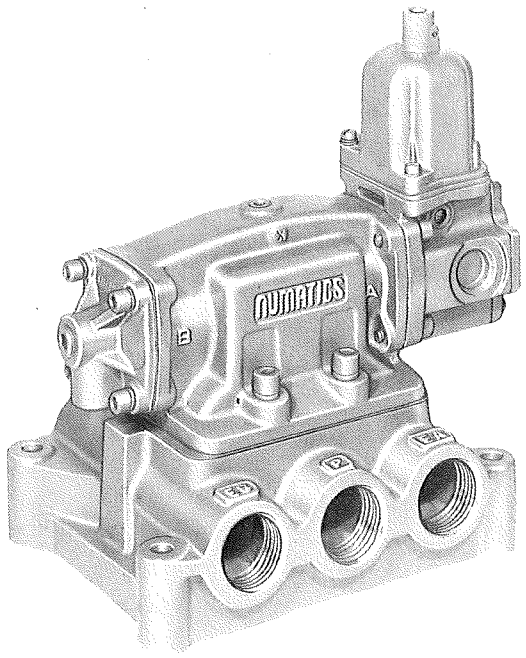
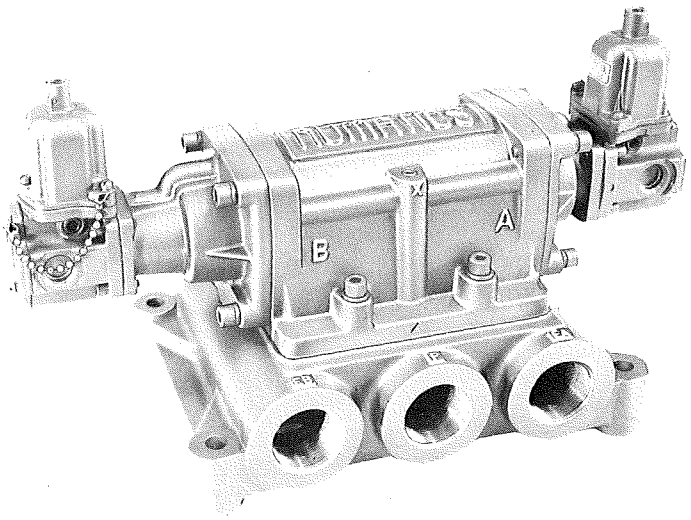
JSPA SERIES





3/4 – 1-1/2 NPTF, HEAVY DUTY, MULTIPURPOSE, SOLENOID PILOT ACTUATED VALVES

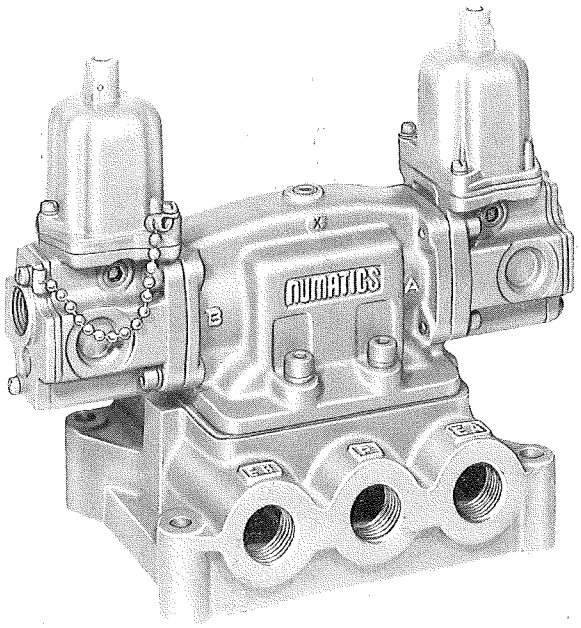


TABLE OF CONTENTS

DESCRIPTION	JSPA PAGE
Basic Valve Components & Construction Features	2 - 3
Specifications & Applications	4 - 5
Model Selection Charts	5
Operating Data, Mounting Means & Metering Devices	6
Solenoid Pilot Assemblies	7
Valve Dimensions & Parts	8 - 10
Options	11

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INCORPORATED

HIGHLAND, MICHIGAN 48031

CATALOG JSPA

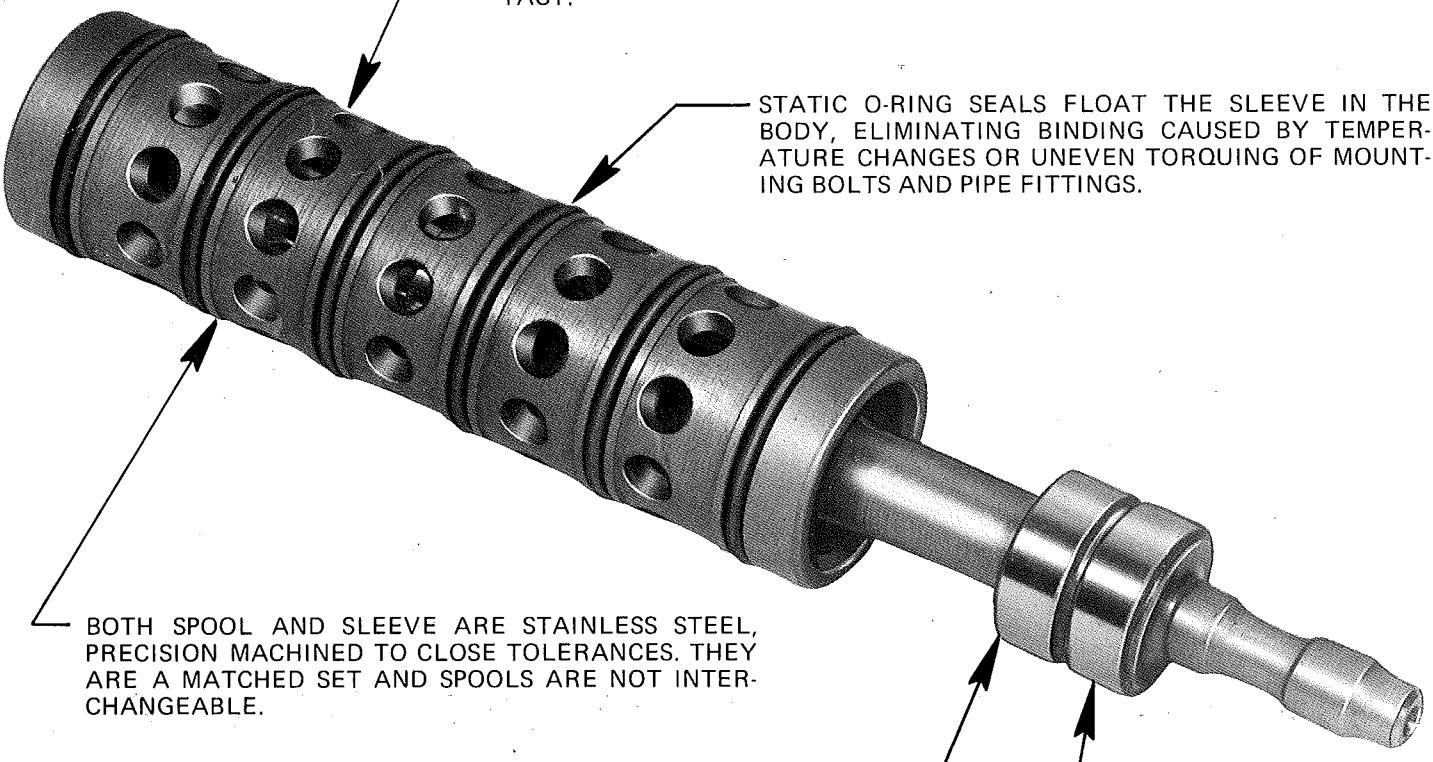
JSPA SERIES

THE PATENTED SPOOL AND SLEEVE ASSEMBLY – THE HEART OF EVERY NUMATICS AIR VALVE

The Numatics famous lapped spool and floating sleeve assembly is a matched set, machined from stainless steel to millionths of an inch precision. Its patented*, balanced construction relies on an air bearing principle, eliminating always troublesome dynamic o-ring seals. The sleeve remains stationary in the valve housing, "floating" on six static seals. The sliding spool is "sealed" simply by virtue of the close finish tolerances.

