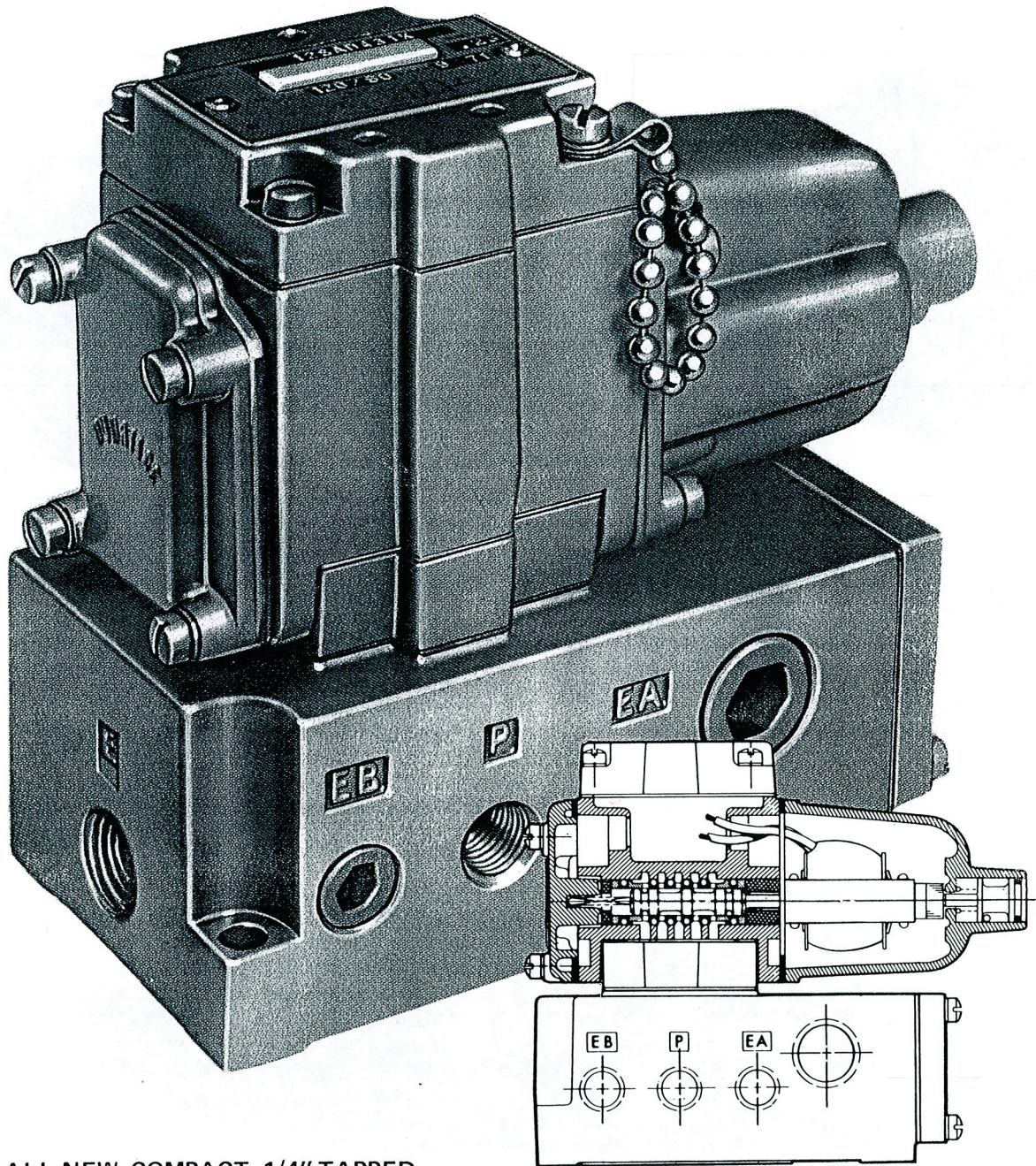


# MARK 10<sup>TM</sup> LINE



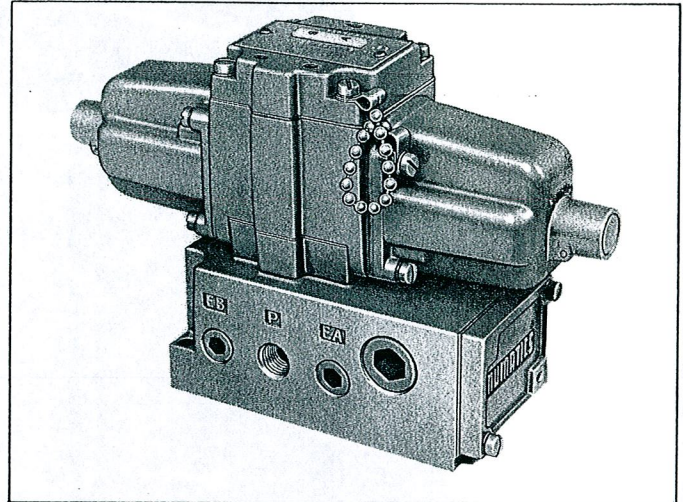
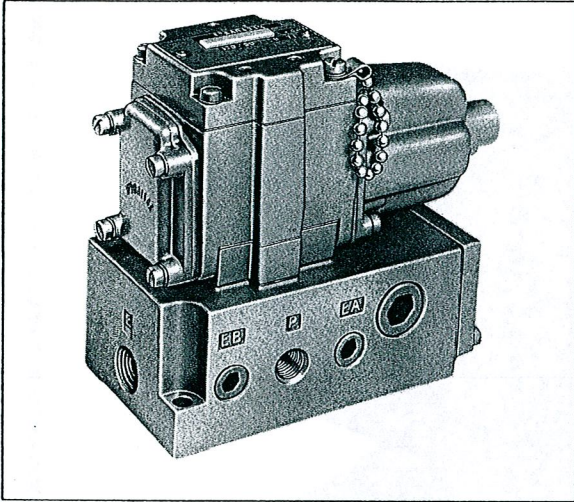
AN ALL-NEW, COMPACT, 1/4" TAPPED,  
DIRECT SOLENOID ACTUATED,  
MULTI-PURPOSE VALVE SERIES

*The air valve people*

**numatics**<sup>®</sup>  
INCORPORATED  
HIGHLAND, MICHIGAN 48031

CATALOG MARK 10 (Rev. 2)

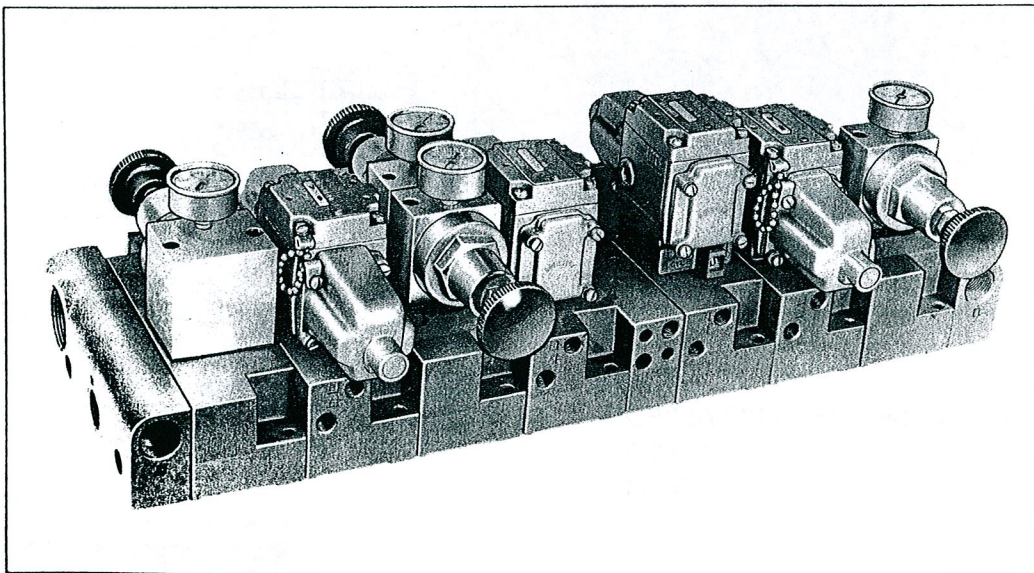
the **MARK 10** LINE



A compact valve which can fill a wide range of air valve applications fills a major gap between miniature and large power air valves.

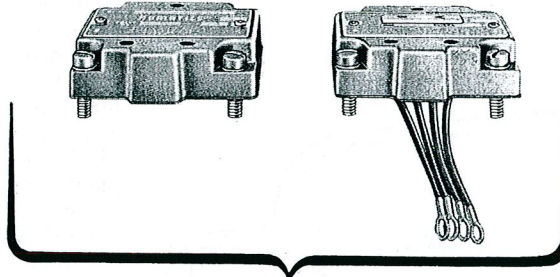
Single and Double Solenoid

- Multi-Purpose Valves (2- and 3-position)
- Reliable, Heavy Duty JIC Construction
- Complete with the famous Numatics patented lapped spool and sleeve
- Optional Splashproof Pilot Light
- Optional Integral Electrical Plug.
- Optional Mounting Means: plug-in type, standard subplate, or FlexiBlok manifolding, including Nupresco pressure controls.

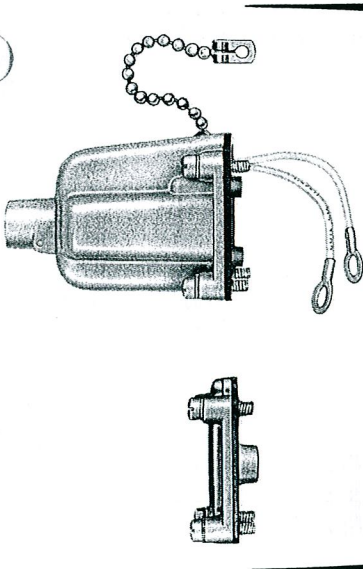


**AN ALL - NEW COMPACT, 1/4" TAPPED, J.I.C.,  
DIRECT SOLENOID , MULTI-PURPOSE VALVE SERIES**

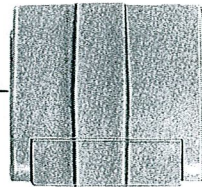
The air valve people  
**numatics®**  
**MK. 10** LINE



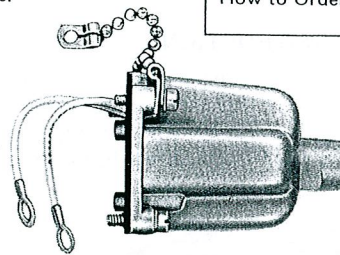
Top-off the valve unit with a splashproof cover assembly with or without light.



MARK 10 Line valves start with a high flow die cast body unit, featuring integral plug-in option. Add either a single solenoid and spring cover, or two solenoids.

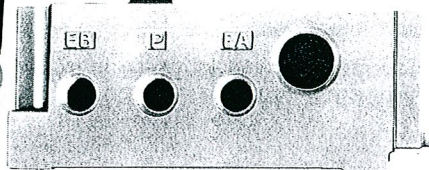


The single "sandwich" adapter affords mounting on all three mounting arrangements.



Speed Control Kit

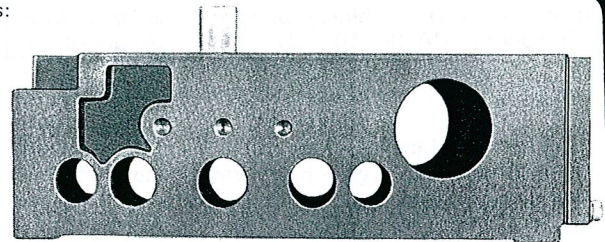
Select from 3 mounting arrangements:



No. 31  
Plug-in base, with or without plug option



No. 41  
Standard base

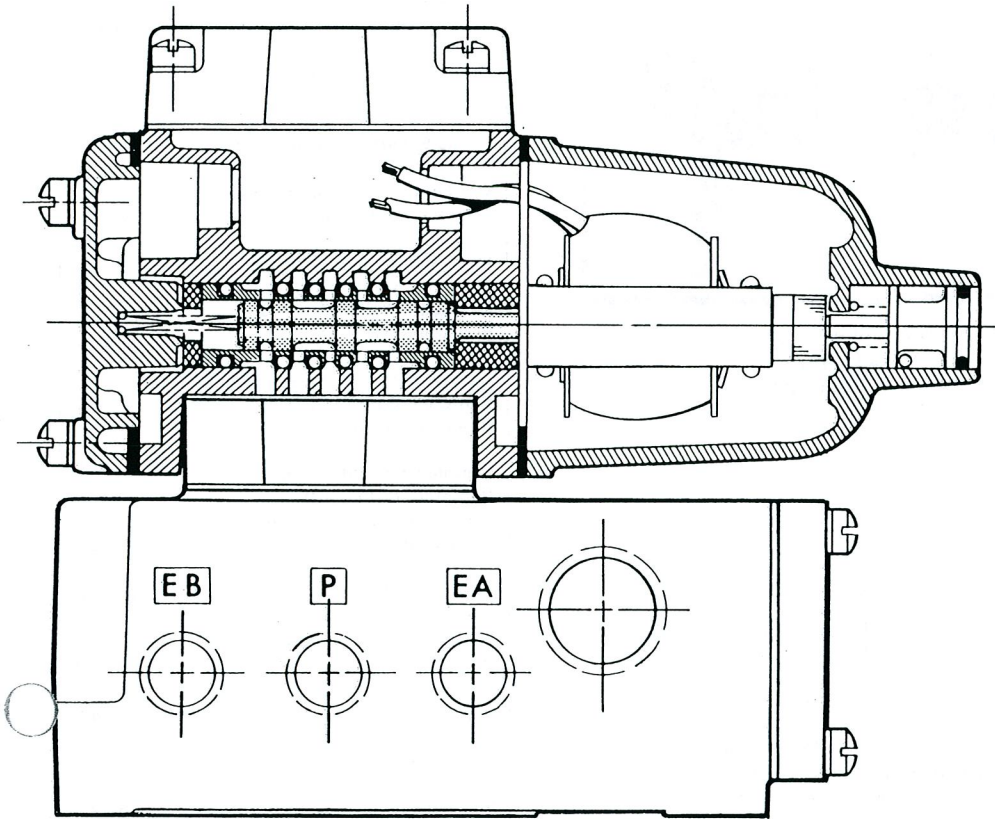


No. 11 - 14  
FlexiBlok manifold, with or without plug option

DESCRIPTION	MK10 PAGE
Basic Valve Components & Construction Features	4 - 5
Single Solenoid, Spring Offset	6 - 7
Double Solenoid, Momentary Contact, Detented	8 - 9
Double Solenoid, Spring Centered, Cylinder Ports Exhausted or Open to Dual Pressure in Neutral	10 - 11
Double Solenoid, Spring Centered, Cylinder Ports Blocked in Neutral	12 - 13
Double Solenoid, Spring Centered, Cylinder Ports Open to Common Supply in Neutral	14 - 15
FlexiBlok Manifolding System	16 - 26
Nupresco Manifold Mounted Pressure Controls	27 - 37
Accessories	38 - 42
Electrical Options	43 - 45
Mechanical Options	46 - 47
How to Order FlexiBlok	Back Cover

# the MARK 10 LINE

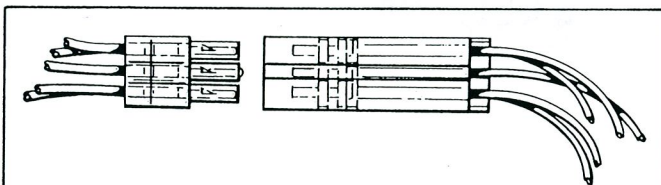
## BASIC VALVE COMPONENTS



Numatics MARK 10 Line air valves are die cast, multi-purpose units, designed to control a wide range of sizes of air cylinders. They fill the gap between miniature and large power air valves. They can be used on a conservative 45% of all air valve applications in a typical plant. The MARK 10 Line is the logical successor to Numatics' famous "SA Junior" series\* which has earned an outstanding reputation in the small valve field since its introduction in 1959. MARK 10 valves are tapped for 1/4" pipe and have a nominal  $C_v$  of 1.0. They are quality air valves, precision built for rugged service, and offer all the advanced design features of larger Numatics valves, including the famous, patented\*\* lapped spool and sleeve. Yet, they are very competitive in price. The MARK 10 Line offers, in a complete family of compact valves and manifolds, the same durability and performance evident in all Numatics air valves. They will give years and years of reliable and troublefree service, exceeding industrial standards of design and performance.

### GENUINE MULTI-PURPOSE CONSTRUCTION

Universal die cast construction permits one body unit to be used for 2- or 3-position 4-way valves, single or double solenoid, single or dual pressure, used any way you can pipe 5 working ports, with service from high vacuum to 300 PSIG.



### PLUG-IN BASE - INTEGRAL PLUG

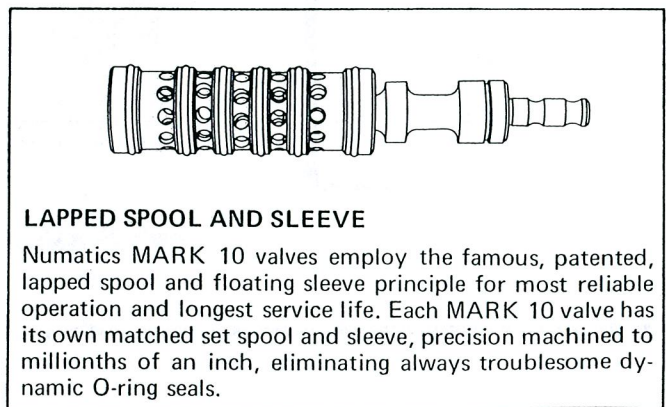
An optional plug-in base is now available from Numatics for the MARK 10 Line, useable with or without the speed control kit. The plug's grounded, shrouded, polarized and arc-containing design makes the MARK 10 the first air valve whose integral plug is designed to meet JIC, NEMA, CSA, UL, automotive and machinery builders' standards. (See page MK10-43.) MARK 10 valves are CSA approved.

### COMPACT DESIGN

Although MARK 10 Line valves are small in size, sound design still permits them to give generous wiring space plus ample swing clearance between ports for ease of piping. They save space and weight in machine design, as well. Despite their small size, the superior design of MARK 10 Line valves allows a nominal  $C_v$  of 1.0.

### BUILT-IN MUFFLER

This option, which is available on plug-in bases or FlexiBlok assemblies, will greatly reduce noise and air pollution, in line with prevailing regulations, without inducing wasteful back pressure. (See page MK10-47.)



### LAPPED SPOOL AND SLEEVE

Numatics MARK 10 valves employ the famous, patented, lapped spool and floating sleeve principle for most reliable operation and longest service life. Each MARK 10 valve has its own matched set spool and sleeve, precision machined to millionths of an inch, eliminating always troublesome dynamic O-ring seals.

### MANUAL OVERRIDE

A nonlocking, manual operator is standard to aid in machine set-up and tryout. The operator is recessed to prevent accidental operation.

\*Superseded by the MARK 10 effective January 1, 1972.

\*\*In USA and foreign countries.

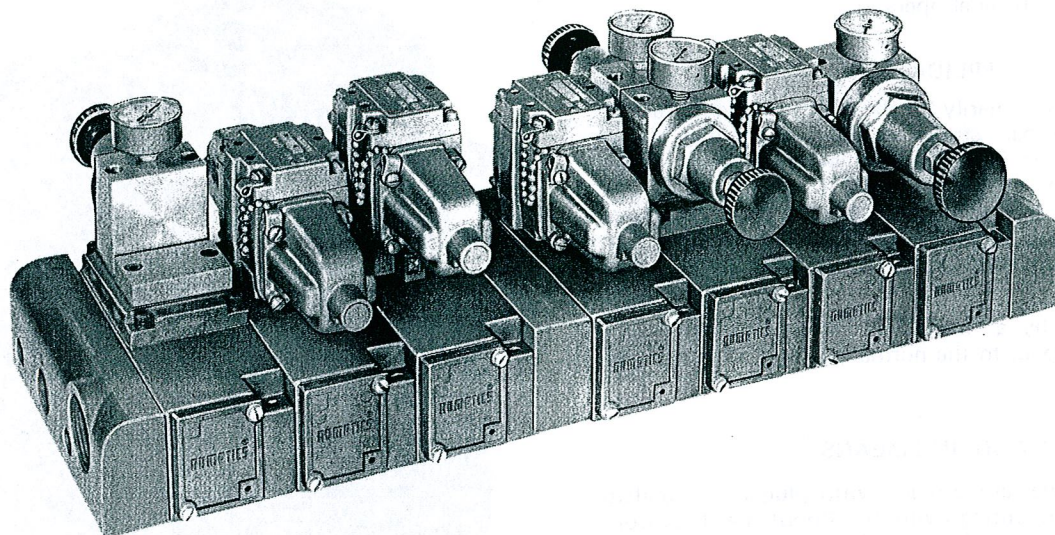
# CONSTRUCTION AND FEATURES



## MOUNTING MEANS

MARK 10 Line valves offer a choice of 3 base or manifold mounting means. The new plug-in base, mentioned earlier, offers an optional integral electrical plug designed to meet industry standards. Standard bases without electrical provision come in three porting arrangements to suit any design requirement.

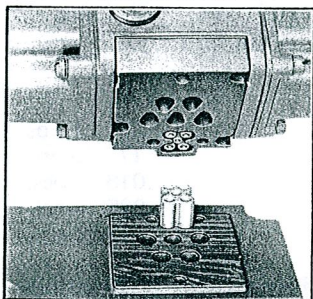
The MARK 10 FlexiBlok manifolding system offers major reductions in piping time and piping errors, integral pressure control, less installation space, easy station-adding capability, and dramatic improvement in machine appearance.



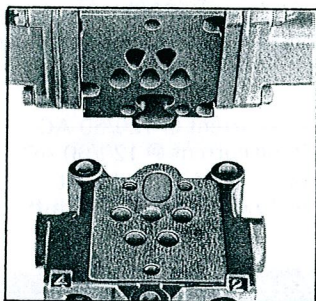
## BASE OR FLEXIBLOK MOUNTING

Standard and plug-in bases are side ported, side and bottom ported, or side ported with common exhaust. FlexiBlok Manifolds permit assembly of MARK 10 Line valves and/or Nupresco pressure controls into "stations". This is particularly advantageous where a number of valves are used in the same installation.

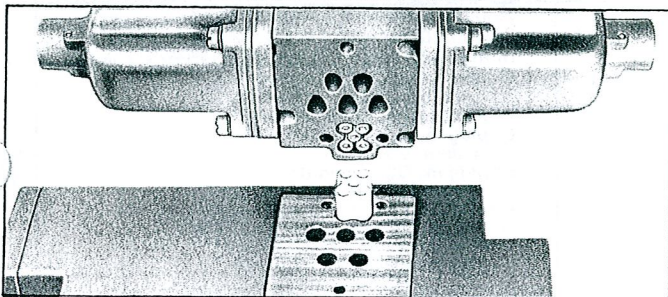
PLUG-IN BASE



STANDARD BASE

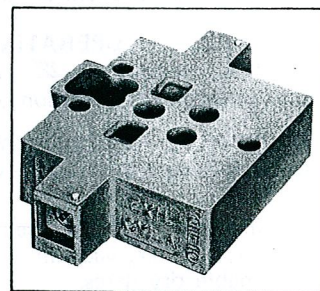


FLEXIBLOK MANIFOLDING



## SPEED CONTROL

A metering device inserted between valve and base permits adjustment of cylinder speed by throttling the flow of exhaust air.

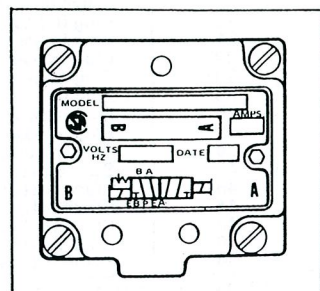


## SOLENOID DESIGN

The unique capsule construction feature of Numatics solenoid valves permits rapid valve disassembly WITHOUT LOOSE PARTS. The solenoid is mounted in the cover, and the entire electrical capsule is removed by loosening four captive screws. This complies with JIC requirements by rendering the valve electrically inoperative when the capsule is removed.

## PILOT LIGHT OPTION

Available in single or double light arrangement. When illuminated, it indicates that power is being supplied to the valve. Low power draw, low heat generation, and long burning life are featured in a splashproof housing.



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**numatics**  
**MK. 10** LINE

**SERIES 12SAD4**  
**1/4" TAPPED, J.I.C.**  
**SINGLE SOLENOID, SPRING RETURN**

**SPECIFICATIONS**

12SAD4 series valves are 1/4" heavy duty, multi-purpose, 2-position, direct solenoid operated, spring returned, 4-way air valves. They meet or exceed ALL JIC standards. They are of splash-proof construction and are, as standard, fitted with a recessed, non-locking manual operator.

**APPLICATION**

These valves are used primarily for the control of double acting air cylinders where part stroke stopping or inching of the cylinder is not required. They are genuine multi-purpose valves; that is, they may be used as normally open or closed 2- or 3-way valves, single or dual pressure 4-ways, or as selector or diverter valves, dependent only on how they are piped or plugged. Full back pressure at any port has no operating effect on the valve.

They are actuated by a "maintained" electrical signal. The spring returns the spool to the normal position when the solenoid is de-energized.

**MOUNTING MEANS**

12SAD4 model valves are available with plug-in or standard base or FlexiBlok mounting (with or without speed control). Plug-in base is field convertible to individual exhaust (see page MK10-47). Standard base is shown on page MK10-46). For FlexiBlok options, see pages MK10-18 - 25.

**OPTIONS**

For electrical and mechanical options, see pages MK10-43 - 47.

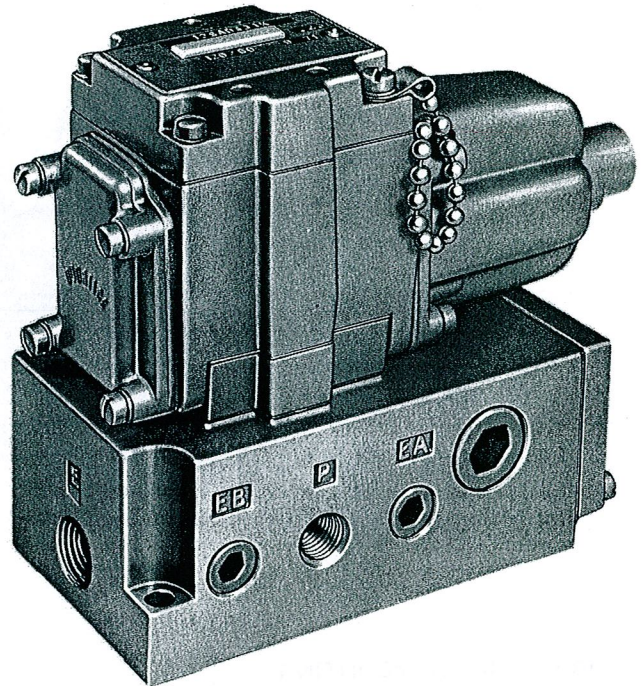
**OPERATING DATA**

**PRESSURE RANGE:** 28" Hg. vacuum to 300 PSIG. (specify pressure for operation over 150 PSIG).

**TEMPERATURE RANGE:** -10°F to +115°F ambient. High temperature coils are not available.

**SERVICE:** Valves can be used on properly filtered and lubricated air, dry air, vacuum or noncorrosive, nontoxic and nonflammable dry gases.

**FLOW CAPACITY:** MARK 10 Line 2-position valves have a C<sub>v</sub> of 1.0. At 80 PSIG supply pressure, discharging to atmosphere, the flow is 46 SCFM. See Numatics' Engineering & Technical Data for complete flow chart.



**SOLENOIDS:** Standard AC voltages are 115/50-120/60, 220/50, and 230/60. Special AC voltages and DC solenoids are available at extra cost. See page MK10-44 for further data and part numbers.

Inrush current @ 120/60 AC	.80 amps
Holding current @ 120/60 AC	.17 amps
Time to energize, full shift	.018 secs.
Time to de-energize, full shift	.025 secs.
Cycle rate, continuous	450/min.

**MODEL SELECTION CHART**

NUMBER	DESCRIPTION	WIRING OPTIONS & MODIFICATION CODE
12SAD400	Valve only, no base	Add one wiring code from below, plus the Modification Code A and a specific voltage, to end of model number** (e.g. 12SAD437KA 120/60). O=non-plug-in, standard AC A=non-plug-in, special AC B=non-plug-in, DC solenoid C=plug-in, standard AC* D=plug-in, special AC* E=plug-in, DC solenoid* F=non-plug-in, standard AC w/light G=non-plug-in, special AC w/light H=non-plug-in, DC solenoid w/light K=plug-in, standard AC w/light* L=plug-in, special AC w/light* M=plug-in, DC solenoid w/light*
29	Plug-in base, side and bottom ports w/muffler	
31	Plug-in base, side ports	
32	Plug-in base, side and bottom ports	
33	Plug-in base, side ports w/muffler	
35	Plug-in base, side ports w/speed control	
36	Plug-in base, side and bottom ports w/speed control	
37	Plug-in base, side ports w/muffler and speed control	
39	Plug-in base, side and bottom ports w/muffler and speed control	
41	Standard base, side ports	
43	Standard base, side and bottom ports	
44	Standard base, side ports, common exhaust	
46	Standard base, side ports w/speed control	
48	Standard base, side and bottom ports w/speed control	
49	Standard base, side ports, common exhaust w/speed control	

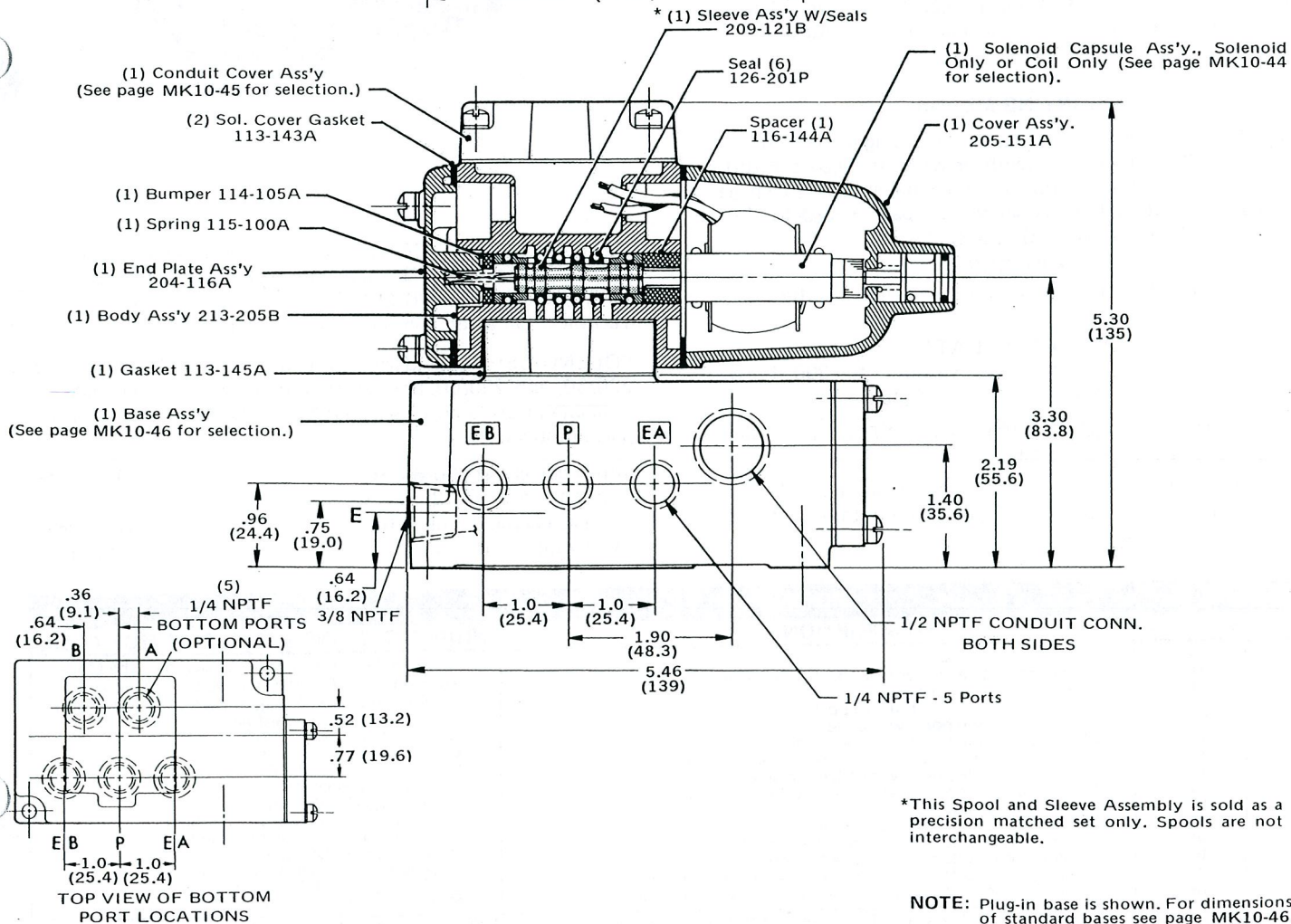
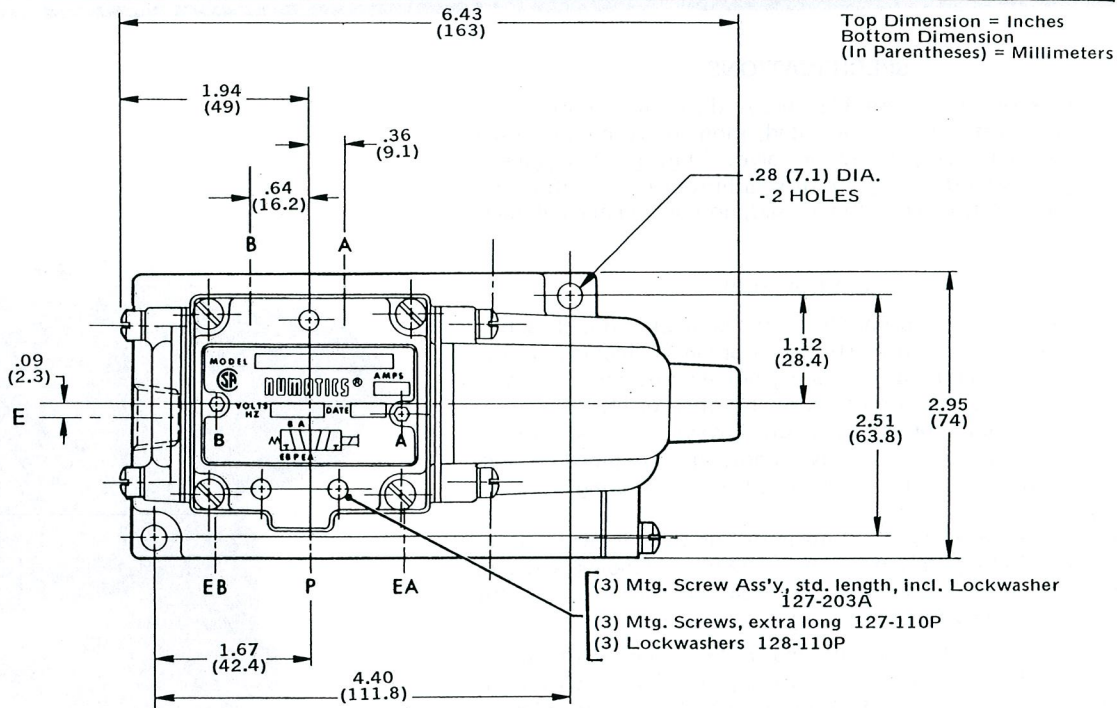
\*Not available with standard base mounted valves.

