AUTOMATIC VALVE

NOVI, MICHIGAN USA

Automatic Valve is here to serve your pneumatic actuation needs.

For over 55 years, our focus has been exclusively fluid power, our foundation: engineering and quality. Our systems are registered to ANSI N45.2 and ISO 9001. Our engineers are experienced, knowledgeable, and customer focused.

With a library of thousands of working applications, we can quickly provide you with the solution to your specialized pneumatic applications.

Our network of full service distribution is there to help you with on-site support, rapid deliveries and total package solutions.

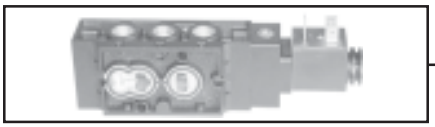
Whether you are looking for a single air valve, a manifold with complicated pneumatic circuitry, or something individually dedicated to your specifications, we can help with a world class pneumatic solution.

Call us at 248.474.6700

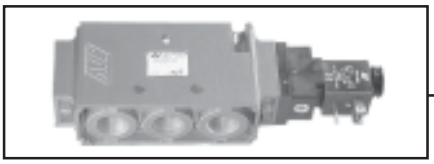
PRODUCT SELECTION

L20 4WAY

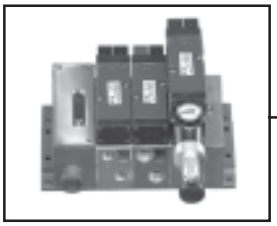
D20



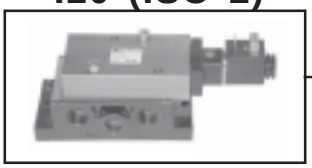
L45



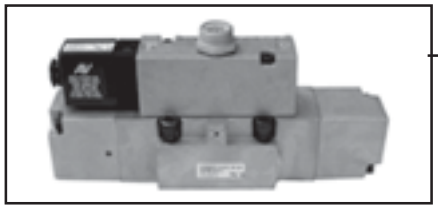
F15



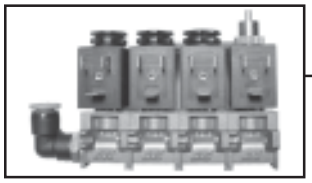
I20 (ISO 2)



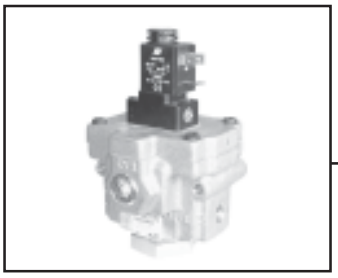
A06 (SAE 250)



K02

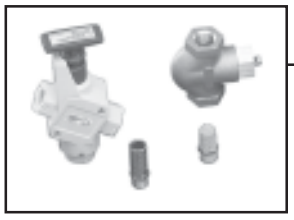


P14



L20 3WAY

ACCESSORIES



WORLD CLASS PNEUMATIC SOLUTIONS

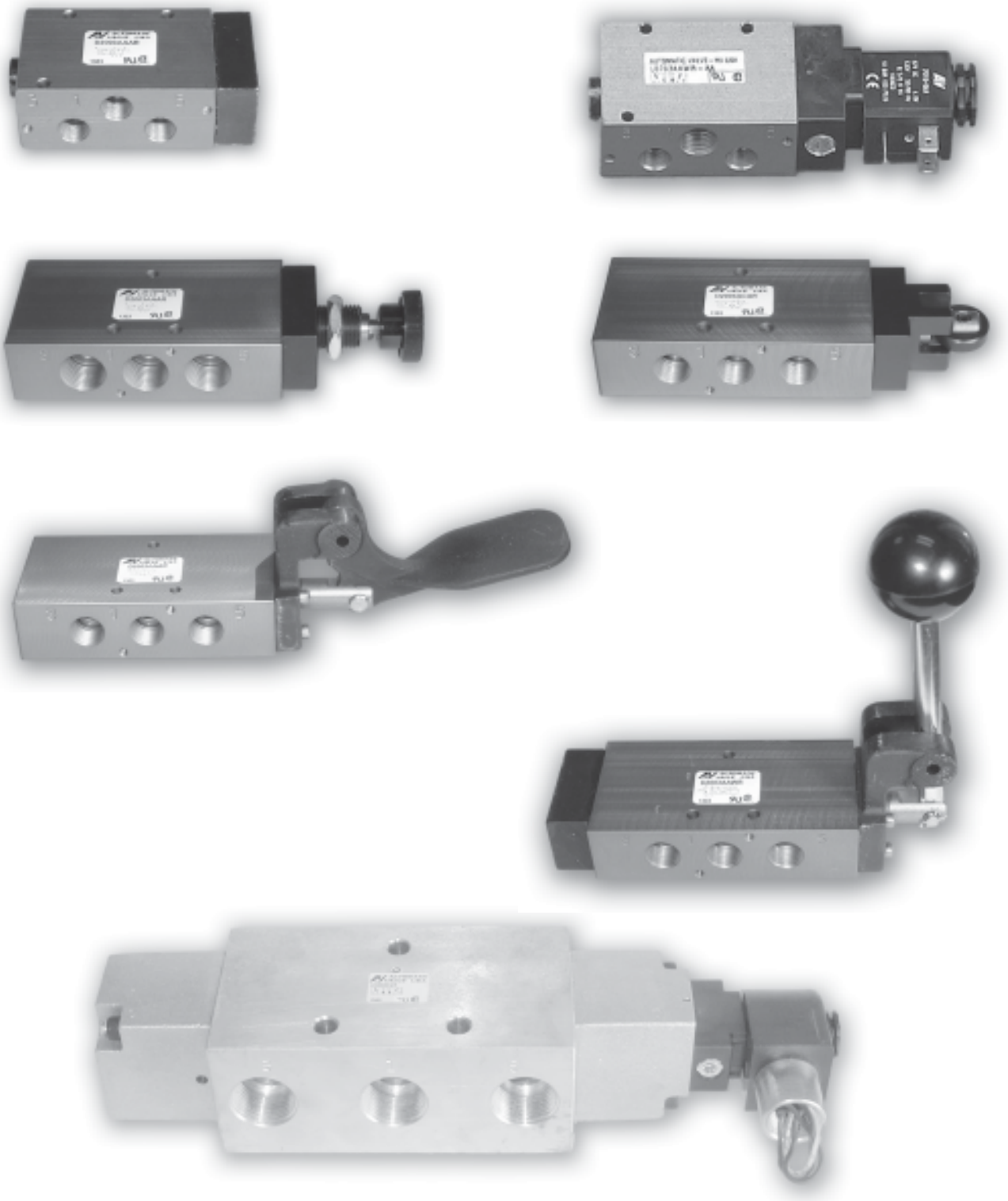
PRODUCT INDEX

SERIES	DESCRIPTION	PORT SIZE	FUNCTION	Cv	VALVE MOUNTING	ACTUATION				SECTION
						DIRECT SOL	PILOT SOL	AIR PILOT	MANUAL	
L07 L20 L65	**COMPACT**	1/8, 1/4 1/4, 3/8 3/4, 1	5/2*, 5/3	0.7 2.0 8.6	INLINE MANIFOLD		● ● ●	● ● ●	● ●	**A**
D20	**ACTUATOR MOUNT NAMUR**	1/4	5/2*, 5/3	2.0	DIRECT ACTUATOR		●	●		**B**
D06			3/2	.6			●			
L05	**TOP MOUNT**	1/8	5/2*	0.4	INLINE MANIFOLD		●	●		**C**
L21 L45		1/4 1/2, 3/4	5/2*, 5/3	2.0 4.5			● ●	● ●	●	
F15	**FIELD BUS**	1/4, 3/8	5/2*, 5/3*	1.5	SUB-BASE & MANIFOLD		●	●		**D**
I15 I20 I45	**ISO**	1/4, 3/8 3/8, 1/2 1/2, 3/4	5/2*, 5/3	1.5 2.4 4.5			● ● ●	● ● ●		**E**
A04 A06 A10 A20	**SAE**	1/4, 3/8 1/2, 3/4 3/4, 1 1, 1 1/4,1 1/2	5/2*, 5/3	2.4 8.6 13.7 22.7			● ● ● ●	● ● ● ●	● ●	**F**
K02 K03 K08	**DIRECT POPPET**	1/8, 1/4	2/2, 3/2	0.1 .2 0.8	INLINE & MANIFOLD	●			●	**G**
P06 P14 P36	**PILOT POPPET**	1/4, 3/8, 1/2 1/2, 3/4, 1 1, 1 1/4, 1 1/2	2/2, 3/2	5.5 13.8 33.8	INLINE		● ● ●	● ● ●		**H**
L20 L45	**COMPACT**	1/4, 3/8 1/2	3/2	2.0 4.5	INLINE		●	●	●	**I**
FLOW CONTROLS, CHECK VALVES, LOCKOUT VALVES, FITTINGS	**ACCESSORIES**	1/8 -1 1/2								**J**
	PRECAUTIONS, ENGINEERING, MAINTENANCE, GLOSSARY									**K**

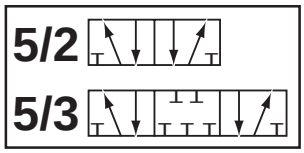
* SPOOL VALVES CAN BE PLUGGED FOR 2 WAY OR 3 WAY FUNCTION.

ISO 9001

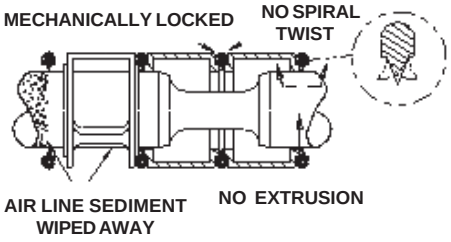
AUTOMATIC VALVE



COMPACT SPOOL VALVES

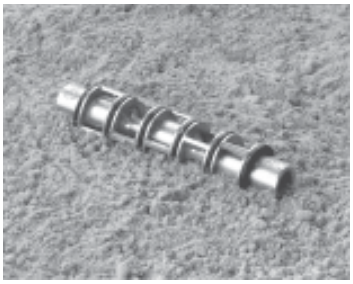


DESIGN FEATURES



VALVES

- Balanced spool construction allows ports to be plugged for 2 or 3 way function, or restricted for inexpensive cylinder exhaust speed control. For selector or dual pressure applications, consult the Factory.
- Inline or manifold mount: flexible, efficient.
- Wide variety of options and operators available.
- Specific application needs? Consult the Factory. We will build it for you.



TAPERED TEE-SEAL ..... Eats Dirt

- Bi-directional tapered Tee-Seal flexes to clean spool. Eliminates Monday morning sticking problems.
- Tested tough and proven reliable according to SAE specifications: Rust and water injected every 864,000 cycles for 20 million cycles.

SOLENOID ... Guaranteed Against Burnout

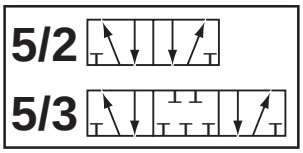
- Three-way pilot uses full air line pressure to shift the valve.
- Pilot is internally supplied when the pressure at port one is 35 to 150 PSIG (240 to 1030 kPa).
- Coil is hermetically sealed as an integral watertight molded unit.
- Intrinsically-safe and explosion-proof versions available.
- Push non-locking override (Extended turn and turn lock available).

PRODUCTS CERTIFIED TO

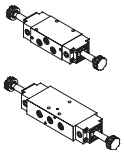
- CSA - (C22.2)
- UL - (STD 429)
- ATEX - (2018x)
- PTB - (EExmIIT5) (EExiaIICT6)
- CE - (73/23/EEC), (89/336/EEC)

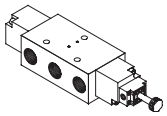
INDEX

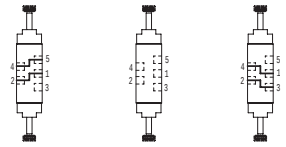
SPECIFICATIONS



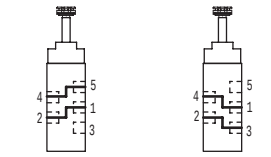
VALVE OPERATION



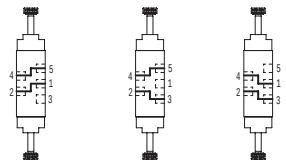




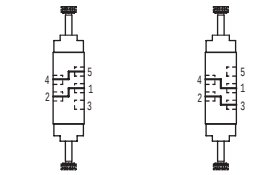
5/3 BLOCK - 4 way 3 position blocked center valves operate like 5/2 double valves except shift when a maintained signal is applied to either 1-2 or 1-4. Valves reset to center position when signal is removed with all ports blocked.



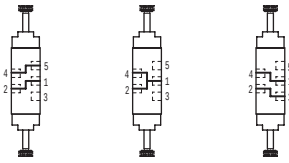
5/2 SINGLE - 4 way 2 position single operator valves shift, apply pressure from port 1 to 4, and exhaust pressure from port 2 to 3 when a maintained signal is applied to operator 1-4. Valves reset, apply pressure from port 1 to 2, exhaust pressure from port 4 to 5 when the signal is removed.



5/3 EXHAUST - 4 way 3 position exhaust center valves operate like 5/2 double valves except shift when a maintained signal is applied to either 1-2 or 1-4. Valves reset to center position when signal is removed with port 2 open to 3, port 4 open to 5, and port 1 blocked.



5/2 DOUBLE - 4 way 2 position double operator valves shift, apply pressure from port 1 to 4,and exhaust pressure from 2 to 3 when a momentary signal is applied to operator 1-4. Valves shift, apply presure from port 1 to 2, and exhaust pressure from 4 to 5 when a momentary signal is applied to operator 1-2.



5/3 PRESURE - 4 way 3 position pressure center valves operate like 5/2 double valves except shift when a maintained signal is applied to either 1-2 or 1-4. Valves reset to center position when signal is removed with port 1 open to ports 2 and 4, and ports 3 and 5 are blocked.

OPERATING TEMPERATURES	SOLENOID PILOT OPERATED	TREATED BUNA-N SEALS (TREATED NBR, Standard)	FLUOROELASTOMER SEALS (FPM (FKM), Option A)
	Standard	-18°C to +52°C (0°F to +125°F)	-18°C to +52°C (0°F to +125°F)
	High Temp Coil (Option CT)	-18°C to +82°C (0°F to +180°F)	-18°C to +82°C (0°F to +180°F)

OPERATING PRESSURES	SOLENOID PILOT OPERATED	INLET PORT	EXTERNAL PILOT PORT
	Standard 2 Position	240 - 1030 kPa (35 - 150 PSIG)	Not Required
	Standard 3 Position	345 - 1030 kPa (50 - 150 PSIG)	Not Required
	External Pilot (Option B)	Vacuum - 240 kPa (Vacuum - 35 PSIG)	240 - 1030 kPa (35 - 150 PSIG)

FILTRATION AND LUBRICATION

MEDIA - AIR OR INERT GAS

Lubrication of Automatic Valve products is not required but is recommended to maximize service life. Oils should be compatible with seal material, have an ISO 32 viscosity, and have an aniline range of 82°C (180°F) and 99°C (210°F). Refer to Maintenance section of catalog for recommended lubricants.

Filter to 50 microns or better.
For temperatures below 40°F, air must be dry to prevent formation of ice.

MODEL NUMBER CHART

SERIES	BODY TYPE		PORT SIZE		FUNCTION		BODY DESIGN		OPERATOR 1		CENTER OPERATOR		OPERATOR 2		VOLTAGE		OPTIONS	
L07	0	INLINE	2	1/8	A	4 WAY 2 POSITION	A	SINGLE	A	AIR PILOT	D	3 POSITION SPRING	A	AIR PILOT	AA	110/50, 120/60	A	FLUOROELASTOMER SEALS
			3	1/4	B	4 WAY 2 POSITION METAL	B	DOUBLE	F	HAND LEVER - LINE			C	3 POSITION SPRING MANUAL	AB	220/50, 240/60, 125VDC	B	EXTERNAL PILOT CONNECTION
					C	4 WAY 3 POSITION BLOCK			G	HAND LEVER - MANIFOLD			M	2 POSITION DETENT MANUAL	DA	22/50,24/60, 12VDC	C	CONDUIT COIL
					D	4 WAY 3 POSITION EXHAUST			I	PALM BUTTON			N	3 POSITION DETENT MANUAL	DB	24VDC	CT	CONDUIT COIL HIGH TEMPERATURE
					E	4 WAY 3 POSITION PRESSURE			J	CAM			R	2 POSITION SPRING			D	DUSTPROOF
									K	FOOT PEDAL			V	INTRINSICALLY-SAFE SOLENOID			G	18" FLYING LEADS
									L	FOOT TREADLE			W	STANDARD SOLENOID			L	LOW WATT COIL
									V	INTRINSICALLY-SAFE SOLENOID							S	STAINLESS STEEL BODY (L20-1/4" ONLY)
									W	STANDARD SOLENOID							SS	316 STAINLESS STEEL BODY (L20-1/4" ONLY)
																	W	G THREADS
																	Y	EXPLOSION-PROOF COIL (CSA, FM)
																	Z	EXPLOSION-PROOF COIL (ATEX, PTB)
L20			3	1/4													1	PUSH TURN LOCKING OVERRIDE
			4	3/8													2	EXTENDED TURN LOCKING OVERRIDE
L65			6	3/4														
			7	1														

5/2

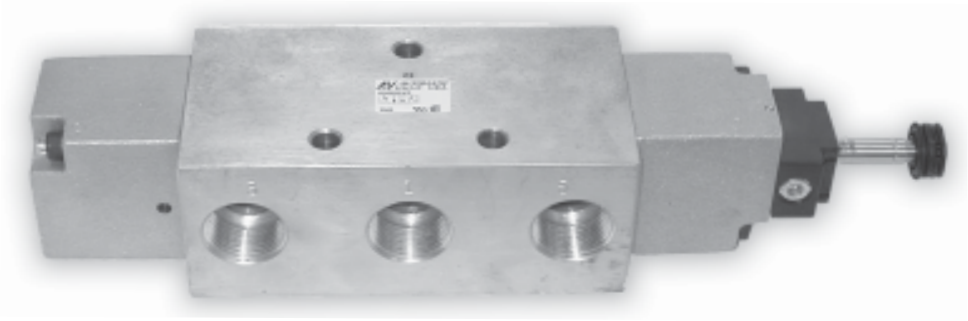
5/3

STANDARD SOLENOID MODELS

L07

L20

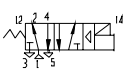
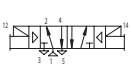
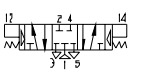
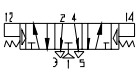
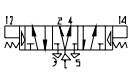
SINGLE SOLENOID



L65

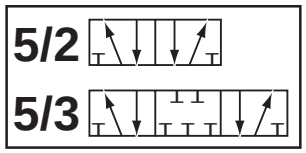
SINGLE SOLENOID

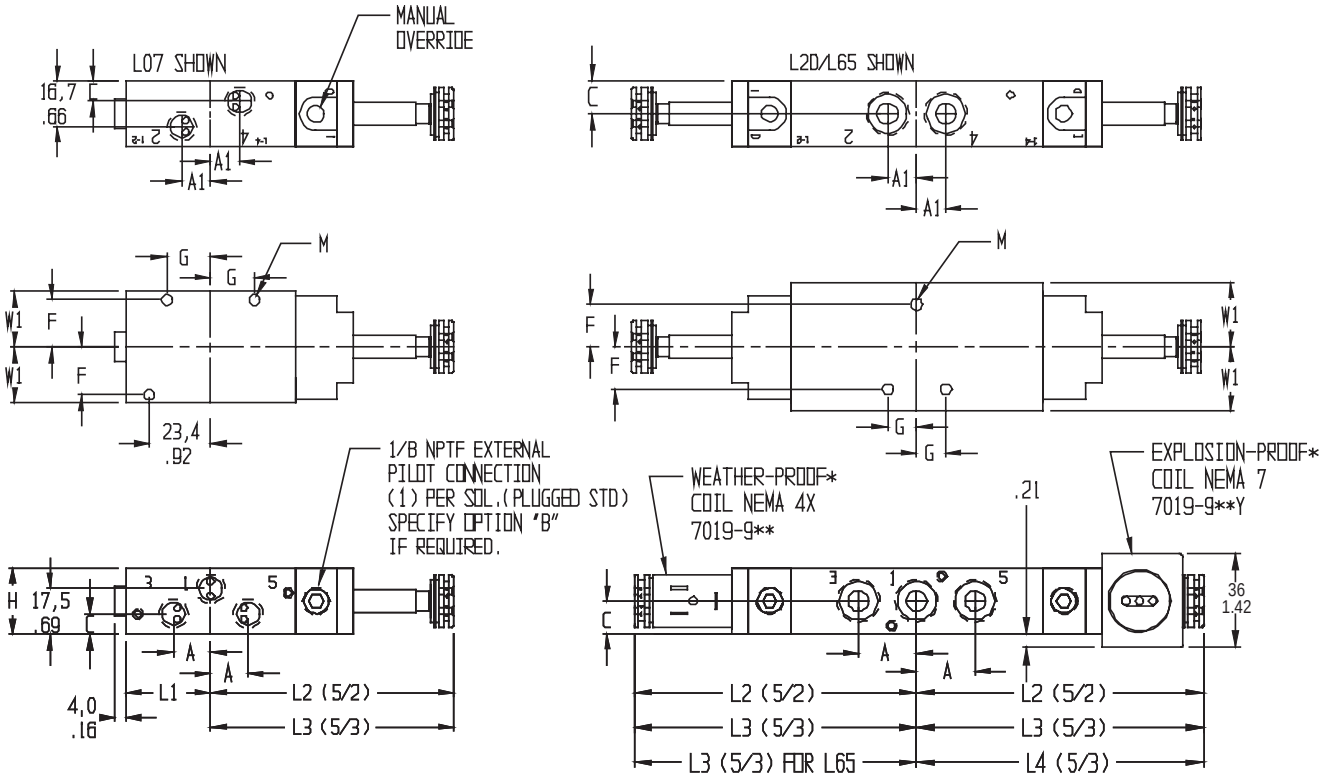
MODEL NUMBERS

SERIES	PORT SIZE		Cv (l/min)	5/2		5/3			BODY MATERIAL	SEAL MATERIAL	Kg (LB)
											
				SINGLE	DOUBLE	BLOCK	EXHAUST	PRESSURE			
L07	1/8		0.7 (690)	L0702AAWR*	L0702ABWW*	L0702CBWDW*	L0702DBWDW*	L0702EBWDW*	ALUMINUM	NBR	,3 (.6)
	1/4 (1,2,4)	1/8 (3,5)		L0703AAWR*	L0703ABWW*	L0703CBWDW*	L0703DBWDW*	L0703EBWDW*			
L20	1/4		1.8 (1770)	L2003AAWR*	L2003ABWW*	L2003CBWDW*	L2003DBWDW*	L2003EBWDW*	ALUMINUM	NBR	,5 (.9)
	3/8		2.0 (1970)	L2004AAWR*	L2004ABWW*	L2004CBWDW*	L2004DBWDW*	L2004EBWDW*			
L65	3/4		9.0 (8860)	L6506BAWR*	L6506BBWW*	L6506CBWDW*	L6506DBWDW*	L6506EBWDW*	ALUMINUM	NBR	1.86 (4.1)
	1 (1,2,4)	3/4 (3,5)	9.5 (9350)	L6507BAWR*	L6507BBWW*	L6507CBWDW*	L6507DBWDW*	L6507EBWDW*			

*Coils sold separately. Refer to Electrical Section for selection.

DIMENSIONAL INFORMATION





SERIES	A	A1	C	F	G	H	L1	L2	L3	L4	M	W1
L07	14,3 .56	7,9 .31	7,9 .31	18,3 .72	16,9 .66	25,4 1.00	32,3 1.27	92,7 3.65	92,7 3.65	-	4,0 .16	21,0 .83
L20	22,2 .88	11,1 .44	12,7 .50	16,1 .64	10,9 .43	25,4 1.00	48,2 1.90	108 4.25	108 4.25	-	4,4 .17	24,6 .97
L65	50,8 2.00	25,4 1.00	28,6 1.12	23,4 .92	25,4 1.00	57,2 2.25	117 4.61	175 6.88	175 6.88	219 8.63	9,14 .35	36,5 1.44

Units of Measure: Top - mm, Bottom - inches

5/2

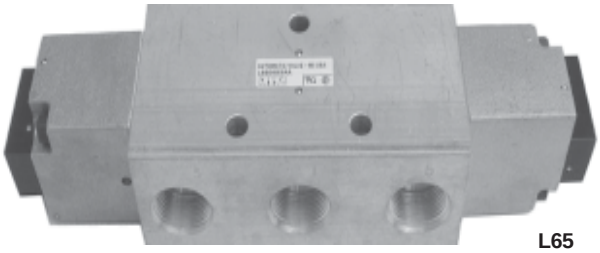
5/3

AIR PILOT MODELS

L07

L20

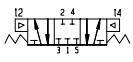
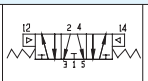
SINGLE



L65

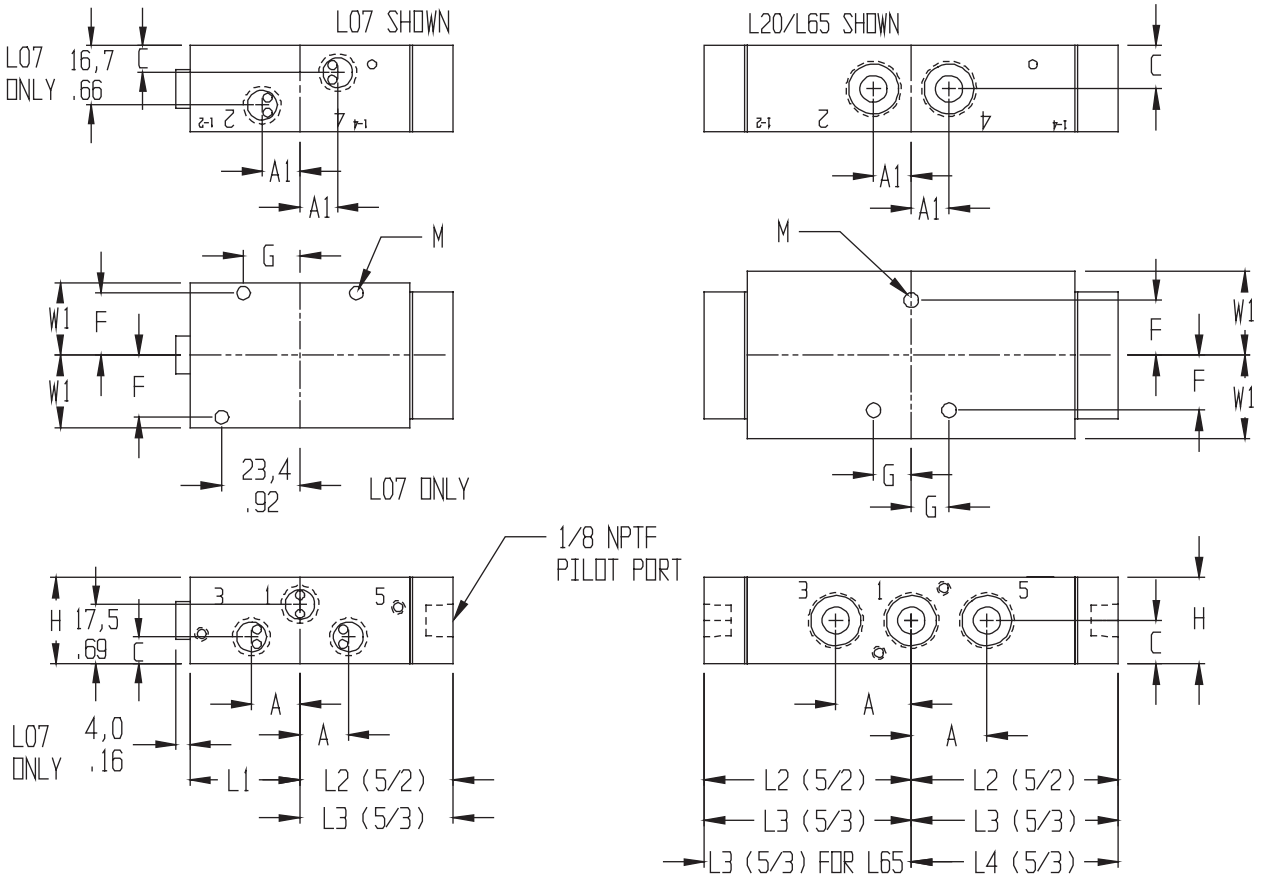
DOUBLE

MODEL NUMBERS

SERIES	PORT SIZE		Cv (l/min)	OPERATOR	5/2		5/3			BODY MATERIAL	SEAL MATERIAL	Kg (LB)
												
					SINGLE	DOUBLE	BLOCK	EXHAUST	PRESSURE			
L07	1/8		0.7 (690)	AIR PILOT	L0702AAAR	L0702ABAA	L0702CBADA	L0702DBADA	L0702EBADA	ALUMINUM	NBR	0,3 (.6)
	1/4 (1,2,4)	1/8 (3,5)			L0703BAAR	L0703ABAA	L0703CBADA	L0703DBADA	L0703EBADA			
L20	1/4		1.8 (1770)	AIR PILOT	L2003AAAR	L2003ABAA	L2003CBADA	L2003DBADA	L2003EBADA	ALUMINUM	NBR	0,5 (.9)
	3/8		2.0 (1970)		L2004AAAR	L2004ABAA	L2004CBADA	L2004DBADA	L2004EBADA			
L65	1 (1,2,4)	3/4 (3,5)	9.5 (9350)	AIR PILOT	L6507BAAR	L6507BBAA	L6507CBADA	L6507DBADA	L6507EBADA	ALUMINUM	NBR	1,86 (4.1)

DIMENSIONAL INFORMATION

5/2
5/3



SERIES	A	A1	C	F	G	H	L1	L2	L3	L4	M	W1
L07	14,3 .56	7,9 .31	7,9 .31	18,3 .72	16,9 .66	25,4 1.00	32,3 1.27	45,0 1.77	45,0 1.77	-	4,0 .16	21,0 .83
L20	22,2 .88	11,1 .44	12,7 .50	16,1 .64	10,9 .43	25,4 1.00	48,2 1.90	61 2.40	61 2.40	-	4,4 .17	24,6 .97
L65	50,8 2.00	50,8 2.00	28,6 1.12	23,4 .92	25.4 1.00	57,2 2.25	115,9 4.56	129 6.81	129 6.81	217 8.56	9,14 .35	36,5 1.44

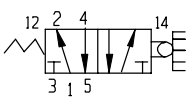
Units of Measure: Top - mm, Bottom - inches

5/2

MECHANICAL MODELS

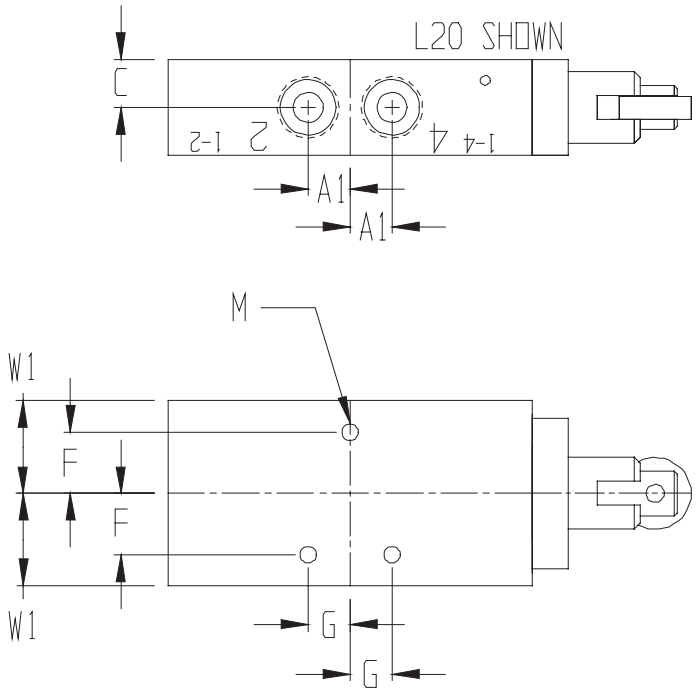
CAM ROLLER

MODEL NUMBERS

SERIES	PORT SIZE	Cv (l/min)	OPERATOR	5/2  SINGLE	BODY MATERIAL	SEAL MATERIAL	Kg (LB)
L20	1/4	1.8 (1770)	CAM ROLLER	L2003AAJR	ALUMINUM	NBR	0,3 (.7)
	3/8	2.0 (1970)		L2004AAJR			

5/2

DIMENSIONAL INFORMATION



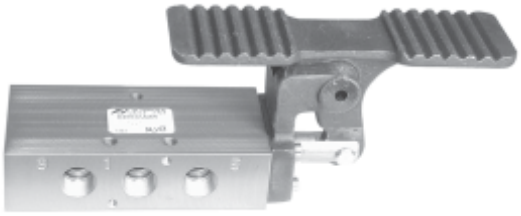
SERIES	A	A1	C	F	G	H	L1	L4	M	W1
L20	22,2 .88	11,1 .44	12,7 .50	16,1 .64	10,9 .43	25,4 1.00	48,2 1.90	90,4 3.56	4,4 .17	24,6 .97

Units of Measure: Top - mm, Bottom - inches

5/2 

MANUAL MODELS

FOOT PEDAL



FOOT TREADLE

HAND LEVER
(LINE MOUNTED)