With the spool floating on a film of air molecules, there is no metal-to-metal contact. Heat treating of the spools and sleeves gives a hardness necessary to combat pipe scale and other air line contaminants. The spool is "balanced" with respect to air pressure, and offers extreme versatility of valve application. It supplies true multipurpose construction. The floating sleeve insures freedom from any mechanical distortion imposed on the valve body. Lubricated or properly filtered dry air will insure longer life; however, the spool and sleeve's unique design, and its inherent resistance to contaminants and sticking, will provide years and years of troublefree service, exceeding industrial standards of design and performance.

All these factors give the Numatics spool and sleeve a reliability and long service life which have been field proven in maintenance-free operation, typically outlasting the life of the machine on which it was installed. Its rugged versatility is unmatched. It has been envied and maligned, copied and imitated ---- but never duplicated.



*In USA and foreign countries.

3/4 — 1-1/2 NPTF, HEAVY DUTY, MULTIPURPOSE, SOLENOID PILOT ACTUATED VALVES

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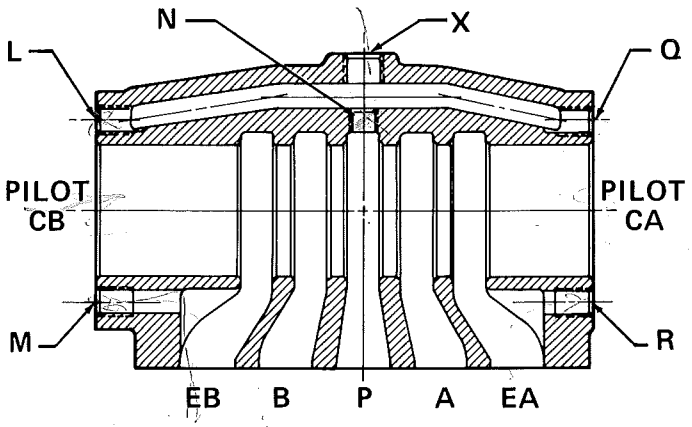
The JSPA Series consists of high speed, heavy duty, multipurpose, solenoid controlled, pilot actuated, 2- and 3-position, 4-way air valves. These valves are specifically designed to operate from low power static output amplifiers, hermetic relays, electron tubes and other low power switching devices. However, they can also operate from conventional relays and controls. This Series combines the features of Numatics' time-proven JPA air pressure actuated valves with a heavy duty solenoid pilot valve. Thus, many of the pilot options of our JPA and time delay valves can be combined with solenoid operation for the ultimate in versatility and interchangeability.

PILOT PLUGGING ARRANGEMENTS:

The Numatics JSPA Series multipurpose valve body offers many pilot supply options. The standard arrangement provides internal pilot supply from Port P for all series except JDSPA034. These latter valves are intended for dual pressure and they are plugged for internal pilot supply from Port EB to Pilots CA and CB. The chart below explains how to convert in the field to other pilot arrangements. If one of these other arrangements is desired, specify the type on your order and Numatics will install the proper plugging when assembling the valve.

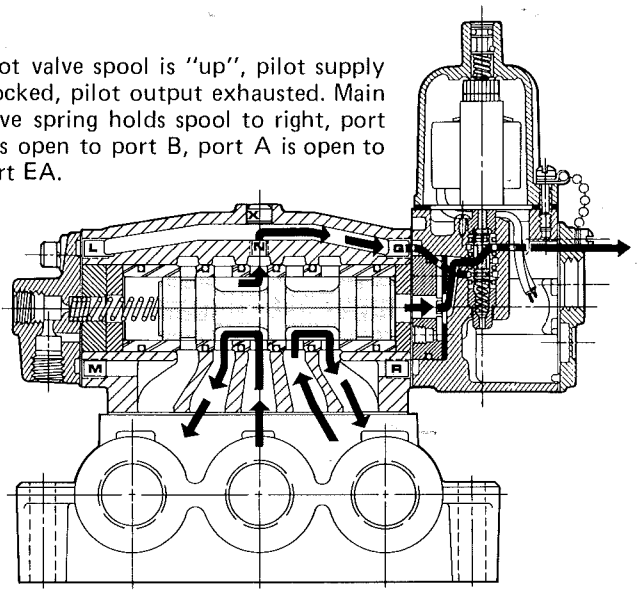
NOTES:

1. Port X is 1/8 NPTF; all other ports are 1/16 NPTF.
2. Pipe plugs are teflon coated, Levl seal type.
3. Plugs in ports L, M, Q and R must be flush or below surface.



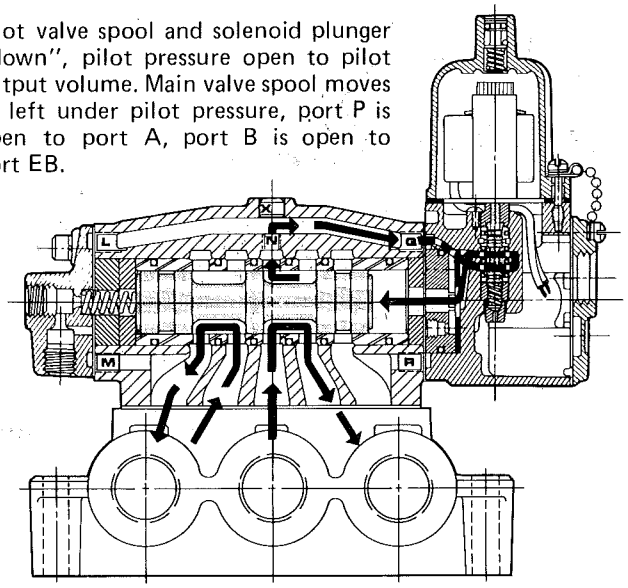
HOW IT WORKS:

Pilot valve spool is "up", pilot supply blocked, pilot output exhausted. Main valve spring holds spool to right, port P is open to port B, port A is open to port EA.



(DE-ENERGIZED)

Pilot valve spool and solenoid plunger "down", pilot pressure open to pilot output volume. Main valve spool moves to left under pilot pressure, port P is open to port A, port B is open to port EB.