\*\*Light option available only in voltages 100-130 or 200-260, any frequency, including DC.

The air valve people

# numatics<sup>®</sup> MK. 10 LINE

A. N. S. I.  
SYMBOL



\*This Spool and Sleeve Assembly is sold as a precision matched set only. Spools are not interchangeable.

NOTE: Plug-in base is shown. For dimensions of standard bases see page MK10-46.

The air valve people

**numatics**  
**MK. 10** LINE

**SERIES 12DSA4**  
**1/4" TAPPED, J.I.C.**  
**DOUBLE SOLENOID, DETENTED**

**SPECIFICATIONS**

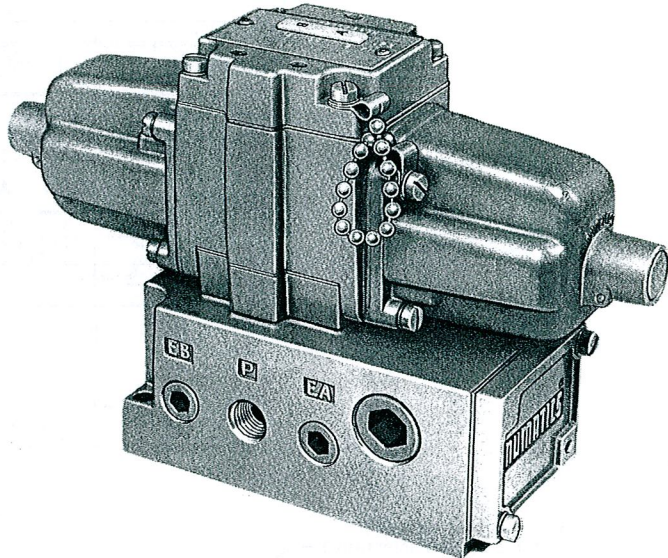
12DSA4 series valves are 1/4" heavy duty, multi-purpose, 2-position, direct solenoid operated, momentary contact (mechanically detented), 4-way air valves. They meet or exceed ALL JIC standards. They are of splashproof construction and are, as standard, fitted with recessed, nonlocking manual operators.

**APPLICATION**

These valves are used primarily for the control of double acting air cylinders where part stroke stopping or inching of the cylinder is not required. They are genuine multi-purpose valves; that is, they may be used as normally open or closed 2- or 3-way valves, single or dual pressure 4-ways, or as selector or diverter valves, dependent only on how they are piped or plugged. Full back pressure at any port has no operating effect on the valve.

They are actuated by a "momentary" or a "maintained" electrical signal alternately on each of the two solenoids, and care should be taken to provide electrical interlocks to prevent simultaneous energization of both solenoids.

The detent assembly prevents inadvertent spool shift due to machine vibration, shock or electrical power failure when both solenoids are de-energized. A mechanical detent is mandatory on all momentary contact valves, per JIC and Automotive standards.



**MOUNTING MEANS**

12DSA4 model valves are available with plug-in or standard base or FlexiBlok mounting (with or without speed control). Plug-in base is field convertible to individual exhaust (see page MK10-47). Standard base is shown on page MK10-46. For FlexiBlok options, see pages MK10-18 - 25.

**OPTIONS**

For electrical and mechanical options, see pages MK10-43 - 47.

**OPERATING DATA**

**PRESSURE RANGE:** 28" Hg. vacuum to 300 PSIG. (specify pressure for operation over 150 PSIG).

**TEMPERATURE RANGE:** -10°F to +115°F ambient. High temperature coils are not available.

**SERVICE:** Valves can be used on properly filtered and lubricated air, dry air, vacuum or noncorrosive, nontoxic and non-flammable dry gases.

**FLOW CAPACITY:** MARK 10 Line 2-position valves have a  $C_v$  of 1.0. At 80 PSIG supply pressure, discharging to atmosphere, the flow is 46 SCFM. See Numatics' Engineering & Technical Data for complete flow chart.

**SOLENOIDS:** Standard AC voltages are 115/50-120/60, 220/50, and 230/60. Special AC voltages and DC solenoids are available at extra cost. See page MK10-44 for further data and part numbers.

Inrush current @ 120/60 AC	.80 amps
Holding current @ 120/60 AC	.17 amps
Time to energize, full shift	.012 secs.
Cycle rate, continuous	450/min.

**MODEL SELECTION CHART**

NUMBER	DESCRIPTION	WIRING OPTIONS & MODIFICATION CODE
12DSA400	Valve only, no base	Add one wiring code from below, plus the Modification Code A and a specific voltage, to end of model number** (e.g. 12DSA437KA 120/60). O=non-plug-in, standard AC A=non-plug-in, special AC B=non-plug-in, DC solenoid C=plug-in, standard AC* D=plug-in, special AC* E=plug-in, DC solenoid* F=non-plug-in, standard AC w/light G=non-plug-in, special AC w/light H=non-plug-in, DC solenoid w/light K=plug-in, standard AC w/light* L=plug-in, special AC w/light* M=plug-in, DC solenoid w/light*
29	Plug-in base, side and bottom ports w/muffler	
31	Plug-in base, side ports	
32	Plug-in base, side and bottom ports	
33	Plug-in base, side ports w/muffler	
35	Plug-in base, side ports w/speed control	
36	Plug-in base, side and bottom ports w/speed control	
37	Plug-in base, side ports w/muffler and speed control	
39	Plug-in base, side and bottom ports w/muffler and speed control	
41	Standard base, side ports	
43	Standard base, side and bottom ports	
44	Standard base, side ports, common exhaust	
46	Standard base, side ports w/speed control	
48	Standard base, side and bottom ports w/speed control	
49	Standard base, side ports, common exhaust w/speed control	

\*Not available with standard base mounted valves.

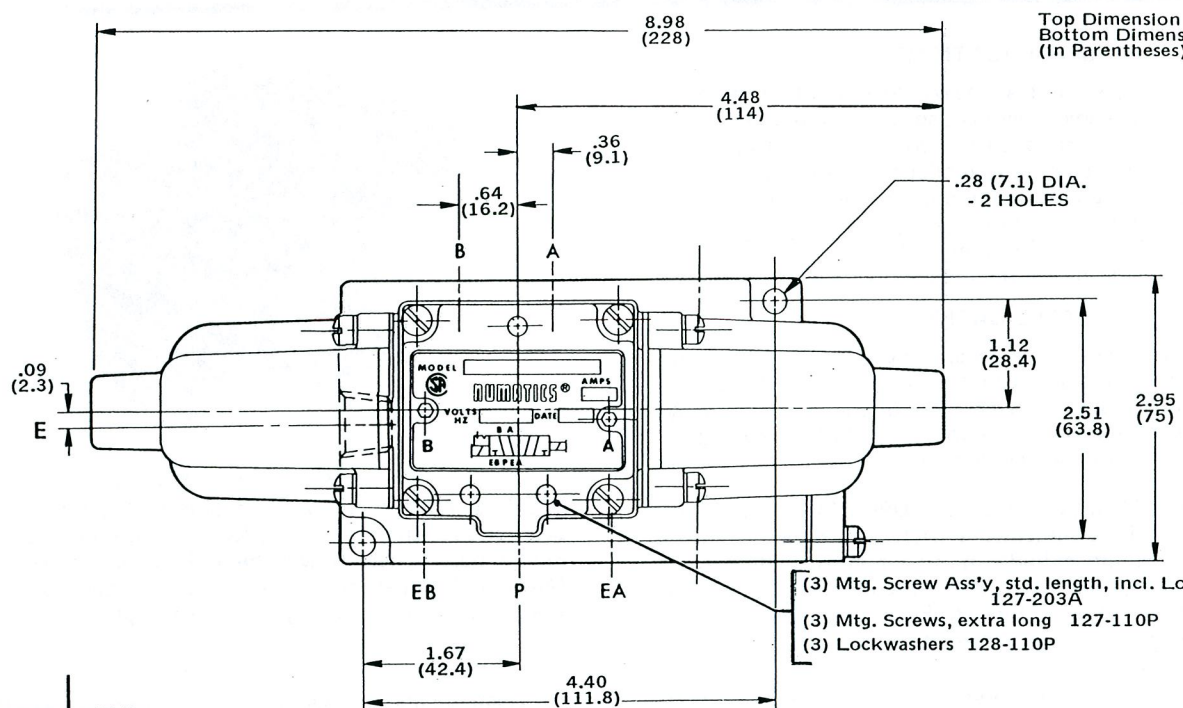
\*\*Light option available only in voltages 100-130 or 200-260, any frequency, including DC.



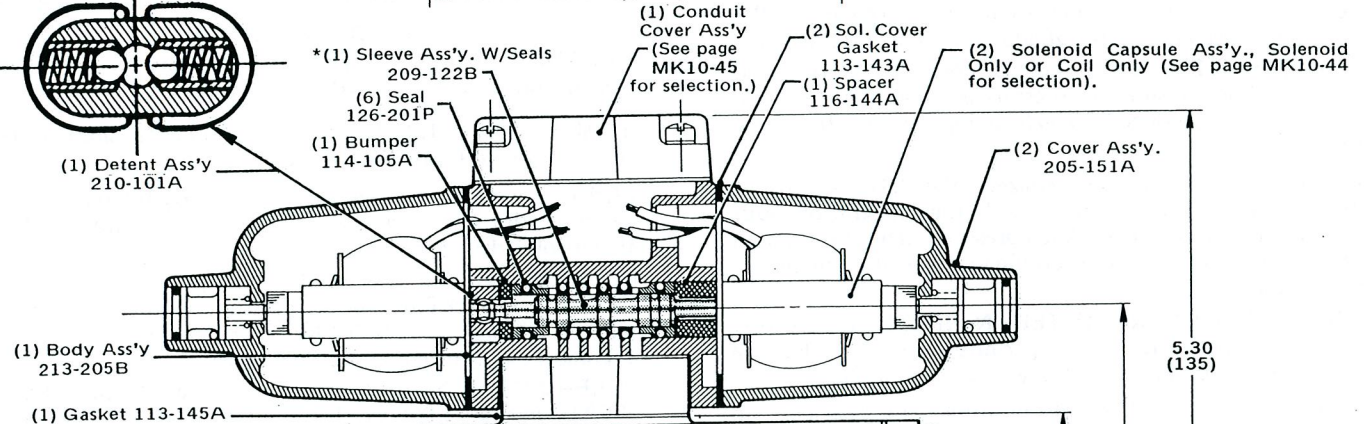
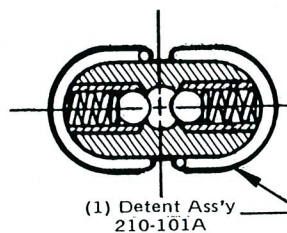


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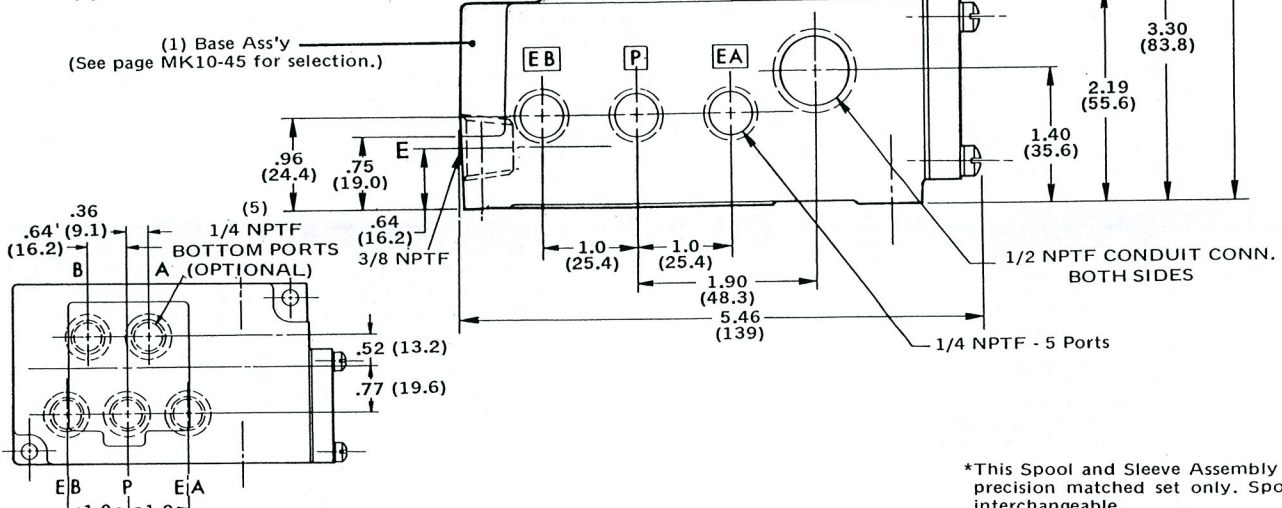
Top Dimension = Inches  
 Bottom Dimension  
 (In Parentheses) = Millimeters



- (3) Mtg. Screw Ass'y, std. length, incl. Lockwasher 127-203A
- (3) Mtg. Screws, extra long 127-110P
- (3) Lockwashers 128-110P



(1) Base Ass'y  
 (See page MK10-45 for selection.)



TOP VIEW OF BOTTOM PORT LOCATIONS

\*This Spool and Sleeve Assembly is sold as a precision matched set only. Spools are not interchangeable.

NOTE: Plug-in base is shown. For dimensions of standard bases see page MK10-46.

The air valve people

**numatics**  
**MK. 10** LINE

**SERIES 12DSA5**  
**1/4" TAPPED, J.I.C.**  
**DOUBLE SOLENOID, SPRING CENTERED, 3-POSITION**

**SPECIFICATIONS**

12DSA5 series valves are 1/4" heavy duty, multi-purpose, 3-position, double solenoid operated, spring centered, 4-way air valves with cylinder ports open to two independent pressures and a common exhaust, or with cylinder ports open to independent exhausts and a blocked common supply in mid-position, depending on how they are piped. They meet or exceed ALL JIC standards. They are of splashproof construction and are, as standard, fitted with recessed nonlocking manual operators.

**APPLICATION**

These valves are operated by energizing alternate solenoids. When de-energized, the springs return the spool to the center position. Each solenoid is rated for continuous duty and may be held energized. Electrical interlocks should be provided to prevent energizing both solenoids simultaneously.

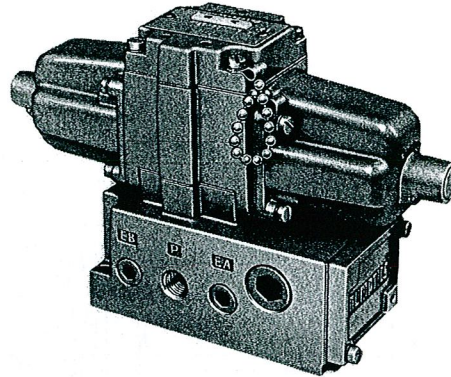
**CYLINDER PORTS OPEN TO DUAL SUPPLY IN NEUTRAL (Use Only Bases with 5 Individual Ports):** This piping arrangement permits accurate cylinder motion control with a very effective emergency stop circuit. This circuit is widely used on transfer cylinders and other long stroke applications, and with rotary air motors to achieve immediate emergency stop or accurate positioning.

Two individual supply connections are made to Ports EB and EA, each with an independent check valve and regulator in the supply line to accommodate cylinder piston area differential. In neutral, Port EB is open to Port B, Port EA to Port A, and both sides of the piston are pressurized. Port P is blocked. Piston motion is produced by exhausting pressure from one side or the other.

When the solenoids are de-energized, the valve returns to neutral and supply immediately builds the pressure on both sides of the piston up to regulated pressures. The check valves trap the air in the cylinder to snub the load and stop the piston in a very short distance.

**CYLINDER PORTS EXHAUSTED IN NEUTRAL (Use Any Base):** This piping arrangement permits use of the valve as a double, normally closed, 3-way with common supply.

**CAUTION:** This circuit should be used with great care on double-acting cylinders because, in neutral, the cylinder is without pressure at either end and the piston is free to drift under external loads. When either solenoid is energized, the piston moves very rapidly under full pressure, with no back pressure on the exhausting end to help control speed. One individual supply connection is made to Port P. Ports B and A are output, EB and EA are exhaust ports.



**MOUNTING MEANS**

12DSA5 model valves are available with plug-in or standard base or FlexiBlok mounting (with or without speed control). Plug-in base is field convertible to individual exhaust (see page MK10-47). Standard base is shown on page MK10-46. For FlexiBlok options, see pages MK10-18 - 25.

**OPTIONS**

For electrical and mechanical options, see pages MK10-43 - 47.

**OPERATING DATA**

**PRESSURE RANGE:** 28" Hg. vacuum to 300 PSIG. (specify pressure for operation over 150 PSIG).

**TEMPERATURE RANGE:** -10°F to +115°F ambient. High temperature coils are not available.

**SERVICE:** Valves can be used on properly filtered and lubricated air, dry air, vacuum or noncorrosive, nontoxic and nonflammable dry gases.

**FLOW CAPACITY:** MARK 10 Line 3-position valves have a C<sub>v</sub> of 0.8. At 80 PSIG supply pressure, discharging to atmosphere, the flow is 36.8 SCFM. See Numatics' Engineering & Technical Data for complete flow chart.

**SOLENOIDS:** Standard AC voltages are 115/50-120/60, 220/50, and 230/60. Special AC voltages and DC solenoids are available at extra cost. See page MK10-44 for further data and part numbers.

Inrush current @ 120/60 AC	.80 amps
Holding current @ 120/60 AC	.17 amps
Time to energize, full shift	.018 secs.
Time to de-energize, full shift	.033 secs.
Cycle rate, continuous	450/mjn.

**MODEL SELECTION CHART**

NUMBER	DESCRIPTION	WIRING OPTIONS & MODIFICATION CODE
12DSA500	Valve only, no base	Add one wiring code from below, plus the Modification Code A and a specific voltage, to end of model number** (e.g. 12DSA537KA 120/60). O=non-plug-in, standard AC A=non-plug-in, special AC B=non-plug-in, DC solenoid C=plug-in, standard AC* D=plug-in, special AC* E=plug-in, DC solenoid* F=non-plug-in, standard AC w/light G=non-plug-in, special AC w/light H=non-plug-in, DC solenoid w/light K=plug-in, standard AC w/light* L=plug-in, special AC w/light* M=plug-in, DC solenoid w/light*
29	Plug-in base, side and bottom ports w/muffler	
31	Plug-in base, side ports	
32	Plug-in base, side and bottom ports	
33	Plug-in base, side ports w/muffler	
35	Plug-in base, side ports w/speed control	
36	Plug-in base, side and bottom ports w/speed control	
37	Plug-in base, side ports w/muffler and speed control	
39	Plug-in base, side and bottom ports w/muffler and speed control	
41	Standard base, side ports	
43	Standard base, side and bottom ports	
44	Standard base, side ports, common exhaust	
46	Standard base, side ports w/speed control	
48	Standard base, side and bottom ports w/speed control	
49	Standard base, side ports, common exhaust w/speed control	

\*Not available with standard base mounted valves.

\*\*Light option available only in voltages 100-130 or 200-260, any frequency, including DC.

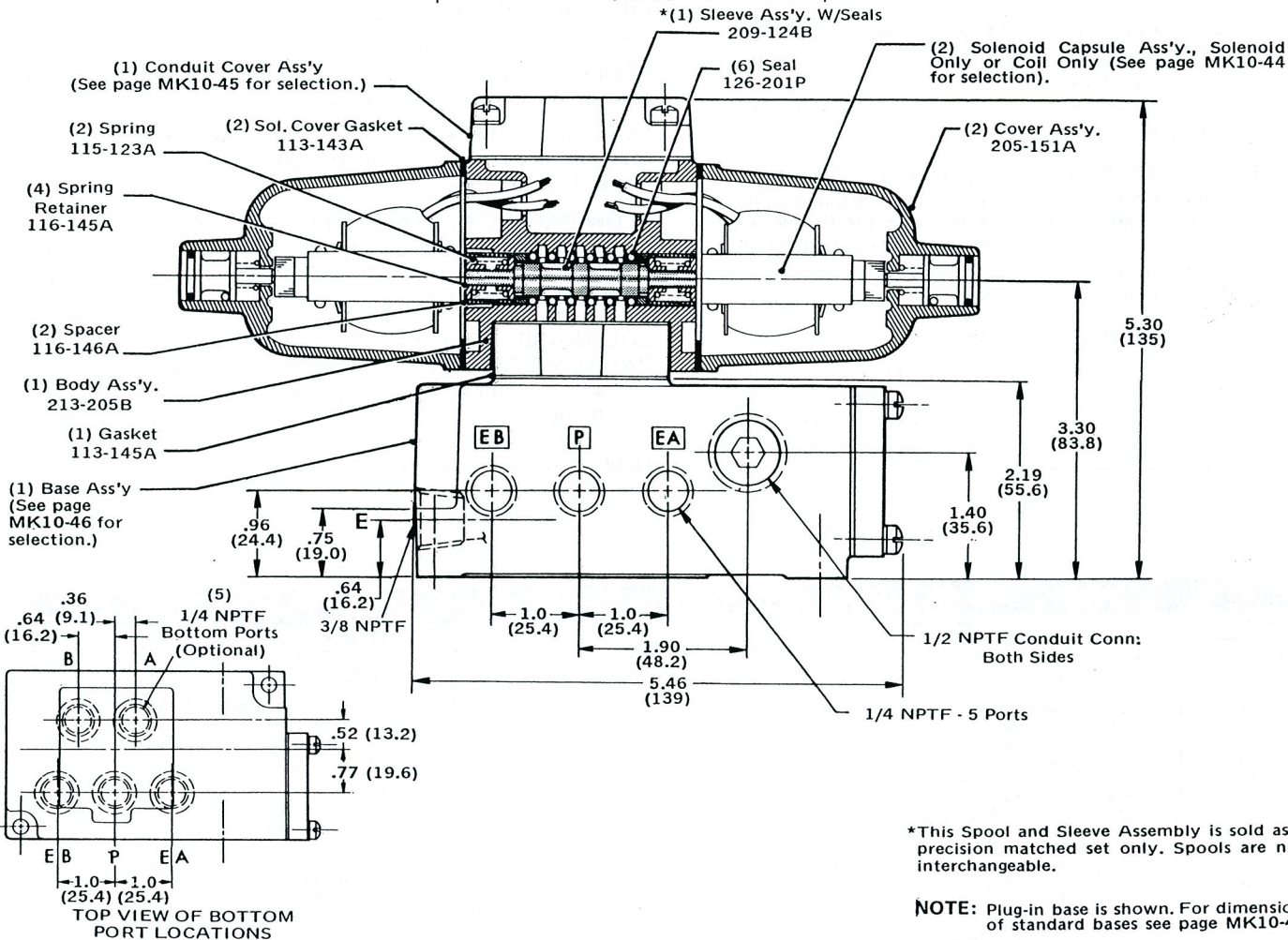
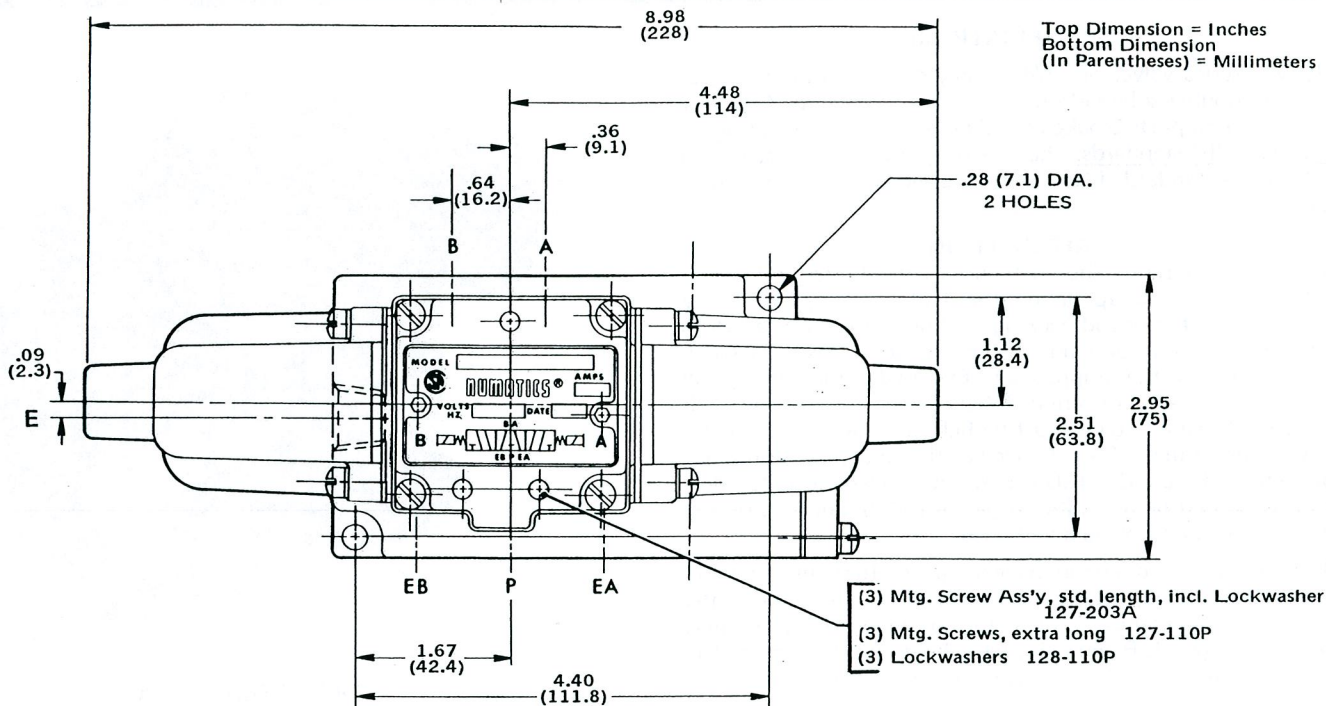
A. N. S. I.  
SYMBOL



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**MK. 10 LINE**



\*This Spool and Sleeve Assembly is sold as a precision matched set only. Spools are not interchangeable.

**NOTE:** Plug-in base is shown. For dimensions of standard bases see page MK10-46.

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**MK. 10** LINE

**SERIES 12DSA6**  
**1/4" TAPPED, J.I.C.**  
**DOUBLE SOLENOID, SPRING CENTERED, 3-POSITION**

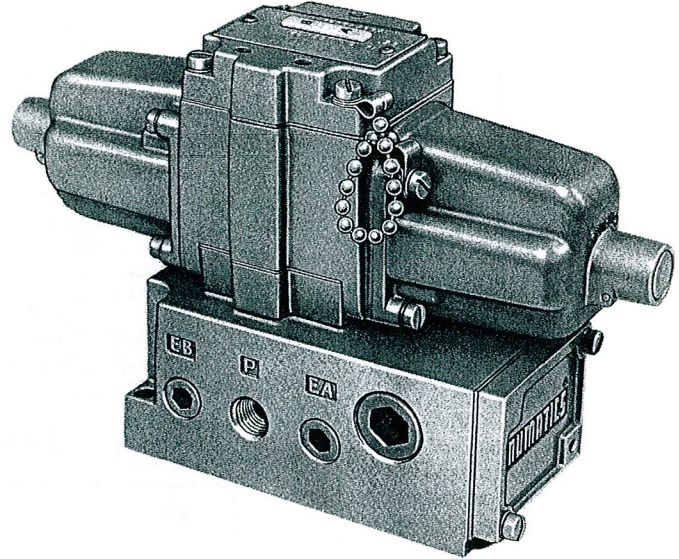
**SPECIFICATIONS**

12DSA6 series valves are 1/4" heavy duty, multi-purpose, 3-position, double solenoid operated, spring centered, 4-way air valves with all ports blocked in mid-position. They meet or exceed ALL JIC standards. They are of splashproof construction and are, as standard, fitted with recessed, nonlocking manual operators.

**APPLICATION**

Blocked port circuits should be used with discretion because of the lack of make-up air to either end of the cylinder. Any leak in the piston or rod packing, air line connections between valve and cylinder, and normal leakage across spool lands allows escape of the trapped air. Eventually the piston will creep, due to area differential between blind and rod ends (particularly where loads must be held in a given position for an extended time). If a cylinder position must be maintained for extended periods, 12DSA5 model valves piped for dual pressure should be used. (See page MK10-10). Supply pressure to the valve must also be maintained.

These valves are operated by energizing alternate solenoids. When de-energized, the springs return the spool to the center position. Each solenoid is rated for continuous duty and may be held energized. Electrical interlocks should be provided to prevent energizing both solenoids simultaneously.



**OPERATING DATA**

**PRESSURE RANGE:** 28" Hg. vacuum to 300 PSIG. (specify pressure for operation over 150 PSIG).

**TEMPERATURE RANGE:** -10°F to +115°F ambient. High temperature coils are not available.

**SERVICE:** Valves can be used on properly filtered and lubricated air, dry air, vacuum or noncorrosive, nontoxic and nonflammable dry gases.

**FLOW CAPACITY:** MARK 10 Line 3-position valves have a C<sub>v</sub> of 0.8. At 80 PSIG supply pressure, discharging to atmosphere, the flow is 36.8 SCFM. See Numatics' Engineering & Technical Data for complete flow chart.

**SOLENOIDS:** Standard AC voltages are 115/50-120/60, 220/50, and 230/60. Special AC voltages and DC solenoids are available at extra cost. See page MK10-44 for further data and part numbers.

Inrush current @ 120/60 AC	.80	amps
Holding current @ 120/60 AC	.17	amps
Time to energize, full shift	.018	secs.
Time to de-energize, full shift	.033	secs.
Cycle rate, continuous	450/min.	

**SINGLE SUPPLY PIPED TO PORT P (Use Any Mounting Bases):** This piping arrangement permits the same pressure to be applied to each side of the cylinder piston. One individual supply connection is made to Port P. B and A are outlet ports, EB and EA are exhaust ports.

**DUAL SUPPLY PIPED TO PORTS EB AND EA (Use Only Bases with 5 Individual Ports):** This piping arrangement permits use of, for example, a higher pressure for the work stroke and a low pressure for the return stroke. Two individual supply connections are made to Ports EB and EA. B and A are outlet ports, P is a common exhaust port.

**MOUNTING MEANS**

12DSA6 model valves are available with plug-in or standard base or FlexiBlok mounting (with or without speed control). Plug-in base is field convertible to individual exhaust (see page MK10-47). Standard base is shown on page MK10-46. For FlexiBlok options, see pages MK10-18 - 25.

**OPTIONS**

For electrical and mechanical options, see pages MK10-43 - 47.

**MODEL SELECTION CHART**

NUMBER	DESCRIPTION	WIRING OPTIONS & MODIFICATION CODE
12DSA600	Valve only, no base	Add one wiring code from below, plus the Modification Code A and a specific voltage, to end of model number** (e.g. 12DSA637KA 120/60). O=non-plug-in, standard AC A=non-plug-in, special AC B=non-plug-in, DC solenoid C=plug-in, standard AC* D=plug-in, special AC* E=plug-in, DC solenoid* F=non-plug-in, standard AC w/light G=non-plug-in, special AC w/light H=non-plug-in, DC solenoid w/light K=plug-in, standard AC w/light* L=plug-in, special AC w/light* M=plug-in, DC solenoid w/light*
29	Plug-in base, side and bottom ports w/muffler	
31	Plug-in base, side ports	
32	Plug-in base, side and bottom ports	
33	Plug-in base, side ports w/muffler	
35	Plug-in base, side ports w/speed control	
36	Plug-in base, side and bottom ports w/speed control	
37	Plug-in base, side ports w/muffler and speed control	
39	Plug-in base, side and bottom ports w/muffler and speed control	
41	Standard base, side ports	
43	Standard base, side and bottom ports	
44	Standard base, side ports, common exhaust	
46	Standard base, side ports w/speed control	
48	Standard base, side and bottom ports w/speed control	
49	Standard base, side ports, common exhaust w/speed control	

\*Not available with standard base mounted valves.

