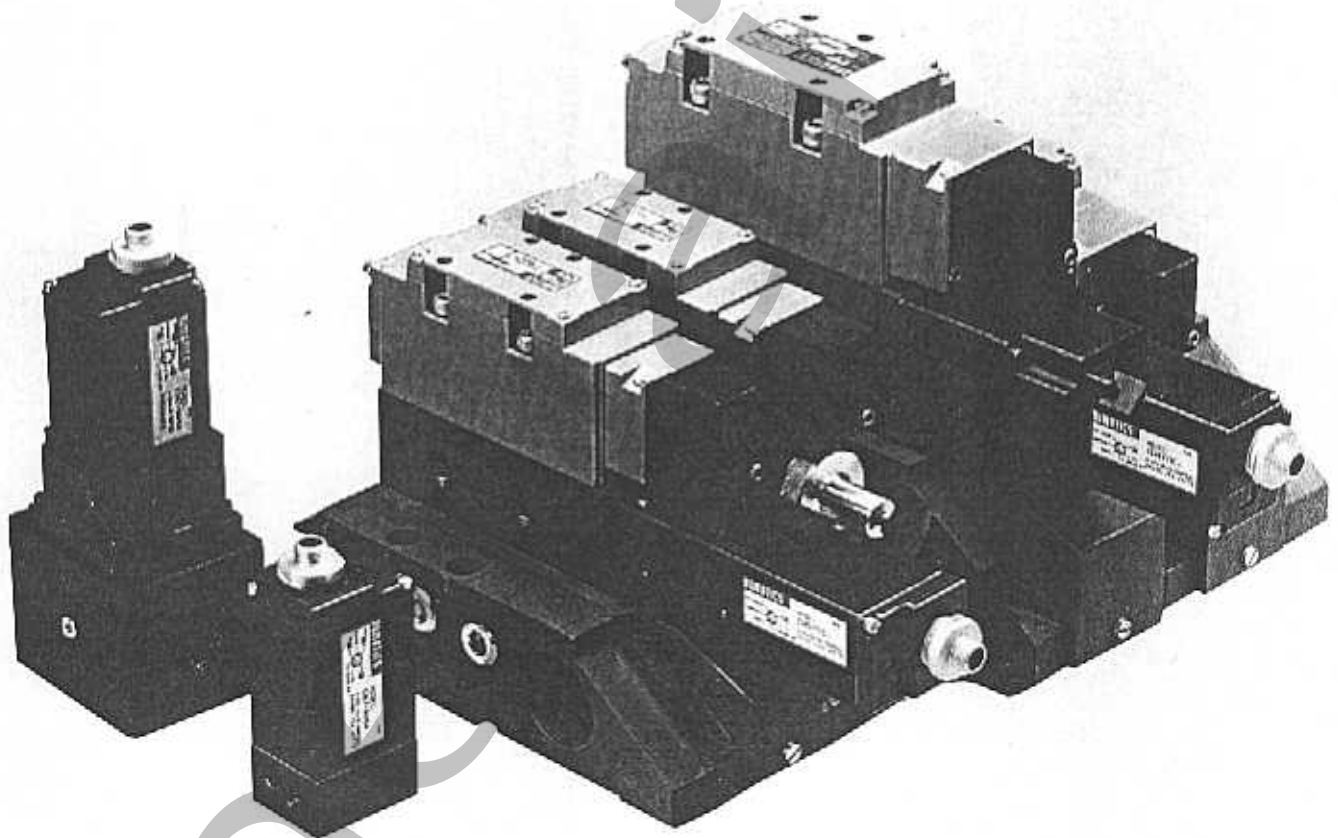




EPR Series

Electronic Proportional Regulators

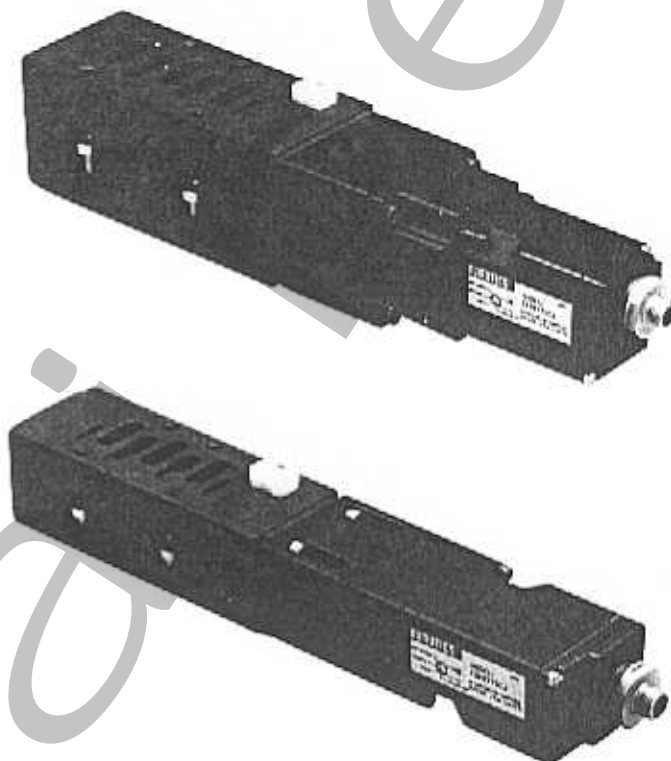


- Analog Input Command: 0–10VDC / 4–20mA
- Compact High Flow Design, High Relief Capacity
- Fast and Accurate
- Subbase or Inline Mount
- Single and Dual Pressure Riser Block Styles
- Compatibility with Numatics MARK Series, ISO 5599/1, ISO 5599/2 and Automotive Series

EPR Series Features

- **Compact Size**
Single Piece Construction
- **High Flow and High Relief Capacity**
 $C_v = 0.03$ to 5.5 (Supply to Outlet)
(depending on size)
- **Fast and Accurate**
Response 20 – 40 milliseconds (depending on size)
Hysteresis: $\pm 1.5\%$ of full scale
Repeatability: 1%
Linearity: $\pm 1.5\%$ of full scale
- **Numatics Compatibility**
30 Series compatible with FlexiBlok FRL
Sandwich riser block series compatible with eleven
Numatics valve series.
- **Mounting Capabilities**
Line Mount – 1/8 NPTF & 3/4 NPTF
Subbase Mount – 1/4 NPTF to 3/4 NPTF
Manifold Mount – 1/4 NPTF to 3/4 NPTF
- **Indicator Lights**
Red: Power ON
Green: Command Pressure Achieved
- **1/8 NPT Gauge Ports Standard**
Available with 30 Series and Sandwich Series

