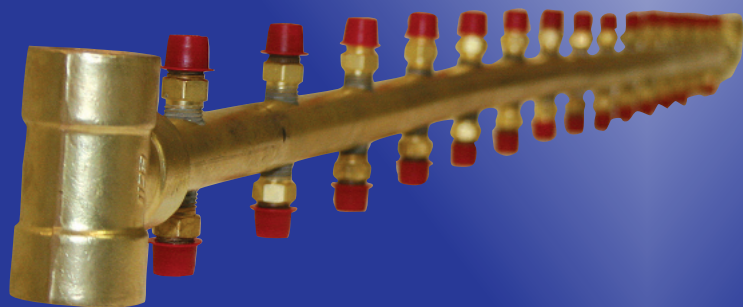
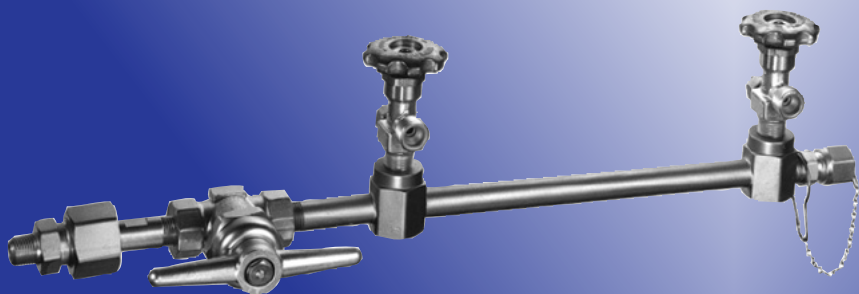


# Gas Mixer / Auto Changeover Manifolds Piping

*Ratermann  
Manufacturing, Inc.  
carries a complete  
line of products  
for your gas  
distribution needs.*



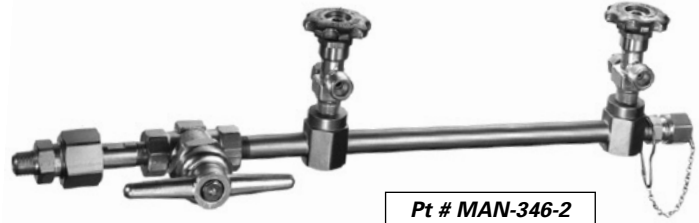
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# GAS MANIFOLD ASSEMBLIES

## SIMPLEX MANIFOLDS WITH MANUAL CONTROLS

The simplex manifold has a master shut off valve with a single row of cylinder modules. Each module consists of 1/2" piping, 1/2" tees, header valves and 24" pigtails with check valves or outlet adapters with check valve and regular pigtails, a union, a CGA end plug and mounting brackets. The last module will have a plug and chain connected to an adapter that allows for future expansion. Proper CGA fittings will be furnished for the specified gas. Manifolds for Acetylene gas will include a Hydraulic Flash Arrestor and pigtails with dry type arrestors.



Pt # MAN-346-2

### Simplex Manifolds with Manual Controls

Part #	Description	Type of Gas
MAN-300-2	2 Cyl. Manifold – CGA 300	Acetylene / Propane
MAN-320-2	2 Cyl. Manifold – CGA 320	Carbon Dioxide
MAN-326-2	2 Cyl. Manifold – CGA 326	Nitrous Oxide
MAN-346-2	2 Cyl. Manifold – CGA 346	Air
MAN-350-2	2 Cyl. Manifold – CGA 350	Hydrogen
MAN-510-2	2 Cyl. Manifold – CGA 510	Acetylene
MAN-540-2	2 Cyl. Manifold – CGA 540	Oxygen
MAN-580-2	2 Cyl. Manifold – CGA 580	Inert
MAN-590-2	2 Cyl. Manifold – CGA 590	Industrial Air

Manifolds come with 24" long hoses

## DUPLEX MANIFOLDS WITH MANUAL CONTROLS

The duplex manifold has two master shut off valves allowing replacement of the exhausted bank of cylinders while the full bank of cylinders is in operation. The center section accommodates a single regulator. The manifold is shipped with 1/2" piping, 1/2" tees header valves and pigtails with check valves or adaptor outlets with check valve and regular pigtails, a union, a CGA end plug, and mounting brackets are included with each module. Modules are furnished with a plug and chain on the last module that allows future expansion. Proper CGA fittings will be furnished for specified gas. Manifolds for Acetylene gas will include a Hydraulic Flash Arrestor and pigtails with dry type arrestors.



Pt # MAN-T580-4

### Duplex Manifolds with Manual Controls and Hoses

Part #	Description
MAN-T300-2	(2) Cyl CGA 300 Dup. Manifold / Manual Controls
MAN-T300-4	(4) Cyl CGA 300 Dup. Manifold / Manual Controls
MAN-T300-6	(6) Cyl CGA 300 Dup. Manifold / Manual Controls
MAN-T320-2	(2) Cyl CGA 320 Dup. Manifold / Manual Controls
MAN-T320-4	(4) Cyl CGA 320 Dup. Manifold / Manual Controls
MAN-T320-6	(6) Cyl CGA 320 Dup. Manifold / Manual Controls
MAN-T346-2	(2) Cyl CGA 346 Dup. Manifold / Manual Controls
MAN-T346-4	(4) Cyl CGA 346 Dup. Manifold / Manual Controls
MAN-T346-6	(6) Cyl CGA 346 Dup. Manifold / Manual Controls
MAN-T350-2	(2) Cyl CGA 350 Dup. Manifold / Manual Controls
MAN-T350-4	(4) Cyl CGA 350 Dup. Manifold / Manual Controls
MAN-T350-6	(6) Cyl CGA 350 Dup. Manifold / Manual Controls
MAN-T510-2	(2) Cyl CGA 510 Dup. Manifold / Manual Controls
MAN-T510-4	(4) Cyl CGA 510 Dup. Manifold / Manual Controls
MAN-T510-6	(6) Cyl CGA 510 Dup. Manifold / Manual Controls
MAN-T540-2	(2) Cyl CGA 540 Dup. Manifold / Manual Controls
MAN-T540-4	(4) Cyl CGA 540 Dup. Manifold / Manual Controls
MAN-T540-6	(6) Cyl CGA 540 Dup. Manifold / Manual Controls
MAN-T580-2	(2) Cyl CGA 580 Dup. Manifold / Manual Controls
MAN-T580-4	(4) Cyl CGA 580 Dup. Manifold / Manual Controls
MAN-T580-6	(6) Cyl CGA 580 Dup. Manifold / Manual Controls
MAN-T590-2	(2) Cyl CGA 590 Dup. Manifold / Manual Controls
MAN-T590-4	(4) Cyl CGA 590 Dup. Manifold / Manual Controls
MAN-T590-6	(6) Cyl CGA 590 Dup. Manifold / Manual Controls