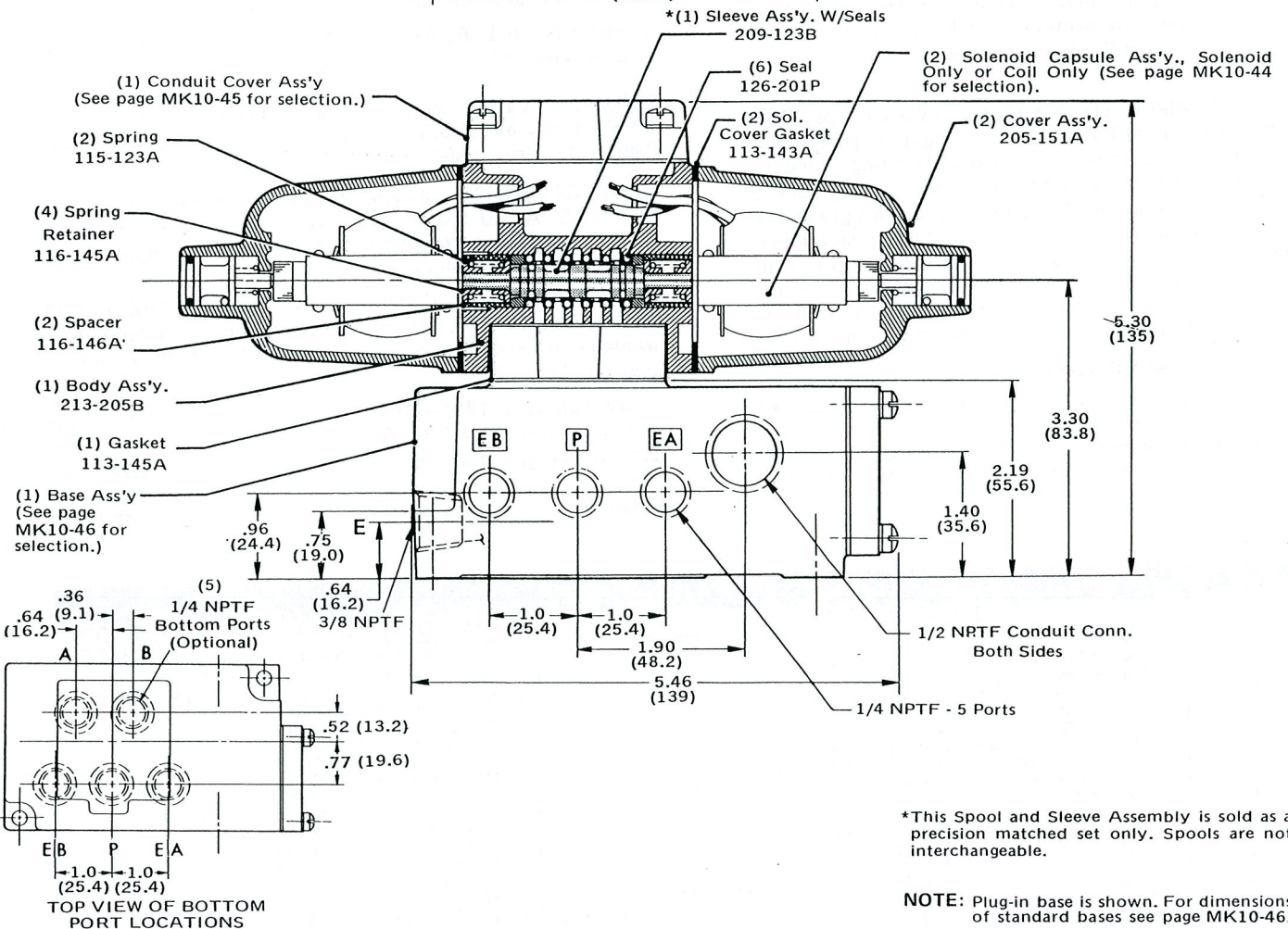
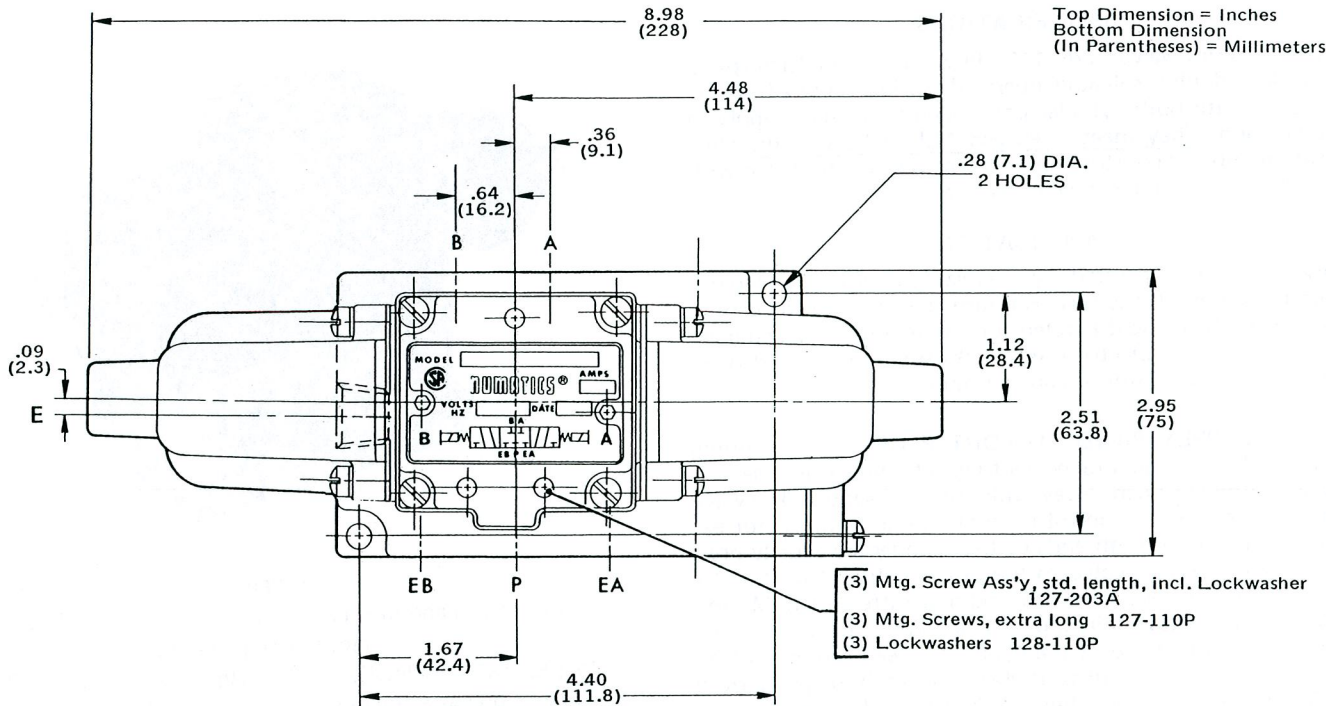
\*\*Light option available only in voltages 100-130 or 200-260, any frequency, including DC.

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Top Dimension = Inches  
Bottom Dimension  
(In Parentheses) = Millimeters



\*This Spool and Sleeve Assembly is sold as a precision matched set only. Spools are not interchangeable.

NOTE: Plug-in base is shown. For dimensions of standard bases see page MK10-46.

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**MK. 10** LINE

**SERIES 12DSA7**

**1/4" TAPPED, J.I.C.**

**DOUBLE SOLENOID, SPRING CENTERED, 3-POSITION**

**SPECIFICATIONS**

12DSA7 series valves are 1/4" heavy duty, multi-purpose, 3-position, double solenoid operated, spring centered, 4-way air valves with both cylinder ports open to a single supply in mid-position. They meet or exceed ALL JIC standards. They are of splashproof construction and are, as standard, fitted with recessed, nonlocking manual operators.

**APPLICATION**

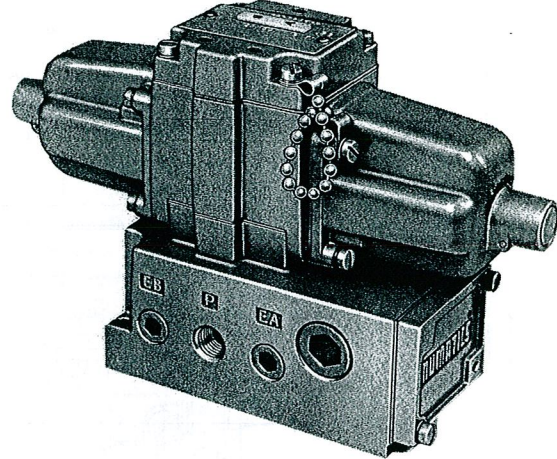
These valves are operated by energizing alternate solenoids. When de-energized, the springs return the spool to the center position. Each solenoid is rated for continuous duty and may be held energized. Electrical interlocks should be provided to prevent energizing both solenoids simultaneously.

**SINGLE SUPPLY PIPED TO PORT P (Use Any Mounting Means):** This piping arrangement permits the valve's use as a double, normally open 3-way with common supply. The valve may also be used to control a double-acting cylinder, for example: In neutral, both ends of the cylinder are equally pressurized and interconnected so the piston is free to drift under external load (except for piston rod area differential). Motion is produced in either direction by actuating the valve to exhaust air from one end of the cylinder. Speed can be controlled accurately because there is always a supply of pressurized air in both ends of the cylinder, when the valve is in neutral. One individual supply connection is made to Port P. B and A are outlet ports, EB and EA are exhaust ports.

**DUAL SUPPLY PIPED TO PORTS EB AND EA (Use Only Bases with 5 Individual Ports):** This piping arrangement also permits the valve to control single or double-acting cylinders. However, caution should be used with this circuit on double-acting cylinders. In neutral, the cylinder is without pressure at either end. When either solenoid is energized, the piston moves very rapidly until sufficient back pressure is built up to snub the motion and bring the speed of the piston under control. Two individual supply connections are made to Ports EB and EA. B and A are outlet Ports, P is a common exhaust port.

**MOUNTING MEANS**

12DSA7 model valves are available with plug-in or standard base or FlexiBlok mounting (with or without speed control). Plug-in base is field convertible to individual exhaust (see page MK10-47). Standard base is shown on page MK10-46. For FlexiBlok options, see pages MK10-18 - 25.



**OPTIONS**

For electrical and mechanical options, see pages MK10-43 - 47.

**OPERATING DATA**

**PRESSURE RANGE:** 28" Hg. vacuum to 300 PSIG. (specify pressure for operation over 150 PSIG).

**TEMPERATURE RANGE:** -10°F to +115°F ambient. High temperature coils are not available.

**SERVICE:** Valves can be used on properly filtered and lubricated air, dry air, vacuum or noncorrosive, nontoxic and nonflammable dry gases.

**FLOW CAPACITY:** MARK 10 Line 3-position valves have a C<sub>v</sub> of 0.8. At 80 PSIG supply pressure, discharging to atmosphere, the flow is 36.8 SCFM. See Numatics' Engineering & Technical Data for complete flow chart.

**SOLENOIDS:** Standard AC voltages are 115/50-120/60, 220/50, and 230/60. Special AC voltages and DC solenoids are available at extra cost. See page MK10-44 for further data and part numbers.

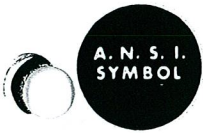
Inrush current @ 120/60 AC	.80	amps
Holding current @ 120/60 AC	.17	amps
Time to energize, full shift	.018	secs.
Time to de-energize, full shift	.033	secs.
Cycle rate, continuous	450	/min.

**MODEL SELECTION CHART**

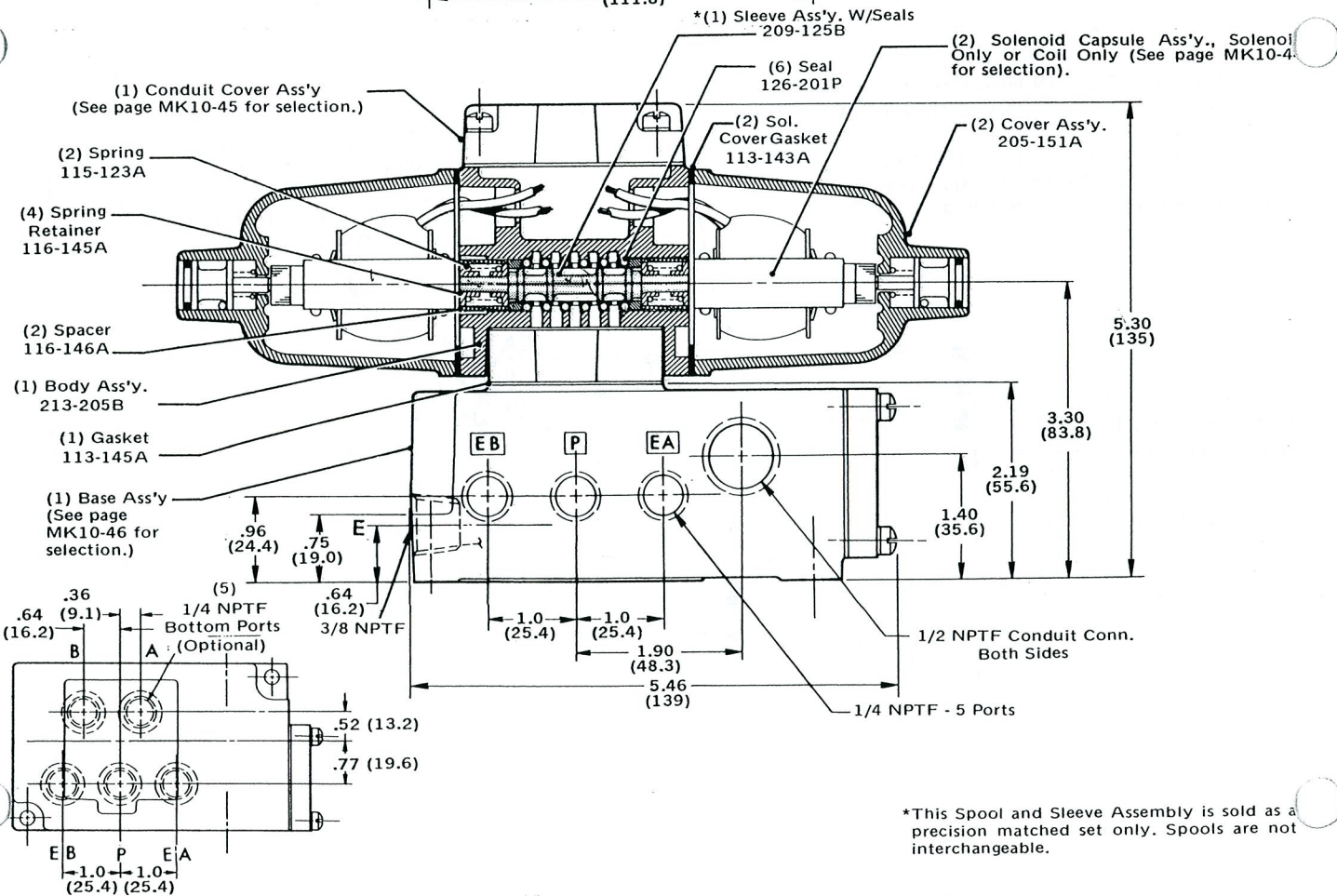
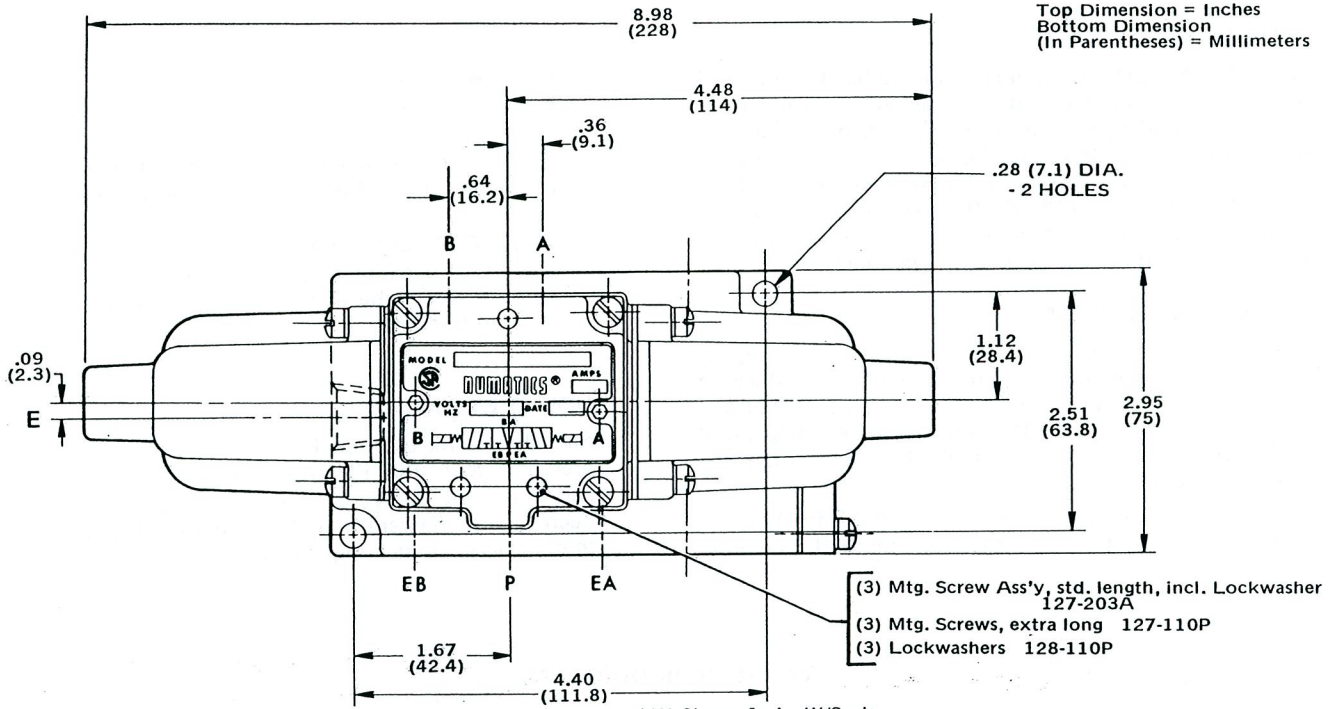
NUMBER	DESCRIPTION	WIRING OPTIONS & MODIFICATION CODE
12DSA700	Valve only, no base	Add one wiring code from below, plus the Modification Code A and a specific voltage, to end of model number** (e.g. 12DSA737KA 120/60). O=non-plug-in, standard AC A=non-plug-in, special AC B=non-plug-in, DC solenoid C=plug-in, standard AC* D=plug-in, special AC* E=plug-in, DC solenoid* F=non-plug-in, standard AC w/light G=non-plug-in, special AC w/light H=non-plug-in, DC solenoid w/light K=plug-in, standard AC w/light* L=plug-in, special AC w/light* M=plug-in, DC solenoid w/light*
29	Plug-in base, side and bottom ports w/muffler	
31	Plug-in base, side ports	
32	Plug-in base, side and bottom ports	
33	Plug-in base, side ports w/muffler	
35	Plug-in base, side ports w/speed control	
36	Plug-in base, side and bottom ports w/speed control	
37	Plug-in base, side ports w/muffler and speed control	
39	Plug-in base, side and bottom ports w/muffler and speed control	
41	Standard base, side ports	
43	Standard base, side and bottom ports	
44	Standard base, side ports, common exhaust	
46	Standard base, side ports w/speed control	
48	Standard base, side and bottom ports w/speed control	
49	Standard base, side ports, common exhaust w/speed control	

\*Not available with standard base mounted valves.

\*\*Light option available only in voltages 100-130 or 200-260, any frequency, including DC.



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TOP VIEW OF BOTTOM PORT LOCATIONS

\*This Spool and Sleeve Assembly is sold as a precision matched set only. Spools are not interchangeable.

NOTE: Plug-in base is shown. For dimensions of standard bases see page MK10-46.

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**MARK 10**  
**FLEXIBLOK**<sup>®</sup>

#### WHAT IT IS:

MARK 10 FLEXIBLOK is a unique building block method of pipeless power air circuitry units, combined to form a complete valve manifolding system. There are six basic "bloks", as illustrated on pages MK10-10 - 24, which allow for a wide range of piping options. Each blok will accommodate any of the MARK 10 Line valves. A MARK 10 FlexiBlok assembly may be joined to a Numatics "PA Junior" FlexiBlok assembly by means of a transition plate kit (see page MK10-41).

#### THE FLEXIBLOK DIAGRAM:

The FlexiBlok diagram is a simplified means of showing the flow passages in the FlexiBlok manifold assembly, one diagram for each valve blok, pressure control blok, circuit plate or end plate. When laid end to end, they form a complete diagram of all the flow passages in the entire FlexiBlok assembly. The diagram has several uses:

The circuit designer uses it to convert an ANSI fluid power circuit diagram into a FlexiBlok manifold assembly.

The assembler uses it as a guide in assembling the individual FlexiBlok into a complete manifold assembly.

The machine builder uses it as an installation guide when installing the FlexiBlok assembly on a machine.

And, MOST IMPORTANT OF ALL, the maintenance man uses it as a circuit guide to troubleshoot and trace flow paths through the assembly on the machine after it goes into production.

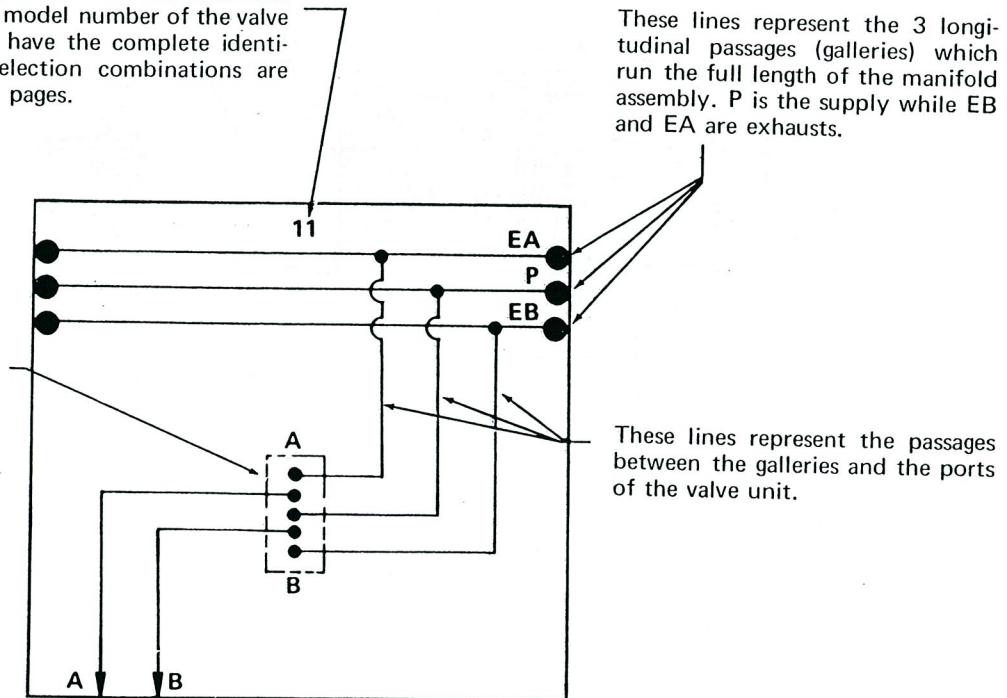
#### HOW IT WORKS:

Each FlexiBlok diagram is the same width as the blok it represents. With the FlexiBlok circuit diagram, maintenance personnel can easily understand and trace the total circuit. Each type of diagram is marked and identified as illustrated on these pages, indicating function, air flow direction, etc.

#### VALVE BLOK DIAGRAM

**FUNCTION IDENTIFICATION NUMBER.** Each represents a different arrangement of air passages. With this function code number appearing in the complete model number of the valve to be mounted on this blok, you have the complete identification of the station. Model selection combinations are shown on the individual catalog pages.

This rectangle represents the valve unit. The dots represent the five ports in the mounting face of the valve, while the A and B correspond to the A and B which appear on the valve unit. For example, the "B" is always on the spring end of a single solenoid valve. Thus with a valve piped conventionally, with pressure at the "P" Port and with solenoid "A" de-energized, flow is out the "B" cylinder port, with the "A" cylinder port open to exhaust.



These lines represent the 3 longitudinal passages (galleries) which run the full length of the manifold assembly. P is the supply while EB and EA are exhausts.

These lines represent the passages between the galleries and the ports of the valve unit.

These are the outlet ports of the blok.

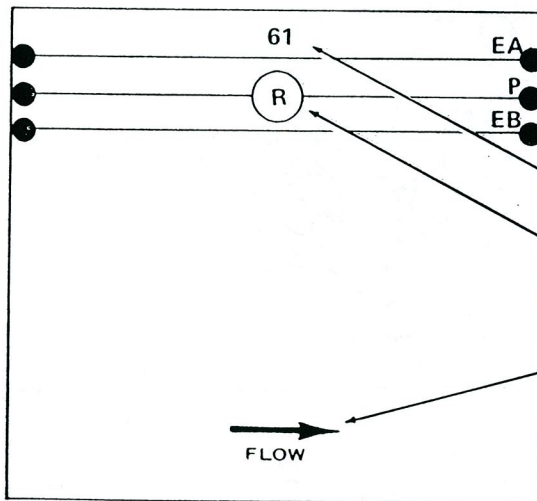
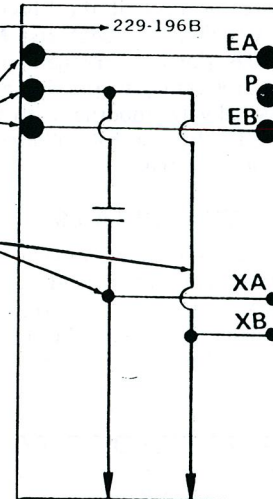


**CIRCUIT PLATES**

Part number stamped on each plate also identifies circuit function.

Lines represent 3 longitudinal passages of the assembly. They may be maintained or interrupted, or externally tapped, depending on the passages in the plate.

Lines represent plate's internal flow paths. They are different for each plate, allowing the use of various plates to achieve different circuitry functions.

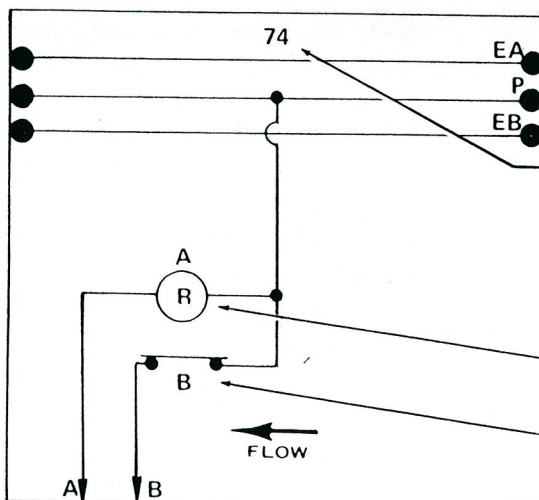


**MASTER PRESSURE CONTROL BLOK**

Function Identification Number is stamped in the top surface of each blok, each code number representing a different arrangement of air passages.

This symbol represents the location of the pressure control unit(s).

Flow arrow stamped on each blok indicates air flow direction through the pressure regulator.



**BASIC AND INDIVIDUAL PRESSURE CONTROL BLOKS**

Function Identification Number represents this blok and the necessary adapter plates and pressure controls which combine to make up this function.

Symbol indicates a pressure control valve mounted on the "A" station.

Symbol indicates a jumper plate mounted on the "B" station.

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**FLEXIBLOK**

**STANDARD  
VALVE BLOK**

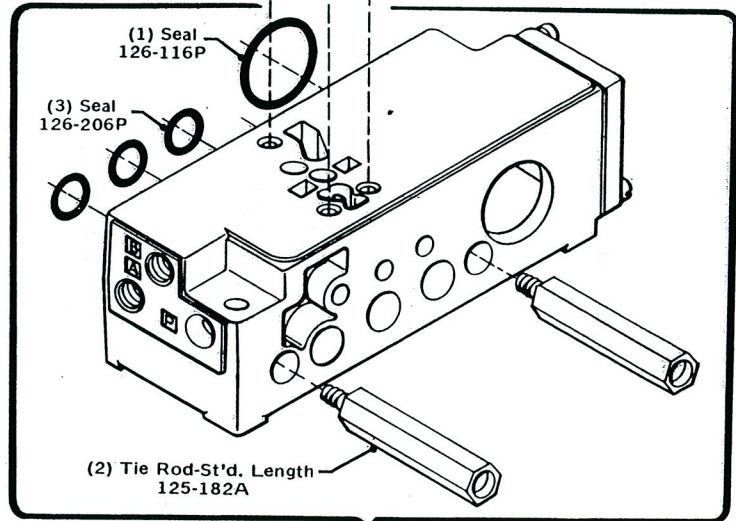
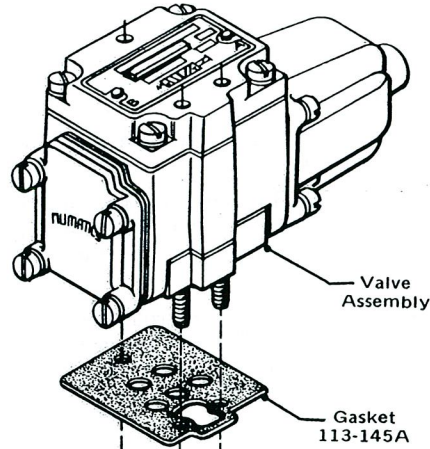
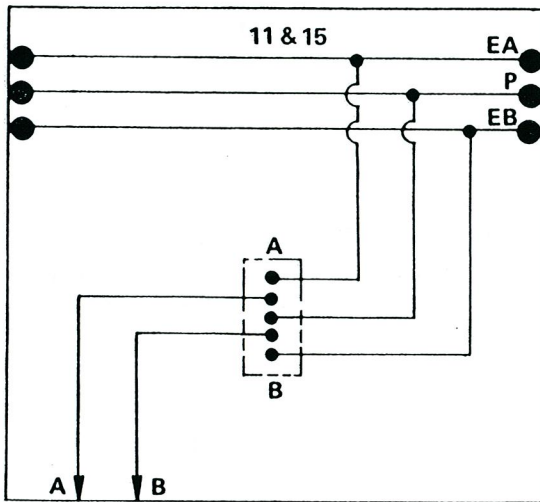
**APPLICATION**

This valve blok is the basic unit of the FlexiBlok system. It provides a mounting which will accept any MARK 10 Line valve unit, and provides porting arrangements as described below. It is used most frequently to provide a standard single pressure, 4-way directional valve module, with supply from the P gallery, exhausts into the EB and EA galleries, and the B and A Ports as cylinder or outlet ports.

**PORTING DETAILS**

Provides EB, P and EA galleries and connects them to the corresponding ports of the valve unit. Provides B and A Ports in the "B" side of the blok as standard, and connects them to the B and A Ports of the valve unit. (Side and bottom cylinder port arrangement is optional.) For complete dimensions see page MK10-26.

**MK. 10 FLEXIBLOK DIAGRAM**



VALVE BLOK  
KIT NO.

- 229-161B = Code No. 11 or No. 21, Non-Plug-In
- 229-162B = Code No. 11, Plug-In
- 229-163B = Code No. 21, Plug-In
- 229-173B = Code No. 15 or No. 25, Non-Plug-In
- 229-174B = Code No. 15, Plug-In
- 229-175B = Code No. 25, Plug-In

When ordering separate valve blok, use above kit number

**MODEL SELECTION CHART**

NUMBER*	DESCRIPTION	WIRING OPTIONS & MODIFICATION CODE
① 12SAD411 ↓ 15 ↓ 21 ↓ 25	Blok No. 11, side ports Blok No. 15, side and bottom ports Blok No. 11, side ports w/speed control† Blok No. 15, side and bottom ports w/speed control†	<p>Add one wiring code from below, plus the Modification Code A and a specific voltage, to end of model number ** (e.g. 12DSA421KA 120/60).</p> <p>O=non-plug-in, standard AC A=non-plug-in, special AC B=non-plug-in, DC solenoid C=plug-in, standard AC D=plug-in, special AC E=plug-in, DC solenoid F=non-plug-in, standard AC w/light G=non-plug-in, special AC w/light H=non-plug-in, DC solenoid w/light K=plug-in, standard AC w/light L=plug-in, special AC w/light M=plug-in, DC solenoid w/light</p>
② 12DSA411 ↓ 15 ↓ 21 ↓ 25	Blok No. 11, side ports Blok No. 15, side and bottom ports Blok No. 11, side ports w/speed control† Blok No. 15, side and bottom ports w/speed control†	
③ 12DSA511 ↓ 15 ↓ 21 ↓ 25	Blok No. 11, side ports Blok No. 15, side and bottom ports Blok No. 11, side ports w/speed control† Blok No. 15, side and bottom ports w/speed control†	
④ 12DSA611 ↓ 15 ↓ 21 ↓ 25	Blok No. 11, side ports Blok No. 15, side and bottom ports Blok No. 11, side ports w/speed control† Blok No. 15, side and bottom ports w/speed control†	
⑤ 12DSA711 ↓ 15 ↓ 21 ↓ 25	Blok No. 11, side ports Blok No. 15, side and bottom ports Blok No. 11, side ports w/speed control† Blok No. 15, side and bottom ports w/speed control†	

\*For valve units only without FlexiBlok base, see following pages: ① single solenoid, page MK10-6; ② double solenoid, detented, page MK10-8; ③ double solenoid, 3-position, page MK10-10; ④ double solenoid, 3-position, page MK10-12; ⑤ double solenoid, 3-position, page MK10-14.  
\*\*Light option available only in voltages 100-130 or 200-260, any frequency, including DC. †For speed control, see page MK10-42.

