CAP, HANSEN	QDH3DCAP
14A	DUST CAP, SCHRADER	QDSDCAP
15	FILL PRESSURE GAUGE (0-6000PSI)	GA256KS
16	LIGHT ASSEMBLY	MACKLIGHT

**SETUP/OPERATION**



## **MACK-2 FILLING CYLINDERS**

### **Step 1)**

**2216/4500psi cylinder fill:** Install the universal CGA-347 handtight nut (Item #3\*) to the empty cylinder's valve, and tighten.

*Note: An optional CGA-347 to CGA-346 adapter/relief valve is available. The relief valve is set to 2400psi.*

### **Step 2)**

Close the fill and bleeder valves (Item #s 1&2\*).

### **Step 3)**

Open empty cylinder valve.

### **Step 4)**

Open the cascade/air supply source. *Note: It is highly recommended you use a high volume air source connected to the high pressure inlet.*

### **Step 5)**

Adjust the fill regulator (Item # 4\*) to desired fill pressure by turning the control knob clockwise to increase pressure.

### **Step 6)**

Slowly open the fill valve (Item # 1\*) to a desired fill rate by turning the knob counterclockwise.

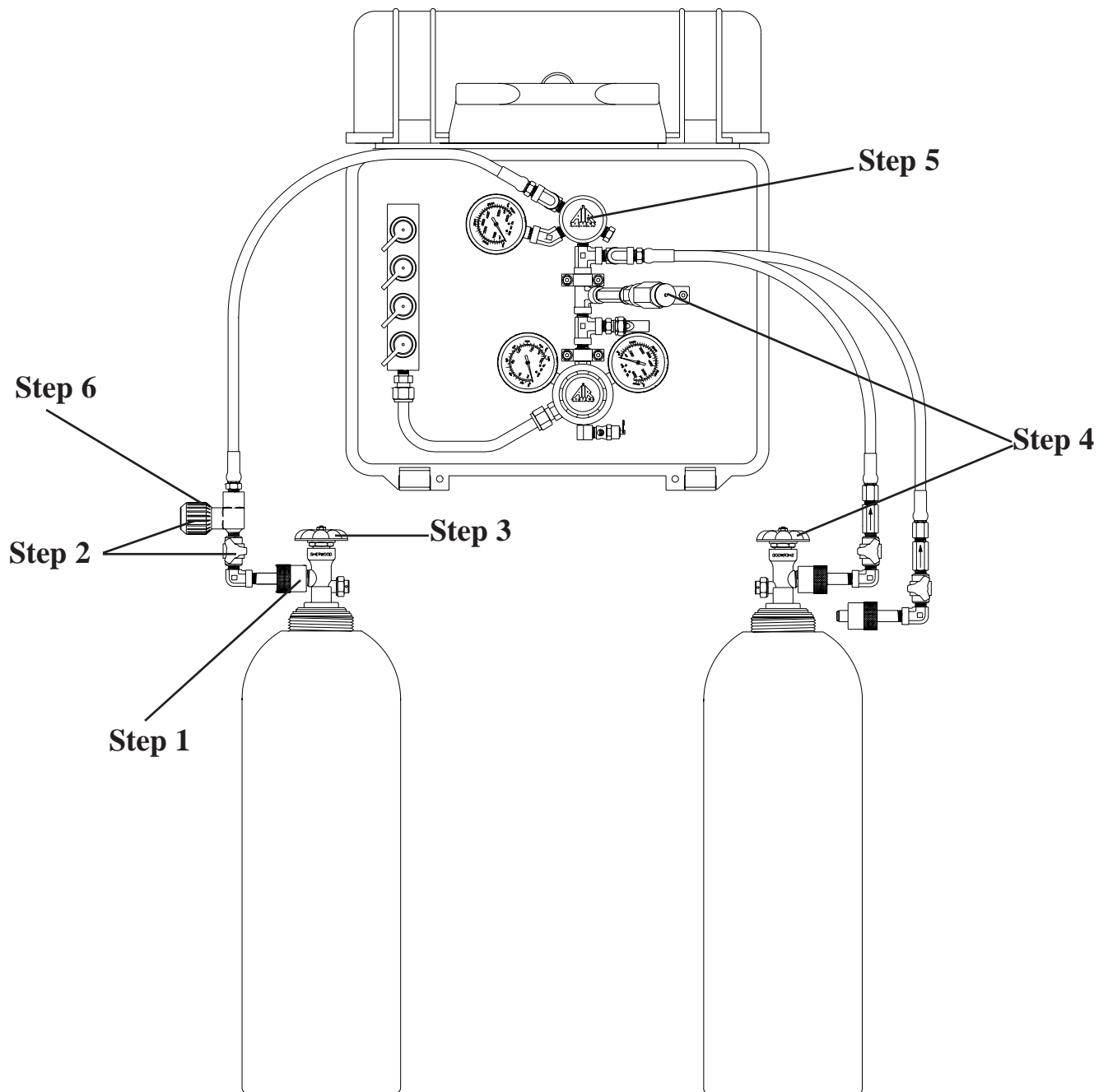
### **Step 7)**

Once filling is complete, close the fill and cylinder valves. Open the bleeder valve (Item #2\*) to vent pressure. Remove the CGA-347 hand tight nut (Item #3\*).