Manifolds come with 24" long hoses

### Specifications

- Header Valves
- 24" Pigtails and Check Valves
- Master Shut-off Valves
- Mounting Brackets
- 1/2" Pipe and Fittings

# SUPER FLO MANIFOLD SYSTEMS

## AUTOMATIC CHANGEOVER CONTROLS

These automatic changeover controls are designed to deliver an uninterrupted supply of gas from high pressure and portable cryogenic cylinders, providing automatic switchover from "service" to "reserve" bank. They do the work of much larger and more costly automatic changeover controls at a fraction of the cost and size. The control unit is very compact at 3" wide x 5.5" high x 1.25" deep. All units are shipped complete with the proper pigtails and CGA tee connections for the indicated gas service. A customer/distributor supplied cylinder regulator is required for delivery pressure adjustment. Control indicators include: individual bank pressure gauges and pop out indicators that show which cylinder is in use and changeover status. The **H** series provides fully automatic changeover for high pressure cylinders, switching at 200 psig. The **LH** series switches over a 100 psig and is designed for use with low pressure cryogenic cylinders, high pressure cylinders or a combination of the two.



### Automatic Changeover Controls

Part #	Description
MAN-ACMC-H	High Pressure Auto Changeover
MAN-ACMC-LH	Low & High Pressure Auto Changeover

## AUTOMATIC CHANGEOVER MANIFOLDS

Super-Flo manifolds are designed to deliver an uninterrupted supply of gas product from high pressure and portable cryogenic cylinders, providing automatic switchover from "service" to "reserve" bank. The **F** series is a fully automatic changeover manifold. No resetting of bank designation is necessary. The **MR** series is an automatic changeover with manual reset. The **PC** series is designed to regulate and control vaporized product from portable cryogenic cylinders, also providing automatic changeover. Super-Flo manifolds offer higher flow rates, up to 3000 scfh from the **F** series. 2000 scfh from the **MR** series and up to 1000 scfh from the **PC** series. All units come with visual alarm, notifying users of changeover status, with remote alarm capabilities. Systems are shipped complete with brass headers, flexible stainless steel braided pigtails, master and individual header valves, wall mounting hardware and complete operating instructions.



### Automatic Changeover Manifolds

Part #	Description
MAN-ACM-F	Fully Automatic Changeover Manifold
MAN-ACM-MR	Auto Changeover w/Manual Reset
MAN-ACM-PC	Auto Changeover for Portable Cryo Cyl

## PRO-MIX PROPORTIONAL GAS MIXER

Proportional Gas Mixers are suited for all applications where precise gas mixtures are required. Blending your own gas is a long term cost savings that will pay for itself in no time, replacing expensive pre-mix gases. The panel is a small wall mounted unit that is easy to install, requires no electricity, on-going maintenance or adjustment. The outlet pressure range is adjustable from 0-100 psig, flow capacity of 0-300 scfh with a mixture accuracy of  $\pm 2\%$  at any flow or pressure. Mixture proportions are unaffected by temperature, pressure or flow. This Proportional Gas Mixer is also available as a turn key system in conjunction with the automatic changeover controls.

### Features

- Tamper proof
- Highly accurate
- Low start up cost
- Compact

### Mixer Specifications

Inlet pressure range	110-150 PSIG
Outlet pressure	0-100 PSIG adjustable
Flow rate	300 SCFH
Mixture accuracy	$\pm 2\%$ (3 to 300 SCFH)
Inlet filters	50 Mieron
Dimensions	11" W x 15" H x 6" D
Weight	5 lbs.
Inlet & Outlet fittings	1/4" NPT female

### Pro-Mix Proportional Gas Mixer

Part #	Description
MAN-PGM-1	Proportional Gas Mixer



# MANIFOLDS & ASSEMBLIES

## SIMPLE DUPLEX MANIFOLDS

The simple duplex manifold is an economical system with a two cylinder capacity, one per side. The unit is furnished with two header valves and two pigtails with check valves, 1/2" NPT tee, a union and a mounting bracket. Manifolds for Acetylene gas will include pigtails with dry type flash back arrestors.



### Simple Duplex Manifolds

Part #	Description
MAN-S-540	CGA-540 Duplex Manifold
MAN-S-580	CGA-580 Duplex Manifold

## REMOTE ALARM SYSTEMS

Remote alarm systems enables the user to monitor bank to bank switching status from a remote location or in the immediate area of the manifold. The green light indicates which bank is in service and the red light and buzzer indicate when changeover has occurred. When changeover occurs, the buzzer can be silenced.



Pt # MAN-RASO



Pt # MAN-RAFAD

### Remote Alarm Systems

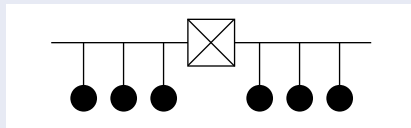
Part #	Description
MAN-RAFAD	Fully Automatic Remote Alarm
MAN-RASO	100/200 PSI Switchover Remote Alarm

## DUPLEX MANIFOLD ASSEMBLIES

### Configuration

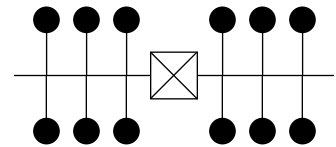
Duplex manifolds are available in **five** different basic configurations. Special configurations can be assembled upon request if the dimensions and other specifications are provided. Header extensions, to add additional cylinders, are available.

