

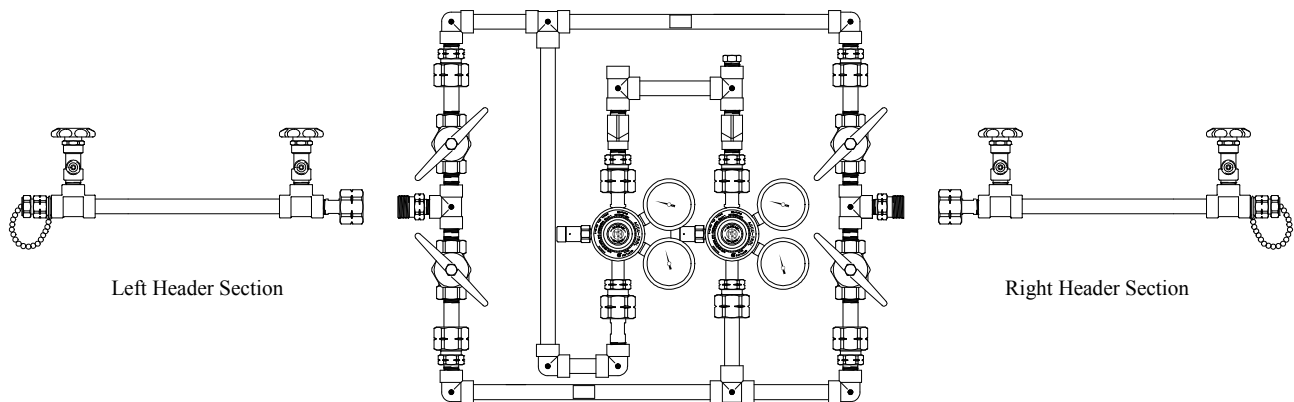


AD - Series

Automatic Manifolds for High Pressure Cylinders for Industrial Applications

The AD-series manifold systems are cleaned, tested and prepared for the indicated gas service and are built following Compressed Gas Association guidelines. The manifold consists of two regulators and two supply bank headers, one service and one secondary supply to provide an uninterrupted supply of gas for the specific gas application. The manifold control unit is designed and built with features providing automatic changeover from the depleted "Service" bank to the "Reserve" supply with a predetermined drop in delivery pressure. Pressure gauges show system pressure status and display the need to replace depleted cylinders. By adding an optional pressure switch and power supply the manifold may be connected to any remote alarm system. Features of the manifold system include regulators, flexible pigtails with check valves, headers and complete mounting hardware.

The AD-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 manifolds should not be placed in a location where the temperature will exceed 120°F (49°C) or fall below 20°F (-7°C). The manifold for all other gases should not be placed in a location where the temperature will exceed 120°F (49°C) or fall below -20 F (-29°C). A manifold placed in an open location should be protected against adverse weather conditions, including direct rain, snow and heavy moisture. During winter, protect the manifold from ice and snow. In summer, shade the manifold and cylinder from continuous exposure to direct rays and heat of the sun.



Specifications

- AD model uses RM (or RDM for Oxygen) regulator, adjustable delivery pressure 20 - 160 PSIG, ADHP model uses RS-300-MAN regulator (all gases except Oxygen), adjustable delivery pressure 40-300 PSIG, SG-450-MAN Oxygen regulator, adjustable delivery pressure 40 - 450 PSIG **Optional equipment is available upon request for higher delivery pressure up to 3000 PSIG.**
- 24" Flexible stainless steel braided Teflon™ lined pigtails with check valves (EPDM seat all gases, Argon/Methane mixtures use Viton). Check valve is at header end of pigtails except Oxygen. *Note:* Helium & Hydrogen manifolds are shipped with synthetic fiber braided pigtails. Vertical crossover and staggered styles include half 24" and half 36" pigtails.
- Individual header valves at each cylinder location (Units with 4 cylinders or larger- all gases except Oxygen). Oxygen units shipped with check valve outlets in place of header valves to provide added safety from "heat of recompression".
- Acetylene manifolds shipped with dry flashback arrestor, separate flashback arrestor with check valve on each pigtail and connecting piping. Hydraulic flashback arrestors are available as an option for an additional charge.
- Optional safety kits (flash arrestors and relief valve) available for Liquefied Fuel gas manifolds.
- Accessory header kits available for Carbon Dioxide and Nitrous Oxide manifolds.
- Maximum inlet pressure: 3000 PSIG
- Manifold outlet: 1/2" NPT female
- High quality, heavy duty brass master valves.
- Complete wall mounting hardware and operating instructions.
- Special header configurations available upon request, U-Shaped, L-Shaped, Staggered, Crossover and Vertical Crossover. Dimensional sketch of installation necessary for U and L - Shaped designs.
- Built to accommodate future expansion by adding header extensions.
- Made in the USA.