\*See MACK-2 Parts Identification, page 7.



## MACK-2 FILLING CYLINDERS



## **MACK-3 SETUP/OPERATION COMMON AIR SOURCES**

### **Step 1)**

Install the universal CGA-347 hand tight nuts (Item #4) to the cylinders.

### **Step 2)**

Close all bleeder valves (Item # 3) by turning the knobs fully clockwise.

### **Step 3)**

Index the isolation valve (Item #21) so the position arrow on the handle is inline with the plumbing.

### **Step 4)**

Open one cylinder. At this time, the low pressure warning alarms (Item #7) will sound until they set themselves at approximately 1000psi (69 bar). Check the reading on the gauge (Item #19) to verify that the cylinder is full. Close the cylinder.

### **Step 5)**

Set the required tool pressure with the regulator control knob (Item # 18). Turn clockwise to increase, counter clockwise to decrease pressure.

### **Step 6)**

Set the required respirator pressure(s) with the regulator control knob (Item # 15). Turn clockwise to increase, counterclockwise to decrease pressure.

### **Step 7)**

Bleed the pressure at either the relief valve (Item # 11), or by partially engaging a male plug into one of the respirator/tool couplings (Item #12/12A). This depressurizes the manifold and simulates low cylinder pressure. The low pressure warning alarms (Item #7) will sound at approximately 500psi (35 bar). Open the other cylinder(s). At this time the low pressure warning alarms (Item #7) will sound until they reset themselves at approximately 1000 psi (69 bar). Check reading on gauge (Item #19) to verify cylinder is full.

### **Step 8)**

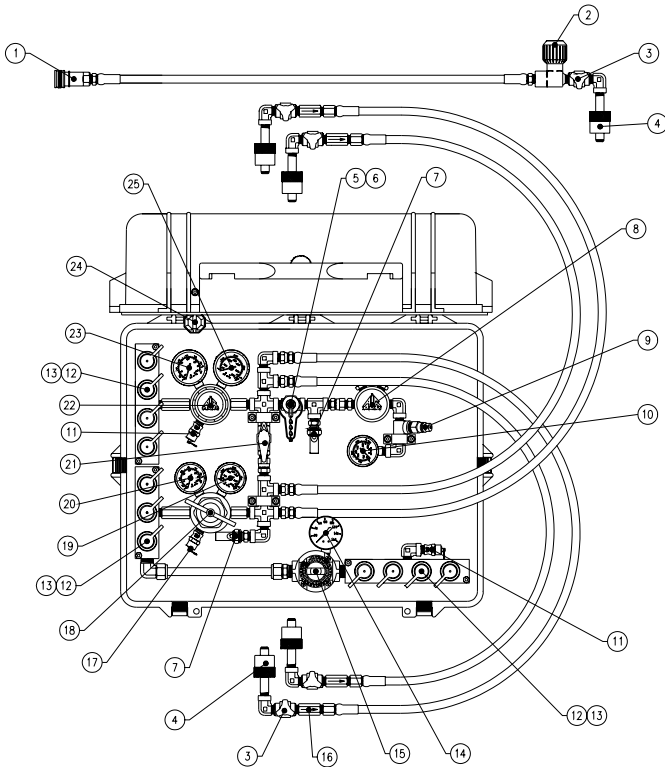
Couple respirators/tools and length of hoses to the corresponding couplings. Readjust the pressure regulators if necessary. The system is now operational.