EPR Series Sandwich Regulators



EPR Series In-Line Regulators

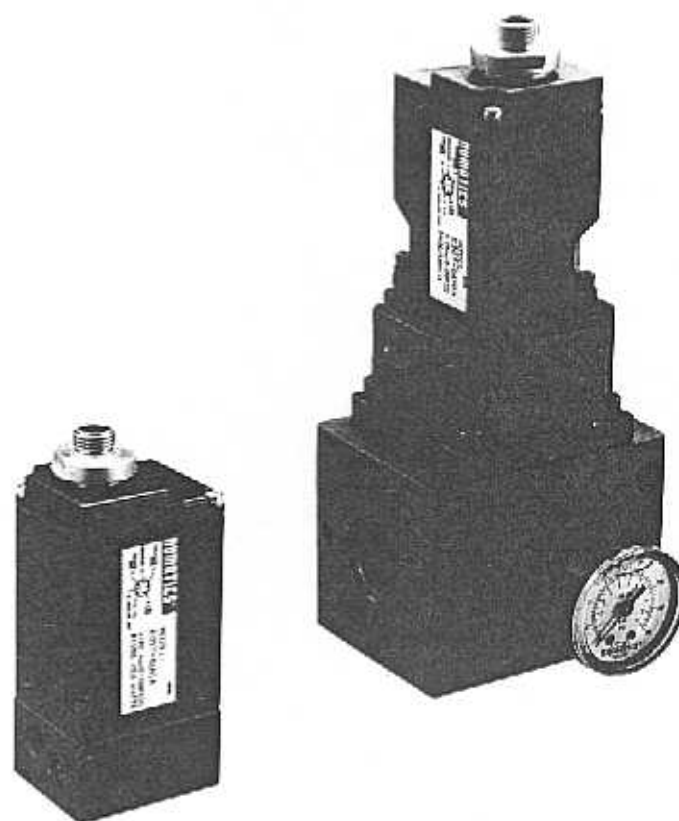
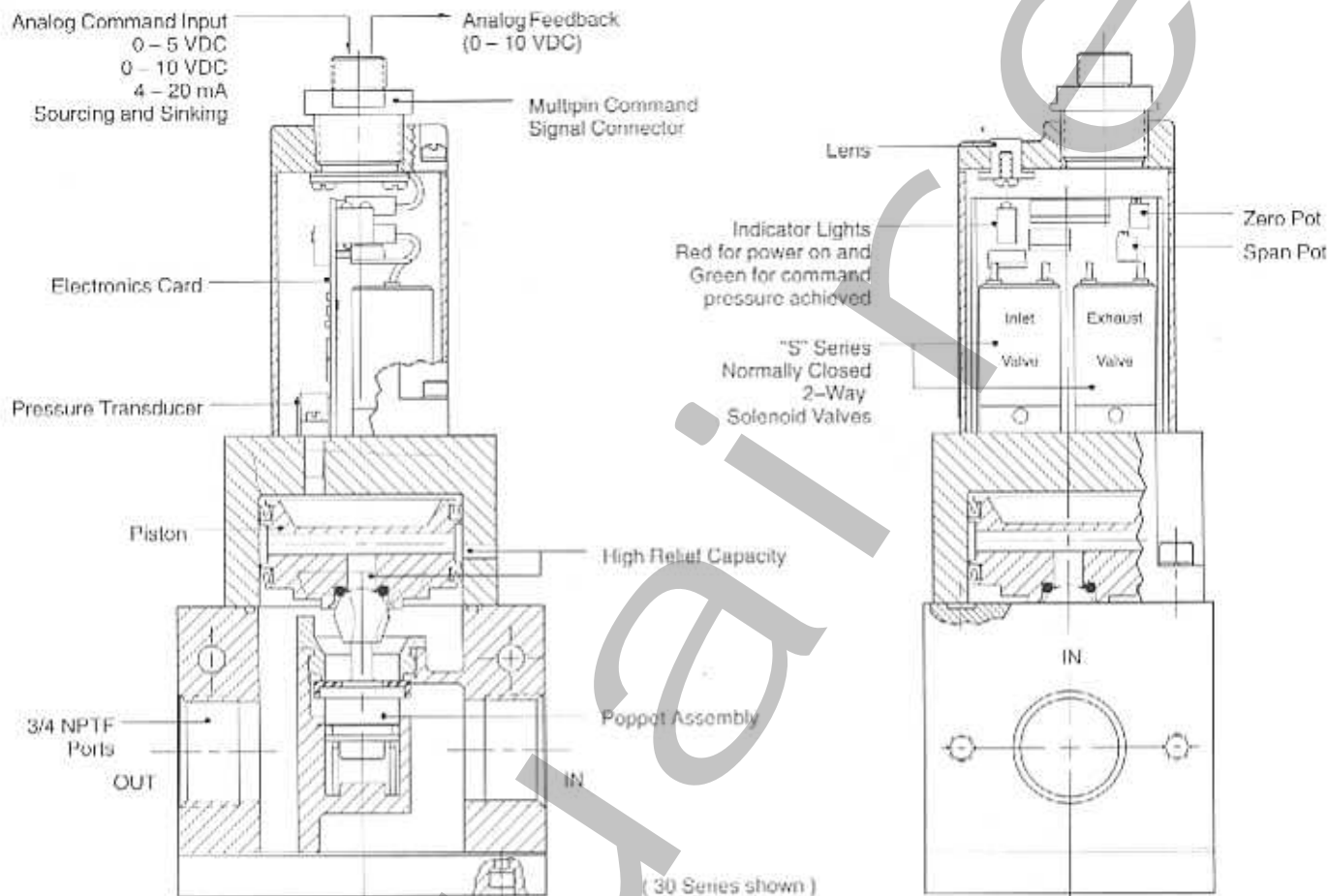


TABLE OF CONTENTS

General Information	3
Sandwich Riser Block Series	4-7
Line Mounted 01 Series	8-10
Line Mounted 30 Series	11-13
Pin Out diagrams and Gauges	14-15

EPR SERIES GENERAL INFORMATION



Numatics EPR Series Electronic Proportional Regulators

Product Overview

Inline

Numatics offers two different inline regulator series. The 01 Series available with 1/8 NPTF ports and 30 Series (shown above) available with 3/4 NPTF ports. These are high flow, compact units and can be mounted in any position.

Sandwich Style

Available in single and dual pressure, Numatics offers two basic regulator sizes that mount directly to existing product line sandwich style riser blocks. Size 1 proportional regulators utilize MK 15, MK 25, ISO 1 and 2 5599/1 & /2, and the 125 series riser blocks. Size 2 proportional regulators utilize the MK 55, ISO 3 5599/1 & /2, and the automotive 250 series riser blocks. Both sizes can be subbase or manifold mounted.

What It Does

The EPR Series electronic regulator provides an output pressure proportional to a commanded electronic signal.

How It Works

The output pressure is controlled by using two normally closed solenoid valves. One functions as an inlet valve, increasing the outlet pressure. The exhaust valve conversely reduces the outlet pressure. The outlet pressure is constantly monitored by a pressure transducer located on the top side of the piston providing an internal signal to the electronics card.

The electronics card compares the command input signal to the internal transducer feedback signal which causes the inlet or exhaust valve to open, increasing or decreasing pressure to maintain the commanded pressure setting.

Electrical Connections

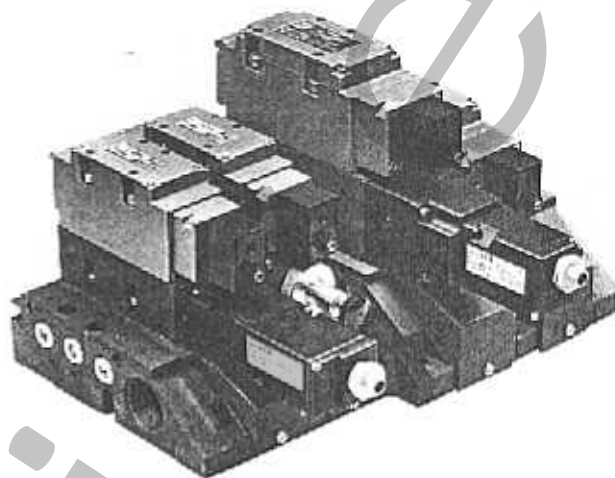
All series of Numatics electronic pressure regulators have a 0-10 VDC analog feedback signal as a standard feature. This signal originates from the internal pressure transducer used in the electronic control circuit. This 0-10 VDC analog feedback signal can be used for data acquisition or indication that the regulator has achieved the commanded pressure.



EPR SERIES SANDWICH REGULATORS

Sandwich riser block series

- High flow compact design.
- Single unit construction: no external pilot line or transducer feedback connection.
- Piston operation for faster, more accurate response
- Available in single and dual pressure regulator function with many pressure ranges.
- 2, 3, or 4-way valve functions.
- Single and double solenoid, 2 and 3 position valves.
- Sub-base and manifold mounting.
- Plug-in riser block design

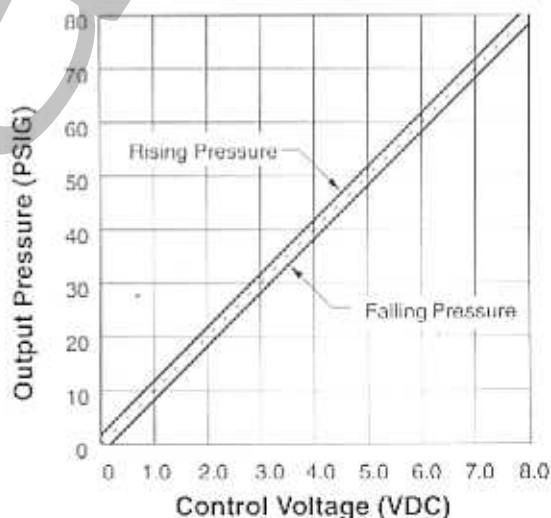


Technical Data

Material	External parts: Anodized Aluminum. Internal wetted parts: Aluminum, Brass, Buna, Stainless. Transducer: Polyester, Fluorosilicone and Silicone
Operating Temperature	-10° F to +115° F (-23° C to +46° C)
Inlet Pressure	0 - 150 psig (0 - 10.2 bar)
Outlet Pressure *	0 - 145 psig (0 - 9.86 bar)
Response	40 ms (from zero psig command to first pressure signal)
Repeatability (% full scale)	± 1%
Filtration Recommendation	20 Micron
Hysteresis (% FS)	± 1.5%
Wattage	5 w
Supply Voltage	24 VDC ± 10%
Command Signal	0 - 5 VDC, 0 - 10 VDC, 4 - 20 mA Sourcing and Sinking
Analog Feedback	0 - 10 VDC

