

Features

Breather Vents

- Use on valves and single acting cylinders to prevent dirt from entering ports open to atmosphere. Other uses are for vacuum relief or pressure equalization on gear boxes, reservoirs and air tanks.
- 40 micron filtration. Selection based on thread size.
- Nickel plated steel body.



20311-X

Muffler

- Use on valve exhaust ports.
- Sintered bronze construction. Air muffler and exhaust diffuser.
- 40 micron nominal filtration; sound deadening qualities with low pressure drop.
- Nickel plated steel body.



20312-X

Speed Controls

- Controls air flow on exhaust ports of air valves.
- Change cylinder operating speed by adjusting screw. Secure with lock nut.



20313-X

Silencer

- Reduces noise of air powered motors and valves.
- For high SCFM applications. High flow, low back pressure with no build up.
- 300 PSI Max.



20308-X

Ordering

Breather Vents

| Model Number | Port Size | Length In. (mm) | Hex |
|--------------|-----------|-----------------|--------|
| 20311-1 | 1/8" | 7/16 (11.1) | 7/16 |
| 20311-2 | 1/4" | 5/8 (15.9) | 9/16 |
| 20311-3 | 3/8" | 3/4 (19.1) | 11/16 |
| 20311-4 | 1/2" | 7/8 (22.2) | 7/8 |
| 20311-6 | 3/4" | 1 (25.4) | 1-1/16 |
| 20311-8 | 1" | 1-5/16 (33.3) | 1-5/16 |

Speed Controls

| Model Number | Port Size | Length Closed | Length Open In. (mm) |
|--------------|-----------|---------------|----------------------|
| 20313-1 | 1/8" | 1 3/8 (34.9) | 2 (50.8) |
| 20313-2 | 1/4" | 1 9/16 (39.7) | 2 3/16 (55.6) |
| 20313-3 | 3/8" | 1 7/8 (47.6) | 2 13/16 (71.4) |
| 20313-4 | 1/2" | 2 1/4 (57.2) | 3 5/16 (84.1) |
| 20313-6 | 3/4" | 2 3/4 (69.9) | 3 13/16 (96.8) |
| 20313-8 | 1" | 3 1/4 (82.6) | 4 5/8 (117.5) |

Muffler

| Model Number | Port Size | Length In. (mm) | Hex |
|--------------|-----------|-----------------|--------|
| 116464 | 10-32 | 23/32 (18.2) | 5/16 |
| 20312-1 | 1/8" | 1 1/8 (28.6) | 7/16 |
| 20312-2 | 1/4" | 1 3/8 (34.9) | 9/16 |
| 20312-3 | 3/8" | 1 1/2 (38.1) | 11/16 |
| 20312-4 | 1/2" | 1 7/8 (47.6) | 7/8 |
| 20312-6 | 3/4" | 2 1/4 (57.2) | 11/16 |
| 20312-8 | 1" | 1 7/8 (73.0) | 1 5/16 |

Silencer

| Model | Ports | Diameter | Length |
|---------|-------|----------|--------|
| 20308-1 | 1/8" | 13/16 | 2-1/8 |
| 20308-2 | 1/4" | 13/16 | 2-1/4 |
| 20308-3 | 3/8" | 1-1/4 | 3-7/16 |
| 20308-4 | 1/2" | 1-1/4 | 3-9/16 |
| 20308-6 | 3/4" | 2 | 5-3/8 |
| 20308-8 | 1" | 2 | 5-1/2 |

Features

3-Way Sleeve Valve

- Provides low-cost on-off control of single-acting spring return cylinders.
- Use in both ports of double-acting cylinders to isolate from circuit.



600-X

Ordering

3-Way Sleeve Valve

Max. Press: 200 PSI (13.8 bar)
 Temp Range: -25° - 200°F (-32° - 93°C)

| Model Number | Port Size | 10 PSI Pressure Drop (SCFM) | |
|--------------|-----------|-----------------------------|--------|
| | | 100 PSI | 80 PSI |
| 600-1 | 1/8" | 16 | 14.5 |
| 600-2 | 1/4" | 40 | 36 |
| 600-3 | 3/8" | 65 | 59 |
| 600-4 | 1/2" | 140 | 127 |

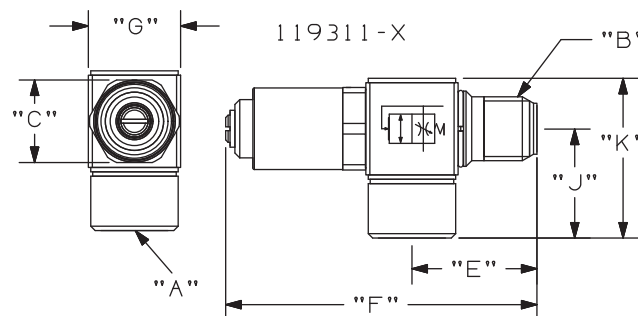
Soft Start Valve Fittings

- Mount directly into cylinder ports
- Male on one end; female on the other
- Screwdriver adjustment
- Working pressure up to 200 psi
- Prevents air surge and slamming of the piston rod into other equipment



119311-500

| Model # | Size (In.) |
|------------|-------------|
| 119311-125 | 1/8x1/8 NPT |
| 119311-250 | 1/4x1/4 NPT |
| 119311-375 | 3/8x3/8 NPT |
| 119311-500 | 1/2x1/2 NPT |



Dimensional Data

Dimensions given in Inches and (Millimeters)

| Port Size A & B | C | E | F | G | J | K |
|-----------------|------------|--------------|--------------|------------|--------------|--------------|
| 1/8 NPTF | .512 (13) | .780 (19.8) | 2.217 (56.3) | .591 (15) | .728 (18.5) | 1.051 (26.7) |
| 1/4 NTPF | .669 (17) | 1.016 (25.8) | 2.472 (62.8) | .748 (19) | .886 (22.5) | 1.295 (32.9) |
| 3/8 NTPF | .866 (22) | 1.142 (29) | 2.693 (68.4) | .906 (23) | 1.122 (28.5) | 1.614 (41) |
| 1/2 NTPF | 1.063 (27) | 1.417 (36) | 2.870 (72.9) | 1.102 (28) | 1.220 (31) | 1.823 (46.3) |

Features

- 360° swivel eases tube alignment. Preapplied thread sealant eliminates Teflon taping.
- Choose threaded or instant tube fitting inlets; slotted or knob flow adjustment.
- Sturdy components include nickel-plated brass body, black anodized aluminum swivel, Buna-N seals and a stainless steel spring.
- Ready for installation on all ARO and competitive cylinders.
- Consult factory for BSP size models.