### 1 Standard Configuration



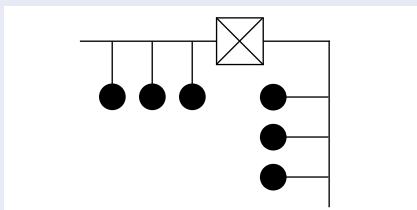
10" Centers All Gases except Fuel Gases  
13" Centers Fuel Gases

### 2 Crossover Configuration



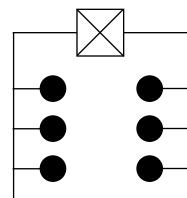
10" Centers All Gases except Fuel Gases  
13" Centers Fuel Gases

### 3 "L" Shaped Configuration



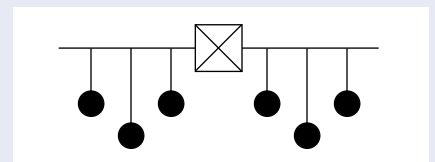
10" Centers All Gases except Fuel Gases  
13" Centers Fuel Gases

### 4 "U" Shaped Configuration



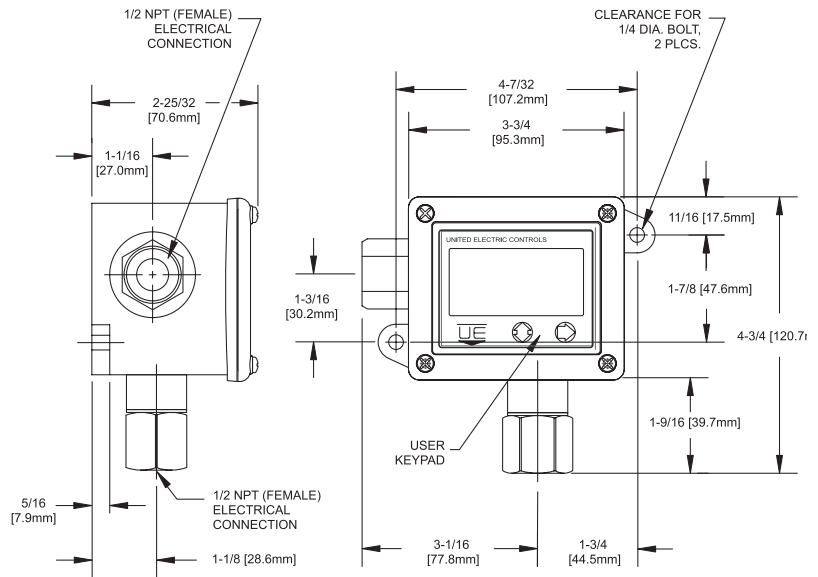
10" Centers All Gases except Fuel Gases  
13" Centers Fuel Gases

### 5 Staggered Configuration



5" Centers All Gases

## ELECTRONIC PRESSURE SWITCHES



Electronic Pressure Switch, 316 Stainless Steel Weld Diaphragm 1/2 Female NPT. Discrete input Powered 12-30 VDC 40 mA. User Adjustable, Digital Indicating 2 Wire Configuration

Electronic Pressure Switch, 316 Stainless Steel Weld Diaphragm 1/2 Female NPT. Discrete input Powered 90-130 VAC or VDC, 100mA. User Adjustable, Digital Indicating 2 Wire Configuration

Part #	PSI Range	Maximum Over***
EPS2W-SSF14-1230-0-5	0-5	7.5
EPS2W-SSF14-1230-0-15	0-15	22.5
EPS2W-SSF14-1230-0-30	0-30	45
EPS2W-SSF14-1230-0-50	0-50	75
EPS2W-SSF14-1230-0-100	0-100	150
EPS2W-SSF14-1230-0-300	0-300	450
EPS2W-SSF14-1230-0-500	0-500	750
EPS2W-SSF14-1230-0-1000	0-1000	1500
EPS2W-SSF14-1230-0-3000	0-3000	4500
EPS2W-SSF14-1230-0-4500	0-4500	6750

*Cleaned for Oxygen Service*

Part #	PSI Range	Maximum Over***
EPS2W-SSF14-1230-OX-0-5	0-5	7.5
EPS2W-SSF14-1230-OX-0-15	0-15	22.5
EPS2W-SSF14-1230-OX-0-30	0-30	45
EPS2W-SSF14-1230-OX-0-50	0-50	75
EPS2W-SSF14-1230-OX-0-100	0-100	150
EPS2W-SSF14-1230-OX-0-300	0-300	450
EPS2W-SSF14-1230-OX-0-500	0-500	750
EPS2W-SSF14-1230-OX-0-1000	0-1000	1500
EPS2W-SSF14-1230-OX-0-3000	0-3000	4500
EPS2W-SSF14-1230-OX-0-4500	0-4500	6750

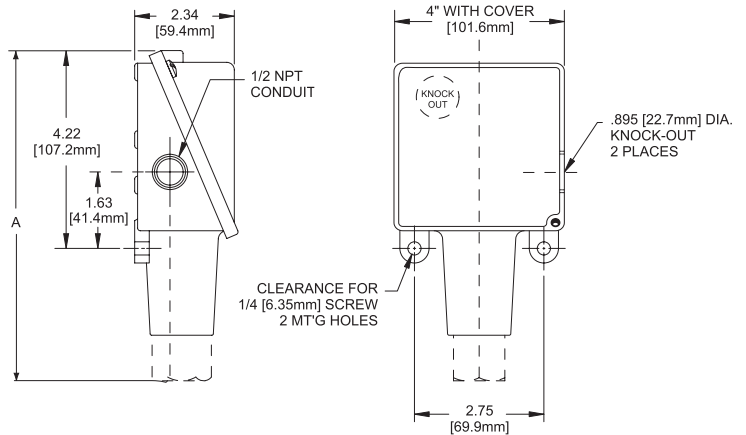
Part #	PSI Range	Maximum Over***
EPS2W-SSF14-90130-0-5	0-5	7.5
EPS2W-SSF14-90130-0-15	0-15	22.5
EPS2W-SSF14-90130-0-30	0-30	45
EPS2W-SSF14-90130-0-50	0-50	75
EPS2W-SSF14-90130-0-100	0-100	150
EPS2W-SSF14-90130-0-300	0-300	450
EPS2W-SSF14-90130-0-500	0-500	750
EPS2W-SSF14-90130-0-1000	0-1000	1500
EPS2W-SSF14-90130-0-3000	0-3000	4500
EPS2W-SSF14-90130-0-4500	0-4500	6750