(ENERGIZED)

MULTIPURPOSE PILOT PLUGGING ARRANGEMENTS								
PILOT PASSAGE	INTERNAL SUPPLY FROM PORT P (STANDARD)		EXTERNAL SUPPLY FROM PORT X		INTERNAL SUPPLY FROM PORT EB		INTERNAL SUPPLY FROM PORT EA	
	SINGLE PILOT	DOUBLE PILOT	SINGLE PILOT	DOUBLE PILOT	SINGLE PILOT	DOUBLE PILOT	SINGLE PILOT	DOUBLE PILOT
L	PLUG	OPEN	PLUG	OPEN	OPEN	OPEN	PLUG	OPEN
M	PLUG	PLUG	PLUG	PLUG	OPEN	OPEN	PLUG	PLUG
N	OPEN	OPEN	PLUG	PLUG	PLUG	PLUG	PLUG	PLUG
Q	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	PLUG	OPEN
R	PLUG	PLUG	PLUG	PLUG	PLUG	PLUG	OPEN	OPEN
X	PLUG	PLUG	OPEN	OPEN	PLUG	PLUG	PLUG	PLUG

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SPECIFICATIONS & APPLICATION

SPECIFICATIONS

JSPA Series valves are heavy duty, subbase mounted, solenoid controlled, pilot actuated, 4-way air valves. They meet or exceed all JIC standards. They are of splashproof construction and are, as standard, fitted with a recessed, nonlocking manual operator. They are designed to operate with extremely low power draw.

APPLICATION

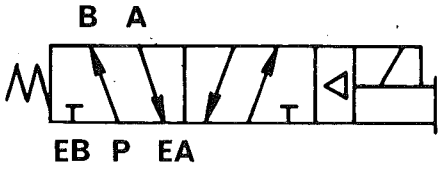
All JSPA valves are of multipurpose construction; that is, they may be used as normally open or closed 2- or 3-way valves, single or dual pressure 4-ways, or as selector or diverter valves, dependent only on how they are piped or plugged. The pilot exhaust is separate from the main valve exhaust; thus, full back pressure at any port has no operating effect on the valve.

Internal pilot passages may be plugged in many ways to permit the valve to be used as single or dual pressure with either internal or external pilot supply. All JSPA valves are shipped as standard with internal pilot supply from port P, except Series JDSPA034 which has internal pilot supply from port EB.

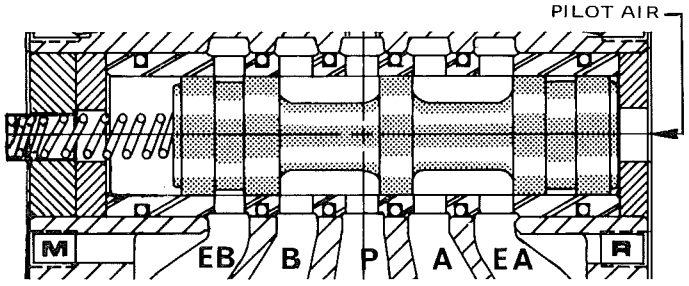
Five different spool configurations enable this one valve series to be used to control all types of cylinders and air motors. 3-position spools permit cylinders and air motors to be accurately inched, positioned or stopped. The different applications are described below:

SERIES 6JSPA4 and 12JSPAD4

SINGLE SOLENOID-PILOT, SPRING RETURN, 2-POSITION: These models are actuated by a "maintained" electrical signal. The spring returns the spool to the normal position when the solenoid is de-energized.



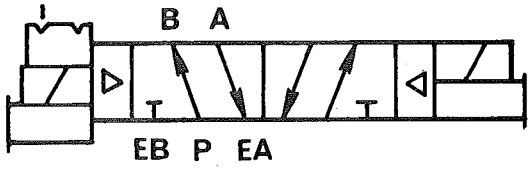
A.N.S.I. SYMBOL



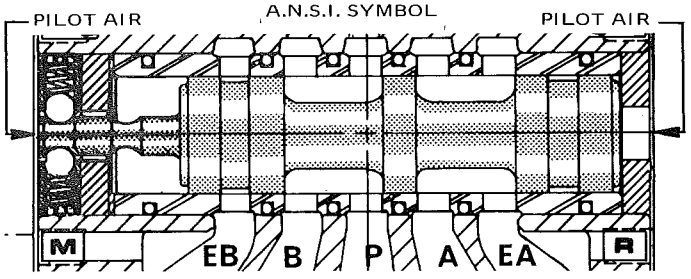
SPOOL CONFIGURATION

SERIES 6JDSPA4 and 12JDSPAD4

DOUBLE SOLENOID-PILOT, DETENTED, 2-POSITION: These models are actuated by a "momentary" or a "maintained" electrical signal alternately on each of two solenoids. Energizing both solenoids simultaneously will not damage the valve; however, the valve will not shift until one solenoid is de-energized and the pilot is exhausted.



A.N.S.I. SYMBOL

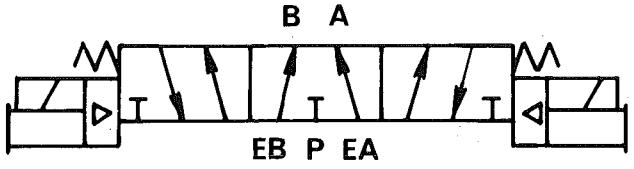


SPOOL CONFIGURATION

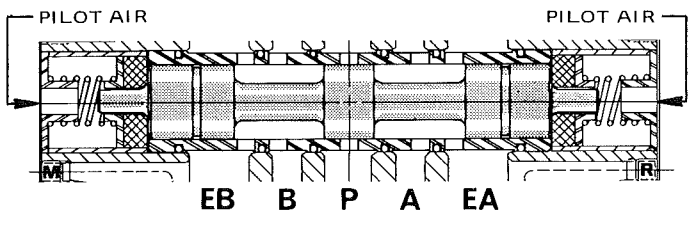
SERIES 6JDSPA034

DOUBLE SOLENOID-PILOT, SPRING CENTERED, 3-POSITION, CYLINDER PORTS OPEN TO DUAL SUPPLY IN NEUTRAL: 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 is open 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 spool 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.



A.N.S.I. SYMBOL



SPOOL CONFIGURATION

SPECIFICATIONS & APPLICATION
MODEL SELECTION CHART

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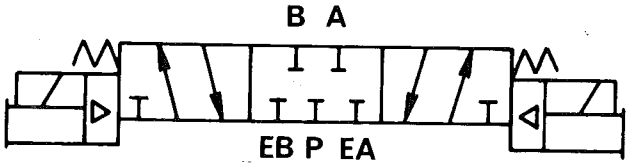
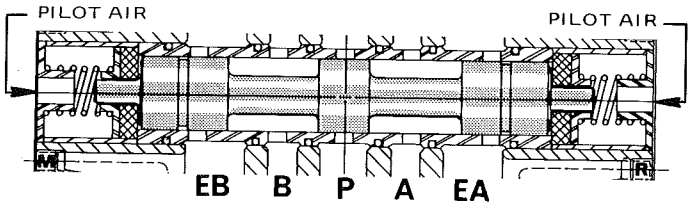
SERIES 6JDSPA34

DOUBLE SOLENOID-PILOT, SPRING CENTERED, 3-POSITION, ALL PORTS BLOCKED IN NEUTRAL: These models are actuated by a "maintained" electrical signal alternately on each of two solenoids. De-energizing or energizing both solenoids simultaneously allows the spool to shift to the neutral third position with all ports blocked. The all-ports-blocked position permits a single supply line to be connected to port P and inch, stop or hold cylinders and air motors in position for a short period of time.

Blocked port circuits should be used with discretion because of the lack of make-up air to either end of the cylinder (particularly when loads must be held in position for an extended time). 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. If a cylinder position must be maintained for an extended period, use Series 6JDSPA034.