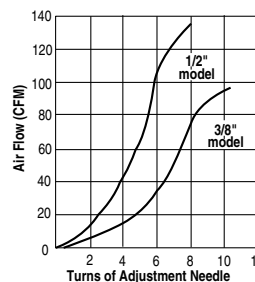
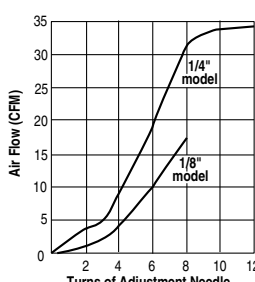
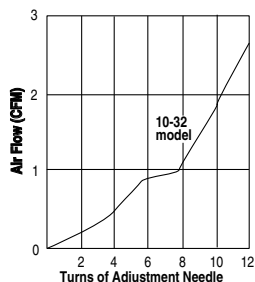


Ordering

| SLOTTED ADJUST | | | | KNOB ADJUST | | | |
|-------------------|-----------------|--------------------|---------------|-------------------|-----------------|--------------------|---------------|
| 119307-XXX | | 119309-XXX | | 119308-XXX | | 119310-XXX | |
| Male x Female thd | | Male thd x fitting | | Male x Female thd | | Male thd x fitting | |
| Description | | Description | | Description | | Description | |
| XXX | Male x Female | xxx | Male x Tubing | xxx | Male x Female | XXX | Male x Tubing |
| 103 | 10-32x10-32 | 103 | 10-32 x 5/32" | 125 | 1/8" x 1/8" NPT | 120 | 1/8" x 5/32" |
| 125 | 1/8" x 1/8" NPT | 120 | 1/8" x 5/32" | 250 | 1/4" x 1/4" NPT | 125 | 1/8" x 1/4" |
| 250 | 1/4" x 1/4" NPT | 125 | 1/8" x 1/4" | 375 | 3/8" x 3/8" NPT | 250 | 1/4" x 1/4" |
| 375 | 3/8" x 3/8" NPT | 250 | 1/4" x 1/4" | 500 | 1/2" x 1/2" NPT | 255 | 1/4" x 3/8" |
| 500 | 1/2" x 1/2" NPT | 255 | 1/4" x 3/8" | | | 375 | 3/8" x 3/8" |
| | | 375 | 3/8" x 3/8" | | | | |

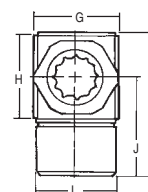
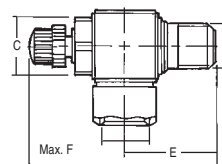
Performance Specifications

Operating Pressure: 15-150 PSI (1-10 bar)
 Operating Temperature: -32°F - 158°F

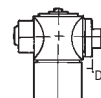
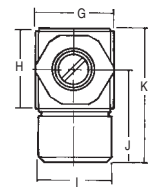
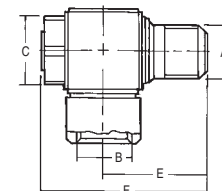


Dimensional Data

KNOB ADJUST



SLOTTED ADJUST

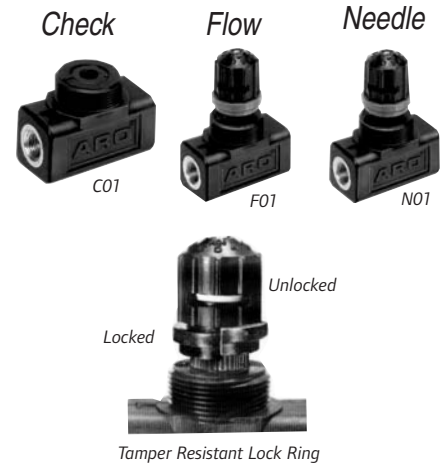


| | PORT SIZE "A" & "B" | "C" inches (mm) | "D" inches (mm) | "E" inches (mm) | "F" inches (mm) | "G" inches (mm) | "H" inches (mm) | "I" inches (mm) | "J" inches (mm) | "K" inches (mm) |
|----------------|---------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| SLOTTED ADJUST | 10/32 | 5/16 (8) | 1/8 (3.2) | 27/64 (11) | 53/64 (21) | 27/64 (11) | 11/32 (9) | 7/16 (11) | 37/64 (14.7) | 53/64 (21.1) |
| | 1/8 | 1/2 (13) | 0 | 25/32 (19.8) | 1-17/64 (32) | 19/32 (15) | 19/32 (15) | 33/64 (13) | 47/64 (18.5) | 1-3/64 (26.7) |
| | 1/4 | 43/64 (17) | 0 | 1-1/64 (25.8) | 1-39/64 (41) | 3/4 (19) | 3/4 (19) | 23/32 (18) | 7/8 (22.5) | 1-19/64 (32.9) |
| | 3/8 | 7/8 (22) | 0 | 1-9/64 (29) | 1-27/32 (47) | 29/32 (23) | 29/32 (23) | 29/32 (23) | 1-1/8 (28.5) | 1-39/64 (41) |
| | 1/2 | 1-1/16 (27) | 0 | 1-27/64 (36) | 2-9/32 (58) | 1-7/64 (28) | 1-7/64 (28) | 63/64 (25) | 1-7/32 (31) | 1-53/64 (46.3) |
| KNOB ADJUST | 1/8 | 33/64 (13) | 0 | 25/32 (19.8) | 1-7/8 (47.5) | 19/32 (15) | 19/32 (15) | 33/64 (13) | 47/64 (18.5) | 1-3/64 (26.7) |
| | 1/4 | 43/64 (17) | 0 | 1-1/64 (25.8) | 2-9/32 (58) | 3/4 (19) | 3/4 (19) | 45/64 (18) | 57/64 (22.5) | 1-19/64 (32.9) |
| | 3/8 | 7/8 (22) | 0 | 1-9/64 (29) | 2-37/64 (65.5) | 29/32 (23) | 29/32 (23) | 29/32 (23) | 1-1/8 (28.5) | 1-39/64 (41) |
| | 1/2 | 1-1/16 (27) | 0 | 1-27/64 (36) | 3-5/32 (80) | 1-7/64 (28) | 1-7/64 (28) | 63/64 (25) | 1-7/32 (31) | 1-53/64 (46.3) |

Features

In-Line, Composite

- Four Stage, tapered needle design provides infinite control settings.
- Composite body is tough and corrosion resistant.
- Color-coded micrometer & calibrated adjustment knob provide instant reference points for repeat settings. Press red locking ring down prevents adjustment. Tamper resistant wire supplied in package.
- Units are threaded for easy remote panel mounting. Order panel nuts below.
- Needle Valve is available with stainless steel needle & inserts. Order 104104-NS2.