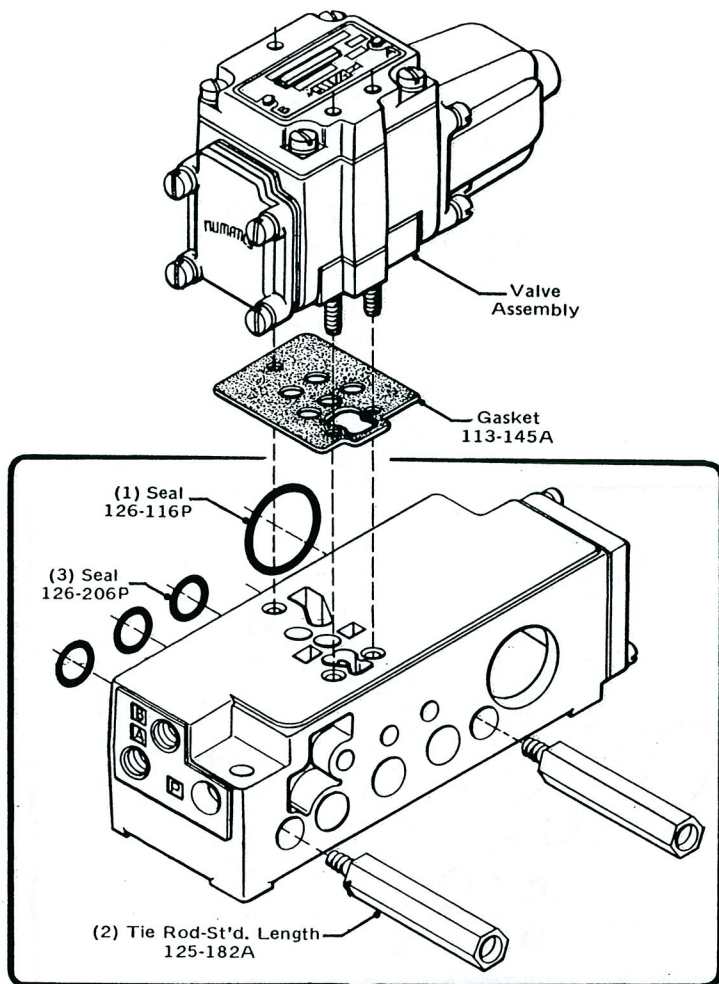
# FLEXIBLOK®

## AUXILIARY SUPPLY AND EXHAUST VALVE BLOK

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## MK. 10 LINO



### APPLICATION

This is a special valve blok used in circuits where either the supply or the exhausts (or both) are to be connected to ports other than the normal supply and exhaust galleries. It accepts any MARK 10 Line valve. Typical applications are:

Supplying the valve from a pressure control valve instead of from the P gallery; exhaust into the EB and EA galleries, via the pressure control blok.

Supplying the valve from an external source outside the manifold; exhaust into the EB and EA galleries, via a circuit plate.

Dual pressure circuits where regulated supplies are to be introduced into the EB and EA Ports of the valve unit and the P Port of the valve is to be connected to either the EB or EA gallery as an exhaust.

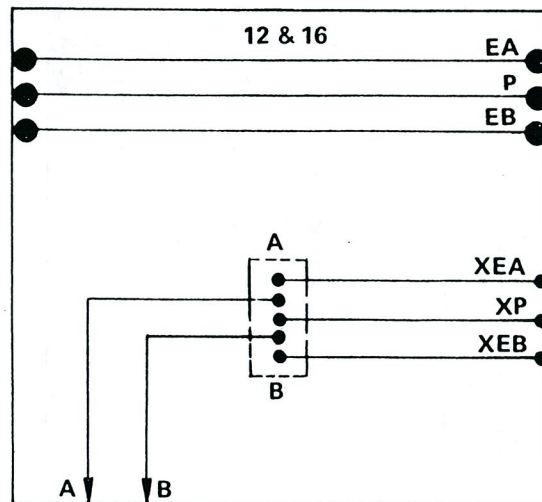
Individual exhaust applications where the valve is to receive air from the P gallery, but is to exhaust the EB and EA Ports out external ports instead of the EB and EA galleries.

### PORTING DETAILS

Maintains the EB, P and EA galleries, but isolates them from the valve unit. Provides auxiliary Ports XEB, XP, and XEA in the right side of the blok and connects these ports with the EB, P, and EA Ports of the valve unit respectively.

Provides standard B and A Ports in the "B" side of the blok as standard, and connects them to the B and A Ports of the valve unit. (Side and bottom cylinder port arrangement is optional.) For complete dimensions see page MK10-26.

### MK. 10 FLEXIBLOK DIAGRAM



VALVE BLOK  
KIT NO.

- 229-164B = Code No. 12 or No. 22, Non-Plug-In
- 229-165B = Code No. 12, Plug-In
- 229-166B = Code No. 22, Plug-In
- 229-176B = Code No. 16, or No. 26, Non-Plug-In
- 229-177B = Code No. 16, Plug-In
- 229-178B = Code No. 26, Plug-In

When ordering separate valve blok, use above kit number

### MODEL SELECTION CHART

NUMBER*	DESCRIPTION	WIRING OPTIONS & MODIFICATION CODE
①	12SAD412	Add one wiring code from below, plus the Modification Code A and a specific voltage, to end of model number** (e.g. 12DSA412KA 120/60).  O=non-plug-in, standard AC A=non-plug-in, special AC B=non-plug-in, DC solenoid C=plug-in, standard AC D=plug-in, special AC E=plug-in, DC solenoid F=non-plug-in, standard AC w/light G=non-plug-in, special AC w/light H=non-plug-in, DC solenoid w/light K=plug-in, standard AC w/light L=plug-in, special AC w/light M=plug-in, DC solenoid w/light
	16	
	22	
②	12DSA412	
	16	
	22	
③	12DSA512	
	16	
	22	
④	12DSA612	
	16	
	22	
⑤	12DSA712	
	16	
	22	

\*For valve units only without FlexiBlok base, see following pages: ① single solenoid, page MK10-6; ② double solenoid, detented, page MK10-8; ③ double solenoid, 3-position, page MK10-10; ④ double solenoid, 3-position, page MK10-12; ⑤ double solenoid, 3-position, page MK10-14.  
 \*\*Light option available only in voltages 100-130 or 200-260, any frequency, including DC. †For speed control, see page MK10-42.

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ALTERNATE OUTLET PORTS  
VALVE BLOK

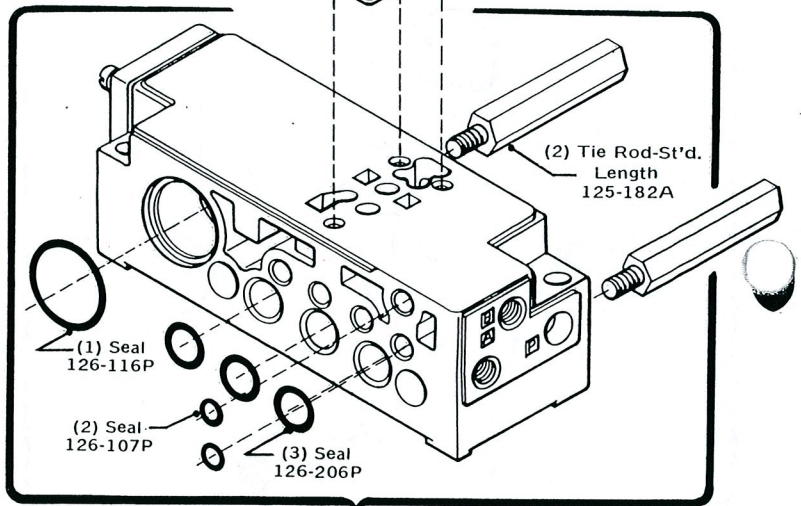
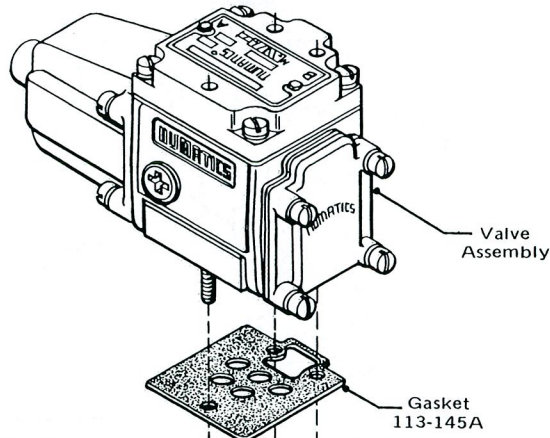
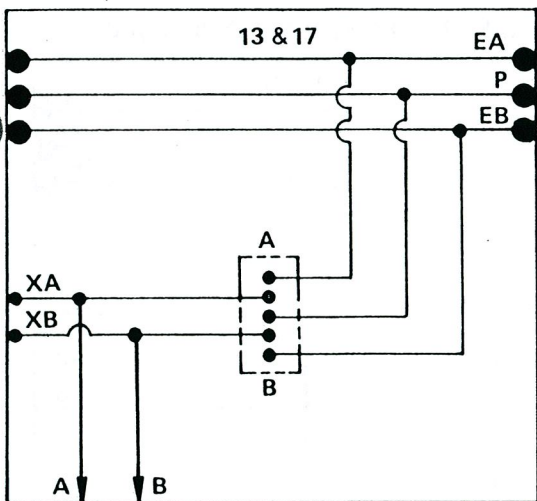
**APPLICATION**

This blok is a variation of the standard valve blok and accepts any MARK 10 Line valve. It provides 2 alternate ports (XB and XA) in the left side of the blok, in addition to the other standard ports. These alternate outlets cooperate with mating ports in a variety of circuit plates and are used in setting up tandem circuits where the outlets from this valve are directed through the circuit plate to various ports of an adjacent valve on the left.

**PORTING DETAILS**

Provides EB, P and EA galleries and connects them to the EB, P and EA Ports of the valve unit. Provides B and A Ports in the "B" side of the blok as standard, and connects them to the B and A Ports of the valve. (Side and bottom cylinder port arrangement is optional.) Also provides alternate Ports XB and XA in the blok's left side, which connect to the standard B and A Ports respectively. This blok must be used with a circuit plate on the left to seal the alternate outlet ports. For complete dimensions see page MK10-26.

**MK. 10 FLEXIBLOK DIAGRAM**



VALVE BLOK  
KIT NO.

- 229-167B = Code No. 13 or No. 23, Non-Plug-In
- 229-168B = Code No. 13, Plug-In
- 229-169B = Code No. 23, Plug-In
- 229-179B = Code No. 17 or No. 27, Non-Plug-In
- 229-180B = Code No. 17, Plug-In
- 229-181B = Code No. 27, Plug-In

When ordering separate valve blok, use above kit number

**MODEL SELECTION CHART**

NUMBER*	DESCRIPTION	WIRING OPTIONS & MODIFICATION CODE
① 12SAD413 ↓ 17 23 27	Blok No. 13, side ports Blok No. 17, side and bottom ports Blok No. 13, side ports w/speed control Blok No. 17, side and bottom ports w/speed control	<p>Add one wiring code from below, plus the Modification Code A and a specific voltage, to end of model number** (e.g. 12DSA413KA 120/60).</p> <p>O=non-plug-in, standard AC A=non-plug-in, special AC B=non-plug-in, DC solenoid C=plug-in, standard AC D=plug-in, special AC E=plug-in, DC solenoid F=non-plug-in, standard AC w/light G=non-plug-in, special AC w/light H=non-plug-in, DC solenoid w/light K=plug-in, standard AC w/light L=plug-in, special AC w/light M=plug-in, DC solenoid w/light</p>
② 12DSA413 ↓ 17 23 27	Blok No. 13, side ports Blok No. 17, side and bottom ports Blok No. 13, side ports w/speed control Blok No. 17, side and bottom ports w/speed control	
③ 12DSA513 ↓ 17 23 27	Blok No. 13, side ports Blok No. 17, side and bottom ports Blok No. 13, side ports w/speed control Blok No. 17, side and bottom ports w/speed control	
④ 12DSA613 ↓ 17 23 27	Blok No. 13, side ports Blok No. 17, side and bottom ports Blok No. 13, side ports w/speed control Blok No. 17, side and bottom ports w/speed control	
12DSA713 ↓ 17 23 27	Blok No. 13, side ports Blok No. 17, side and bottom ports Blok No. 13, side ports w/speed control Blok No. 17, side and bottom ports w/speed control	

\*For valve units only without FlexiBlok base, see following pages: ① single solenoid, page MK10-6; ② double solenoid, detented, page MK10-8; ③ double solenoid, 3-position, page MK10-10; ④ double solenoid, 3-position, page MK10-12; ⑤ double solenoid, 3-position, page MK10-14.  
\*\*Light option available only in voltages 100-130 or 200-260, any frequency, including DC. †For speed control, see page MK10-42.

# FLEXIBLOK®

## AUXILIARY SUPPLY AND EXHAUST, ALTERNATE OUTLETS VALVE BLOK

The air valve people

# numatics®

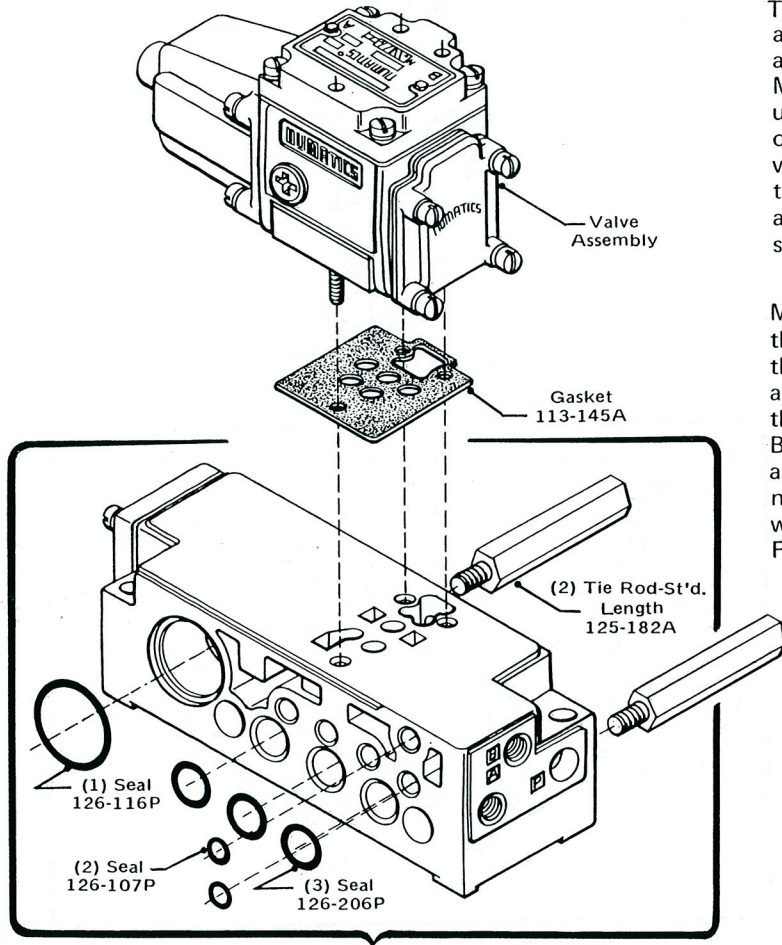
## MK. 10 LINE

### APPLICATION

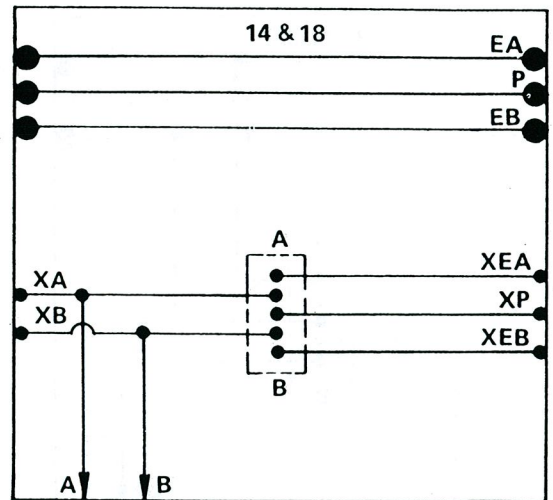
This is a special blok which provides the porting of the No. 12 auxiliary supply and exhaust blok (page MK10-19) with the XB and XA alternate outlet ports of the No. 13 blok (page MK10-20). It accepts any MARK 10 Line valve. This blok is used wherever it is necessary to supply the valve from a source other than the normal P gallery and where the outlets from the valve must be connected to the input of a second valve. A typical application is a tandem circuit where the first valve acts as a pressure selector to feed one of two pressures to a second valve, the second valve being a normal single inlet 4-way.

### PORTING DETAILS

Maintains the EB, P and EA galleries but isolates them from the valve unit. Provides auxiliary ports XEB, XP, and XEA in the right side of the blok and connects them with the EB, P and EA Ports of the valve. Provides standard B and A Ports in the "B" side of the blok as standard, and connects them to the B and A Ports of the valve unit. (Side and bottom cylinder port arrangement is optional.) Also provides the XB and XA alternate outlet ports in the blok's left side. This blok must be used with a circuit plate on the left to seal the alternate outlet ports. For complete dimensions see page MK10-26.



### MK. 10 FLEXIBLOK DIAGRAM



- VALVE BLOK KIT NO.
- 229-170B = Code No. 14 or No. 24, Non-Plug-In
  - 229-171B = Code No. 14, Plug-In
  - 229-172B = Code No. 24, Plug-In
  - 229-182B = Code No. 18 or No. 28, Non-Plug-In
  - 229-183B = Code No. 18, Plug-In
  - 229-184B = Code No. 28, Plug-In

When ordering separate valve blok, use above kit number

### MODEL SELECTION CHART

NUMBER*	DESCRIPTION	WIRING OPTIONS & MODIFICATION CODE
① 12SAD414 18 24 28	Blok No. 14, side ports Blok No. 18, side and bottom ports Blok No. 14, side ports w/speed control† Blok No. 18, side and bottom ports w/speed control†	Add one wiring code from below, plus the Modification Code A and a specific voltage, to end of model number** (e.g. 12DSA414KA 120/60).  O=non-plug-in, standard AC A=non-plug-in, special AC B=non-plug-in, DC solenoid C=plug-in, standard AC D=plug-in, special AC E=plug-in, DC solenoid F=non-plug-in, standard AC w/light G=non-plug-in, special AC w/light H=non-plug-in, DC solenoid w/light K=plug-in, standard AC w/light L=plug-in, special AC w/light M=plug-in, DC solenoid w/light
② 12DSA414 18 24 28	Blok No. 14, side ports Blok No. 18, side and bottom ports Blok No. 14, side ports w/speed control† Blok No. 18, side and bottom ports w/speed control†	
③ 12DSA514 18 24 28	Blok No. 14, side ports Blok No. 18, side and bottom ports Blok No. 14, side ports w/speed control† Blok No. 18, side and bottom ports w/speed control†	
④ 12DSA614 18 24 28	Blok No. 14, side ports Blok No. 18, side and bottom ports Blok No. 14, side ports w/speed control† Blok No. 18, side and bottom ports w/speed control†	
⑤ 12DSA714 18 24 28	Blok No. 14, side ports Blok No. 18, side and bottom ports Blok No. 14, side ports w/speed control† Blok No. 18, side and bottom ports w/speed control†	

\*For valve units only without FlexiBlok base, see following pages: ① single solenoid, page MK10-6; ② double solenoid, detented, page MK10-8; ③ double solenoid, 3-position, page MK10-10; ④ double solenoid, 3-position, page MK10-12; ⑤ double solenoid, 3-position, page MK10-14.  
\*\*Light option available only in voltages 100-130 or 200-260, any frequency, including DC. †For speed control, see page MK10-42.

The air valve people

**numatics**  
**MK. 10** LINE

**FLEXIBLOK**

INDIVIDUAL SUPPLY  
VALVE BLOK

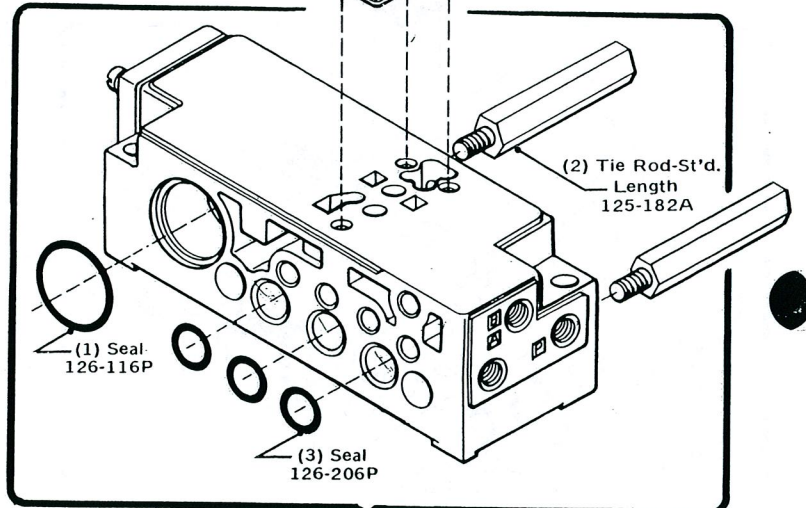
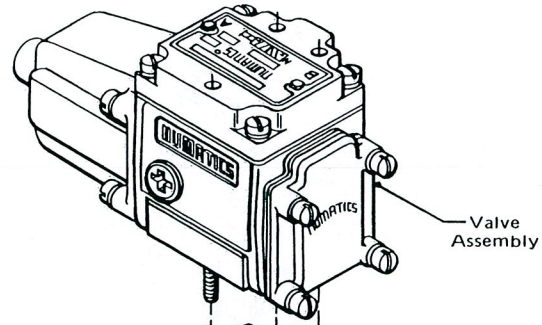
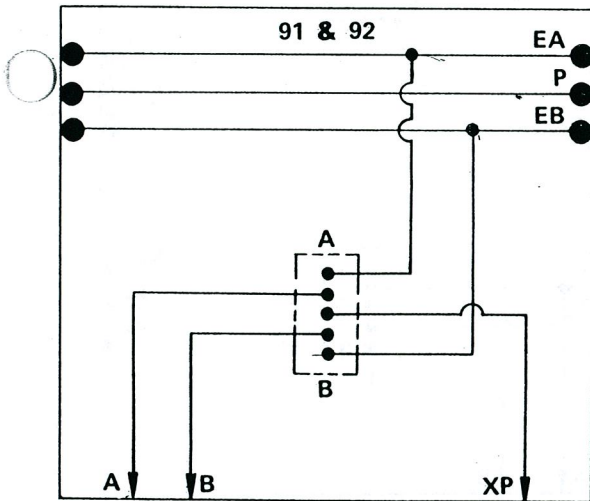
**APPLICATION**

This blok provides an external 1/4" NPTF supply to the P Port of the valve, and this supply is isolated from the main gallery. All three galleries are maintained, which permits this blok to be placed anywhere (and in any quantity) in a FlexiBlok assembly to combine both common and individual supply functions.

**PORTING DETAILS**

Provides EB, P and EA galleries. Galleries EB and EA are connected to Ports EB and EA of the valve unit. Gallery P is isolated from the valve. Provides B, A and XP Ports in the "B" side of the blok as standard and connects them to the B, A and P Ports of the valve. (Side and bottom supply and cylinder port arrangement is optional.) For complete dimensions see page MK10-26.

**MK. 10 FLEXIBLOK DIAGRAM**



VALVE BLOK  
KIT NO.

- 229-217B = Code No. 91 or No. 93, Non-Plug-in
- 229-218B = Code No. 91, Plug-in
- 229-219B = Code No. 93, Plug-in
- 229-220B = Code No. 92 or No. 94, Non-Plug-in
- 229-221B = Code No. 92, Plug-in
- 229-222B = Code No. 94, Plug-in

When ordering separate valve blok, use above kit number

**MODEL SELECTION CHART**

NUMBER*	DESCRIPTION	WIRING OPTIONS & MODIFICATION CODE
① 12SAD491 ↓ 92 93 94	Blok No. 91, side ports Blok No. 92, side and bottom ports Blok No. 91, side ports w/speed control† Blok No. 92, side and bottom ports w/speed control†	Add one wiring code from below, plus the Modification Code A and a specific voltage, to end of model number** (e.g. 12DSA491KA 120/60).  O=non-plug-in, standard AC A=non-plug-in, special AC B=non-plug-in, DC solenoid C=plug-in, standard AC D=plug-in, special AC E=plug-in, DC solenoid F=non-plug-in, standard AC w/light G=non-plug-in, special AC w/light H=non-plug-in, DC solenoid w/light K=plug-in, standard AC w/light L=plug-in, special AC w/light M=plug-in, DC solenoid w/light
② 12DSA491 ↓ 92 93 94	Blok No. 91, side ports Blok No. 92, side and bottom ports Blok No. 91, side ports w/speed control† Blok No. 92, side and bottom ports w/speed control†	
③ 12DSA591 ↓ 92 93 94	Blok No. 91, side ports Blok No. 92, side and bottom ports Blok No. 91, side ports w/speed control† Blok No. 92, side and bottom ports w/speed control†	
④ 12DSA691 ↓ 92 93 94	Blok No. 91, side ports Blok No. 92, side and bottom ports Blok No. 91, side ports w/speed control† Blok No. 92, side and bottom ports w/speed control†	
12DSA791 ↓ 92 93 94	Blok No. 91, side ports Blok No. 92, side and bottom ports Blok No. 91, side ports w/speed control† Blok No. 92, side and bottom ports w/speed control†	

\*For valve units only without FlexiBlok base, see following pages: ① single solenoid, page MK10-6; ② double solenoid, detented, page MK10-8; ③ double solenoid, 3-position, page MK10-10; ④ double solenoid, 3-position, page MK10-12; ⑤ double solenoid, 3-position, page MK10-14.  
\*\*Light option available only in voltages 100-130 or 200-260, any frequency, including DC. †For speed control, see page MK10-42.

# FLEXIBLOK®

## INDIVIDUAL SUPPLY, ALTERNATE OUTLETS VALVE BLOK

The air valve people

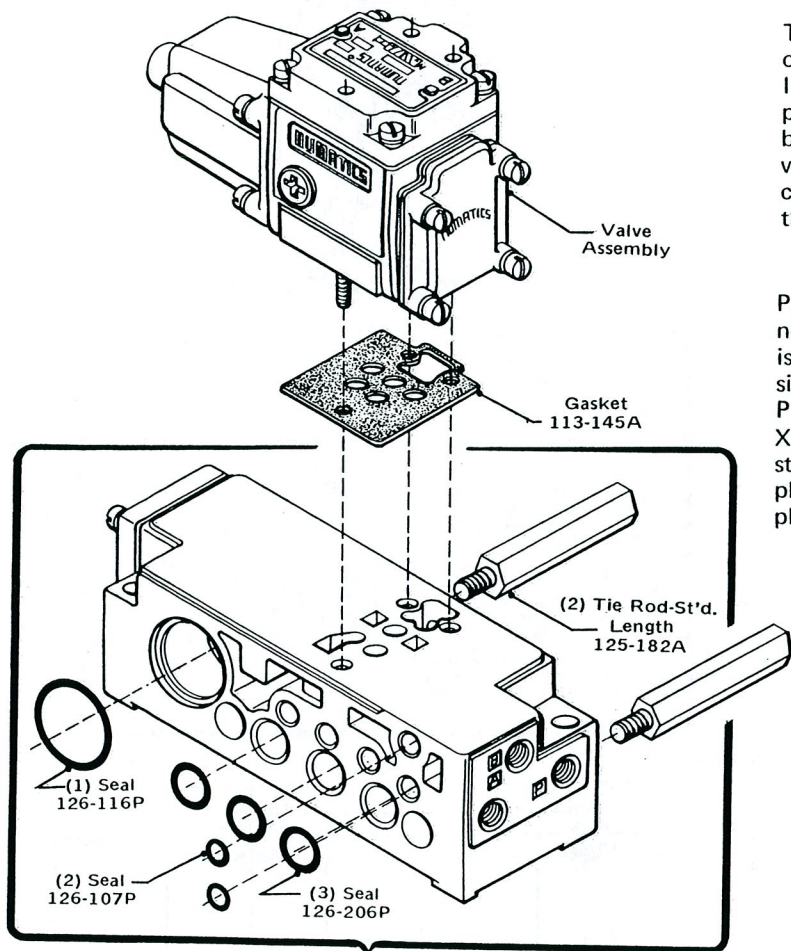
# numatics® MK. 10 LINE

### APPLICATION

This blok provides an external 1/4" NPTF supply to the P Port of the valve, and this supply is isolated from the main gallery. In addition to the two standard A and B outlet ports, this blok provides two alternate ports (XA, XB) in the left side of the blok. These alternate outlets cooperate with mating ports in a variety of circuit plates and are used in setting up tandem circuits where the outlets from this valve are directed through the circuit plate to various ports of an adjacent valve on the left.

### PORTING DETAILS

Provides EB, P and EA galleries. Galleries EB and EA are connected to ports EB and EA of the valve unit. Gallery P is isolated from the valve. Provides B, A and XP Ports in the "B" side of the blok as standard and connects them to the B, A and P Ports of the valve. Also provides alternate ports XB and XA in the blok's left side which connect, respectively, to the standard B and A Ports. This blok must be used with a circuit plate on the left to seal the alternate outlet ports. For complete dimensions see page MK10-26.

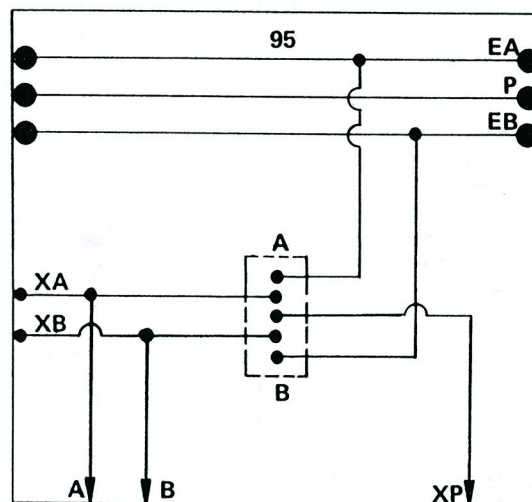


VALVE BLOK  
KIT NO.

229-223B = Code No. 95 or No. 96, Non-Plug-in  
229-224B = Code No. 95, Plug-in  
229-225B = Code No. 96, Plug-in

When ordering separate valve blok, use above kit number

### MK. 10 FLEXIBLOK DIAGRAM



### MODEL SELECTION CHART

NUMBER*	DESCRIPTION	WIRING OPTIONS & MODIFICATION CODE
① 12SAD495 96	Blok No. 95, side ports Blok No. 96, side ports w/speed control†	<p>Add one wiring code from below, plus the Modification Code A and a specific voltage, to end of model number** (e.g. 12DSA495KA 120/60).</p> <p>O=non-plug-in, standard AC A=non-plug-in, special AC B=non-plug-in, DC solenoid C=plug-in, standard AC D=plug-in, special AC E=plug-in, DC solenoid F=non-plug-in, standard AC w/light G=non-plug-in, special AC w/light H=non-plug-in, DC solenoid w/light K=plug-in, standard AC w/light L=plug-in, special AC w/light M=plug-in, DC solenoid w/light</p>
② 12DSA495 96	Blok No. 95, side ports Blok No. 96, side ports w/speed control†	
③ 12DSA595 96	Blok No. 95, side ports Blok No. 96, side ports w/speed control†	
④ 12DSA695 96	Blok No. 95, side ports Blok No. 96, side ports w/speed control†	
⑤ 12DSA795 96	Blok No. 95, side ports Blok No. 96, side ports w/speed control†	

\*For valve units only without FlexiBlok base, see following pages: ① single solenoid, page MK10-6; ② double solenoid, detented, page MK10-8; ③ double solenoid, 3-position, page MK10-10; ④ double solenoid, 3-position, page MK10-12; ⑤ double solenoid, 3-position, page MK10-14.  
\*\*Light option available only in voltages 100-130 or 200-260, any frequency, including DC. †For speed control, see page MK10-42.

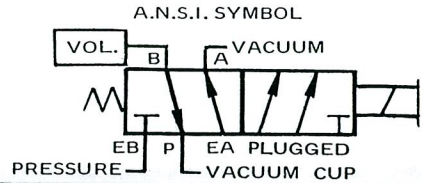
The air valve people

**numatics**®

**MK. 10** LINE

**FLEXIBLOK**™

**SPECIAL NO. 97  
PRESSURE-VACUUM VALVE BLOK**



**APPLICATION**

This is a special valve blok to be used in vacuum application, while permitting only a measured and variable amount of pressurized air to quickly release the vacuum cup when the valve is de-energized. Air is not wasted because it does not blow continuously. When the valve is energized, the vacuum pump is connected to the vacuum cup. At the same time a volume is pressurized. When the valve is de-energized, this volume of pressurized air is exhausted through the vacuum cup, breaking the suction. Any size volume and pressure up to 150 PSIG may be used to provide the exact control required.