*Cleaned for Oxygen Service*

Part #	PSI Range	Maximum Over***
EPS2W-SSF14-90130-OX-0-5	0-5	7.5
EPS2W-SSF14-90130-OX-0-15	0-15	22.5
EPS2W-SSF14-90130-OX-0-30	0-30	45
EPS2W-SSF14-90130-OX-0-50	0-50	75
EPS2W-SSF14-90130-OX-0-100	0-100	150
EPS2W-SSF14-90130-OX-0-300	0-300	450
EPS2W-SSF14-90130-OX-0-500	0-500	750
EPS2W-SSF14-90130-OX-0-1000	0-1000	1500
EPS2W-SSF14-90130-OX-0-3000	0-3000	4500
EPS2W-SSF14-90130-OX-0-4500	0-4500	6750

\*\*\*Maximum Over Range is the value above which the switch is automatically disabled and must be serviced.

## PRESSURE SWITCHES



Welded 316 Stainless Steel Diagram and 1/2" Female NPT Pressure Connection. Large 0.72" Orifice for cleanout purposes (NACE MR-0175 Compliant)

*Cleaned for Oxygen Service*

Part #	PSI Range	Over Range Pressure*	Proof Pressure**
PS-SSF12-0.720-5-30	5 to 30	1500 PSI	2500 PSI
PS-SSF12-0.720-10-100	10 to 100	1500 PSI	2500 PSI
PS-SSF12-0.720-15-300	15 to 300	1500 PSI	2500 PSI
PS-SSF12-0.720-20-500	20 to 500	1500 PSI	2500 PSI
PS-SSF12-0.720-80-1700	80 to 1700	2000 PSI	2500 PSI

Part #	PSI Range	Over Range Pressure*	Proof Pressure**
PS-SSF12-0.720-OX-5-30	5 to 30	1500 PSI	2500 PSI
PS-SSF12-0.720-OX-10-100	10 to 100	1500 PSI	2500 PSI
PS-SSF12-0.720-OX-15-300	15 to 300	1500 PSI	2500 PSI
PS-SSF12-0.720-OX-20-500	20 to 500	1500 PSI	2500 PSI
PS-SSF12-0.720-OX-80-1700	80 to 1700	2000 PSI	2500 PSI

\* Over Range Pressure is the maximum pressure that may be applied continuously without causing damage and maintaining set point  
 \*\* Proof Pressure is the maximum pressure to which a pressure sensor may be occasionally subjected, which causes no permanent damage.  
 The unit may require calibration (e.g., start-up, testing).

## AUTOMATIC & IN-LINE GAS HEATERS



Automatic gas heaters are designed to assure uniform temperature with constant gas flow along with preventing regulator freeze-up. Completely automatic they can be used with pressure up to 3000 PSIG. Recommended for use with nitrous oxide and carbon dioxide when withdrawal rates exceed 35 scfh. This unit requires 115 volts (AC).

### FEATURES

- Lifetime heating element.
- Heavily insulated so cabinet remains "cool".
- Heat exchange medium is aluminum.
- Flow can be either direction without loss of efficiency.
- Continuous fluid carrying tubing.
- Minimum pressure drop.

Part Number	Description	Gas Service	Capacity
GH-CGA320-CD	Gas Heater	Carbon Dioxide (CGA320)	1000scfh
GH-CGA326-NO	Gas Heater	Nitrous Oxide (CGA326)	1000scfh
GH-CGA320-CD-A	Manifold Adapter	Carbon Dioxide (CGA320)	
GH-CGA326-NO-A	Manifold Adapter	Nitrous Oxide (CGA326)	

### In-Line Gas Heaters

In-line heater for single cylinder service installs between cylinder and regulator. Just attach an extension cord and you are ready for trouble free service. Handles pressures up to 3000PSI and 160cfh capacity.

Part Number	Description	Gas Service	Capacity
GH-IL-CGA320-CD	Gas Heater	Carbon Dioxide (CGA320)	160scfh
GH-IL-CGA326-NO	Gas Heater	Nitrous Oxide (CGA326)	160scfh

# HIGH PRESSURE MASTER VALVES

## 9560 SERIES HP MASTER SHUT-OFF VALVES - REGO®

The 9560 series high pressure shut-off valves are designed for heavy duty use on manifolds, tube trailers and other high pressure piping systems. These valves are suitable for use with oxygen, acetylene, nitrogen, argon, helium, hydrogen, carbon dioxide, nitrous oxide and other inert gases.



**PANEL MOUNT VALVE**

1/2" F.NPT  
master shut-off  
valve for all  
gases, panel  
mount

### 9560 SERIES SEATING OPTIONS

- CTFE soft seat material seals against smooth seating surface of brass body to assure bubble tight shut off with all gases, especially useful for hydrogen and helium. Valve Cv is 2.6.
- Designed for Oxygen – Copper seat disk is used to create a seal against a replaceable Monel body seat for metal seating.

*Designed for resistance to ignition from adiabatic compression of high pressure oxygen, important in medical oxygen cylinder filling and supply manifolds. Not to be used in acetylene service.*

### KEY FEATURES

- 4200PSI maximum working pressure with 5:1 safety factor, 5000PSI maximum working pressure with 4:1 safety factor.
- Lowest operating torque valve, only 25 inch pounds at 6000 PSIG
- Only takes 1.5 turns to open full flow.
- Non-rotational seating action extends bubble tight seal life.
- Brass body, stem, seat retainer and bonnet for non corrosive gas service.
- Large tapered bar style handwheel for comfortable and easy operation
- All valves are cleaned for use in oxygen per CGA G-4.1.