Ordering

| 104104 - X XX | | Port Size | | Panel Mounting Nuts | | Port Size | |
|---------------|--------------|-----------|-------------|---------------------|--------------------------------------------------|-----------|-------------------|
| Code | Description | Code | Description | Code | Description | | |
| C | Check Valve | 01 | 1/8-27 NPTF | 04 | 1/2-14 NPTF | 104096 | 1/8" & 1/4" |
| F | Flow Control | 02 | 1/4-18 NPTF | 06 | 3/4-14 NPTF | 104094 | 3/8", 1/2" & 3/4" |
| N | Needle Valve | 03 | 3/8-18 NPTF | * S2 | 1/4-18 NPTF Stainless Steel inserts & stem | | |

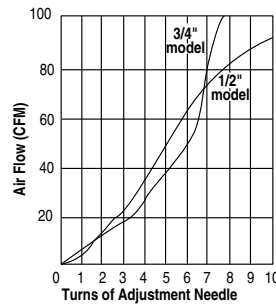
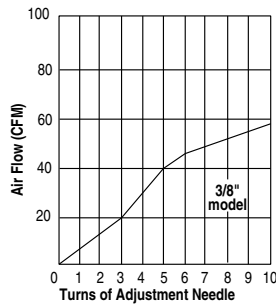
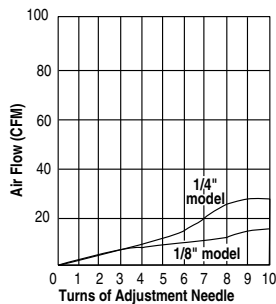
* Available on needle valve only.

Performance Specifications

Operating Pressure:
200 PSI (13.8 bar)

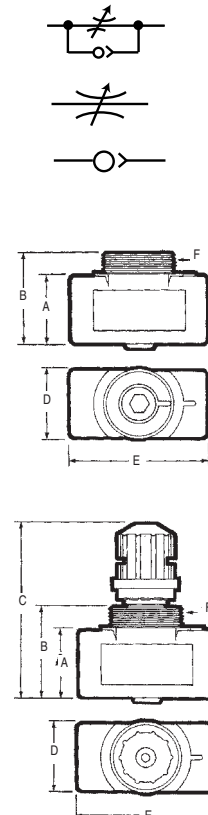
Operating Temperature:
0° - 200°F (-18° - 93°C)

Flow:
100 PSI Inlet



| MODEL | PORT* NPT(F) | A inches (mm) | B inches (mm) | C inches Min. Max. | D inches (mm) | E inches (mm) | F inches (mm) |
|-----------|-----------------|---------------------|---------------------|--------------------------------------|---------------------|---------------------|----------------------|
| 01 | 1/8-27 | 15/16 (23.8) | 1-11/32 (34.1) | 2-33/64 (63.9) 2-53/64 (71.6) | 15/16 (23.8) | 1-29/32 (48.4) | 1-20 UNEF-2A |
| 02 | 1/4-18 | 15/16 (23.8) | 1-11/32 (34.1) | 2-33/64 (63.9) 2-53/64 (71.6) | 15/16 (23.8) | 1-29/32 (48.4) | 1-20 UNEF-2A |
| 03 | 3/8-18 | 1-5/16 (33.3) | 1-11/16 (42.9) | 3-23/64 (85.3) 3-55/64 (97.8) | 1-5/16 (33.3) | 2-27/32 (72.2) | 1-3/16-18 UNEF-2A |
| 04 | 1/2-14 | 1-5/16 (33.3) | 1-11/16 (42.9) | 3-23/64 (85.3) 3-55/64 (97.8) | 1-5/16 (33.3) | 2-27/32 (72.2) | 1-3/16-18 UNEF-2A |
| 06 | 3/4-14 | 1-9/16 (39.7) | 2 (50.8) | 3-43/64 (93.3) 4-11/64 (105.7) | 1-9/16 (39.7) | 3 (76.2) | 1-3/16-18 UNEF-2A |

Dimensional Data



Features

In-Line, Brass

CPXX-B Check Valve

FXX-BK Flow Control

NXX-BK Needle Valve

- High Pressure (up to 2000 PSI) flow control for either pneumatic or hydraulic applications.
- Heavy-duty brass construction provides good corrosion resistance.
- Valve bodies, needle housings, locknuts & plugs are machined from brass stock.

• Cracking Pressure

CP10 - 1-1/2 PSI
CP30 - 3 PSI

CP20 - 1-1/2 PSI
CP35 - 4 PSI

CP25 - 2 PSI



Ordering

In-Line, Brass

Replace the "XX" with valve number corresponding to port size desired.

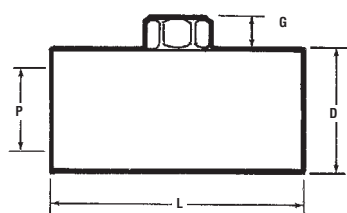
Example: F10-BK
Flow Control Valve
1/8" Ports

| MODEL | VALVE NO. (XX) | NPTF PORT | P D HEX | E | L | G |
|---------------|----------------|-----------|---------|-------|---------|-------|
| | 10 | 1/8 | 11/16 | 1-1/4 | 1-1/2 | 9/32 |
| FXX-BK | 20 | 1/4 | 7/8 | 1-1/4 | 2 | 5/16 |
| NXX-BK | 25 | 3/8 | 1-1/16 | 1-3/8 | 2-1/4 | 11/32 |
| CPXX-B | 30 | 1/2 | 1-5/16 | 1-3/8 | 2-21/32 | 3/8 |
| | 35 | 3/4 | 1-5/8 | 1-7/8 | 3 | 15/32 |

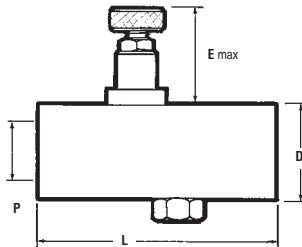
CP35-B Not available.