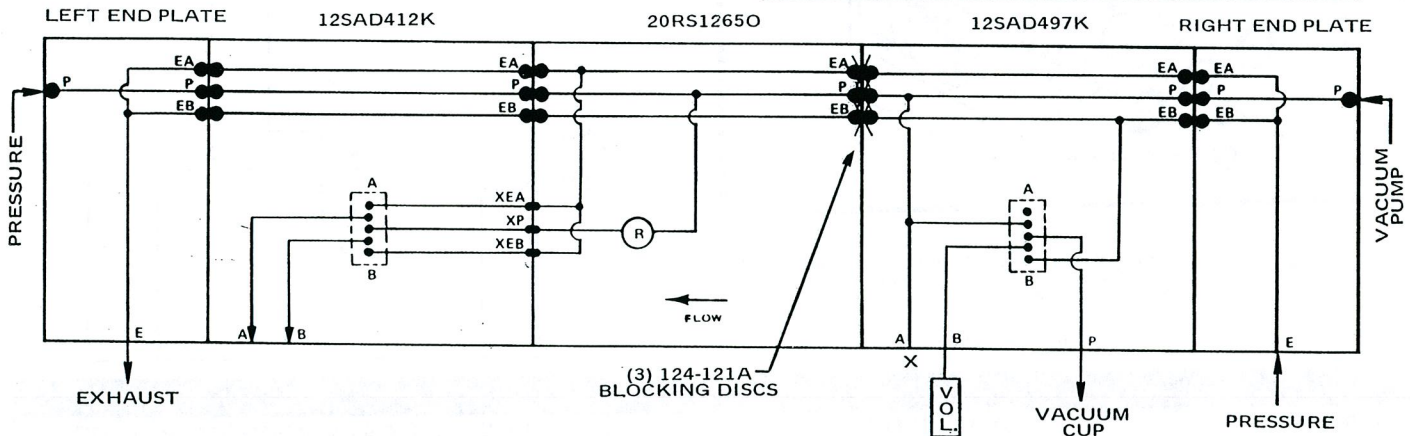
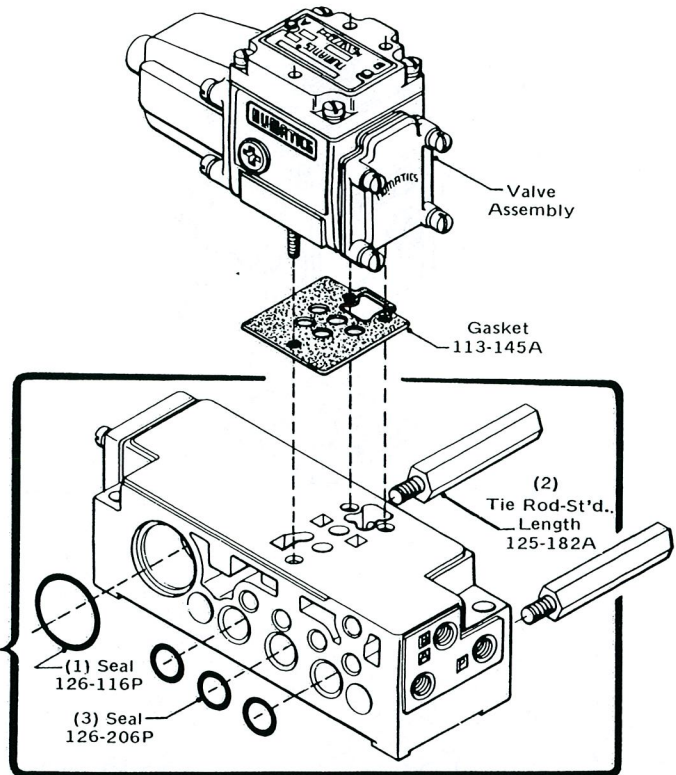
**ASSEMBLY PRECAUTIONS**

When combined with conventional circuitry, as shown below, all No. 97 bloks must be grouped at the right and blocking discs used in all three galleries between the two circuits. The vacuum pump is connected to the P port in the right end plate; pressure is connected to the E port in the right end plate.

If only No. 97 bloks are used, no special precautions are required and blocking discs are omitted. Pressure and vacuum may be supplied from either end.

229-349B = CODE NO. 97, NON-PLUG-IN VALVE BLOK KIT NO.  
229-350B = CODE NO. 97, PLUG-IN

When ordering separate valve blok, use above kit number



TYPICAL CIRCUIT USING SPECIAL BLOK NO. 97 WITH CONVENTIONAL CIRCUITRY

**MODEL SELECTION CHART**

NUMBER*		DESCRIPTION	WIRING OPTIONS & MODIFICATION CODE
①	12SAD497	Single Solenoid, spring return, Side and Bottom B and P ports †	Add one wiring code from below, plus the Modification Code A and a specific voltage, to end of model number** (e.g. 12DSA497KA 120/60).  O = non-plug-in, standard AC A = non-plug-in, special AC B = non-plug-in, DC solenoid C = plug-in, standard AC D = plug-in, special AC E = plug-in, DC solenoid F = non-plug-in, standard AC w/light G = non-plug-in, special AC w/light H = non-plug-in, DC solenoid w/light K = plug-in, standard AC w/light L = plug-in, special AC w/light M = plug-in, DC solenoid w/light
②	12DSA497	Double Solenoid, detented Side and Bottom B and P ports †	
3-Position Valves Not Applicable		NOTE: Bottom ports are plugged as standard. Port A in both side and bottom MUST REMAIN PLUGGED.	
* For valve units only without FlexiBlok base, see following pages: ① page MK10-6; ② page MK10-8. ** Light option available only in voltages 100-130 or 200-260, any frequency, including DC. † Speed control option is not applicable to No. 97 blok.			



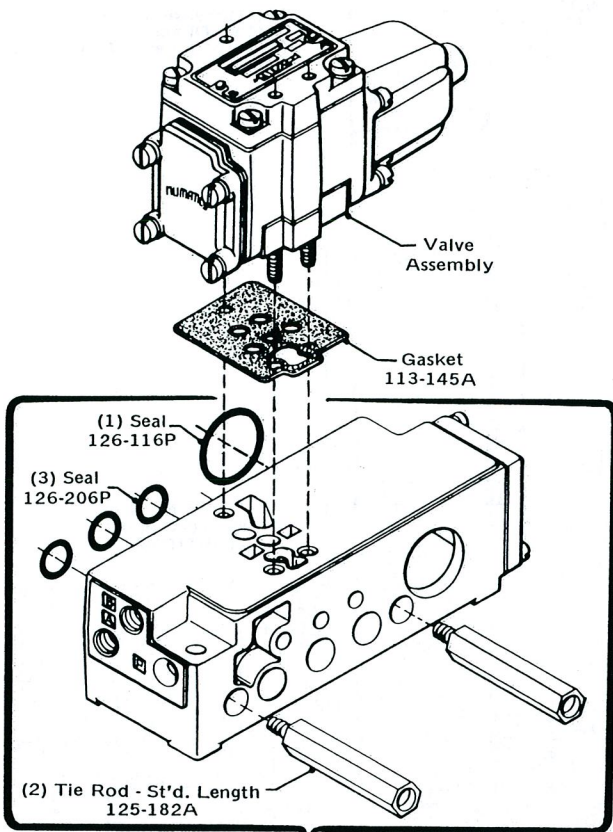
# FLEXIBLOK™

## SPECIAL NO. 98 DOUBLE FLOW PRESSURIZING, SINGLE FLOW EXHAUST VALVE BLOK

The air valve people

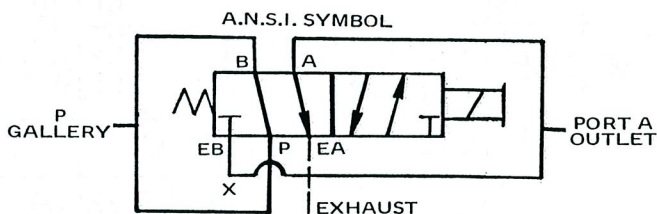
# NUMATICS®

## MK. 10 LINE



VALVE BLOK KIT NO. { 229-358B = Code No. 98, Non-Plug-in  
229-425B = Code No. 98, Plug-in

When ordering separate valve blok, use above kit number



### APPLICATION

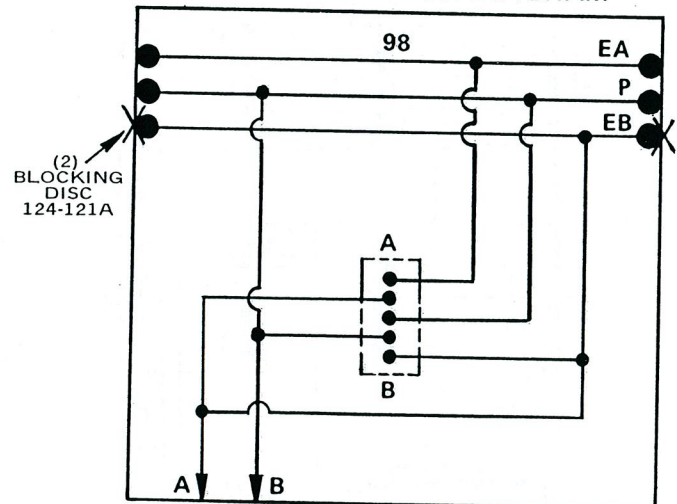
This special valve blok connects passages to allow the valve unit to function as a 3-way, normally closed valve. It is unique in that it offers a dual flow path when the valve is energized, and a single exhaust path when the valve is de-energized. The dual flow path increases the flow capacity to a  $C_v$  of 1.5 (50% greater than standard). With this increased capacity, a MARK 10 valve mounted in a compact FlexiBlok assembly will perform many functions that previously required a much larger valve.

### PORTING DETAILS

Blok No. 98 may be located anywhere in a FlexiBlok assembly. However, blocking discs No. 124-121A must be used in the EB gallery on both sides of the blok. If these are omitted, air will blow directly to exhaust when the valve is energized (solenoid A in command). Air is supplied to the P gallery for the entire system from either end, depending on the circuitry. Port A is the double capacity outlet. Exhaust is into the EA gallery.

This blok is available with side ports only. Speed control is not available. DO NOT remove the red anodized plugs from the B ports; these are construction holes only.

### MK. 10 FLEXIBLOK DIAGRAM



### MODEL SELECTION CHART

NUMBER*	DESCRIPTION	WIRING OPTIONS & MODIFICATION CODE
① 12SAD498	Single Solenoid, spring return Side ports only †	Add one wiring code from below, plus the Modification Code A and a specific voltage, to end of model number** (e.g. 12DSA498KA 120/60).
② 12DSA498	Double Solenoid, detented Side ports only †	
③ 12DSA698	Double Solenoid, 3-position, Side ports only †	
Other 3-Position Valves Not Applicable		O = non-plug-in, standard AC A = non-plug-in, special AC B = non-plug-in, DC solenoid C = plug-in, standard AC D = plug-in, special AC E = plug-in, DC solenoid F = non-plug-in, standard AC w/light G = non-plug-in, special AC w/light H = non-plug-in, DC solenoid w/light K = plug-in, standard AC w/light L = plug-in, special AC w/light M = plug-in, DC solenoid w/light
* For valve units only without FlexiBlok base, see following pages: ① page MK 10-6; ② page MK 10-8; ③ page MK 10-12. ** Light option available only in voltages 100-130 or 200-260, any frequency, including DC. † Speed control option is not applicable to No. 98 blok.		

The air valve people

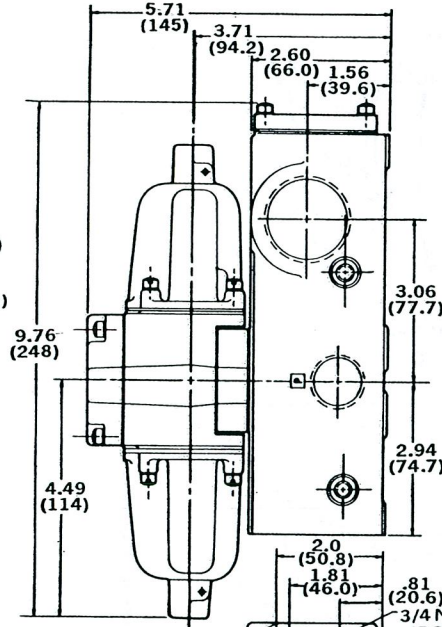
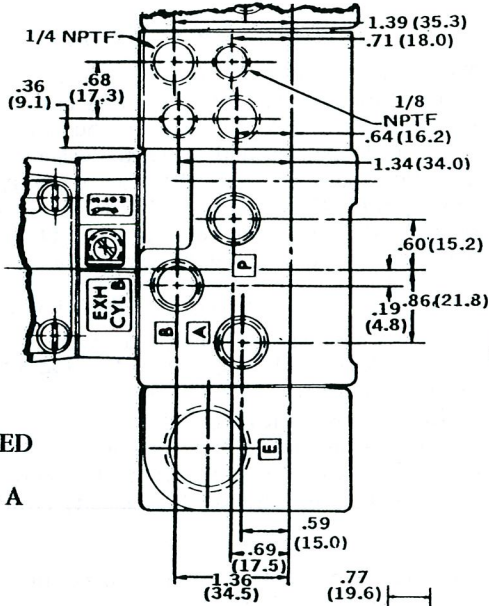
# numatics® MK. 10 LINE

# FLEXIBLOK®

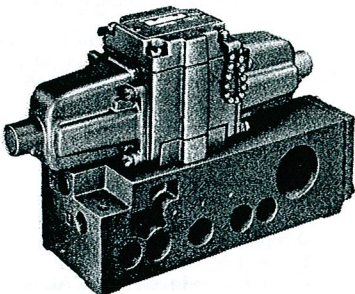
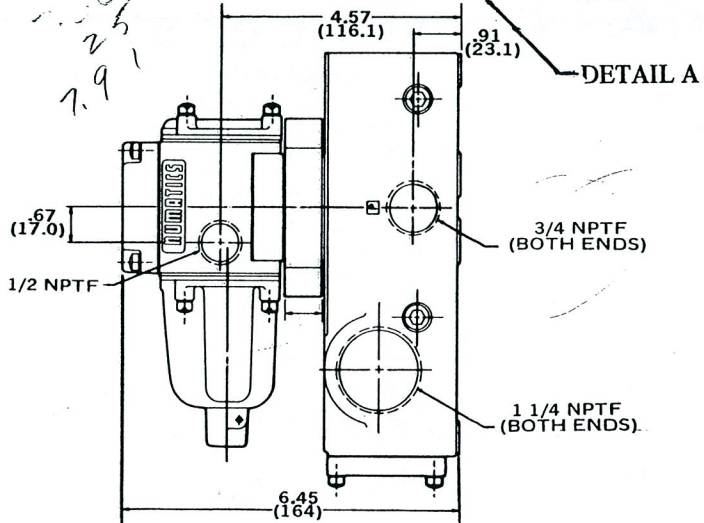
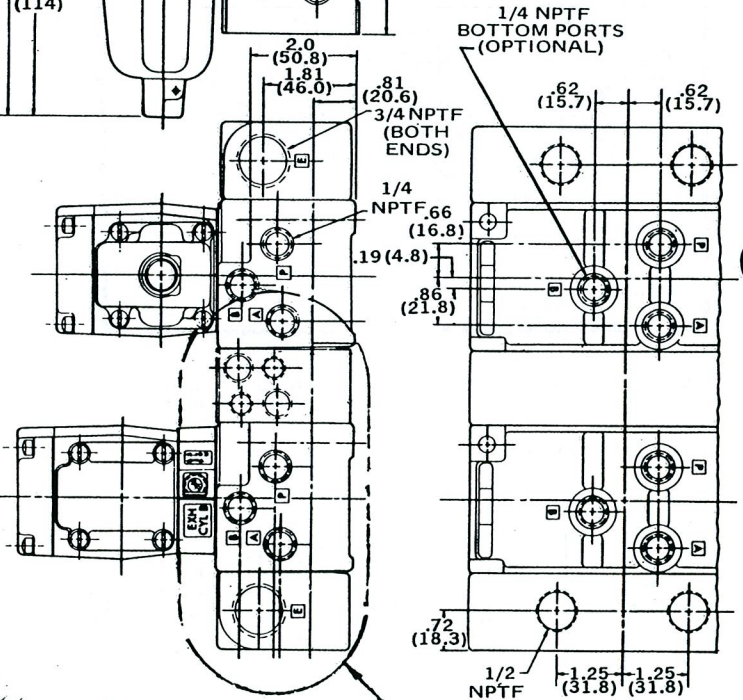
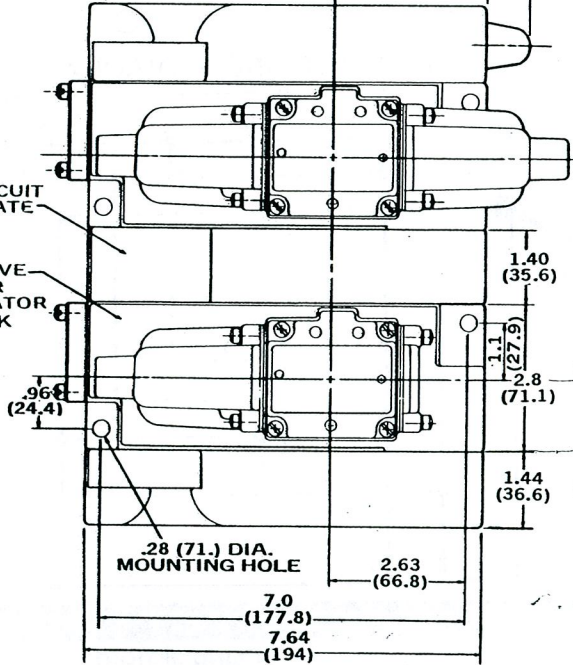
## DIMENSIONS FOR ALL VALVE BLOKS

Top Dimension = Inches  
Bottom Dimension  
(In Parentheses) = Millimeters

ENLARGED  
VIEW  
DETAIL A



CIRCUIT  
PLATE  
  
VALVE  
OR  
REGULATOR  
BLOK



Dimensional details for all eight FlexiBlok units (shown on pages MK10-18 -25) are the same, as shown here. For FlexiBlok assemblies with speed control, add .74" (18.8 mm) to overall height.

# Nupresco®

## MANIFOLD MOUNTED PRESSURE CONTROLS

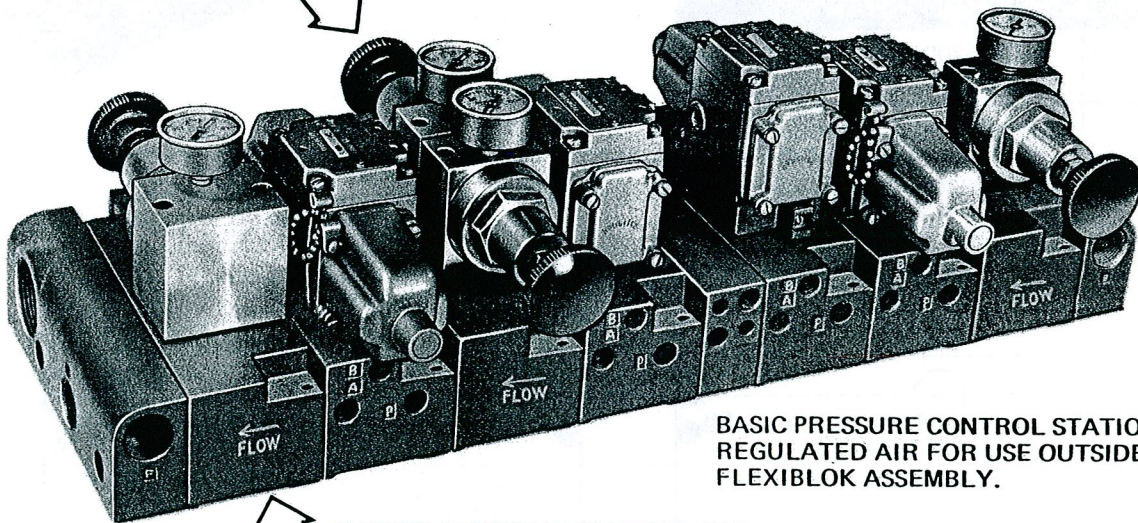
The air valve people  
**numatics®**  
**MK. 10** LINE

### WHAT THEY DO:

NUPRESCO Manifold Mounted Pressure Controls mount in valve-manifold assemblies using MARK 10 Line solenoid valves and FlexiBlok. There are a number of advantages to this type of control station assembly. It can . . . . .

- ➔ **SAVE SPACE**
- ➔ **IMPROVE APPEARANCE**
- ➔ **SIMPLIFY INSTALLATION and MAINTENANCE**
- ➔ **MAKE MORE EFFICIENT USE OF AIR POWER**
- ➔ **PROVIDE EASY STATION-ADDING CAPABILITY**
- ➔ **GIVE SMOOTHER CYLINDER OPERATION**
- ➔ **REDUCE PIPING TIME and PIPING ERROR**
- ➔ **REDUCE CYLINDER PACKING WEAR, thus REDUCE CYLINDER MAINTENANCE**

INDIVIDUAL PRESSURE CONTROL STATION -  
SERVES THE VALVE ON ITS LEFT.



BASIC PRESSURE CONTROL STATION PROVIDES  
REGULATED AIR FOR USE OUTSIDE THE  
FLEXIBLOK ASSEMBLY.

MASTER PRESSURE CONTROL FOR  
ENTIRE FLEXIBLOK ASSEMBLY.

### WHY MANIFOLD MOUNTED PRESSURE CONTROL?

For years, directional control valves have been subplate and manifold mounted to promote easy maintenance, save space and to simplify installation. These same reasons dictate that pressure control valves should also be manifold mounted.

A major problem facing industrial compressed air technology is the continuing difficulty of mounting and piping increasingly more complicated power air installations on modern machines. Everyone recognizes the advantages of using the lowest possible air pressure for each actuator, but the physical problems of finding space to mount individual, bracket mounted pressure regulators, and the piping problems created by these multiple pressure systems, make it difficult to find

enough space on a complex machine.

Similarly, it is good engineering to use only as much air pressure as needed to do a job. Different cylinders on a machine will operate satisfactorily at different pressures. In fact, many times high pressure can be used on one end of a cylinder and a very low pressure on the other end.

NUPRESCO Manifold Mounted Pressure Controls make it easy and economical to install a pressure control wherever one is needed in a circuit. They mount in about the same space occupied by directional valves and can provide individual unit, multiple pressure control for any possible power air system. The savings in both air and installation costs can be dramatic!

The air valve people

**numatics**  
MK. 10 LINE

Nupresco®

**FLEXIBLOK** MASTER PRESSURE CONTROL STATION  
(SINGLE PRESSURE)

**APPLICATION**

This assembly mounts a 1/2" full pipe size pressure control valve unit on a FlexiBlok. It takes unregulated air into the P gallery of one side of the FlexiBlok and delivers regulated air out the P gallery of the other side. This unit is used as a master pressure control valve delivering controlled pressure to the P gallery of the FlexiBlok system.

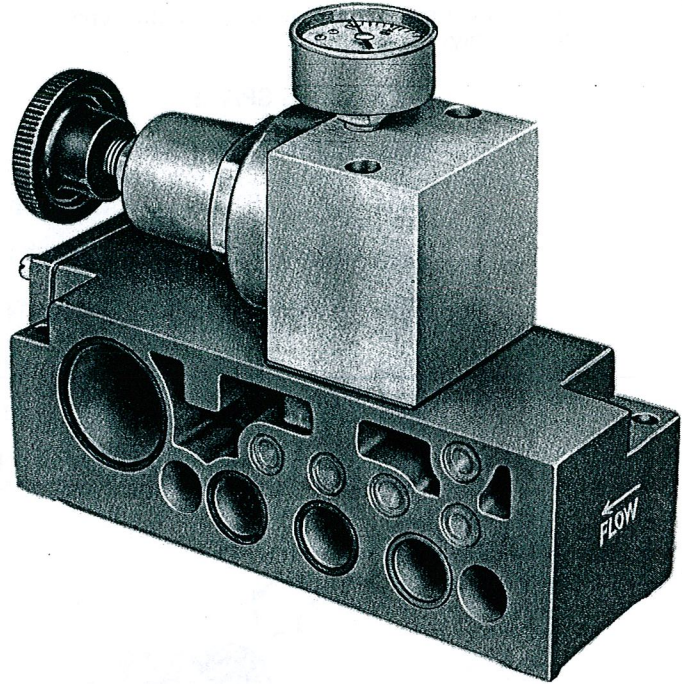
**PORTING DETAILS**

Provides uninterrupted EB and EA galleries. Interrupts the P gallery and routes the incoming air up through the pressure control valve, then down into the outlet, supplying regulated air to the downstream P gallery.

**AIR FLOW DIRECTION**

This assembly is available with flow from either left to right or right to left. The difference is in the porting of the FlexiBlok. The pressure control valve unit is the same in either case.

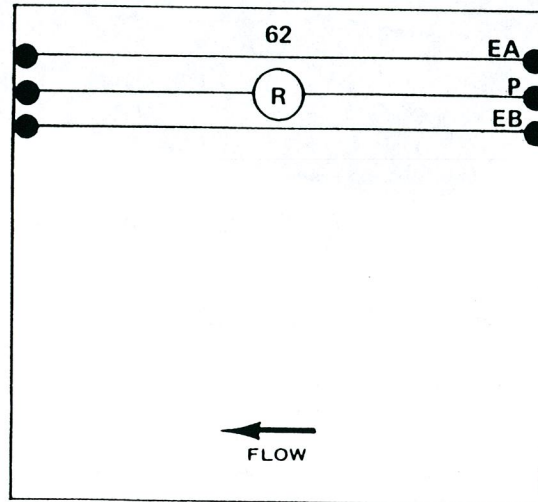
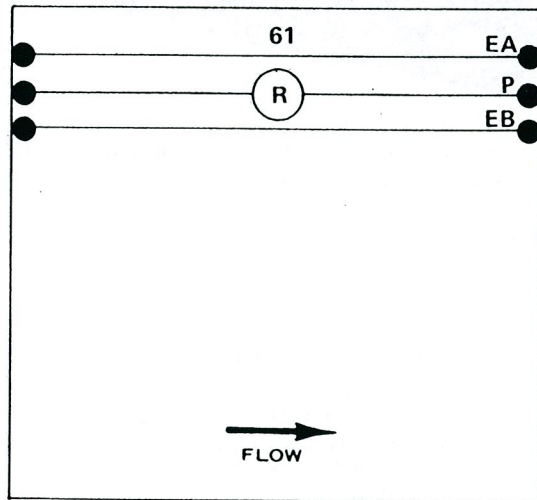
**PRESSURE RANGE:** Primary - 250 PSIG maximum  
Secondary - 10-130 PSIG maximum  
For other ranges, consult factory.



**MODEL SELECTION CHART**

FLOW DIRECTION	WITH 0-200 PSIG GAGE	WITHOUT GAGE
LEFT TO RIGHT	40RS2261OB	40RS2261OB12H
RIGHT TO LEFT	40RS2262OB	40RS2262OB12H

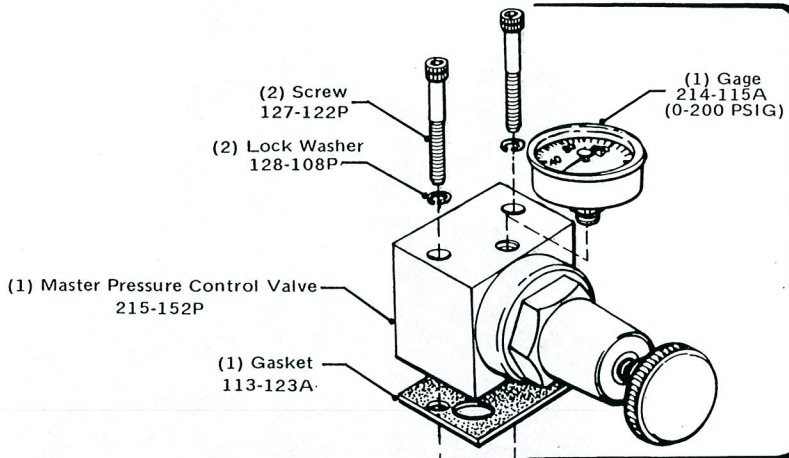
**MK. 10 FLEXIBLOK DIAGRAMS**



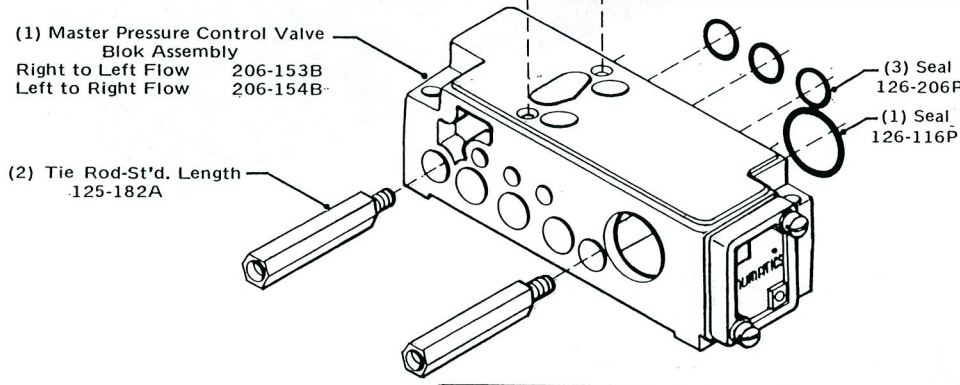
The air valve people

# numatics<sup>®</sup> MK. 10 LINE

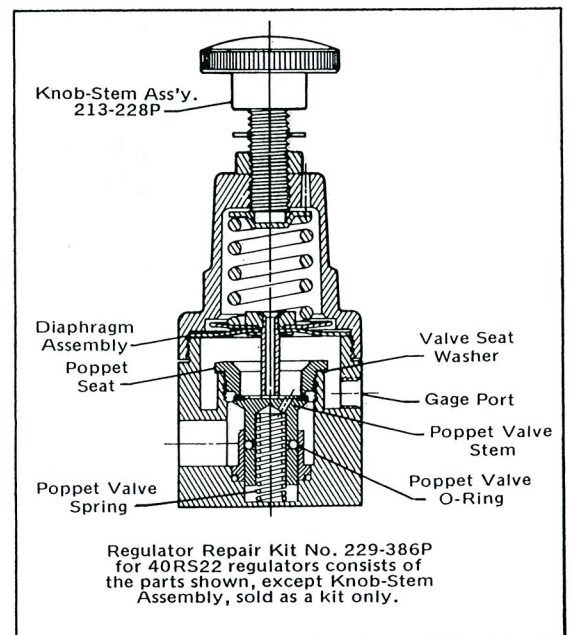
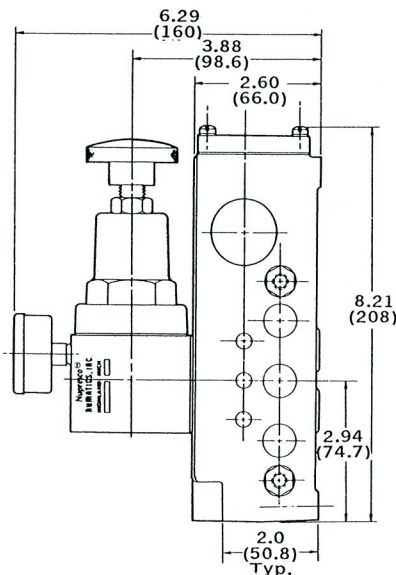
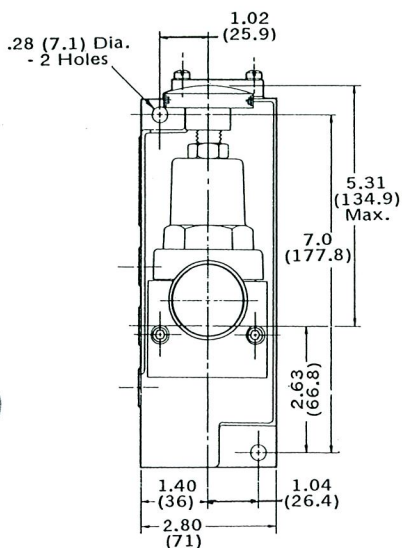
Top Dimension = Inches  
Bottom Dimension  
(In Parentheses) = Millimeters



MASTER PRESSURE CONTROL VALVE UNIT  
40RS2200OB (Incl. Gage)  
40RS2200OB12H (Less Gage)



(1) Master Pressure Control Valve Blok Kit  
Right to Left Flow 229-185B  
Left to Right Flow 229-186B  
(Incl's. Seals, Tie Rods & Master Press. Control Valve Blok Ass'y.)



Regulator Repair Kit No. 229-386P for 40RS22 regulators consists of the parts shown, except Knob-Stem Assembly, sold as a kit only.

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**MK. 10** LINE

**Nupresco**<sup>®</sup>

**FLEXIBLOK** INDIVIDUAL PRESSURE CONTROL STATION  
(SINGLE PRESSURE TO ADJACENT VALVE)

#### APPLICATION

This assembly is used to take air from the P gallery of a manifold assembly, regulate it down to a lower pressure, then feed it to the P Port of a directional valve. This blok always supplies air to the valve blok or circuit plate on its LEFT.