A.N.S.I. SYMBOL

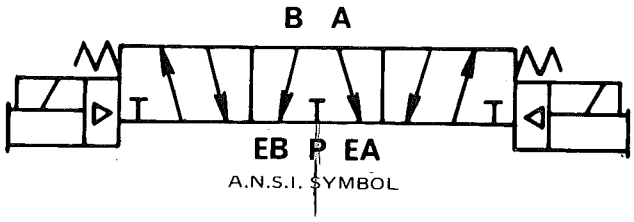


SPOOL CONFIGURATION

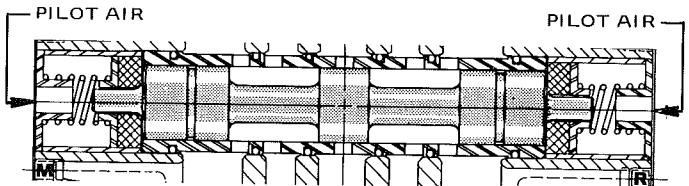
SERIES 6JDSPAC34

DOUBLE SOLENOID-PILOT, SPRING CENTERED, 3-POSITION, CYLINDER PORTS EXHAUSTED IN NEUTRAL: This valve is identical to Series 6JDSPA034 except that the pilot passages are plugged for internal pilot supply to both pilots from port P.

This piping arrangement permits the valve to be used as a double, normally closed 3-way with common supply. It may also be used to control double acting cylinders, but extreme caution is advised. In neutral, the cylinder is without pressure at either end and the piston is free to drift under external load. 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.



A.N.S.I. SYMBOL



SPOOL CONFIGURATION

MODEL SELECTION CHART - 2-POSITION

MOUNTING OPTIONS	SINGLE SOLENOID PILOT, SPRING RETURN				DOUBLE SOLENOID PILOT, DETENTED			
	3/4 BASIC SIZE		1-1/2 BASIC SIZE		3/4 BASIC SIZE		1-1/2 BASIC SIZE	
	3/4 NPTF	1 NPTF	1-1/4 NPTF	1-1/2 NPTF	3/4 NPTF	1 NPTF	1-1/4 NPTF	1-1/2 NPTF
Valve Unit Only	6JSPA4U	–	–	12JSPAD4U	6JDSPA4U	–	–	12JDSPAD4U
Valve with Base, Side Ports Only	6JSPA4	68JSPA4	10JSPAD4	12JSPAD4	6JDSPA4	68JDSPA4	10JDSPAD4	12JDSPAD4
Valve with Base, Side & Bottom Ports	6JSPA4SB	68JSPA4SB	10JSPAD4SB	12JSPAD4SB	6JDSPA4SB	68JDSPA4SB	10JDSPAD4SB	12JDSPAD4SB

MODEL SELECTION CHART - 3-POSITION

MOUNTING OPTIONS	SERIES JDSPA034		SERIES JDSPA34		SERIES JDSPAC34	
	3/4 NPTF	1 NPTF	3/4 NPTF	1 NPTF	3/4 NPTF	1 NPTF
Valve Unit Only	6JDSPA034U	–	6JDSPA34U	–	6JDSPAC34U	–
Valve with Base, Side Ports Only	6JDSPA034	68JDSPA034	6JDSPA34	68JDSPA34	6JDSPAC34	68JDSPAC34
Valve with Base, Side & Bottom Ports	6JDSPA034SB	68JDSPA034SB	6JDSPA34SB	68JDSPA34SB	6JDSPAC34SB	68JDSPAC34SB

NOTES: When ordering, specify volts and hertz after model number (e.g. 6JDSPA4 120/60).
To order optional lube port in 3/4 or 1 NPTF base, add LP to model number (e.g. 6JDSPA4LP 120/60).
To order optional 48" leads from conduit opening instead of usual 12", add 0005 to single solenoid model numbers or 0505 to double solenoid model numbers (e.g. 6JDSPA40505 120/60).

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JSPA SERIES

OPERATING DATA, MOUNTING MEANS & METERING DEVICES

OPERATING DATA

PRESSURE RANGE:

Internal Pilot Supply:

All Basic 3/4" Valves:	15 - 125 PSIG
10 and 12JSPAD4	30 - 125 PSIG
10 and 12JDSPAD4	10 - 125 PSIG

External Pilot Supply:

Main Valve (All Models): 28" Hg. vacuum to 300 PSIG (specify pressure for operation over 150 PSIG).

Pilot Supply: Same as Internal Pilot Supply.

TEMPERATURE RANGE: -10°F to +150°F ambient. High temperature coils are not available.

SERVICE: Basic 3/4" valves can be used on properly filtered and lubricated air, dry air, vacuum or non-corrosive, nontoxic and nonflammable dry gases. Basic 1-1/2" valves must be filtered and lubricated.

FLOW CAPACITY: JSPA Series valves have a C_V as listed at right. See Numatics' Engineering & Technical Data for complete flow chart.

C_V RATING

	3/4	1
Series JSPA4 & Series JDSPA4	8.0	8.4
All 3-Position Valves	6.9	7.0
	1-1/4	**1-1/2**
Series JSPAD4 & Series JDSPAD4	24.2	26.3

SOLENOIDS: Recommended Maximum Cycle Rate, continuous:

All NPTF Sizes	A.C.	D.C.
Series JSPA4	350/min.	250/min.
Series JSPAD4	350/min.	100/min.
All Other Series	100/min.	100/min.

For additional solenoid data, see page JSPA-7.

MOUNTING MEANS

JSPA valves are subbase mounted, with all working ports located in the base. Two different styles of mounting are available:

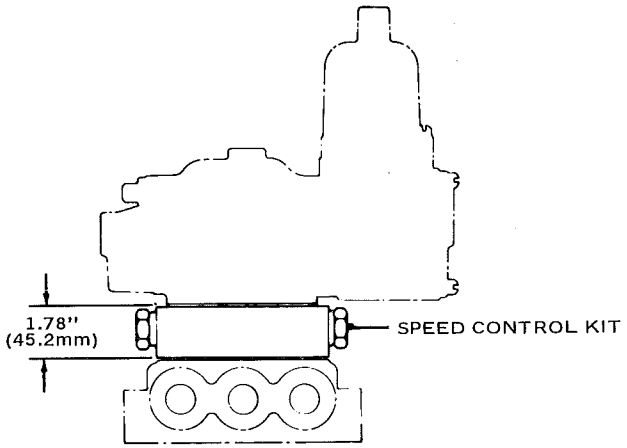
STANDARD BASE (shown on pages JSPA-8 - 10): This base is available with five individual side ports or side and bottom ports.

econoBLOK MANIFOLD (shown on separate catalog sheet): econoBLOK modular manifolding permits compact valve installation. It offers common supply and exhaust galleries with side only or side and bottom cylinder ports. Available with basic 3/4" valves only.

All JSPA valves mount in any position. An optional 1/8 NPTF lubrication port for forced lubrication systems is available on 3/4 and 1 NPTF bases, and is located between the A and B cylinder ports.

SPEED CONTROL KIT - 229-357A

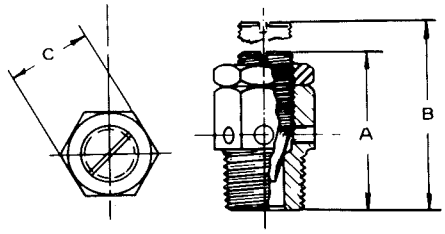
(For Basic 3/4" Valves Only, All Series Except JDSPA034.)



Installs between the valve unit and base, to control cylinder piston speed by throttling exhaust air. Flow Capacity: C_V = 8.34. To order 3/4" valves with speed control, add SC to any applicable model number **(e.g. 6JDSPA4SC).**

METERING VALVES:

These units screw into ports EA and EB to throttle exhaust air. Order separately from JSPA valve models. Not available on 1-1/4 or 1-1/2 NPTF bases.