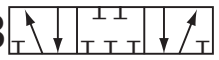
PALM BUTTON

MODEL NUMBERS

(4 WAY 2 POSITION)

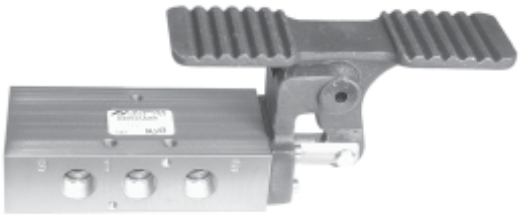
SERIES	PORT SIZE	Cv (l/min)	OPERATOR	5/2		BODY MATERIAL	SEAL MATERIAL	Kg (LB)
								
				DETENTED	SPRING RETURN			
L20	1/4	1.8 (1770)	FOOT PEDAL*	-	L2003AAKR	ALUMINUM	NBR	0,7 (1.5)
			FOOT TREADLE	L2003BALM	L2003AALR			
			HAND LEVER LINE MOUNTED	L2003BAFM	L2003AAFR			
			HAND LEVER MANIFOLD MOUNTED	L2003BAGM	L2003AAGR			
			PALM BUTTON	L2003BAlM	L2003AAlR			
	3/8	2.0 (1970)	FOOT PEDAL*	-	L2004AAKR	ALUMINUM	NBR	0,7 (1.5)
			FOOT TREADLE	L2004BALM	L2004AALR			
			HAND LEVER LINE MOUNTED	L2004BAFM	L2004AAFR			
			HAND LEVER MANIFOLD MOUNTED	L2004BAGM	L2004AAGR			
			PALM BUTTON	L2004BAlM	L2004AAlR			

*Guard sold separately - A8016-137

5/3 

MANUAL MODELS

HAND LEVER
(LINE MOUNTED)



FOOT TREADLE

PALM BUTTON

MODEL NUMBERS

(4 WAY 3 POSITION)

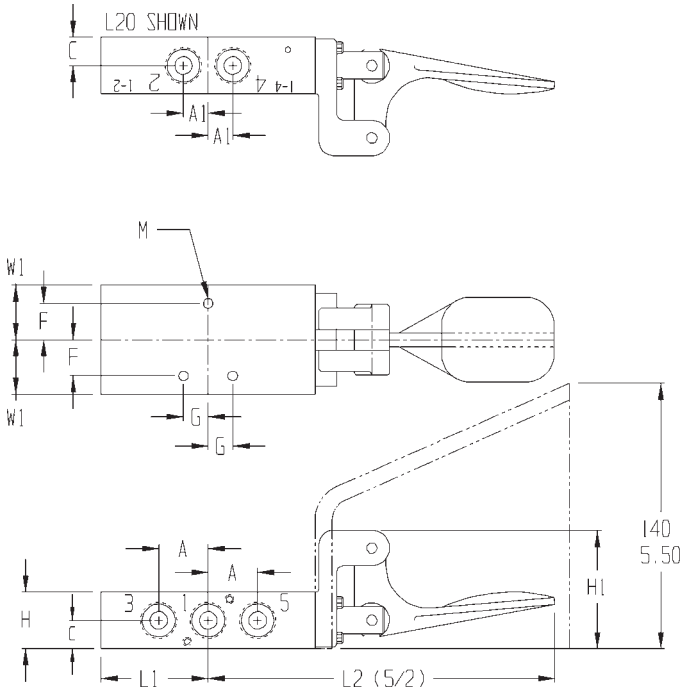
SERIES	PORT SIZE	Cv (l/min)	OPERATOR	5/3						BODY MATERIAL	SEAL MATERIAL	Kg (LB)
				DETENTED 5/3			SPRING RETURN 5/3					
				BLOCK	EXHAUST	PRESSURE	BLOCK	EXHAUST	PRESSURE			
L20	1/4	1.8 (1770)	FOOT TREADLE	L2003CALN	L2003DALN	L2003EALN	L2003CBLC	L2003DBLC	L2003EBLC	ALUMINUM	NBR	0,7 (1.5)
			HAND LEVER LINE MOUNTED	L2003CAFN	L2003DAFN	L2003EAFN	L2003CBFC	L2003DBFC	L2003EBFC			
			HAND LEVER MANIFOLD MOUNTED	L2003CAGN	L2003DAGN	L2003EAGN	L2003CBGC	L2003DBGC	L2003EBGC			
			PALM BUTTON	L2003CAIN	L2003DAIN	L2003EAIN	L2003CBIC	L2003DBIC	L2003EBIC			
	3/8	2.0 (1970)	FOOT TREADLE	L2004CALN	L2004DALN	L2004EALN	L2004CBLC	L2004DBLC	L2004EBLC	ALUMINUM	NBR	0,7 (1.5)
			HAND LEVER LINE MOUNTED	L2004CAFN	L2004DAFN	L2004EAFN	L2004CBFC	L2004DBFC	L2004EBFC			
			HAND LEVER MANIFOLD MOUNTED	L2004CAGN	L2004DAGN	L2004EAGN	L2004CBGC	L2004DBGC	L2004EBGC			
			PALM BUTTON	L2004CAIN	L2004DAIN	L2004EAIN	L2004CBIC	L2004DBIC	L2004EBIC			

5/2

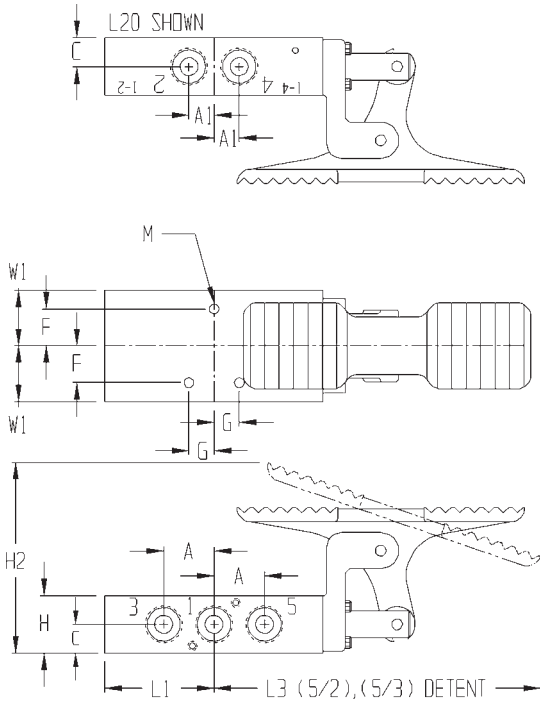
5/3

DIMENSIONAL INFORMATION

FOOT PEDAL



FOOT TREADLE



DESCRIPTION	L20
GUARD - FOOT PEDAL	A8016-137

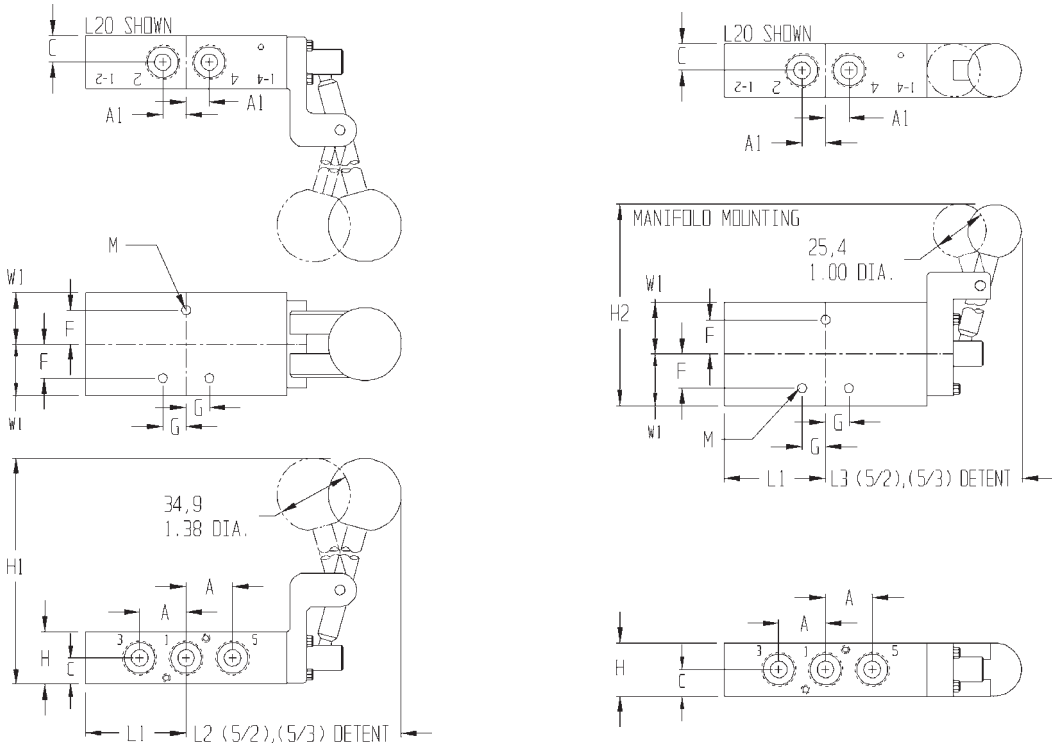
SERIES	A	A1	C	F	G	H	H1	H2	L1	L2	L3	M	W1
L20	22,2 .88	11,1 .44	12,7 .50	16,1 .64	10,9 .43	25,4 1.00	52,4 2.06	85,7 3.38	48,2 1.90	143 5.63	160 6.29	4,4 .17	24,6 .97

Units of Measure: Top - mm, Bottom - inches

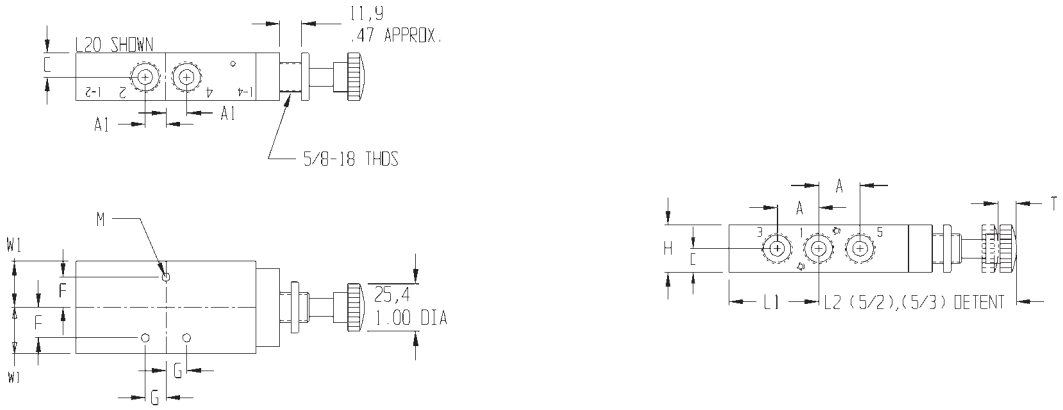
DIMENSIONAL INFORMATION

5/2
5/3

HAND LEVER



PALM BUTTON



SERIES	A	A1	C	F	G	H	H1	H2	L1	L2	L3	M	T	W
L20	22,2 .88	11,1 .44	12,7 .50	16,1 .64	10,9 .43	25,4 1.00	136 5.35	140 5.50	48,2 1.90	105 4.14	105 4.14	4,4 .17	9,5 .38	24,6 .97

Units of Measure: Top - mm, Bottom - inches

5/2

5/3

MANIFOLDS

L07

L20

FEATURES

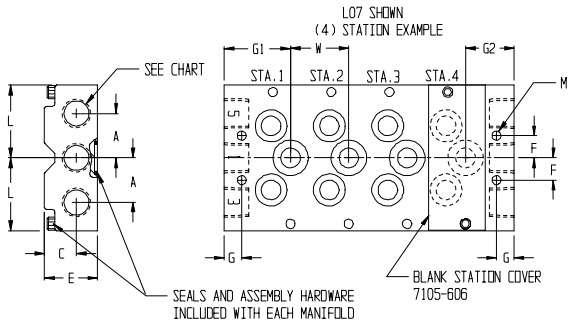
- Common inlet and common exhaust ports.
- Top cylinder ports.
- Valve mounting screws attached from bottom.
- Seals and mounting hardware included.

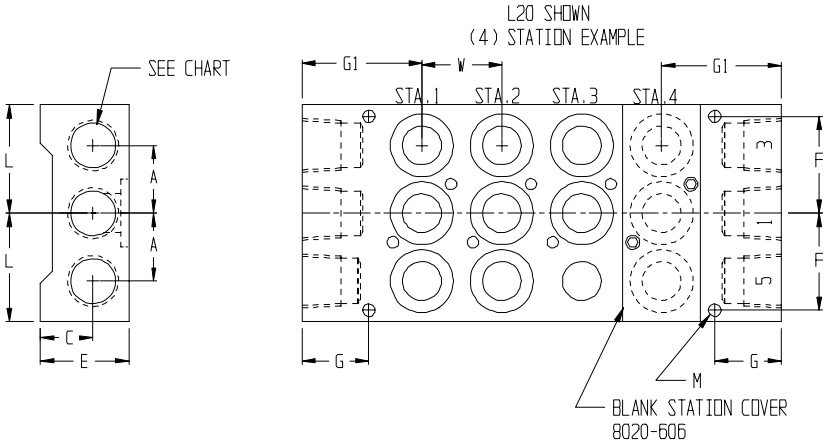
SERIES	MANIFOLD*				ACCESSORIES	
	NO. OF STATIONS	MODEL NUMBER	PORTS 3, 1, & 5	WGT Kg (LB)	BLOCKING DISK	BLANK STATION COVER
L07	2	A7105-002	1/4	0,2 (.5)	A7105-202	7105-606
	4	A7105-004		0,4 (.9)		
	6	A7105-006		0,6 (1.2)		
	8	A7105-008		0,7 (1.6)		
	10	A7105-010		0,9 (2.0)		
L20	2	A8020-002	3/8	0,4 (.8)	A8020-202	8020-606
	4	A8020-004		0,6 (.3)		
	6	A8020-006		0,8 (.7)		
	8	A8020-008		0,0 (2.2)		
	10	A8020-010		0,2 (2.7)		

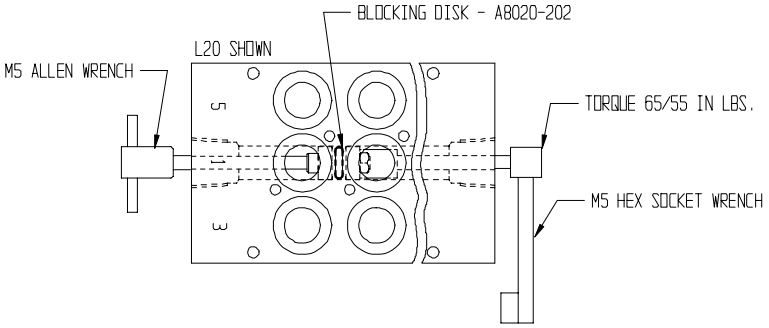
*Seals and mounting hardware included.

DIMENSIONAL INFORMATION

5/2
5/3







SERIES	A	C	E	F	G	G1	G2	L	M	W
L07	19,8 .78	14,3 .56	23,8 .94	9,9 .39	7,9 .31	29,7 1.17	22,2 .86	32,4 1.28	3,7 .15	26,2 1.03
L20	22,2 .88	17,3 .68	31,8 1.25	31,8 1.25	21,8 .86	39,3 1.55	39,3 1.55	35,6 1.40	3,7 .15	26,2 1.03

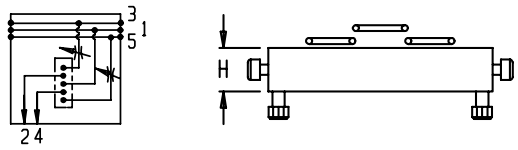
Units of Measure: Top - mm, Bottom - inches

5/2

5/3

ACCESSORIES

SANDWICH FLOW CONTROL



SERIES	MODEL NUMBER	DIMENSION H	WGT Kg (LB)
L07	B7106-005	12,7 .50	0,06 (.14)
L20	B8022-005	12,7 .50	0,09 (.19)

Units of Measure: Top - mm, Bottom - inches

FEATURES

- Restricts air flow from port 2 to port 3 and from port 4 to port 5.
- Mounts between valve and manifold.
- Vibration proof metering control.

A

OPTIONS

(LISTED AT THE END OF THE MODEL NUMBER IN ALPHA-NUMERIC ORDER)

A - FLUOROELASTOMER SEALS

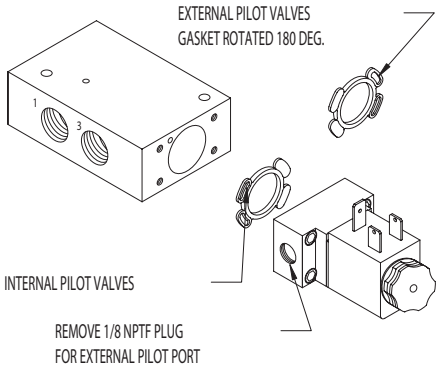
For applications where fluid media or ambient conditions are not compatible with nitrile seals. Note: Fluorocarbon seals do not increase the effective temperature range of the valve. For high temperature applications, consult the factory.

B - EXTERNAL PILOT

For solenoid applications when the pressure to port 1 is less than 35 PSIG (2 BAR). See example below for field conversion.

FIELD CONVERSION

- Remove solenoid and cap from valve body.
- Rotate gasket 180 degrees so that the internal pilot hole in the valve body is covered by the gasket.
- Reassemble the gasket, cap and solenoid to the valve body. Make sure gasket completely covers internal pilot hole before tightening screws.
- Remove the 1/8 NPTF pipe plug from the cap and make the external pilot connection.



C - CONDUIT COIL

Refer to Electrical Section for details.

CT - CONDUIT COIL HIGH TEMPERATURE

Refer to Electrical Section for details.

D - DUSTPROOF

For applications in extremely dusty and contaminated environments. Standard vent ports are plugged. Operators breathe through the exhaust ports via flats on the end of the spools.

G - COIL WITH 18" FLYING LEADS

Refer to Electrical Section for details.

L - LOW WATT COIL

Refer to Electrical Section for details.

S - STAINLESS STEEL

Stainless steel body, all other external parts corrosive resistant; for corrosive environment applications.

SS - 316 STAINLESS STEEL

Stainless steel body, all other external parts corrosive resistant; for corrosive environment applications.

W - G THREADS

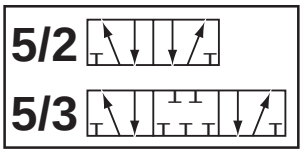
Y - EXPLOSION-PROOF COIL (CSA,FM)

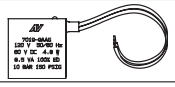
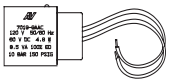
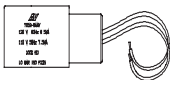
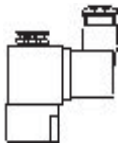
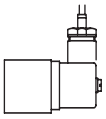
Refer to Electrical Section for details.

Z - EXPLOSION-PROOF COIL (ATEX, PTB)

Refer to Electrical Section for details.

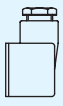
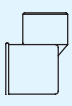
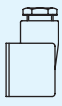
ELECTRICAL INFORMATION

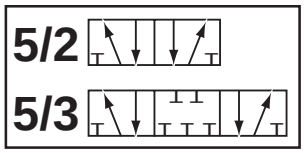


DESCRIPTION		WHEN THE 8TH CHARACTER OF MODEL NUMBER IS:	INSTRUCTIONS	COIL PART NUMBER ** = VOLTAGE
NEMA 4X WITH DIN 43650 CONNECTION		W	Order coil separately (specify voltage code from below)	7019-9**
NEMA 4X WITH 18" LEADS		W	Order coil separately (specify voltage code from below)	7019-9**G
NEMA 4X 1/2" CONDUIT WITH 30" LEADS		W	Order coil separately (specify voltage code from below)	7019-9**C 7019-9**CT (high temperature 82°C maximum)
EXPLOSION-PROOF 1/2" CONDUIT WITH 24" LEADS [CSA 202633X FM APPROVED CL. I; ZONE1Ex m II T4; AEx m II CL. I; Div. 1; GR. A, B, C, D CL. II; GR. E, F, G CL. III T4 Ta= -20°C to +60°C NEMA: 4, 4X, 7C, 7D]		W	Order coil separately (specify voltage code from below)	7019-**Y
INTRINSICALLY-SAFE WITH STRAIN RELIEF (EEx ia IICT6) CL. I: Div. 1; GR. A, B, C, D CL. II: GR. E, F, G CL. III: Div. 1 Hazardous Location		V	Coil and Connector included with valve (24VDC only)	A7106-374
EXPLOSION-PROOF WITH 3m CABLE AND STRAIN RELIEF [MEETS EUROPE ATEX STANDARDS] (Ex II 2G EExm II T - 5 I EC Exm II T-5 PTB NO 03 2018x)		Z	Order coil separately (specify voltage code from below)	7152-9**

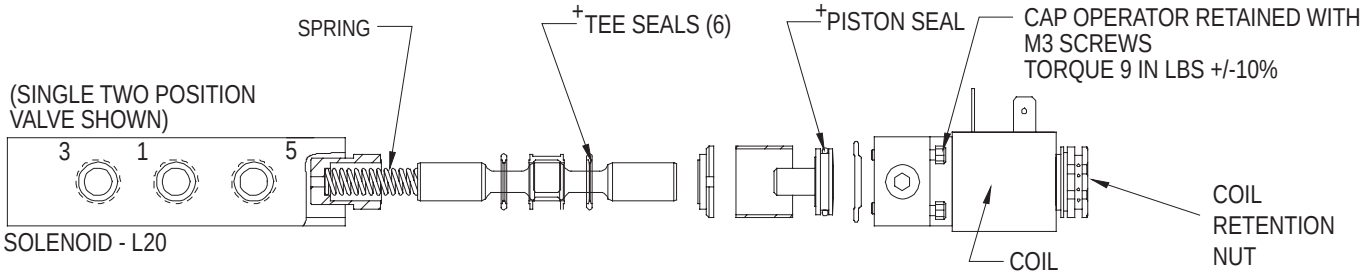
VOLTAGE +/- 10 %	** CODE	CURRENT (AMPS)								RESISTANCE (OHMS @ 25° C)				POWER (AC = VA DC = WATTS)			
		INRUSH				HOLDING											
		W		V	Z	W		V	Z	W		V	Z	W		V	Z
		NEMA				NEMA				NEMA				NEMA			
		4	7	V		4	7	V		4	7	V		4	7	V	
22/50 24/60	DA	.40	.55	-	-	.40	.32	-	-	31	19	-	-	4.8	4.5	-	-
110/50 120/60	AA	.08	.096	-	-	.06	.054	-	.029	840	530	-	1164	4.8	6.5	-	3.0
220/50 240/60	AB	.04	.048	-	-	.03	.027	-	.015	3400	2345	-	6730	6.0	6.5	-	3.0
12 VDC	DA	.40	-	-	-	.40	.375	-	.267	31	32	-	45	4.8	7	-	3.5
24 VDC	DB	.20	-	.03	.136	.20	.187	.03	.136	121	128	275	177	4.8	-	2.1	3.5
24 VDC	DBL	-	-	-	-	-	-	-	-	320	-	-	-	1.8	4.5	-	-
125 VDC	AB	.04	-	-	-	.04	.06	-	-	3400	2000	-	-	4.8	7	-	-

For alternative lower wattage options, please consult the factory.

DIN 43650 CONNECTORS							
TYPE	STRAIN RELIEF WITHOUT CORD	1/2" CONDUIT WITHOUT CORD	MOLDED WITH 6' CORD	STRAIN RELIEF WITH LIGHT		STRAIN RELIEF WITH LIGHT + 6' CORD	
				100-240 AC 48-120 DC	6-48 AC/DC	100-240 AC 48-120 DC	6-48 AC/DC
PART NUMBER	7020-001	7039-001	7020-006	7020-AA	7020-DB	7094-006	7094-007



SERVICE KIT INFORMATION



SERVICE KIT INSTALLATION

1. Remove Coil retention nut.
2. Remove Coil.
3. Remove screws from cap of operator.
4. Remove cap.
5. Remove existing serviceable components.
6. Replace with kit components. **+All seals must be lubricated with Magnalube-G or equivalent.**
7. Align pilot hole in body with pilot hole in cap.
8. Torque screws as shown above.

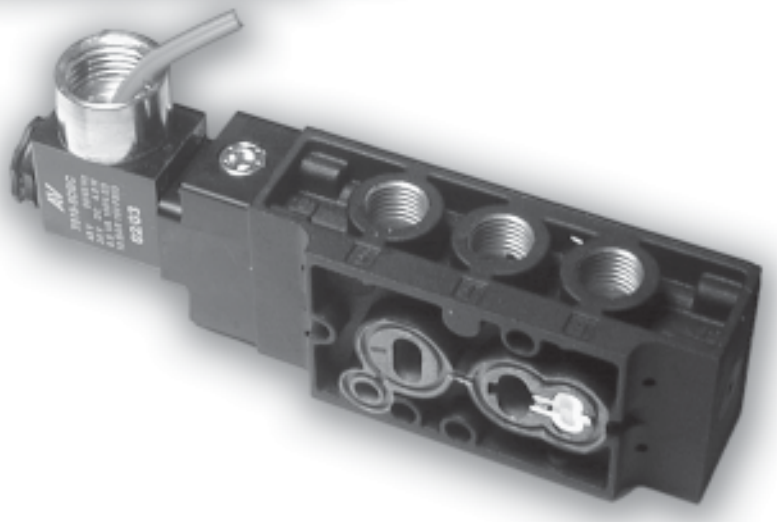
Lubrication of Automatic Valve products is not required but is recommended to maximize service life. Oils should be compatible with seal material, have an ISO 32 or lighter viscosity, and have an aniline point between 82°C (180°F) and 99°C (210°F). Refer to Maintenance section of catalog for recommended lubricants.

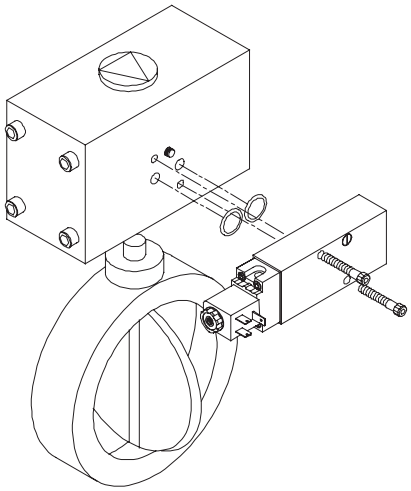
MODEL NUMBERS

SERIES	FUNCTION			
	SINGLE		DOUBLE	
	PART NUMBER	DESCRIPTION	PART NUMBER	DESCRIPTION
L07	K-L07-SGL K-L07-SGL-A (Fluoroelastomer)	Tee Seals (6) Piston Seal (1) Spring (1)	K-L07-DBL K-L07-DBL-A (Fluoroelastomer)	Tee Seals (6) Piston Seal (2)
L20	K-L20-SGL K-L20-SGL-A (Fluoroelastomer)	Tee Seals (6) Piston Seal (1) Spring (1)	K-L20-DBL K-L20-DBL-A (Fluoroelastomer)	Tee Seals (6) Piston Seal (2)
L65	K-L65-SGL K-L65-SGL-A (Fluoroelastomer)	Tee Seals (6) Piston Seal (1) Spring (1)	K-L65-DBL K-L65-DBL-A (Fluoroelastomer)	Tee Seals (6) Piston Seal (2)

ISO 9001

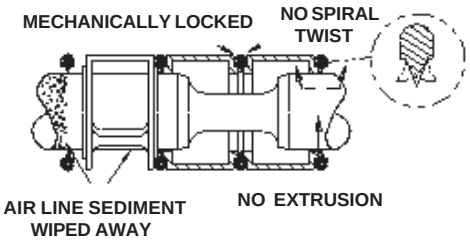
AUTOMATIC VALVE

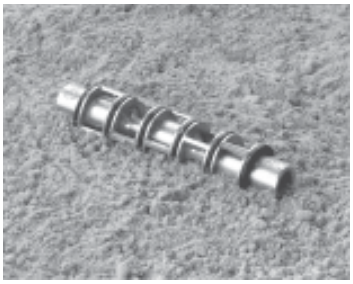




ACTUATOR MOUNT NAMUR SOLENOIDS

DESIGN FEATURES





VALVES

- Proven design with 10+ years OEM experience.
- Options available to meet your requirements: Nema 7, stainless steel, fluoroelastomer seals.
- Easily converted from 4 way to 3 way operation.

TAPERED TEE-SEAL ..... Eats Dirt

- Bi-directional tapered Tee-Seal flexes to clean spool. Eliminates Monday morning sticking problems.
- Tested tough and proven reliable according to SAE specifications: Rust and water injected every 864,000 cycles for 20 million cycles.

SOLENOID ... Guaranteed Against Burnout

- Three-way pilot uses full air line pressure to shift the valve.
- Pilot is internally supplied when the pressure at port one is 35 to 150 PSIG (240 to 1030 kPa).
- Coil is hermetically sealed as an integral watertight molded unit.
- Intrinsically-safe and explosion-proof versions available.
- Push non-locking override. (Extended turn and turn lock available)

PRODUCTS CERTIFIED TO INCLUDE

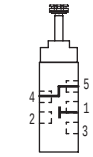
- CSA - (C22.2)
- UL - (STD 429)
- ATEX - (2018x)
- PTB - (EExmIIT5) (EExiaIICT6)
- CE - (73/23/EEC), (89/336/EEC)

INDEX

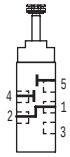
SPECIFICATIONS

3/2
5/2
5/3

VALVE OPERATION



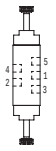
DE-ENERGIZED



ENERGIZED

3/2 NC - 3 way 2 position normally closed valves shift and apply pressure when a maintained signal is applied to the operator then reset and block pressure when the signal is removed.

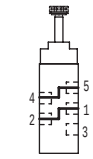
ENERGIZED



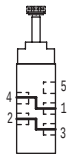
DE-ENERGIZED

ENERGIZED

5/3 BLOCK - 4 way 3 position blocked center valves operate like 5/2 double valves except shift when a maintained signal is applied to either 1-2 or 1-4. Valves reset to center position when signal is removed with all ports blocked.



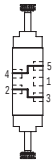
DE-ENERGIZED



ENERGIZED

5/2 SINGLE - 4 way 2 position single operator valves shift, apply pressure from port 1 to 4, and exhaust pressure from port 2 to 3 when a maintained signal is applied to operator 1-4. Valves reset, apply pressure from port 1 to 2, exhaust pressure from port 4 to 5 when the signal is removed.

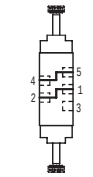
ENERGIZED



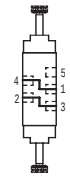
DE-ENERGIZED

ENERGIZED

5/3 EXHAUST - 4 way 3 position exhaust center valves operate like 5/2 double valves except shift when a maintained signal is applied to either 1-2 or 1-4. Valves reset to center position when signal is removed with port 2 open to 3, port 4 open to 5, and port 1 blocked.



DE-ENERGIZED



ENERGIZED

5/2 DOUBLE - 4 way 2 position double operator valves shift, apply pressure from port 1 to 4,and exhaust pressure from 2 to 3 when a momentary signal is applied to operator 1-4. Valves shift, apply presure from port 1 to 2, and exhaust pressure from 4 to 5 when a momentary signal is applied to operator 1-2.

ENERGIZED

DE-ENERGIZED

ENERGIZED

5/3 PRESURE - 4 way 3 position pressure center valves operate like 5/2 double valves except shift when a maintained signal is applied to either 1-2 or 1-4. Valves reset to center position when signal is removed with port 1 open to ports 2 and 4, and ports 3 and 5 are blocked.

OPERATING TEMPERATURES	SOLENOID PILOT OPERATED	TREATED BUNA-N SEALS (TREATED NBR, Standard)	FLUOROELASTOMER SEALS (FPM (FKM), Option A)
	Standard	-18°C to +52°C (0°F to +125°F)	-18°C to +52°C (0°F to +125°F)
	High Temp Coil (Option T)	-18°C to +82°C (0°F to +180°F)	-18°C to +82°C (0°F to +180°F)

OPERATING PRESSURES	SOLENOID PILOT OPERATED	INLET PORT	EXTERNAL PILOT PORT
	Standard 2 Position	240 - 1030 kPa (35 - 150 PSIG)	Not Required
	Standard 3 Position	345 - 1030 kPa (50 - 150 PSIG)	Not Required
	External Pilot (Option B)	Vacuum - 240 kPa (Vacuum - 35 PSIG)	240 - 1030 kPa (35 - 150 PSIG)

FILTRATION AND LUBRICATION

MEDIA - AIR OR INERT GAS

Lubrication of Automatic Valve products is not required but is recommended to maximize service life. Oils should be compatible with seal material, have an ISO 32 viscosity, and have an aniline range of 82°C (180°F) and 99°C (210°F). Refer to Maintenance section of catalog for recommended lubricants.

Filter to 50 microns or better.
For temperatures below 40°F, air must be dry to prevent formation of ice.