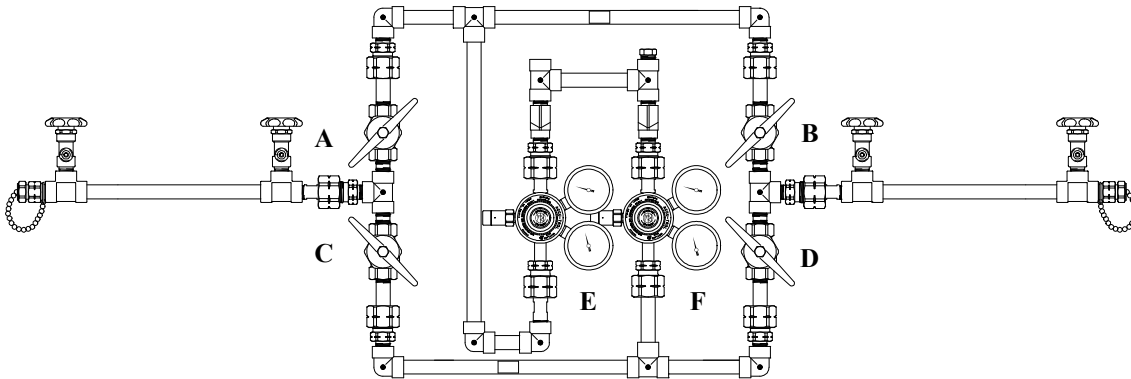
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Manifold Operation

The AD series manifold is designed to changeover from one bank to the other automatically, provided a sufficient differential is maintained between the two primary regulators.

Note: In the following explanation regulator settings were chosen for purpose of example. It is understood that once installed the manifold regulators will have to be set to deliver pressure for the specific application. These actual settings may be either higher or lower than those listed in the example below.

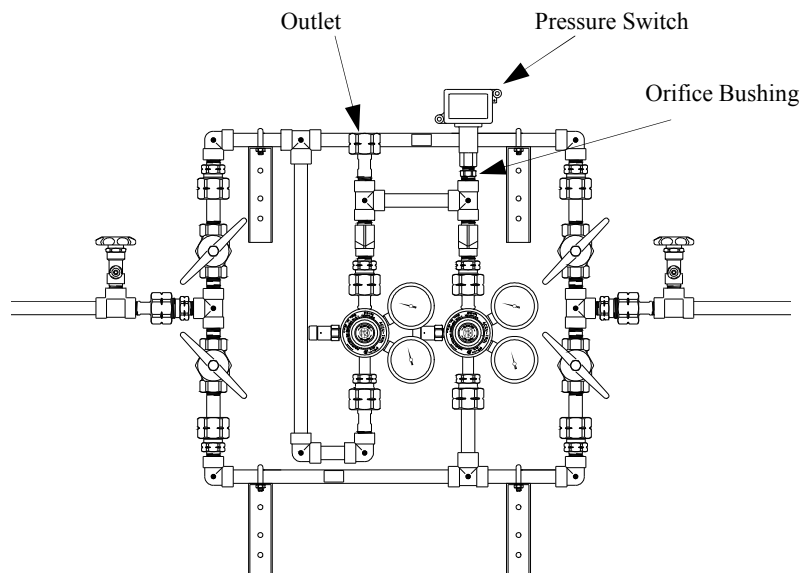


Example: Preset regulator "E" to deliver 100 psig
 Preset regulator "F" to deliver 75 psig
 Open master valve "A" & "D" (left service)
 Close master valve "B" & "C" (right reserve)

The pressure from the right bank will be directed through regulator "F" which is set at 75 psig. The left bank pressure is routed through regulator "E" which is set at 100 psig. Since regulator "E" has a 25 psig advantage, the left bank becomes the "service" side. The left bank (service side) will preferentially flow until the cylinder pressure can no longer support the regulator setting of 100 psig and begins to fall. The delivery pressure will continue to fall until it reaches 75 psig, at which point regulator "F" will open and begin to flow. Gas is now being withdrawn from the right bank (reserve side). After changeover has occurred one needs only to close master valves "A" & "D" and slowly open valve "B" & "C". The right bank is now routed through regulator "E" (100 psig) and becomes the new service side. After exhausted cylinders on the right bank are replaced and cylinder valves are opened, the replenished left bank becomes the new "reserve" side and a new cycle repeats. After the second changeover cycle has occurred one may repeat the same sequence outlined above remembering to slowly open and close the correct alternating valves in order to place the proper bank in service.