#### PORTING DETAILS

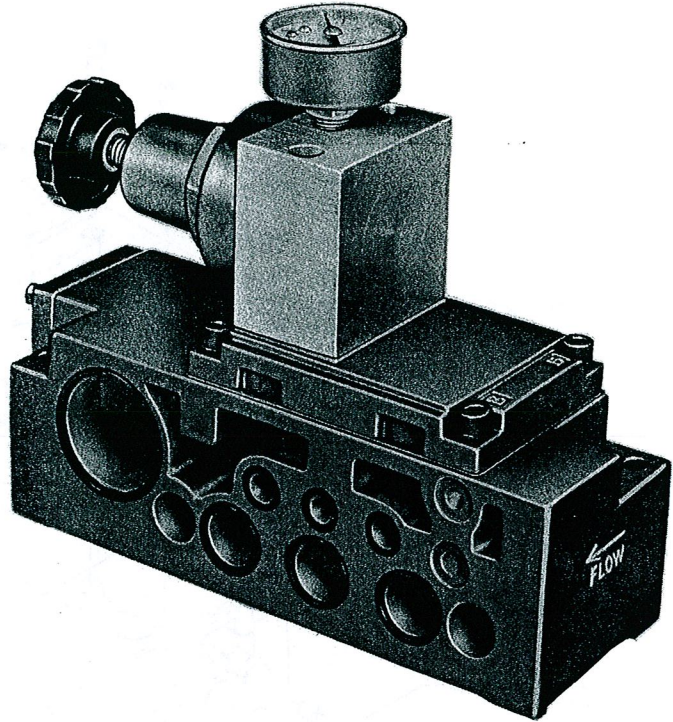
Maintains the EB, P and EA galleries. Delivers air from the P gallery to the inlet of the pressure control valve (regulator). Delivers the output of the pressure control valve to the XP Port. Connects the XEB and XEA Ports to the EA gallery.

#### PRESSURE RANGE

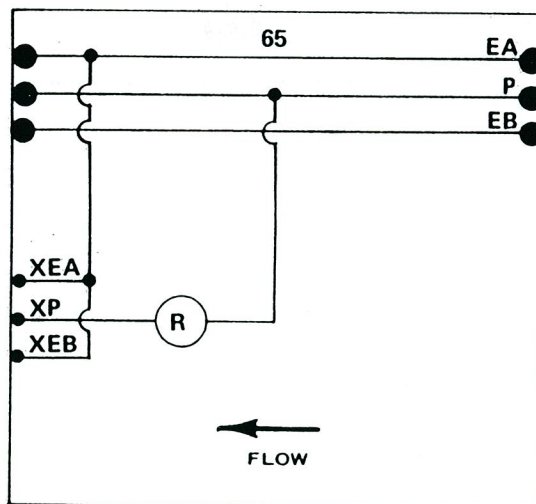
Primary - 250 PSIG maximum  
Secondary - 10-130 PSIG maximum  
For other ranges, consult factory.

#### MODEL SELECTION

With Gage: 20RS1265  
Less Gage: 20RS12650012H



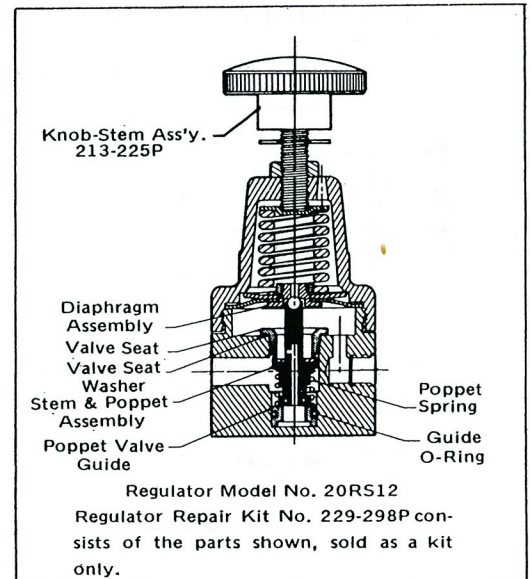
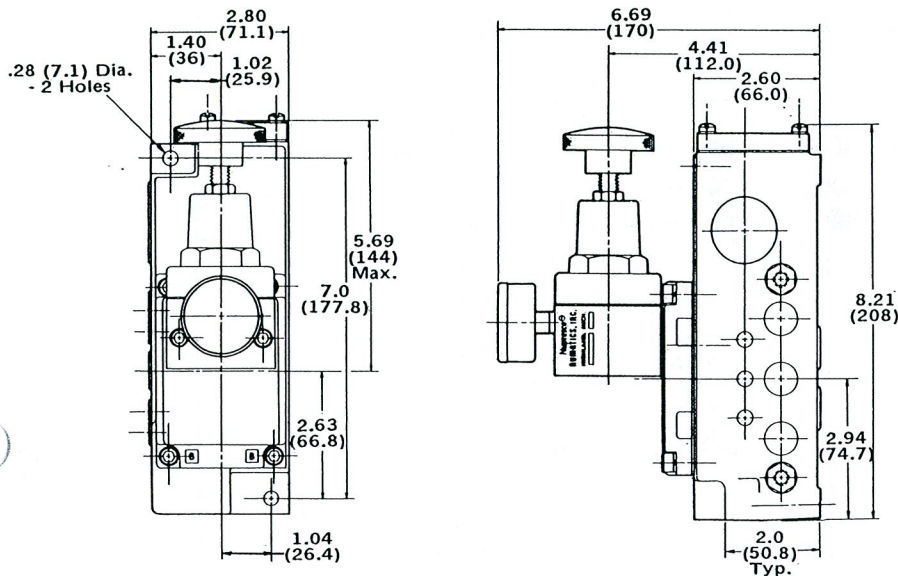
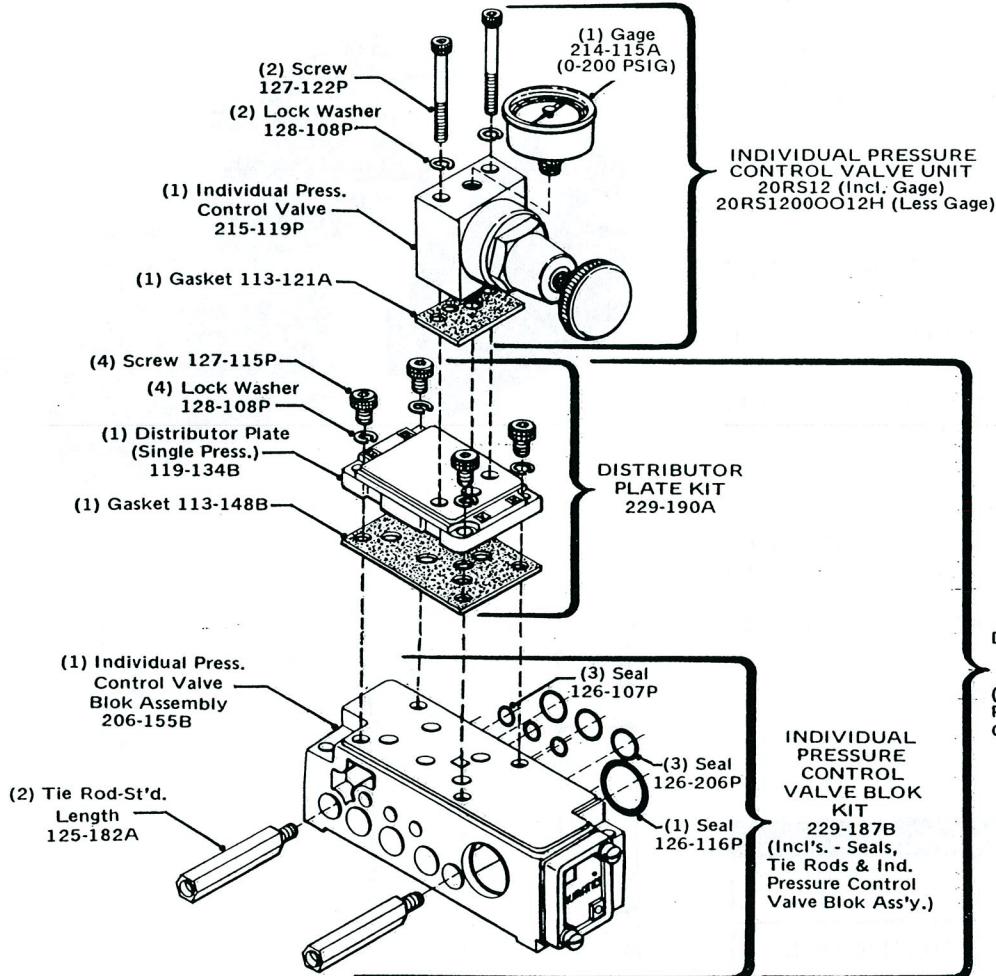
**MK. 10 FLEXIBLOK DIAGRAM**



The air valve people

# NUMATICS<sup>®</sup> MK. 10 LINE

Top Dimension = Inches  
Bottom Dimension  
(In Parentheses) = Millimeters



The air valve people

**numatics**  
MK. 10 LINE

**Nupresco**<sup>®</sup>

**FLEXIBLOK** INDIVIDUAL PRESSURE CONTROL STATION  
(DUAL PRESSURE TO ADJACENT VALVE)

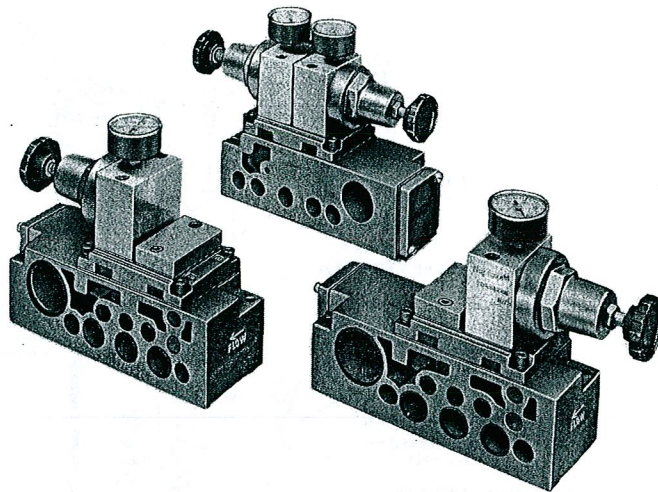
**APPLICATION**

This assembly is used to take air from the P gallery of a manifold assembly and feed two pressures to the EB and EA Ports of the adjacent directional valve. This blok provides two pressure control valve mounting stations, A and B. Each station can accept either a pressure control valve or a jumper plate. Thus three arrangements are possible:

1. Two pressure control valves, one on each station.
2. One pressure control valve on station A, and a jumper plate on station B.
3. One pressure control valve on station B, and a jumper plate on station A.

These bloks always supply air to the valve blok or circuit plate on the LEFT.

**NOTE:** Do not use these pressure control bloks to supply valve bloks which include speed control. Line air will leak past the needle to atmosphere.



**PORTING DETAILS**

Maintains the EB, P and EA galleries. Connects the P gallery to the inlets of two mounting stations, A and B. Connects the output of station A to the XEA Port; connects the output of station B to the XEB Port. Connects the XP Port to the EB and EA galleries.

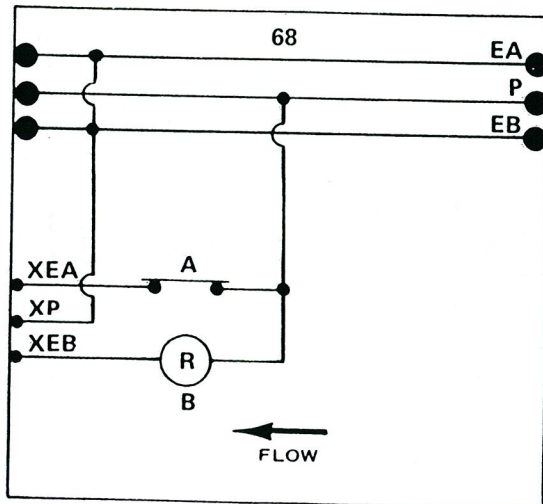
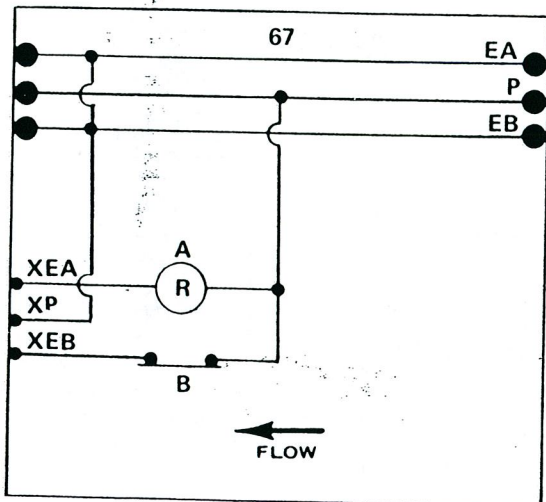
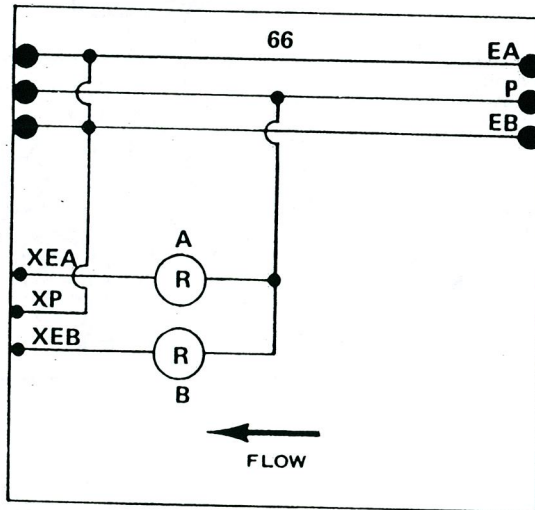
**PRESSURE RANGE**

Primary - 250 PSIG maximum  
Secondary - 10-130 PSIG maximum  
For other ranges, consult factory.

**MODEL SELECTION CHART**

BLOK NUMBER	WITH 0-200 PSIG GAGE	WITHOUT GAGE
66	20RS1266	20RS1266OO12H
67	20RS1267	20RS1267OO12H
68	20RS1268	20RS1268OO12H

**MK. 10 FLEXIBLOK DIAGRAMS**

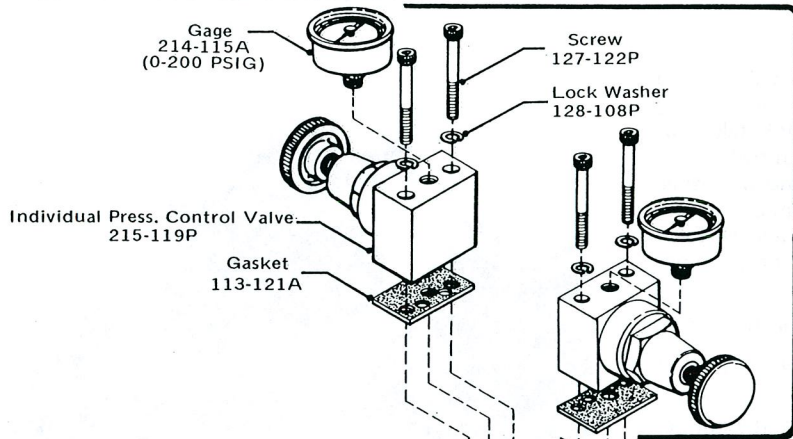




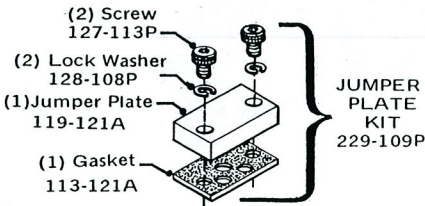
The air valve people

# numatics<sup>®</sup> MK. 10 LINE

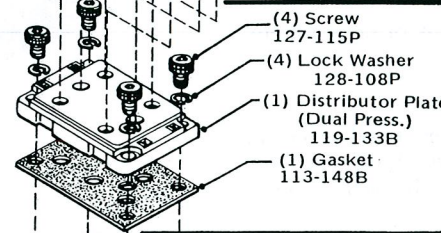
Top Dimension = Inches  
Bottom Dimension  
(In Parentheses) = Millimeters



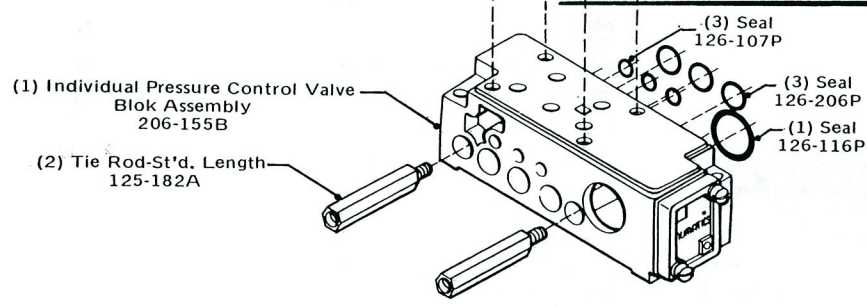
INDIVIDUAL PRESSURE CONTROL VALVE UNIT  
20RS12 (Incl. Gage)  
20RS12000012H (Less Gage)



JUMPER PLATE KIT  
229-109P

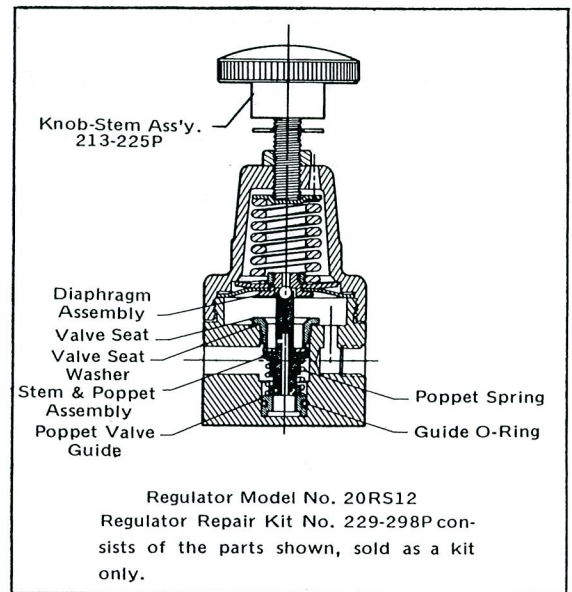
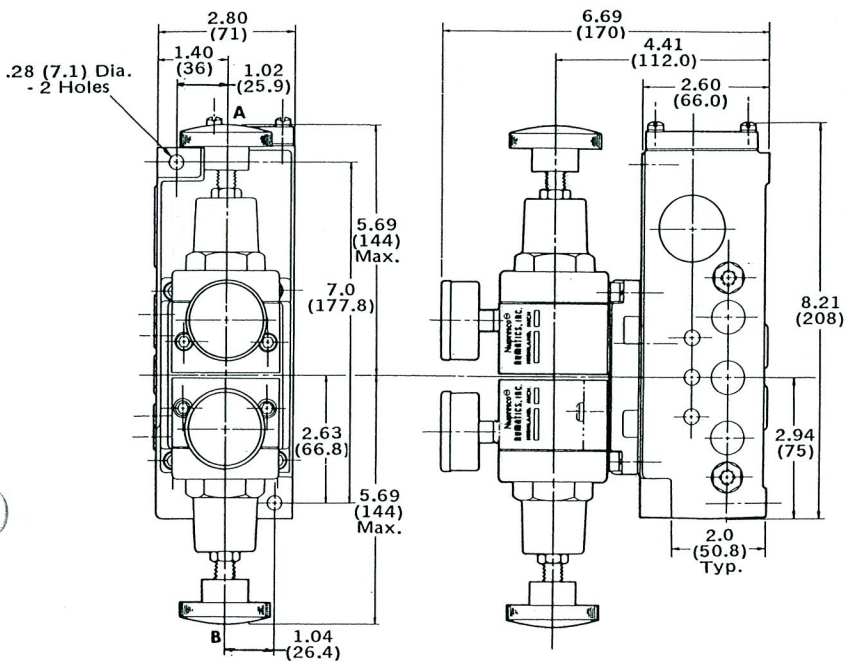


DISTRIBUTOR PLATE KIT  
229-191A



INDIVIDUAL PRESSURE CONTROL VALVE BLOK KIT  
229-187B  
(Incl's. - Seals, Tie Rods & Ind. Pressure Control Valve Blok Ass'y.)

VALVE BLOK AND DISTRIBUTOR PLATE ASSEMBLY  
206-159B  
(Incl's. - Distributor Plate Kit & Ind. Press. Control Valve Blok Kit)



Regulator Model No. 20RS12  
Regulator Repair Kit No. 229-298P consists of the parts shown, sold as a kit only.

The air valve people

**numatics**  
MK. 10 LINE

**Nupresco**<sup>®</sup>

**FLEXIBLOK** INDIVIDUAL PRESSURE CONTROL STATION

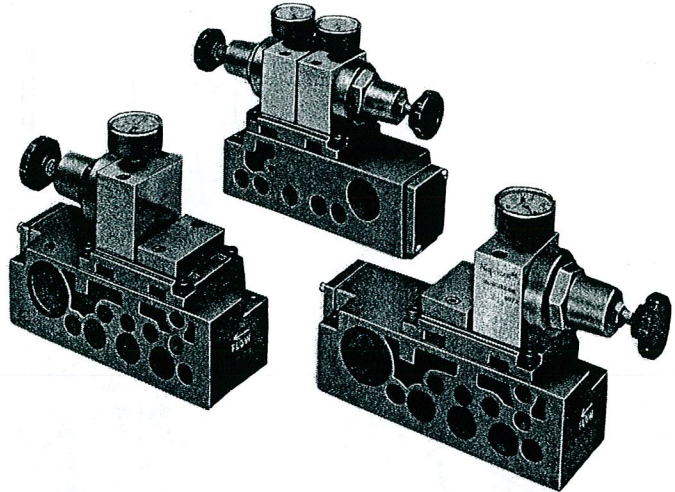
(DUAL PRESSURE TO ADJACENT VALVE, WITH VALVE ACTING AS A 2-PRESSURE SELECTOR)

**APPLICATION**

This assembly is used with a valve blok to get a 2-pressure selector action (with no exhaust function except the relieving capacity of the pressure control valves). This blok takes air from the P gallery and feeds it to two pressure control valves, one serving the P Port of the directional valve and the other serving the EB and EA Ports. This blok provides mounting stations for two pressure control valves, stations A and B. Each station can accept either a pressure control valve or a jumper plate. Thus, three arrangements are possible:

1. Two pressure control valves, one on each station.
2. One pressure control valve on station A, and a jumper plate on station B.
3. One pressure control valve on station B, and a jumper plate on station A.

These bloks always supply air to the valve blok or circuit plate on the LEFT.



**PORTING DETAILS**

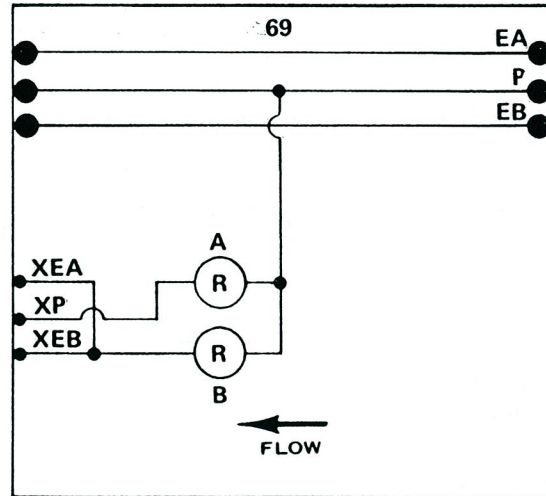
Maintains the EB, P and EA galleries. Connects the P gallery to the inlets of the two mounting stations, A and B. Connects the output of station A to the XP Port; connects the output of station B to the XEB and XEA Ports.

**PRESSURE RANGE**

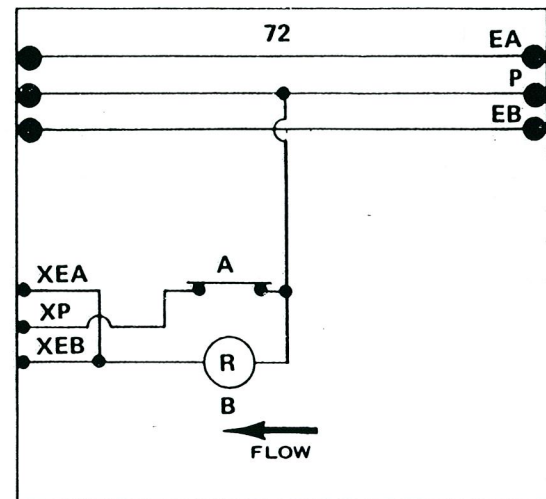
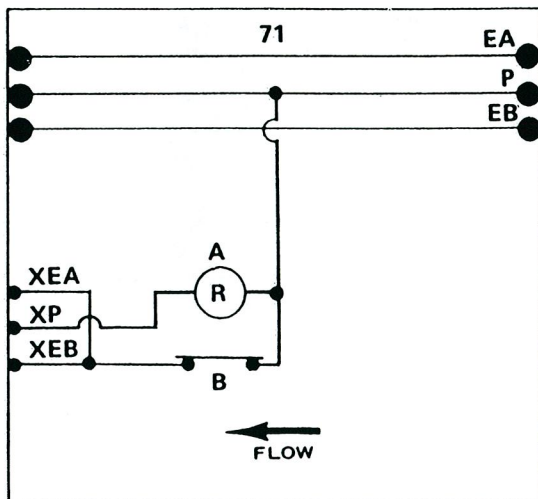
Primary - 250 PSIG maximum  
Secondary - 10-130 PSIG maximum  
For other ranges, consult factory.

**MODEL SELECTION CHART**

BLOK NUMBER	WITH 0-200 PSIG GAGE	WITHOUT GAGE
69	20RS1269	20RS12690012H
71	20RS1271	20RS12710012H
72	20RS1272	20RS12720012H



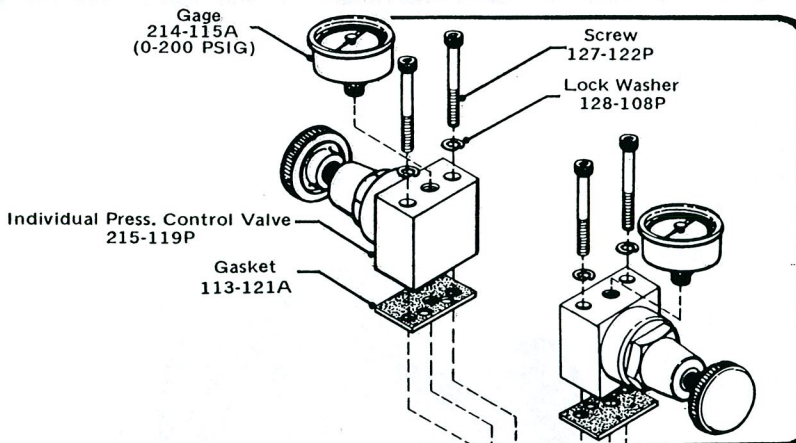
**MK. 10 FLEXIBLOK DIAGRAMS**



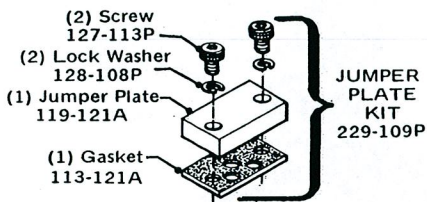
The air valve people

# numatics® MK. 10 LINE

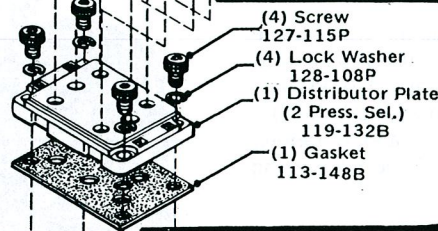
Top Dimension = Inches  
Bottom Dimension (In Parentheses) = Millimeters



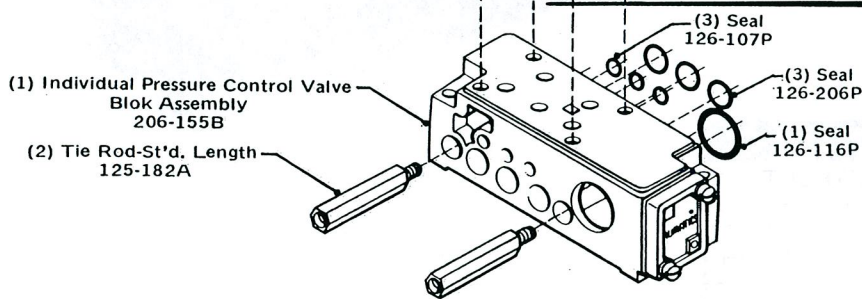
INDIVIDUAL PRESSURE CONTROL VALVE UNIT  
20RS12 (Incl. Gage)  
20RS12000012H (Less Gage)



JUMPER PLATE KIT  
229-109P

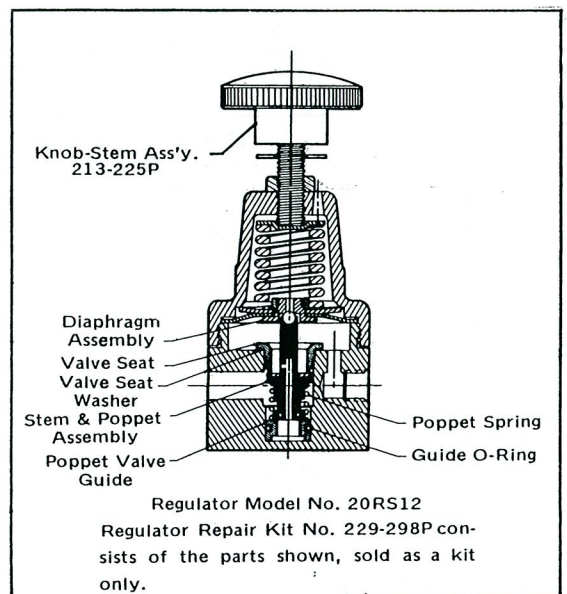
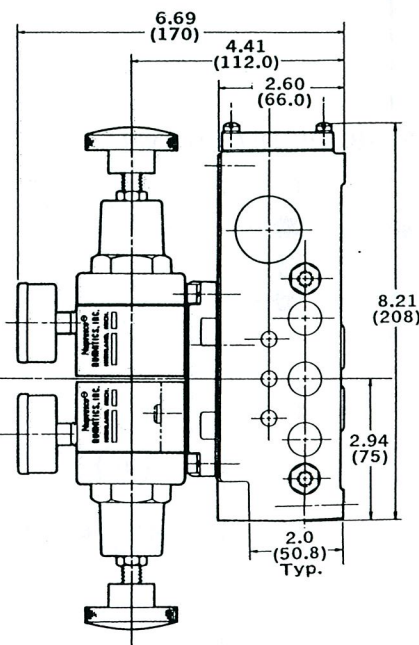
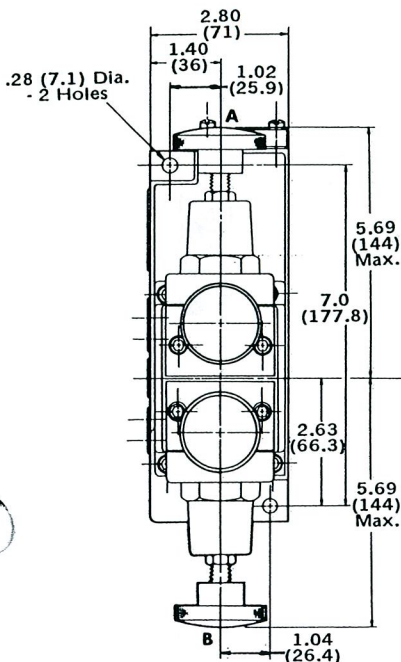


DISTRIBUTOR PLATE KIT  
229-192A



INDIVIDUAL PRESSURE CONTROL VALVE BLOK KIT  
229-187B  
(Incl's. - Seals, Tie Rods & Ind. Pressure Control Valve Blok Ass'y.)

VALVE BLOK AND DISTRIBUTOR PLATE ASSEMBLY  
206-160B  
(Incl's. - Distributor Plate Kit & Ind. Press. Control Valve Blok Kit)



The air valve people

**numatics**  
**MK. 10** LINE

**Nupresco®**

**FLEXIBLOK BASIC PRESSURE CONTROL STATION  
(EXTERNAL OUTLET PORTS)**

**APPLICATION**

This assembly is used to get a source of regulated pressure FOR USE OUTSIDE THE FLEXIBLOK manifold assembly. It provides mountings for two separate pressure control valves. Each takes its supply from the P gallery and delivers regulated air to an external port in the front "B" side of the FlexiBlok, from which the air can be piped to the point where it will be used. This blok maintains the EB, P and EA galleries. This can be mounted in a FlexiBlok manifold assembly. Two assembly arrangements are possible:

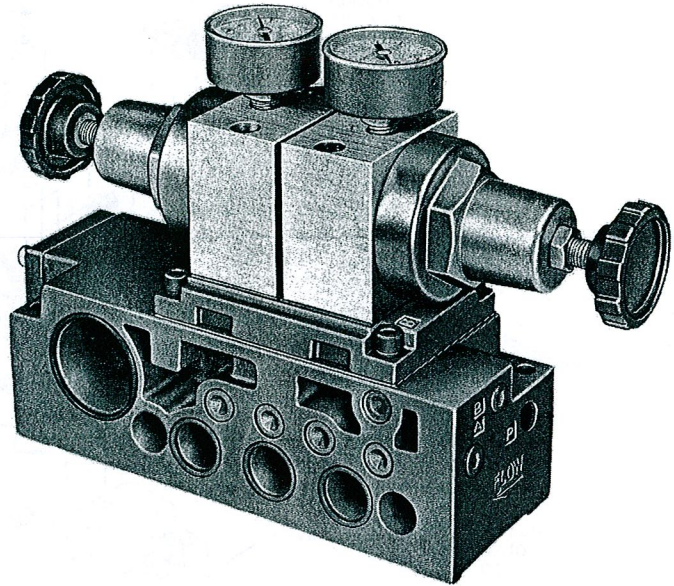
1. Two pressure control valves, one on each station.
2. If only one pressure control valve is needed, use a pressure control valve on station A and a jumper plate on station B.