Dimensional Data

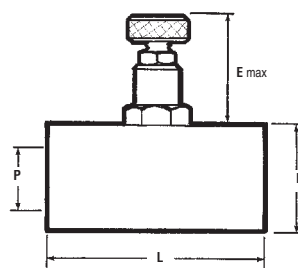
In-Line, Brass



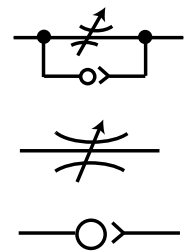
CPXX-B



FXX-BK



NXX-BK



Features

Coils

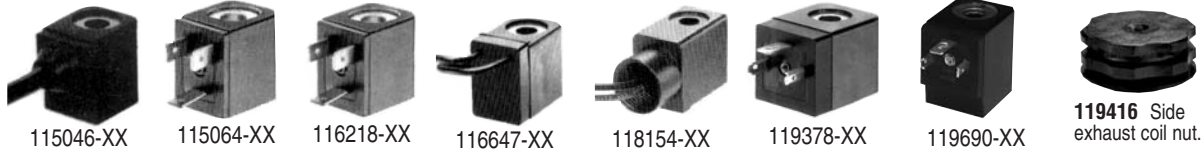
- Coils are Class F rated for 100% duty cycle (311°F/155°C) applications.
- AC and DC coils are interchangeable on the same solenoid stem.
- Low “inrush” and “holding” current keeps heat rise to a minimum. This maximizes coil life and reduces power consumption.

Code / Voltage

-31 = 12V AC
 -33 = 120V AC
 -35 = 240V AC
 -37 = 5V DC

Code / Voltage

-38 = 24V AC or
 12V DC
 (22mm Coils only)
 -39 = 24V DC



Connectors

- Protect electrical connections from humidity and moisture. Meet NEMA 4 classifications
- Each is it's own junction box, eliminating need to wire solenoid to another box.

Hazardous Location Coil

Coils are CSA certified and meet the requirements for use in hazardous locations.
 Environmental Code: Division 1, Class I, II, III, Group A-G
 FM Certification: 3006713
 Electrical Entry: 1/2" - 14 NPT-1 w/24" Lead Wires
 Class “H” rated, 100% duty cycle
 Available in 120V AC & 24V DC only



Ordering

Coils

(Replace XX on model number with coil voltage required.)

- 115046-XX Cable Coil (NEMA 4, 22mm)**
 10' AWG UL-listed elastomer cable. No solenoid connector needed.
- 115064-XX Low Watt Coil (DC only) (NEMA 4, 22mm)**
 Low DIN coil. DC only, for use with 3-prong connectors. 5, 12 and 24V DC only. Used only on valves ordered as low wattage.
- 116218-XX Standard Coil CSA & UL-listed (NEMA 4, 22mm)**
 AC or DC DIN coil for use with 3-prong connectors.
- 116647-XX Coil with Molded Leads CSA & UL-listed (NEMA 4, 22mm)**
 AC or DC lead wire coil with 18" molded leads. No solenoid connector needed.
- 118154-XX 1/2" Conduit (NEMA 4, 22mm)**
 1/2" Conduit coil connects directly to metal housing on the coil. Coil has 18" long 18-gauge heavy-duty wire. Available in -33 and -39 voltage only.
- *119378-XX Oversize (NEMA 4, 30mm)**
 AC or DC DIN coil for use with solenoid connector. Available in -33, -38 and -39 voltage only. For Alpha, E, K, H, Genesis, and 1/8" Cat Valves. (not for HF Cat)
- *119690-XX Oversize (NEMA 4, 30 mm)**
 High Flow Cat Valve and 2-way Valve coil. Available in -32, -33, -35, -37, -38 and -39 voltages

Connectors

22-mm Connectors:

(Replace XXX with voltage and type from chart below)

- CHW** Straight connector with cable (36" located on top.
- CBW** Straight connector with cable (36" located on back.
- CHL-XXX** Straight connector (36") with indicator light located on back.
- CSN** Strain Relief, without indicator light or cable.
- CSL-XXX** Strain Relief with indicator light located on back.
- CDN** 1/2" Conduit without lights or lead wires.
- CDW** 1/2" Conduit without lights, 18" lead wires.
- CDL-XXX** 1/2" Conduit with light and 18" lead wires.

30-mm Connectors:

Use with High Flow Cat and intrinsically safe Genesis Valves

- CDW-30** Connector with wire.
- CSN-30** Connector, strain relief.
- CHW-30** Connector, molded cable.

Voltage (-XXX)

005 = 5V DC
012 = 12V AC/DC
024 = 24V AC/DC
120 = 120V AC
240 = 240V AC/DC

* **NOTE:** -38 option is 12 VDC only on 30mm coils. 24 VAC is not available
 See Page 80 for Voltage Operating Ranges and Voltage Ratings.

Performance Specifications

Coils

Voltage Operating Ranges

| Coil Voltage Ratings | Operating Range ±10% | |
|----------------------|----------------------|---------|
| | AC | DC |
| 5 | -- | 4.5-5.5 |
| 2 | 11-13 | 11-13 |
| 24 | 22-26 | 22-26 |
| 120 | 108-132 | 108-132 |
| 240 | 216-264 | -- |
| 380 | 342-418 | -- |

| 22 mm Coil | Current (Amps) | Watts |
|--------------|----------------|-------|
| 5 DC | 0.97 | 4.9 |
| 12 DC | 0.38 | 4.8 |
| 24 DC | 0.20 | 4.8 |
| 120 DC | 0.04 | 4.8 |
| 5, 12, 24 DC | .05 | 1.1 |

| 30 mm Coil | Current (Amps) | Watts |
|------------|------------------|-------|
| 12 DC | 0-.62 | 15 |
| 24 DC | 0.62 | 15 |
| 24 DC | (Hazardous Duty) | 5 |