**STANDARD BONNET VALVE**

3/4" F.NPT  
master shut-off  
valve for all  
gases

### PANEL MOUNT VALVE 9560 SERIES - SOFT SEAT FOR ALL GASES

Part Number	Inlet Connection	Outlet Connection
HPV-NPT12F-SO-SP	1/2" F. NPT	1/2" F. NPT
HPV-NPT34F-SO-SP	3/4" F. NPT	3/4" F. NPT
HPV-111RHFS-SP	1-11 1/2 NPSM R.H.	1-11 1/2 R.H. Female Swivel
HPV-111LHFS-SP	1-11 1/2 NPSM L.H.	1-11 1/2 L.H. Female Swivel
HPV-111NPSMR-SO-SP	1-11 1/2 NPSM R.H.	1-11 1/2 NPSM R.H.
HPV-111NPSML-SO-SP	1-11 1/2 NPSM L.H.	1-11 1/2 NPSM L.H.
HPV-N12F128S-SO-SP	1/2" (.843-.847 Sweat)	1/2" (.843-.847 Sweat)
HPV-341S-SO-SP	3/4" (1.053-1.057 Sweat)	3/4" (1.053-1.057 Sweat)
HPV-34FNPT-SP	3/4" (1.053-1.057 Sweat)	3/4" F. NPT

### PANEL MOUNT VALVE 9560 SERIES - COPPER SEAT FOR ALL OXYGEN

Part Number	Inlet Connection	Outlet Connection
HPV-NPT12F-SO-CP	1/2" F. NPT	1/2" F. NPT
HPV-NPT34F-SO-CP	3/4" F. NPT	3/4" F. NPT
HPV-111RHFS-CP	1-11 1/2 NPSM R.H.	1-11 1/2 R.H. Female Swivel
HPV-111LHFS-CP	1-11 1/2 NPSM L.H.	1-11 1/2 L.H. Female Swivel
HPV-111NPSMR-SO-CP	1-11 1/2 NPSM R.H.	1-11 1/2 NPSM R.H.
HPV-111NPSML-SO-CP	1-11 1/2 NPSM L.H.	1-11 1/2 NPSM L.H.
HPV-N12F128S-SO-CP	1/2" (.843-.847 Sweat)	1/2" (.843-.847 Sweat)
HPV-341S-SO-CP	3/4" (1.053-1.057 Sweat)	3/4" (1.053-1.057 Sweat)
HPV-34FNPT-CP	3/4" (1.053-1.057 Sweat)	3/4" F. NPT

For panel mount version, a 1.625 diameter panel hole is required for mounting

### STANDARD BONNET VALVE 9560 SERIES - SOFT SEAT FOR ALL GASES

Part Number	Inlet Connection	Outlet Connection
HPV-NPT12F-SO-S	1/2" F. NPT	1/2" F. NPT
HPV-NPT34F-SO-S	3/4" F. NPT	3/4" F. NPT
HPV-111RHFS-S	1-11 1/2 NPSM R.H.	1-11 1/2 R.H. Female Swivel
HPV-111LHFS-S	1-11 1/2 NPSM L.H.	1-11 1/2 L.H. Female Swivel
HPV-111NPSMR-SO-S	1-11 1/2 NPSM R.H.	1-11 1/2 NPSM R.H.
HPV-111NPSML-SO-S	1-11 1/2 NPSM L.H.	1-11 1/2 NPSM L.H.
HPV-N12F128S-SO-S	1/2" (.843-.847 Sweat)	1/2" (.843-.847 Sweat)
HPV-341S-SO-S	3/4" (1.053-1.057 Sweat)	3/4" (1.053-1.057 Sweat)
HPV-34FNPT-S	3/4" (1.053-1.057 Sweat)	3/4" F. NPT

### STANDARD BONNET VALVE 9560 SERIES - COPPER SEAT FOR ALL OXYGEN

Part Number	Inlet Connection	Outlet Connection
HPV-NPT12F-SO-C	1/2" F. NPT	1/2" F. NPT
HPV-NPT34F-SO-C	3/4" F. NPT	3/4" F. NPT
HPV-111RHFS-C	1-11 1/2 NPSM R.H.	1-11 1/2 R.H. Female Swivel
HPV-111LHFS-C	1-11 1/2 NPSM L.H.	1-11 1/2 L.H. Female Swivel
HPV-111NPSMR-SO-C	1-11 1/2 NPSM R.H.	1-11 1/2 NPSM R.H.
HPV-111NPSML-SO-C	1-11 1/2 NPSM L.H.	1-11 1/2 NPSM L.H.
HPV-N12F128S-SO-C	1/2" (.843-.847 Sweat)	1/2" (.843-.847 Sweat)
HPV-341S-SO-C	3/4" (1.053-1.057 Sweat)	3/4" (1.053-1.057 Sweat)
HPV-34FNPT-C	3/4" (1.053-1.057 Sweat)	3/4" F. NPT

# COMPOSITE PIPE

**FOR NITROGEN, ARGON, CO2 GAS WORKING PRESSURE 200PSI AT 73°**

## Material Description – Pipe

Duratec pipe meets the stringent requirements of ANSI/ASTM F1282 as well as CSA B137.9. This unique pipe design provides high strength and pressure ratings, while offering the benefits of a pipe that bends easily and stays bent. Large inside diameters provide excellent flow rates.

Duratec pipe is constructed of an inner and outer layer of high density polyethylene and a center core of aluminum. The high density polyethylene contributes approximately 30% to the overall strength of the Duratec pipe. The remaining 70% comes from the aluminum. Together the two materials, HDPE and aluminum, provide the end user with all of the advantages of plastic and metal, in a revolutionary composite air-line pipe.

