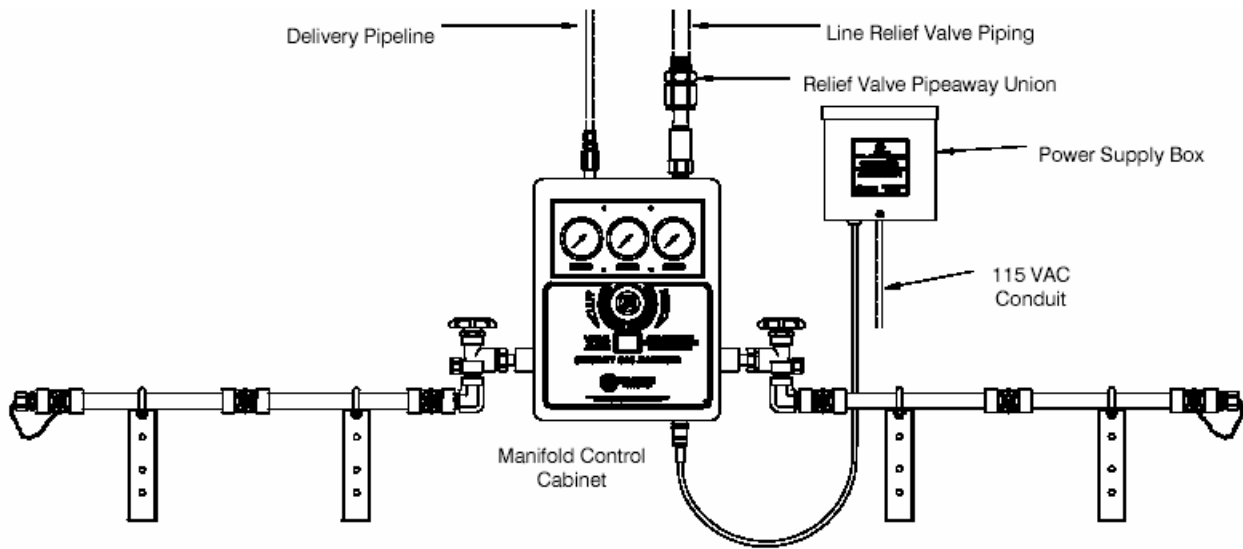




**HBAC2 - Series  
High Purity Brass Automatic Manifold for High Pressure Cylinders (up to 3,000 psi.)**

The HBAC2 series manifold systems are cleaned, tested and prepared for the indicated gas service and are built following National Fire Protection Association and Compressed Gas Association guidelines. The manifold consists of a manifold control and two supply bank headers, one service and one reserve supply, to provide an uninterrupted supply of gas for the specific gas application. The control is designed and built with features providing automatic changeover from the depleted "Service" supply bank to the "Reserve" supply with no loss or drop in delivery pressure. Pressure gauges, alarm signal connections and lights (non fuel gas manifolds) show system status and alert the need to replace depleted cylinders. Features of the automatic systems include an integral adjustable line regulator, stainless steel inner core braided flexible pigtailed with check valves, rigid wall-mounted headers with check valves and complete mounting hardware.

The HBAC2 series manifold should be installed in accordance with guidelines stated by the National Fire Protection Association, the Compressed Gas Association, OSHA, and all applicable local codes. The carbon dioxide and nitrous Oxide manifold should not be placed in a location where the temperature will exceed 120°F (49°C) or fall below 20°F (-7°C) . The manifolds for all other gases should not be placed in a location where the temperature will exceed 120°F (49°C) or fall below 0°F (-18° C). A manifold placed in an open location should be protected against weather conditions. During winter, protect the manifold from ice and snow. In summer, shade the manifold and cylinders from continuous exposure to direct rays of the sun.