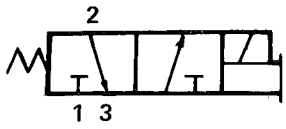
DIMENSIONS AND FLOW*

Valve No.	Pipe Size	A	B	C	C_V
MV-75	3/4"	2.00 51	2.37 60	1.06 26.9	8.34
MV-100	1"	3.00 76	3.50 89	1.37 34.8	8.34

*Top dimension = inches, bottom dimension = millimeters

C_V = measured at full open position

A.N.S.I. SYMBOL



SOLENOID PILOT ASSEMBLY
OJSA3
OJSA3DC

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SPECIFICATIONS

The JSPA Pilot Head is actually a 3-way normally closed valve in itself, complete with spool and sleeve and solenoid assembly, controlling the actuation of the main valve. It mounts on any single or double solenoid valve and accepts either AC or DC solenoid capsules. DC capsules are completely self-contained units, carrying a single part number, and conversion from AC to DC may be made in the field. Optional conduit tapping ("K" Pilot) is available to provide three taps, one in each side of conduit box. An "F" Pilot option provides anti-contamination protection for the pilot exhaust port. See page JSPA-11 for these options.

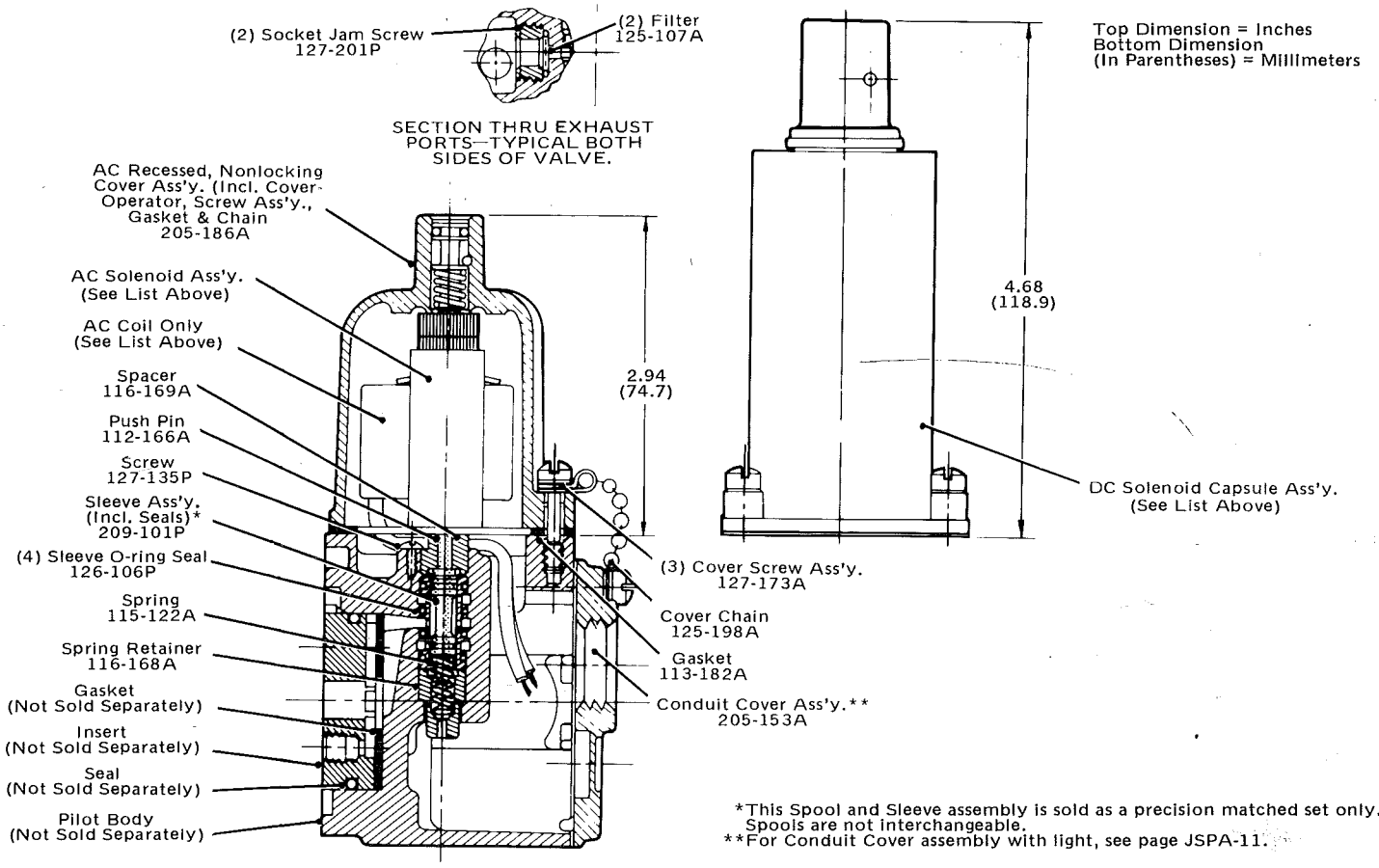
Pilot Heads meet or exceed ALL JIC standards. They are of splashproof construction and are, as standard, fitted with recessed, nonlocking manual operators.

SOLENOID DATA

Standard AC and DC voltages are listed below. Special AC voltages 12 to 460, 50 and 60 cycle, and DC solenoids (6-volts min., 250-volts max.) are also available. A 25 cycle coil is not available for this series.

Inrush current @ 120/60 AC	.4 amps
Holding current @ 120/60 AC	.08 amps
DC Watts, Inrush and Holding (all voltages)	5.5 max.

AC SOLENOID PART NUMBERS			DC SOLENOID CAPSULE NUMBERS	
VOLTAGE	COIL ONLY	SOLENOID ASSEMBLY		
24/50 - 60	139-181P	228-276A	6-volt	226-125B
100 - 115/50 115 - 120/60	139-177P	228-272A	10-volt 12-volt 24-volt	226-126B 226-127B 226-128B
200 - 240/50 220 - 240/60	139-357P	228-589A	48-volt 115-volt	226-129B 226-130B
460/60	139-185P	228-280A	120-volt	226-131B
Other, Specify	139-186P	228-281A	Other, Specify	226-132B



*This Spool and Sleeve assembly is sold as a precision matched set only. Spools are not interchangeable.
**For Conduit Cover assembly with light, see page JSPA-11.