*Some of the advantages include:*

### HDPE

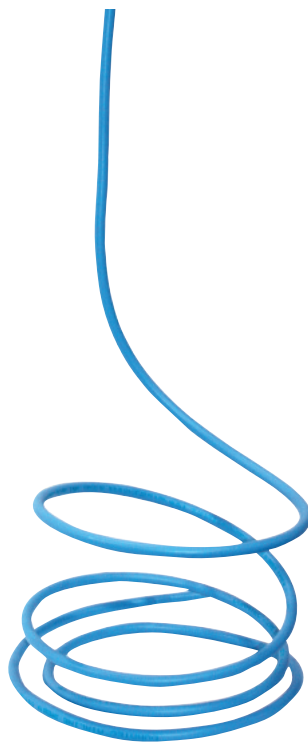
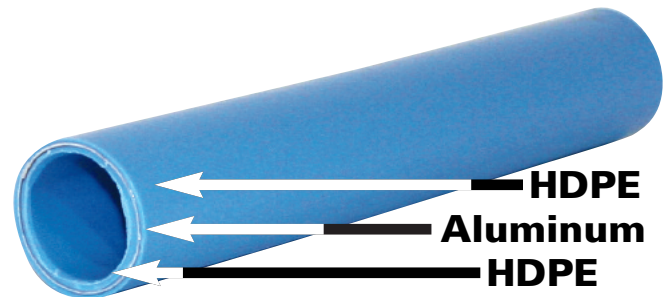
- Corrosion proof
- Flexibility
- Ease of installation
- Improved air/gas quality
- No scaling
- All weather installation
- Condensation resistance

### ALUMINUM

- Rigidity
- No memory – “stays where it lays”
- High mechanical strength
- High temperature capability
- High pressure capability
- Permanent permeation barrier
- Low expansion and contraction

The HDPE used in the manufacture of Duratec is a member of the polyolefin group. It is a tough and flexible material even at cold temperatures. Duratec HDPE is formulated with a UV-inhibited blue pigment designed to screen out ultra-violet radiation.

The aluminum material used in Duratec has a minimum elongation of 20% and ultimate tensile strength of 14,600 psi (100 mPa) when tested in accordance with ASTM E8.



## Material Description – Fittings

The Duratec system uses a unique and cost effective D1 nickel plated brass inert fitting for easy connections. All Duratec fittings are protected with a corrosion resistant, industrial strength nickel plating.

These fittings are easily attached to Duratec pipe using a split ring and locking nut mechanism. A full range of male, female thread and tubing adapters are available as well as tees, couplings and valves.

Duratec fittings are manufactured in accordance with ASTM F1974 which details specific requirements for brass alloys, o-ring materials, fitting dimensions and performance requirements.

Duratec also has male adapters manufactured in 316 stainless steel for easy conversion to threaded stainless steel fittings for systems where nickel plated brass is not acceptable.

## Fewer Fittings

Duratec pipe comes in convenient 100 ft. and 300 ft. coils eliminating several joints and the need for threading, fusing, or solvent cementing.

## FOR NITROGEN, ARGON, CO2 GAS WORKING PRESSURE 200PSI AT 73°

### Material Properties

Properties	Pipe Properties		Fittings Properties		ASTM	Units
	HDPE	Aluminum	Nickel Plated Brass	316 SS		
Hardness, shore D	59	-	-	-	D2240	-
Tensile Strength	4,800 (33)	-	40,000 (275)	75,000 (515)	D882	psi (MPa)
Yield Strength	2,800 (19)	14,600 (100)	15,000 (105)	30,000 (205)	D882	psi (MPa)
Elongation	550	20	10	40	D882	%

### Features and Benefits

#### Safety

The unique construction of Duratec affords resistance to accidental damage from impact. Duratec has been tested to impacts with blunt and sharp strikers at temperatures from 32°F (0°C) to 140° (60°C) validating its ductility and impact resistance required for compressed air service.

#### Low Installation Costs

Duratec Air-Line pipe reduces costs on a typical installation not only for materials but also for labor and transportation costs when compared to traditional materials. The reason? Its lightweight construction and simple assembly procedures. Like all thermoplastics, Duratec is easily handled, stored, cut, joined and installed. As a result, project costs for installed Duratec systems are significantly lower. Requirements for heavy installation equipment are also eliminated.

#### Clean

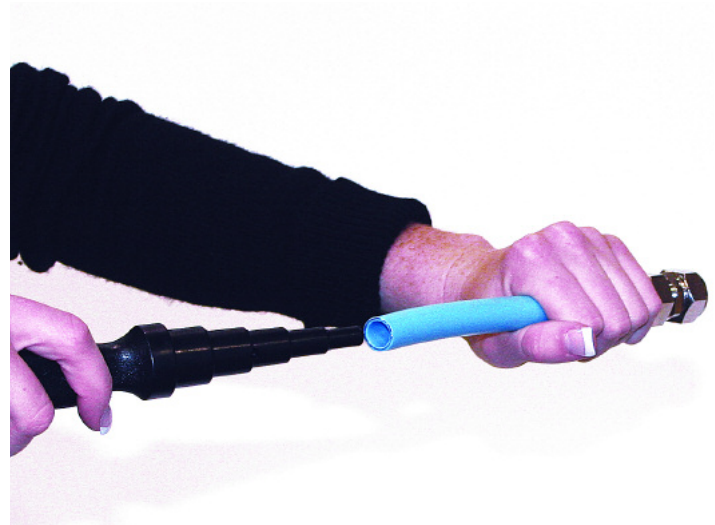
All Duratec pipe is packaged in cardboard boxes preventing contamination before use. The smooth HDPE inner layer cannot rust, corrode or form loose scale. Clean air remains clean throughout the life of the system.

#### Corrosion Resistant

Corrosion is a continuous problem with metal systems in compressed air applications. The corroded metal from the pipe wall can be carried by the air and clog tools, instruments and machinery. This problem is eliminated with the corrosion resistant Duratec Air-Line system.

#### Smooth Interior

Less friction means lower pressure drops and higher flow rates. This may allow for smaller pipe sizes to be used.



#### Extended Life

Once properly selected for the application and correctly installed, Duratec Air-Line systems will provide years of maintenance free service. Our Air-Line system is designed not to rust, scale, pit or corrode.

#### Ease of Handling

Duratec is 75% lighter than the weight of the equivalent diameter of copper and SCH 40 carbon steel.

#### Quick Removable Connections

Threading is not required. All joints are double o-ring seals and can be quickly assembled or disassembled. Easy on-site modifications and repairs can be made.