### **Step 9) Optional**

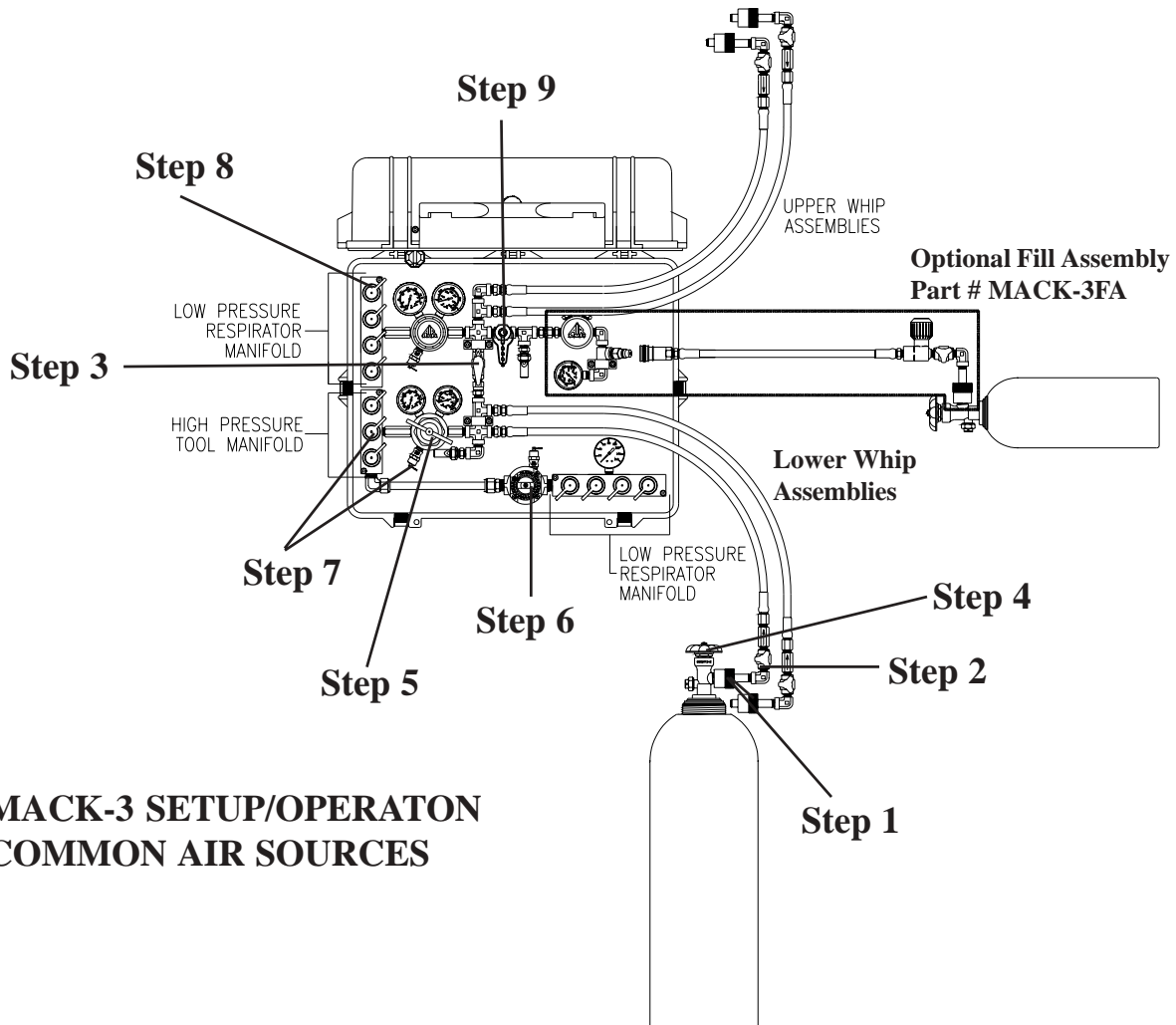
Install a high pressure connect whip to the high pressure inlet. This step may be done after step 7, or at any time during operation of the system.

# MACK-3

## PARTS IDENTIFICATION



ITEM #	DESCRIPTION	PART #
1	HIGH PRESSURE QUICK DISCONNECT	QDHKSL4FSS
2	ON/OFF VALVE	VAL020
3	BLEEDER VALVE	VAL030
4	CGA-347 HAND TIGHT NUT/STEM	SS347HT
5	CGA-347 MALE ADAPTER	SS4F347AM
6	PRESSURE CAP	SS347CAP
7	LOW PRESSURE WHISTLE	AC-PA25
8	FILL REGULATOR	REG001
9	FILL WHIP CONNECTION	QDHKPL4FSS
10	FILL PRESSURE GAUGE	GA256KS
11	RELIEF VALVE (150PSI)	VR4150BR
12	QUICK DISCONNECT, HANSEN	QDH3SL6M
12A	QUICK DISCONNECT, SCHRADER	QDSSL6M
13	DUST CAP, HANSEN	QDH3DCAP
13A	DUST CAP, SCHRADER	QDSDCAP
14	OUTLET PRESSURE GAUGE (0-160PSI)	GA20160S
15	PRESSURE REGULATOR	WL014
16	CHECK VALVE	VC4MMSS
17	RELIEF VALVE (275PSI)	VR4275BR
18	AIR SHORE REGULATOR	REG007
19	INLET PRESSURE GAUGE (0-6000PSI)	GA206KS
20	OUTLET PRESSURE GAUGE (0-1000PSI)	GA201KS
21	SYSTEM ISOLATION VALVE	VAL073
22	PRESSURE REGULATOR	REG-5000
23	OUTLET PRESSURE GAUGE (0-200PSI)	GA25200S
24	LIGHT ASSEMBLY	MACKLIGHT
25	INLET PRESSURE GAUGE (0-6000PSI)	GA256KS



## MACK-3 SETUP/OPERATON COMMON AIR SOURCES

## **MACK-3 SETUP/OPERATION**

### **AIR SOURCES ISOLATED**

#### **Step 1)**

Install the universal CGA-347 hand tight nuts (Item # 4\*) to the cylinders.

***Note: At least one cylinder on the upper and lower whip assemblies needs to be connected for independent operation.***

#### **Step 2)**

Close all bleeder valves (Item # 3\*) by turning the knobs fully clockwise.

#### **Step 3)**

Index the isolation valve (Item #21\*) so the position arrow on the handle is perpendicular to the plumbing.

#### **Step 4)**

Open one cylinder from the upper and lower whip assemblies. At this time the corresponding low pressure warning alarms (Item #7\*) will sound until they set themselves at approximately 1000psi (69 bar). Check the reading on the gauges (Item #s 19 & 25\*) to verify that the cylinders are full. Close the cylinders.

#### **Step 5)**

Set the required tool pressure with the regulator control knob (Item # 18\*). Turn knob clockwise to increase, or counterclockwise to decrease pressure.