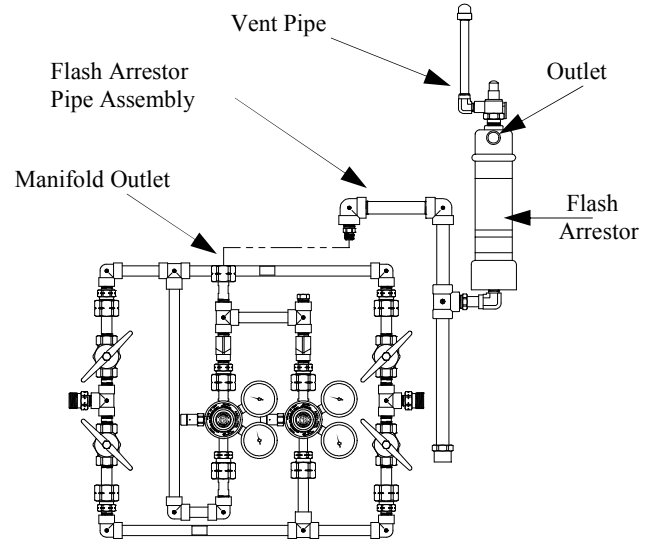
Alarm Option

An alarm for non-fuel gases can be added to signal when the cylinders are depleted and the changeover should occur by adding the following items: WMS-4-9 pressure switch, WMS-1-97 orifice adaptor, WMS-9-25 Power supply box and BIA-3 remote audio/visual alarm panel. Wiring diagrams for remote audio / visual alarms are included with the alarm. For alarms for fuel gases please contact Western for part numbers.



AD - Series**Automatic Manifolds for High Pressure Cylinders for Industrial Applications****Fuel gas Manifolds - Flashback arrestors**

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

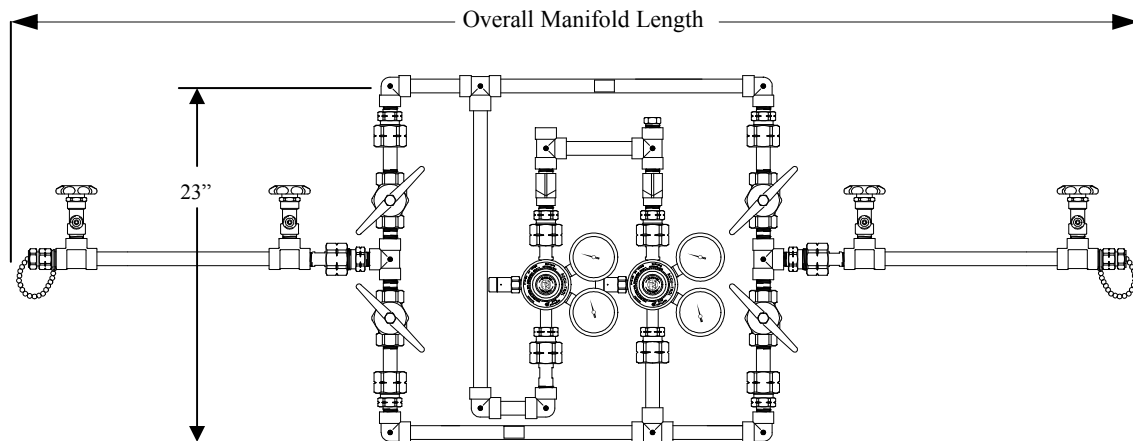


Fuel Gas Type	AD Series	Flow Capacity	Relief Valves
Acetylene/Hydraulic	BI-FKA	300 SCFH	20 PSIG
Hydraulic	BI-FK	300 SCFH	40 PSIG
Dry	BI-FKD	300 SCFH	35 PSIG