**Specifications**

- Maximum Inlet Pressure: 3000 psig
- Delivery pressure Range: 30-100 psig  
50-200 psig HP Model  
0-15 psig Acetylene
- Carbon Dioxide and Nitrous Oxide models available both with and without heaters
- Cylinder station spacing: 10" center to center all gases except Acetylene 13" center to center.
- Inlet (pigtail) Connections CGA as specified
- Header Inlets: CGA check valve outlet (for added safety) corresponding to gas use.
- Outlet Connection: 1/4" Tube compression
- Current Draw: .075 amps
- **Every unit (except HL suffix heater units and Acetylene flashback arrestor) is Helium leak tested  $2 \times 10^{-6}$  SCC/SEC and shipped with certification.**

**Features and Benefits**

- Eliminates costly downtime by providing a constant uninterrupted gas flow.
- Enhances safety by consolidating cylinders into a centralized location.
- Ensures system purity with compatible component selection.
- Check valve outlets on header provide added safety.
- Additional check valve at cylinder end of pigtailed to minimize contamination during cylinder change outs.
- 1/2" brass pipe and tee construction, silver brazed and Teflon taped.
- Design allows field installation of additional stations without brazing.
- Flexible stainless lined pigtailed with check valves at cylinder end allow easy cylinder hook up and maintain gas purity.

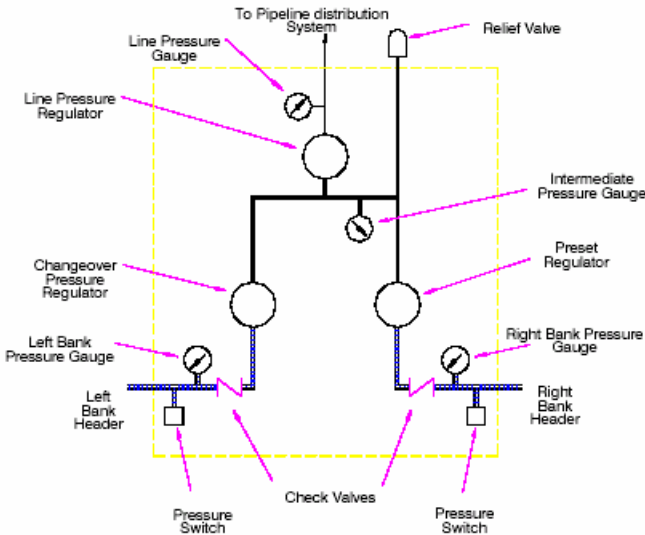
**HBAC2 - Series**  
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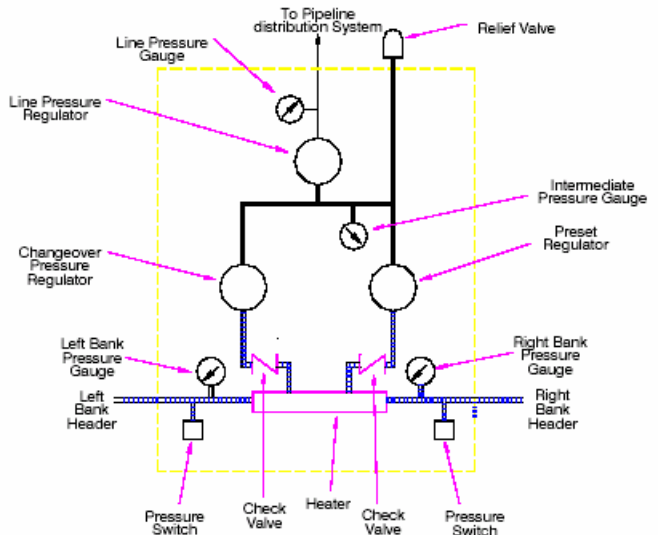
**Manifold Operation**

The HBAC2 manifold control includes the following components and features: green “system Normal”, and red “Replace Depleted Bank” indicator lights, cylinder pressure gauges, line pressure gauges, intermediate safety relief valve, supply bank control indicator knob, and automatic bank switching. Supply banks consist of a header with 24” stainless steel inner core flexible pigtails with check valves, check valve outlets, master shut-off valves, and union connections for attachment to the control unit. The cylinder bank that supplies the piping system is known as the “Service” supply, while the cylinders on stand-by are referred to as the “Reserve” supply. Gas flows through the manifold control to first the primary regulator and then through the line regulator. Delivery pressure is controlled by the line regulator and is adjustable via the access hole in the upper left hand side of the cabinet. Changeover from the “Service” to “Reserve” side is accomplished by a pressure differential between the change-over and intermediate primary regulator. As cylinder contents are depleting, pressure passing through the primary regulators will drop. When this pressure drops to the set pressure of the intermediate regulator, a pressure switch is actuated causing the green ”System Normal” light to go out and a red “Replace Depleted Bank” light to come on. The “reserve” bank will automatically begin to flow without any interruption in service line delivery pressure. There are two definite indicators as to which bank should be changed; (1) the arrow on the control indicator knob in conjunction with the red “Replace Depleted Bank” light and (2) the cylinder bank pressure gauge. After replacing empty cylinders, open the master valve. Because the cylinder pressure will actuate the pressure switch, the red “Replace Depleted Bank” light will be extinguished and the knob indicator must be turned to it’s opposite position to indicate the new supply bank now in service. Except for moving the indicator knob to it’s position after replacement of an empty bank, the indicator knob must always be in the extreme right or left position.