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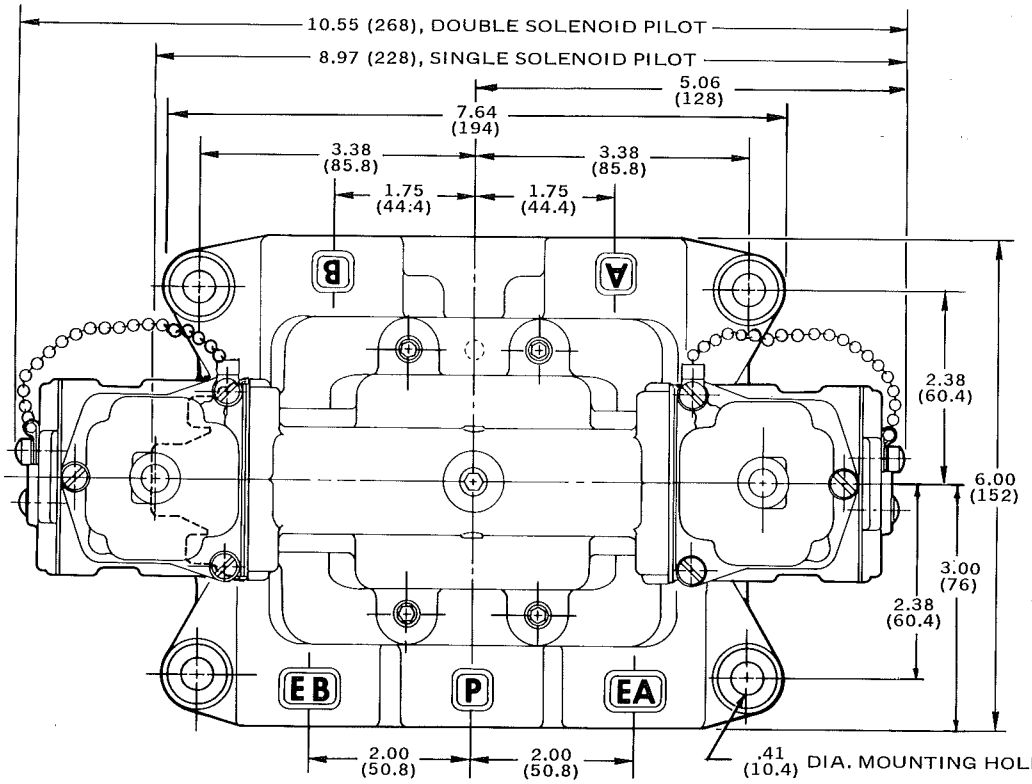
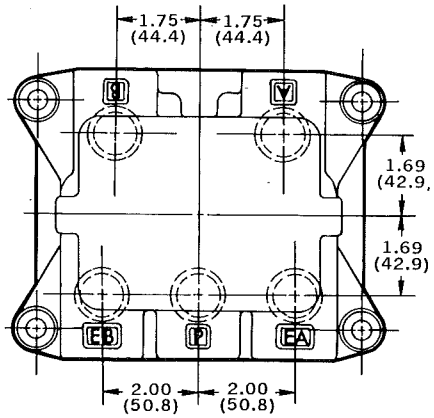
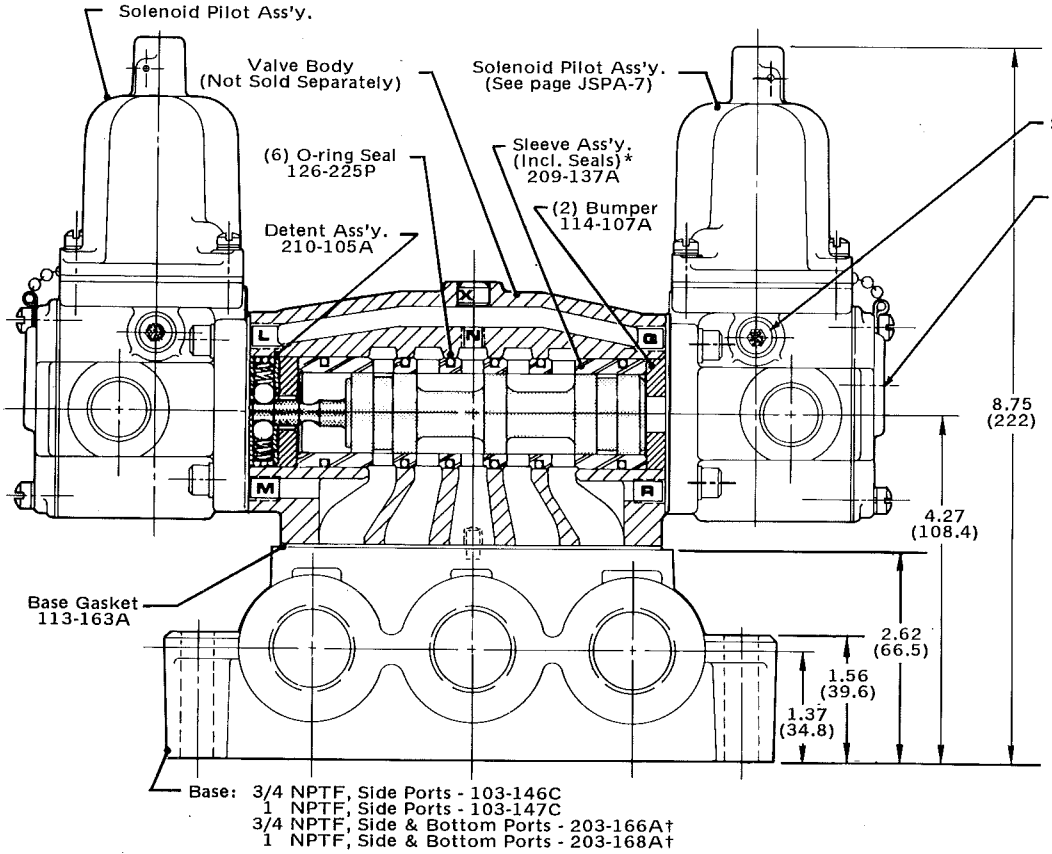
VALVE DIMENSIONS & PARTS
2-POSITION VALVES
3/4" and 1" TAPPED

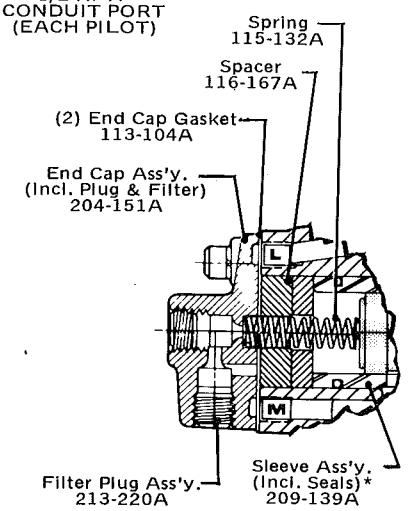
Top Dimension = Inches
Bottom Dimension
(In Parentheses) = Millimeters





TOP VIEW OF
BOTTOM PORT LOCATIONS
(OPTIONAL)





DETAIL OF
SINGLE SOLENOID
PILOT ACTUATED, SPRING RETURN

†Includes 5 loose plugs.
*Spool and Sleeve Assembly sold as a precision matched set only. Spools are not interchangeable.