#### Quick Installation

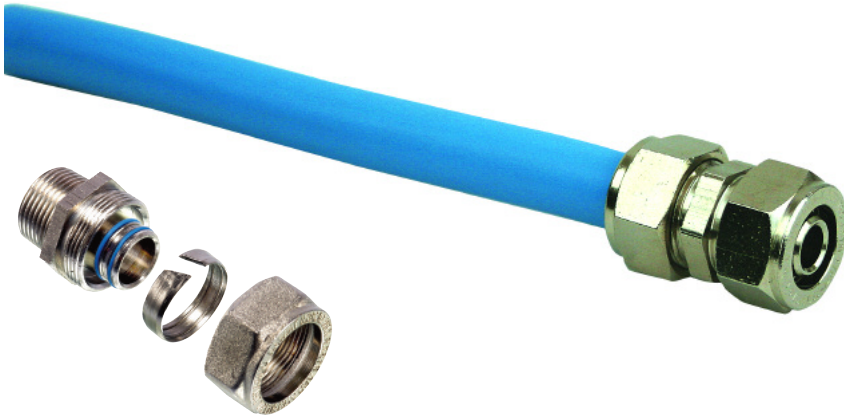
No special training or equipment is required to complete a Duratec system.

#### Flexible Yet Rigid

Due to its composite structure, Duratec pipe can be easily bent by hand and will maintain its desired shape.

# COMPOSITE PIPE

**FOR NITROGEN, ARGON, CO2 GAS WORKING PRESSURE 200PSI AT 73°**



## DURATEC AIRLINE PIPE

### Composite

Part #	Description
<b>CMP-38-100</b>	Composite Pipe 3/8" x 100 Foot Coil
<b>CMP-38-300</b>	Composite Pipe 3/8" x 300 Foot Coil
<b>CMP-12-100</b>	Composite Pipe 1/2" x 100 Foot Coil
<b>CMP-12-300</b>	Composite Pipe 1/2" x 300 Foot Coil
<b>CMP-34-100</b>	Composite Pipe 3/4" x 100 Foot Coil
<b>CMP-34-300</b>	Composite Pipe 3/4" x 300 Foot Coil
<b>CMP-1-100</b>	Composite Pipe 1" x 100 Foot Coil
<b>CMP-1-300</b>	Composite Pipe 1" x 300 Foot Coil

## DURATEC AIRLINE ADAPTERS



### Pipe End x Male Thread Adapter

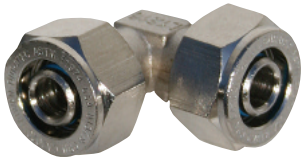
Part #	Description
<b>CMP-MTA3838</b>	Composite Pipe Male Thread Adapter 3/8" Pipe x 3/8" MPT
<b>CMP-MTA3812</b>	Composite Pipe Male Thread Adapter 3/8" Pipe x 1/2" MPT
<b>CMP-MTA1212</b>	Composite Pipe Male Thread Adapter 1/2" Pipe x 1/2" MPT
<b>CMP-MTA3434</b>	Composite Pipe Male Thread Adapter 3/4" Pipe x 3/4" MP
<b>CMP-MTA0101</b>	Composite Pipe Male Thread Adapter 1" Pipe x 1" MPT



### Pipe End x Male Thread Adapter Stainless Steel

Part #	Description
<b>CMP-MTASS3838</b>	Composite Pipe Stainless Steel Male Thread Adapter 3/8" Pipe x 3/8" MPT
<b>CMP-MTASS1212</b>	Composite Pipe Stainless Steel Male Thread Adapter 1/2" Pipe x 1/2" MPT
<b>CMP-MTASS3434</b>	Composite Pipe Stainless Steel Male Thread Adapter 3/4" Pipe x 3/4" MPT
<b>CMP-MTASS0101</b>	Composite Pipe Stainless Steel Male Thread Adapter 1" Pipe x 1" MPT

## DURATEC AIRLINE ELBOWS AND TEES



### 90 Degree Pipe Elbow

Part #	Description
<b>CMP-90E38</b>	Composite Pipe 90° Elbow 3/8" Pipe x 3/8" Pipe
<b>CMP-90E12</b>	Composite Pipe 90° Elbow 1/2" Pipe x 1/2" Pipe
<b>CMP-90E34</b>	Composite Pipe 90° Elbow 3/4" Pipe x 3/4" Pipe
<b>CMP-90E01</b>	Composite Pipe 90° Elbow 1" Pipe x 1" Pipe



### Pipe End x Female Thread Wing Back 90° Elbow

Part #	Description
<b>CMP-90EFTWB1212</b>	Composite Pipe 90 Degree Wing Back Elbow 1/2" Pipe x 1/2" Pipe

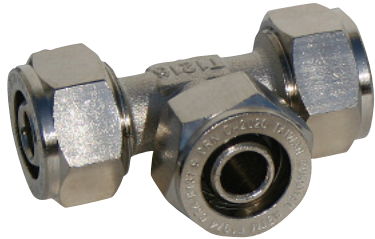
### Wall Bracket Multiport

Part #	Description
<b>CMP-TWBM34F12</b>	Composite Pipe Wall Bracket 3/4" MPT Inlet x 1/2" FPT Outlet

# COMPOSITE PIPE

**FOR NITROGEN, ARGON, CO2 GAS WORKING PRESSURE 200PSI AT 73°**

## DURATEC AIRLINE ELBOWS AND TEES continued



### All Around Pipe Tee

Part #	Description
CMP-TEE38	Composite Pipe Tee 3/8" x 3/8" x 3/8"
CMP-TEE12	Composite Pipe Tee 1/2" x 1/2" x 1/2"
CMP-TEE34	Composite Pipe Tee 3/4" x 3/4" x 3/4"
CMP-TEE01	Composite Pipe Tee 1" x 1" x 1"

### Reducing Tee

Part #	Description
CMP-RT121238	Composite Pipe Reducing Tee 1/2" x 1/2" x 3/8"
CMP-RT341212	Composite Pipe Reducing Tee 3/4" x 1/2" x 1/2"
CMP-RT343412	Composite Pipe Reducing Tee 3/4" x 3/4" x 1/2"
CMP-RT341234	Composite Pipe Reducing Tee 3/4" x 1/2" x 3/4"
CMP-RT010112	Composite Pipe Reducing Tee 1" x 1" x 1/2"
CMP-RT013434	Composite Pipe Reducing Tee 1" x 3/4" x 3/4"
CMP-RT010134	Composite Pipe Reducing Tee 1" x 1" x 3/4"