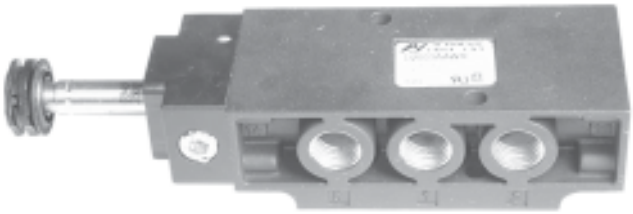
MODEL NUMBER CHART

SERIES	BODY TYPE	PORT SIZE	FUNCTION	BODY DESIGN	OPERATOR 1	CENTER OPERATOR	OPERATOR 2	VOLTAGE	OPTIONS
D06	0 NAMUR	3 1/4	G 3 WAY NC	A RIGHT	V INTRINSICALLY-SAFE SOLENOID W WEATHER-PROOF SOLENOID		R 2 POSITION SPRING	AA 110/50, 120/60 AB 220/50, 240/60, 125VDC DA 22/50, 24/60 12VDC, DB 24VDC	A FLUOROELASTOMER SEALS **(D20)** B EXTERNAL PILOT CONNECTION **(D20)** C CONDUIT COIL CT CONDUIT COIL HIGH TEMPERATURE D DUSTPROOF **(D20)** G 18" FLYING LEADS P TRANSITION PLATE **(D20)** Q CLOSED LOOP **(D20)** S STAINLESS STEEL BODY W G THREADS Y EXPLOSION-PROOF COIL (CSA, FM) Z EXPLOSION-PROOF COIL (ATEX, PTB) 1 PUSH TURN LOCKING OVERRIDE 2 EXTENDED TURN LOCKING OVERRIDE 8 10-24 MOUNTING KIT 9 10-32 MOUNTING KIT
D20			A 4 WAY 2 POSITION C 4 WAY 3 POSITION BLOCK CENTER D 4 WAY 3 POSITION EXHAUST CENTER E 4 WAY 3 POSITION PRESSURE CENTER G 3 WAY NC	A RIGHT B DOUBLE C LEFT	A AIR PILOT V INTRINSICALLY-SAFE SOLENOID W STANDARD SOLENOID	D 3 POSITION SPRING	A AIR PILOT 2 POSITION SPRING R INTRINSICALLY-SAFE SOLENOID V STANDARD SOLENOID W		

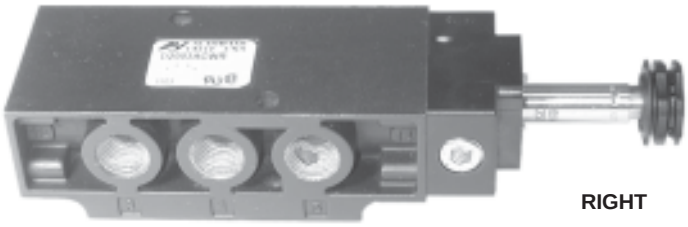
3/2
5/2
5/3

STANDARD SOLENOID MODELS

D06



LEFT

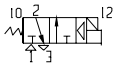
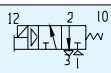
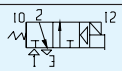
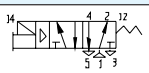
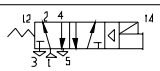
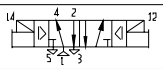
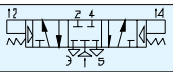
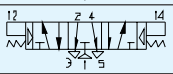
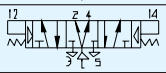


RIGHT

DOUBLE

D20

MODEL NUMBERS

FUNCTION		PORT SIZE	Cv (l/min)	MODEL NUMBER	BODY MATERIAL	SEAL MATERIAL	Kg (LB)
DESCRIPTION	SCHEMATIC						
3/2 NORMALLY CLOSED SINGLE SOLENOID		1/4	0.06 (59)	D0603GAWR*	ALUMINUM	-	0,26 (.58)
3/2 NORMALLY CLOSED SINGLE SOLENOID LEFT		1/4	1.8 (1770)	D2003GCWR*	ALUMINUM	NBR	0,32 (.70)
3/2 NORMALLY CLOSED SINGLE SOLENOID RIGHT				D2003GAWR*			
5/2 SINGLE SOLENOID LEFT		1/4	1.8 (1770)	D2003ACWR*	ALUMINUM	NBR	0,32 (.70)
5/2 SINGLE SOLENOID RIGHT				D2003AAWR*			
5/2 DOUBLE SOLENOID				D2003ABWW*			0,36 (.80)
5/3 BLOCK DOUBLE SOLENOID		1/4	1.8 (1770)	D2003CBWDW*	ALUMINUM	NBR	0,36 (.80)
5/3 EXHAUST DOUBLE SOLENOID				D2003DBWDW*			
5/3 PRESSURE DOUBLE SOLENOID				D2003EBWDW*			

*Coils sold separately. Refer to Electrical Section for additional information.

DIMENSIONAL INFORMATION

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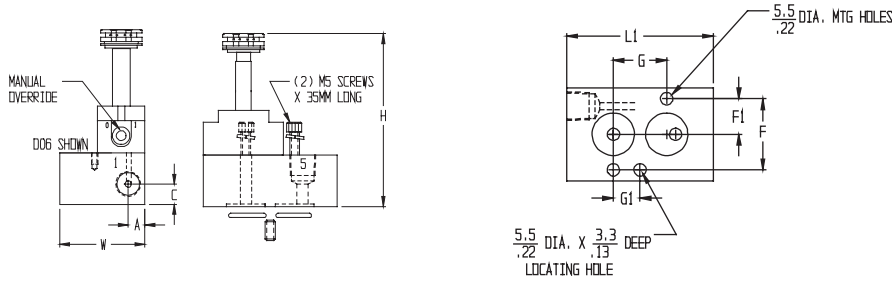
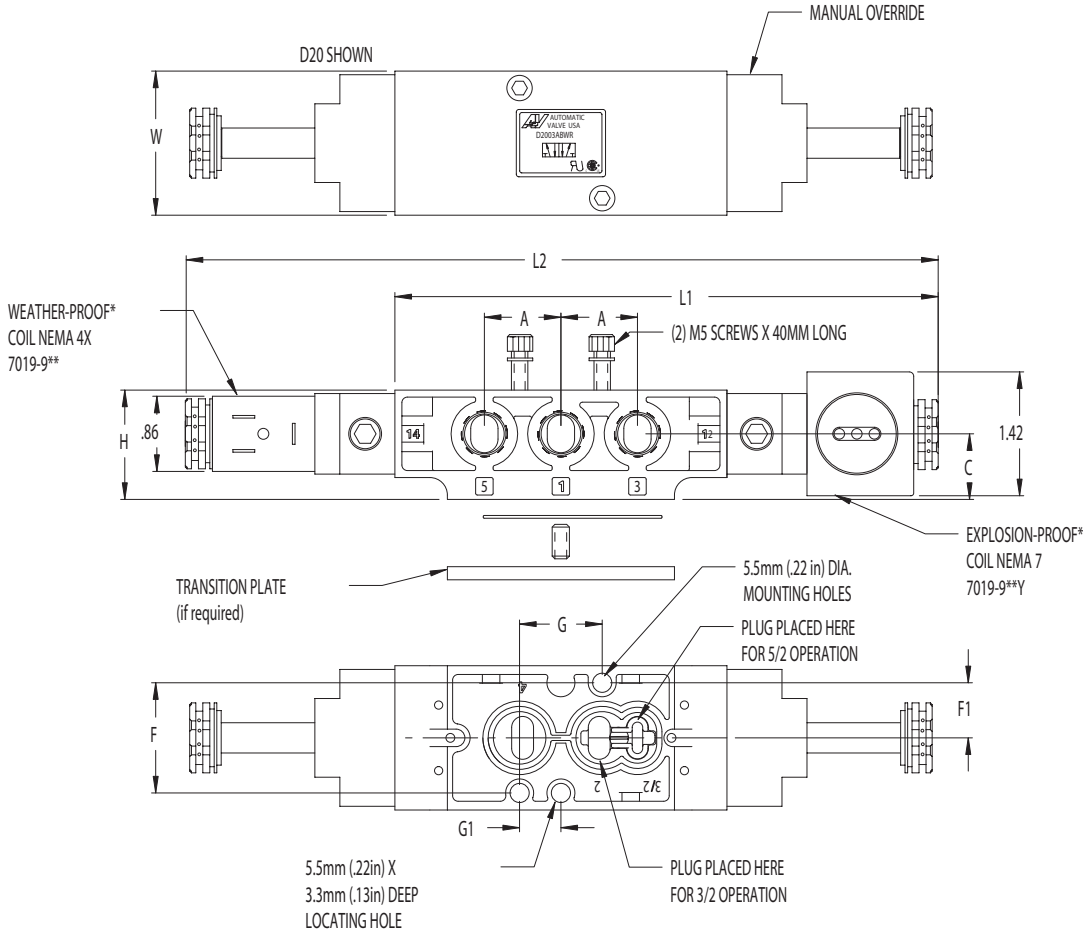
5/2
5/3





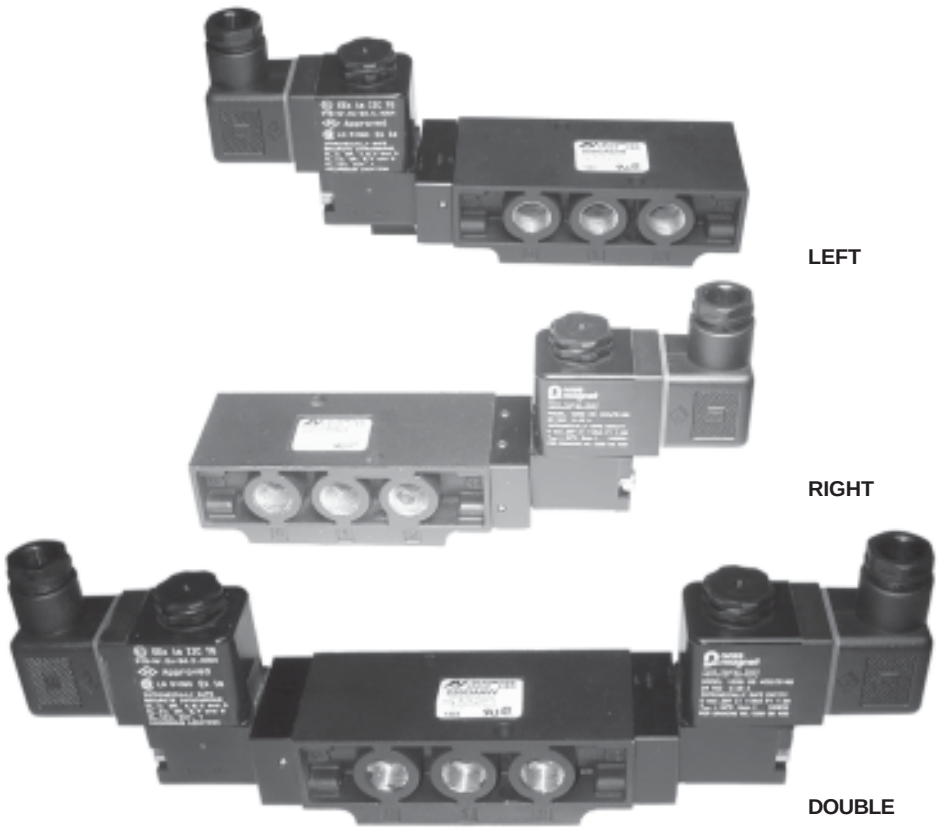
SERIES	DESCRIPTION	A	C	F	F1	G	G1	H	L1	L2	W
D06	SINGLE SOLENOID	8,4 .33	10,2 .40	32,0 1.26	16,0 .63	23,9 .94	11,9 .47	85,1 3.35	66,0 2.60	-	41,9 1.65
D20	SINGLE SOLENOID	22,2 .88	19,1 .75	32,0 1.26	16,0 .63	23,9 .94	11,9 .47	31,7 1.25	155.4 6.12	- -	41,9 1.65
	DOUBLE SOLENOID	22,2 .88	19,1 .75	32,0 1.26	16,0 .63	23,9 .94	11,9 .47	31,7 1.25	- -	214 8.42	41,9 1.65

Units of Measure: Top - mm, Bottom - inches

3/2
5/2
5/3

INTRINSICALLY-SAFE SOLENOID MODELS

D06



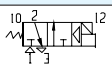
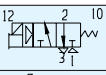
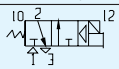
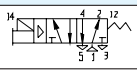
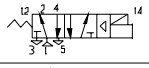
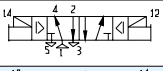
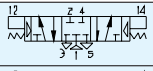
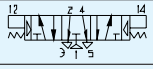
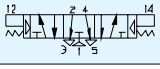
LEFT

RIGHT

DOUBLE

D20

MODEL NUMBERS

FUNCTION		PORT SIZE	Cv (l/min)	MODEL NUMBER	BODY MATERIAL	SEAL MATERIAL	Kg (LB)
DESCRIPTION	SCHEMATIC						
3/2 NORMALLY CLOSED SINGLE SOLENOID RIGHT		1/4	0.06 (59)	D0603GAVR*-DB	ALUMINUM	-	0,26 (.58)
3/2 NORMALLY CLOSED SINGLE SOLENOID LEFT		1/4	1.8 (1770)	D2003GCVR*-DB	ALUMINUM	NBR	0,32 (.70)
3/2 NORMALLY CLOSED SINGLE SOLENOID RIGHT				D2003GAVR*-DB			
5/2 SINGLE SOLENOID LEFT		1/4	1.8 (1770)	D2003ACVR*-DB	ALUMINUM	NBR	0,32 (.70)
5/2 SINGLE SOLENOID RIGHT				D2003AAVR*-DB			
5/2 DOUBLE SOLENOID				D2003ABVV*-DB			0,36 (.80)
5/3 BLOCK DOUBLE SOLENOID		1/4	1.8 (1770)	D2003CBVDV*-DB	ALUMINUM	NBR	0,36 (.80)
5/3 EXHAUST DOUBLE SOLENOID				D2003DBVDV*-DB			
5/3 PRESSURE DOUBLE SOLENOID				D2003EBVDV*-DB			

*Coils included with valve. Refer to Electrical Section for additional information.

DIMENSIONAL INFORMATION

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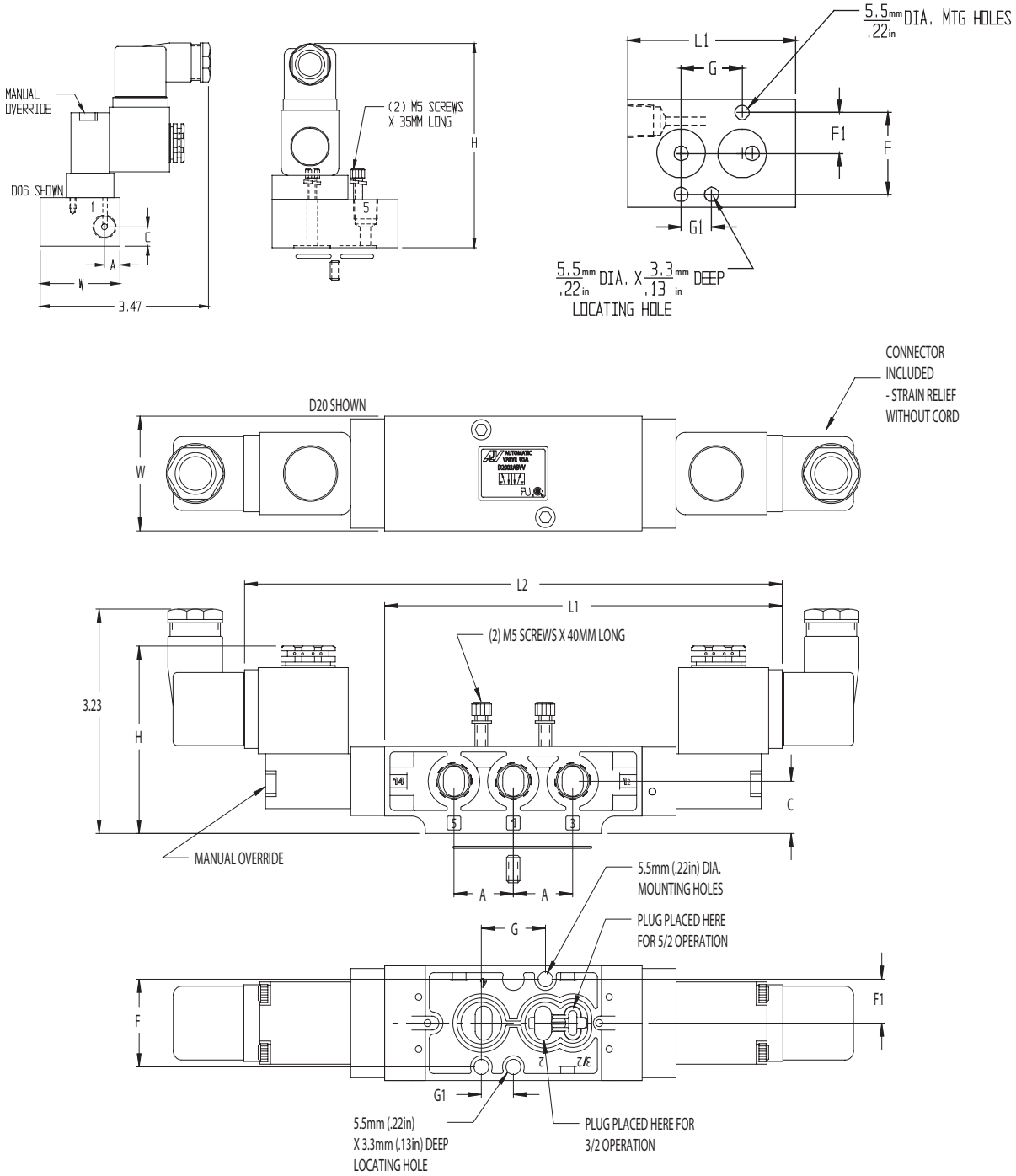
5/2
5/3



SERIES	DESCRIPTION	A	C	F	F1	G	G1	H	L1	L2	W
D06	SINGLE SOLENOID	8,4 .33	10,2 .40	32,0 1.26	16,0 .63	23,9 .94	11,9 .47	107,2 4.22	85,8 3.38	-	41,9 1.65
D20	SINGLE SOLENOID	22,2 .88	19,1 .75	32,0 1.26	16,0 .63	23,9 .94	11,9 .47	68,3 2.69	149 5.86	-	41,9 1.65
	DOUBLE SOLENOID	22,2 .88	19,1 .75	32,0 1.26	16,0 .63	23,9 .94	11,9 .47	68,3 2.69	-	201 7.92	41,9 1.65

Units of Measure: Top - mm, Bottom - inches

5/2

5/3

AIR PILOT MODELS

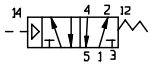
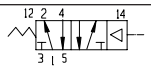
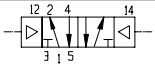
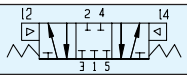
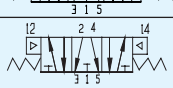
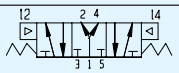
LEFT

RIGHT

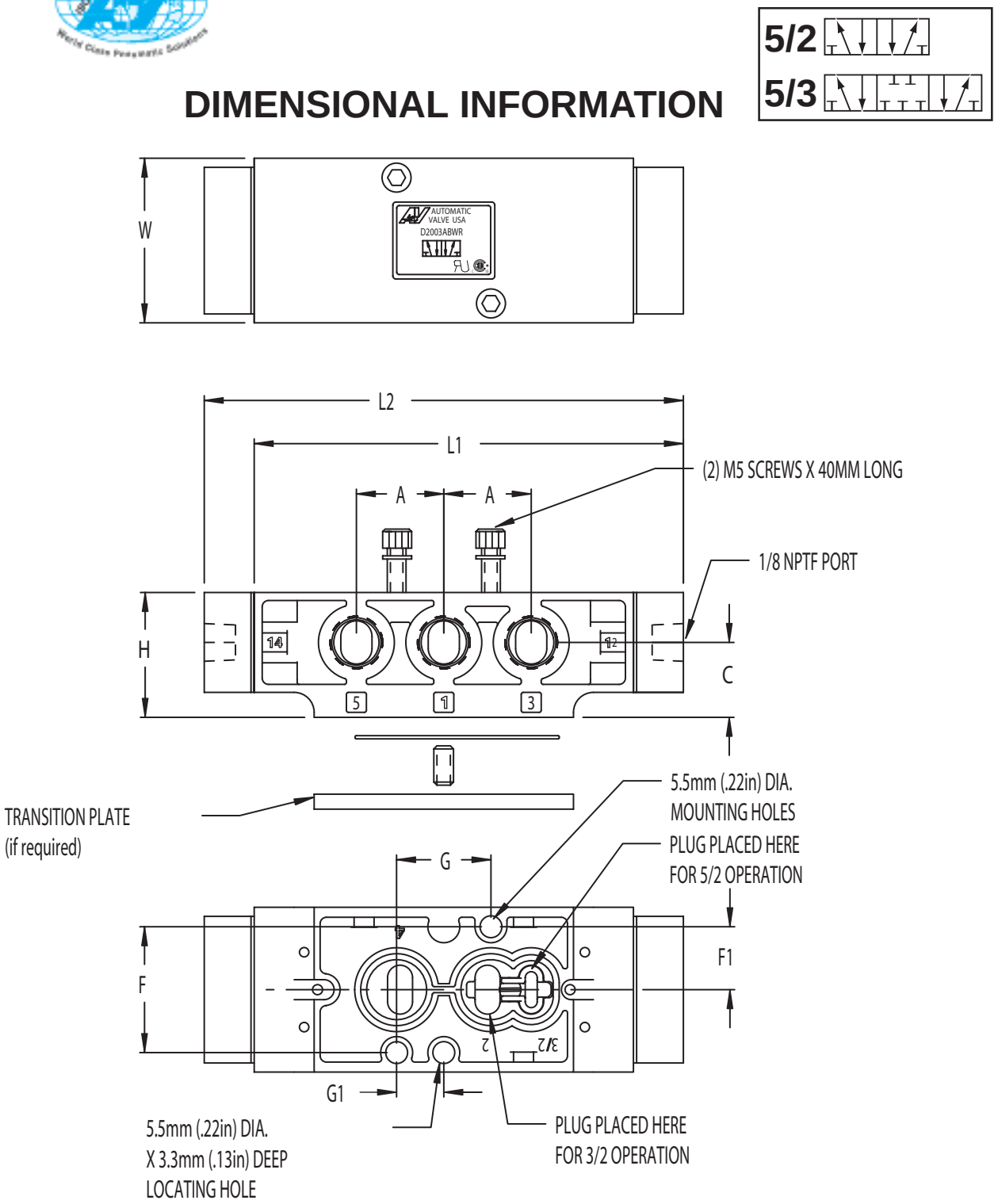
D20
SINGLE

D20
DOUBLE

MODEL NUMBERS

FUNCTION		PORT SIZE	Cv (l/min)	MODEL NUMBER	BODY MATERIAL	SEAL MATERIAL	Kg (LB)
DESCRIPTION	SCHEMATIC						
5/2 SINGLE LEFT		1/4	1.8 (1770)	D2003ACAR	ALUMINUM	NBR	0,32 (.70)
5/2 SINGLE RIGHT				D2003AAAR			
5/2 DOUBLE				D2003ABAA			0,36 (.80)
5/3 BLOCK DOUBLE		1/4	1.8 (1770)	D2003CBADA	ALUMINUM	NBR	0,36 (.80)
5/3 EXHAUST DOUBLE				D2003DBADA			
5/3 PRESSURE DOUBLE				D2003EBADA			

DIMENSIONAL INFORMATION



SERIES	DESCRIPTION	A	C	F	F1	G	G1	H	L1	L2	W
D20	SINGLE AIR PILOT	22,2 .88	19,1 .75	32,0 1.26	16,0 .63	23,9 .94	11,9 .47	31,7 1.25	109 4.30	-	41,9 1.65
	DOUBLE AIR PILOT	22,2 .88	19,1 .75	32,0 1.26	16,0 .63	23,9 .94	11,9 .47	31,7 1.25	-	122 4.80	41,9 1.65

Units of Measure: Top - mm, Bottom - inches

5/2

5/3

OPTIONS

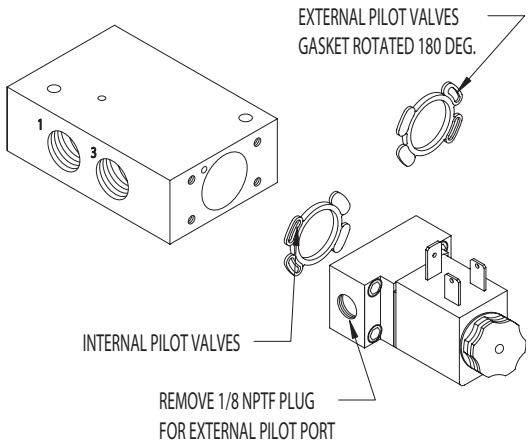
(LISTED AT THE END OF THE MODEL NUMBER IN ALPHA-NUMERIC ORDER)

A - FLUOROELASTOMER SEALS
For applications where fluid media or ambient conditions are not compatible with nitrile seals.
Note: Fluorocarbon seals do not increase the effective temperature range of the valve.
For high temperature applications, consult the factory.

B - EXTERNAL PILOT
For solenoid applications when the pressure to port one is less than 35 PSIG (2 BAR). See example below for field conversion.

FIELD CONVERSION

- Remove solenoid and cap from valve body.
- Rotate gasket 180 degrees so that the internal pilot hole in the valve body is covered by the gasket.
- Reassemble the gasket, cap and solenoid to the valve body. Make sure gasket completely covers internal pilot hole before tightening screws.
- Remove the 1/8 NPTF pipe plug from the cap and make the external pilot connection.



C - CONDUIT COIL
Refer to Electrical Section for details.
CT - CONDUIT COIL HIGH TEMPERATURE
Refer to Electrical Section for details.
D - DUSTPROOF
For applications in extremely dusty and contaminated environments. Standard vent ports are plugged. Operators breathe through the exhaust ports via flats on the end of the spools.
G - COIL WITH 18" LEADS
Refer to Electrical Section for details.
P - TRANSITION PLATE
For mounts to surfaces smaller than 2 1/2" x 1 3/8". Refer to next page for Installation Instructions.
Q - CLOSED LOOP
S - STAINLESS STEEL
Stainless steel body, all other external parts corrosive resistant; for corrosive environment applications.
SS - 316 STAINLESS STEEL
Stainless steel body, all other external parts corrosive resistant; for corrosive environment applications.
W - G THREADS
Y - EXPLOSION-PROOF COIL (CSA, FM)
Refer to Electrical Section for details.
Z - EXPLOSION-PROOF COIL (ATEX, PTB)
Refer to Electrical Section for details.

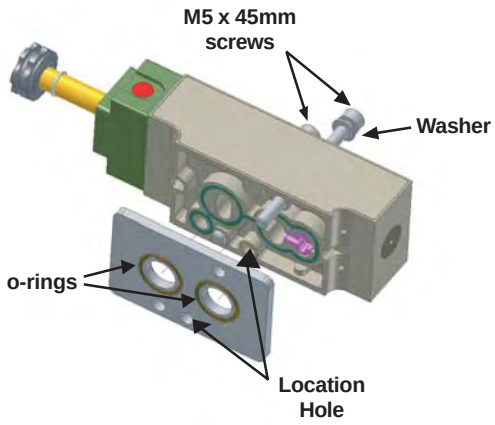
5/2
5/3

TRANSITION PLATE

Part Number A8021-339

Installation Instructions

This plate is designed for use in situations where the NAMUR solenoid valve needs to be raised above the mounting surface or where the sealing face of the solenoid valve extends beyond the mounting surface.
(The minimum required mounting area measures 2 1/2" x 1 3/8")



MOUNTING SURFACE

Installation

1. Place the plate between the solenoid valve and the mounting surface.

2. Use the supplied M5 x 45mm screws to secure the solenoid valve/plate assembly to the mounting surface. DO NOT use the solenoid valve screws (they are too short to engage correctly).

3. Note: The o-ring face of the plate must seal on the mounting surface. The gasket on the solenoid valve will seal on flat surface of the plate.

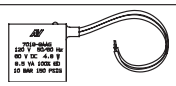
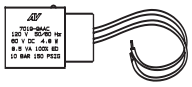
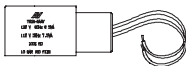
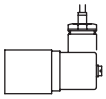
4. Orientation of the plate is universal (but keep the o-rings against the mounting surface). Location holes must be aligned.

5. Washers on the supplied screws should be retained between the screw head and the top of the solenoid.

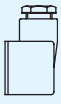
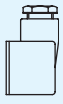
5/2

5/3

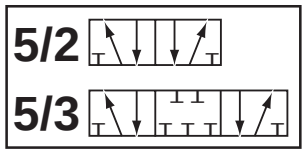
ELECTRICAL INFORMATION

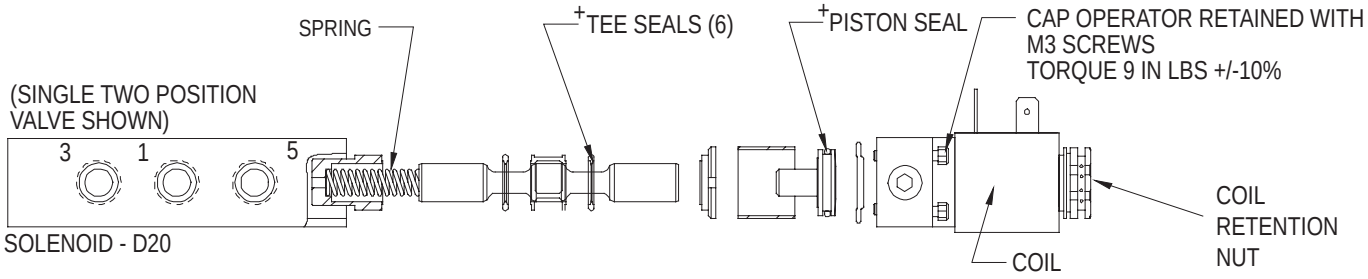
DESCRIPTION		WHEN THE 8TH CHARACTER OF MODEL NUMBER IS:	INSTRUCTIONS	COIL PART NUMBER ** = VOLTAGE
NEMA 4X WITH DIN 43650 CONNECTION		W	Order coil separately (specify voltage code from below)	7019-9**
NEMA 4X WITH 18" LEADS		W	Order coil separately (specify voltage code from below)	7019-9**G
NEMA 4X 1/2" CONDUIT WITH 30" LEADS		W	Order coil separately (specify voltage code from below)	7019-9**C 7019-9**CT (high temperature 82°C maximum)
EXPLOSION-PROOF 1/2" CONDUIT WITH 24" LEADS [CSA 202633X FM APPROVED CL. I; ZONE1Ex m II T4; AEx m II CL. I; Div. 1; GR. A, B, C, D CL. II; GR. E, F, G CL. III T4 Ta= -20°C to +60°C NEMA: 4, 4X, 7C, 7D]		W	Order coil separately (specify voltage code from below)	7019-9**Y
INTRINSICALLY-SAFE WITH STRAIN RELIEF (EEx ia IICT6) CL. I: Div. 1; GR. A, B, C, D CL. II: GR. E, F, G CL. III: Div. 1 Hazardous Location		V	Coil and Connector included with valve (24VDC only)	A7106-374
EXPLOSION-PROOF WITH 3m CABLE AND STRAIN RELIEF (Ex II 2G EExm II T - I EC Exm II T-)		Z	Order coil separately (specify voltage code from below)	7152-9**

For alternative lower wattage options, please consult the factory.

DIN 43650 CONNECTORS							
TYPE	**STRAIN RELIEF WITHOUT CORD**	**1/2" CONDUIT WITHOUT CORD**	**MOLDED WITH 6' CORD**	**STRAIN RELIEF WITH LIGHT**		**STRAIN RELIEF WITH LIGHT + 6' CORD**	
				100-240 AC 48-120 DC	**6-48 AC/DC**	**100-240 AC 48-120 DC**	**6-48 AC/DC**
PART NUMBER	7020-001	7039-001	7020-006	7020-AA	7020-DB	7094-006	7094-007

SERVICE KIT INFORMATION





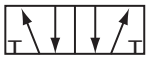
SERVICE KIT INSTALLATION

1. Remove Coil retention nut.
2. Remove Coil.
3. Remove screws from cap of operator.
4. Remove cap.
5. Remove existing serviceable components.
6. Replace with kit components. **+All seals must be lubricated with Magnalube-G or equivalent.**
7. Align pilot hole in body with pilot hole in cap.
8. Torque screws as shown above.

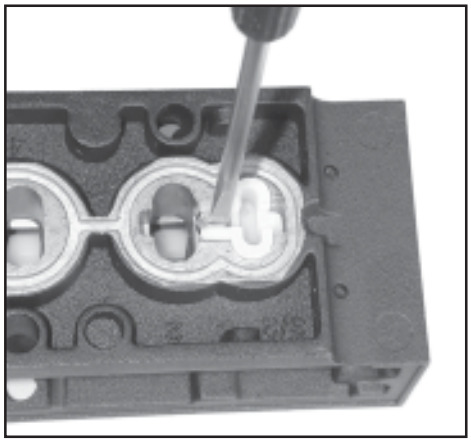
Lubrication of Automatic Valve products is not required but is recommended to maximize service life. Oils should be compatible with seal material, have an ISO 32 or lighter viscosity, and have an aniline point between 82°C (180°F) and 99°C (210°F). Refer to Maintenance section of catalog for recommended lubricants.