**PORTING DETAILS**

Maintains the EB, P and EA galleries. Takes air from the P gallery to supply two pressure control valve stations, A and B. The output of station A goes to the outlet port marked "A"; the output of station B goes to the outlet port marked "B". The standard arrangement has outlet Ports A and B tapped 1/4" NPTF in the "B" side of the blok. Optional porting offers side and bottom ports tapped 1/4" NPTF.

**PRESSURE RANGE**

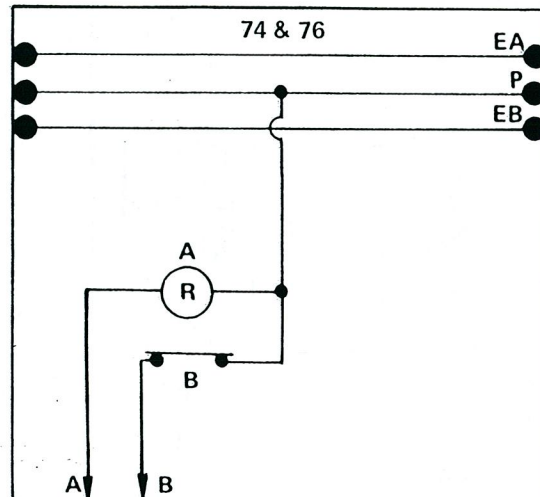
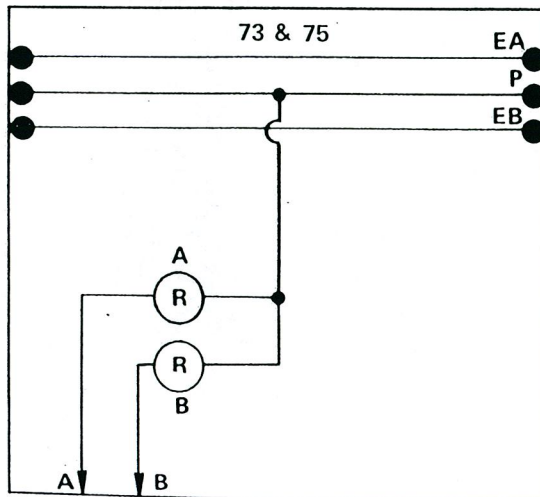
Primary - 250 PSIG maximum  
Secondary - 10-130 PSIG maximum  
For other ranges, consult factory.



**MODEL SELECTION CHART**

MOUNTING OPTIONS	BLOK NUMBER	WITH 0-200 PSIG GAGE	WITHOUT GAGE
SIDE PORTS ONLY	73	22RS1273	22RS12730012H
	74	22RS1274	22RS12740012H
SIDE AND BOTTOM PORTS	75	22RS1275	22RS12750012H
	76	22RS1276	22RS12760012H

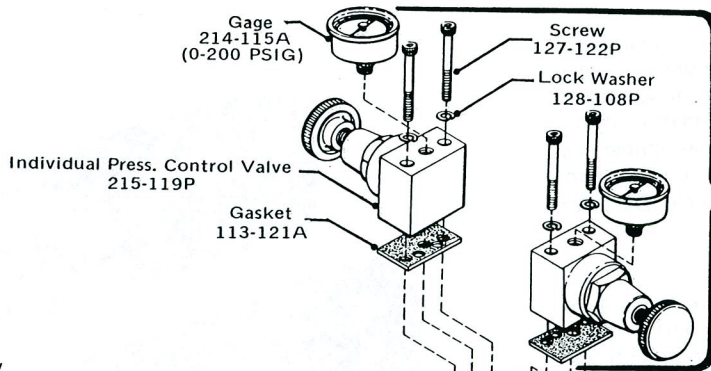
**MK. 10 FLEXIBLOK DIAGRAMS**



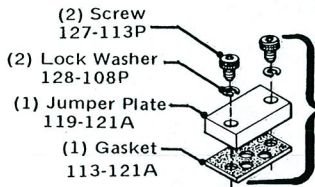
The air valve people

# numatics® MK. 10 LINE

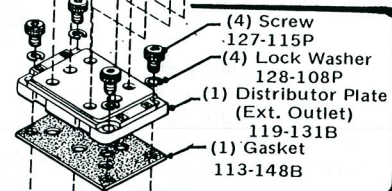
Top Dimension = Inches  
Bottom Dimension  
(In Parentheses) = Millimeters



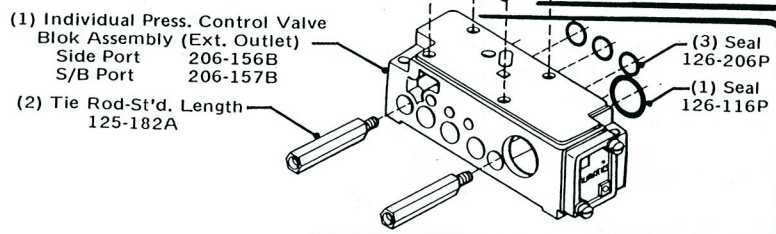
**INDIVIDUAL PRESSURE CONTROL VALVE UNIT**  
20RS12 (Incl. Gage)  
20RS1200012H (Less Gage)



**JUMPER PLATE KIT**  
229-109P

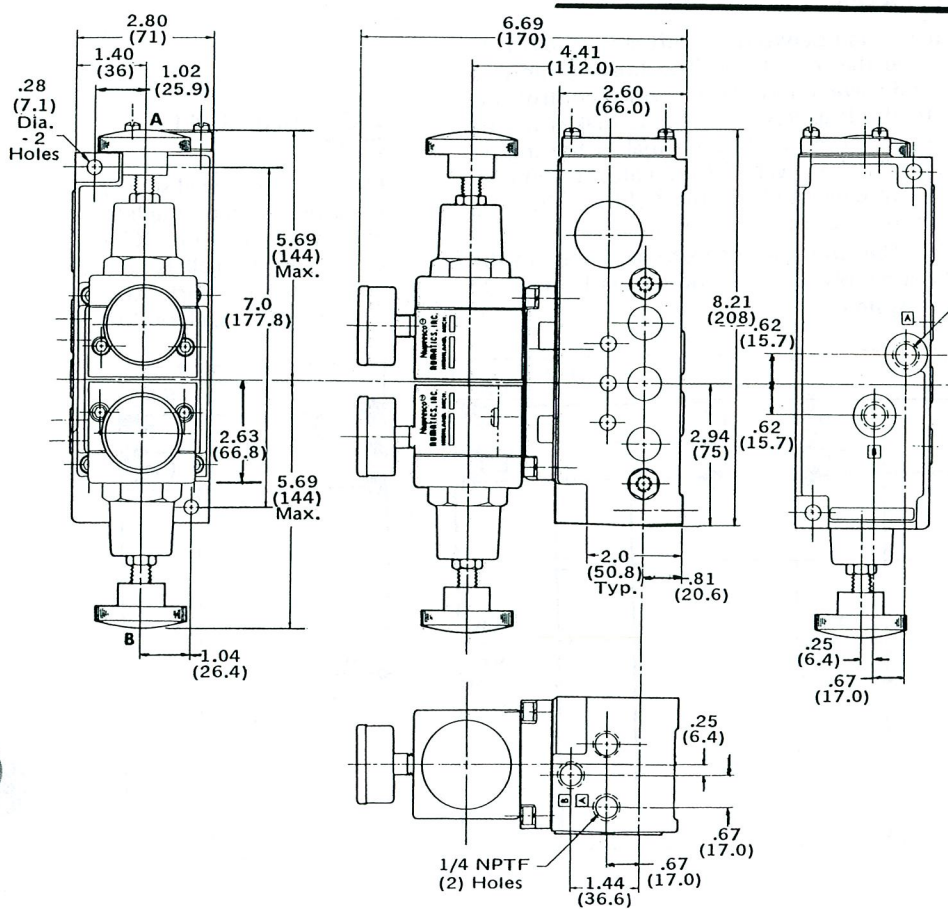


**DISTRIBUTOR PLATE KIT**  
229-193A

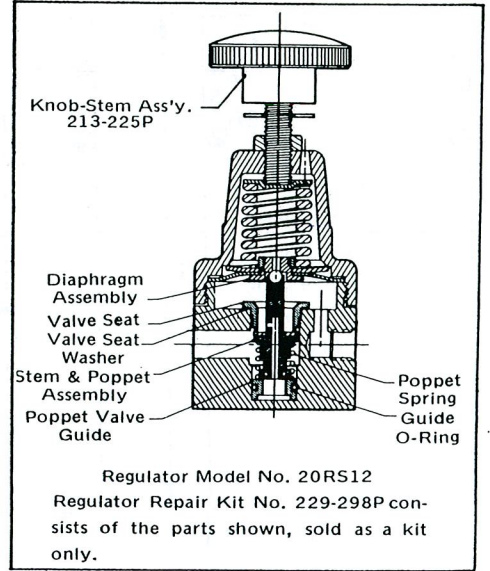


**INDIVIDUAL PRESSURE CONTROL BLOK KIT**  
(Ext. Outlet)  
SIDE PORT 229-188B  
SIDE AND BOTTOM PORT 229-189B

**VALVE BLOK AND DISTRIBUTOR PLATE ASSEMBLY**  
SIDE PORT 206-161B  
SIDE AND BOTTOM PORT 206-162B



1/4 NPTF Bottom Ports (Optional)  
(2) Holes



**Knob-Stem Ass'y.**  
213-225P

- Diaphragm Assembly
- Valve Seat
- Valve Seat Washer
- Stem & Poppet Assembly
- Poppet Spring Guide
- O-Ring

Regulator Model No. 20RS12  
Regulator Repair Kit No. 229-298P consists of the parts shown, sold as a kit only.

**APPLICATION**

MARK 10 FlexiBlok circuit plates are a series of special plates designed to fit between two valve blocs or between a valve blok and a pressure control blok. They offer a wide variety of internal passages which cooperate with the porting of both the valve and pressure control blocs in such a way that almost any circuit can be built without external tubing or pipe connections. (See Numatics' Engineering & Technical Data for how to build a circuit.)

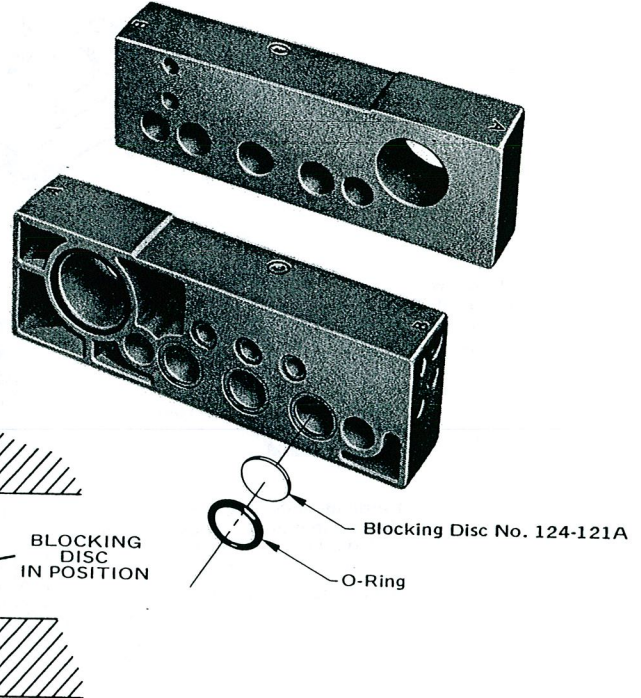
**SPECIFICATIONS**

The blok diagrams on pages MK10-38 through MK10-40 show all the standard circuit plates. Each plate carries a part number, as shown, which includes the plate, all necessary seals and two tie rods - everything needed to install the circuit plate in a manifold assembly.

All circuit plates are the same size, 1.40" x 2.56", one-half the width of a valve blok. Two extra-length tie rods come with each plate. To install the plate, remove the standard length tie rods of the valve blok and substitute the extra-length rods. They are long enough to accommodate BOTH the valve blok and the circuit plate.

As an alternate to circuit plate No. 229-195B, Numatics offers a Blocking Disc, part No. 124-121A, which fits inside the o-ring of any of the valve or pressure control blocs' three main galleries. These aluminum discs permit interruption of air pressure supply or exhaust between individual blocs in an assembly. To order Blocking Discs in an assembly, see back cover.

Top Dimension = Inches  
 Bottom Dimension  
 (In Parentheses) = Millimeters



**BLANK PLATE**

This plate blocks off the EB, P and EA galleries. Use it to divide a FlexiBlok assembly into two separate circuits. For example, where there are two different pressures supplied independently to the two ends of the assembly, use a blank plate to completely isolate one from the other.

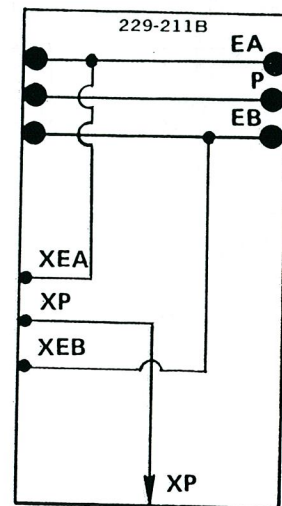
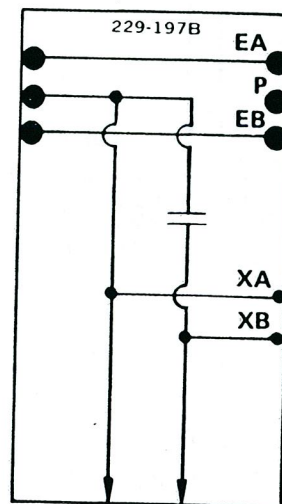
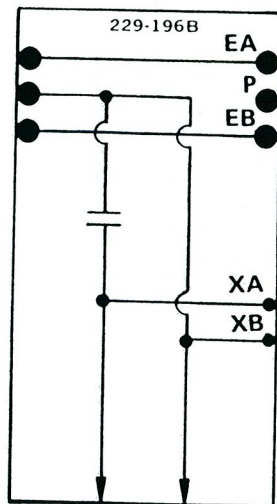
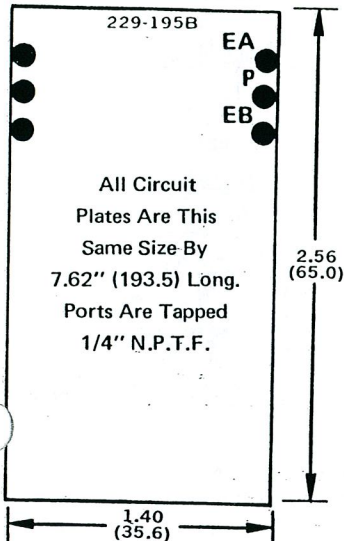
**MASTER PLATES**

These plates install between the left side of a No. 13 valve blok and the rest of the FlexiBlok assembly to make the end valve a master valve which controls the air going to the P gallery. 196B plate makes valve a normally open valve; 197B plate makes the master valve a normally closed valve. Both plates are actually the same plate convertible in the field by changing the location of one internal pipe plug.

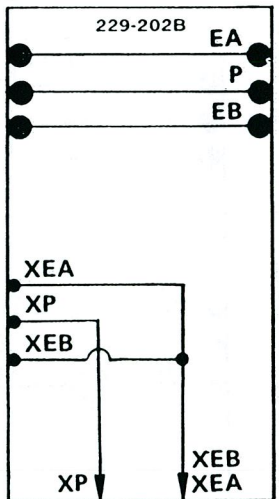
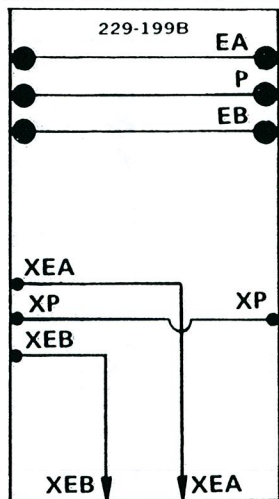
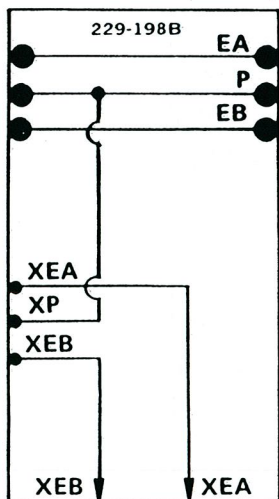
**CAUTION:** This arrangement restricts the air to the rest of the assembly. Consideration must be given to starving the system.

**EXTERNAL SUPPLY PLATE**

Provides an external supply to valve station on the left, with alternate Port XEA connected to gallery EA connected to gallery EA and alternate Port XEB connected to gallery EB.



### EXTERNAL EXHAUST PLATES



#### EXTERNAL EXHAUST PLATE 229-198B

Installed to the right of a No. 12 valve blok, this plate provides individual external exhausts instead of exhausting into the EB and EA galleries.

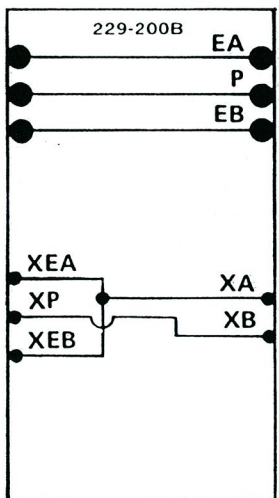
#### EXTERNAL EXHAUST - REGULATED SUPPLY 229-199B

Installed between a No. 12 valve blok and a No. 65 pressure control blok, this plate provides individual external exhausts, plus regulated supply from the P gallery.

#### ALTERNATE EXTERNAL OUTLET 229-202B

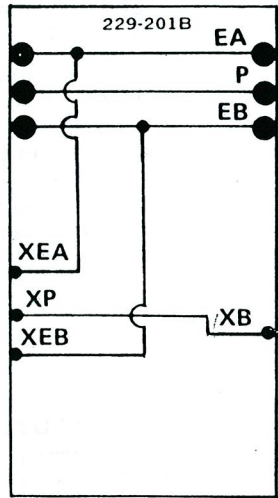
Installed to the right of a No. 12 valve blok, this plate maintains complete isolation from the main galleries for a valve used to control vacuum, for example.

### TANDEM CIRCUIT PLATES (2-VALVE SERIES)



#### TWO 4-WAY SERIES

Installed between a No. 12 valve blok and a No. 13 valve blok, this plate creates the typical 4-way tandem circuit in which EITHER 4-way valve can change the position of the cylinder piston.



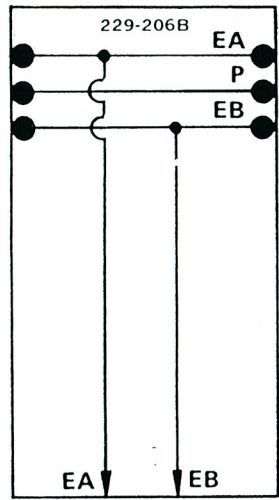
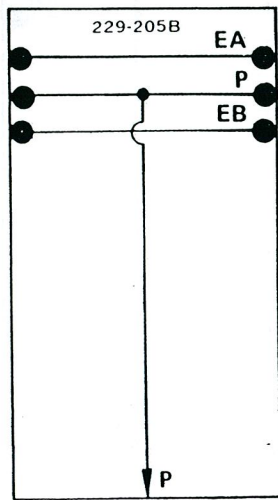
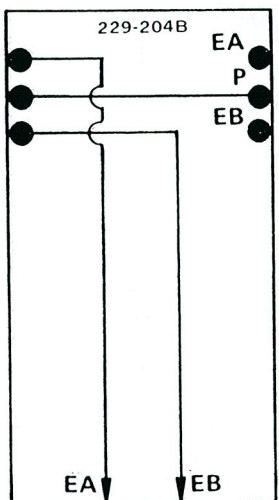
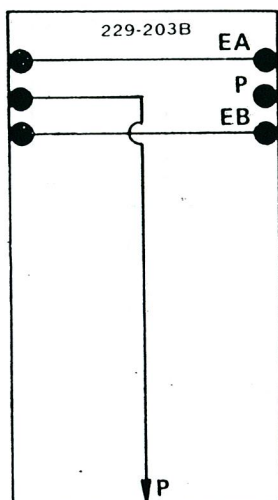
#### 2-PRESSURE SELECTOR CIRCUIT

Installed between a No. 12 valve blok and a No. 14 valve blok, with the No. 14 valve installed as a 2-pressure selector, this plate creates a 2-valve tandem circuit in which the No. 14 valve is a pressure selector for the No. 12 4-way.

#### 229-313B

Alternate to circuit plate 229-201B. Pressure from XA rather than XB. All other paths are the same.

### EXTERNAL CONNECTIONS TO THE GALLERIES

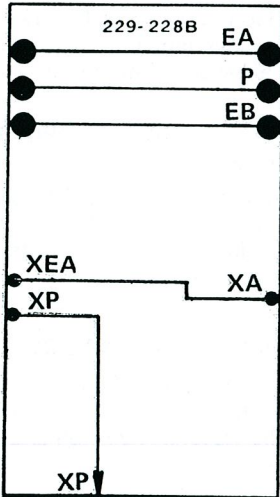


These plates provide several different arrangements of external connections into the EB, P and EA galleries. They may be used as auxiliary pressure inlets, pressure outlet taps, or external exhaust connections.

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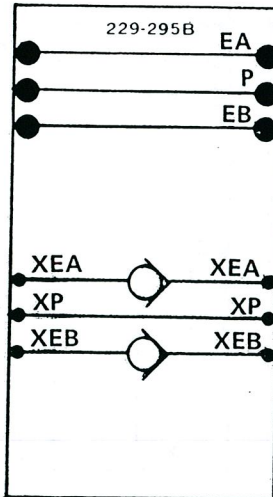
**numatics**  
**MK. 10** LINE

**FLEXIBLOK®**  
CIRCUIT AND END PLATES



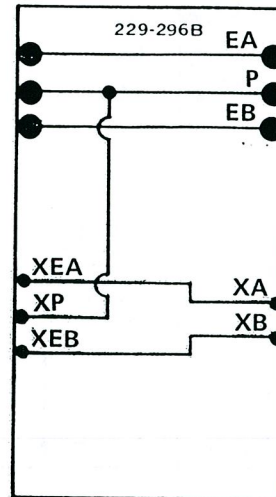
**MULTIPLE PRESSURE  
SELECTOR CIRCUIT**

This circuit plate, when used alternately between No. 14 blos, can be used to set up a circuit for selecting pressures from external sources. The output from a No. 12 blok on the left is from Port A. When all valves are de-energized ("B" in command), the output is exhausted through the valve on the right.



**CHECK FOR  
EMERGENCY STOP  
CIRCUIT**

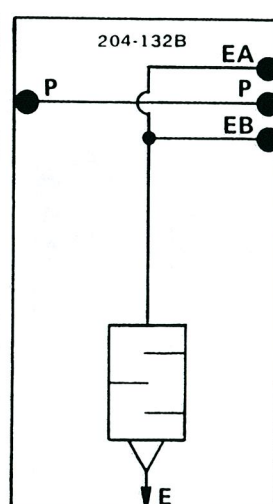
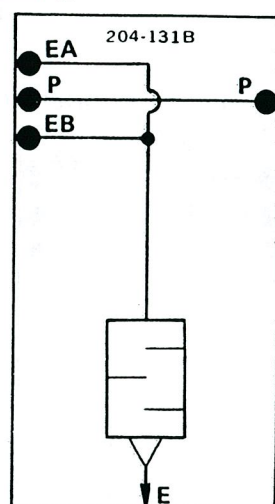
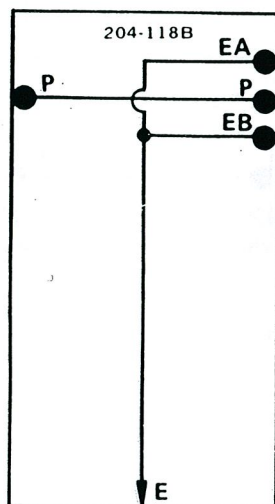
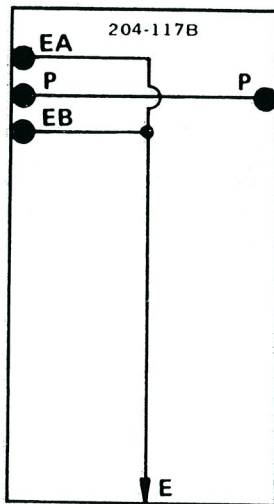
Installed between a model 12DSA512 on the left and a No. 66, 67 or 68 blok on the right, this circuit plate traps pressure for accurate cylinder positioning and emergency stopping. (Refer to page MK10-10.)



**DECELERATION  
CIRCUIT PLATE**

Installed between a No. 12 blok on the left and a No. 24 blok and 229-211B circuit plate on the right, a cylinder can be decelerated in either direction. This plate also allows selection of 3 pressures, one from the gallery and two from XA.

**END PLATES**



Left and right end plates are available with or without built-in muffler. End plates serve to collect and remove all exhausts through one port. This is done automatically since galleries EA and EB are internally connected. Numatics recommends the use of end plates with the integral muffler. See page MK10-41.

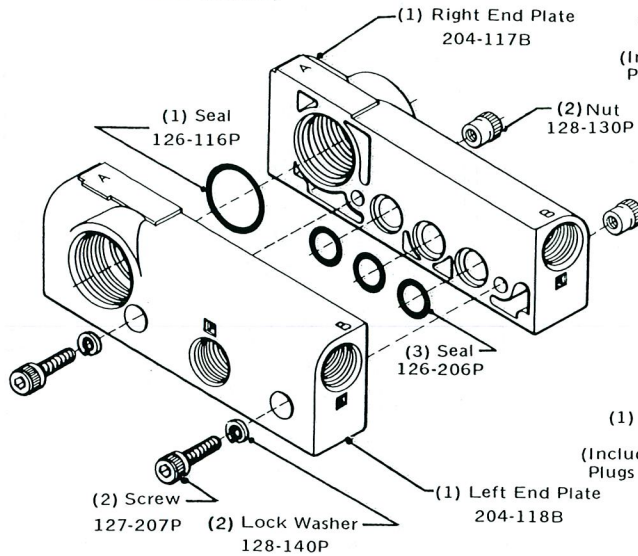


Top Dimension = Inches  
Bottom Dimension  
(In Parentheses) = Millimeters

### END PLATES KITS:

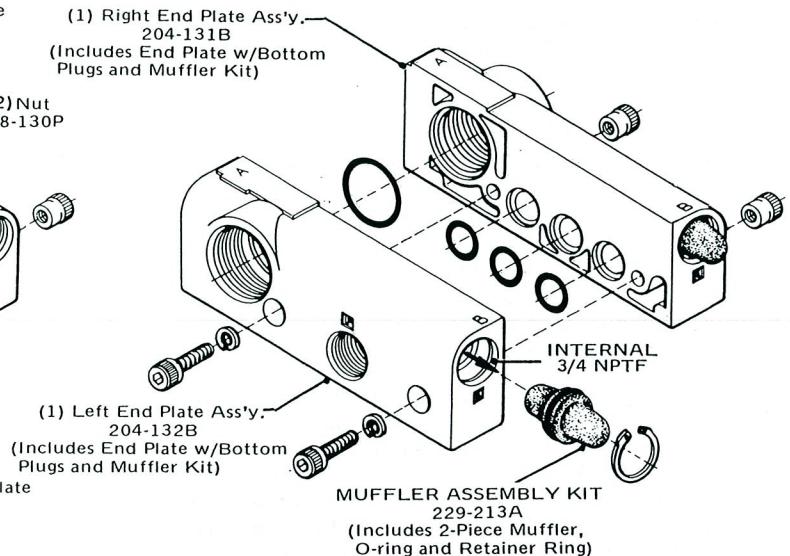
#### BASIC END PLATES KIT 229-194B

(Includes Left and Right End Plates with Bottom Plugs, Seals, Screws, Nuts and Lock Washers)



#### END PLATES KIT WITH BUILT-IN MUFFLER 229-210B

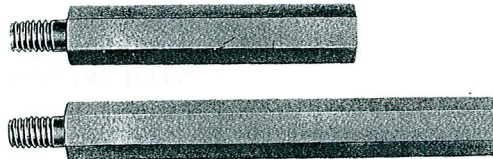
(Includes Left and Right End Plates, each with Bottom Plugs and Muffler, Plus Seals, Screws, Nuts and Lock Washers)



### TIE RODS (2 Required):

STANDARD LENGTH  
125-182A  
(For Valve Bloks and Pressure Control Bloks)

EXTRA LENGTH  
125-183A  
(For Valve Blok and Circuit Plate, or  
Pressure Control Blok and Circuit Plate)

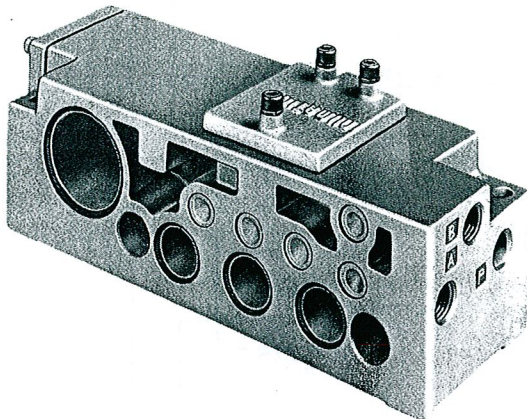


### BLANK STATION PLATE KITS:

NON-PLUG-IN BLOK KIT (SHOWN) 229-212A  
(Includes Blank Plate, Gasket and Screws)

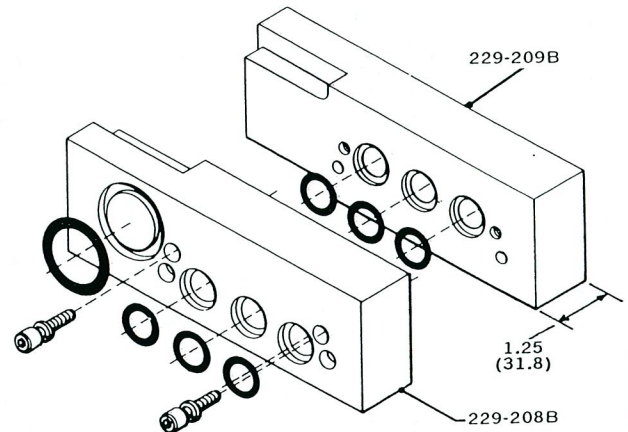
PLUG-IN (STD. LENGTH) BLOK KIT 229-312A  
(Includes Blank Plate, Insert, Gaskets and Screws)

KIT NOT AVAILABLE ON BLOKS WITH EXTRA LENGTH  
PLUGS.



### TRANSITION PLATE KITS:

(For Joining a MARK 10 FlexiBlok Assembly to a  
Numatics "PA Junior" FlexiBlok Assembly)



Use LEFT ADAPTER PLATE KIT - 229-208B - when MARK 10 is to left of PA (looking at "B" end of manifolds); use RIGHT ADAPTER PLATE KIT - 229-209B - when MARK 10 is to right of PA (looking at "B" end of manifolds). Each kit includes an Adapter Plate, Seals, and Screw Assemblies.

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# numatics®

## MK. 10 LINE

# FLEXIBLOK®

## SPEED CONTROL KIT

### APPLICATION

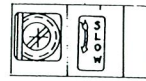
The MARK 10 FlexiBlok Speed Control Kit mounts between any MARK 10 Line valve unit and any base or FlexiBlok mounting means. The EB and EA Ports of this kit contain needle valves which can be adjusted to throttle the flow of exhaust air out the valve unit. Thus, the speeds of the two strokes of the cylinder piston can be adjusted independently. The needle valves are captive, vibration-proof, nylon locking units. The kit adds .74" to the overall height of the assembly.

### MODEL SELECTION

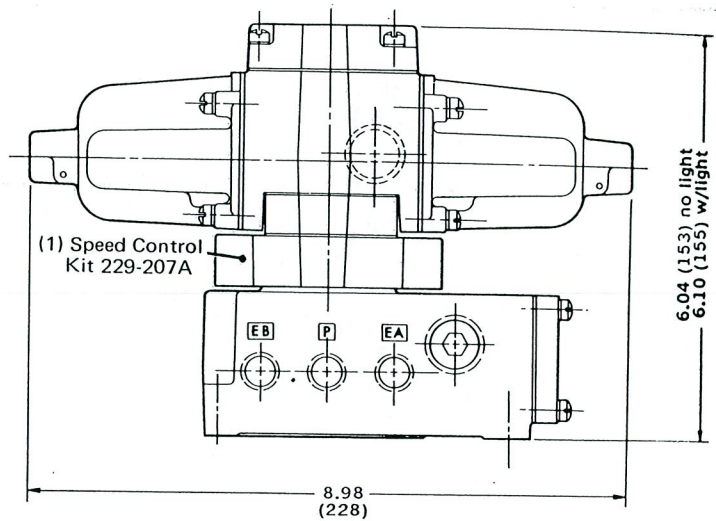
Model numbers codes, for FlexiBlok assemblies using a speed control kit, are found on the blok pages MK10-18 - 23. Models for plug-in or standard subplate bases with speed control are given on pages MK10-6 - 14 for the particular valve model desired.) Individual speed control kit (including gasket, 3 screws and lockwashers) is No. 229-207A. To order valve unit with speed control, without any base mounting, add code 01 to valve Series number (e.g. 12DSA401).