Hysteresis - Curve

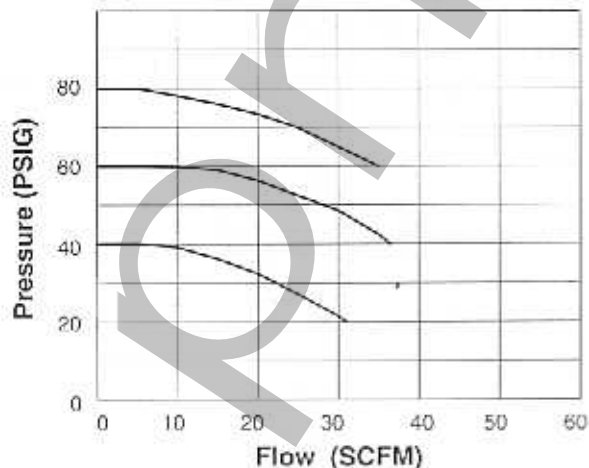
Proportional Regulator, Primary Pressure: 85 PSIG
13.5 Cubic Inch Volume at outlet



* Standard calibrated outlet pressure ranges are available. Special ranges available upon request

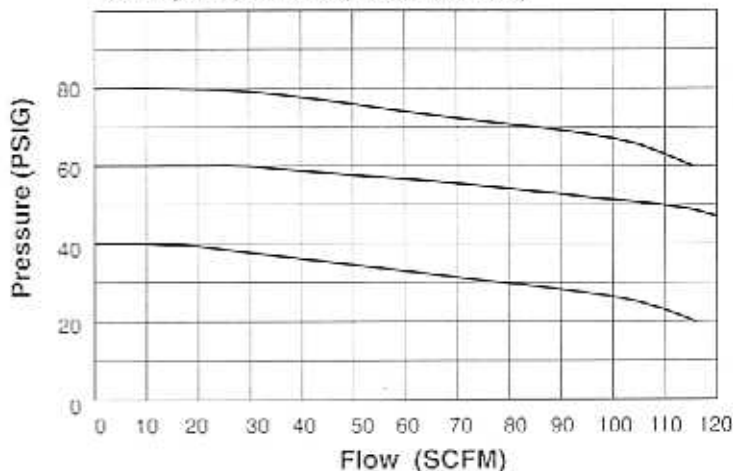
Flow Characteristics

SIZE 1 (MK15, MK25, 125 Series, ISO 1 & 2 5599/1 & 2)



Size 1 Sandwich Style Electronic Regulator using MK15 valve and riser block. (Other Size 1 flow characteristics would be similar)

SIZE 2 (MK55, 250 Series, ISO 3 5599/1 & 2)



Size 2 Sandwich Style Electronic Regulator using MK55 valve and riser block. (Other Size 2 flow characteristics would be similar)

EPR SERIES SANDWICH REGULATORS

Single and Double Sandwich Riser Block Function

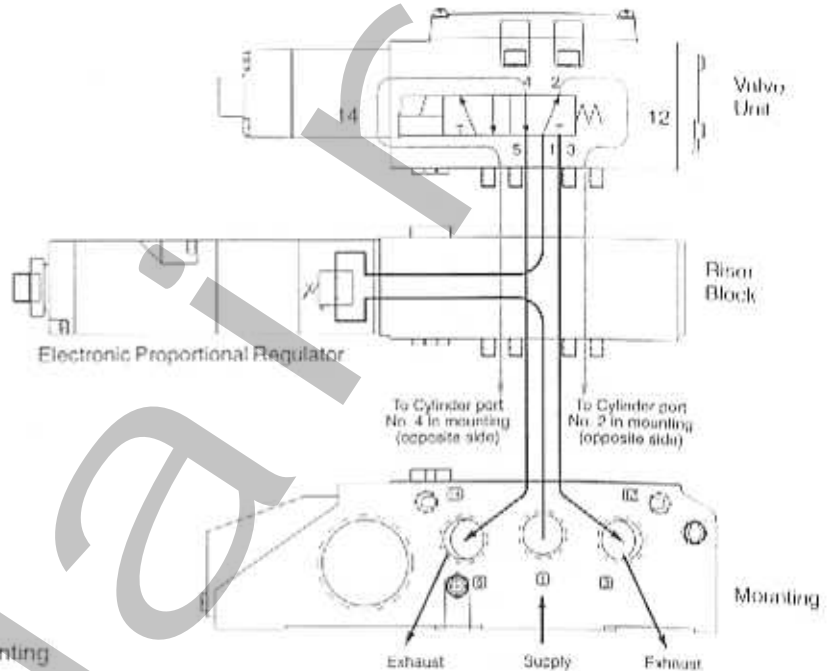
Single and Double sandwich regulators will mount under any Numatics two or three position, single and double solenoid actuated valves. Single solenoid illustrated.

TYPE

S

ELECTRONIC SINGLE PRESSURE

- Pressure is supplied from port 1 (P) in the mounting to the riser block.
- The riser block diverts the inlet pressure to the electronic regulator where it is adjusted to the commanded setting, sent back to the riser block and connected to the No. 1 (P) port of the valve unit.
- The valve unit connects the commanded pressure to port No. 2 (B) when de-energized or to port No. 4 (A) when energized. The exhaust galleries of the valve unit are directed back through the riser block to the corresponding exhaust ports in the mounting.
- This unit provides a single pressure, four way function with equal output pressures.



TYPE

D

ELECTRONIC DUAL PRESSURE

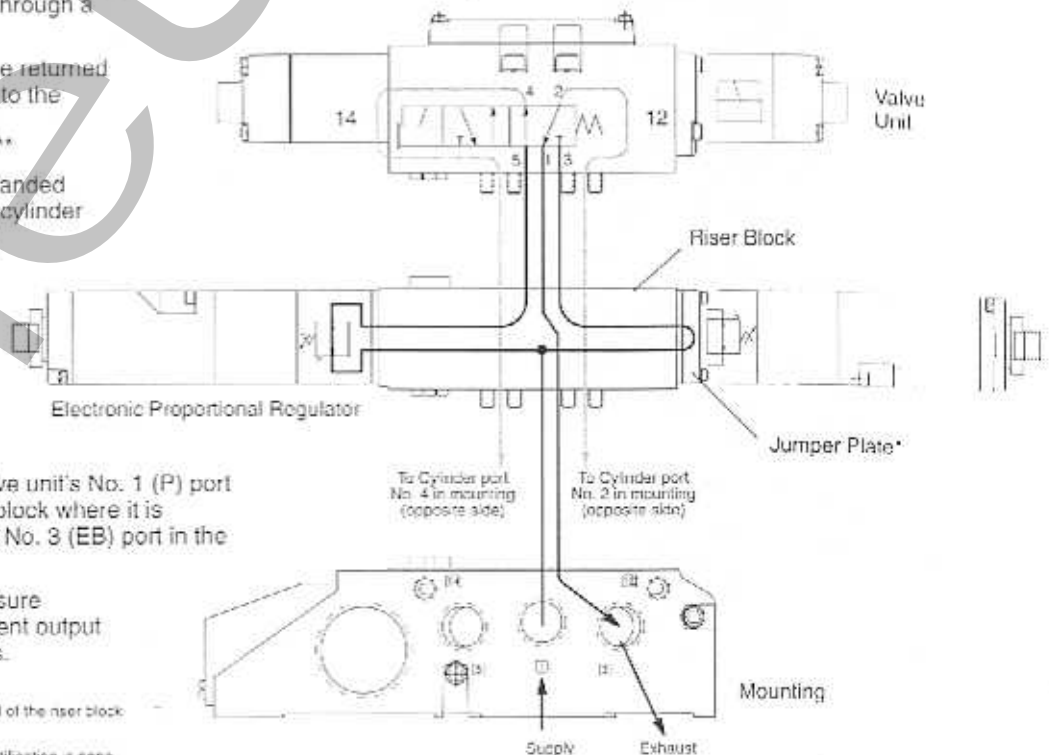
- Pressure is supplied from port 1 (P) in the mounting to the riser block.
- The riser block diverts the inlet pressure to the electronic regulators on each end where it is independently adjusted to the commanded pressures or fed unregulated through a jumper plate* (as shown).

The independent pressures are returned to the riser block and diverted to the valve unit's No. 3 (EB) and No.5 (EA) exhaust galleries. ***

The valve connects the commanded pressure at port No. 5 (EA) to cylinder port No. 4 (A) when the 12 (B) end is in command. Alternately, the valve connects the commanded pressure at port No. 3 (EB) to cylinder port No. 2 (EB) when the 14 (A) end is in command. **

The exhaust gallery of the valve unit's No. 1 (P) port is directed back into the riser block where it is diverted and connected to the No. 3 (EB) port in the mounting.

This unit provides a dual pressure 4-way function with independent output pressures to the cylinder ports.