#### **Step 6)**

Set the required respirator pressure(s) with the regulator control knob (Item # 15\*). Turn clockwise to increase, counterclockwise to decrease pressure.

#### **Step 7)**

Bleed the pressure at either the relief valve (Item # 11\*) or by partially engaging a male plug into one of the respirator/tool couplings (Item #s 12/12A\*). This depressurizes the manifold, and simulates low cylinder pressure. The low pressure warning alarms will sound at approximately 500psi (35 bar). Open the other cylinder(s). At this time the low pressure warning alarms (Item #7\*) will sound until they reset themselves at approximately 1000psi (69 bar). Check reading on gauge (Item #19\*) to verify cylinder is full.

#### **Step 8)**

Couple respirators/tools and lengths of hose to the corresponding couplings. Readjust the pressure regulators if necessary. The system is now operational.

#### **Step 9) Optional**

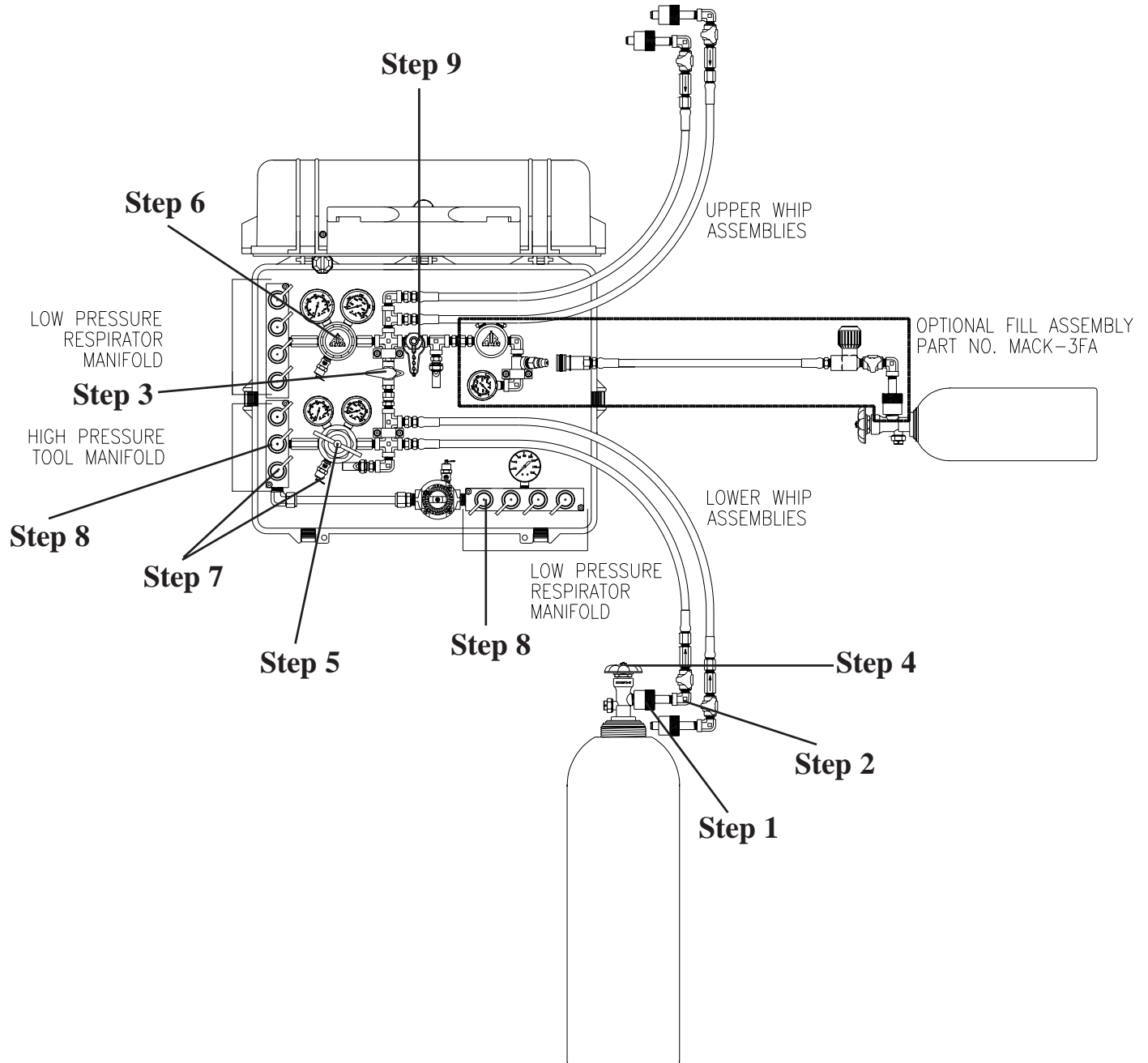
Install a high pressure connect whip to the high pressure inlet. This may be done after Step 8, or at any time during operation of the system.

\*See MACK-3 Parts Identification, page 11.

# MACK-3

## SETUP/OPERATION

### AIR SOURCES ISOLATED



**MACK-3 SETUP/OPERATION  
OPTIONAL FILL WHIP ASSEMBLY  
PART # MACK-3FA**

**Step 1)**

If the system is to be used for breathing air and filling, follow the procedures on page 10 for common air sources or page 12 for isolated air sources. Continue to Step 2.