22 mm Coil Voltage Ratings

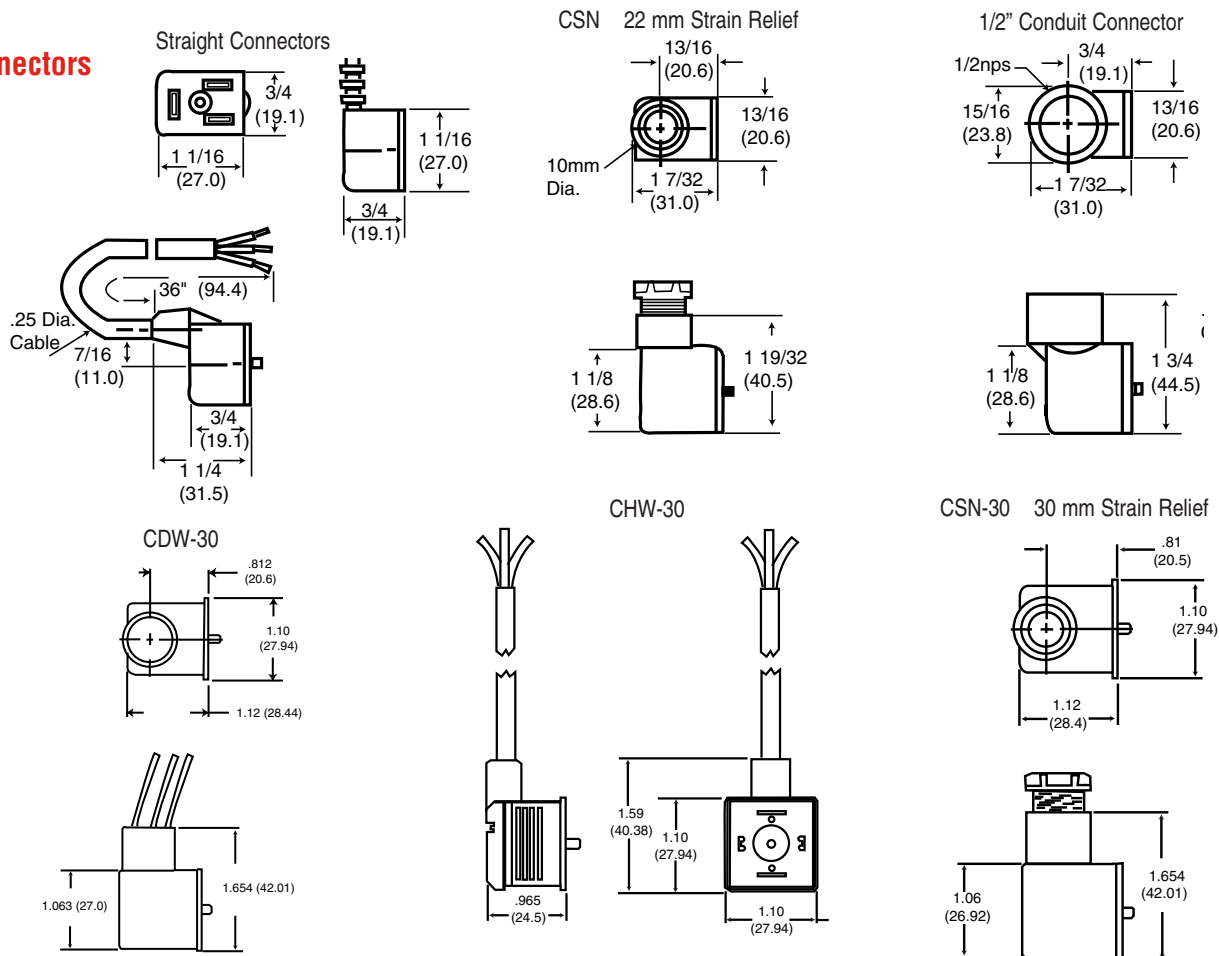
| Coil Voltage Rating | 50/60 Hz Current (Amps) | | 50/60 Hz Volt-Amps, Holding | |
|---------------------|-------------------------|-----------|-----------------------------|---------|
| | Inrush | Holding | Inrush | Holding |
| 12AC | .70/.63 | .50/.42 | 8.4/7.5 | 6.0/5.0 |
| 24AC | .46/.40 | .36/.27 | 11.0/9.4 | 8.4/6.5 |
| 120AC | .09/.08 | .07/.05 | 11.0/9.4 | 8.4/6.5 |
| 240AC | .05/.04 | .04/.03 | 11.0/9.4 | 8.4/6.5 |
| 380AC | .03/.026 | .024/.019 | 11.4/9.9 | 9.1/6.9 |

30 mm Coil Voltage Ratings

| Coil Voltage Rating | 50/60 Hz Current (Amps) | | 50/60 Hz Volt-Amps, Holding | |
|---------------------|-------------------------|---------|-----------------------------|---------|
| | Inrush | Holding | Inrush | Holding |
| 24AC | -- | -- | 23 | 20 |
| 120AC | -- | -- | 23 | 20 |
| 120AC | (Hazardous Duty) | | 11.5 | 8.5 |

Dimensional Data

Connectors



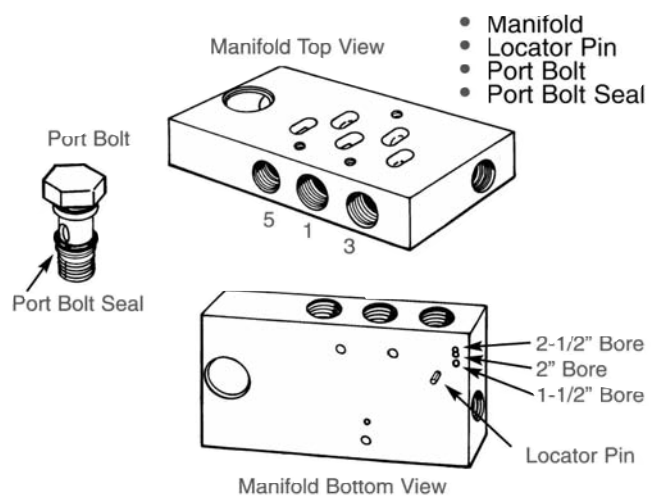
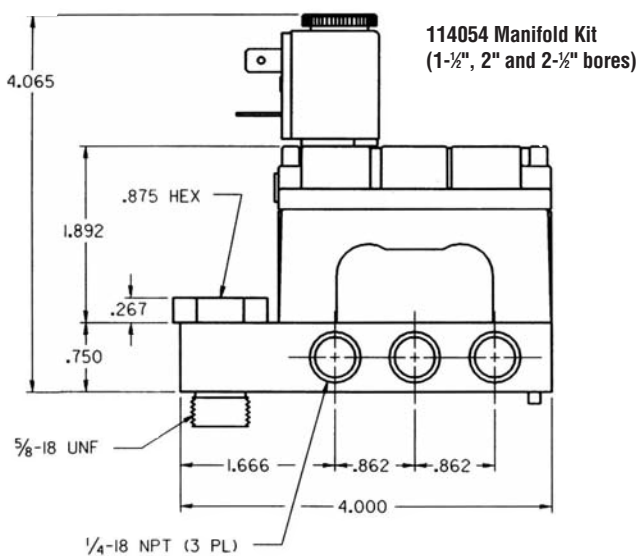
Features

Valve/Cylinder Manifold

- Mount any Alpha subbase valve to any NFPA cylinder
- Obtain maximum cylinder response and speeds
- Provides “clean” valve mounting method
- Mounts at cap or head end of cylinder
- Operates any NFPA Cylinder up to 2-1/2" bore
- Any stroke length (Minimum 3")



Dimensional Data



Ordering

Alpha Valves

| Valve Model | Kit Number |
|----------------------------------------------------|------------|
| All 2-Position, Spring Return, Urethane | 118597-2 |
| All 2-Position, Pilot or Solenoid Return, Urethane | 118597-12 |
| All 2-Position, Spring Return, Viton | 118598-4 |
| All 2-Position, Pilot or Solenoid Return, Viton | 118598-14 |
| 3-Position, Closed, Urethane | 118597-3 |
| 3-Position, Open, Urethane | 118597-7 |
| 3-Position, Closed, Viton | 118598-8 |
| 3-Position, Open, Viton | 118598-9 |