HBAC2 AND HBAC2HP SERIES  
 MANIFOLD PIPING SCHEMATIC

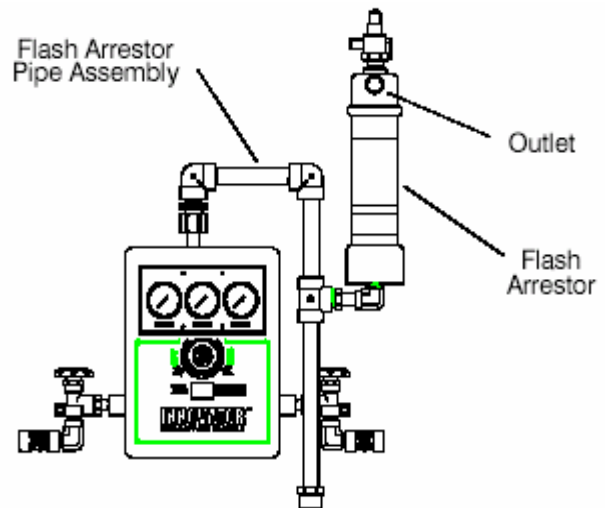


HBAC2HL SERIES  
 MANIFOLD PIPING SCHEMATIC



**Fuel Gas Manifold - Flashback Arrestors**

A dry flashback arrestor is provided with all Western acetylene manifolds. A flashback arrestor shall also be used on all fuel gas manifolds (not provided with manifold) used in applications with oxygen. Installed in the main gas line or at the head of each branch line, the arrestor protects the main gas supply from the dangers of reverse flow and flashbacks. The safety relief valve is installed on the outlet side of the flashback arrestor. Should excessive pressure occur, the gas is then vented out and away to a safe location





**HBAC2 - Series**

**High Purity Brass Automatic Manifold for High Pressure Cylinders (up to 3,000 psi.)**

**HBAC2HL - Model for use with Carbon Dioxide and Nitrous Oxide**

Carbon Dioxide and Nitrous Oxide systems include a 500 SCFH capacity heater. The thermostatically controlled heater warms the gas before entering the regulator, preventing “freeze-up”. The control is supplied with a 6-foot cord and plug for 115 VAC power and draws approximately four amperes. This cord power only the heater, you must wire in the power supply to activate the indicator lights on the front of the manifold control.

**Power Source Requirements**

A 115 VAC to 24 VAC power supply is provided with the manifold to operate the alarm lights on the manifold. Under normal operation the manifold will draw a maximum of 40 millamperes (.040 amperes)

Nitrous Oxide and Carbon Dioxide systems includes a 500 SCFH capacity heater. The thermostatically controlled heater warms the gas before entering the regulator, preventing “freeze-up”. The heater operates at 115 VAC and draws approximately four amperes.

**Flow Capability**

Oxygen: 250 SCFH maximum at 80 psig delivery with a 12 psi pressure drop and 2000 psig inlet pressure.  
30 SCFH maximum at 80 psig delivery with a 5 psi pressure drop and 2000 psig inlet pressure.