**Step 2)**

Close the high pressure fill regulator by turning the control knob (Item #8\*) counterclockwise until no resistance is noticed. ***Note: Continuing to turn counterclockwise will result in the removal of the knob.***

**Step 3)**

Install the fill whip onto the fill regulator by way of the quick disconnect (Item #1\*).

**Step 4)**

Install the universal CGA-347 hand tight nut (Item #4\*) to the cylinder to be filled.

**Step 5)**

Close the bleeder and fill valves (Item #s 2 & 3\*) by turning the knobs fully clockwise. Open the empty cylinder's valve.

**Step 6)**

Adjust the fill regulator (Item #8\*) to the desired pressure by turning the control knob clockwise to increase pressure.

**Step 7)**

Slowly open the fill valve (Item # 2\*) by turning the knob counterclockwise.

**Step 8)**

Once filling is complete, close the full cylinder valve.

**Step 9)**

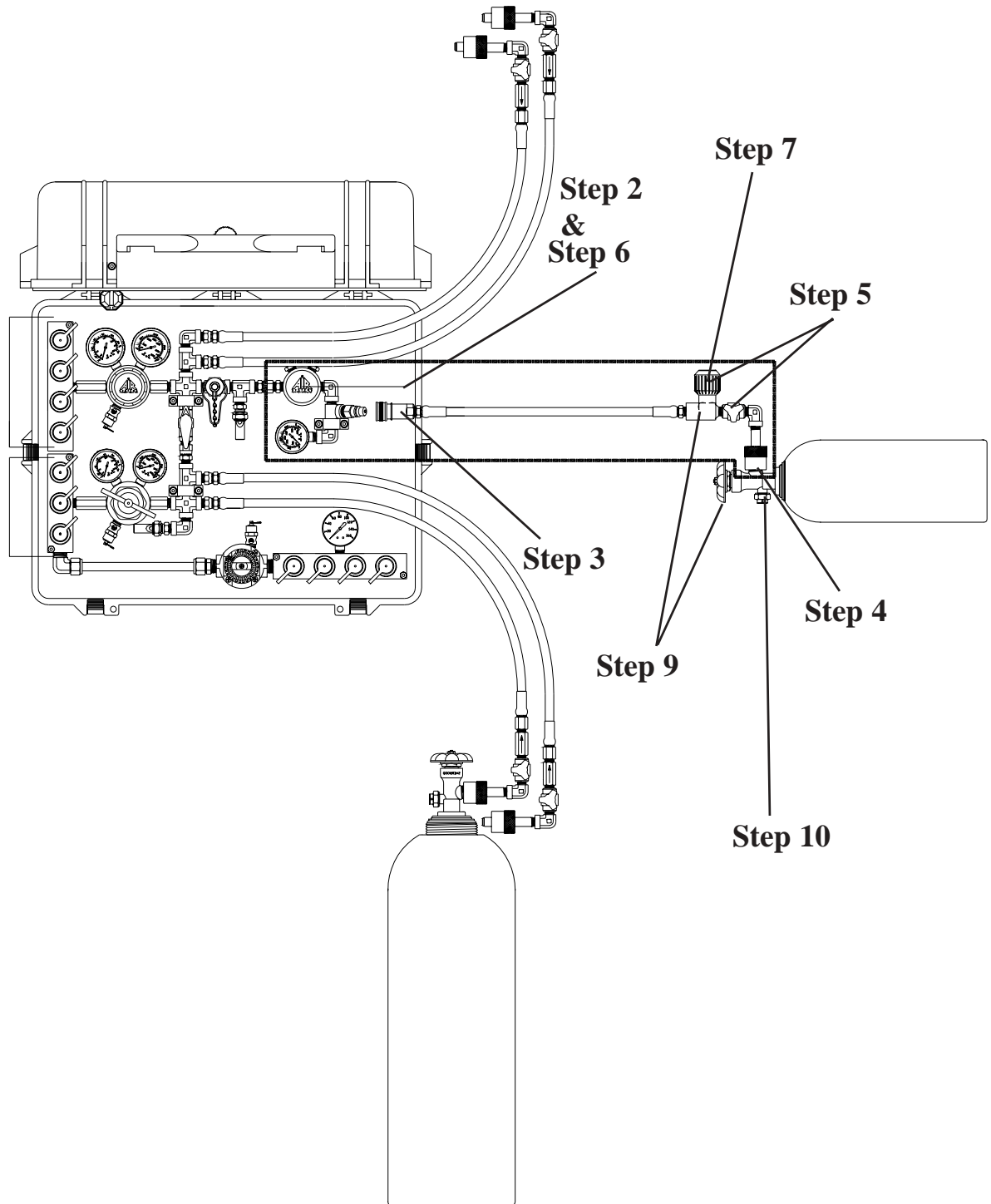
Close the fill valve (Item #2\*).