MODEL NUMBERS

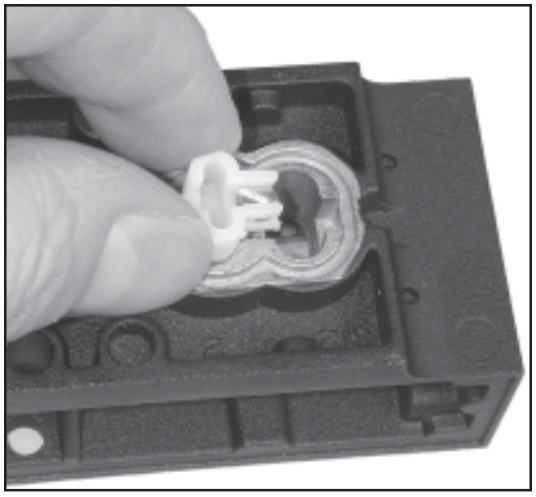
SERIES	FUNCTION			
	SINGLE		DOUBLE	
	PART NUMBER	CONTENTS	PART NUMBER	CONTENTS
D20	K-L20-SGL K-L20-SGL-A (Fluoroelastomer)	Tee Seals (6) Piston Seal (1) Spring (1)	K-L20-DBL K-L20-DBL-A (Fluoroelastomer)	Tee Seals (6) Piston Seal (2)
	A8021-340	Plug Assembly (1) Gasket (1) Screws (2) Set screw (1) Washers (2)		

3/2 
5/2 

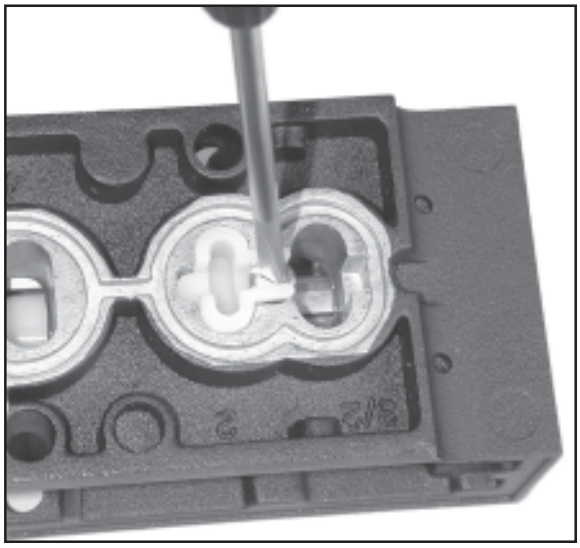
4 WAY / 3 WAY CONVERSION



Step 1. Using a 3mm screwdriver loosen the plug retention screw.



Step 2. Remove the plug, lightly lubricate plug o-ring, and place in adjacent cavity.



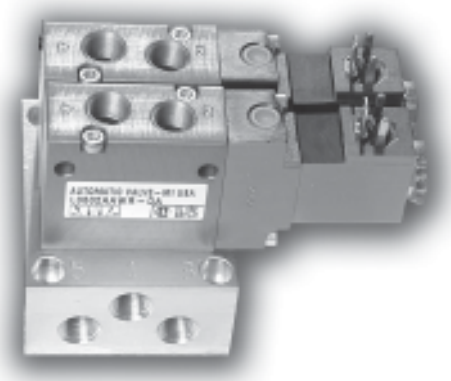
Step 3. Tighten plug retention screw to 6 +/- 10%in lbs.

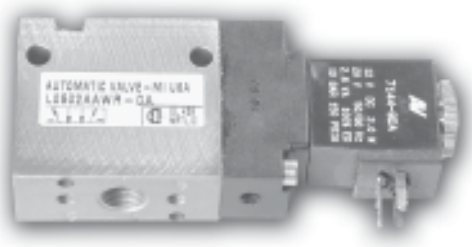
Separate kits containing 10 plugs are available.

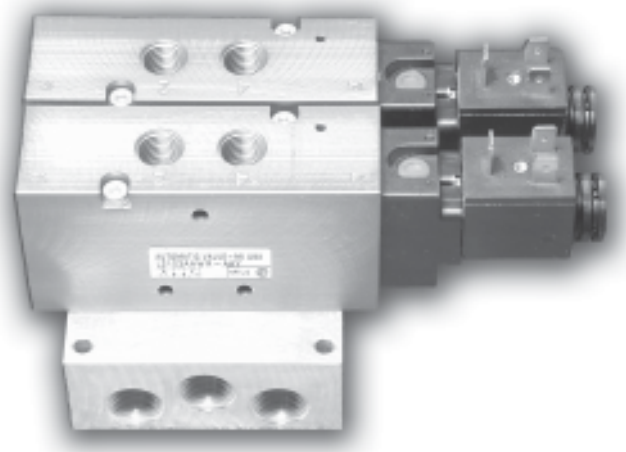
SERIES	PART NUMBER	CONTENTS
D20	K-D20-PLUG	Plug Assemblies (10) (screw/seal/plug)

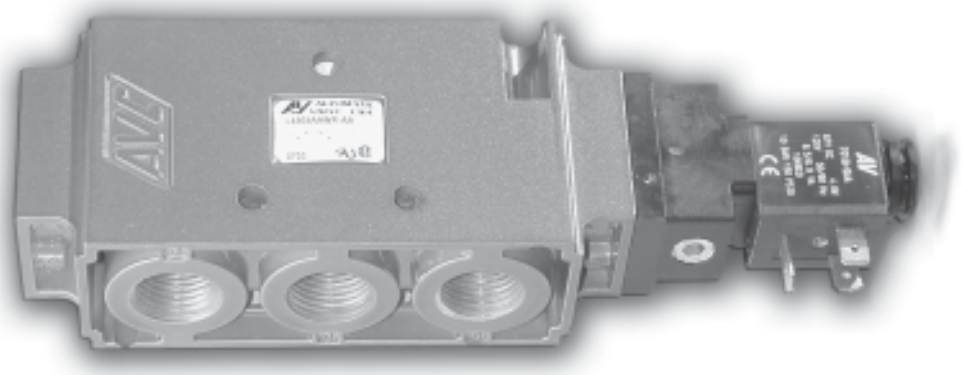
ISO 9001

AUTOMATIC VALVE



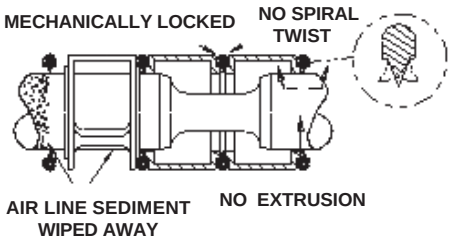






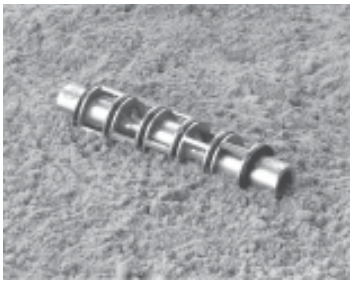
TOP MOUNT SPOOL VALVES

DESIGN FEATURES



VALVES

- Balanced spool construction allows ports to be plugged for 2 or 3 way function, or restricted for inexpensive cylinder exhaust speed control. For selector or dual pressure applications, consult Factory.
- Manifold or line mount - flexible, efficient.
- Solid manifold construction for rugged, reliable performance.
- Specific application needs? Consult the Factory. We will build it for you.



TAPERED TEE-SEAL - L21, L45 ..... Eats Dirt

- Bi-directional tapered Tee-Seal flexes to clean spool. Eliminates Monday morning sticking problems.
- Tested tough and proven reliable according to SAE specifications: Rust and water injected every 864,000 cycles for 20 million cycles.

SOLENOID ... Guaranteed Against Burnout

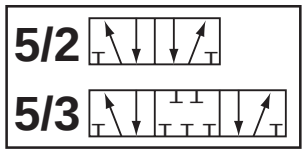
- Three-way pilot uses full air line pressure to shift the valve.
- Pilot is internally supplied when the pressure at port one is 35 to 150 PSIG (240 to 1030 kPa).
- Coil is hermetically sealed as an integral watertight molded unit.
- Push non-locking override. (Extended turn and turn lock available).

PRODUCTS CERTIFIED TO INCLUDE

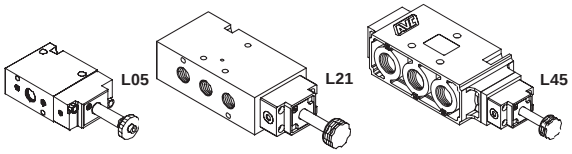
- CSA - (C22.2)
- UL - (STD 429)
- ATEX - (2018x)
- PTB - (EExmIIT5) (EExiaIICT6)
- CE - (73/23/EEC), (89/336/EEC)

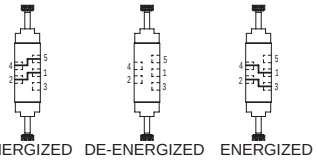
INDEX

SPECIFICATIONS

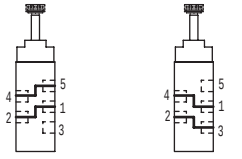


VALVE OPERATION

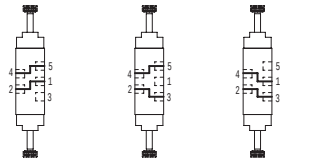




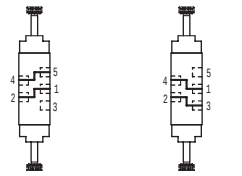
5/3 BLOCK - 4 way 3 position blocked center valves operate like 5/2 double valves except shift when a maintained signal is applied to either 1-2 or 1-4. Valves reset to center position when signal is removed with all ports blocked.



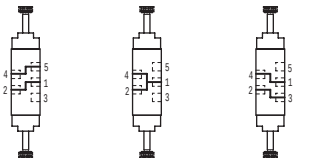
5/2 SINGLE - 4 way 2 position single operator valves shift, apply pressure from port 1 to 4, and exhaust pressure from port 2 to 3 when a maintained signal is applied to operator 1-4. Valves reset, apply pressure from port 1 to 2, exhaust pressure from port 4 to 5 when the signal is removed.



5/3 EXHAUST - 4 way 3 position exhaust center valves operate like 5/2 double valves except shift when a maintained signal is applied to either 1-2 or 1-4. Valves reset to center position when signal is removed with port 2 open to 3, port 4 open to 5, and port 1 blocked.



5/2 DOUBLE - 4 way 2 position double operator valves shift, apply pressure from port 1 to 4,and exhaust pressure from 2 to 3 when a momentary signal is applied to operator 1-4. Valves shift, apply presure from port 1 to 2, and exhaust pressure from 4 to 5 when a momentary signal is applied to operator 1-2.



5/3 PRESSURE - 4 way 3 position pressure center valves operate like 5/2 double valves except shift when a maintained signal is applied to either 1-2 or 1-4. Valves reset to center position when signal is removed with port 1 open to ports 2 and 4, and ports 3 and 5 are blocked.

OPERATING TEMPERATURES	SOLENOID PILOT OPERATED	TREATED BUNA-N SEALS (TREATED NBR, Standard L21, L45)	FLUOROELASTOMER SEALS (FPM (FKM) Standard L05 - Option A L21, L45)
	Standard	-18°C to +52°C (0°F to +125°F)	-18°C to +52°C (0°F to +125°F)
	High Temp Coil (Option CT)	-18°C to +82°C (0°F to +180°F)	-18°C to +82°C (0°F to +180°F)

OPERATING PRESSURES	SOLENOID PILOT OPERATED	INLET PORT	EXTERNAL PILOT PORT
	Standard 2 Position - L05	345 - 1030 kPa (50 - 150 PSIG)	Not Required
	- L21, L45	240 - 1030 kPa (35 - 150 PSIG)	Not Required
	Standard 3 Position	345 - 1030 kPa (50 - 150 PSIG)	Not Required
	External Pilot (Option B)	Vacuum - 240 kPa (Vacuum - 35 PSIG)	240 - 1030 kPa (35 - 150 PSIG)

FILTRATION AND LUBRICATION

MEDIA - AIR OR INERT GAS

Lubrication of Automatic Valve products is not required but recommended to maximize service life. Oils should be compatible with seal material, have an ISO 32 or lighter viscosity, and have an aniline range of 82°C (180°F) to 99°C (210°F). Refer to Maintenance section of catalog for recommended lubricants.

Filter to 50 microns or better.
For temperatures below 40°F, air must be dry to prevent formation of ice.

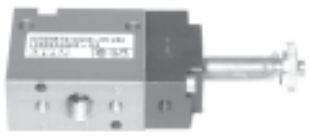
MODEL NUMBER CHART

SERIES	BODY TYPE	PORT SIZE	FUNCTION	BODY DESIGN	OPERATOR 1	CENTER OPERATOR	OPERATOR 2	VOLTAGE	OPTIONS
L05	0 INLINE	2 1/8	A 4 WAY 2 POSITION	A SINGLE B DOUBLE	A AIR PILOT I PALM BUTTON W WEATHER-PROOF SOLENOID		A AIR PILOT R 2 POSITION SPRING W WEATHER-PROOF SOLENOID	AA 110/50, 120/60 AB 220/50, 240/60, 125VDC DA 22/50, 24/60, 12VDC DB 24VDC	B EXTERNAL PILOT CONNECTION
L21	0 INLINE	3 1/4	A 4 WAY 2 POSITION B 4 WAY 2 POSITION METAL C 4 WAY 3 POSITION BLOCK D 4 WAY 3 POSITION EXHAUST E 4 WAY 3 POSITION PRESSURE	A SINGLE B DOUBLE	A AIR PILOT F HAND LEVER - LINE G HAND LEVER -MANIFOLD I PALM BUTTON K FOOT PEDAL L FOOT TREADLE V INTRINSICALLY SAFE W STANDARD SOLENOID	D 3 POSITION SPRING	A AIR PILOT C 3 POSITION SPRING MANUAL M 2 POSITION DETENT MANUAL N 3 POSITION DETENT MANUAL R 2 POSITION SPRING V INTRINSICALLY SAFE W STANDARD SOLENOID		A FLUOROELASTOMER SEALS B EXTERNAL PILOT CONNECTION C CONDUIT COIL CT CONDUIT COIL HIGH TEMP D DUSTPROOF G 18" FLYING LEADS S STAINLESS STEEL BODY(L45 1/2" ONLY) W G THREADS Y EXPLOSION-PROOF COIL Z EXPLOSION-PROOF COIL 1 PUSH TURN LOCKING OVERRIDE 2 EXTENDED TURN LOCKING OVERRIDE
L45	0 INLINE	5 1/2 6 3/4							

5/2

5/3

WEATHER-PROOF AND EXPLOSION-PROOF SOLENOID MODELS



L05

L21

L45

SINGLE SOLENOID

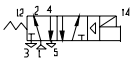
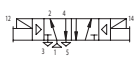
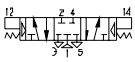
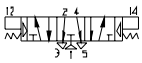
L05

L21

L45

DOUBLE SOLENOID

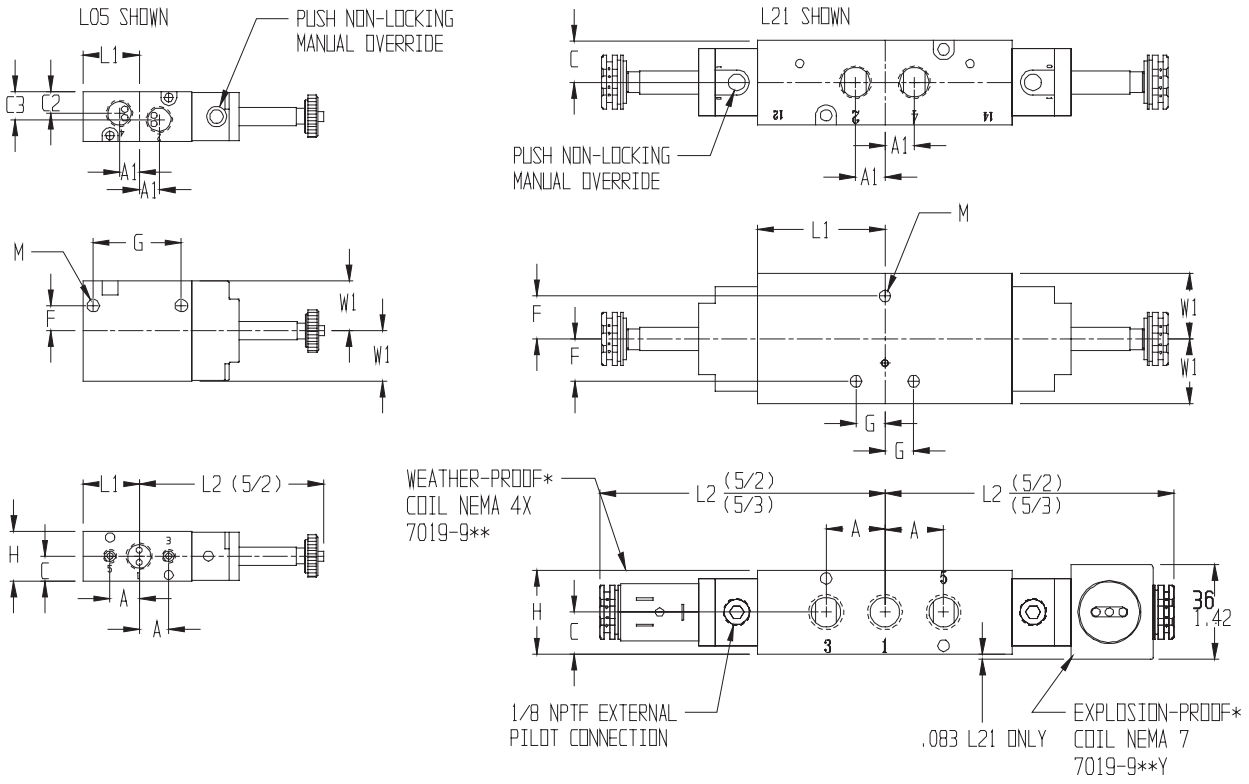
MODEL NUMBERS

SERIES	PORT SIZE	Cv (l/min)	5/2		5/3			BODY MATERIAL	SEAL MATERIAL	Kg (LB)
										
			SINGLE	DOUBLE	BLOCK	EXHAUST	PRESSURE			
L05	1/8	0.4 (390)	L0502AAWR*	L0502ABWW*	-	-	-	ALUMINUM	FPM (FKM)	,2 (.4)
L21	1/4	1.8 (1770)	L2103AAWR*	L2103ABWW*	L2103CBWDW*	L2103DBWDW*	L2103EBWDW*	ALUMINUM	NBR	,5 (1.1)
L45	1/2	4.8 (4755)	L4505AAWR*	L4505ABWW*	L4505CBWDW*	L4505DBWDW*	L4505EBWDW*	ALUMINUM	NBR	,7 (1.6)
	3/4	5.2 (5152)	L4506AAWR*	L4506ABWW*	L4506CBWDW*	L4506DBWDW*	L4506EBWDW*			

*Coils sold separately. Refer to Electrical Section for selection.

DIMENSIONAL INFORMATION

5/2
5/3



SERIES	A	A1	C	C2	C3	F	G	H	L1	L2	M	W1
L05	11,1 .44	7,3 .29	9,6 .38	8,3 .38	10,6 .42	9,6 .38	33,2 1.31	19,1 .75	21,3 .84	69,1 2.72	4,5 .18	19,1 .75
L21	22,2 .88	11,1 .44	16,5 .65	-	-	16,1 .64	10,9 .43	31,7 1.25	48,2 1.90	108 4.25	4,4 .17	25,4 1.00
L45	34,5 1.36	34,5 1.36	21 .83	-	-	19 .75	17 .68	42,2 1.66	69 2.72	129 5.07	6,7 .27	31,8 1.25

*Coils sold separately. Refer to Electrical Section for selection.
Units of Measure: Top - mm, Bottom - inches

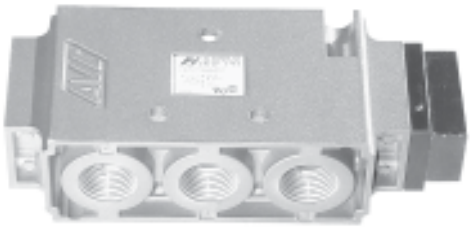
5/2

5/3

AIR PILOT MODELS

L05

L21



L45

SINGLE AIR PILOT

L05

L21

L45

DOUBLE AIR PILOT

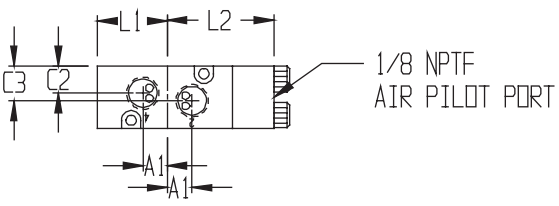
MODEL NUMBERS

SERIES	PORT SIZE	Cv (l/min)	OPERATOR	5/2		5/3			BODY MATERIAL	SEAL MATERIAL	Kg (LB)
				SINGLE	DOUBLE	BLOCK	EXHAUST	PRESSURE			
L05	1/8	0.4 (390)	AIR PILOT	L0502AAAR	L0502ABAA	-	-	-	ALUMINUM	FPM (FKM)	,2 (.4)
L21	1/4	1.8 (1770)	AIR PILOT	L2103AAAR	L2103ABAA	L2103CBADA	L2103DBADA	L2103EBADA	ALUMINUM	NBR	,5 (1.1)
L45	1/2	4.8 (4755)	AIR PILOT	L4505AAAR	L4505ABAA	L4505CBADA	L4505DBADA	L4505EBADA	ALUMINUM	NBR	,8 (1.7)
	3/4	5.2 (5152)		L4506AAAR	L4506ABAA	L4506CBADA	L4506DBADA	L4506EBADA			

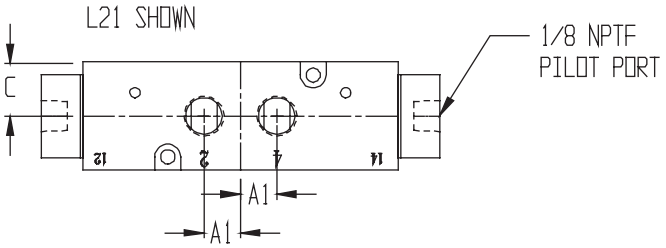
DIMENSIONAL INFORMATION

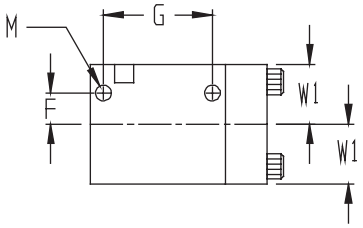
5/2
5/3

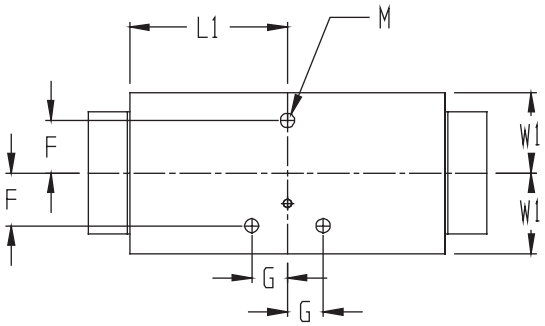
L05 SHOWN

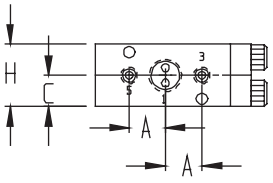


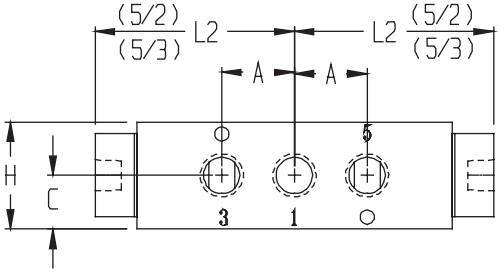
L21 SHOWN











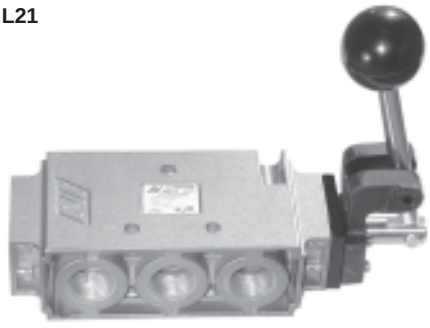
SERIES	A	A1	C	C2	C3	F	G	H	L1	L2	M	W1
L05	11,1 .44	7,3 .29	9,6 .38	8,3 .38	10,6 .42	9,6 .38	33,2 1.31	19,1 .75	21,3 .84	32,5 1.28	4,5 .18	19,1 .75
L21	22,2 .88	11,1 .44	16,5 .65	-	-	16,1 .64	10,9 .43	31,7 1.25	48,2 1.90	61,0 2.40	4,4 .17	24,6 .97
L45	34,5 1.36	17,3 .68	21 .83	-	-	19 .75	17,3 .68	42,2 1.66	69,0 2.72	88,9 3.50	6,7 .27	31,8 1.25

Units of Measure: Top - mm, Bottom - inches

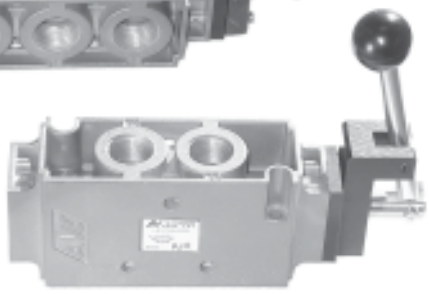
5/2

MANUAL MODELS

L21



L45



L45

HAND LEVER
(LINE OR MANIFOLD MOUNTED)

L05

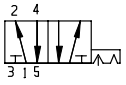
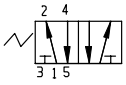
L21

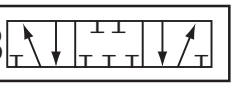
L45

PALM BUTTON

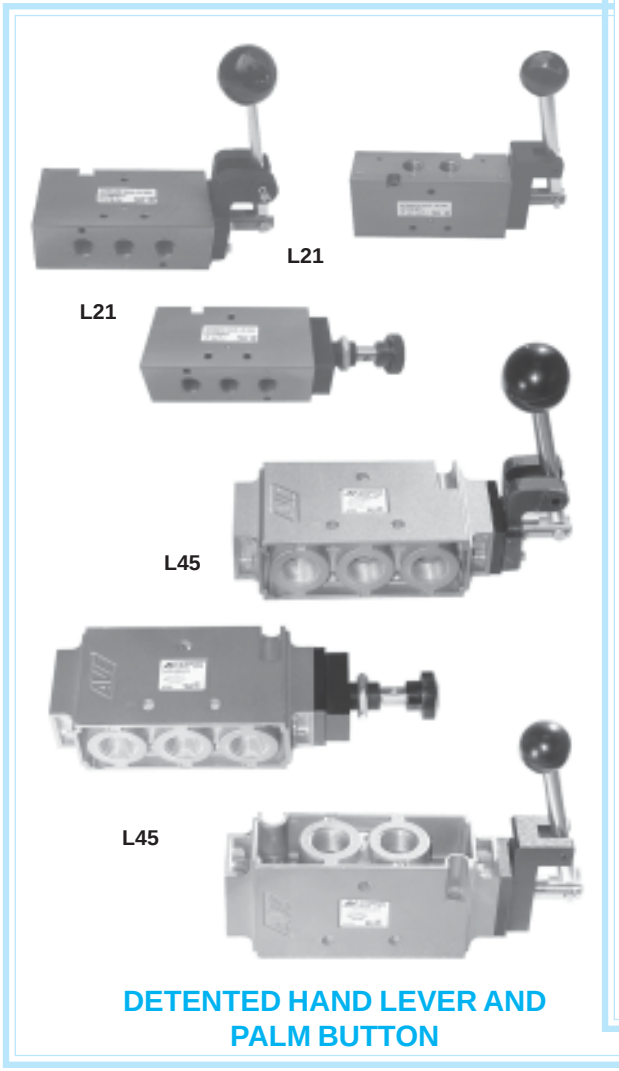
MODEL NUMBERS

(4 WAY 2 POSITION)

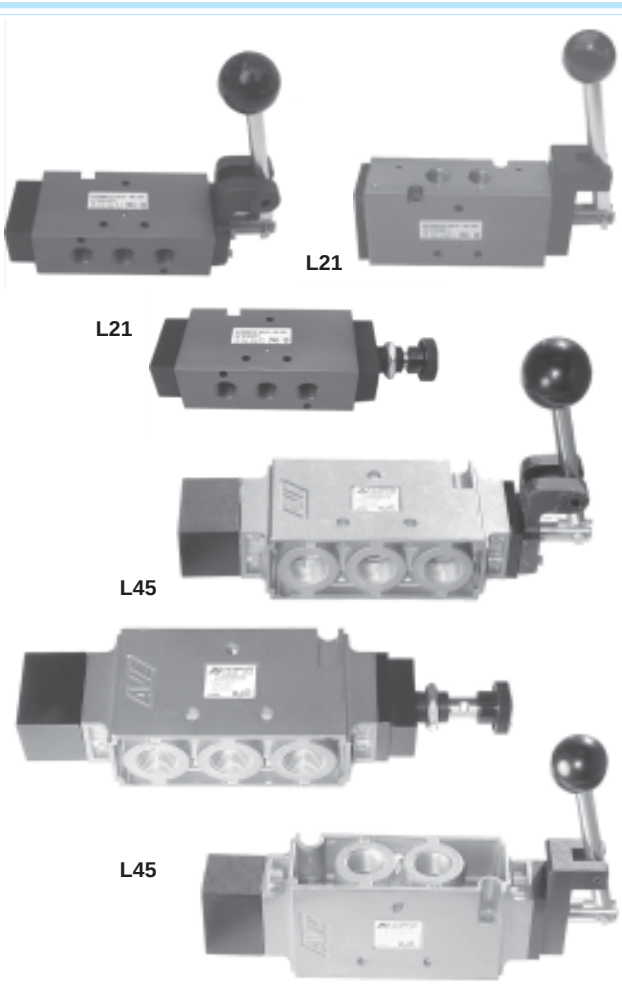
SERIES	PORT SIZE	Cv (l/min)	OPERATOR	5/2		BODY MATERIAL	SEAL MATERIAL	Kg (LB)
								
				DETENTED	SPRING RETURN			
L05	1/8	0.4 (390)	PALM BUTTON	-	L0502AAIR	ALUMINUM	FPM (FKM)	12 (.4)
L21	1/4	1.8 (1770)	HAND LEVER LINE MOUNTED	L2103BAFM	L2103AAFR	ALUMINUM	NBR	,5 (1.1)
			HAND LEVER MANIFOLD MOUNTED	L2103BAGM	L2103AAGR			
			PALM BUTTON	L2103BAIM	L2103AAIR			
L45	1/2	4.8 (4755)	HAND LEVER LINE MOUNTED	L4505BAFM	L4505BAFR	ALUMINUM	NBR	,96 (2.1)
			HAND LEVER MANIFOLD MOUNTED	L4505BAGM	L4505BAGR			
			PALM BUTTON	L4505BAIM	L4505BAIR			
	3/4	5.2 (5152)	HAND LEVER LINE MOUNTED	L4506BAFM	L4506BAFR			
			HAND LEVER MANIFOLD MOUNTED	L4506BAGM	L4506BAGR			
			PALM BUTTON	L4506BAIM	L4506BAIR			

5/3 

MANUAL MODELS



DETENTED HAND LEVER AND PALM BUTTON



SPRING RETURN HAND LEVER AND PALM BUTTON

MODEL NUMBERS

(4 WAY 3 POSITION)

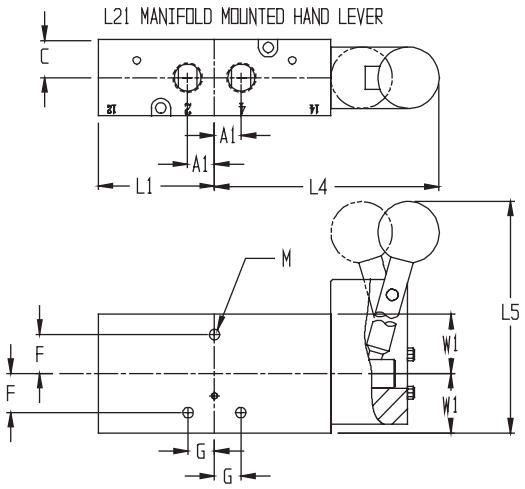
SERIES	PORT SIZE	Cv (l/min)	OPERATOR	5/3						BODY MATERIAL	SEAL MATERIAL	Kg (LB)
				DETENTED 5/3			SPRING RETURN 5/3					
				BLOCK	EXHAUST	PRESSURE	BLOCK	EXHAUST	PRESSURE			
L21	1/4	1.8 (1770)	HAND LEVER LINE MOUNTED	L2103CAFN	L2103DAFN	L2103EAFN	L2103CBFC	L2103DBFC	L2103EBFC	ALUMINUM	NBR	,5 (1.1)
			HAND LEVER MANIFOLD MOUNTED	L2103CAGN	L2103DAGN	L2103EAGN	L2103CBGC	L2103DBGC	L2103EBGC			
			PALM BUTTON	L2103CAIN	L2103DAIN	L2103EAIN	L2103CBIC	L2103DBIC	L2103EBIC			
L45	1/2	4.8 (4755)	HAND LEVER LINE MOUNTED	L4505CAFN	L4505DAFN	L4505EAFN	L4505CBFC	L4505DBFC	L4505EBFC	ALUMINUM	NBR	,96 (2.1)
			HAND LEVER MANIFOLD MOUNTED	L4505CAGN	L4505DAGN	L4505EAGN	L4505CBGC	L4505DBGC	L4505EBGC			
			PALM BUTTON	L4505CAIN	L4505DAIN	L4505EAIN	L4505CBIC	L4505DBIC	L4505EBIC			
	3/4	5.2 (5152)	HAND LEVER LINE MOUNTED	L4506CAFN	L4506DAFN	L4506EAFN	L4506CBFC	L4506DBFC	L4506EBFC			
			HAND LEVER MANIFOLD MOUNTED	L4506CAGN	L4506DAGN	L4506EAGN	L4506CBGC	L4506DBGC	L4506EBGC			
			PALM BUTTON	L4506CAIN	L4506DAIN	L4506EAIN	L4506CBIC	L4506DBIC	L4506EBIC			

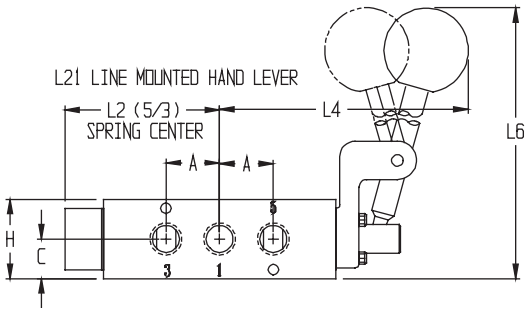
5/2

5/3

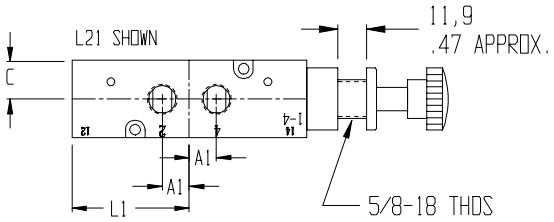
DIMENSIONAL INFORMATION

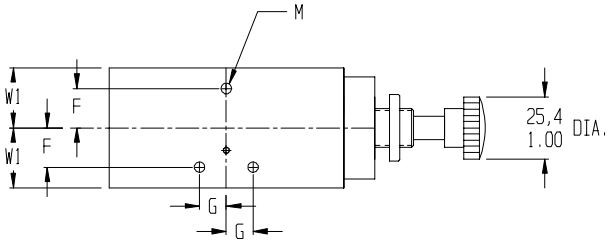
HAND LEVER

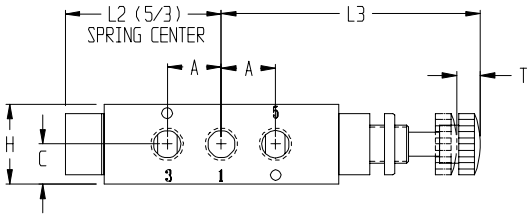




PALM BUTTON







SERIES	A	A1	C	F	G	H	L1	L2	L3	L4	L5	L6	M	W1
L05	11,1 .44	7,3 .29	9,6 .38	9,6 .38	33,2 1.31	19,1 .75	21,3 .84	-	42,2 1.66	-	-	-	4,5 .18	19,1 .75
L21	22,2 .88	11,1 .44	16,5 .65	16,1 .64	10,9 .43	31,7 1.25	48,2 1.90	64,0 2.52	106 4.16	105 4.14	140 5.50	112 4.41	4,4 .17	25,4 1.00
L45	34,5 1.36	34,5 1.36	21 .83	19 .75	17,3 .68	42,2 1.66	69,0 2.72	99,3 3.91	127 5.00	126 4.96	141 5.57	136 5.35	6,7 .27	31,8 1.25

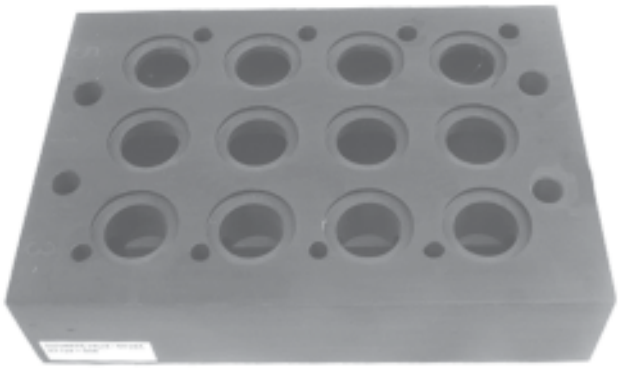
Units of Measure: Top - mm, Bottom - inches

MANIFOLDS

5/2
5/3

L05

L21



L45

FEATURES

- Common inlet and common exhaust ports.
- Cylinder ports from valve mounted on top of manifold.
- Top mounted valve bodies.
- Seals and mounting hardware included.