Nitrogen: 250 SCFH maximum at 80 psig delivery with a 12 psi pressure drop and 2000 psig inlet pressure.  
30 SCFH maximum at 80 psig delivery with a 5 psi pressure drop and 2000 psig inlet pressure

Nitrous Oxide & Carbon Dioxide The flow capability of a Nitrous Oxide or Carbon Dioxide cylinder manifold will depend upon conditions at the installation site, demands of the delivery system and the number of cylinders in service. Maximum Capability is 35 SCFH at 80 psig delivery and 750 psig inlet pressure. Higher flow rates up to 250 SCFH can be obtained using the HBAC2HL series manifolds. The HBAC2HL manifold includes an internal Heater. Installing a Nitrous Oxide or Carbon Dioxide manifold in a location which exposes it to ambient Temperatures below 20°F (-7°C) is not recommended.

Air, Argon: 250 SCFH maximum at 80 psig delivery with a 12 psi pressure drop and 2000 psig inlet pressure.  
30 SCFH maximum at 80 psig delivery with a 5 psi pressure drop and 2000 psig inlet pressure

Helium & Hydrogen: 250 SCFH maximum at 80 psig delivery with a 12 psi pressure drop and 2000 psig inlet pressure  
30 SCFH maximum at 80 psig delivery with a 5 psi pressure drop and 2000 psig inlet pressure

Acetylene: 75 SCFH maximum at 15 psig delivery with a 5 psi pressure drop and 200 psig inlet pressure.

**Material of Construction**

**Brass Fittings and Pipe Materials**

UNS C36000  
UNS C37700

**Pigtail Materials**

CGA Connections: Brass  
Inner Core Material: 316L stainless (annular corrugated)

**Master Valve Materials**

Diaphragm: 303 Stainless Steel  
Seat: Nylon  
Body: Brass

**Internal Check valves**

Body: Brass  
Seat: Viton™ (EPDM for CO<sub>2</sub> and N<sub>2</sub>O)  
Spring: 302 Stainless Steel

**Pipe Thread Seal:** Teflon™ Tape

**Inlet Filter:** 10 Micron Sintered Porous Bronze

**Intermediate Relief Valve**

Body: UNS C36000  
Seat: Viton™ (EPDM for CO<sub>2</sub> and N<sub>2</sub>O)

**Line Regulator**

Body: Brass  
Diaphragm: 316L Stainless Steel  
Seat: Teflon™  
Filter: 10 Micron Sintered Bronze  
Seals: PTFE Teflon™

**Tubing:** 316 Stainless Steel and Copper (all models except following) HBAC2-1 and HBAC2-1A: Brass And 316 Stainless Steel.

**Primary Regulator and changeover Regulator**

Body, Nozzle, and Retainer: Brass  
Seat: Kel-F™  
O-Rings: Viton™ (EPDM for CO<sub>2</sub> and N<sub>2</sub>O)  
Diaphragm: 316 Stainless Steel