**Step 10)**

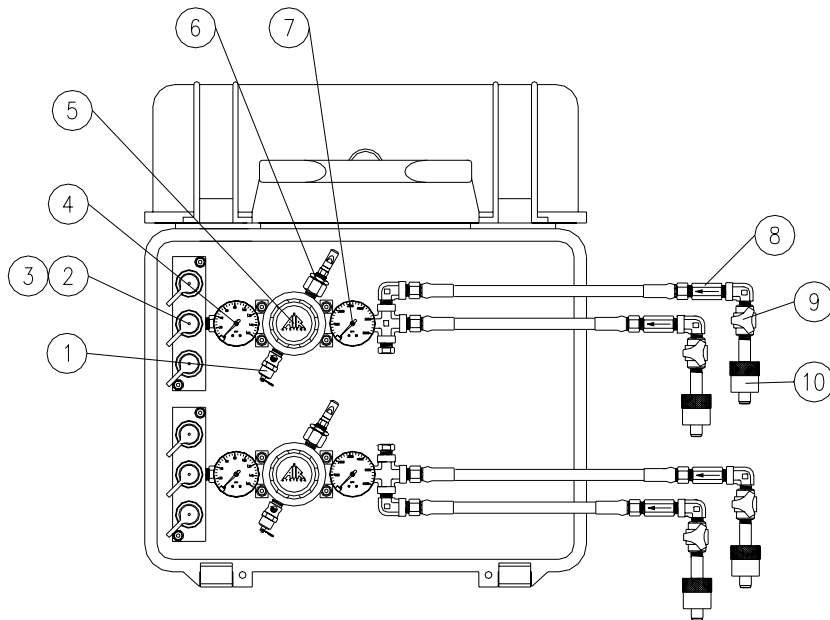
Open the relief valve. This relieves the line pressure, allowing removal of the universal CGA-347 hand tight nut.

\*See MACK-3 Parts Identification, page 11.

**MACK-3**  
**OPTIONAL FILL WHIP ASSEMBLY**  
**PART # MACK-3FA**

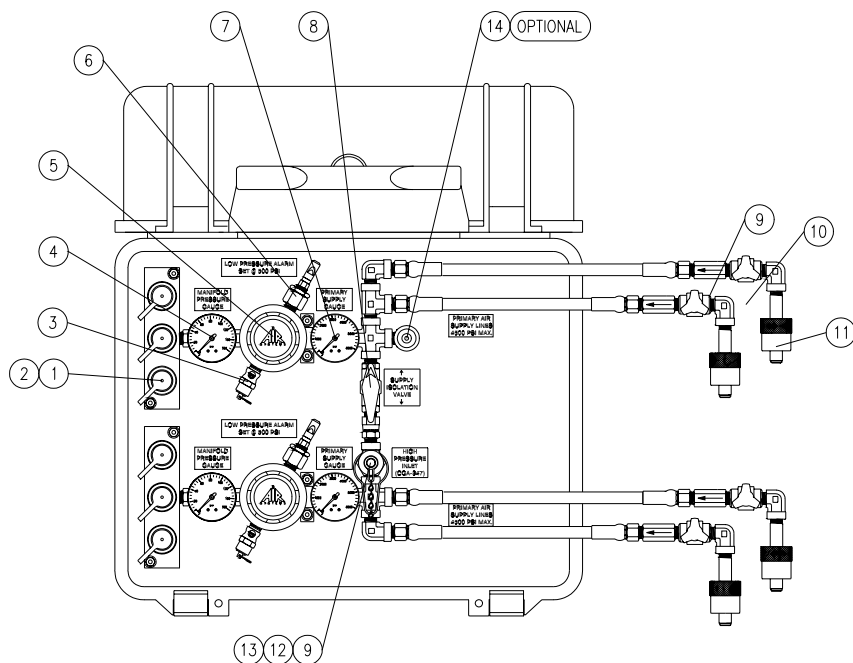


## MACK-NFPA1 PARTS IDENTIFICATION



ITEM #	DESCRIPTION	PART #
1	RELIEF VALVE, 125 PSI	VR4125BR
2	QUICK-CONNECT, HANSEN	QDH3SL4M
2A	QUICK-CONNECT, SCHRADER	QDSSL4M
3	DUST CAP, HANSEN	QDH3DCAP
3A	DUST CAP, SCHRADER	QSDSCAP
4	OUTLET PRESSURE GAUGE	GA20160B
5	PRESSURE REGULATOR	REG-5000NG
6	LOW PRESSURE WHISTLE	AC-PA25
7	INLET PRESSURE GAUGE	GA206KB
8	CHECK VALVE	VC4MMSS
9	BLEEDER VALVE	VAL030
10	CGA-347 HAND-TIGHT	SS347HT