* Jumper plates can be used on either end of the riser block to suit the desired circuitry.

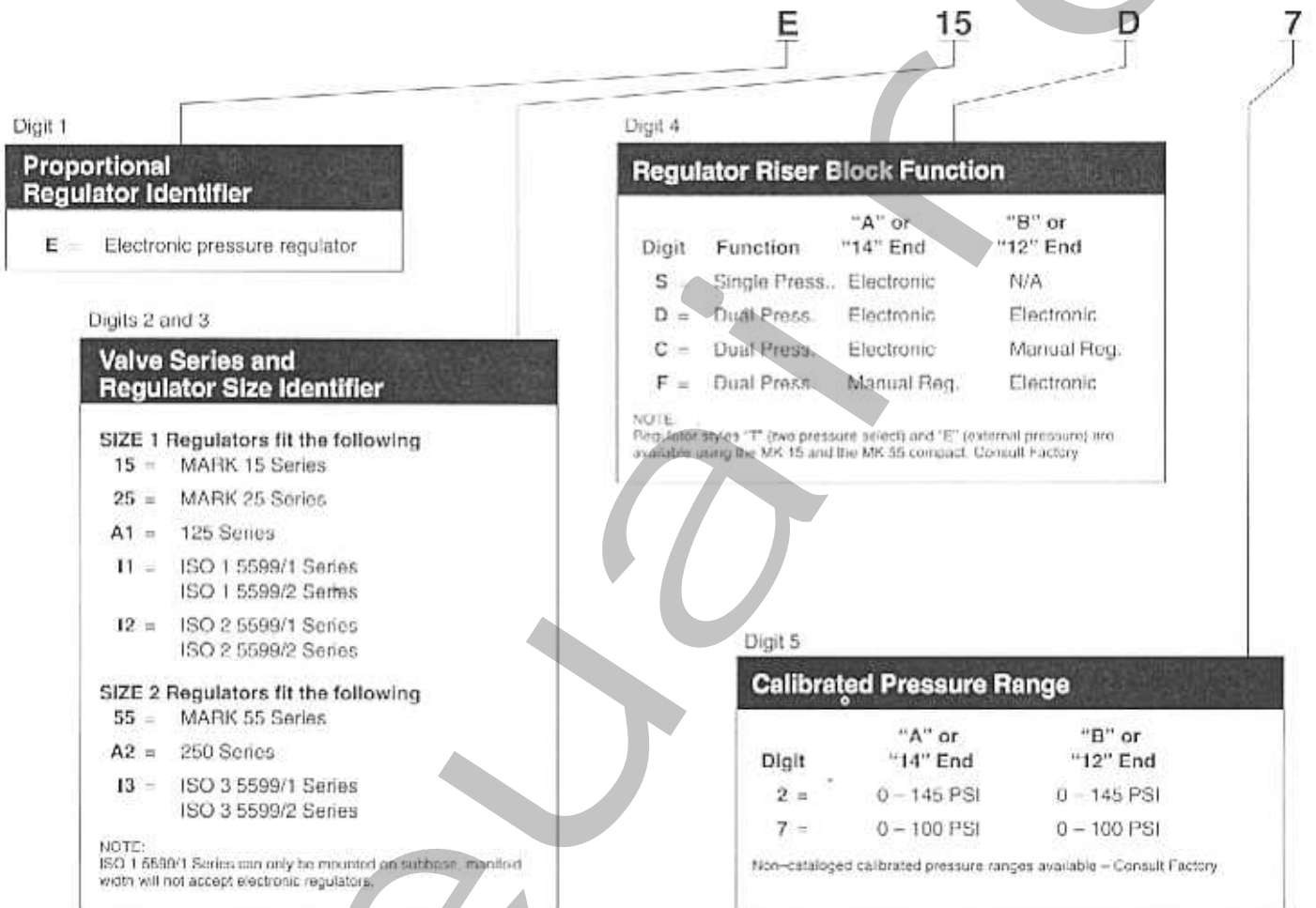
** Automotive 120 and 250 series port identification is opposite to description and illustration. No. 2 port = A, 4 = B, 5 = EB and 3 = EA.

*** When using a solenoid pilot assisted valve unit, specify pilot supply from EA (5) or EB (3) as required.



How to order

ORDERING

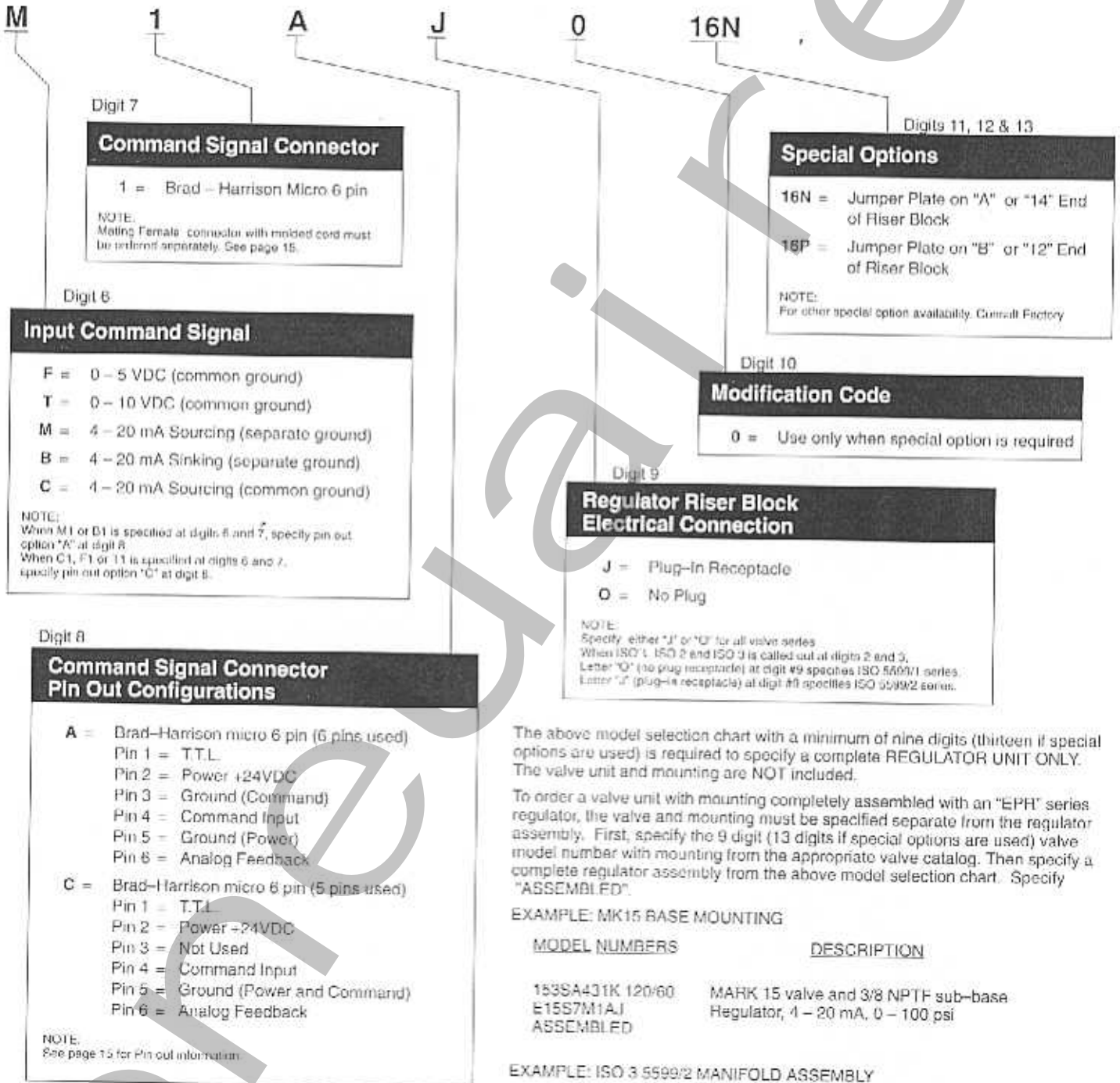


GAUGE NOTE:
Electronic regulators have as standard one 1/8 NPTF gauge port with one 1/8 NPTF pipe plug included - shipped loose.

Gauges are not included and must be ordered separately - see page 15.

When the EPR series is ordered with a manual regulator on one end, that manual regulator is shipped with the gauge and gauge fitting as is standard with that valve series.

EXAMPLE



The above model selection chart with a minimum of nine digits (thirteen if special options are used) is required to specify a complete REGULATOR UNIT ONLY. The valve unit and mounting are NOT included.