## DURATEC AIRLINE COUPLINGS AND CAPS



### Coupling

Part #	Description
CMP-C38	Composite Pipe Coupling 3/8"
CMP-C12	Composite Pipe Coupling 1/2"
CMP-C34	Composite Pipe Coupling 3/4"
CMP-C01	Composite Pipe Coupling 1"

### Reducing Coupling

Part #	Description
CMP-RC1238	Composite Pipe Reducing Coupling 1/2" x 3/8"
CMP-RC3412	Composite Pipe Reducing Coupling 3/4" x 1/2"
CMP-RT0134	Composite Pipe Reducing Coupling 1" x 3/4"

### Caps

Part #	Description
CMP-CAP38	Composite Pipe Cap 3/8"
CMP-CAP12	Composite Pipe Cap 1/2"
CMP-CAP34	Composite Pipe Cap 3/4"
CMP-CAP01	Composite Pipe Cap 1"

## DURATEC VALVES AND ACCESSORIES

### 5 in 1 Beveling Tool

Part #	Description
CMP-BT38-1	Beveling Tool 5-in-1, 3/8" to 1"



# GAS PIPE MARKERS

## GAS PIPE MARKERS

### Reduce the chance of error or confusion

Individual style pipe markers allow for marking each pipe with exact content without having to purchase large quantities. Conform to Compressed Gas Association Standard (CGA) C-9-1988 (R1993) with medical gas markers.

**Markers are made from durable pressure sensitive vinyl.**



## DIRECTIONAL ARROWS

Directional Arrows Available



Pt # PML-DA-BROWNPK5 (Qty 5) Pt # PML-DA-GRAYPK5 (Qty 5)  
Pt # PML-DA-BLUEPK5 (Qty 5) Pt # PML-DA-BLACKPK5 (Qty 5)

- Additional Packages Available -

Choose from two sizes to meet your pipe needs.

For outside pipe diameters:

2 1/2" - 7 7/8" choose size 1.

3/4" - 1 3/8" order size 2.

Part #	Description	Color	Pipe Diameter	4+ Pkg. of 25	2+ Pkg. of 25	1+ Pkg. of 25	Pkg. of 5
PML-AR-1PK25	Pipe Marker Size 1 Argon	Brown / White	2 1/2" - 7 7/8"	\$2.04 ea. pc. 25 to a pack	\$2.36 ea. pc. 25 to a pack	\$2.63 ea. pc. 25 to a pack	(Pt # PML-AR-1PK5) \$18.49 Pk
PML-CO2-1PK25	Pipe Marker Size 1 CO2	Gray / White	2 1/2" - 7 7/8"	\$2.04 ea. pc. 25 to a pack	\$2.36 ea. pc. 25 to a pack	\$2.63 ea. pc. 25 to a pack	(Pt # PML-CO2-1PK5) \$18.49 Pk
PML-LIQUID-1PK25	Pipe Marker Size 1 Liquid	Blue / White	2 1/2" - 7 7/8"	\$2.04 ea. pc. 25 to a pack	\$2.36 ea. pc. 25 to a pack	\$2.63 ea. pc. 25 to a pack	(Pt # PML-LIQUID-1PK5) \$18.49 Pk
PML-OX-1PK25	Pipe Marker Size 1 Oxygen	Green / White	2 1/2" - 7 7/8"	\$2.04 ea. pc. 25 to a pack	\$2.36 ea. pc. 25 to a pack	\$2.63 ea. pc. 25 to a pack	(Pt # PML-OX-1PK5) \$18.49 Pk
PML-N-1PK25	Pipe Marker Size 1 Nitrogen	Black / White	2 1/2" - 7 7/8"	\$2.04 ea. pc. 25 to a pack	\$2.36 ea. pc. 25 to a pack	\$2.63 ea. pc. 25 to a pack	(Pt # PML-N-1PK5) \$18.49 Pk
Part #	Description	Color	Pipe Diameter	4+ Pkg. of 25	2+ Pkg. of 25	1+ Pkg. of 25	Pkg. of 5
PML-AR-2PK25	Pipe Marker Size 2 Argon	Brown / White	3/4" - 1 3/8"	\$1.55 ea. pc. 25 to a pack	\$1.71 ea. pc. 25 to a pack	\$1.93 ea. pc. 25 to a pack	(Pt # PML-AR-2PK5) \$11.25 Pk
PML-CO2-2PK25	Pipe Marker Size 2 CO2	Gray / White	3/4" - 1 3/8"	\$1.55 ea. pc. 25 to a pack	\$1.71 ea. pc. 25 to a pack	\$1.93 ea. pc. 25 to a pack	(Pt # PML-CO2-2PK5) \$11.25 Pk
PML-LIQUID-2PK25	Pipe Marker Size 2 Liquid	Blue / White	3/4" - 1 3/8"	\$1.55 ea. pc. 25 to a pack	\$1.71 ea. pc. 25 to a pack	\$1.93 ea. pc. 25 to a pack	(Pt # PML-LIQUID-2PK5) \$11.25 Pk
PML-OX-2PK25	Pipe Marker Size 2 Oxygen	Green / White	3/4" - 1 3/8"	\$1.55 ea. pc. 25 to a pack	\$1.71 ea. pc. 25 to a pack	\$1.93 ea. pc. 25 to a pack	(Pt # PML-OX-2PK5) \$11.25 Pk
PML-N-2PK25	Pipe Marker Size 2 Nitrogen	Black / White	3/4" - 1 3/8"	\$1.55 ea. pc. 25 to a pack	\$1.71 ea. pc. 25 to a pack	\$1.93 ea. pc. 25 to a pack	(Pt # PML-N-2PK5) \$11.25 Pk

Call Ratermann Manufacturing for your Gas Manifold Application.

We will help you match the correct product to your needs.