VALVE DIMENSIONS & PARTS
3-POSITION VALVES
3/4" and 1" TAPPED

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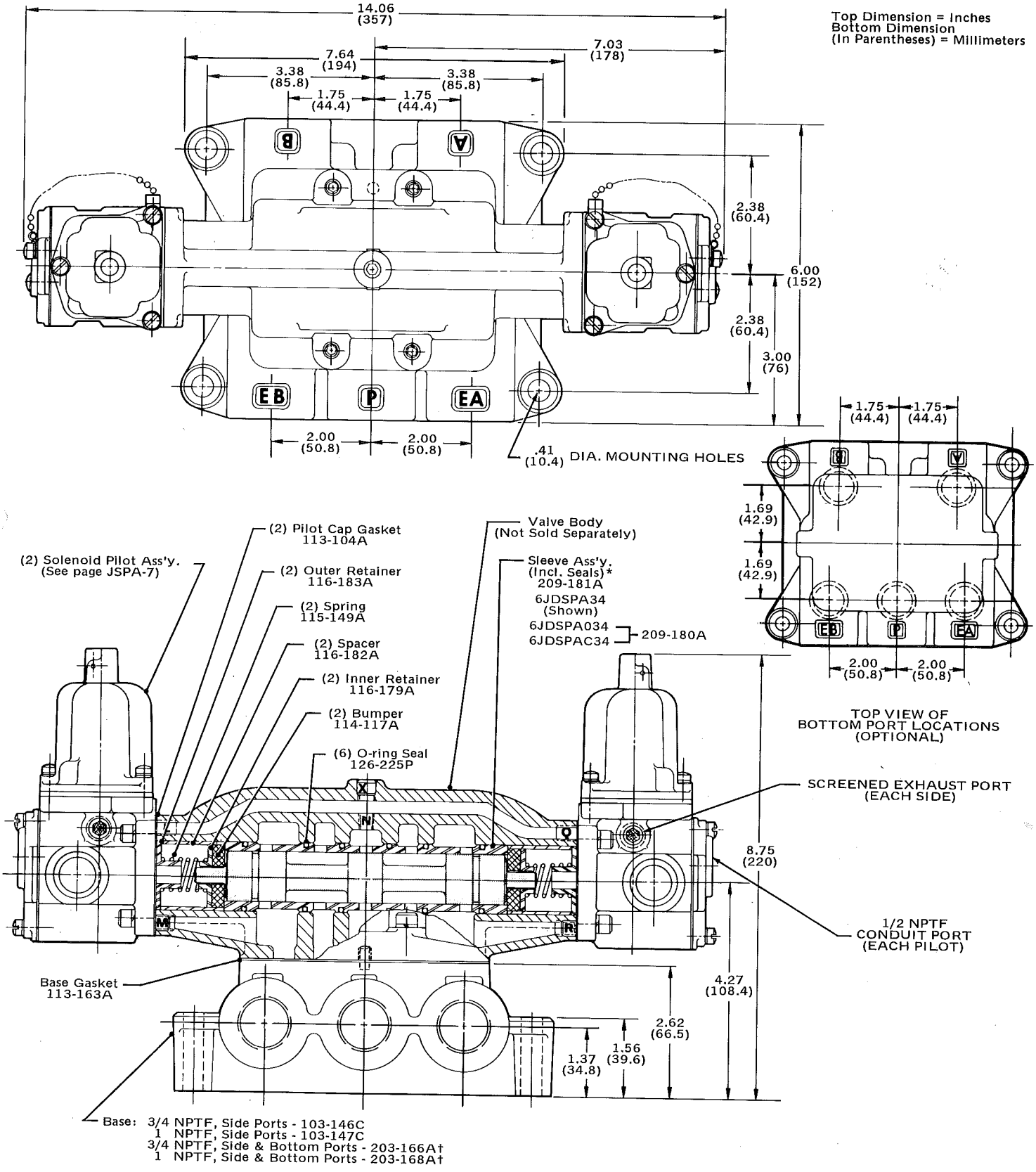
Top Dimension = Inches
Bottom Dimension
(In Parentheses) = Millimeters



†Includes 5 loose plugs,
*Spool and Sleeve Assembly sold as a precision matched set only. Spools are not interchangeable.

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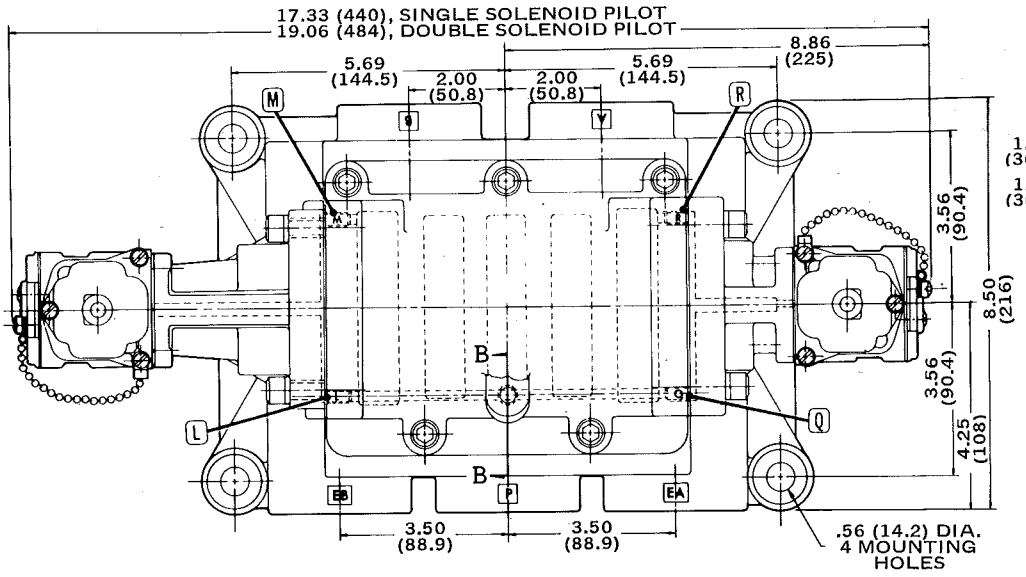
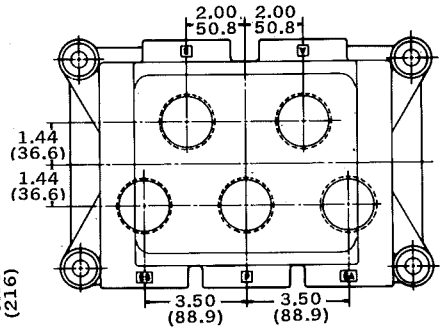
numatics®
JSPA SERIES

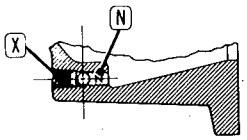
VALVE DIMENSIONS & PARTS
2-POSITION VALVES
1-1/4" and 1-1/2" TAPPED