To order a valve unit with mounting completely assembled with an "EPR" series regulator, the valve and mounting must be specified separate from the regulator assembly. First, specify the 9 digit (13 digits if special options are used) valve model number with mounting from the appropriate valve catalog. Then specify a complete regulator assembly from the above model selection chart. Specify "ASSEMBLED".

EXAMPLE: MK15 BASE MOUNTING

MODEL NUMBERS	DESCRIPTION
153SA431K 120/60 E15S7M1A.J ASSEMBLED	MARK 15 valve and 3/8 NPTF sub-base Regulator, 4-20 mA, 0-100 psi

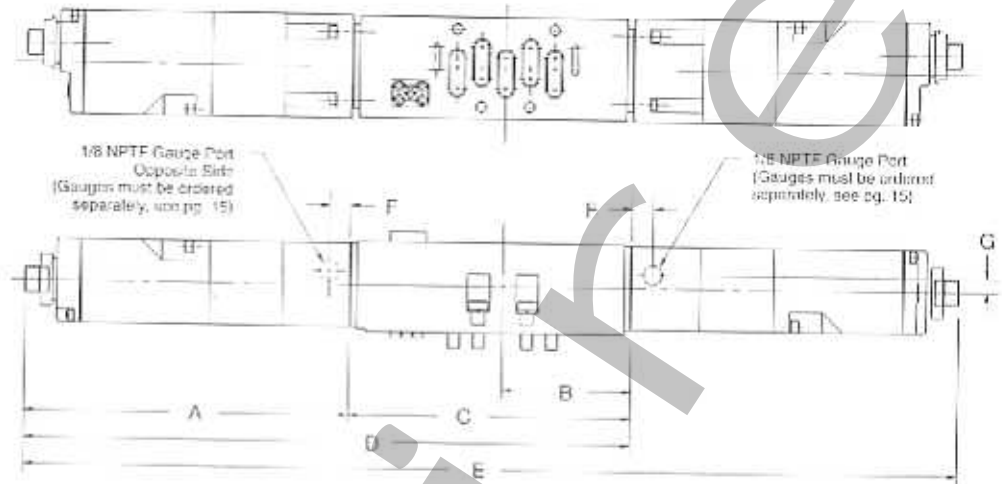
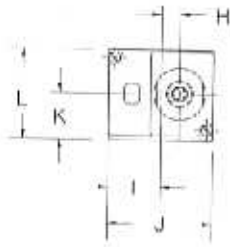
EXAMPLE: ISO 3 5599/2 MANIFOLD ASSEMBLY

AKP13-2 (see ISO 5599/2 catalog "How to order manifold assembly")	Assembly Kit
I34BA415K014D EI3D7T1CJ016N	ISO 3 5599/2 valve and manifold (Station 1) Regulator, 0-10 volts, 0-100 psi (Station 1)
I34DA500K I34RS115K	ISO 3 5599/2 valve only (Station 2) ISO 3 5599/2 Manual regulator & manifold (Station 2)
ASSEMBLED	

NOTE: When using a solenoid-pilot assist valve and a dual riser block, care should be taken to get pressure to the pilot(s). Specify internal supply 014D or 014C or external supply 014X.

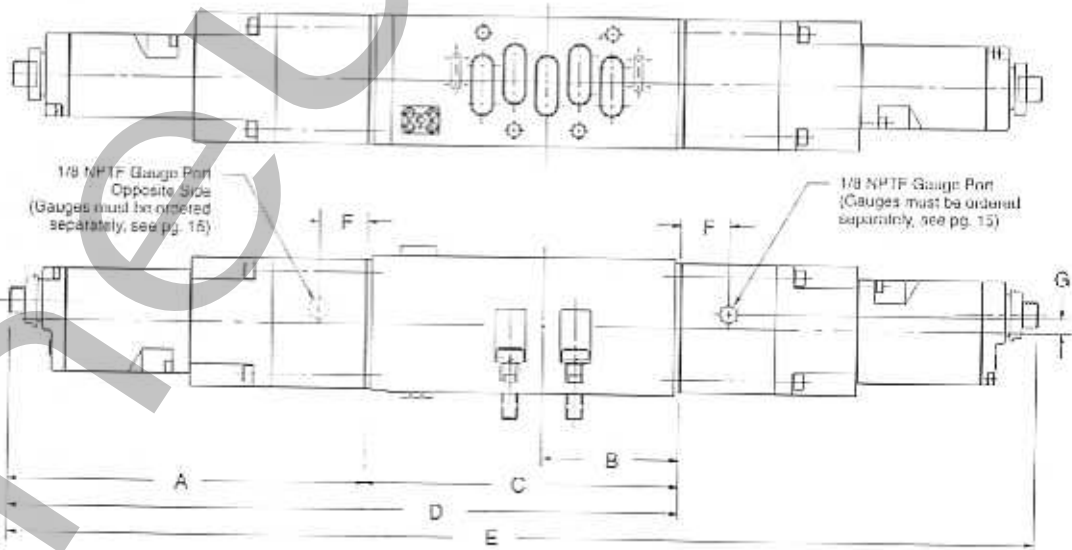
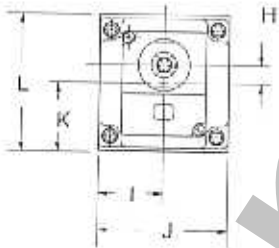
Note that the mounting is specified with the valve unit when using sandwich style electronic proportional regulator.

Note that the mounting is specified with regulator when using conventional style regulators.



Size 1 Dimensions

Valve Series	A	B	C	D	E	F	G	H	I	J	K	L
MARK 15	8.36 (161.6)	1.03 (41.3)	3.67 (76.3)	9.33 (236.9)	15.69 (398.0)	.43 (10.9)	.26 (6.60)	.36 (9.1)	1.0 (25.4)	2.0 (50.8)	.85 (21.6)	1.70 (43.2)
MARK 25	9.30 (161.6)	2.44 (62.1)	4.89 (124.2)	11.25 (285.8)	17.62 (447.5)	.43 (10.9)	.26 (6.60)	.36 (9.1)	1.0 (25.4)	2.0 (50.8)	.87 (22.1)	1.74 (44.1)
125 Series	6.35 (161.6)	2.44 (62.1)	4.80 (124.2)	11.25 (285.8)	17.62 (447.5)	.43 (10.9)	.28 (6.60)	.36 (9.1)	1.0 (25.4)	2.0 (50.8)	.87 (22.1)	1.74 (44.1)
ISO 1 5599/1	8.36 (161.6)	1.02 (46.2)	3.82 (92)	9.96 (253.6)	16.35 (415.2)	.43 (10.9)	.26 (6.60)	.36 (9.1)	1.0 (25.4)	2.0 (50.8)	.85 (21.6)	1.70 (43.2)
ISO 1 5599/2	6.06 (161.6)	1.82 (46.2)	4.41 (112.1)	10.78 (273.7)	17.14 (435.4)	.43 (10.9)	.28 (6.60)	.36 (9.1)	1.0 (25.4)	2.0 (50.8)	.91 (23.1)	1.76 (44.7)
ISO 2 5599/1	6.35 (161.6)	1.90 (50.3)	3.94 (100.1)	10.50 (261.7)	16.67 (423.3)	.43 (10.9)	.28 (6.60)	.36 (9.1)	1.0 (25.4)	2.0 (50.8)	.85 (21.6)	1.70 (43.2)
ISO 2 5599/2	6.30 (161.6)	2.47 (62.7)	5.42 (137.6)	11.78 (299.2)	16.14 (408.8)	.43 (10.9)	.26 (6.60)	.36 (9.1)	1.0 (25.4)	2.0 (50.8)	.89 (22.6)	1.76 (44.7)



Size 2 Dimensions

Valve Series	A	B	C	D	E	F	G	H	I	J	K	L
MARK 55	7.04 (178.8)	2.50 (63.5)	4.70 (121.4)	11.82 (300.2)	18.66 (478.1)	.39 (23.6)	.28 (7.1)	.36 (9.1)	1.25 (31.8)	2.50 (63.5)	1.29 (32.5)	2.58 (65.5)
250 Series	7.04 (178.8)	3.30 (83.8)	6.60 (167.6)	13.64 (346.5)	20.68 (526.3)	.39 (23.6)	.28 (7.1)	.36 (9.1)	1.25 (31.8)	2.50 (63.5)	1.28 (31.8)	2.50 (63.5)
ISO 3 5599/1	7.04 (178.8)	2.65 (67.3)	5.28 (134.1)	13.32 (312)	19.36 (491.6)	.39 (23.6)	.28 (7.1)	.36 (9.1)	1.25 (31.8)	2.50 (63.5)	1.31 (33.3)	2.63 (66.8)
ISO 3 5599/2	7.04 (178.8)	2.69 (68.2)	6.09 (154.7)	13.15 (333.5)	20.17 (512.4)	.39 (23.6)	.28 (7.1)	.36 (9.1)	1.25 (32)	2.52 (64)	1.31 (33.3)	2.65 (67.2)