Genesis Valves

GXXX XX - XXX - X

| Plug-On Valves | | | Plug-In Valves | | |
|----------------|-------------|------------|----------------|-------------|------------|
| Code | Rebuild Kit | Gasket Kit | Code | Rebuild Kit | Gasket Kit |
| GN12 | 118820-3 | 118824 | GP12 | 118820-1 | 118823 |
| GN13 | 118822-3 | 118824 | GP13 | 118822-1 | 118823 |
| GN14 | 118820-4 | 118824 | GP14 | 118820-2 | 118823 |
| GN17 | 118821-3 | 118824 | GP17 | 118821-1 | 118823 |
| GN18 | 118822-4 | 118824 | GP18 | 118822-2 | 118823 |
| GN19 | 118821-4 | 118824 | GP19 | 118821-2 | 118823 |

Rebuild Kit selection is determined by the first four model numbers. [GX1X]
XX-XXX-X (The positions within the brackets)

MaxAir Valves

| Model | Repair Kit |
|--------------|------------|
| M212LM | RKM212-LM |
| M212LS | RKM212-LS |
| M212PD | RKM212-PD |
| M212PS | RKM212-PS |
| M212SD-XXX-X | RKM212-SD |
| M212SS-XXX-X | RKM212-SS |
| M213LM | RKM213-LM |
| M213LS | RKM213-LS |
| M213PD | RKM213-PD |
| M213PS | RKM213-PS |
| M213SD-XXX-X | RKM213-SD |
| M213SS-XXX-X | RKM213-SS |
| M214-PD | RKM214-PD |
| M214PS | RKM214-PS |
| M214SD-XXX-X | RKM214-SD |
| M214SS-XXX-X | RKM214-SS |
| M2X2FS | 114645 |
| M2X2TM | 114645 |
| M312PD | RKM312-PD |
| M312SD-XXX-X | RKM312-SD |
| M313PD | RKM313-PD |
| M313SD-XXX-X | RKM313-SD |
| M314PD | RKM314-PD |
| M314SD-XXX-X | RKM314-SD |

Sierra Valves

| Model Number | Repair Kit |
|---------------------|------------|
| All Sierra Model 15 | MQ3620 |
| M812SS-XXX-X | RKM812-SS |
| M812SD-XXX-X | RKM812-SD |
| M813SD-XXX-X | RKM813-SD |

50-Series Valves

| Model Number | Repair Kit |
|--------------|------------|
| All Models | 7000 |

Genesis Pressure Regulators

| Model | Rebuild Kit | Press Adj. Kit |
|-----------|-------------|----------------|
| 118573-X2 | 119213 | 119212-30 |
| 118573-X3 | 119213 | 119212-60 |
| 118573-X4 | 119213 | 119212-120 |

E-Series Valves

| Model | Repair Kit | Model | Repair Kit | Model | Repair Kit | Model | Repair Kit | Model | Repair Kit |
|--------|------------|--------------|------------|--------------|------------|--------------|------------|--------------------------|------------|
| E112HM | 116772 | E212JD | 116702 | E252BD | 116773 | E252LP | 116772 | E712LS | 116773 |
| E112LM | 116772 | E212KD-XXX-X | 116702 | E252BS | 116772 | E252LS | 116772 | E312SD-XXX | 116773 |
| E112PD | 116773 | E212KS-XXX-X | 116702 | E252CA | 116772 | E252PA | 116772 | E512LM | 116772 |
| E152HM | 116772 | E212LA | 116772 | E252CS | 116772 | E252PD | 116773 | E612LM | 116772 |
| E152LM | 116772 | E212LM | 116772 | E252CP | 116772 | E252PE | 116772 | E712SD-XXX-X | 116773 |
| E152PD | 116773 | E212LP | 116772 | E252FA | 116772 | E252PS | 116772 | Solenoid Operator | |
| E212BS | 116772 | E212LS | 116772 | E252FP | 116772 | E252RA | 116772 | E212KD-XXX-X | 116575 |
| E212BD | 116773 | E212PA | 116772 | E252FS | 116772 | E252RP | 116772 | E212KS-XXX-X | 116573 |
| E212CA | 116772 | E212PD | 116773 | E252GA | 116772 | E252RS | 116772 | E212SA-XXX-X | 116573 |
| E212CS | 116772 | E212PE | 116772 | E252GS | 116772 | E252SA-XXX-X | 116772 | E212SP-XXX-X | 116573 |
| E212CP | 116772 | E212PS | 116772 | E252HA | 116772 | E252SN-XXX-X | 116772 | E212SD-XXX-X | 116575 |
| E212FA | 116772 | E212RA | 116772 | E252HM | 116772 | E252SP-XXX-X | 116773 | E212SS-XXX-X | 116573 |
| E212FP | 116772 | E212RP | 116772 | E252HP | 116772 | E252SS-XXX-X | 116772 | E252KS-XXX-X | 116573 |
| E212FS | 116772 | E212RS | 116772 | E252HS | 116772 | E252TM | 116772 | E252SA-XXX-X | 116573 |
| E212HA | 116772 | E212SA-XXX-X | 116772 | E252JS | 116702 | E252UA | 116772 | E252SN-XXX-X | 116573 |
| E212HM | 116772 | E212SD-XXX-X | 116773 | E252JD | 116702 | E252US | 116772 | E252SP-XXX-X | 116573 |
| E212HP | 116772 | E212SP-XXX-X | 116773 | E252KS-XXX-X | 116702 | E312LS | 116773 | E252SS-XXX-X | 116573 |
| E212HS | 116772 | E212SS-XXX-X | 116772 | E252LA | 116772 | E312PD | 116773 | E312SD-XXX-X | 116575 |
| E212JS | 116702 | E212TM | 116772 | E252LM | 116772 | E312TS | 116773 | E712SD-XXX-X | 116575 |