SERIES	MANIFOLD				ACCESSORIES	
	NO. OF STATIONS	MODEL NUMBER	PORTS 3, 1, & 5	WGT Kg (LB)	BLOCKING DISK	BLANK STATION COVER
L05	2	A7204-012	1/8	,2 (.5)	A7204-039	A7204-027
	4	A7204-014		,3 (.7)		
	6	A7204-016		,4 (1.1)		
	8	A7204-018		,6 (1.4)		
	10	A7204-010		,7 (1.7)		
	12	A7204-112		,9 (2.1)		
	14	A7204-114		1,1 (2.5)		
L21	2	A8023-012	3/8	,4 (.9)	A8020-202	A8023-009
	4	A8023-014		,9 (2.0)		
	6	A8023-016		1,3 (3.0)		
	8	A8023-018		1,8 (3.9)		
	10	A8023-010		2,2 (4.9)		
L45 SEE NOTE (I)	2	A7128-232	3/4	1,1 (2.5)	-	A7128-229
	4	A7128-234		1,8 (4.0)		
	6	A7128-236		2,7 (5.9)		
	8	A7128-238		3,3 (7.8)		
	10	A7128-240		4,3 (9.6)		

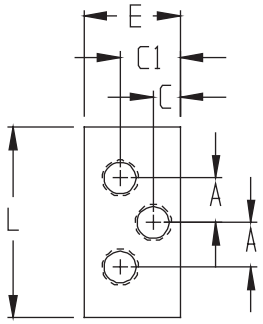
(I) Previous L45 manifolds (A7127 - ***) are not compatible with new L45.

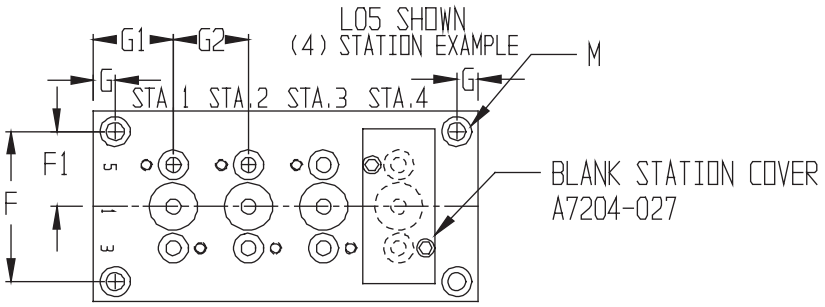
5/2

5/3

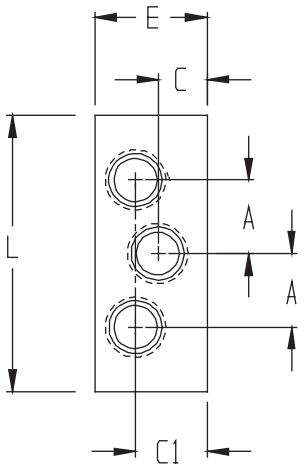
DIMENSIONAL INFORMATION

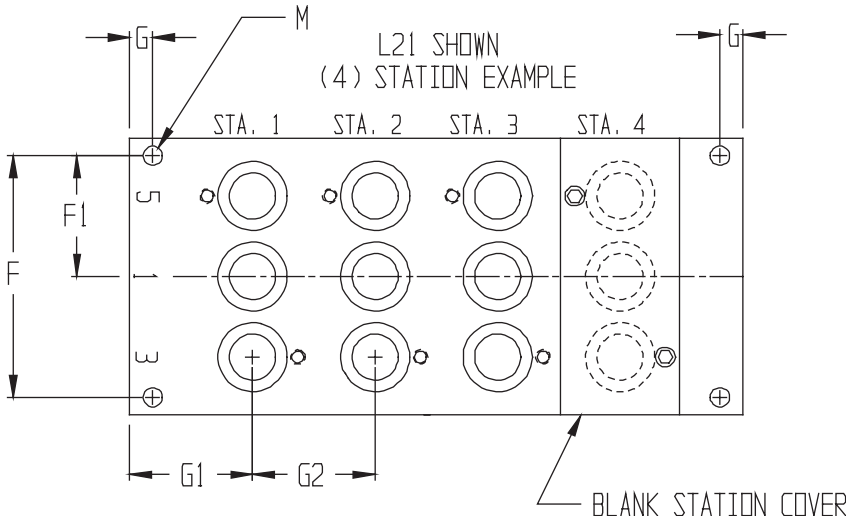
L05





L21, L45

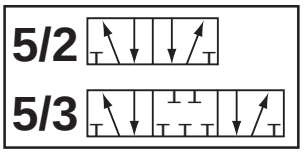




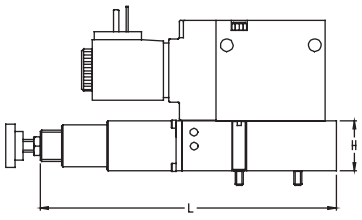
SERIES	A	C	C1	E	F	F1	G	G1	G2	L	M
L05	11,9 .47	7,11 .28	15,8 .62	25,4 1.00	40,1 1.58	20,0 .79	5,8 .23	21,1 .83	19,8 .78	50,8 2.00	4,5 .18
L21	20,3 .80	13,4 .53	19,8 .78	30,9 1.22	66,5 2.62	33,3 1.31	6,4 .25	33,8 1.33	33,8 1.33	76,2 3.00	5,6 .22
L45	34,5 1.36	19,3 .76	30,0 1.18	50,8 2.00	38,1 1.50	19,05 .75	13,9 .55	43,4 1.71	43,4 1.71	117 4.60	8,6 .34

Units of Measure: Top - mm, Bottom - inches

ACCESSORIES



SANDWICH SINGLE PRESSURE REGULATOR

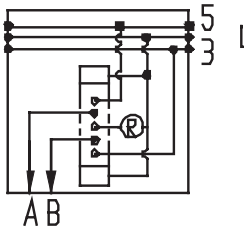


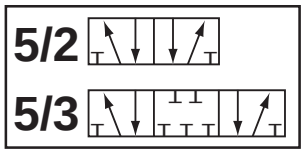
SERIES	MODEL NUMBER	VALVE BODY DESIGN	DIMENSION H	DIMENSION L	WGT Kg (LB)
L05	B7204-028	SINGLE	19,1 .75	112,3 4.42	,09 (.2)
L21	B8023-035	SINGLE	33,0 1.30	136,6 5.38	,3 (.6)
L21	B8023-067	DOUBLE	33,0 1.30	136,6 5.38	,4 (.8)

Units of Measure: Top - mm, Bottom - inches

FEATURES

- Regulates single inlet pressure from inlet port 1 to cylinder ports 2 & 4.
- Mounts between valve and base.
- Pressure range: L05: 345 - 1030 kPa (50 - 150 PSIG)
  L21: 240 - 1030 kPa (35 - 150 PSIG)
  Work port pressure is adjustable from:
  0 - 1030 kPa (0 - 150 PSIG)
- 1/8 NPTF gage port: Available with single valves only.
- Valve and regulator sold together.
- See Accessories Section for in port regulator, PO check and flow control alternatives.





OPTIONS

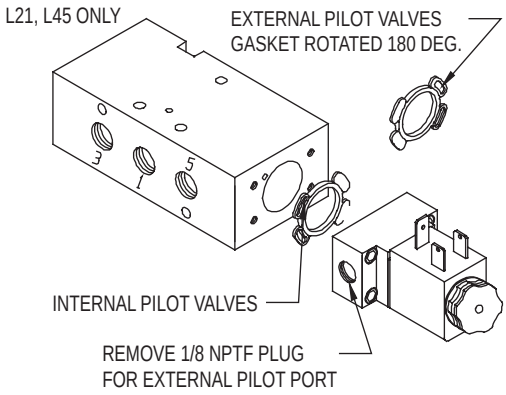
(LISTED AT THE END OF THE MODEL NUMBER IN ALPHA-NUMERIC ORDER)

A - FLUOROELASTOMER SEALS (L21 & L45)
For applications where fluid media or ambient conditions are not compatible with nitrile seals. Note: Fluorocarbon seals do not increase the effective temperature range of a solenoid valve. For high temperature applications, consult the factory.

B - EXTERNAL PILOT
For solenoid applications when the pressure to port is less than 35 PSIG (2 BAR). See example below for field conversion of L21 & L45. The L05 must be ordered as an externally piloted valve, if required.

FIELD CONVERSION FOR L21 & L45

1. Remove solenoid and cap from valve body.
2. Rotate gasket 180 degrees so that the internal pilot hole in the valve body is covered by the gasket.
3. Reassemble the gasket, cap and solenoid to the valve body. Make sure gasket completely covers internal pilot hole before tightening screws.
4. Remove the 1/8 NPTF pipe plug from the cap and make the external pilot connection.



C - CONDUIT COIL
Refer to Electrical Section for details.

CT - CONDUIT COIL HIGH TEMPERATURE
Refer to Electrical Section for details.

D - DUSTPROOF
For applications in extremely dusty and contaminated environments. Standard vent ports are plugged. Operators breathe through the exhaust ports via flats on the end of the spools.

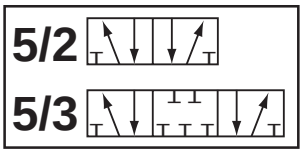
G - COIL WITH 18" LEADS
Refer to Electrical Section for details.

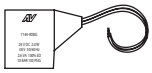
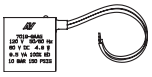
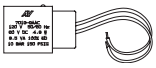
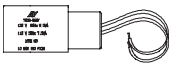
W - G THREADS

Y - EXPLOSION PROOF COIL (CSA, FM)
Refer to Electrical Section for details.

Z - EXPLOSION PROOF COIL (ATEX, PTB)
Refer to Electrical Section for details.

ELECTRICAL INFORMATION



DESCRIPTION		SERIES	WHEN THE 8TH CHARACTER OF MODEL NUMBER IS:	INSTRUCTIONS	COIL PART NUMBER ** = VOLTAGE
NEMA 4X WITH DIN 43650C CONNECTION (L05)		L05	W	Order coil separately (specify voltage code from below)	7144-9**
NEMA 4X WITH 18" LEADS (L05)		L05	W	Order coil separately (specify voltage code from below)	7144-9**G Contact Factory for low wattage Options
INTRINSICALLY-SAFE WITH STRAIN RELIEF (EEx ia IICT6)		L21 L45	V	Coil included (24VDC only)	A7106-374 (if ordered separately)
NEMA 4X WITH DIN 43650 CONNECTION		L21 L45	W	Order coil separately (specify voltage code from below)	7019-9**
NEMA 4X WITH 18" LEADS		L21 L45	W	Order coil separately (specify voltage code from below)	7019-9**G
NEMA 4X 1/2" CONDUIT WITH 30" LEADS		L21 L45	W	Order coil separately (specify voltage code from below)	7019-9**C 7019-9**CT (high temperature 82°C maximum)
EXPLOSION-PROOF 1/2" CONDUIT WITH 24" LEADS [CSA 202633X FM APPROVED CL. I; ZONE1Ex m II T4; AEx m II CL. I; Div. 1; GR. A, B, C, D CL. II; GR. E, F, G CL. III T4 Ta= -20°C to +60°C NEMA: 4, 4X, 7C, 7D]		L21 L45	W	Order coil separately (specify voltage code from below)	7019-9**Y

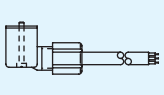
L05

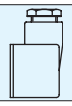
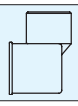
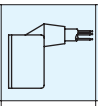
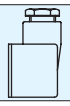
L05 VOLTAGE +/- 10 %	** CODE	CURRENT (AMPS)		RESISTANCE (OHMS @ 25° C)	POWER (AC=VA DC=WATTS)
		INRUSH	HOLDING	NEMA	
4		4	4	4	4
20/50 20/60	DA	.15	.15	78	2.6
110/50 120/60	AA	.02	.02	2890	2.6
220/50 220/60	AB	.01	.01	9515	2.6
12 VDC	DA	.15	.15	78	2.0
24 VDC	DB	.09	.09	283	2.0
140 VDC	AB	.01	.01	9515	2.0

L21, L45

VOLTAGE +/- 10 %		** CODE	CURRENT (AMPS)				RESISTANCE (OHMS @ 25° C)		POWER (AC = VA DC = WATTS)	
			INRUSH		HOLDING		NEMA			
4	7		4	7	4	7	4	7	4	7
24/50 24/60	-	DA	.40	.55	.40	.32	31	19	4.8	4.5
110/50 120/60	110/50 120/60	AA	.08	.096	.06	.054	840	530	4.8	6.5
230/50 230/60	220/50 240/60	AB	.04	.048	.03	.027	3400	2345	6.0	6.5
12 VDC	12 VDC	DA	.40	-	.40	.375	31	32	4.8	7
24 VDC	24 VDC	DB	.20	-	.20	.187	121	128	4.8	4.5
140 VDC	-	AB	.04	-	.04	.06	3400	2000	4.8	7

For alternative lower wattage, please consult factory.

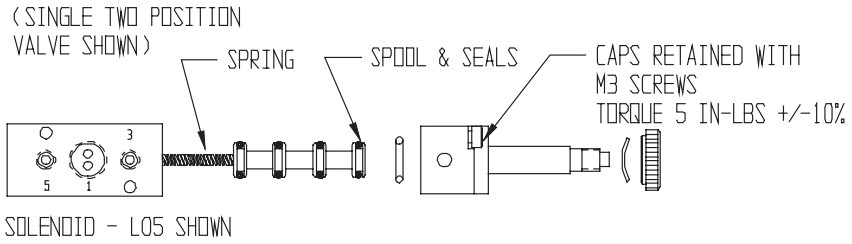
DIN 43650C L05 CONNECTORS		
TYPE	STRAIN RELIEF WITHOUT CORD	LIGHT + 6' CORD
		120/60 AC / 24 VDC
PART NUMBER	7144-001	7144-002 / 7144-003

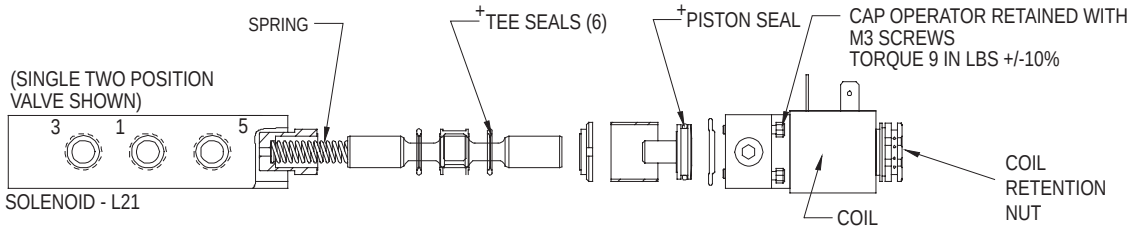
DIN 43650 L21, L45 CONNECTORS					
TYPE	STRAIN RELIEF WITHOUT CORD	1/2" CONDUIT WITHOUT CORD	MOLDED WITH 6' CORD	STRAIN RELIEF WITH LIGHT	STRAIN RELIEF WITH LIGHT + 6' CORD
				100-240 AC 48-120 DC / 6-48 AC/DC	100-240 AC 48-120 DC / 6-48 AC/DC
PART NUMBER	7020-001	7039-001	7020-006	7020-AA / 7020-DB	7094-006 / 7094-007

5/2

5/3

SERVICE KIT INFORMATION





SERVICE KIT INSTALLATION

1. Remove Coil retention nut.
2. Remove Coil.
3. Remove screws from cap of operator.
4. Remove cap.
5. Remove existing serviceable components.
6. Replace with kit components. **+All seals must be lubricated with Magnalube-G or equivalent.**
7. Align pilot hole in body with pilot hole in cap.
8. Torque screws as shown above.

+ ANY VALVE REBUILT MUST BE LUBRICATED TO FACTORY SPECIFICATIONS.
Lubrication of Automatic Valve products is not required but is recommended to maximize service life. Oils should be compatible with seal material, have an ISO 32 or lighter viscosity, and have an aniline point between 82ºC (180ºF) and 99ºC (210ºF). Refer to Maintenance section of catalog for recommended lubricants.

MODEL NUMBERS

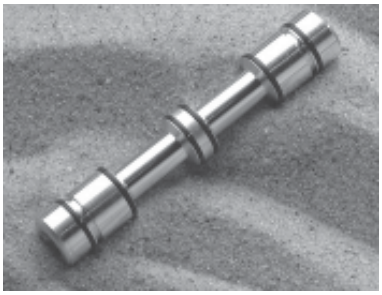
SERIES	FUNCTION			
	SINGLE		DOUBLE	
	PART NUMBER	DESCRIPTION	PART NUMBER	DESCRIPTION
L05	K-L05-SGL	O Rings & Spool Spring (1)	K-L05-DBL	O Rings & Spool
L21	K-L21-SGL K-L21-SGL-A (Fluoroelastomer)	Tee Seals (6) Piston Seal (1) Spring (1)	K-L21-DBL K-L21-DBL-A (Fluoroelastomer)	Tee Seals (6) Piston Seal (2)
L45	K-L45-SGL K-L45-SGL-A (Fluoroelastomer)	Tee Seals (6) Piston Seal (1) Spring (1)	K-L45-DBL K-L45-DBL-A (Fluoroelastomer)	Tee Seals (6) Piston Seal (2)

5/2
5/3

DESIGN FEATURES

VALVES

- Modular design allows for solutions tailored exactly to your needs, easy upgrades.
- Circuit boards replace wire tangles.
- Terminal strip, PLC and multiple serial bus electronic interfaces available.
- Pneumatic accessories include interposed regulator with gage port; dual pressure isolated station feeds; pilot operated checks, flow controls and soft start.
- Piped solenoid exhaust is standard.
- Diecast aluminum body, aluminum spool, zamak alloy end caps.
- 1.6 - 2.0 Cv.

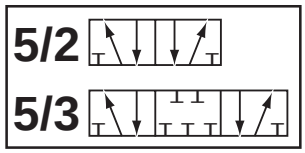


TAPERED FLEX SEAL....COMPACT DESIGN

- Tough, new, inverted NBR Tee-Seal retains the advantages of our standard seals. Eliminates Monday morning sticking problems.
- Abrasion resistant formulation.
- Ability to run with or without lubrication (if lubrication is not started).

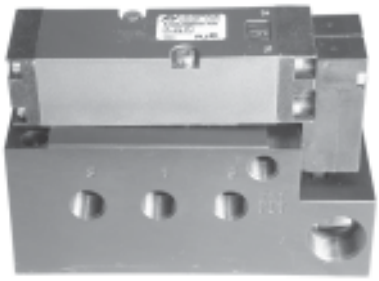
INDEX

DESIGN FEATURES (continue)



SOLENOID....GUARANTEED AGAINST BURNOUT

- 1.2 watt Nema 4/IP65 solenoid.
- Polarity insensitive.
- LED status indicator - green.
- Internal surge supression.
- Seal material: NBR.
- Three-way pilot uses full air line pressure to shift the valve.
- Pilot is internally supplied when the pressure at port one is 35 to 120 PSIG (240 to 830 KPA).
- Coil is hermetically sealed as an integral watertight molded unit.
- Push non-locking override is standard.



BASE MOUNTED VALVES
5 PORTED 4 WAY 2 AND 3 POSITION Cv 1.6

- Internal wiring eliminated.
- Easy connect terminal strip.
- 1.2 watt solenoid or air pilot.
- Designed to meet Nema 4/IP65 specifications.

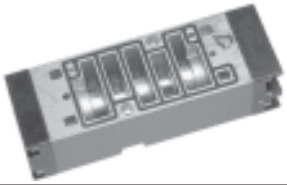
MANIFOLD MOUNTED VALVES
5 PORTED 4 WAY 2 AND 3 POSITION Cv 1.6

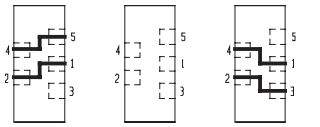
- Multipurpose electrical interface cap allows round, conduit or sub-d connection.
- Captured fasteners for easy assembly.
- Easy, flexible connection to serial bus/electronics.
- Push-to-connect cartridge fittings available.
- Station positions may be moved without changes to valves or boards.
- Designed to meet Nema 4/IP65 specifications.

5/2
5/3

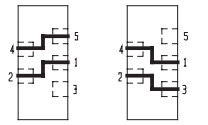
SPECIFICATIONS

VALVE OPERATION

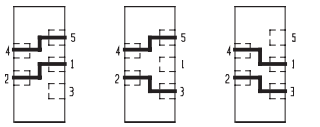




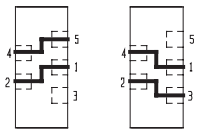
5/3 BLOCK - 4 way 3 position blocked center valves operate like 5/2 double valves except shift when a maintained signal is applied to either 1-2 or 1-4. Valves reset to center position when signal is removed with all ports blocked.



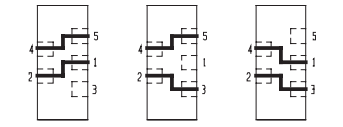
5/2 SINGLE - 4 way 2 position single operator valves shift, apply pressure from port 1 to 4, and exhaust pressure from port 2 to 3 when a maintained signal is applied to operator 1-4. Valves reset, apply pressure from port 1 to 2, exhaust pressure from port 4 to 5 when the signal is removed.



5/3 EXHAUST - 4 way 3 position exhaust center valves operate like 5/2 double valves except shift when a maintained signal is applied to either 1-2 or 1-4. Valves reset to center position when signal is removed with port 2 open to 3, port 4 open to 5, and port 1 blocked.



5/2 DOUBLE - 4 way 2 position double operator valves shift, apply pressure from port 1 to 4,and exhaust pressure from 2 to 3 when a momentary signal is applied to operator 1-4. Valves shift, apply presure from port 1 to 2, and exhaust pressure from 4 to 5 when a momentary signal is applied to operator 1-2.



5/3 PRESURE - 4 way 3 position pressure center valves operate like 5/2 double valves except shift when a maintained signal is applied to either 1-2 or 1-4. Valves reset to center position when signal is removed with port 1 open to ports 2 and 4, and ports 3 and 5 are blocked.

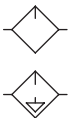
OPERATING TEMPERATURES

SOLENOID PILOT OPERATED	TREATED BUNA-N SEALS (TREATED NBR, Standard)
Standard	-18°C to +52°C (0°F to +125°F)

OPERATING PRESSURES

SOLENOID PILOT OPERATED	INLET PORT	EXTERNAL PILOT PORT
Standard 2 Position	240 - 830 kPa (35 - 120 PSIG)	Not Required
Standard 3 Position	345 - 830 kPa (50 - 120 PSIG)	Not Required
External Pilot (Option B)	Vacuum - 240 kPa (Vacuum - 35 PSIG)	240 - 830 kPa (35 - 120 PSIG)

FILTRATION AND LUBRICATION



MEDIA - AIR OR INERT GAS

Lubrication of Automatic Valve products is not required but is recommended to maximize service life. Oils should be compatible with seal material, have an ISO 32 viscosity, and have an aniline range of 82°C (180°F) and 99°C (210°F). Refer to Maintenance section of catalog for recommended lubricants.

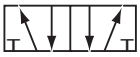
Filter to 50 microns or better.
For temperatures below 40°F, air must be dry to prevent formation of ice.

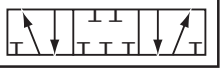
MODEL NUMBER CHART

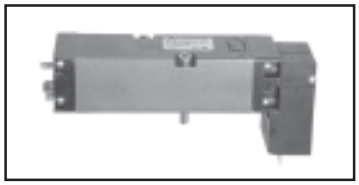
SERIES	BODY TYPE	PORT SIZE	FUNCTION	BODY DESIGN	OPERATOR 1	CENTER OPERATOR	OPERATOR 2	VOLTAGE	OPTIONS
F15	0 LESS BASE 1 SUB-BASE (SIDE PORTS) 2 SUBBASE (BOTTOM# PORTS) 3 MANIFOLD* (SIDE PORTS) 4 MANIFOLD* (SIDE/BOTTOM PORTS)	0 N/A 3 1/4 4 3/8 G 1/4 BSPP H 3/8 OD PUSH-IN TUBE	B 4 WAY 2 POSITION C 4 WAY 3 POSITION BLOCK D 4 WAY 3 POSITION EXHAUST E 4 WAY 3 POSITION PRESSURE	A SINGLE B DOUBLE	S SOLENOID - PLUG-IN W SOLENOID - DIN	D 3 POSITION SPRING	J AIR SPRING SPRING ONLY R SPRING ONLY S SOLENOID - PLUG-IN W SOLENOID - DIN	AA 110/50, 120/60 DB 24VDC	B EXTERNAL PILOT CONNECTION Z 2.0 Cv FLOW (BOTTOM PORTS)

*End caps required. See page D8 for information.