Line Mounted 01 Series

- High flow compact design
- Side and bottom output ports standard
- 1/8 NPTF Ports



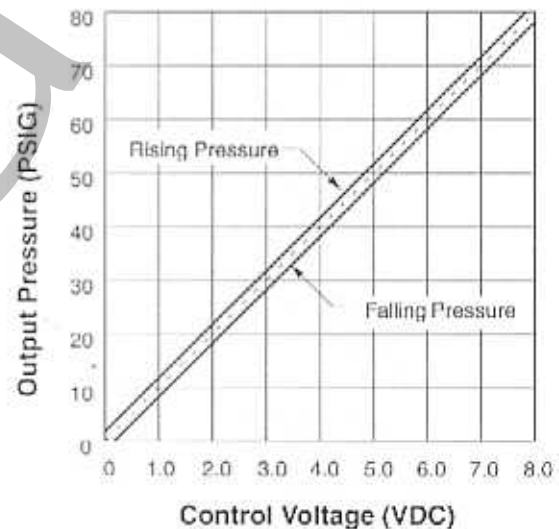
Technical Data

Material	External parts: Anodized Aluminum. Internal wetted parts: Aluminum, Brass, Buna, Stainless. Transducer: Polyester, Fluorosilicone and Silicone
Operating Temperature	-10° F to +115° F (-23° C to +46° C)
Inlet Pressure	0 – 100 psig (0 – 6.8 bar)
Outlet Pressure *	0 – 100 psig (0 – 6.8 bar)
Minimum Volume	1.5 cubic inches
Response	20 ms (from zero psig command to first pressure signal)
Repeatability (% full scale)	± 1%
Filtration Recommendation	20 Micron
Hysteresis (% FS)	± 1.5%
Wattage	5 w
Supply Voltage	24 VDC ± 10%
Command Signal	0 – 5 VDC, 0 – 10 VDC, 4 – 20 mA Sourcing and Sinking
Analog Feedback	0 – 10 VDC

* Standard calibrated outlet pressure ranges are available. Special ranges available upon request.

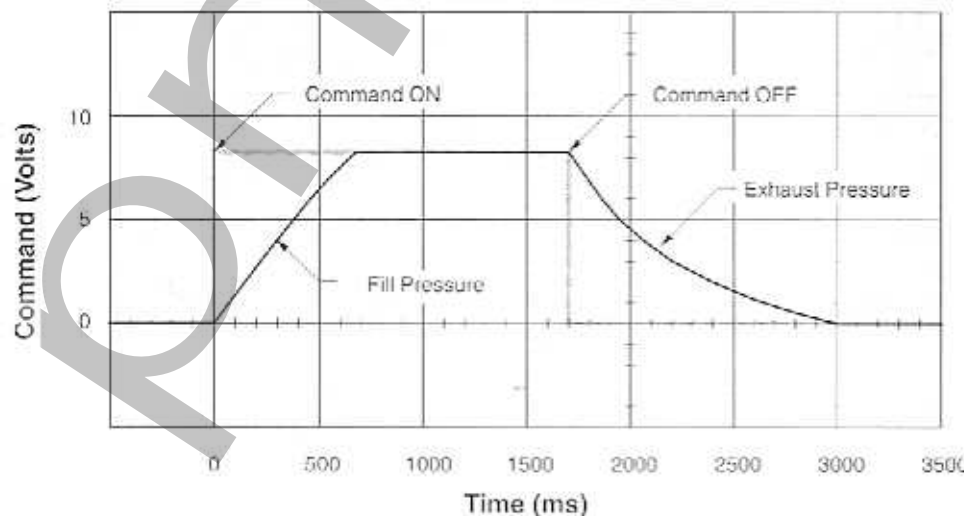
Hysteresis – Curve

01 Series Proportional Regulator
Primary Pressure: 85 PSIG, 1.8 Cubic Inch Volume at outlet



01 Series Flow Characteristics

0 – 80 PSIG, 85PSIG Primary, 1.8 cubic inches



Graph shows times to fill and exhaust a 1.8 cubic inch volume from 0 to 80 psi or from 0 to 8 command volts and back to zero. Time is determined by the difference between command and pressure achieved.

How to order 01 Series

EXAMPLE: E 01 7 - 01 M 1 A

Digit 1

Proportional Regulator Identifier

E = Electronic pressure regulator

Digits 2 and 3

Series Identifier

01 = "S" Series

Digit 4

Calibrated Pressure Range

3 = 0 - 30 PSI (0 - 2 bar)
(Max. Supply Pressure 60 PSI)

7 = 0 - 100 PSI (0 - 7 bar)

8 = 3 - 15 PSI
(Max. Supply Pressure 30 PSI)

NOTE:
Non-cataloged pressure ranges available - consult factory.

Digit 5

Tap Type

- = NPTF

Digit 6

Port Tap Size

01 = 1/8

NOTE:
Side and bottom output ports standard

Digit 9

Command Signal Connector Pin Out Configurations

A = Brad-Harrison micro 6 pin (6 pins used)
Pin 1 = T.T.L.
Pin 2 = Power +24VDC
Pin 3 = Ground (Command)
Pin 4 = Command Input
Pin 5 = Ground (Power)
Pin 6 = Analog Feedback

C = Brad-Harrison micro 6 pin (5 pins used)
Pin 1 = T.T.L.
Pin 2 = Power +24VDC
Pin 3 = Not Used
Pin 4 = Command Input
Pin 5 = Ground (Power and Command)
Pin 6 = Analog Feedback

NOTE:
See page 15 for Pin out information

Digit 8

Command Signal Connector

1 = Brad - Harrison Micro 6 pin

NOTE:
Mating Female connector with molded cord must be ordered separately. See page 15.

Digit 7

Input Command Signal

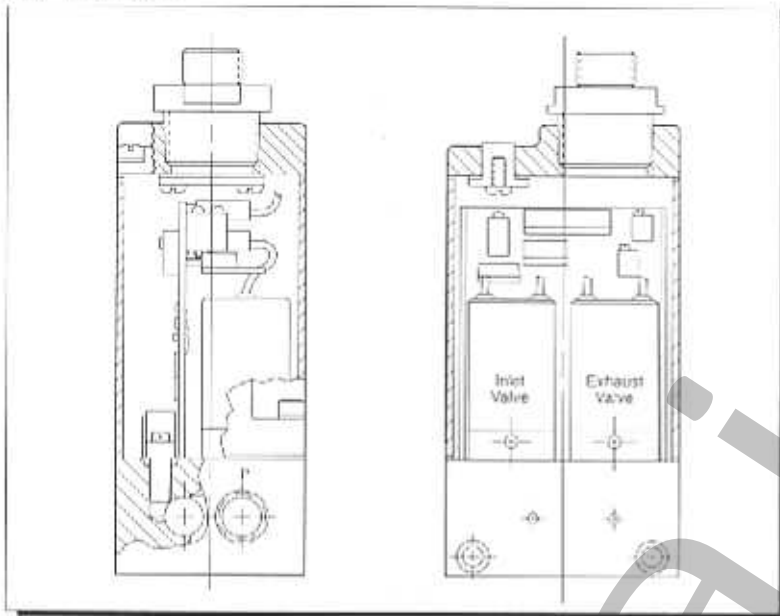
F = 0 - 5 VDC (common ground)
T = 0 - 10 VDC (common ground)
M = 4 - 20 mA Sourcing (separate ground)
B = 4 - 20 mA Sinking (separate ground)
C = 4 - 20 mA Sourcing (common ground)

NOTE:
When M or B is specified at digits 7 and 8, specify pin out option "A" at digit 9.
When C, F or T is specified at digits 7 and 8, specify pin out option "C" at digit 9.