Ordering

H-Series

| Model | Repair Kit | Model | Repair Kit | Model | Repair Kit | Model | Repair Kit |
|--------------|------------|--------------|------------|--------------|------------|--------------------------|------------|
| H212BD | 7103 | H214PD | 7103 | H243SD-XXX-X | 7103 | SOLENOID OPERATOR | |
| H212PA | 7103 | H214SA-XXX-X | 7103 | H252PS | 7102 | H212SA-XXX-X | 116572 |
| H212PD | 7103 | H214SD-XXX-X | 7103 | H252SS-XXX-X | 7102 | H212SD-XXX-X | 116574 |
| H212SA-XXX-X | 7103 | H242BD | 7103 | H253PS | 7102 | H213SA-XXX-X | 116572 |
| H212SD-XXX-X | 7103 | H242PA | 7103 | H253SS-XXX-X | 7102 | H213SD-XXX-X | 116574 |
| H213BD | 7103 | H242PD | 7103 | H254PS | 7102 | H214SA-XXX-X | 116572 |
| H213PA | 7103 | H242SA-XXX-X | 7103 | H254SS-XXX-X | 7102 | H214SD-XXX-X | 116574 |
| H213PD | 7103 | H242SD-XXX-X | 7103 | H282PS | 7102 | H242SA-XXX-X | 116572 |
| H213SA-XXX-X | 7103 | H243BD | 7103 | H282SS-XXX-X | 7102 | H242SD-XXX-X | 116574 |
| H213SD-XXX-X | 7103 | H243PA | 7103 | H283PS | 7102 | H243SA-XXX-X | 116572 |
| H214BD | 7103 | H243PD | 7103 | H283SS-XXX-X | 7102 | H243SD-XXX-X | 116574 |
| H214PA | 7103 | H243SA-XXX-X | 7103 | - | - | H252SS-XXX-X | 116572 |
| | | | | | | H253SS-XXX-X | 116572 |
| | | | | | | H254SS-XXX-X | 116572 |
| | | | | | | H282SS-XXX-X | 116572 |

K-Series

| Model | Repair Kit | Model | Repair Kit | Model | Repair Kit | Model | Repair Kit | Model | Repair Kit | Model | Repair Kit |
|--------------|------------|--------------|------------|--------------|------------|--------------|------------|--------------------------|------------|--------------------------------|------------|
| K213BS | 7006 | K233PD | 7006 | K244BD | 7006 | K314BD | 7006 | K713SD-XXX-X | 7006 | SOLENOID OPERATOR CONT. | |
| K213FP | 7006 | K233PS | 7006 | K244BS | 7006 | K334TS | 7006 | K713TS | 7006 | K234SD-XXX-X | 116578 |
| K213FS | 7006 | K233RS | 7008 | K244FP | 7006 | K336PD | 7010 | K714LS | 7006 | K234SS-XXX-X | 116578 |
| K213HS | 7006 | K233SD-XXX-X | 7006 | K244FS | 7006 | K336SD-XXX-X | 7010 | K714PD | 7006 | K236SD-XXX-X | 116579 |
| K213LM | 7006 | K233SS-XXX-X | 7006 | K244LM | 7006 | K338PD | 7010 | K714SD-XXX-X | 7006 | K236SS-XXX-X | 116579 |
| K213LS | 7006 | K233TM | 7006 | K244LS | 7006 | K338SD-XXX-X | 7010 | K714TS | 7006 | K238SD-XXX-X | 116579 |
| K213PD | 7006 | K234BD | 7006 | K244PD | 7006 | K343LS | 7006 | K716PD | 7010 | K238SS-XXX-X | 116579 |
| K213PS | 7006 | K234BS | 7006 | K244PS | 7006 | K343PD | 7006 | K716SD-XXX-X | 7010 | K243SD-XXX-X | 116578 |
| K213RS | 7008 | K234FP | 7006 | K244RS | 7008 | K343SD-XXX-X | 7006 | K718PD | 7010 | K243SS-XXX-X | 116578 |
| K213SD-XXX-X | 7006 | K234FS | 7006 | K244SD-XXX-X | 7006 | K343TS | 7006 | K718SD-XXX-X | 7010 | K244SD-XXX-X | 116578 |
| K213SS-XXX-X | 7006 | K234LM | 7006 | K244SS-XXX-X | 7006 | K344LS | 7006 | K733PD | 7006 | K244SS-XXX-X | 116578 |
| K213TM | 7006 | K234LS | 7006 | K244TM | 7006 | K344PD | 7006 | K733LS | 7006 | K246SD-XXX-X | 116579 |
| K214BS | 7006 | K234PD | 7006 | K246BD | 7010 | K344SD-XXX-X | 7006 | K733SD-XXX-X | 7006 | K246SS-XXX-X | 116579 |
| K214BD | 7006 | K234PS | 7006 | K246BS | 7010 | K344TS | 7006 | K733TS | 7006 | K248SD-XXX-X | 116579 |
| K214FP | 7006 | K234RS | 7008 | K246PD | 7010 | K346PD | 7010 | K734PD | 7006 | K248SS-XXX-X | 116579 |
| K214FS | 7006 | K234SD-XXX-X | 7006 | K246PS | 7010 | K346SD-XXX-X | 7010 | K734LS | 7006 | K313SD-XXX-X | 116578 |
| K214LM | 7006 | K234SS-XXX-X | 7006 | K246RS | 7012 | K348PD | 7010 | K734SD-XXX-X | 7006 | K314SD-XXX-X | 116578 |
| K214LS | 7006 | K234TM | 7006 | K246SD-XXX-X | 7010 | K348SD-XXX-X | 7010 | K734TS | 7006 | K316SD-XXX-X | 116579 |
| K214PS | 7006 | K236BD | 7010 | K246SS-XXX-X | 7010 | K513LM | 7007 | K736PD | 7010 | K318SD-XXX-X | 116579 |
| K214PD | 7006 | K236BS | 7010 | K248BD | 7010 | K513TM | 7007 | K736SD-XXX-X | 7010 | K333SD-XXX-X | 116578 |
| K214RS | 7008 | K236PD | 7010 | K248BS | 7010 | K514LM | 7007 | K738PD | 7010 | K334SD-XXX-X | 116578 |
| K214SD-XXX-X | 7006 | K236PS | 7010 | K248PD | 7010 | K514TM | 7007 | K738SD-XXX-X | 7010 | K336SD-XXX-X | 116579 |
| K214SS-XXX-X | 7006 | K236RS | 7012 | K248PS | 7010 | K533LM | 7007 | K743LS | 7006 | K338SD-XXX-X | 116579 |
| K214TM | 7006 | K236SD-XXX-X | 7010 | K248RS | 7012 | K533TM | 7007 | K743SD-XXX-X | 7006 | K343SD-XXX-X | 116578 |
| K216BD | 7010 | K236SS-XXX-X | 7010 | K248SD-XXX-X | 7010 | K534LM | 7007 | K743TS | 7006 | K344SD-XXX-X | 116578 |
| K216BS | 7010 | K238BS | 7010 | K248SS-XXX-X | 7010 | K534TM | 7007 | K744LS | 7006 | K346SD-XXX-X | 116579 |
| K216PD | 7010 | K238BD | 7010 | K313LS | 7006 | K543LM | 7007 | K744PD | 7006 | K348SD-XXX-X | 116579 |
| K216PS | 7010 | K238PD | 7010 | K313PD | 7006 | K543TM | 7007 | K744SD-XXX-X | 7006 | K713SD-XXX-X | 116578 |
| K216RS | 7012 | K238PS | 7010 | K313TS | 7006 | K544LM | 7007 | K744TS | 7006 | K714SD-XXX-X | 116578 |
| K216SD-XXX-X | 7010 | K238RS | 7012 | K314LS | 7006 | K544TM | 7007 | K746PD | 7010 | K716SD-XXX-X | 116579 |
| K216SS-XXX-X | 7010 | K238SD-XXX-X | 7010 | K314PD | 7006 | K613LM | 7007 | K746SD-XXX-X | 7010 | K718SD-XXX-X | 116579 |
| K218BD | 7010 | K238SS-XXX-X | 7010 | K314SD-XXX-X | 7006 | K613TM | 7007 | K748PD | 7010 | K733SD-XXX-X | 116578 |
| K218BS | 7010 | K243BD | 7006 | K314TS | 7006 | K614LM | 7007 | K748SD-XXX-X | 7010 | K734SD-XXX-X | 116578 |
| K218PD | 7010 | K243BS | 7006 | K316PD | 7010 | K614TM | 7007 | SOLENOID OPERATOR | | K736SD-XXX-X | 116579 |
| K218PS | 7010 | K243FP | 7006 | K316SD-XXX-X | 7010 | K633LM | 7007 | K213SD-XXX-X | 116578 | K738SD-XXX-X | 116579 |
| K218RS | 7012 | K243FS | 7006 | K318PD | 7010 | K633TM | 7007 | K213SS-XXX-X | 116578 | K743SD-XXX-X | 116578 |
| K218SD-XXX-X | 7010 | K243LM | 7006 | K318SD-XXX-X | 7010 | K634LM | 7007 | K214SD-XXX-X | 116578 | K744SD-XXX-X | 116578 |
| K218SS-XXX-X | 7010 | K243LS | 7006 | K333LS | 7006 | K634TM | 7007 | K214SS-XXX-X | 116578 | K746SD-XXX-X | 116579 |
| K233BD | 7006 | K243PD | 7006 | K333PD | 7006 | K643LM | 7007 | K216SD-XXX-X | 116579 | K748SD-XXX-X | 116579 |
| K233BS | 7006 | K243PS | 7006 | K333SD-XXX-X | 7006 | K643TM | 7007 | K216SS-XXX-X | 116579 | | |
| K233FP | 7006 | K243RS | 7008 | K333TS | 7006 | K644LM | 7007 | K218SD-XXX-X | 116579 | | |
| K233FS | 7006 | K243SD-XXX-X | 7006 | K334LS | 7006 | K644TM | 7007 | K218SS-XXX-X | 116579 | | |
| K233LM | 7006 | K243SS-XXX-X | 7006 | K334PD | 7006 | K713LS | 7006 | K233SD-XXX-X | 116578 | | |
| K233LS | 7006 | K243TM | 7006 | K334SD-XXX-X | 7006 | K713PD | 7006 | K233SS-XXX-X | 116578 | | |