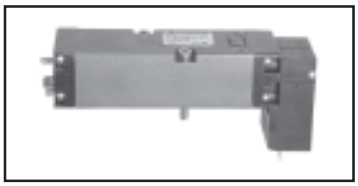
MODEL NUMBER PREFIX

5/2 

5/3 

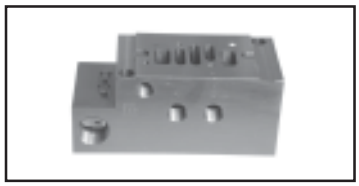


VALVE ONLY = F1500

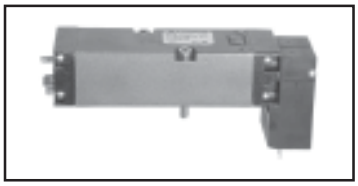


VALVE

+

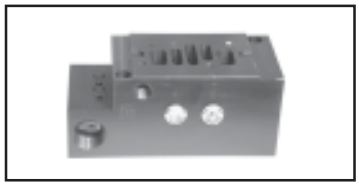


SUB-BASE (SIDE PORTS) = F151

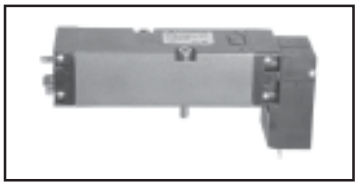


VALVE

+

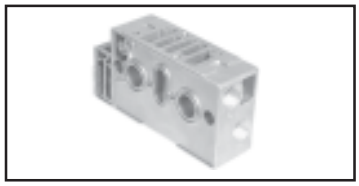


SUB-BASE (BOTTOM PORTS) = F152

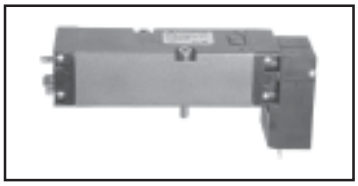


VALVE

+

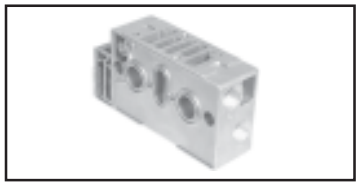


MANIFOLD (SIDE PORTS) = F153



VALVE

+

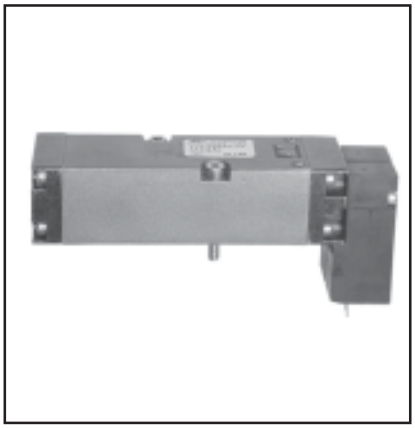


MANIFOLD (SIDE / BOTTOM PORTS) = F154

5/2

5/3

STANDARD
PLUG-IN SOLENOID MODELS



VALVE ONLY

VALVE WITH SUBBASE

VALVE WITH MANIFOLD

MODEL NUMBERS

SERIES Cv (l/min)	BODY TYPE	PORT SIZE	SOL. TYPE	5/2		5/3			BODY MATERIAL	SEAL MATERIAL	Kg (LB)
				SINGLE	DOUBLE	BLOCK	EXHAUST	PRESSURE			
F15 1.6 (1570)	VALVE ONLY	-	S	F1500BASJ - **	F1500BBSS - **	F1500CBSDS - **	F1500DBSDS - **	F1500EBSDS - **	ALUMINUM	NBR	,25 (.6)
	VALVE WITH SUB-BASE (SIDE PORTS)	1/4 (NPT)	S	F1513BASJ - **	F1513BBSS - **	F1513CBSDS - **	F1513DBSDS - **	F1513EBSDS - **			1,1 (2.4)
		3/8 (NPT)	S	F1514BASJ - **	F1514BBSS - **	F1514CBSDS - **	F1514DBSDS - **	F1514EBSDS - **			
	VALVE WITH SUB-BASE (BOTTOM PORTS)	1/4 (NPT)	S	F1523BASJ - **	F1523BBSS - **	F1523CBSDS - **	F1523DBSDS - **	F1523EBSDS - **			
		3/8 (NPT)	S	F1524BASJ - **	F1524BBSS - **	F1524CBSDS - **	F1524DBSDS - **	F1524EBSDS - **			
	VALVE WITH MANIFOLD (SIDE PORTS)	1/4 (NPT)	S	F1533BASJ - **	F1533BBSS - **	F1533CBSDS - **	F1533DBSDS - **	F1533EBSDS - **			,6 (1.4)
		3/8 (NPT)	S	F1534BASJ - **	F1534BBSS - **	F1534CBSDS - **	F1534DBSDS - **	F1534EBSDS - **			
	VALVE WITH MANIFOLD (SIDE / BOTTOM PORTS)	1/4 (NPT)	S	F1543BASJ - **	F1543BBSS - **	F1543CBSDS - **	F1543DBSDS - **	F1543EBSDS - **			
		3/8 (NPT)	S	F1544BASJ - **	F1544BBSS - **	F1544CBSDS - **	F1544DBSDS - **	F1544EBSDS - **			

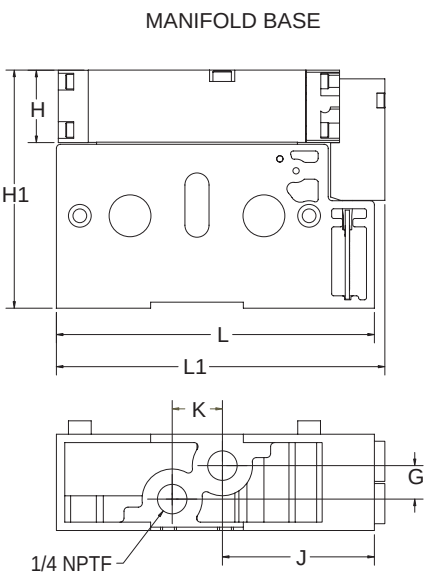
**Specify Voltage AA (120/60) DB (24VDC)

DIMENSIONAL INFORMATION

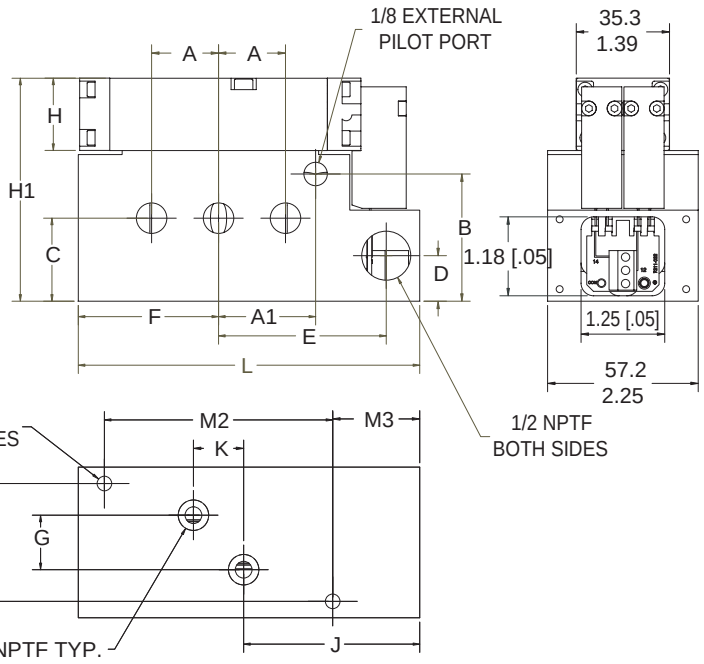
5/2

5/3

MANIFOLD BASE

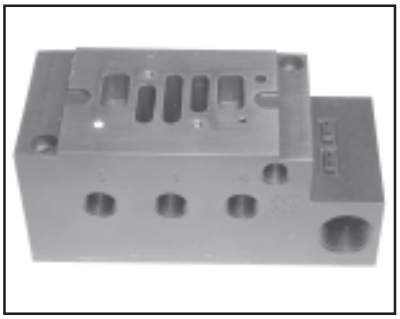


SUB-BASE

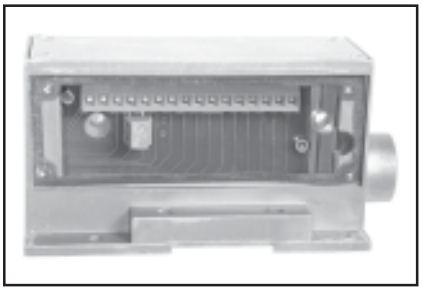


DESCRIPTION	A	A1	B	C	D	E	F	G	H	H1	J	K	L	L1	M	M1	M2	M3
VALVE ONLY	-	-	-	-	-	-	-	-	27.4 1.08	-	-	-	-	12.5 4.90	-	-	-	-
VALVE WITH SUBBASE	25.4 (1.00)	36.8 1.45	48.3 1.90	31.5 1.24	17.3 .68	63.8 2.51	53.3 2.10	20.6 .81	-	84.6 3.33	66.8 2.63	19.0 .75	129 5.10	-	5.6 .22	44.7 1.76	86.6 3.41	33.0 1.30
VALVE WITH MANIFOLD	-		-	-	-	-	-	12.7 .50	-	90.4 3.56	57.7 2.27	19.0 .75	121 4.75	-	-	-	-	-

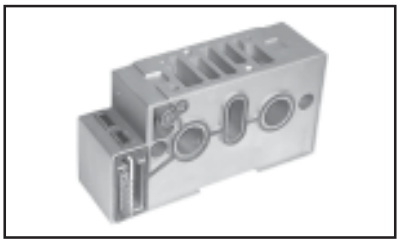
SUB-BASE AND MANIFOLDS



SUB-BASE



MANIFOLD END PLATE
WITH TERMINAL STRIP
(SHOWN WITH COVER REMOVED)



MANIFOLD

MODEL NUMBERS

SERIES		SUB-BASE		MANIFOLD	
	DESCRIPTION	MODEL NUMBER	PORT SIZE 2,4	MODEL* NUMBER	PORT SIZE 2,4
F15	SIDE PORTS	B7209-033 B7209-034	1/4 NPTF 3/8 NPTF	B7209-076 B7209-077	1/4 NPTF 3/8 NPTF
				B7209-078 B7209-079	1/4 BSPP 3/8 OD TUBE
	SIDE/BOTTOM PORTS	B7209-091 B7209-092	1/4 NPTF 3/8 NPTF	B7209-028 B7209-158	1/4 NPTF 3/8 NPTF
				B7209-166 B7209-167	1/4 BSPP 3/8 OD TUBE

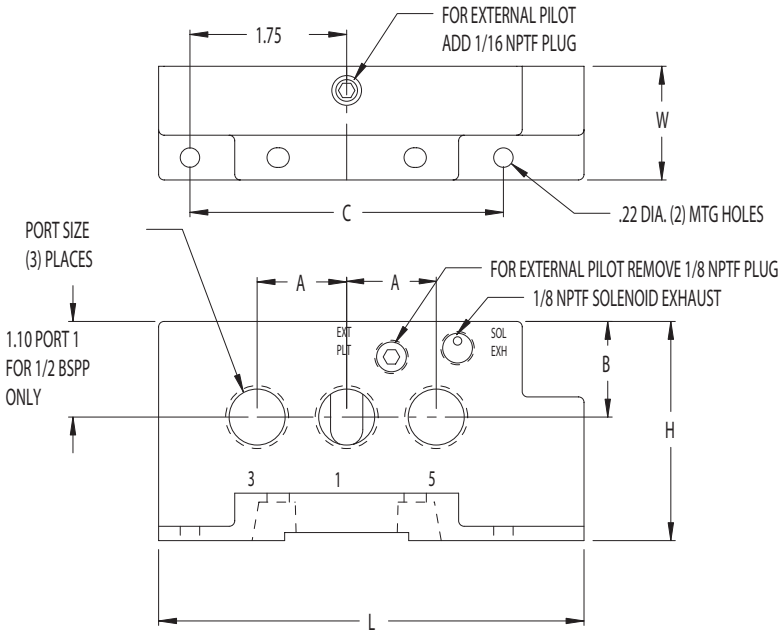
* Standard manifold is designed to accomodate single or double solenoid valves.
To request a single solenoid only manifold please call the factory.

MANIFOLD END PLATES			
TERMINAL STRIP		25 PIN SUB-D	
MODEL * NUMBER	PORT SIZE 1,3,5	MODEL* NUMBER	PORT SIZE 1,3,5
B7209-069 B7209-073	1/2 NPTF 1/2 BSPP	B7209-070 B7209-071	1/2 NPTF 1/2 BSPP

* ADD OPTION LETTER B FOR EXTERNAL PILOT

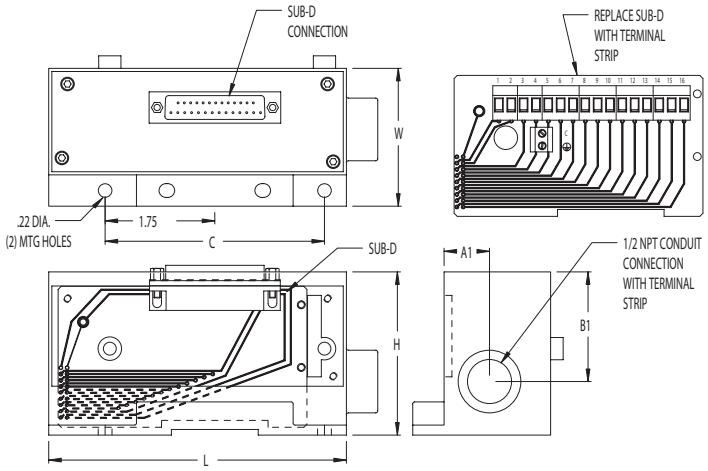
DIMENSIONAL INFORMATION

PNEUMATIC END (1) PER MFD



DESCRIPTION	PORT SIZE	A	B	C	H	L	W
PNEUMATIC	1/2 NPTF	25.4 1.00	27.2 1.07	88.9 3.50	62.2 2.45	121 4.75	32.3 1.27
PNEUMATIC	1/2 BSPP	34.8 1.37	32.0 1.26	88.9 3.50	62.9 2.48	121 4.75	43.2 1.70

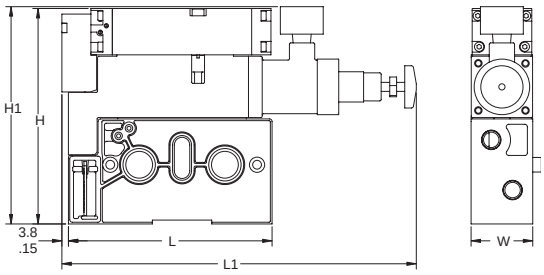
ELECTRICAL END (1) PER MFD



DESCRIPTION	PORT SIZE	A1	B1	C	H	L	W
ELECTRICAL	-	18.5 .73	4.44 1.75	88.9 3.50	62.0 2.60	121 4.75	55.9 2.20

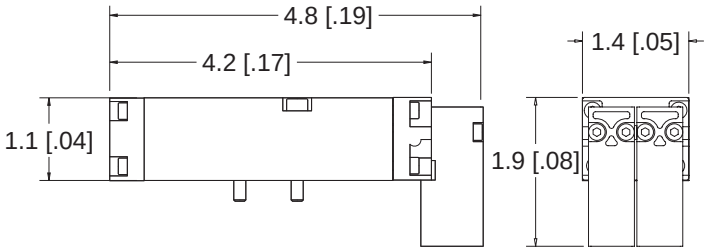
ACCESSORIES

INTERPOSED REGULATOR

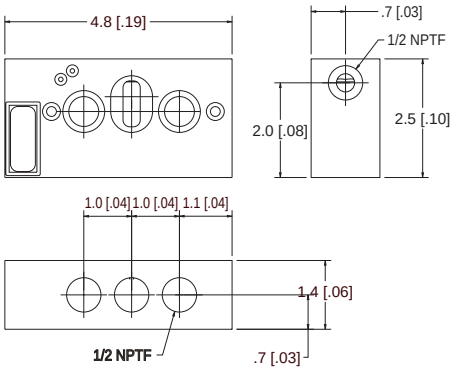


- Diecast aluminum and zamak alloys, NBR seals.
- Common regulation to both cylinder ports.
- Manual pressure adjustment on three pressure ranges.

MODEL NUMBER AND DIMENSIONS							
PRESSURE RANGE	MODEL NUMBER WITH GAUGE	MODEL NUMBER WITHOUT GAUGE	H mm (Inches)	H1 mm (Inches)	L mm (Inches)	L1 mm (Inches)	W mm (Inches)
14kPa - 138 kPa (2 - 20 psi)	B7209-054	B7209-055	128 (5.02)	129 (5.06)	121 (4.75)	210 (8.25)	56,6 (1.44)
28kPa - 310 kPa (4 - 45 psi)	B7209-056	B7209-057	128 (5.02)	129 (5.06)	121 (4.75)	210 (8.25)	56,6 (1.44)
69 kPa - 759 kPa (10 - 110 psi)	B7209-058	B7209-059	128 (5.02)	129 (5.06)	121 (4.75)	210 (8.25)	56,6 (1.44)



BLANK STATION COVER



DUAL PRESSURE INLET ISOLATION

MANIFOLD ACCESSORIES			
BLANK STATION COVER		DUAL PRESSURE INLET ISOLATION	
MODEL NUMBER	PORT SIZE	MODEL NUMBER	PORT SIZE
A7209-043	-	A7209-060	1/2 NPTF

OPTIONS

(LISTED AT THE END OF THE MODEL NUMBER IN ALPHA-NUMERIC ORDER)

B - EXTERNAL PILOT
For solenoid applications when the pressure to port one is less than 35 PSIG (240 kPa). See example below for field conversion.

FIELD CONVERSION

- REMOVE 1/8 PIPE PLUG FROM TOP OF CAP.
- ADD 1/16 NPTF PIPE PLUG IN SAME LOCATION OF 1/8 PLUG.
- REINSTALL 1/8 PIPE PLUG.
- REMOVE 1/8 PIPE PLUG FROM FRONT OF CAP FOR EXTERNAL PIPE PLUG CONNECTION.

ELECTRICAL INFORMATION

DESCRIPTION	WHEN THE 8TH CHARACTER OF MODEL NUMBER IS:	INSTRUCTIONS	COIL PART NUMBER ** = VOLTAGE
NEMA 4 WITH CIRCUIT BOARD CONNECTION	S	COIL INCLUDED WITH VALVE (SPECIFY VOLTAGE FROM BELOW)	7211-9**

VOLTAGE +/- 10%	** CODE	CURRENT (AMPS)		RESISTANCE	POWER (AC=VA DC=WATTS)
		INRUSH	HOLDING		
110/50 120/60	AA	.016	.012	3700	1.4
24VDC	DB	.05	.05	570	1.2

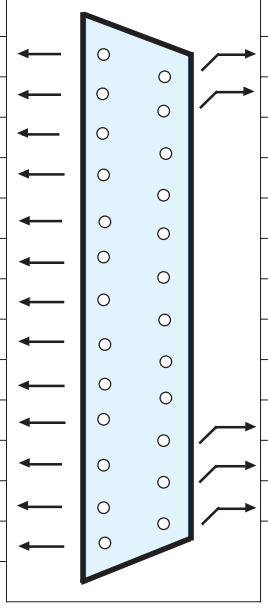
D

PIN MAPPING

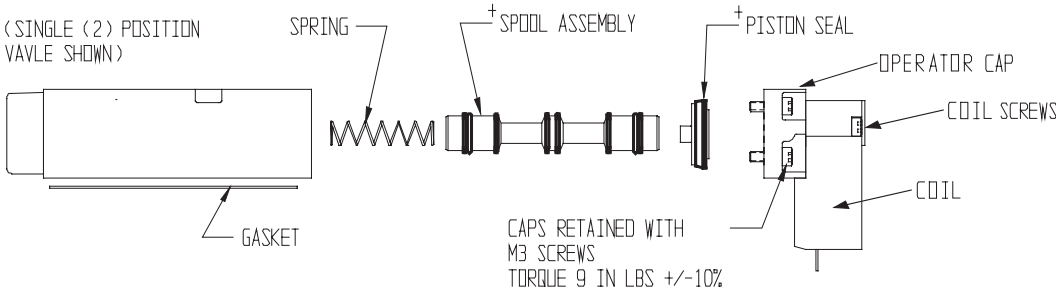
POSITION ON MANIFOLD

- All addressing starts from the electrical cap on the manifold.
- The right solenoid position on the first manifold adjacent to the electrical end cap is Station 1.
- This address extends from Station 1 through Station 16, regardless of whether the station is used.
- Field bus channels used correspond to used pins only. The first active pin is mapped to Channel 1, the next is to Channel 2, etc.
- Please consult Factory for manifold requirements above 8 stations/16 solenoids.

SUB 'D' CONNECTOR CALLOUT			
PIN NUMBER	ADDRESS NUMBER	PIN NUMBER	ADDRESS NUMBER
13	13	25	GROUND
12	12	24	COMMON
11	11	23	
10	10	22	
9	9	21	
8	8	20	
7	7	19	
6	6	18	
5	5	17	
4	4	16	16
3	3	15	15
2	2	14	14
1	1		



SERVICE KIT INFORMATION



SERVICE KIT INSTALLATION

I. Remove screws from the coils.

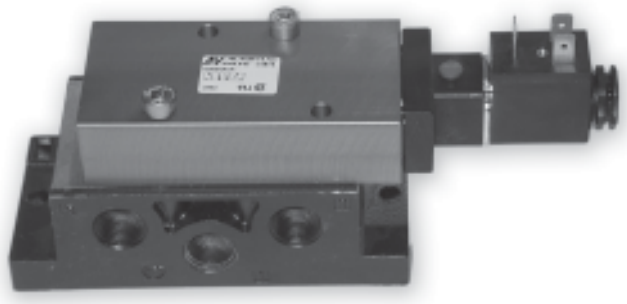
1. Remove screws from cap of operator.
2. Remove cap.
3. Remove existing serviceable components.
4. Replace with kit components. **+All seals must be lubricated with Magnalube-G or equivalent.**
5. Align pilot hole in body with pilot hole in cap.
6. Torque screws as shown above.

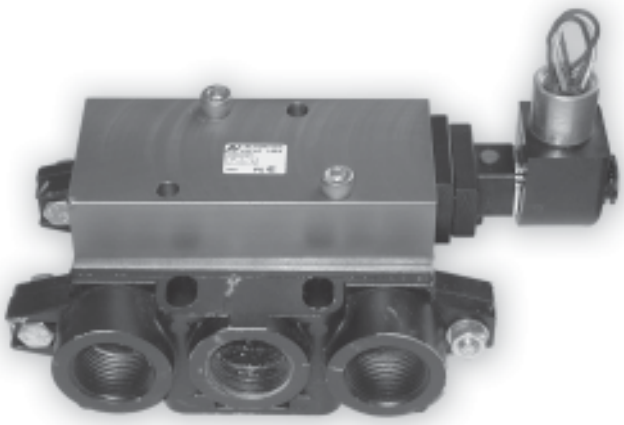
Lubrication of Automatic Valve products is not required but is recommended to maximize service life. Oils should be compatible with seal material, have an ISO 32 or lighter viscosity, and have an aniline point between 82°C (180°F) and 99°C (210°F). Refer to Maintenance section of catalog for recommended lubricants.

SERIES	FUNCTION			
	SINGLE		DOUBLE	
	PART NUMBER	DESCRIPTION	PART NUMBER	DESCRIPTION
F15	K-F15-SGL	Spool Assembly (1) Piston Seal (1) Spring (1) Gasket (1)	K-F15-DBL-B K-F15-DBL-C DBL-D DBL-E	Spool Assembly (1) Piston Seal (2) Gasket (1)

ISO 9001

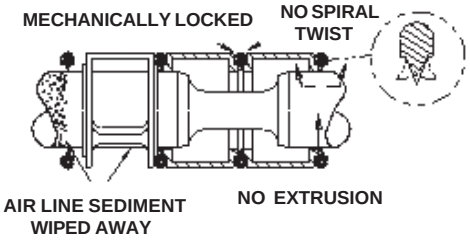
AUTOMATIC VALVE

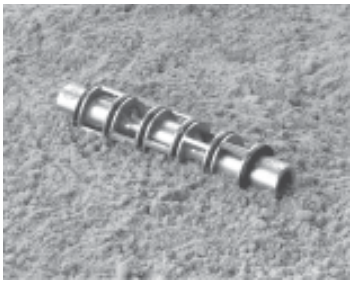




ISO SPOOL VALVES

DESIGN FEATURES





VALVES

- Conform to ISO 5599\1 specifications for size 1, 2 and 3.
- Complete range of operators available.

TAPERED TEE-SEAL ..... Eats Dirt

- Bi-directional tapered Tee-Seal flexes to clean spool. Eliminates Monday morning sticking problems**.**
- Tested tough and proven reliable according to SAE specifications: Rust and water injected every 864,000 cycles for 20 million cycles.

SOLENOID ... Guaranteed Against Burnout

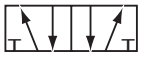
- Three-way pilot uses full air line pressure to shift the valve.
- Pilot is internally supplied when the pressure at port one is 35 to 150 PSIG (240 to 1030 kPa).
- Coil is hermetically sealed as an integral watertight molded unit.
- Intrinsically-safe and explosion-proof versions available.
- Push non-locking override. (Extended turn and turn lock available)

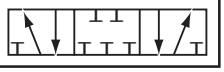
PRODUCTS CERTIFIED TO INCLUDE

- CSA - (C22.2)
- UL - (STD 429)
- ATEX - (2018x)
- PTB - (EExmIIT5) (EExiaIICT6)
- CE - (73/23/EEC), (89/336/EEC)

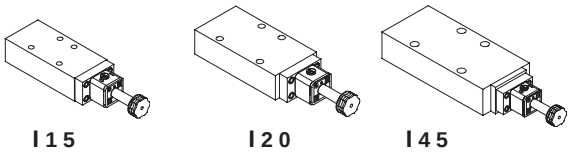
INDEX

SPECIFICATIONS

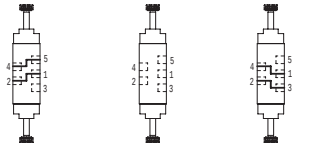
5/2 

5/3 

VALVE OPERATION

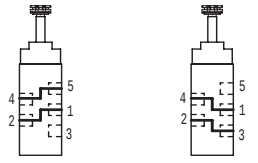


I15 I20 I45



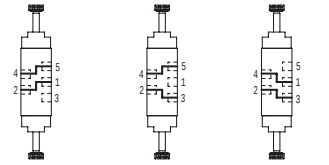
ENERGIZED DE-ENERGIZED ENERGIZED

5/3 BLOCK - 4 way 3 position blocked center valves operate like 5/2 double valves except shift when a maintained signal is applied to either 1-2 or 1-4. Valves reset to center position when signal is removed with all ports blocked.



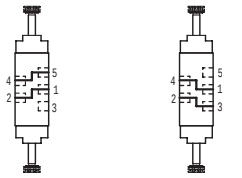
DE-ENERGIZED ENERGIZED

5/2 SINGLE - 4 way 2 position single operator valves shift, apply pressure from port 1 to 4, and exhaust pressure from port 2 to 3 when a maintained signal is applied to operator 1-4. Valves reset, apply pressure from port 1 to 2, exhaust pressure from port 4 to 5 when the signal is removed.



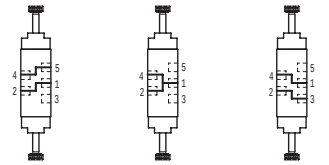
ENERGIZED DE-ENERGIZED ENERGIZED

5/3 EXHAUST - 4 way 3 position exhaust center valves operate like 5/2 double valves except shift when a maintained signal is applied to either 1-2 or 1-4. Valves reset to center position when signal is removed with port 2 open to 3, port 4 open to 5, and port 1 blocked.



DE-ENERGIZED ENERGIZED

5/2 DOUBLE - 4 way 2 position double operator valves shift, apply pressure from port 1 to 4,and exhaust pressure from 2 to 3 when a momentary signal is applied to operator 1-4. Valves shift, apply presure from port 1 to 2, and exhaust pressure from 4 to 5 when a momentary signal is applied to operator 1-2.



ENERGIZED DE-ENERGIZED ENERGIZED

5/3 PRESURE - 4 way 3 position pressure center valves operate like 5/2 double valves except shift when a maintained signal is applied to either 1-2 or 1-4. Valves reset to center position when signal is removed with port 1 open to ports 2 and 4, and ports 3 and 5 are blocked.

OPERATING TEMPERATURES	**SOLENOID PILOT OPERATED**	**TREATED BUNA-N SEALS (TREATED NBR, Standard)**	**FLUOROELASTOMER SEALS (FPM (FKM), Option A)**
	Standard	-18ºC to +52ºC (0ºF to +125ºF)	-18ºC to +52ºC (0ºF to +125ºF)
	High Temp Coil (Option T)	-18ºC to +82ºC (0ºF to +180ºF)	-18ºC to +82ºC (0ºF to +180ºF)

OPERATING PRESSURES	**SOLENOID PILOT OPERATED**	**INLET PORT**	**EXTERNAL PILOT PORT**
	Standard 2 Position	240 - 1030 kPa (35 - 150 PSIG)	Not Required
	Standard 3 Position	345 - 1030 kPa (50 - 150 PSIG)	Not Required
	External Pilot (Option B)	Vacuum - 240 kPa (Vacuum - 35 PSIG)	240 - 1030 kPa (35 - 150 PSIG)

FILTRATION AND LUBRICATION

MEDIA - AIR OR INERT GAS

Lubrication of Automatic Valve products is not required but is recommended to maximize service life. Oils should be compatible with seal material, have an ISO 32 or lighter viscosity, and have an aniline range of 82ºC (180ºF) to 99ºC (210ºF). Refer to Maintenance section of catalog for recommended lubricants.

Filter to 50 microns or better.
For temperatures below 40ºF, air must be dry to prevent formation of ice.

MODEL NUMBER CHART

SERIES	BODY TYPE		PORT SIZE		FUNCTION		BODY DESIGN		OPERATOR 1		CENTER OPERATOR		OPERATOR 2		VOLTAGE		OPTIONS	
I15	0	BASE	0	0	A	4 WAY 2 POSITION	A	SINGLE	A	AIR PILOT	D	3 POSITION SOLENOID/ AIR	A	AIR PILOT	AA	110/50, 120/60	A	FLUOROELASTOMER SEALS
I20					B	4 WAY 2 POSITION	B	DOUBLE	F	HAND LEVER - LINE			C	3 POSITION SPRING MANUAL	AB	220/50, 240/60, 125VDC	B	EXTERNAL PILOT CONNECTION
I45					C	4 WAY 3 POSITION BLOCK			I	PALM BUTTON INTRINSICALLY-SAFE SOLENOID			M	2 POSITION DETENT MANUAL	DA	22/50, 24/60, 12VDC	C	CONDUIT COIL
					D	4 WAY 3 POSITION EXHAUST			V	STANDARD SOLENOID			N	3 POSITION DETENT MANUAL	DB	24VDC	CT	CONDUIT COIL HIGH TEMPERATURE
					E	4 WAY 3 POSITION PRESSURE			X				R	2 POSITION SPRING INTRINSICALLY-SAFE SOLENOID			D	DUSTPROOF
													V	STANDARD SOLENOID			G	18" FLYING LEADS
													X				W	G THREADS
																	Y	EXPLOSION-PROOF COIL
																	Z	EXPLOSION-PROOF COIL
																	1	PUSH TURN LOCKING OVERRIDE
																	2	EXTENDED TURN LOCKING OVERRIDE

5/2

5/3

STANDARD SOLENOID MODELS

I15

I20

I45

SINGLE SOLENOID

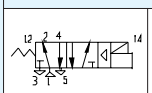
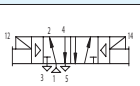
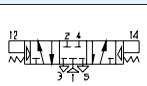
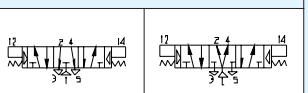
I15

I20

I45

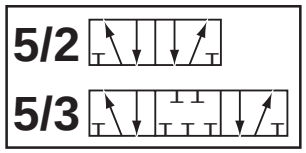
DOUBLE SOLENOID

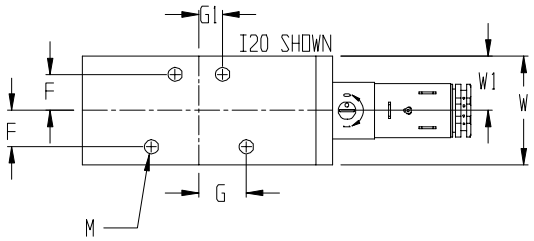
MODEL NUMBERS

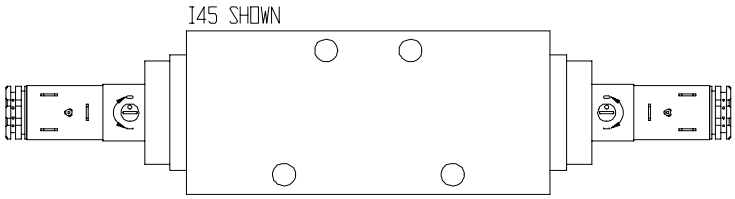
SERIES	ISO SIZE	PORT LOC.	Cv (l/min)	5/2		5/3			BODY MATERIAL	SEAL MATERIAL	Kg (LB)
											
				SINGLE	DOUBLE	BLOCK	EXHAUST	PRESSURE			
I15	1	BASE	1.5 (1480)	I1500AAXR*	I1500ABXX*	I1500CBXDX*	I1500DBXDX*	I1500EBXDX*	ALUMINUM	NBR	,4 (.9)
I20	2	BASE	2.0 (1970)	I2000AAXR*	I2000ABXX*	I2000CBXDX*	I2000DBXDX*	I2000EBXDX*	ALUMINUM	NBR	,7 (1.5)
I45	3	BASE	4.5 (4430)	I4500AAXR*	I4500ABXX*	I4500CBXDX*	I4500DBXDX*	I4500EBXDX*	ALUMINUM	NBR	,9 (2.0)

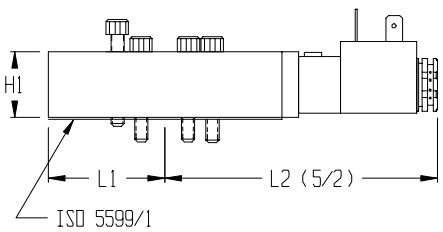
*Coils sold separately. Refer to Electrical Section for selection.