When an assembly is ordered with speed control, longer-than-standard mounting screws are used in the valve to reach through the speed control kit and secure both it and the valve to the base or FlexiBlok. To order a valve unit with these longer screws, but without the kit, add code 02 to the valve Series number (e.g. 12DSA402). When an assembly is ordered with speed control and plug-in base, longer female plug receptacles are also provided to compensate for the extra .74" between valve and base.

Top Dimension = Inches  
Bottom Dimension  
(In Parentheses) = Millimeters



END VIEW,  
SPEED CONTROL ADJUSTMENT



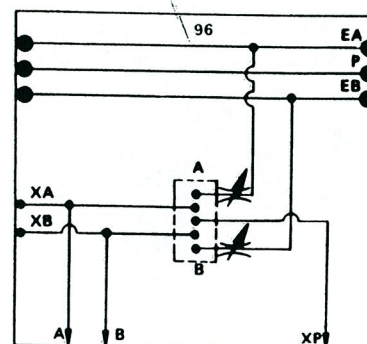
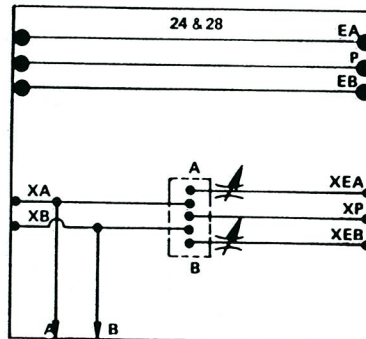
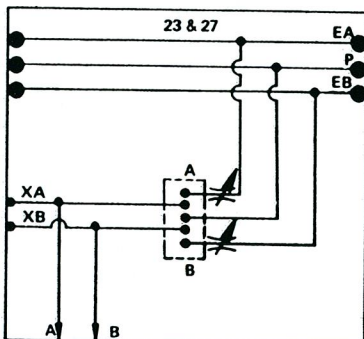
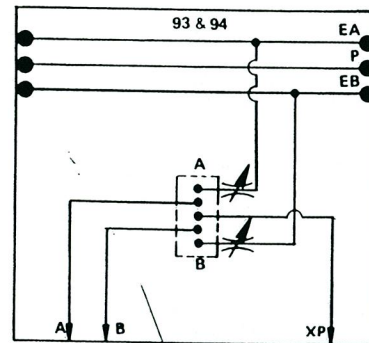
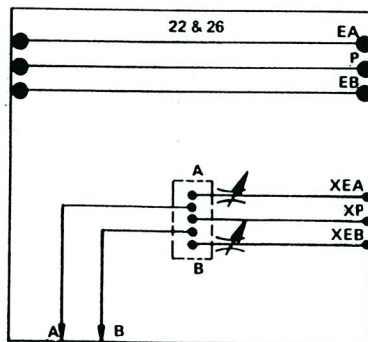
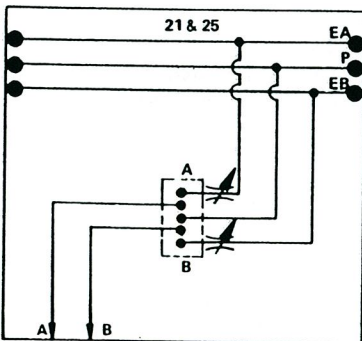
MARK 10 Line valve unit with speed control mounted on plug-in base.  
For dimensions using FlexiBlok, see page MK10-26.

### MK. 10 FLEXIBLOK DIAGRAMS WITH SPEED CONTROL

Basic diagrams carry separate code numbers when they include the speed control function, and the symbol shown represents this device.



Bloks 22, 26, 24 and 28 should not be used with dual pressure supplies.



**ELECTRICAL  
OPTIONS**

Top Dimension = Inches  
Bottom Dimension  
(In Parentheses) = Millimeters

**INTEGRAL PLUG (For Plug-In Base):**

Numatics' MARK 10 Line valves offer an optional integral plug of outstanding design for use with the MARK 10 Line Plug-in Base or FlexiBlok assemblies. The MARK 10 is the FIRST valve whose integral plug is designed to meet ALL MINIMUM JIC, NEMA, CSA and UL STANDARDS. The design criteria for these standards are:

1. Presence of a ground pole (the third pole in a 3-pole plug for single solenoid valves, and the fifth in a 5-pole plug for double solenoid valves).
2. Ground pole shall be first to enter female receptacle and the last to leave.
3. All poles shall be shrouded or skirted to contain arcing.
4. Male plug shall be connected to the load (valve solenoid) and the female receptacle connected to the electrical supply (base).
5. Plug shall be polarized. (The MARK 10 valve and plug assembly are polarized so the valve and plug cannot be improperly installed on the mounting.)
6. Plug shall be mechanically secured in the valve and the base.
7. Plug shall be protected from ambient and valve contaminants.

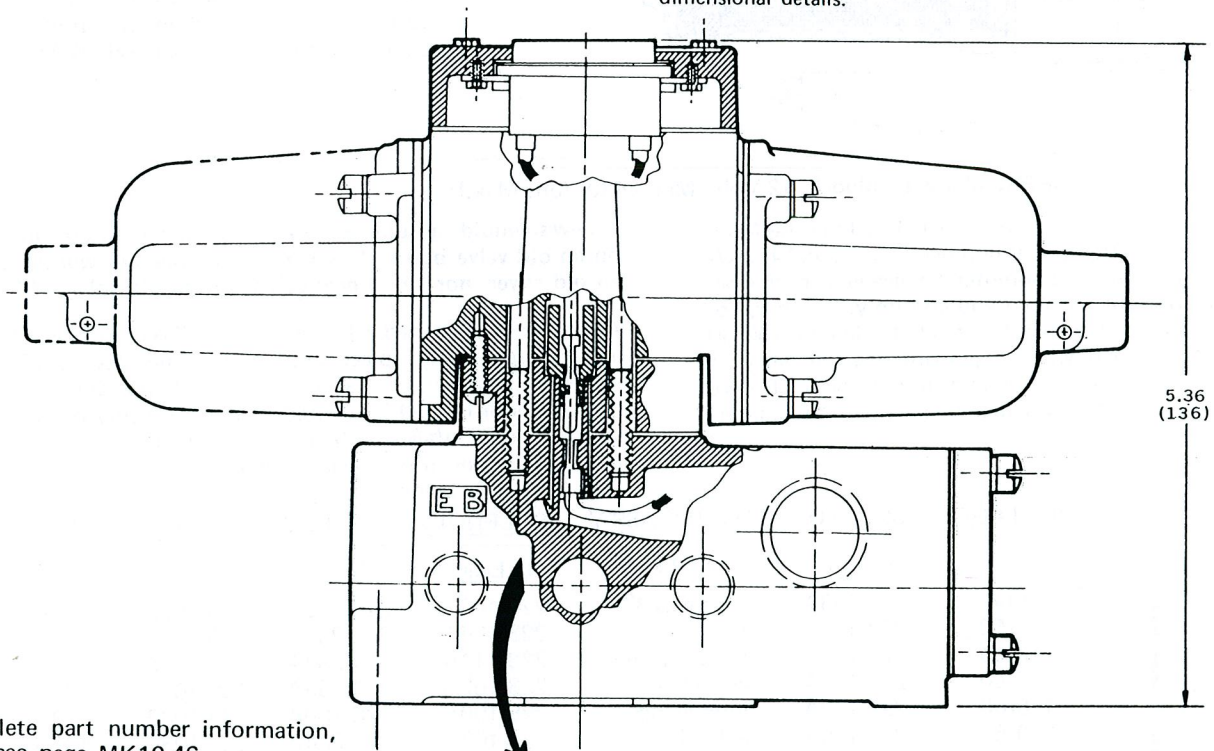
The MARK 10 Line's integral plug design meets or exceeds all of the above criteria.

On single solenoid valve units, of course, only the ground lead and the two solenoid leads are installed in the male half of the hard nylon plug body. On both the single and double solenoid units, the ground wires (covered with green vinyl insulation and with ring-type connectors) are firmly secured to the valve housing and plug-in base with screws. The ground symbol ( $\text{—}$ ) and solenoid identifiers "A" and "B" are cast into the integral junction box of the valve unit and on both the plug-in and FlexiBlok bases.

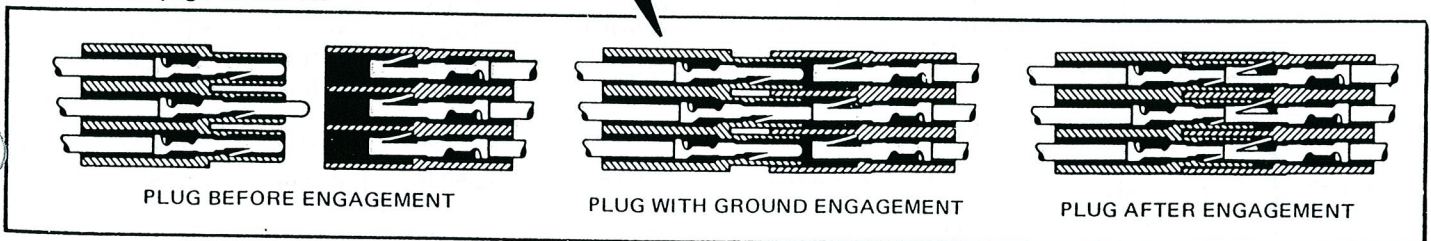
The "A" solenoid leads are covered with orange vinyl insulation, marked with an "A" every 3/8", and are terminated with ring-type connectors. The "B" solenoid leads are covered with brown vinyl insulation, marked with a "B" every 3/8", and are also terminated with ring-type connectors.

On both the plug-in base and the FlexiBlok bases with plug, the female receptacle has all five leads installed, although the two "B" leads are tucked out of the way on single solenoid valves. This makes field conversion from single to double solenoid very easy.

The MARK 10 Line integral plug is available on valves with or without the Speed Control option. With the speed control kit, longer female receptacles are provided to compensate for the extra width between valve and base. See page MK10-42 for dimensional details.



For complete part number information, see page MK10-46.



3 Poles Only Shown for Clarity

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# numatics<sup>®</sup> MK. 10 LINE

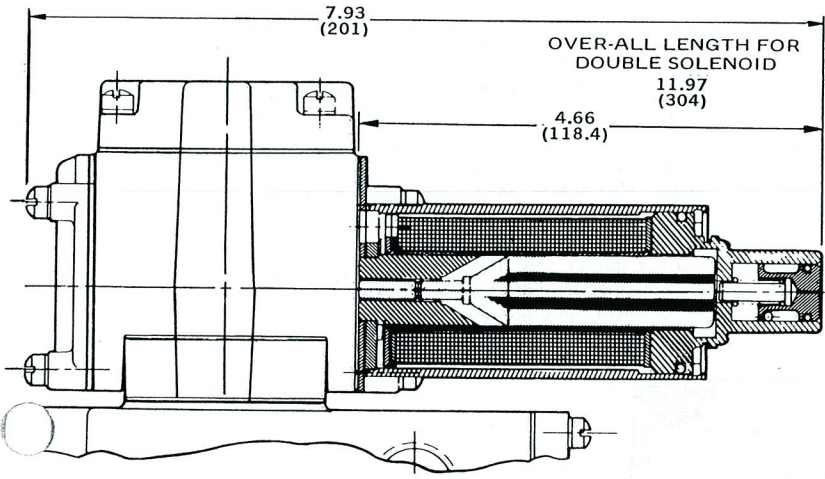
## ELECTRICAL OPTIONS

Top Dimension = Inches  
Bottom Dimension  
(In Parentheses) = Millimeters

### D.C. SOLENOIDS:

A DC solenoid capsule may replace the AC solenoid capsule on any MARK 10 Line valve. The DC solenoid assembly is a completely self-contained unit, carrying a single part number, and conversion may be made in the field. Valve model numbers with the DC option are given on the individual model pages (pages MK10-6 - 14). DC solenoids may be used on MARK 10 valves with the light option only if the voltage is between 100-130 or between 200-260.

	12SAD4	12DSA4	3-Position
Time to energize, full shift (secs.)	.055	.060	.072
Time to de-energize, full shift (secs.)	.040	N/A	.050
Max. Cycle/min., continuous	300	150	120
Inrush and holding watts (max.)	6	6	6



DC SOLENOID CAPSULE ASSEMBLY  
(6 Volts Min. - 250 Volts Max.)

6-Volt	Part No. 226-100B
10-Volt	Part No. 226-104B
12-Volt	Part No. 226-101B
24-Volt	Part No. 226-102B
48-Volt	Part No. 226-103B
115-Volt	Part No. 226-119B
120-Volt	Part No. 226-105B
Other, Specify	Part No. 226-120B

### A.C. SOLENOID PART NUMBERS (All Valve Models, 12 Volts Min. - 480 Volts Max.):

MARK 10 valves built after October, 1974 include the Modification Code "A" in the model number (e.g. 12DSA437KA 120/60). Code "A" refers to a noninterchangeable part change, in this case affecting the solenoid and coil only. The purpose for this change was so that dual hertz rated solenoids (50/60 cycle) could be provided without jeopardizing reliability or performance. Thus, a larger solenoid frame and coil were required, necessitating, then, a solenoid cover with more internal space.

**A new solenoid capsule assembly is completely interchangeable on an old valve body. However, a new solenoid will not fit in an old cover, nor will a new coil fit in an old solenoid frame.**

All valves stamp-coded 1074 or earlier will require the old coils and solenoids as replacement parts. The new 50/60 hz. solenoids were first installed in valves stamp-coded 1174 or later. In addition, all hardwired valves are furnished with 15" solenoid leads. Valves with plugs or lights have 3" leads and ring-type connectors. Select the correct replacement parts from the lists below.

	VOLTAGE	SOLENOID CAPSULE ASS'Y.		SOLENOID ASSEMBLY		COIL ONLY	
		3" Leads	15" Leads	3" Leads	15" Leads	3" Leads	15" Leads
Single Hertz Solenoids & Coils, on Valves Stamp-Coded 1074 or Earlier	24/60	227-163A	(Same as 3" Leads; complete capsule assemblies are interchangeable. Dual Hertz Solenoid will be provided in either case.)	228-106A	228-285A	139-107P	139-190P
	100/50	227-161A		228-105A	228-286A	139-105P	139-191P
	110/50	227-164A		228-114A	228-287A	139-108P	139-192P
	115/50	227-104A		228-102A	228-283A	139-102P	139-188P
	120/60	227-100A		228-100A	228-160A	139-100P	139-145P
	220/50	227-106A		228-103A	228-284A	139-103P	139-189P
	230/50	227-162A		228-113A	228-288A	139-106P	139-193P
	230/60	227-102A		228-101A	228-282A	139-101P	139-187P
	460/60	227-160A		228-112A	228-289A	139-104P	139-194P
	Other, Specify	227-165A		228-115A	228-161A	139-109P	139-146P
Dual Hertz Solenoids & Coils, on Valves Stamp-Coded 1174 or Later	24/50/60	227-163A	227-642A	228-606B	228-600B	139-372P	139-366P
	100 - 115/50	227-100A	227-301A	228-553B	228-588B	139-329P	139-356P
	115 - 120/60	227-102A	227-303A	228-605B	228-599B	139-371P	139-365P
	200 - 240/50	227-160A	227-646A	228-607B	228-601B	139-373P	139-367P
	220 - 240/60	227-165A	227-302A	228-608B	228-602B	139-374P	139-368P
	460/60	227-165A	227-302A	228-608B	228-602B	139-374P	139-368P

## ELECTRICAL OPTIONS

The air valve people

# numatics® MK. 10 LINE

Top Dimension = Inches  
Bottom Dimension  
(In Parentheses) = Millimeters

### CONDUIT COVER COMPLETE WITH LIGHT:

MARK 10 Line valves may be ordered complete with a light for single or double solenoids, as shown in the Model Selection Charts. When the light is illuminated it indicates that power is being supplied to the valve. The splashproof neon light glows brightly, yet draws only about 0.1 watt. Low power draw and low heat generation assure thousands of hours of operation. This option is a time-saving aid during machine set-up, and also simplifies maintenance troubleshooting.

### TOP-TAPPED CONDUIT COVER:

An optional conduit cover with 1/2" NPTF tap is also available. When this cover is furnished, the usual nameplate is omitted from the valve. This cover is not available on valves with the light or plug-in option. To order valves with conduit connections through a top-tapped cover, add 11E to any model number (e.g. 12SAD4410A11E 120/60).

### CONDUIT COVERS:

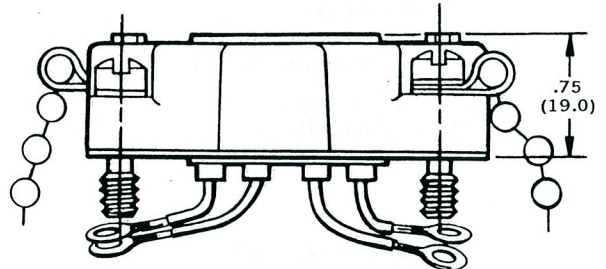
205-146A	Conduit cover assembly, no light
205-147A	Conduit cover assembly w/115V light, single solenoid (no nameplate)
205-148A	Conduit cover assembly w/230V light, single solenoid (no nameplate)
205-149A	Conduit cover assembly w/115V light, double solenoid (no nameplate)
205-150A	Conduit cover assembly w/230V light, double solenoid (no nameplate)
205-166A	Conduit cover assembly with 1/2" NPTF tap

### LIGHTS:

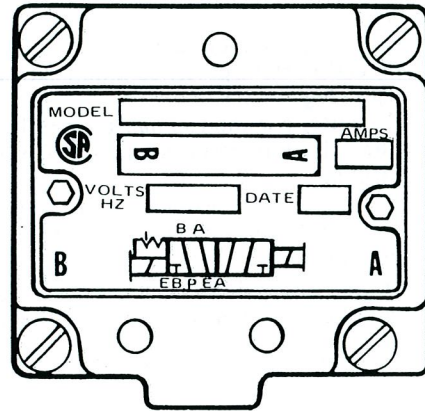
230-110P	115V light assembly, single solenoid
230-111P	115V light assembly, double solenoid
230-114A	230V light assembly, single solenoid
230-115A	230V light assembly, double solenoid

### NAMEPLATES:

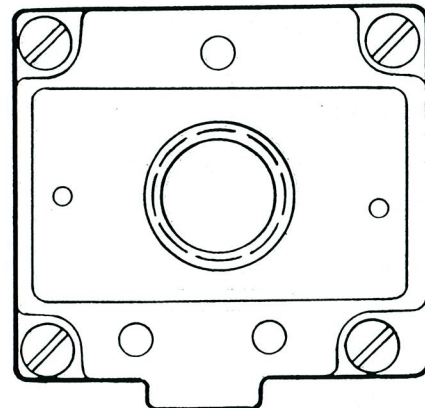
122-217B	Blank nameplate, single solenoid w/light cutout
122-218B	Blank nameplate, single solenoid, no light
122-219B	Blank nameplate, double solenoid detented w/light cutout
122-220B	Blank nameplate, double solenoid detented, no light
122-221B	Blank nameplate, double solenoid 3-position (P open to B & A), w/light cutout
122-222B	Blank nameplate, double solenoid 3-position (P open to B & A), no light
122-223B	Blank nameplate, double solenoid 3-position (cylinder ports open to dual supply) w/light cutout
122-224B	Blank nameplate, double solenoid 3-position (cylinder ports open to dual supply), no light
122-225B	Blank nameplate, double solenoid 3-position (all ports blocked) w/light cutout
122-226B	Blank nameplate, double solenoid 3-position (all ports blocked), no light



Side view, conduit cover with light assembly



Solenoid Light Assembly (double light shown). For view of single light assembly, see photograph page MK10-6.



Conduit cover with 1/2" NPTF tap  
(Assembly includes cover, gasket and screws)

The air valve people

**numatics**  
**MK. 10 LINE**

**MECHANICAL  
OPTIONS**

**STANDARD BASE:**

Standard bases without electrical provision are available as side ported, common or dual exhaust, or as side and bottom ported, dual exhaust. Five threaded plugs are shipped loose with the 10-ported bases. Select from the models listed below:

- 103-134C Side ports, common exhaust
- 103-136C Side ports, dual exhaust
- 203-120A Side and bottom ports, dual exhaust

**PLUG-IN BASES:**

- 203-108B Side ports, dual exhaust, no plug
- 203-109B Side and bottom ports, dual exhaust, no plug
- 203-110B Side ports, common exhaust, no plug
- 203-111B Side and bottom ports, common exhaust, no plug
- 203-112B Side ports, common exhaust, std. length plug
- 203-113B Side and bottom ports, common exhaust, std. length plug
- 203-114B Side ports, common exhaust, extra long plug
- 203-115B Side and bottom ports, common exhaust, extra long plug
- 203-116B Side ports, dual exhaust, std. length plug
- 203-117B Side and bottom ports, dual exhaust, std. length plug
- 203-118B Side ports, dual exhaust, extra long plug
- 203-119B Side and bottom ports, dual exhaust, extra long plug
- 203-122B Side ports, common exhaust w/muffler, no plug
- 203-123B Side ports, common exhaust w/muffler, std. length plug
- 203-124B Side ports, common exhaust w/muffler, extra long plug
- 203-125B Side and bottom ports, common exhaust w/muffler, no plug
- 203-126B Side and bottom ports, common exhaust w/muffler, std. length plug
- 203-127B Side and bottom ports, common exhaust w/muffler, extra long plug

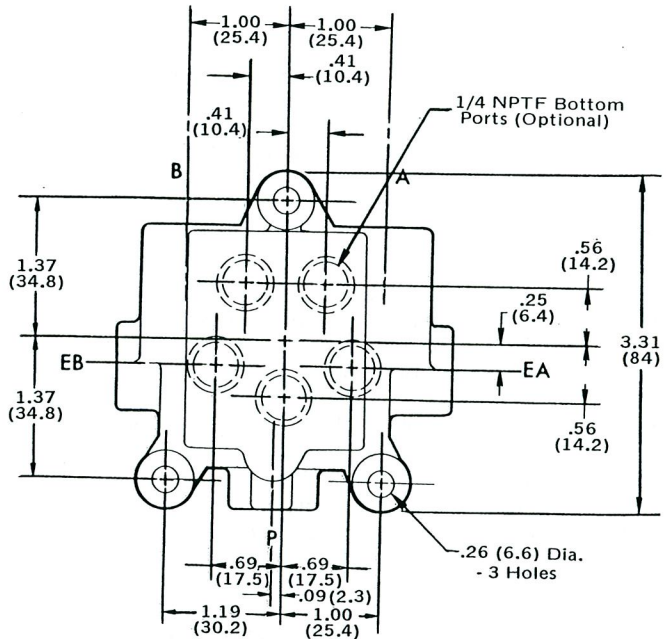
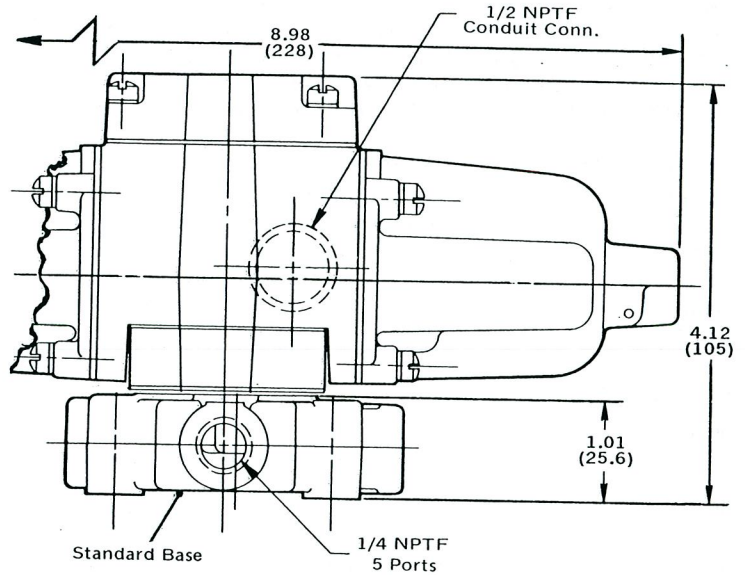
**PLUGS & RECEPTACLES:**

- 230-124A 5-wire receptacle assembly, standard length.
- 230-125A 5-wire receptacle assembly, extra long (for use with speed control kit)
- 230-126A 3-wire plug assembly (for single solenoid valves).
- 230-127A 5-wire plug assembly (for all double solenoid valves)

**INTERCHANGEABILITY OF "SA JUNIOR" AND MARK 10 VALVES ON SAME BASE:**

The considered design of the MARK 10 valves permits them to mount on the standard subplate base as well as the MARK 10 Plug-In Base and MARK 10 FlexiBlok manifold system. Thus, MARK 10 Line valves may replace Numatics' "SA Junior" valves on the same base or MC manifold without necessitating replacement and repiping of existing bases or manifolds.

Top Dimension = Inches  
Bottom Dimension  
(In Parentheses) = Millimeters



TOP VIEW OF BOTTOM PORT LOCATIONS

Top Dimension = Inches  
 Bottom Dimension  
 (In Parentheses) = Millimeters

## MECHANICAL OPTIONS

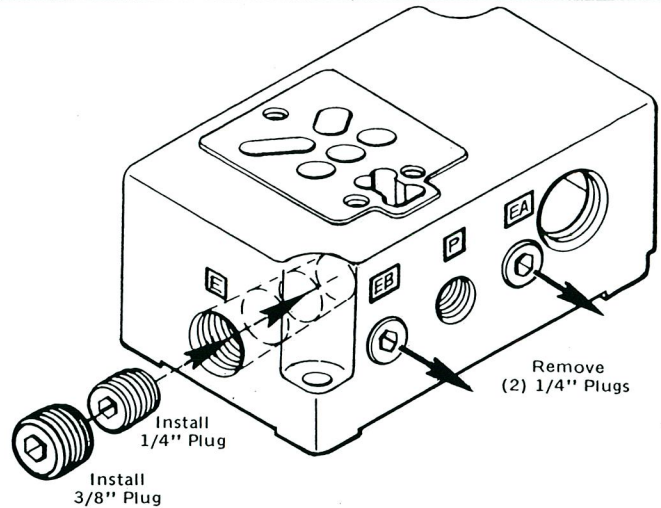
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### FIELD CONVERSION OF PLUG-IN BASE TO INDIVIDUAL EXHAUST:

The MARK 10 Plug-In Base may be converted in the field from its normal common exhaust porting arrangement to a genuine 5-port arrangement. This is desirable and advantageous in many applications.

To convert the plug-in base to individual exhaust, remove the 1/4" plugs from the EB and EA Ports on the side of the base. Install a 1/4" plug in the internal pipe tap of the E Port. Then install a 3/8" plug in the external tap of the E Port. Valve may then be used as a multi-purpose, 5-port valve.

Note that while the MARK 10 Plug-In Base is furnished plugged for common exhaust as standard, it may be ordered with individual exhausts by so specifying on the order.



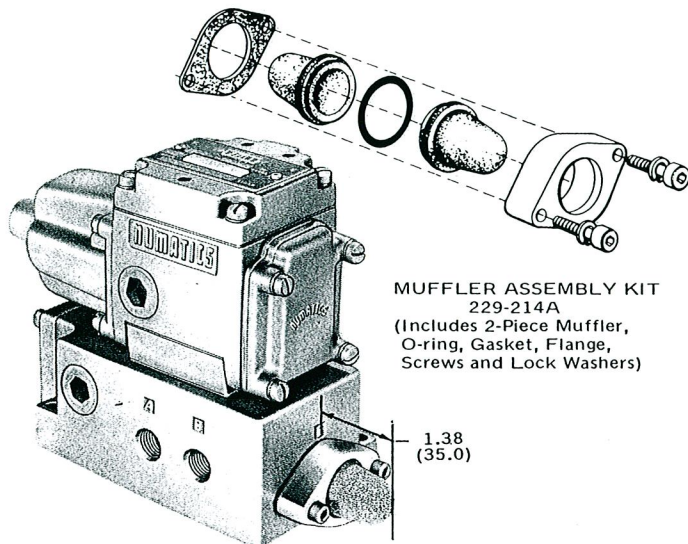
### MUFFLER:

#### APPLICATION

The MARK 10 Line exhaust control unit is designed to meet prevailing regulations concerning noise emission. The MARK 10 muffler significantly reduces exhaust noise. Its patented construction consists of two sintered bronze conical parts placed end to end, with a center seal to insure that all exhaust air passes through the elements. This satisfactorily reduces the noise level of the escaping air, with minimum back pressure. Test results (average of four readings at 3 ft. from valve operating at 60 CPM on 80 PSIG air) on valves with muffler have registered 77.0 dBA; without muffler, 103.5 dBA.

#### MODEL SELECTION

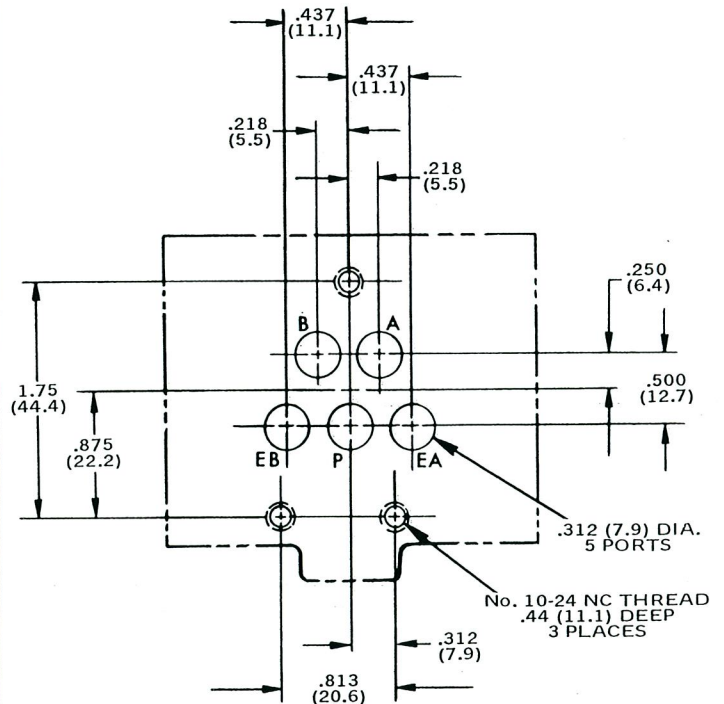
The MARK 10 Line muffler is available only as a pre-assembled option and not as a loose part to be installed in a tapped port. It is available only on the plug-in base with common exhaust or on MARK 10 FlexiBlok end plates. Select from the Model Selection Charts on pages MK10-6 - 14, or the FlexiBlok End Plates Kit from page MK10-41.



MUFFLER ASSEMBLY KIT  
 229-214A  
 (Includes 2-Piece Muffler,  
 O-ring, Gasket, Flange,  
 Screws and Lock Washers)

### MOUNTING PATTERN FOR MARK 10 VALVES:

There may be occasions when MARK 10 valves must be mounted on other than Numatics bases or manifolds. The drawing below locates the mounting holes and ports required for non-plug-in valves.



MARK 10 SERIES  
 MOUNTING  
 PATTERN

NOTE: Valves are easily removed from any base with a No. 1024, 5/32" key Allen wrench.





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## HOW TO ORDER AND PRICE A **FLEXIBLOK**<sup>®</sup> MANIFOLD ASSEMBLY

After the required circuitry has been determined and the FlexiBlok assemblies and circuit plates or blocking discs have been selected, simply list the components in order from left to right when facing the cylinder Ports A and B of the assembly.

A typical eight-station assembly may be as follows:

Station 1	40RS22610A
Station 2	12DSA412K
Station 3	20RS1266
Station 4	22RS1274
Station 5	229-205B
Blocking Disc	124-121A (Install in P gallery)
Station 6	12DSA421K
Station 7	12SAD412K
Station 8	20RS1267
Assembly Kit	AK102-8

The blocking disc is listed between the two units to be blocked and you must indicate in which gallery it is to be installed. The top surface of the valve blok to be plugged will be stamped "X" for blocked and "O" for open on all three galleries. The blok to be stamped will be the one to the right of the gallery plug when facing the cylinder ports.

The last item above is the standard assembly kit consisting of end plates with muffler, necessary tie rods and screws, and assembling and testing. To order the assembly kit without muffler, use kit number AK101-8. Kits for circuitry assemblies are prefixed with AK, and the number following the dash indicates the number of stations in the assembly. All

valve bloks, pressure control bloks and circuit plates are one station each. Blocking discs and end plates are NOT counted as stations.

When ordered as stated in the example, Numatics will assemble and test the entire FlexiBlok for proper operation. It will be supplied ready for installation and connection to the supply and cylinder ports.

There is no stated maximum number of assembled stations possible with MARK 10 FlexiBlok. However, for an assembly of 12 stations or more, an additional charge is made for special crating due to the assembly's weight and configuration to properly secure and ship it and maintain the assembly's alignment.

If you wish to assemble your own FlexiBlok, order the required station by the same model number as if the bloks were assembled. Order the required end plates kit and/or other assembly hardware shown in the catalog. Each valve blok, pressure control blok and circuit plate comes complete with tie rods and seals. DO NOT order the assembly kit; this is for factory assembled units only.

The list price for each valve blok, pressure control blok, circuit plate, blocking disc and assembly kit is listed in the Numatics Price List. Add up the individual prices and you will have the list price of the FlexiBlok assembly - assembled, tested and ready to mount on the machine.

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