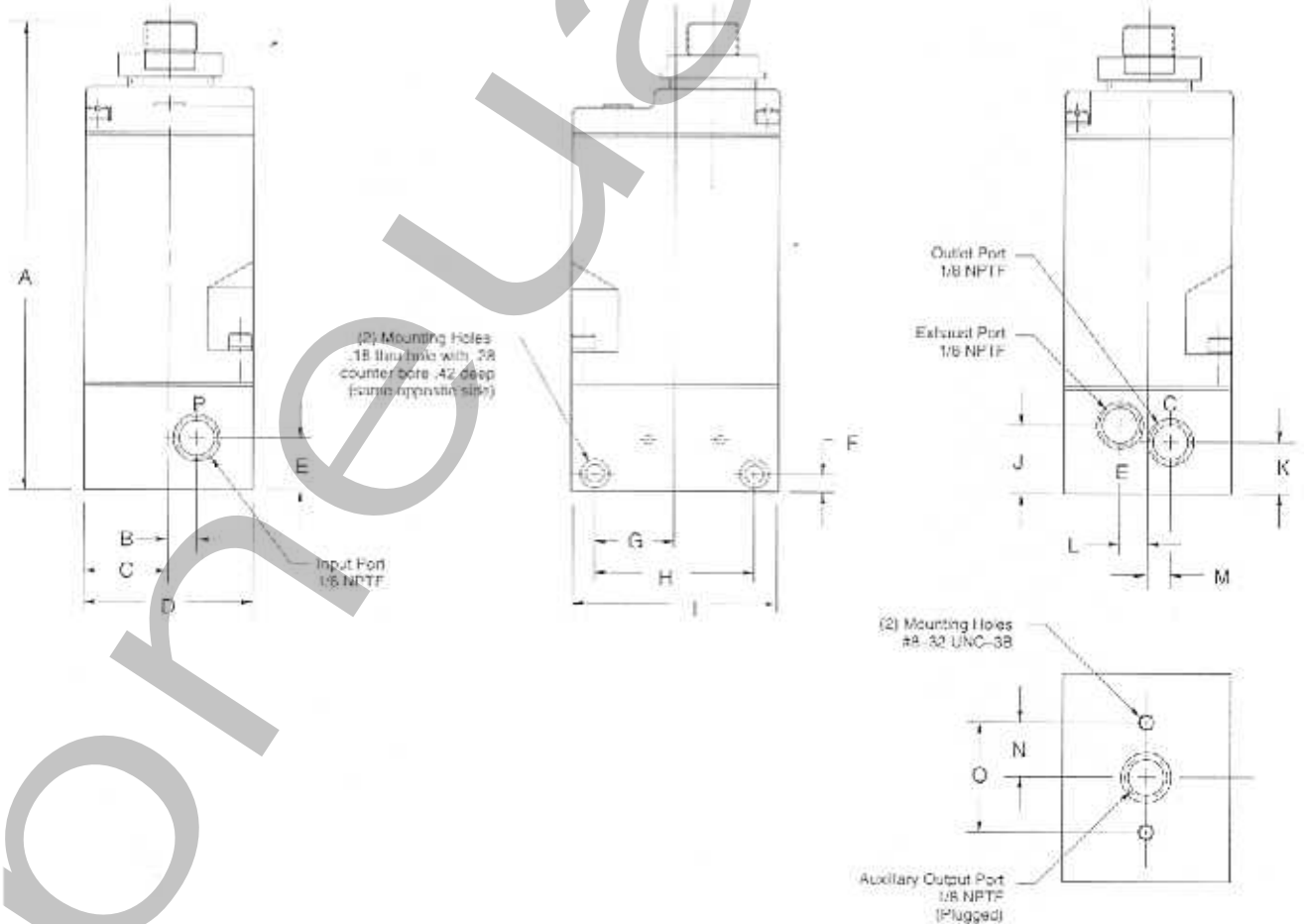
GAUGE NOTE:
Gauge ports are not available for 01 Series. However, unused output port can be piped to a gauge if required.

EPR SERIES LINE MOUNT REGULATORS

01 Series



Top Dimensions = Inches
Bottom Dimensions
(In Parenthesis) = Millimeters



01 Series Dimensions

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
4.60 (116.8)	.27 (6.9)	.81 (20.6)	1.62 (41.1)	.50 (12.7)	.17 (4.3)	.77 (19.6)	1.51 (39.1)	2.00 (50.8)	.86 (21.6)	.60 (12.7)	.27 (6.9)	.22 (5.6)	.53 (13.5)	1.00 (25.0)	.30 (7.6)



EPR SERIES LINE MOUNT REGULATORS

Line Mounted 30 series

- High flow compact design
- Single unit construction:
No external pilot line or transducer feedback connection, balanced poppet and piston operation for faster, more accurate response.
- Available in many pressure ranges (non-cataloged pressures available, consult factory)
- Can be installed as a FlexiBlok modular or individual unit
- 3/4 NPTF Ports



Technical Data

Material	External parts: Anodized Aluminum. Internal wetted parts: Aluminum, Brass, Buna, Stainless Transducer: Polyester, Fluorosilicone and Silicone
Operating Temperature	-10° F to +115° F (-23° C to +45° C)
Inlet Pressure	0 - 150 psig (0 - 10.2 bar)
Outlet Pressure *	0 - 145 psig (0 - 9.86 bar)
Response	40 ms (from zero psig command to first pressure signal)
Repeatability (% full scale)	± 1%
Filtration Recommendation	20 Micron
Hysteresis (% FS)	± 1.5%
Wattage	5 w
Supply Voltage	24 VDC ± 10%
Command Signal	0 - 5 VDC, 0 - 10 VDC, 4 - 20 mA Sourcing and Sinking
Analog Feedback	0 - 10 VDC

* Standard calibrated outlet pressure ranges. Special ranges are available upon request.

Response Data

Fill Times

Pressure	150 cu. in. Volume	200 cu. in. Volume	250 cu. in. Volume
0 - 20 PSI	0.13 sec.	0.15 sec.	0.18 sec.
0 - 40 PSI	0.26 sec.	0.27 sec.	0.28 sec.
0 - 60 PSI	0.38 sec.	0.39 sec.	0.42 sec.
0 - 80 PSI	0.53 sec.	0.55 sec.	0.56 sec.

Exhaust Times

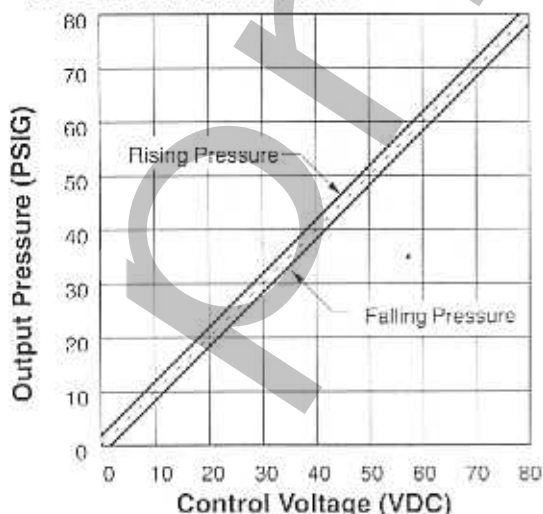
Pressure	150 cu. in. Volume	200 cu. in. Volume	250 cu. in. Volume
20 - 0 PSI	0.51 sec.	0.62 sec.	0.66 sec.
40 - 0 PSI	0.79 sec.	1.00 sec.	1.04 sec.
60 - 0 PSI	0.89 sec.	1.08 sec.	1.31 sec.
80 - 0 PSI	0.95 sec.	1.12 sec.	1.44 sec.

Test times were taken with regulator close nippled to volume. Actual times will vary based on piping and Cv of components used in the system.

Fill Pressure to 90% - Exhaust pressure to 10%

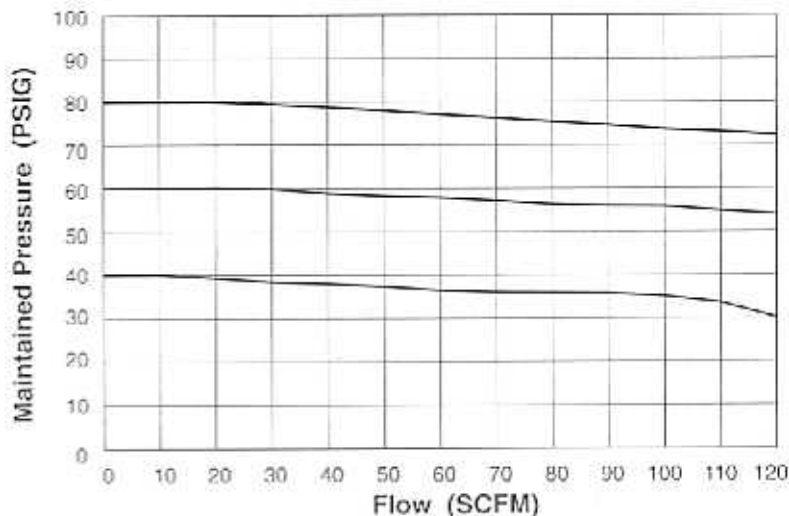
Hysteresis - Curve

30 Series Proportional Regulator Primary Pressure: 85 PSIG
13.5 Cubic Inch Volume at outlet



Drop Curves

30 Series Proportional Regulator
3/4 NPT



How to order 30 series

EXAMPLE

E 30 2 - 06 M 1 A 61Q

Digit 1

Proportional Regulator Identifier

E = Electronic pressure regulator

Digits 2 and 3

Series Identifier

30 = 30 Series Line Mount

Digit 4

Calibrated Pressure Range

2 = 0 - 145 PSI (0 - 9.86 bar)

7 = 0 - 100 PSI (0 - 6.8 bar)

NOTE:

Non-cataloged calibrated pressure ranges available - consult factory.