Heater Option

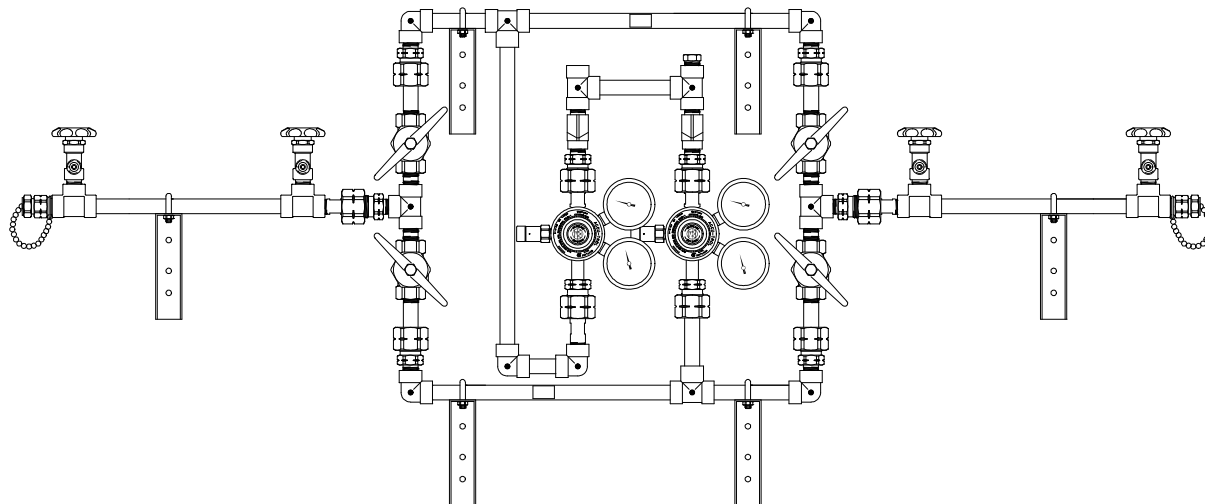
An heater can be added to prevent regulator freeze-up for Carbon Dioxide and Nitrous Oxide by adding the following items. Recommended whenever flow rate exceeds 35 SCFH.

Part #	Description	Gas Service	Capacity
WME-3-4	Gas Heater	Carbon Dioxide CGA 320	1,000 SCFH
WME-3-7	Gas Heater	Nitrous Oxide CGA 326	1,000 SCFH
WHS-11	Manifold Adaptor	Carbon Dioxide CGA 320	
WHS-12	Manifold Adaptor	Nitrous Oxide CGA 326	



Total Number of Cylinders	2	4	6	8	10	12	16
Standard (10" Centers) Overall Manifold Length	4'-0" (1.22M)	5'-8" (1.73M)	7'-4" (2.24M)	9'-0" (2.74M)	10'-8" (3.25M)	12'-0" (3.66M)	15'-4" (4.67M)
Staggered Design (5" Centers) Overall Manifold Length		4'-10" (1.47M)	5'-8" (1.73M)	6'-6" (1.98M)	7'-4" (2.24M)	7'-10" (2.39M)	9'-6" (2.90M)
Vertical Crossover (10" Centers) Overall Manifold Length	N/A	4'-0" (1.22M)	N/A	5'-8" (1.73M)	N/A	7'-4" (2.24M)	9'-0" (2.24M)
Crossover (10" Centers) Overall Manifold Length	N/A	4'-0" (1.22M)	N/A	5'-8" (1.73M)	N/A	7'-4" (2.24M)	9'-0" (2.74M)
Acetylene Manifold (13" Centers) Overall Manifold Length	4'-0" (1.22M)	6'-2" (1.88M)	8'-4" (2.54M)	10'-6" (3.20M)	12'-8" (3.86M)	14'-10" (4.52M)	19'-2" (5.84M)

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AD - Series
Automatic Manifolds for Industrial Applications


How to Order: Specify; Control type (V) - Service (W) - Number of Cylinders (X) Header Configuration (Y) Mounting (Z)
 Example: AD-7-4S represents AD with nitrogen service and a staggered header configuration of two cylinders per side which is mounted on the wall.

Control Type (V)	Gas Service (W)	Number of Cylinders (X)	Header Configuration (Y)	Mounting (Z)
AD (20-160 psig)	(1) Acetylene	CGA 510	BLANK-Standard 10" on center	Blank = Wall Mount (Standard)
	(1A) Acetylene	CGA 300	13" on center for Acetylene & LPG	
ADHP (40-300 psig.) (all gases except Oxygen)	(2) Compressed Air	CGA 346	S-STAGGERED 5" on center	F - Floor Stand
	(3) Argon	CGA 580	6.5" on center for Acetylene & LPG	
ADHP (Oxygen) (40-450 psig)	(4) Carbon Dioxide	CGA 320	V- VERTICAL CROSSOVER	
	(5) Helium	CGA 580	Standard 10" on center	
	(6) Hydrogen	CGA 350	13" on center for Acetylene & LPG	
	(6A) Argon/Methane	CGA 350	C-CROSSOVER (Floor Mount Only)	
	(7) Nitrogen	CGA 580	Standard 10" on center	
	(7A) Industrial Air	CGA 590	13" on center for Acetylene & LPG	
	(8) Nitrous Oxide	CGA 326	U-SHAPED - SKETCH REQUIRED	
	(9) Oxygen	CGA 540	L-SHAPED- SKETCH REQUIRED	
(10) Liquefied Fuel Gas (LPG)	CGA 510			

Warranty

All Western manifolds 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 Operating manual.