**Pressure Switch**

Body: 316 Stainless Steel  
Diaphragms: 316 Stainless Steel

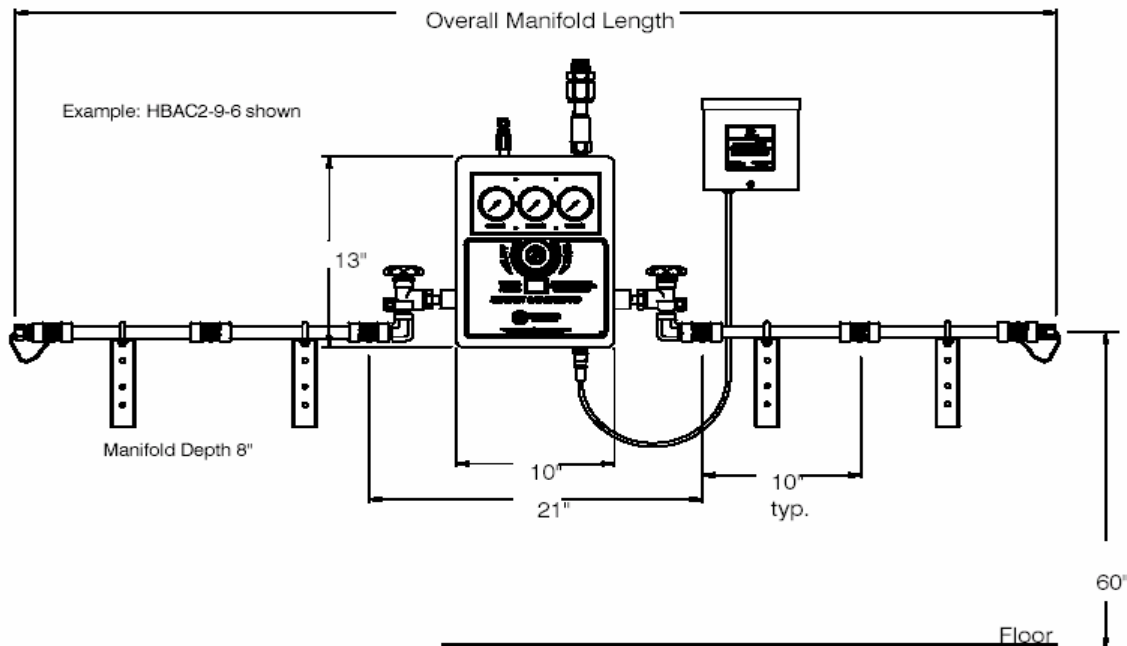
**Inlet Pressure gauges**

Body: Brass  
Bourdon Tube: Phosphor Bronze  
Solder: Silver

**Intermediate and Line Pressure Gauge**

Body: Brass  
Bourdon Tube: Phosphor Bronze  
Solder: Soft Solder

**HBAC2 - Series**  
**High Purity Brass Automatic Manifold for High Pressure Cylinders (up to 3,000 psi.)**



Total Number of Cylinders	2	4	6	8	10	12	16
Standard (10" Centers) Overall Manifold Length	2'-3" (0.7m)	3'-11" (1.2m)	5'-7" (1.7m)	7'-3" (2.21m)	8'-11" (2.72m)	10'-7" (3.23m)	13'-11" (4.24m)
Staggered Design (5" Centers) Overall Manifold Length	2'-3" (0.7m)	3'-1" (.94m)	3'-11" (1.2m)	4'-9" (1.45m)	5'-7" (1.7m)	6'-5" (1.96m)	8'-1" (2.46m)
Vertical Crossover (10" Centers) Overall Manifold Length	N/A	2'-3" (0.7m)	N/A	3'-11" (1.2m)	N/A	5'-7" (1.7m)	N/A
Standard Acetylene Manifold (13" Centers) Overall Manifold Length	2'-3" (0.7m)	4'-5" (1.35m)	6'-7" (2.0m)	8'-9" (2.7m)	10'-11" (3.3m)	13'-1" (4.0m)	17'-5" (5.31m)
Staggered Acetylene Manifold (6.5" Centers) Overall Manifold Length	2'-3" (0.7m)	3'-4" (1.0m)	4'-5" (1.67m)	5'-6" (1.67m)	6'-7" (2.0m)	7'-8" (2.34m)	9'-10" (3.0m)

**How to Order:** Specify; Control type (V) - Service (W) - Number of Cylinders (X) Header Configuration (Y) Mounting (Z)

Control Type (V)	Gas Service (W)	Number of Cylinders (X)	Header Configuration (Y)	Mounting (Z)
HBAC2 (30-100 psig) Acetylene (0-15 psig)	(1) Acetylene	CGA-510	BLANK-Standard 10" on center	Blank = Wall Mount (Standard)
	(1A) Acetylene	CGA-300	13" on center for Acetylene	
HBAC2HL (30-100 psig) (500 SCFH heater included in HL model for CO <sub>2</sub> and N <sub>2</sub> O)	(2) Zero Air	CGA-346	S-STAGGERED 5" on center	F - Floor Stand
	(2A) Zero Air	CGA-590	-6.5" on center for Acetylene	
	(3) Argon	CGA-580	V- VERTICAL CROSSOVER	
	(4) Carbon Dioxide	CGA-320	-Standard 10" on center	
	(5) Helium	CGA-580	-13" on center For Acetylene	
	(6) Hydrogen	CGA-350	U-SHAPED - SKETCH REQUIRED	
HBAC2HP (50-200 psig)	(6A) Argon/Methane	CGA-350	L-SHAPED- SKETCH REQUIRED	
	(7) Nitrogen	CGA-580		
	(8) Nitrous Oxide	CGA-326		
	(9) Oxygen	CGA-540		

**Warranty**

All Western manifold are warranted against defects in materials and workmanship for the period of one year from the date of shipment. For complete information on the warranty please see the back cover of the Installation and operations manual