Digit 5

Tap Type

- = NPTF

Digit 6

Port Tap Size

06 = 3/4

Digit 9

Command Signal Connector Pin Out Configurations

A = Brad-Harrison micro 6 pin (6 pins used)

Pin 1 = T.T.L.

Pin 2 = Power +24VDC

Pin 3 = Ground (Command)

Pin 4 = Command Input

Pin 5 = Ground (Power)

Pin 6 = Analog Feedback

C = Brad-Harrison micro 6 pin (5 pins used)

Pin 1 = T.T.L.

Pin 2 = Power +24VDC

Pin 3 = Not Used

Pin 4 = Command Input

Pin 5 = Ground (Power and Command)

Pin 6 = Analog Feedback

NOTE:

See page 16 for Pin out information

Digit 8

Command Signal Connector

1 = Brad - Harrison Micro 6 pin

NOTE:

Mating Fairlead connector with modest cord must be ordered separately. See page 15.

Digit 7

Input Command Signal

F = 0 - 5 VDC (common ground)

T = 0 - 10 VDC (common ground)

M = 4 - 20 mA Sourcing (separate ground)

B = 4 - 20 mA Sinking (separate ground)

C = 4 - 20 mA Sourcing (common ground)

NOTE:

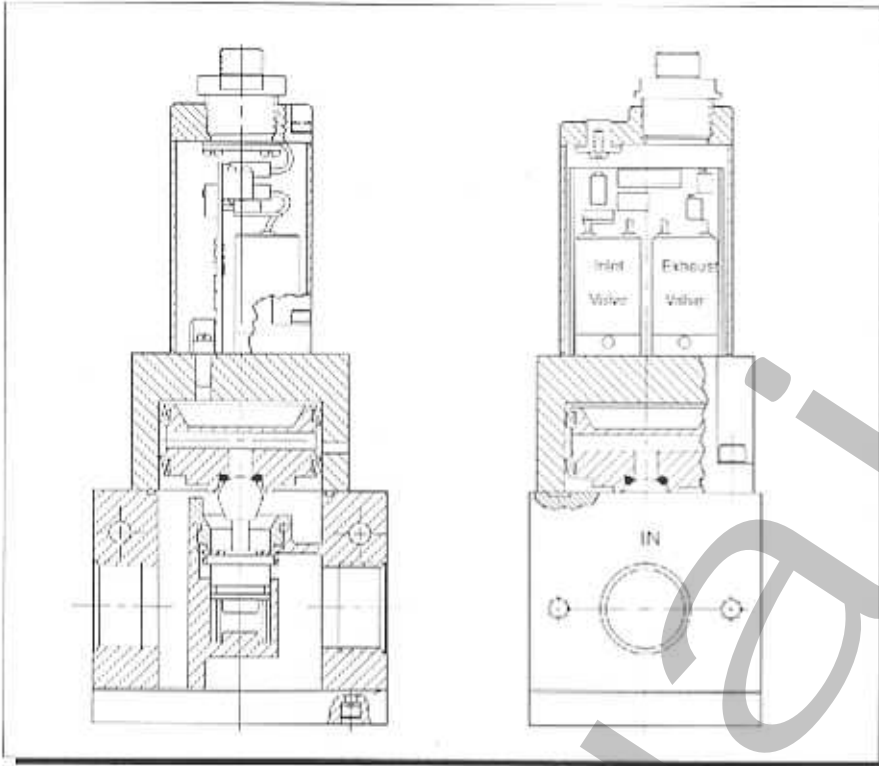
When M1 or B1 is specified at digits 7 and 8, specify pin out option "A" at digit 9.

When C1, F1 or T1 is specified at digits 7 and 8, specify pin out option "C" at digit 9.

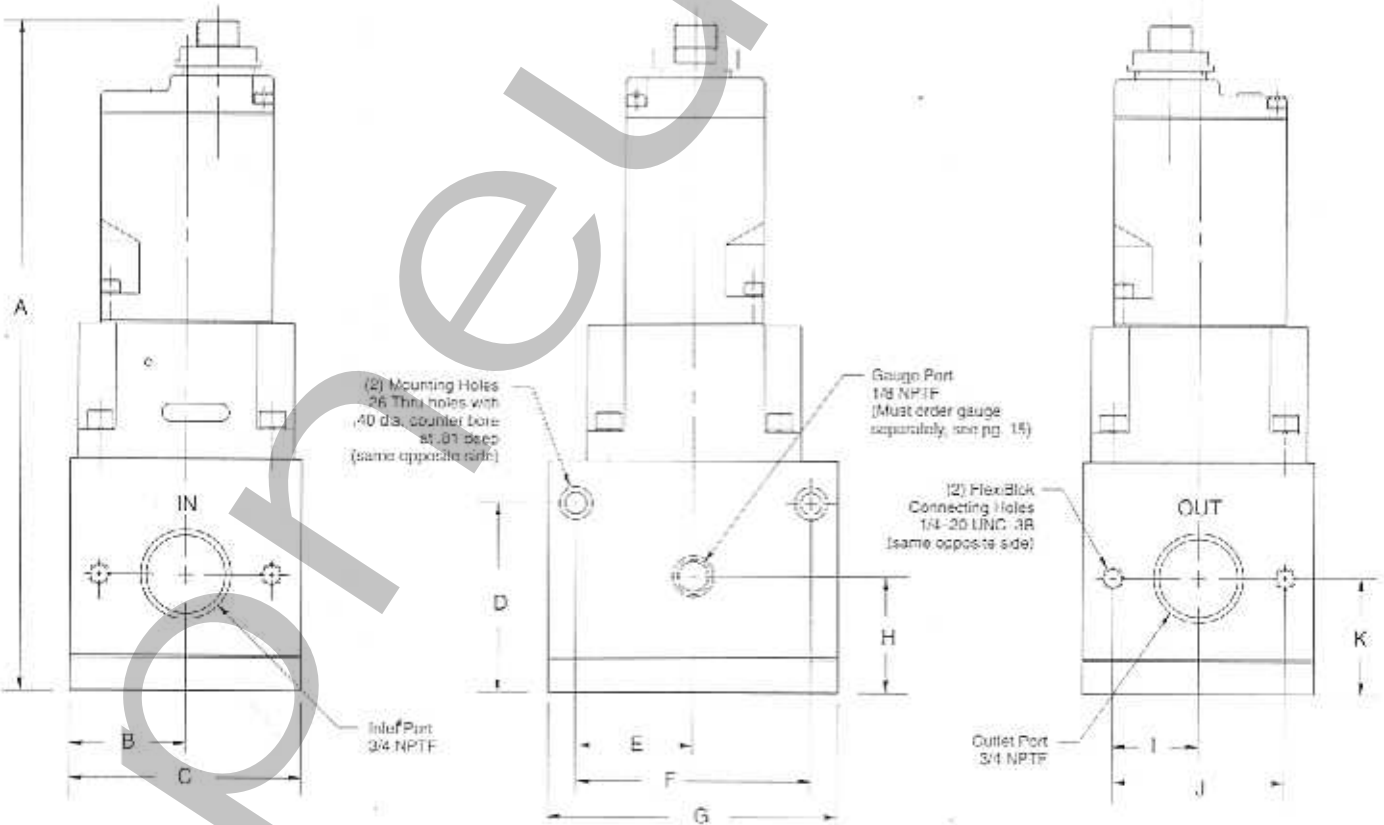
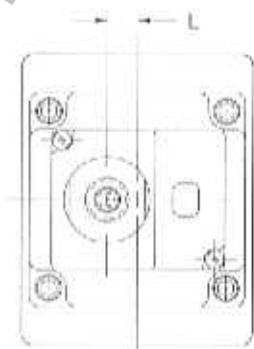
GAUGE NOTE:

Two 1/8 NPTF gauge ports standard. Two 1/8 NPTF pipe plugs included - shipped loose. The gauge is not included - must be ordered separately - see page 15.

30 Series



Top Dimension - Inches
Bottom Dimensions
(In Parenthesis) = Millimeters



30 Series Dimensions

A	D	C	D	E	F	F	H	I	J	K	L
8.40 (213.4)	1.34 (34.0)	2.50 (63.5)	2.20 (55.9)	1.37 (34.8)	2.75 (69.9)	3.58 (90.9)	1.35 (34.3)	1.00 (25.4)	2.00 (50.8)	1.05 (26.7)	.36 (9.1)