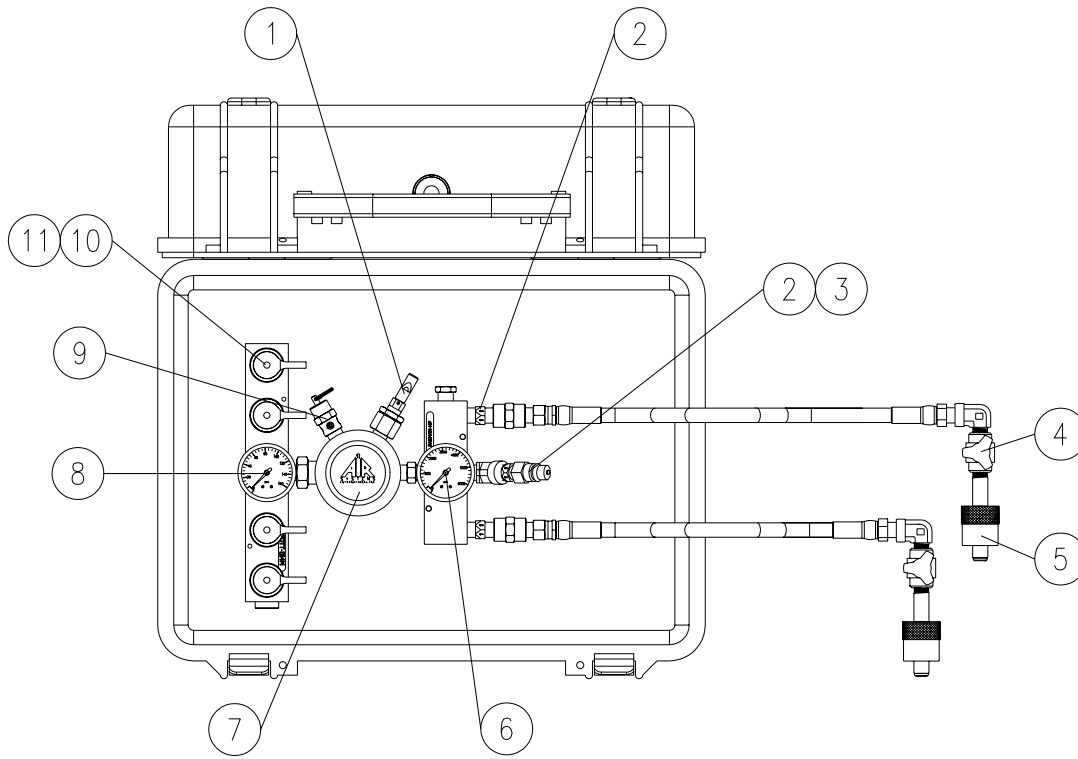
## MACK-NFPA3 & MACK-NFPA3Q PARTS IDENTIFICATION



ITEM #	DESCRIPTION	PART #
1	RESPIRATOR COUPLING, HANSEN	QDH3SL4M
1A	RESPIRATOR COUPLING, SCHRADER	QDSSL4M
2	DUST CAP, HANSEN	QDH3DCAP
2A	DUST CAP, SCHRADER	QSDSCAP
3	RELIEF VALVE	VR4125BR
4	OUTLET GAUGE, 0-160 PSI	GA20160B
5	PRESSURE REGULATOR	REG-5000NG
6	LOW PRESSURE WHISTLE	AC-PA25
7	INLET GAUGE, 0-6000 PSI	GA206KB
8	SUPPLY ISOLATION VALVE	VAL073
9	CHECK VALVE	VC4MMSS
10	BLEED VALVE	VAL030
11	CGA-346/CGA-347 HAND-TIGHT	SS347HT
12	CGA-347 MALE ADAPTER	SS4F347AM
13	PRESSURE CAP	SS347CAP
14	QUICK FILL PLUG - OPTIONAL	ST878MFST



## MACK-1-6K PARTS IDENTIFICATION



ITEM #	DESCRIPTION	PART #
1	LOW PRESSURE WHISTLE	AC-PA25
2	CHECK VALVE	VC4SMMSS
3	HIGH PRESSURE INLET FITTING, 6000 PSI MAX	QDHKPL4FSS
4	BLEED VALVE	VAL030
5	CGA-347 HAND-TIGHT NUT/NIPPLE	SS347HT
6	0-6000 PSI PRESSURE GAUGE	GA206KB
7	PRESSURE REGULATOR	REG009
8	OUTLET PRESSURE GAUGE	GA20160B
9	RELIEF VALVE	VR4150BR
10	RESPIRATOR FITTING, HANSEN	QDH3SL4M
10A	RESPIRATOR FITTING, SCHRADER	QDSSL4M
11	DUST CAP, HANSEN	QDH3DCAP
11A	DUST CAP, SCHRADER	QDSDCAP
12	LIGHT ASSEMBLY (NOT SHOWN)	MACKLIGHT

## MACK-NFPA1& MACK-NFPA3(Q) SETUP & OPERATION

*Note: Low pressure (2216psi) and high pressure (4500psi) cylinders can be used.*

### Step 1)

Install CGA-347 connections to cylinder valves and tighten with hand tight wheels.

### Step 2)

Make sure all bleeder valves are turned fully clockwise to prevent air loss, and open one cylinder. At this time the low pressure alarm whistle will sound. It will continue until the pressure reaches approximately 1000psi (69 bar).