Features

Aro Pneumatic Logic Control Overview

Elements: Elements are miniature diaphragm operated poppet valves designed to perform specific functions. This includes "Or," "And," "Not," plus various "Memory" and "Delay" functions. Elements are designed so response times, shift ratios, flow and exhaust capacities are closely matched and all are compatible in a total system. This compatibility simplifies circuit design.

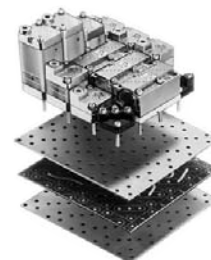
Circuit Board Construction: Aro's patented circuit board construction uses a gasket and two metal plates to create a custom air manifold. Interconnections between the elements are cut into the gasket (module) and sealed between the metal plates. The result is a completely interconnected circuit without tubing or fittings. Two gasket modules are used for more complex circuits. Circuit Boards produce a smaller circuit package at lower cost; increased tamper resistance; and provide a clean, neat assembly.

Function Base Assembly Method: A Function Base can be used when circuits require four or less elements. This consists of a gasket module, a thin metal plate and a porting strip. Interconnections between the elements are cut into the module. The porting strip has 1/8" NPTF ports, eliminating the need for porting blocks. This method can be mounted on any flat surface; it provides a neat, durable assembly; and it increases tamper resistance.

Back Tubulation Construction: This method uses a thin metal plate (base plate) and porting blocks for each element. Each block has built in fittings for 5/32" (4mm) tubing. Element interconnections are made by connecting tubes to these fittings. Back tubulation is often used for "bread boarding" new circuits, air circuit training and if circuits are frequently changed.



Individual Elements



Circuit Board Construction



Function Base Assembly



Back Tubulation

Performance Specifications

Air Supply Preparation

Recommended Filtration: Filter air with a 40 micron filter or better. Additional screens in the base of timing function elements and amplifiers prevent large particles from entering the element.

Recommended Lubrication: None required for individual elements, or for circuits including timing functions or amplifiers.

Moisture: All metal parts are chromate plated to resist corrosion from moisture and many chemicals. A dry air supply is recommended for maximum repeatability of timing and sensing functions.

Operating Air:

Operating Pressure: 30-150 PSI (2-10 bar). Two-hand anti-tie-down devices require 50-125 PSI (3.5-9 bar).

Shift Pressures:

Snap-Acting Elements (And, Not, Inhibitor, S/R -- Mem, Delay and Pulse) shift when the pilot pressure exceeds 70% of the supply. They return when pilot pressure is less than 40% (Inhibitor 5%) of the supply.

Non-Snap-Acting Elements (Or -- Flip-Flop) have a shift pressure of 50% of supply pressure.

Flow & Cv Factors:

Dependent on specific elements and flow paths.
Flow = 9.3-16.2 SCFM, Cv = .14-.28

Identification:

Symbols: Each element has a symbol based on the National Standard for diagramming moving part logic control (attached method).

Port Identification: Letters cast into the cover and base of each element correspond to input and output designations.

Mounting: Elements have 5/8" (15.9mm) bolt extensions. All mounting hardware and seals are provided with each element.

Test Ports: Many elements have 1/8" NPT ports connected to the "C" (output) port. These can be used as optional output ports, or as test ports.

Anticipated Life:

Element Life: APLC elements have proven extremely durable, operating many millions of cycles, or several years, without failure. If needed, repair kits or parts are available for most elements.