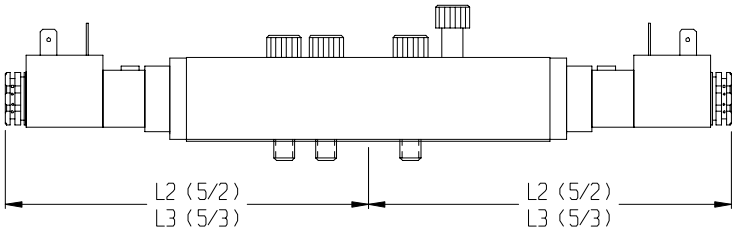
DIMENSIONAL INFORMATION











SERIES	ISO SIZE	F	G	G1	H1	L1	L2	L3	M	W	W1
I15	1	14,0 .55	18,0 .71	9,0 .35	25,4 1.00	44,3 1.74	103 4.07	103 4.07	5,4 .21	41,9 1.65	21,0 .83
I20	2	19,0 .75	24,0 .95	12,0 .47	25,4 1.00	48,2 1.90	107 4.23	107 4.23	6,4 .25	49,2 1.94	24,6 .97
I45	3	24,0 .95	32,0 1.26	16,0 .63	31,8 1.25	69,0 2.72	138 5.43	138 5.43	8,7 .34	63,5 2.50	31,8 1.25

Units of Measure: Top - mm, Bottom - inches

5/2
5/3

AIR PILOT MODELS

I15

I20

I45

SINGLE

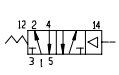
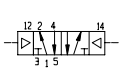
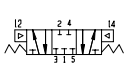
I15

I20

I45

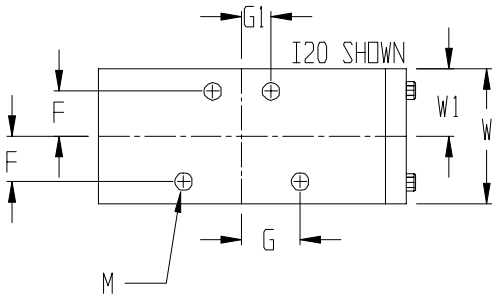
DOUBLE

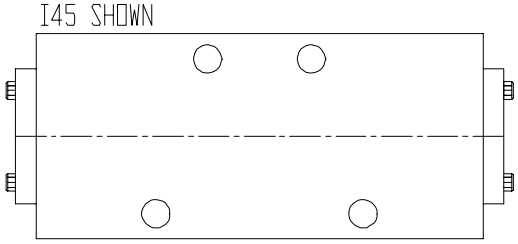
MODEL NUMBERS

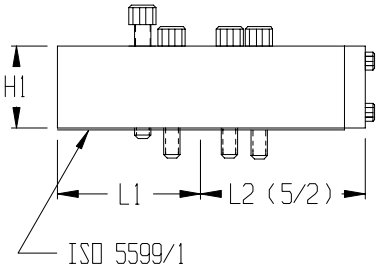
SERIES	ISO SIZE	PORT LOC.	Cv (l/min)	5/2		5/3			BODY MATERIAL	SEAL MATERIAL	Kg (LB)
											
				SINGLE	DOUBLE	BLOCK	EXHAUST	PRESSURE			
I15	1	BASE	1.5 (1480)	I1500AAAR	I1500ABAA	I1500CBADA	I1500DBADA	I1500EBADA	ALUMINUM	NBR	,4 (.9)
I20	2	BASE	2.0 (1970)	I2000AAAR	I2000ABAA	I2000CBADA	I2000DBADA	I2000EBADA	ALUMINUM	NBR	,7 (1.5)
I45	3	BASE	4.5 (4430)	I4500AAAR	I4500ABAA	I4500CBADA	I4500DBADA	I4500EBADA	ALUMINUM	NBR	,9 (2.0)

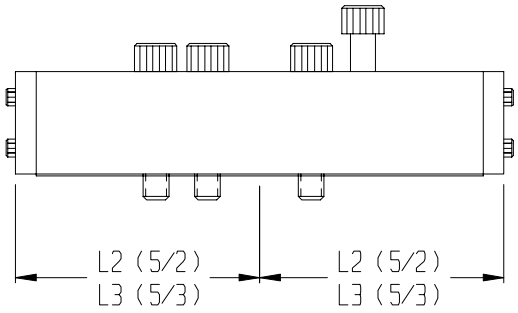
DIMENSIONAL INFORMATION

5/2
5/3









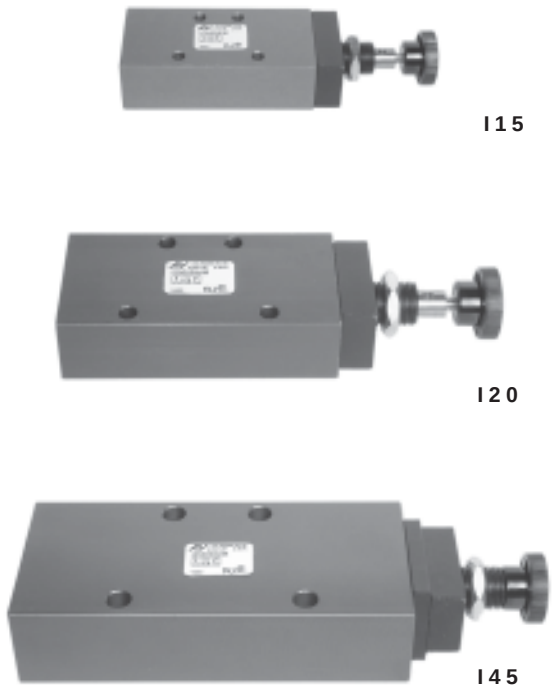
SERIES	ISO SIZE	F	G	G1	H1	L1	L2	L3	M	W	W1
I15	1	14,0 .55	18,0 .71	9,0 .35	25,4 1.00	44,3 1.74	50,5 1.99	50,5 1.99	5,4 .21	41,9 1.65	21,0 .83
I20	2	19,0 .75	24,0 .95	12,0 .47	25,4 1.00	48,2 1.90	54,6 2.15	54,6 2.15	6,4 .25	49,2 1.94	24,6 .97
I45	3	24,0 .95	32,0 1.26	16,0 .63	31,8 1.25	69,0 2.72	75,4 2.97	75,4 2.97	8,7 .34	63,5 2.50	31,8 1.25

Units of Measure: Top - mm, Bottom - inches

5/2 

MANUAL MODELS

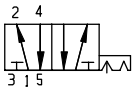
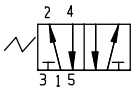
HAND LEVER



PALM BUTTON

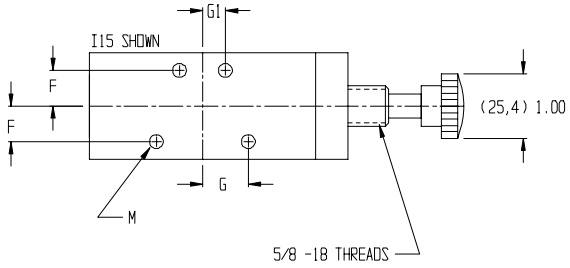
MODEL NUMBERS

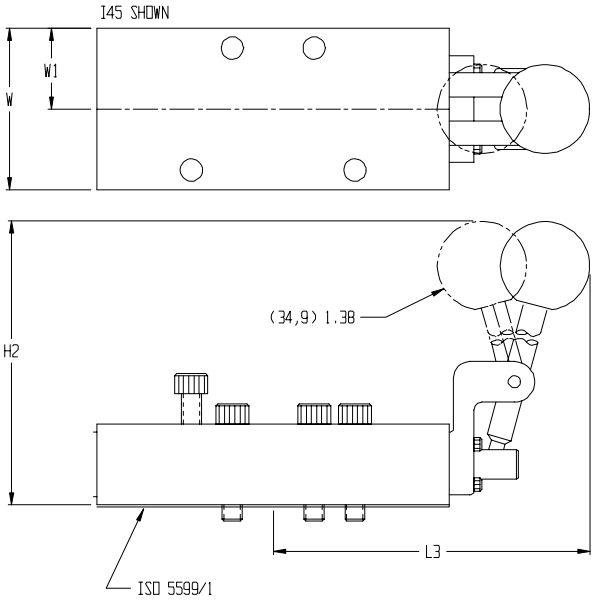
(4 WAY 2 POSITION)

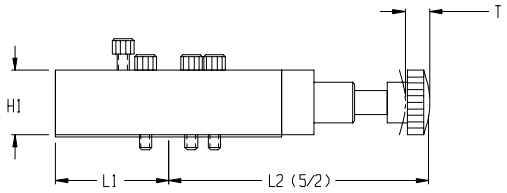
SERIES	ISO SIZE	PORT LOC.	Cv (l/min)	OPERATOR	5/2		BODY MATERIAL	SEAL MATERIAL	Kg (LB)
					 DETENTED	 SPRING RETURN			
I15	1	BASE	1.5 (1480)	HAND LEVER	I1500BAFM	I1500BAFR	ALUMINUM	NBR	,4 (.9)
				PALM BUTTON	I1500BAIM	I1500BAIR			
I20	2	BASE	2.0 (1970)	HAND LEVER	I200BAFM	I200BAFR	ALUMINUM	NBR	,7 (1.5)
				PALM BUTTON	I200BAIM	I200BAIR			
I45	3	BASE	4.5 (4430)	HAND LEVER	I4500BAFM	I4500BAFR	ALUMINUM	NBR	,9 (2.0)
				PALM BUTTON	I4500BAIM	I4500BAIR			

5/2

DIMENSIONAL INFORMATION

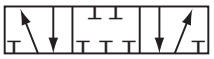




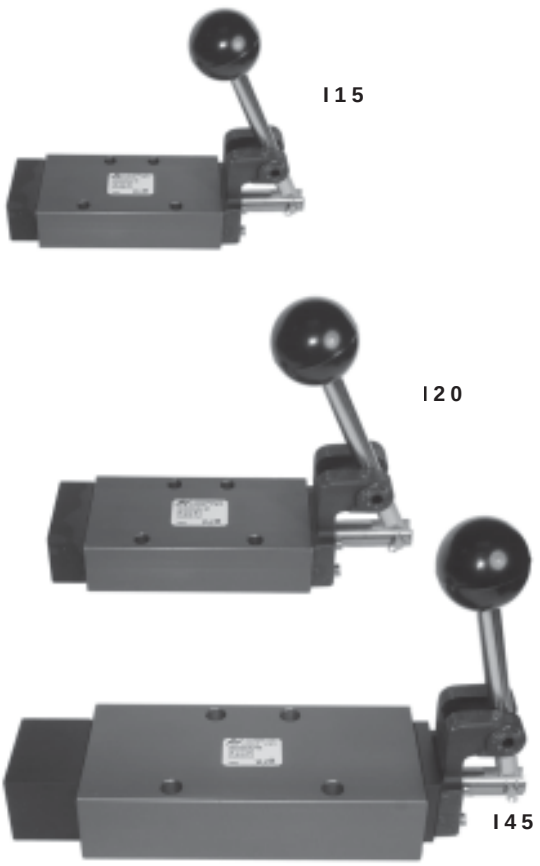


SERIES	ISO SIZE	F	G	G1	H1	H2	L1	L2	L3	L4	M	T	W	W1
I15	1	14,0 .55	18,0 .71	9,0 .35	25,4 1.00	136 5.35	44,3 1.74	102 4.00	101 3.98	60,1 2.37	5,4 .21	6,4 .38	41,9 1.65	21,0 .83
I20	2	19,0 .75	24,0 .95	12,0 .47	25,4 1.00	136 5.35	48,2 1.90	106 4.16	105 4.14	64,1 2.52	6,4 .25	9,5 .38	49,2 1.94	24,6 .97
I45	3	24,0 .95	32,0 1.26	16,0 .63	31,8 1.25	155 5.47	69,0 2.72	26,5 4.98	126 4.96	99,2 3.91	8,7 .34	12,7 .50	63,5 2.50	31,8 1.25

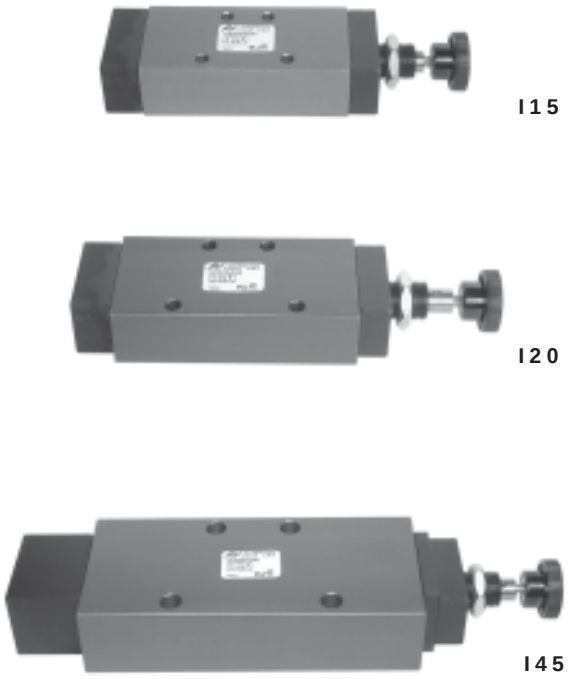
Units of Measure: Top - mm, Bottom - inches

5/3 

MANUAL MODELS



HAND LEVER
(DETENTED)



PALM BUTTON
(DETENTED)

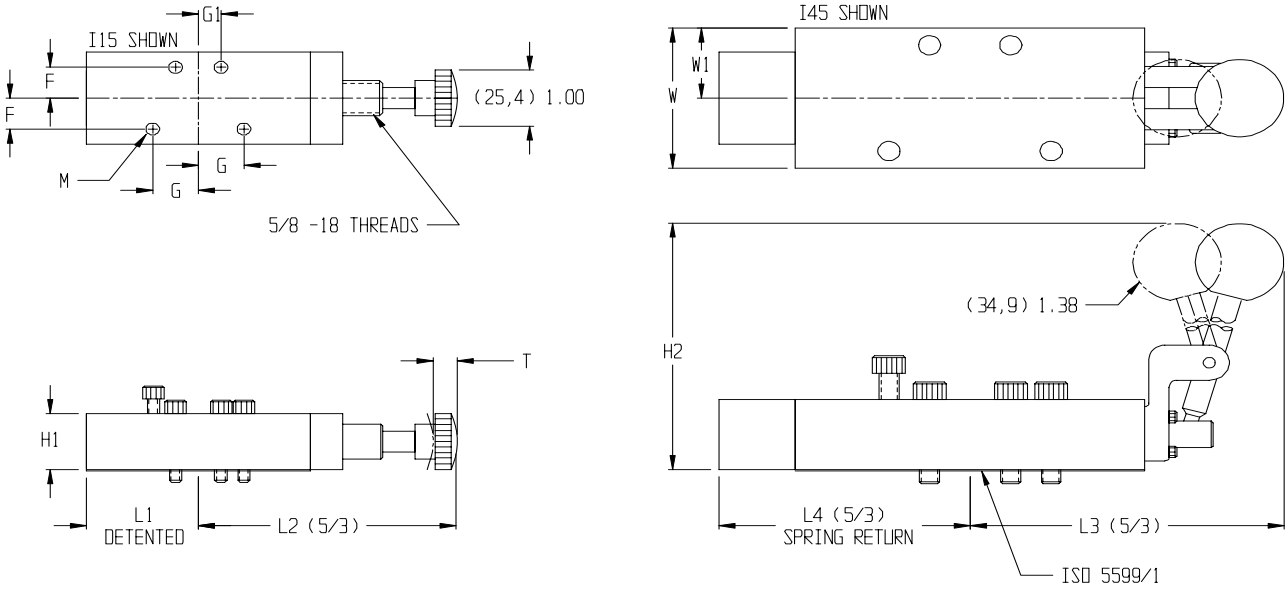
MODEL NUMBERS

(4 WAY 3 POSITION)

SERIES	ISO SIZE	Cv (l/min)	OPERATOR	5/3						BODY MATERIAL	SEAL MATERIAL	Kg (LB)
				DETENTED 5/3			SPRING RETURN 5/3					
				BLOCK	EXHAUST	PRESSURE	BLOCK	EXHAUST	PRESSURE			
I15	1	1.5 (1480)	HAND LEVER	I1500CAFN	I1500DAFN	I1500EAFN	I1500CBFC	I1500DBFC	I1500EBFC	ALUMINUM	NBR	,4 (.9)
			PALM BUTTON	I1500CAIN	I1500DAIN	I1500EAIN	I1500CBIC	I1500DBIC	I1500EBIC			
I20	2	2.0 (1970)	HAND LEVER	I2000CAFN	I2000DAFN	I2000EAFN	I2000CBFC	I2000DBFC	I2000EBFC	ALUMINUM	NBR	,7 (1.5)
			PALM BUTTON	I2000CAIN	I2000DAIN	I2000EAIN	I2000CBIC	I2000DBIC	I2000DBIC			
I45	3	4.5 (4430)	HAND LEVER	I4500CAFN	I4500DAFN	I4500EAFN	I4500CBFC	I4500DBFC	I4500EBFC	ALUMINUM	NBR	,9 (2.0)
			PALM BUTTON	I4500CAIN	I4500DAIN	I4500EAIN	I4500CBIC	I4500DBIC	I4500EBIC			

5/3

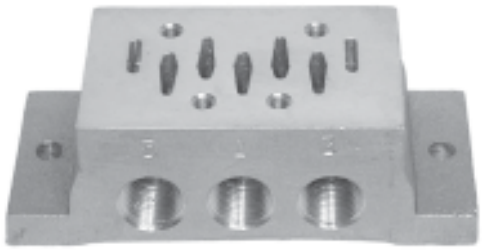
DIMENSIONAL INFORMATION



SERIES	ISO SIZE	F	G	G1	H1	H2	L1	L2	L3	L4	M	T	W	W1
I15	1	14,0 .55	18,0 .71	9,0 .35	25,4 1.00	136 5.35	44,3 1.74	102 4.00	101 3.98	60,1 2.37	5,4 .21	9,6 .38	41,9 1.65	21,0 .83
I20	2	19,0 .75	24,0 .95	12,0 .47	25,4 1.00	136 5.35	48,2 1.90	106 4.16	105 4.14	64,1 2.52	6,4 .25	9,6 .38	49,2 1.94	24,6 .97
I45	3	24,0 .95	32,0 1.26	16,0 .63	31,8 1.25	155 5.47	69,0 2.72	26,5 4.98	126 4.96	99,2 3.91	8,7 .34	12,7 .50	63,5 2.50	31,8 1.25

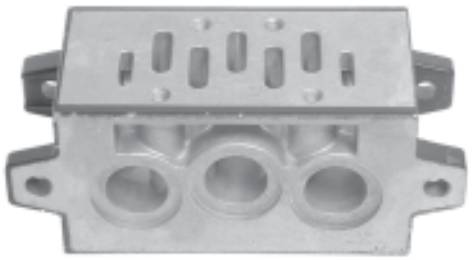
Units of Measure: Top - mm, Bottom - inches

SUB-BASES AND MANIFOLDS



I15

SUB-BASE



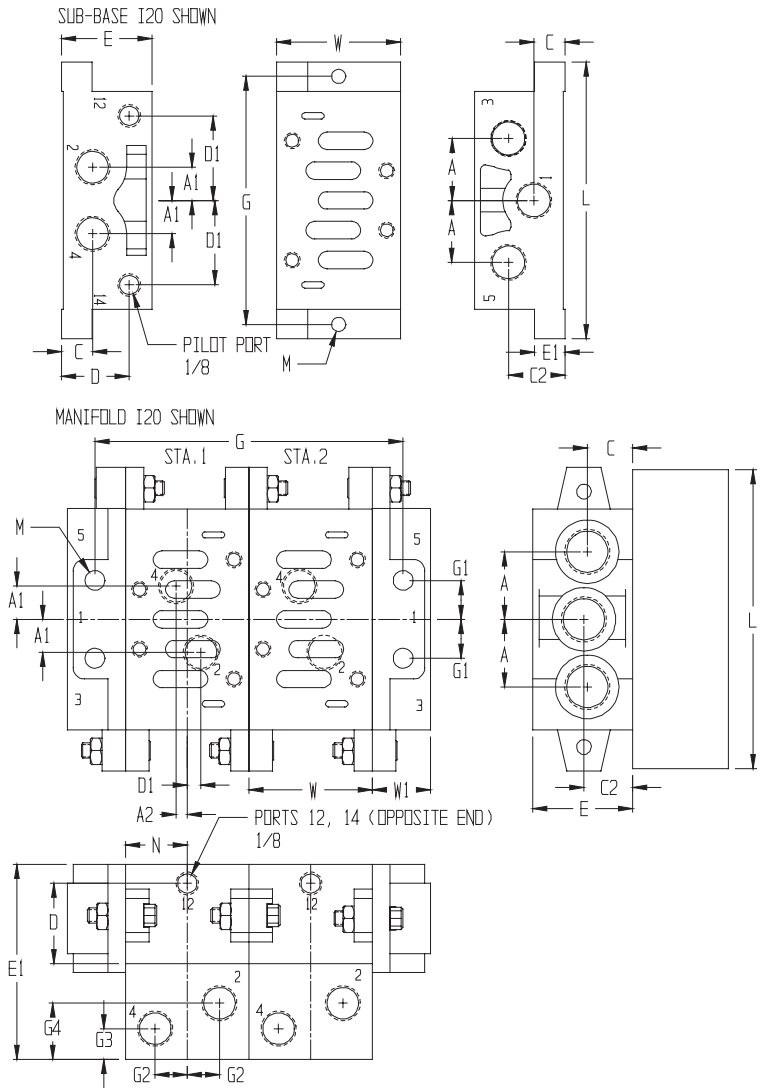
I15

MANIFOLD
(BOTTOM PORTED SHOWN)

SERIES	ISO SIZE	SUB-BASE				MANIFOLD					MANIFOLD ACCESSORIES		
		MODEL NUMBER	PORTS 2 & 4	PORTS 1, 3, & 5	WGT Kg (LB)	MODEL NUMBER		PORTS 2 & 4	PORTS 1, 3, & 5	WGT Kg (LB)	END PLATES	BLOCKING DISK	BLANK STATION COVER
						BOTTOM	SIDE						
I15	1	7107-501	1/4	1/4	,5 1.0	A7107-503	A7108-008	1/4	3/8	,68 (1.5)	7107-504	A7002-010	A7107-506
		7107-502	3/8	3/8	,5 1.0								
I20	2	7112-501	3/8	3/8	,5 1.0	A7113-046	A7113-046	3/8	3/8	,68 (1.5)	N/A	A7112-505	A7112-506
		7112-502	1/2	1/2	,5 1.0								
I45	3	7129-501	1/2	1/2	,54 1.2	-	7130-021	1/2	1	,91 (2.0)	7129-504	A7129-505	A7129-506
		7129-502	3/4	3/4	,54 1.2								

G Threads: Add the letter “W” after the Model Number to indicate G Threads.

DIMENSIONAL INFORMATION



SERIES	ISO SIZE	A	A1	A2	C	C2	D	D1	E	E1	G	G1	G2	G3	G4	L	M	N	W	W1
SUB-BASE																				
I15	1	21,5 .85	12 .47	-	10,5 .41	21,5 .85	23,5 .93	29 1.1	32 1.3	10 .39	98 3.9	-	-	-	-	110 4.3	5,6 .22	-	48 1.9	-
I20	2	28 1.1	15 .59	-	14 .55	25,9 1.02	30 1.18	37 1.46	40 1.57	13 .51	112 4.41	-	-	-	-	124 4.88	7 .26	-	57 2.24	-
I45	3	34 1.3	16 .63	-	17 .67	17 .67	22 .87	45 1.8	32 1.3	18 .71	136 5.4	-	-	-	-	149 5.9	7 .26	-	71 2.8	-
MANIFOLD																				
I15	1	24 .94	13 .51	1,5 .06	21 .83	24 .94	37 1.47	7,5 .30	46 1.8	81 3.2	108 4.3	14 .55	11 .43	12 .47	25 .98	110 4.3	7 .27	21,5 .85	43 1.69	22 .87
I20	2	35,5 1.40	17,8 .70	14,3 .56	27,4 1.08	27,4 1.08	42,8 1.68	14,3 .56	52,3 2.06	-	118 4.63	27,9 1.10	13,5 .53	12,2 .48	12,2 .48	133 5.25	7,1 .28	27,9 1.1	55,9 2.2	-
I45	3	48,2 1.9	19 .75	6 .24	30,4 1.2	33,0 1.3	45,9 1.81	7,8 .31	55,9 2.2	99 3.9	172 6.8	25,4 1.0	18 .71	17 .67	27,9 1.1	190 7.5	11,9 .47	35,5 1.4	71,1 2.8	30,5 1.2

Units of Measure: Top - mm, Bottom - inches

OPTIONS

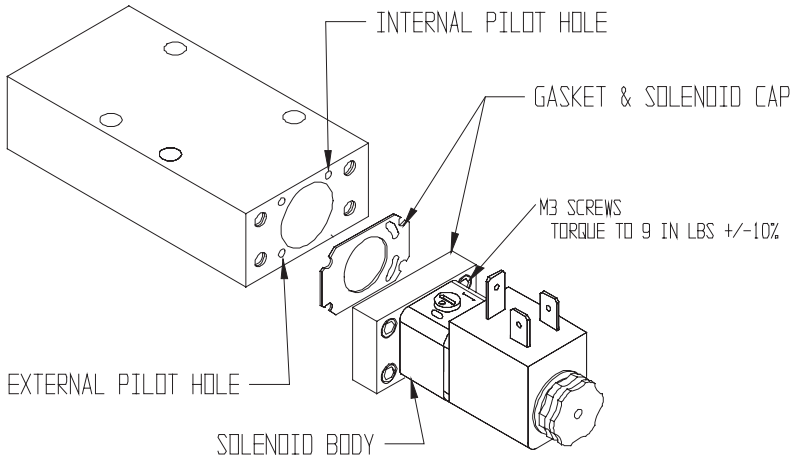
(LISTED AT THE END OF THE MODEL NUMBER IN ALPHA-NUMERIC ORDER)

A - FLUOROELASTOMER SEALS
For applications where fluid media or ambient conditions are not compatible with nitrile seals. Note: Fluorocarbon seals do not increase the effective temperature range of the valve. For high temperature applications, consult the factory.

B - EXTERNAL PILOT
For solenoid applications when the pressure to port one is less than 35 PSIG (2 BAR). See example below for field conversion.

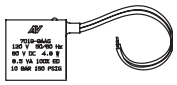
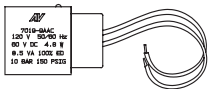
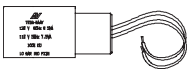
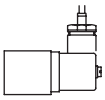
FIELD CONVERSION

- Remove nut, then solenoid coil from stem.
- Remove screws from solenoid body.
- Rotate solenoid cap and gasket 180°.
- Verify that slots in gasket are in line with external pilot hole in body.
- Install Solenoid and Coil.
- External pilot connection through base now engaged.



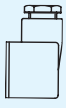
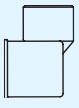
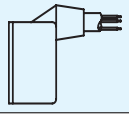
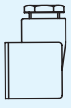
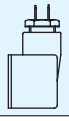
C - CONDUIT COIL
Refer to Electrical Section for details.
CT - CONDUIT COIL HIGH TEMPERATURE
Refer to Electrical Section for details.
D - DUSTPROOF
For applications in extremely dusty and contaminated environments. Standard vent ports are plugged. Operators breathe through the exhaust ports via flats on the end of the spools.
G - COIL WITH 18" LEADS
Refer to Electrical Section for details.
W - G THREADS
Sub-base and Manifold only.
Y - COIL EXPLOSION PROOF (CSA, FM)
Refer to Electrical Section for details.
Z - COIL EXPLOSION PROOF (ATEX, PTB)
Refer to Electrical Section for details.
1 - PUSH TURN LOCKING OVERRIDE
2 - EXTENDED TURN LOCKING OVERRIDE

ELECTRICAL INFORMATION

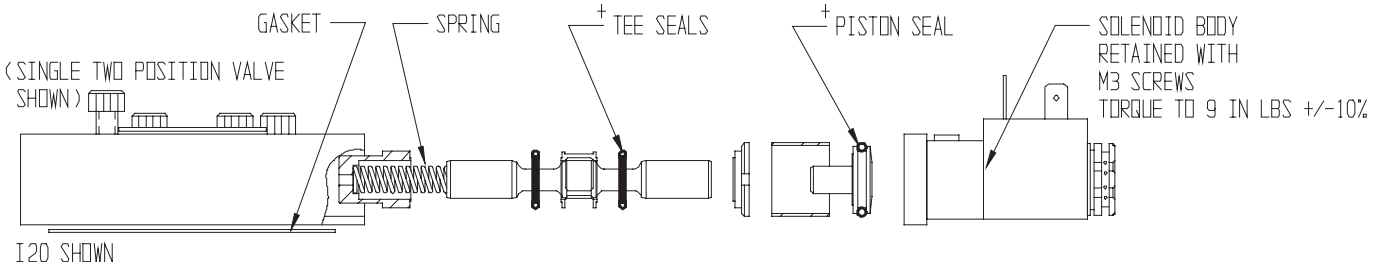
DESCRIPTION		WHEN THE 8TH CHARACTER OF MODEL NUMBER IS:	INSTRUCTIONS	COIL PART NUMBER ** = VOLTAGE
NEMA 4X WITH DIN 43650 CONNECTION		X	Order coil separately (specify voltage code from below)	7019-9**
NEMA 4X WITH 18" LEADS		X	Order coil separately (specify voltage code from below)	7019-9**G
NEMA 4X 1/2" CONDUIT WITH 30" LEADS		X	Order coil separately (specify voltage code from below)	7019-9**C 7019-9**CT (high temperature 82°C maximum)
EXPLOSION-PROOF 1/2" CONDUIT WITH 24" LEADS [CSA 202633X FM APPROVED CL. I; ZONE1Ex m II T4; AEx m II CL. I; Div. 1; GR. A, B, C, D CL. II; GR. E, F, G CL. III T4 Ta= -20°C to +60°C NEMA: 4, 4X, 7C, 7D]		X	Order coil separately (specify voltage code from below)	7019-9**Y
INTRINSICALLY-SAFE WITH STRAIN RELIEF (EEx ia IICT6)		V	Coil and Connector included (24VDC only)	A7106-374
EXPLOSION-PROOF WITH 3m CABLE AND STRAIN RELIEF (Ex II 2G EExm II T - I EC Exm II T-)		Z	Order coil separately (specify voltage code from below)	7152-9**

VOLTAGE +/- 10 %		** CODE	CURRENT (AMPS)								RESISTANCE (OHMS @ 25° C)				POWER (AC = VA DC = WATTS)			
			INRUSH				HOLDING											
			W		V	Z	W		V	Z	W		V	Z	W		V	Z
			NEMA				NEMA				NEMA				NEMA			
4	7		4	7	V		4	7	V		4	7	V		4	7	V	
24/50 24/60	-	DA	.40	.55	-	-	.40	.32	-	-	31	19	-	-	4.8	4.5	-	-
110/50 120/60	110/50 120/60	AA	.08	.096	-	-	.06	.054	-	.029	840	530	-	1164	4.8	6.5	-	3.0
230/50 230/60	220/50 240/60	AB	.04	.048	-	-	.03	.027	-	.015	3400	2345	-	6730	6.0	6.5	-	3.0
12 VDC	12 VDC	DA	.40	-	-	-	.40	.375	-	.267	31	32	-	45	4.8	7	-	3.5
24 VDC	24 VDC	DB	.20	-	.03	.136	.20	.187	.03	.136	121	128	275	177	4.8	-	2.1	3.5
140 VDC	-	AB	.04	-	-	-	.04	.06	-	-	3400	2000	-	-	4.8	7	-	-

For alternative lower wattage options, please consult the factory.

DIN 43650 CONNECTORS							
TYPE	**STRAIN RELIEF WITHOUT CORD**	**1/2" CONDUIT WITHOUT CORD**	**MOLDED WITH 6' CORD**	**STRAIN RELIEF WITH LIGHT**		**STRAIN RELIEF WITH LIGHT + 6' CORD**	
				100-240 AC 48-120 DC	**6-48 AC/DC**	**100-240 AC 48-120 DC**	**6-48 AC/DC**
PART NUMBER	7020-001	7039-001	7020-006	7020-AA	7020-DB	7094-006	7094-007

SERVICE KIT INFORMATION



SERVICE KIT INSTALLATION

1. Remove screws from cap of operator.
2. Remove cap.
3. Remove existing serviceable components.
4. Replace with kit components. **+All seals must be lubricated with Magnalube-G or equivalent.**
5. Align pilot hole in body with pilot hole in cap.
6. Torque screws as shown above.

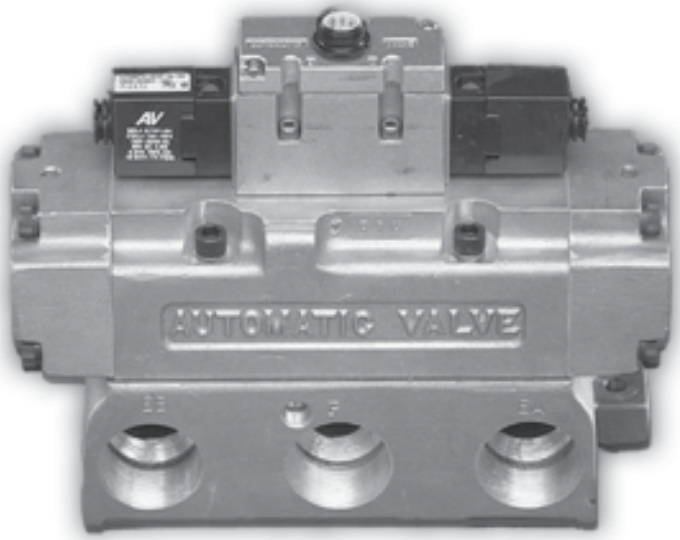
Lubrication of Automatic Valve products is not required but is recommended to maximize service life. Oils should be compatible with seal material, have an ISO 32 or lighter viscosity, and have an aniline point between 82°C (180°F) and 99°C (210°F). Refer to Maintenance section of catalog for recommended lubricants.

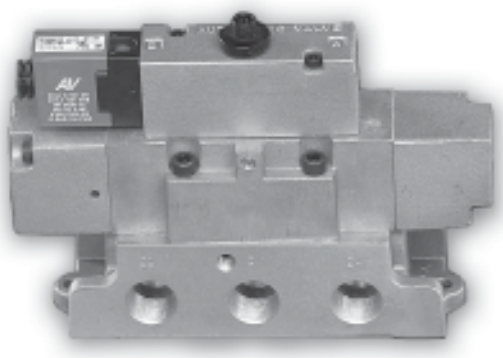
MODEL NUMBERS

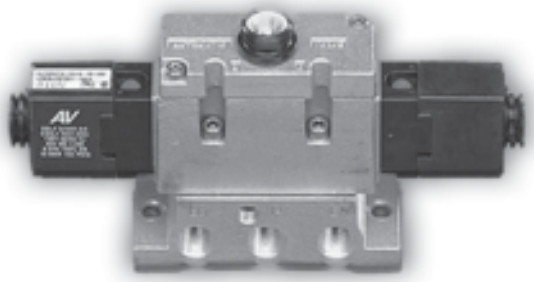
SERIES	FUNCTION			
	SINGLE		DOUBLE	
	PART NUMBER	DESCRIPTION	PART NUMBER	DESCRIPTION
I15	K-I15-SGL K-I15-SGL-A (Fluoroelastomer)	Tee Seals (6) Gasket (1) Piston Seal (1) Spring (1)	K-I15-DBL K-I15-DBL-A (Fluoroelastomer)	Tee Seals (6) Gasket (1) Piston Seal (2)
I20	K-I20-SGL K-I20-SGL-A (Fluoroelastomer)	Tee Seals (6) Gasket (1) Piston Seal (1) Spring (1)	K-I20-DBL K-I20-DBL-A (Fluoroelastomer)	Tee Seals (6) Gasket (1) Piston Seal (2)
I45	K-I45-SGL K-I45-SGL-A (Fluoroelastomer)	Tee Seals (6) Gasket (1) Piston Seal Spring (1)	K-I45-DBL K-I45-DBL-A (Fluoroelastomer)	Tee Seals (6) Gasket (1) Piston Seal (2)

ISO 9001

AUTOMATIC VALVE

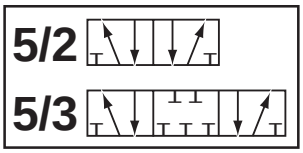




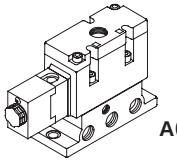


SAE SPOOL VALVES

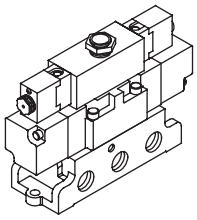
SPECIFICATIONS



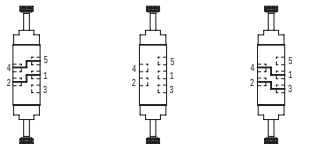
VALVE OPERATION



A04

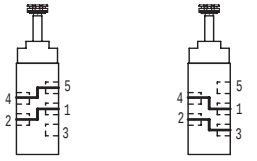


A06



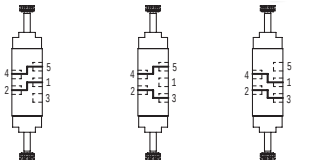
ENERGIZED DE-ENERGIZED ENERGIZED

5/3 BLOCK - 4 way 3 position blocked center valves operate like 5/2 double valves except shift when a maintained signal is applied to either 1-2 or 1-4. Valves reset to center position when signal is removed with all ports blocked.