### Low Pressure Alarm Test

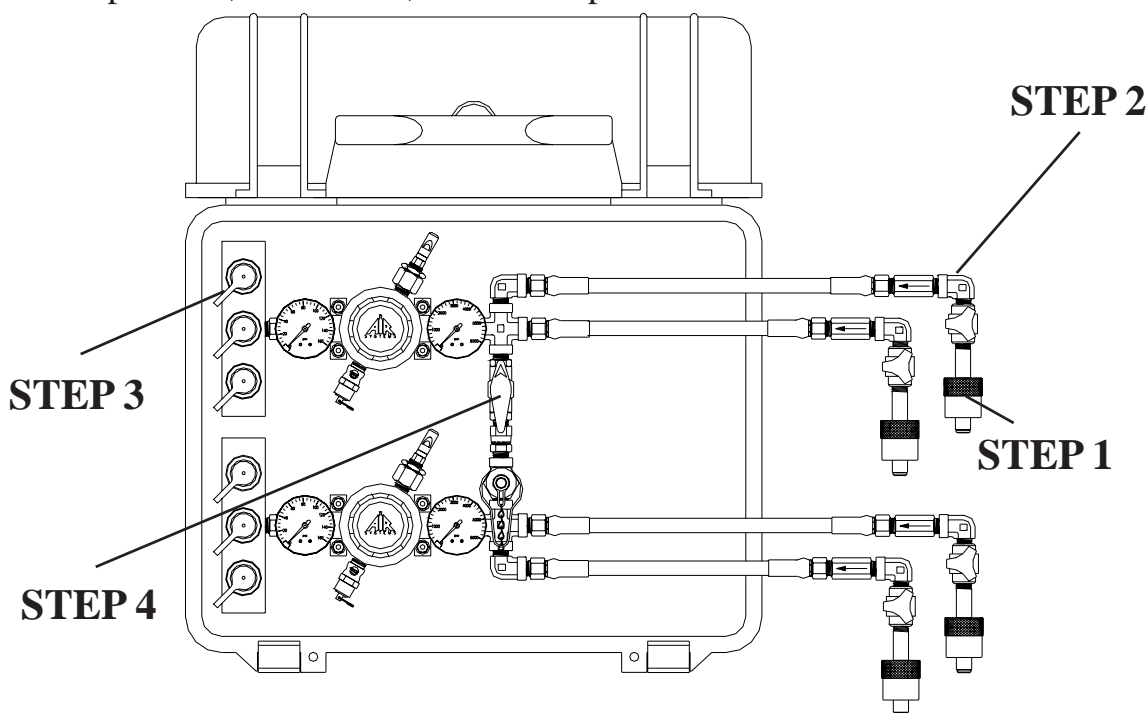
Set the required respirator pressure with the regulator control knob, and bleed the pressure at either the relief valve, or by partially engaging a male plug into one of the respirator couplings. This depressurizes the manifold and simulates low cylinder pressure. The low pressure warning alarm will sound at approximately 500psi (35 bar). Open the other cylinder. Check reading on gauge to verify cylinder is full.

### Step 3)

Couple respirators and lengths of hoses to the manifold and readjust pressure regulator if necessary. The system is now operational.

### Step 4) Optional for MACK-NFPA3

The CGA-347 inlet can be used as an alternate incoming air source. Set the selector valve to the common, vertical position, or isolated, horizontal position.



## CHANGING CYLINDERS

To change a cylinder while the unit is still in use:

1. Open the second cylinder and note the gauge pressure.
2. Close the drained cylinder.
3. Open the bleeder valve to relieve line pressure. Remove the CGA-347 hand tight nut.
4. Remove the drained cylinder and install a full cylinder in its place. Reinstall the CGA-connections. Close bleeder valves. The cylinder is now ready for use when the other cylinder's pressure descends to 500psi.

*Note: The system is equipped with check valves that will prevent backflow from the other cylinder in use.*

## SHUTDOWN PROCEDURE

1. Cylinder valves must be shut and line pressure relieved through the relief valve.
2. Remove CGA-347 connections from cylinders and reinstall valve covers for storage and transportation.

## HIGH PRESSURE AIRLINE GENERAL MAINTENANCE & INSPECTION

### Monthly

1. Check regulatos, gauges, and valves for external leakage.
2. Inspect cylinder valves for proper closure.
3. Check cylinder pigtails for cleanliness, flexibility, wear, leakage, blisters on hose, and thread damage. Replace damaged pigtails immediately.
4. Inspect check valves for closure ability.

### Annually

1. Check relief valve's pressure setting.
2. Check regulator function by opening and closing regulator valve knob fully.

### Every 4 years

1. Replace all flexible pigtails.

### ***Warranty Disclaimer***

Air Systems' manufactured equipment is warranted to the original user against defects in workmanship or materials under normal use for one year after date of purchase. Any part which is determined by Air Systems to be defective in material or workmanship will be, as the exclusive remedy, repaired or replaced at Air Systems' option. This warranty does not apply to electrical systems or electronic components. Electrical parts are warranted, to the original user, for 90 days from the date of sale. During the warranty period, electrical components will be repaired or replaced at Air Systems' option.

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The purchaser shall be solely responsible for compliance with all applicable Federal, State and Local OSHA and/or MSHA requirements. Although Air Systems International believes that its products, if operated and maintained as shipped from the factory and in accordance with our "operations manual", conform to OSHA and/or MSHA requirements, there are no implied or expressed warranties of such compliance extending beyond the limited warranty described herein. Product designs and specifications are subject to change without notice. **Rev 2 12/98**

*Air leaks are not covered under warranty except when they result from a defective system component, i.e. an on/off valve or regulator or upon initial delivery due to poor workmanship. Air leaks due to poor delivery or damage will be covered under delivery claims. Minor air leaks are part of routine service and maintenance and are the responsibility of the customer just as are filters and oil changes.*