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

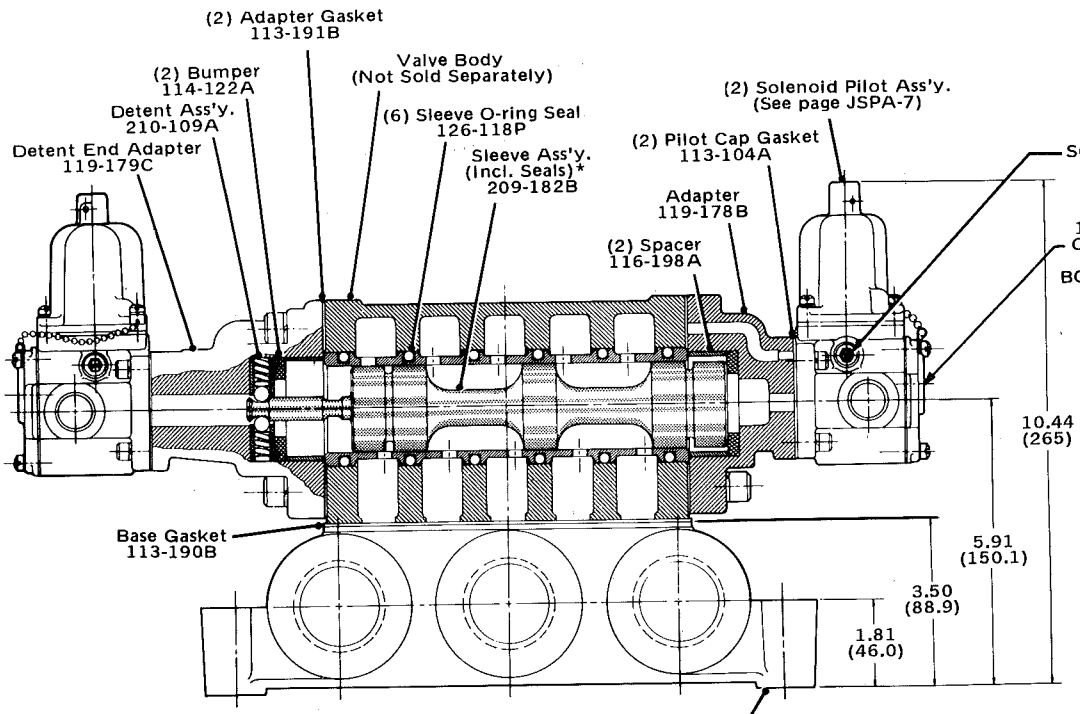




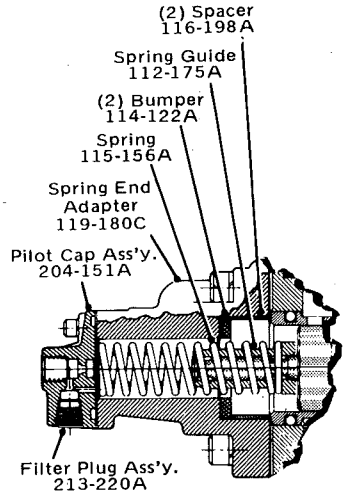
TOP VIEW OF
BOTTOM PORT LOCATIONS
(OPTIONAL)



SECTION B-B



Base - 1-1/4 NPTF - Side Ports
103-216C
Base - 1-1/4 NPTF - Side & Bottom Ports
203-182C†
Base - 1-1/2 NPTF - Side Ports
103-217C
Base - 1-1/2 NPTF - Side & Bottom Ports
203-183C†



DETAIL OF
SINGLE SOLENOID
PILOT ACTUATED, SPRING RETURN

†Includes 5 loose plugs.
*This Spool and Sleeve Assembly is sold as a precision matched set only. Spools are not interchangeable.

W = Recessed Locking Overide

LIGHT COMPLETE WITH CONDUIT COVER:

JSPA Series valves may be ordered complete with a pilot light, for single or double solenoids. 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. This light is available in two nominal voltages, as indicated below.

To order pilot light option, add L2 to any valve model number (e.g. 6JDSPA4L2 120/60 or OJSA3L2 120/60). To order individual conduit cover assembly or pilot light, use the part number shown in the table.

Voltage	To Be Used With Solenoid Voltage	*Conduit Cover Light Assembly Complete	Pilot Light Only
120	100 - 130 Volts Any Frequency Including DC	205-154A	230-112A
230	200 - 260 Volts Any Frequency Including DC	205-155A	230-113A

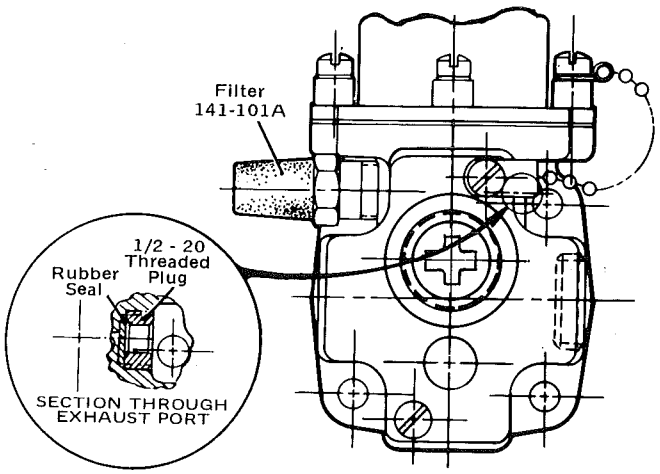
*Includes light, conduit cover, gasket, o-ring seal and screws.

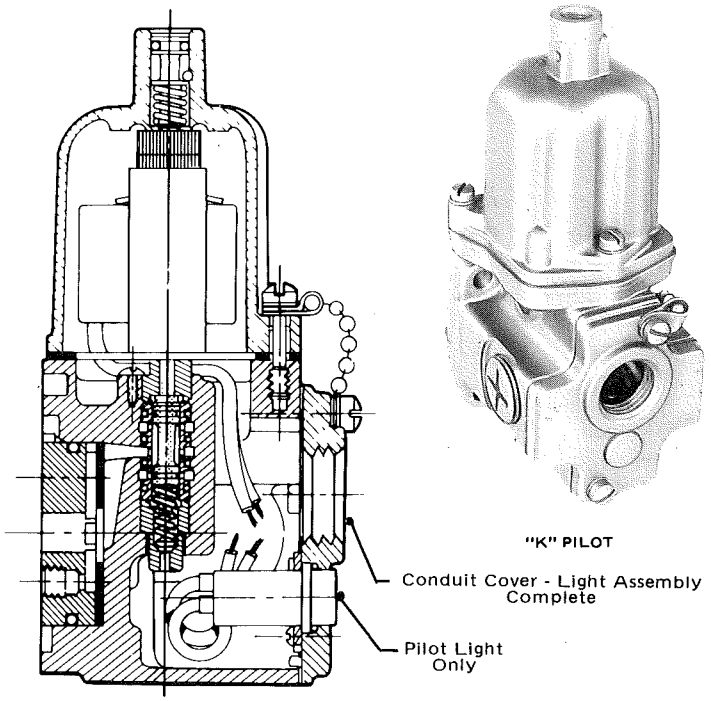
EXHAUST MUFFLER ("F"):

This optional filter unit offers protection against contaminants entering the exhaust ports, regardless of how the valve is mounted. It is a sintered bronze muffler which simply screws into one port, while the second port is blocked with a rubber seal in place of the second screen. Since the filter unit may be installed in either exhaust port, the filter, rubber seal and a socket jam screw are shipped loose.

If the valve is painted after it is installed on a machine, precaution must be taken to not paint the muffler. This would prevent the pilot from exhausting properly.

To order the filter option, add "F" to any model number (e.g. 6JDSPA4KF 120/60). To order replacement units for existing valves, request Filter No. 141-101A and Rubber Seal No. 124-118A.



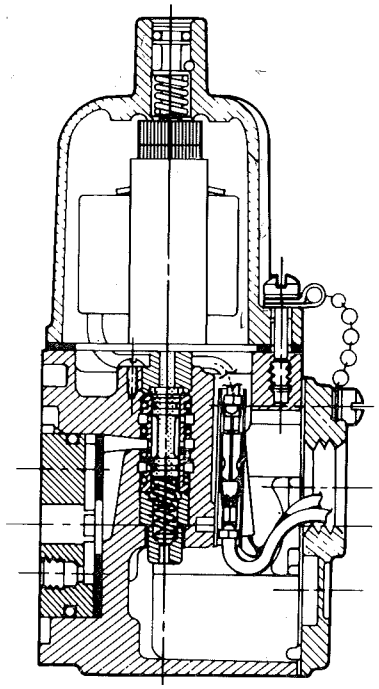


CONDUIT TAP ("K"):

The standard pilot assembly provides one conduit tap in the conduit cover. For maximum flexibility, an optional "K" pilot has THREE conduit taps; one in the cover and one on each side of the pilot body. To order, add "K" to the end (e.g. 6JDSPA4K 120/60).

WIRE DISCONNECT ("Q"):

Optional quick wire disconnects are available to facilitate removing the solenoid pilot capsule (AC or DC) from the pilot body for service. To order, add "Q" to the end of any valve model number or electrical component (e.g. 6JDSPA4Q or OJSA3Q).



The air valve people

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