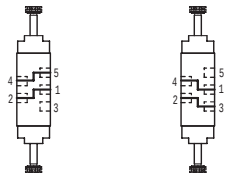
DE-ENERGIZED ENERGIZED

5/2 SINGLE - 4 way 2 position single operator valves shift, apply pressure from port 1 to 4, and exhaust pressure from port 2 to 3 when a maintained signal is applied to operator 1-4. Valves reset, apply pressure from port 1 to 2, exhaust pressure from port 4 to 5 when the signal is removed.



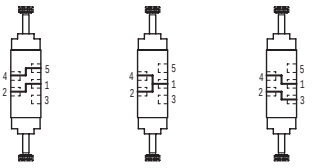
ENERGIZED DE-ENERGIZED ENERGIZED

5/3 EXHAUST - 4 way 3 position exhaust center valves operate like 5/2 double valves except shift when a maintained signal is applied to either 1-2 or 1-4. Valves reset to center position when signal is removed with port 2 open to 3, port 4 open to 5, and port 1 blocked.



DE-ENERGIZED ENERGIZED

5/2 DOUBLE - 4 way 2 position double operator valves shift, apply pressure from port 1 to 4,and exhaust pressure from 2 to 3 when a momentary signal is applied to operator 1-4. Valves shift, apply presure from port 1 to 2, and exhaust pressure from 4 to 5 when a momentary signal is applied to operator 1-2.



ENERGIZED DE-ENERGIZED ENERGIZED

5/3 PRESURE - 4 way 3 position pressure center valves operate like 5/2 double valves except shift when a maintained signal is applied to either 1-2 or 1-4. Valves reset to center position when signal is removed with port 1 open to ports 2 and 4, and ports 3 and 5 are blocked.

OPERATING TEMPERATURES	SOLENOID PILOT OPERATED	TREATED BUNA-N SEALS (TREATED NBR, Standard)	FLUOROELASTOMER SEALS (FPM (FKM), Option A)
	Standard	-18°C to +52°C (0°F to +125°F)	-18°C to +52°C (0°F to +125°F)
	High Temp Coil (Option T)	-18°C to +82°C (0°F to +180°F)	-18°C to +82°C (0°F to +180°F)

OPERATING PRESSURES	SOLENOID PILOT OPERATED	INLET PORT	EXTERNAL PILOT PORT
	Standard 2 Position	240 - 1030 kPa (35 - 150 PSIG)	Not Required
	Standard 3 Position	345 - 1030 kPa (50 - 150 PSIG)	Not Required
	External Pilot (Option B)	Vacuum - 240 kPa (Vacuum - 35 PSIG)	240 - 1030 kPa (35 - 150 PSIG)

FILTRATION AND LUBRICATION

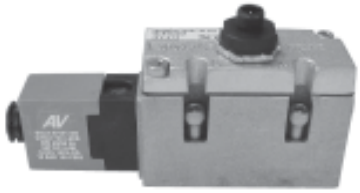
MEDIA - AIR OR INERT GAS

Lubrication of Automatic Valve products is not required but is recommended to maximize service life. Oils should be compatible with seal material, have an ISO 32 viscosity, and have an aniline range of 82°C (180°F) and 99°C (210°F). Refer to Maintenance section of catalog for recommended lubricants.

Filter to 50 microns or better.
For temperatures below 40°F, air must be dry to prevent formation of ice.

5/2
5/3

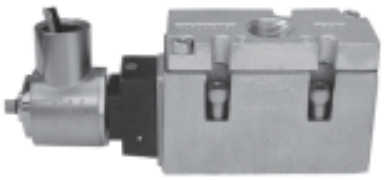
STANDARD SOLENOID MODELS - A04 (125 SERIES)



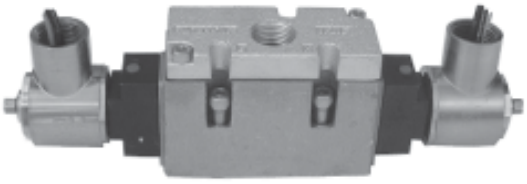
SINGLE

DOUBLE

WEATHER-PROOF



SINGLE

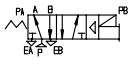
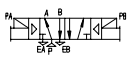
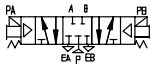


DOUBLE

EXPLOSION-PROOF

F

MODEL NUMBERS

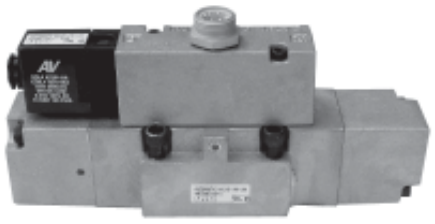
SERIES AV (SAE) Cv (l/min)	BODY TYPE	PORT LOC.	PORT SIZE	SOL. TYPE	5/2		5/3			BODY MAT.	SEAL MAT.	Kg (LB)
					 SINGLE	 DOUBLE	 BLOCK	 EXHAUST	 PRESSURE			
A04 (125) 2.4 (2360)	VALVE ONLY	BASE	-	W-P E-P	407B43S39A* 407B43Y39A*	407B43S3S3* 407B43Y3Y3*	407C43S39DS3* 407C43Y39DY3*	407D43S39DS3* 407D43Y39DY3*	407E43S39DS3* 407E43Y39DY3*	ALUM.	NBR	2,2 (4.5)
	VALVE WITH SUB-BASE	BASE	1/4	W-P E-P	409B42S39A* 409B42Y39A*	409B42S3S3* 409B42Y3Y3*	409C42S39DS3* 409C42Y39DY3*	409D42S39DS3* 409D42Y39DY3*	409E42S39DS3* 409E42Y39DY3*	ALUM.	NBR	2,4 (5.4)
			3/8	W-P E-P	409B43S39A* 409B43Y39A*	409B43S3S3* 409B43Y3Y3*	409C43S39DS3* 409C43Y39DY3*	409D43S39DS3* 409D43Y39DY3*	409E43S39DS3* 409E43Y39DY3*			
	VALVE WITH MANIFOLD (BOTTOM CYL. PORTS)	BASE	1/4	W-P E-P	413B42S39A* 413B42Y39A*	413B42S3S3* 413B42Y3Y3*	413C42S39DS3* 413C42Y39DY3*	413D42S39DS3* 413D42Y39DY3*	413E42S39DS3* 413E42Y39DY3*	ALUM.	NBR	2,5 (5.5)
			3/8	W-P E-P	413B43S39A* 413B43Y39A*	413B43S3S3* 413B43Y3Y3*	413C43S39DS3* 413C43Y39DY3*	413D43S39DS3* 413D43Y39DY3*	413E43S39DS3* 413E43Y39DY3*			
	VALVE WITH MANIFOLD (BOTTOM/ SIDE CYL. PORTS)	BASE	1/4	W-P E-P	416B42S39A* 416B42Y39A*	416B42S3S3* 416B42Y3Y3*	416C42S39DS3* 416C42Y39DY3*	416D42S39DS3* 416D42Y39DY3*	416E42S39DS3* 416E42Y39DY3*	ALUM.	NBR	2,6 (5.9)
			3/8	W-P E-P	416B43S39A* 416B43Y39A*	416B43S3S3* 416B43Y3Y3*	416C43S39DS3* 416C43Y39DY3*	416D43S39DS3* 416D43Y39DY3*	416E43S39DS3* 416E43Y39DY3*			

*Specify voltage. Refer to Electrical Section for selection.

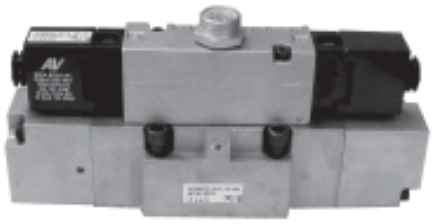
5/2

5/3

STANDARD SOLENOID MODELS - A06 (250 SERIES)

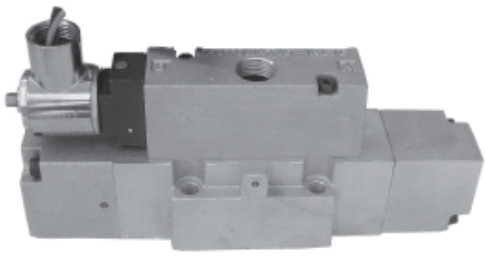


SINGLE

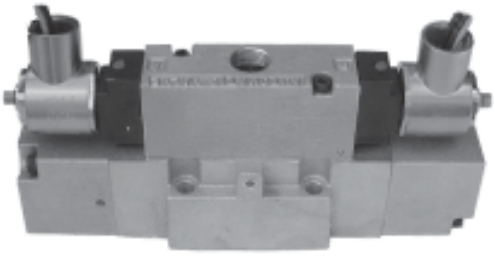


DOUBLE

WEATHER-PROOF



SINGLE



DOUBLE

EXPLOSION-PROOF

MODEL NUMBERS

SERIES AV (SAE) / Cv (l/min)	BODY TYPE	PORT LOC.	PORT SIZE	SOL. TYPE	5/2 SINGLE	5/2 DOUBLE	5/3 BLOCK	5/3 EXHAUST	5/3 PRESSURE	BODY MAT.	SEAL MAT.	Kg (LB)
A06 (250) / 8.6 (8460)	VALVE ONLY	BASE	-	W-P E-P	407B67S39A* 407B67Y39A*	407B67S3S3* 407B67Y3Y3*	407C67S39DS3* 407C67Y39DY3*	407D67S39DS3* 407D67Y39DY3*	407E67S39DS3* 407E67Y39DY3*	ALUM.	NBR	3,9 (8.3)
	VALVE WITH SUB-BASE	BASE	1/2	W-P E-P	409B65S39A* 409B65Y39A*	409B65S3S3* 409B65Y3Y3*	409C65S39DS3* 409C65Y39DY3*	409D65S39DS3* 409D65Y39DY3*	409E65S39DS3* 409E65Y39DY3*	ALUM.	NBR	5,0 (11.0)
			3/4	W-P E-P	409B67S39A* 409B67Y39A*	409B67S3S3* 409B67Y3Y3*	409C67S39DS3* 409C67Y39DY3*	409D67S39DS3* 409D67Y39DY3*	409E67S39DS3* 409E67Y39DY3*			
			1	W-P E-P	409B60S39A* 409B60Y39A*	409B60S3S3* 409B60Y3Y3*	409C60S39DS3* 409C60Y39DY3*	409D60S39DS3* 409D60Y39DY3*	409E60S39DS3* 409E60Y39DY3*			
	VALVE WITH MANIFOLD (BOTTOM CYL. PORTS)	BASE	1/2	W-P E-P	413B65S39A* 413B65Y39A*	413B65S3S3* 413B65Y3Y3*	413C65S39DS3* 413C65Y39DY3*	413D65S39DS3* 413D65Y39DY3*	413E65S39DS3* 413E65Y39DY3*	ALUM.	NBR	5,0 (11.0)
			3/4	W-P E-P	413B67S39A* 413B67Y39A*	413B67S3S3* 413B67Y3Y3*	413C67S39DS3* 413C67Y39DY3*	413D67S39DS3* 413D67Y39DY3*	413E67S39DS3* 413E67Y39DY3*			
	VALVE WITH MANIFOLD (BOTTOM/ SIDE CYL. PORTS)	BASE	1/2	W-P E-P	416B65S39A* 416B65Y39A*	416B65S3S3* 416B65Y3Y3*	416C65S39DS3* 416C65Y39DY3*	416D65S39DS3* 416D65Y39DY3*	416E65S39DS3* 416E65Y39DY3*	ALUM.	NBR	4,6 (10.1)
			3/4	W-P E-P	416B67S39A* 416B67Y39A*	416B67S3S3* 416B67Y3Y3*	416C67S39DS3* 416C67Y39DY3*	416D67S39DS3* 416D67Y39DY3*	416E67S39DS3* 416E67Y39DY3*			

*Specify voltage. Refer to Electrical Section for selection.

5/2
5/3

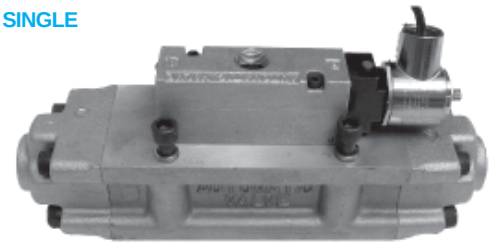
STANDARD SOLENOID MODELS - A10 (500 SERIES)

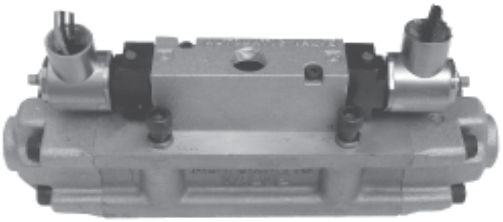
SINGLE

DOUBLE

WEATHER-PROOF

SINGLE



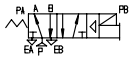
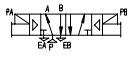
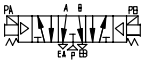


DOUBLE

EXPLOSION-PROOF

F

MODEL NUMBERS

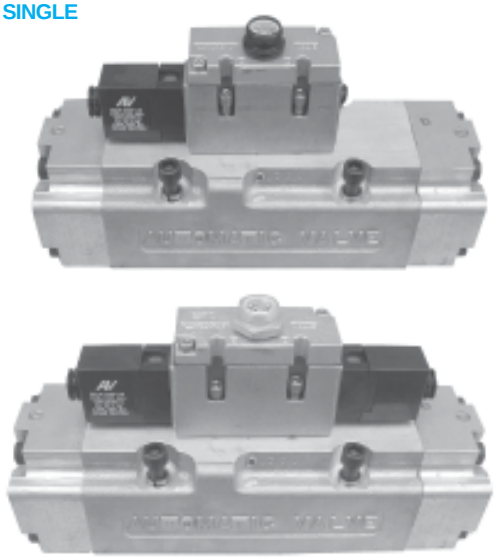
SERIES AV (SAE) Cv (l/min)	BODY TYPE	PORT LOC.	PORT SIZE	SOL. TYPE	5/2		5/3			BODY MAT.	SEAL MAT.	Kg (LB)
					 SINGLE	 DOUBLE	 BLOCK	 EXHAUST	 PRESSURE			
A10 (500) 13.7 (13480)	VALVE ONLY	BASE	-	W-P E-P	407B87S39A* 407B87Y39A*	407B87S3S3* 407B87Y3Y3*	407C87S39DS3* 407C87Y39DY3*	407D87S39DS3* 407D87Y39DY3*	407E87S39DS3* 407E87Y39DY3*	ALUM.	NBR	5,3 (11.4)
	VALVE WITH SUB-BASE	BASE	1/2	W-P E-P	409B85S39A* 409B85Y39A*	409B85S3S3* 409B85Y3Y3*	409C85S39DS3* 409C85Y39DY3*	409D85S39DS3* 409D85Y39DY3*	409E85S39DS3* 409E85Y39DY3*	ALUM.	NBR	6,9 (15.2)
			3/4	W-P E-P	409B87S39A* 409B87Y39A*	409B87S3S3* 409B87Y3Y3*	409C87S39DS3* 409C87Y39DY3*	409D87S39DS3* 409D87Y39DY3*	409E87S39DS3* 409E87Y39DY3*			
			1	W-P E-P	409B81S39A* 409B81Y39A*	409B81S3S3* 409B81Y3Y3*	409B81S39DS3* 409B81Y39DY3*	409D81S39DS3* 409D81Y39DY3*	409E81S39DS3* 409E81Y39DY3*			
	VALVE WITH MANIFOLD (BOTTOM CYL. PORTS)	BASE	1/2	W-P E-P	413B85S39A* 413B85Y39A*	413B85S3S3* 413B85Y3Y3*	413C85S39DS3* 413C85Y39DY3*	413D85S39DS3* 413D85Y39DY3*	413E85S39DS3* 413E85Y39DY3*	ALUM.	NBR	6,4 (14.1)
			3/4	W-P E-P	413B87S39A* 413B87Y39A*	413B87S3S3* 413B87Y3Y3*	413C87S39DS3* 413C87Y39DY3*	413D87S39DS3* 413D87Y39DY3*	413E87S39DS3* 413E87Y39DY3*			

*Specify voltage. Refer to Electrical Section for selection.

5/2
5/3

STANDARD SOLENOID MODELS - A20 (1000 SERIES)

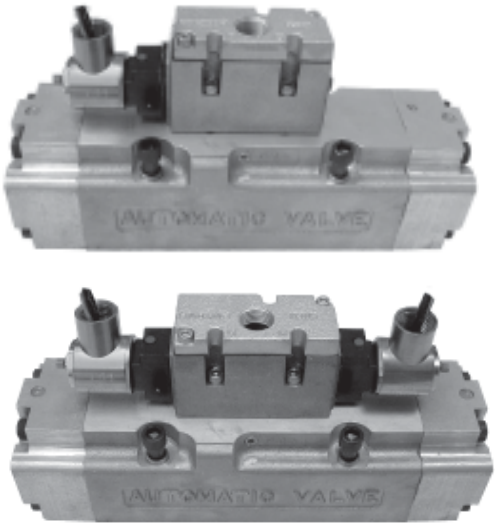
SINGLE



DOUBLE

WEATHER-PROOF

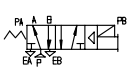
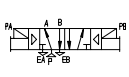
SINGLE



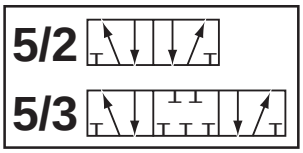
DOUBLE

EXPLOSION-PROOF

MODEL NUMBERS

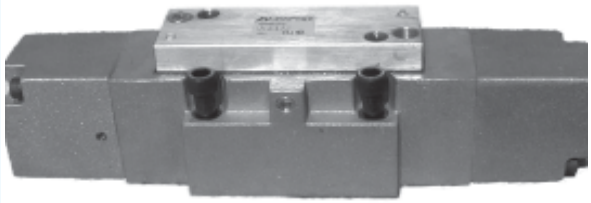
SERIES AV (SAE) Cv (l/min)	BODY TYPE	PORT LOC.	PORT SIZE	SOL. TYPE	5/2		5/3			BODY MAT.	SEAL MAT.	Kg (LB)
					 SINGLE	 DOUBLE	 BLOCK	 EXHAUST	 PRESSURE			
A20 (1000) 22.7 (22340)	VALVE ONLY	BASE	-	W-P E-P	407B12S39A* 407B12Y39A*	407B12S3S3* 407B12Y3Y3*	407C12S39DS3* 407C12Y39DY3*	407D12S39DS3* 407D12Y39DY3*	407E12S39DS3* 407E12Y39DY3*	ALUM.	NBR	8,9 (19.4)
	VALVE WITH SUB-BASE	BASE	1	W-P E-P	409B10S39A* 409B10Y39A*	409B10S3S3* 409B10Y3Y3*	409C10S39DS3* 409C10Y39DY3*	409D10S39DS3* 409D10Y39DY3*	409E10S39DS3* 409E10Y39DY3*	ALUM.	NBR	12,1 (26.7)
			1 1/4	W-P E-P	409B12S39A* 409B12Y39A*	409B12S3S3* 409B12Y3Y3*	409C12S39DS3* 409C12Y39DY3*	409D12S39DS3* 409D12Y39DY3*	409E12S39DS3* 409E12Y39DY3*			
			1 1/2	W-P E-P	409B15S39A* 409B15Y39A*	409B15S3S3* 409B15Y3Y3*	409C15S39DS3* 409C15Y39DY3*	409D15S39DS3* 409D15Y39DY3*	409E15S39DS3* 409E15Y39DY3*			

*Specify voltage. Refer to Electrical Section for selection.



AIR PILOT MODELS
A04 AND A06
(125 AND 250 SERIES)

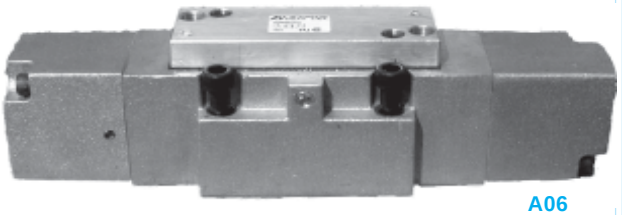
A04



A06

SINGLE

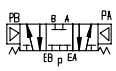
A04



A06

DOUBLE

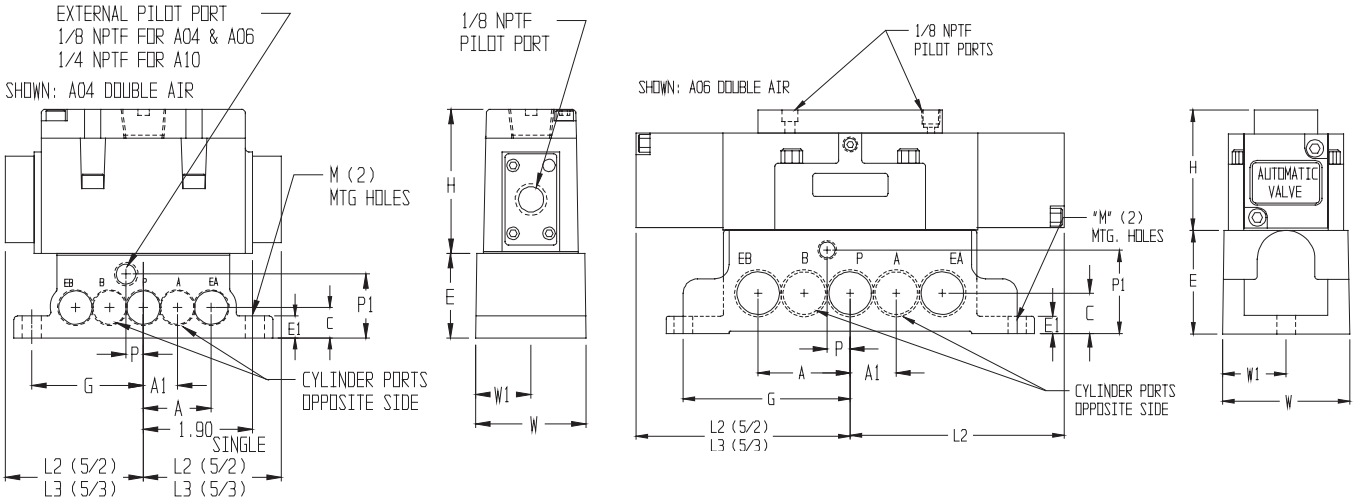
MODEL NUMBERS

SERIES AV (SAE) Cv (l/min)	BODY TYPE	PORT LOC.	PORT SIZE	5/2		5/3			BODY MAT.	SEAL MAT.	Kg (LB)
				 SINGLE	 DOUBLE	 BLOCK	 EXHAUST	 PRESSURE			
A04 (125) 2.4 (2360)	VALVE ONLY	BASE	-	407B431A9A	407B431A1A	407C431A9D1A	407D431A9D1A	407E431A9D1A	ALUM.	NBR	1,1 (2.3)
	VALVE WITH SUB-BASE		1/4	409B421A9A	409B421A1A	409C421A9D1A	409D421A9D1A	409E421A9D1A			1,4 (3.2)
			3/8	409B431A9A	409B431A1A	409C431A9D1A	409D431A9D1A	409E431A9D1A			
	VALVE WITH MANIFOLD (BOTTOM CYL. PORTS)		1/4	413B421A9A	413B421A1A	413C421A9D1A	413D421A9D1A	413E421A9D1A			1,5 (3.31)
			3/8	413B431A9A	413B431A1A	413C431A9D1A	413D431A9D1A	413E431A9D1A			
	VALVE WITH MANIFOLD (BOTTOM/ SIDE CYL. PORTS)		1/4	416B421A9A	416B421A1A	416C421A9D1A	416D421A9D1A	416E421A9D1A			1,7 (3.7)
			3/8	416B431A9A	416B431A1A	416C431A9D1A	416D431A9D1A	416E431A9D1A			
A06 (250) 8.6 (8460)	VALVE ONLY	BASE	-	407B671A9A	407B671A1A	407C671A9D1A	407D671A9D1A	407E671A9D1A	ALUM.	NBR	3,5 (7.8)
	VALVE WITH SUB-BASE		1/2	409B651A9A	409B651A1A	409C651A9D1A	409D651A9D1A	409E651A9D1A			4,7 (10.5)
			3/4	409B671A9A	409B671A1A	409C671A9D1A	409D671A9D1A	409E671A9D1A			
			1	409B601A9A	409B601A1A	409C601A9D1A	409D601A9D1A	409E601A9D1A			
	VALVE WITH MANIFOLD (BOTTOM CYL. PORTS)		1/2	413B651A9A	413B651A1A	413C651A9D1A	413D651A9D1A	413E651A9D1A			4,4 (9.6)
			3/4	413B671A9A	413B671A1A	413C671A9D1A	413D671A9D1A	413E671A9D1A			
	VALVE WITH MANIFOLD (BOTTOM/ SIDE CYL. PORTS)		1/2	416B651A9A	416B651A1A	416C651A9D1A	416D651A9D1A	416E651A9D1A			4,4 (9.6)
			3/4	416B671A9A	416B671A1A	416C671A9D1A	416D671A9D1A	416E671A9D1A			

DIMENSIONAL INFORMATION

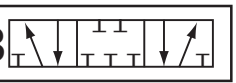
5/2

5/3

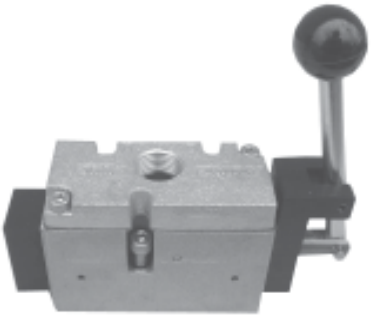


SERIES AV (SAE)	BODY TYPE	PORT SIZE	A	A1	C	E	E1	G	H	L2	L3	M	P	P1	W	W1
A04 (125)	VALVE ONLY	-	-	-	-	-	-	-	64,3 2.53	60,8 2.40	60,8 2.40	-	-	-	-	-
	VALVE WITH SUB-BASE	1/4 3/8	30,0 1.18	15,0 .59	13,5 .53	36,6 1.44	9,5 .38	49,3 1.94	-	60,8 2.40	60,8 2.40	8,7 .34	7,6 .30	28,2 1.11	48,8 1.92	24,4 .96
	VALVE WITH MANIFOLD (BOTTOM CYLINDER PORTS)	1/4 3/8	34,9 1.38	1,75 .69	17,5 .69	46,0 1.81	9,5 .38	57,2 2.25	-	60,8 2.40	60,8 2.40	7,1 .28	7,6 .30	36,5 1.44	46,3 1.82	23,1 .91
	VALVE WITH MANIFOLD (BOTTOM/SIDE CYLINDER PORTS)	1/4 3/8	34,9 1.38	19,1 .75	28,6 1.12	52,4 2.06	-	-	-	60,8 2.40	60,8 2.40	-	7,6 .30	46,0 1.81	50,8 2.00	25,4 1.00
A06 (500)	VALVE ONLY	-	-	-	-	-	-	-	66,5 2.62	117 4.61	162 6.37	-	-	-	-	-
	VALVE WITH SUB-BASE	1/2, 3/4, 1	50,8 2.00	25,4 1.00	22,2 .88	57,2 2.25	10,3 .41	92,1 3.63	-	117 4.61	162 6.37	10,2 .41	12,7 .50	46,0 1.81	70,3 2.77	35,1 1.38
	VALVE WITH MANIFOLD (BOTTOM CYLINDER PORTS)	1/2, 3/4, 1	50,8 2.00	25,4 1.00	22,2 .88	57,2 2.25	10,3 .41	92,1 3.63	-	117 4.61	162 6.37	10,2 .41	12,7 .50	46,0 1.81	65,1 2.56	32,5 1.28
	VALVE WITH MANIFOLD (BOTTOM/SIDE CYLINDER PORTS)	1/2, 3/4, 1	50,8 2.00	25,4 1.00	50,8 2.00	82,2 3.25	-	79,4 3.12	-	117 4.61	162 6.37	8,7 .34	12,7 .50	71,5 2.81	88,9 3.50	44,5 1.75
A10 (500)	VALVE ONLY	-	-	-	-	-	-	-	152 6.00	143 5.63	143 5.63	-	-	-	-	-
	VALVE WITH SUB-BASE	1/2, 3/4, 1	71,4 2.81	34,9 1.38	25,4 1.00	55,6 2.19	20,6 .81	106 4.19	-	143 5.63	143 5.63	10,3 .41	20,6 .91	42,9 1.69	82,6 3.25	41,2 1.62
	VALVE WITH MANIFOLD (BOTTOM CYLINDER PORTS)	1/2, 3/4	69,9 2.75	31,8 1.25	20,6 .81	50,8 2.00	12,7 .50	103 4.06	-	143 5.63	143 5.63	7,9 .31	15,9 .63	40,5 1.60	82,6 3.25	41,3 1.63
A20 (1000)	VALVE ONLY	-	-	-	-	-	-	-	170 6.69	146 5.75	140 5.75	-	-	-	-	-
	VALVE WITH SUB-BASE	1, 1 1/4, 1 1/2	85,7 3.38	41,3 1.63	32,5 1.28	77,8 3.06	20,6 .81	128 5.03	-	146 5.75	146 5.75	10,3 .41	20,6 .81	61,9 2.44	105 4.12	26,9 1.06

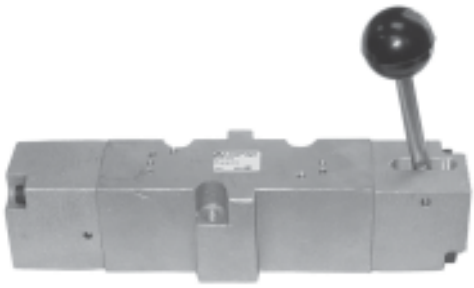
Units of Measure: Top - mm, Bottom - inches

5/3 

MANUAL MODELS



A04



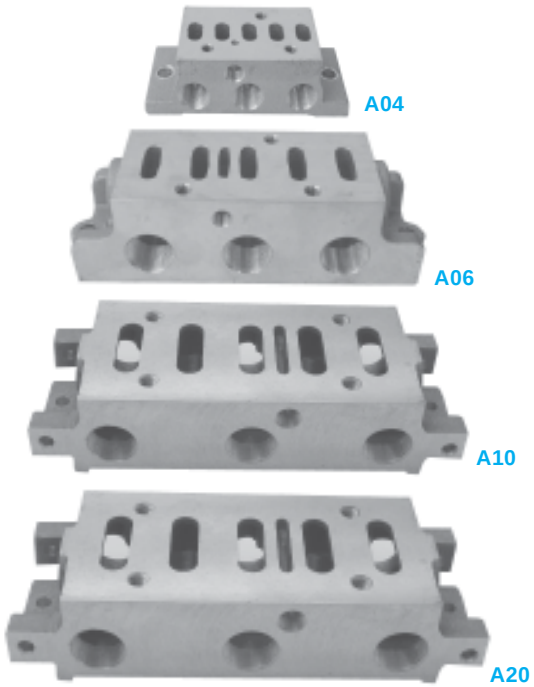
A06

MODEL NUMBERS

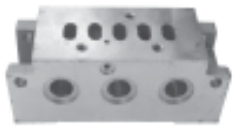
(4 WAY 3 POSITION)

SERIES AV (SAE) Cv (l/min)	BODY TYPE	PORT LOC.	PORT SIZE	5/3 DETENTED BLOCK	5/3 DETENTED EXHAUST	5/3 DETENTED PRESSURE	5/3 SPRING CENTERED BLOCK	5/3 SPRING CENTERED EXHAUST	5/3 SPRING CENTERED PRESSURE	BODY MAT.	SEAL MAT.	Kg (LB)
A04 (125) 2.4 (2360)	VALVE ONLY	BASE	-	407C433B7B	407D433B7B	407E433B7B	407C433B9B	407D433B9B	407E433B9B	ALUM.	NBR	1,1 (2.3)
	VALVE WITH SUB-BASE		1/4	409C423B7B	409D423B7B	409E423B7B	409C423B9B	409D423B9B	409E423B9B			1,4 (3.2)
			3/8	409C433B7B	409D433B7B	409E433B7B	409C433B9B	409D433B9B	409E433B9B			
	VALVE WITH MANIFOLD (BOTTOM CYLINDER PORTS)		1/4	413C423B7B	413D423B7B	413E423B7B	413C423B9B	413D423B9B	413E423B9B			1,5 (3.3)
			3/8	413C433B7B	413D433B7B	413E433B7B	413C433B9B	413D433B9B	413E433B9B			
	VALVE WITH MANIFOLD (BOTTOM/SIDE CYLINDER PORTS)		1/4	416C423B7B	416D423B7B	416E423B7B	416C423B9B	416D423B9B	416E423B9B			1,7 (3.7)
			3/8	416C433B7B	416D433B7B	416E433B7B	416C433B9B	416D433B9B	416E433B9B			
A06 (250) 8.6 (8460)	VALVE ONLY	BASE	-	407C673B7B	407D673B7B	407E673B7B	407C673B9B	407D673B9B	407E673B9B	ALUM.	NBR	3,1 (6.9)
	VALVE WITH SUB-BASE		1/2	409C653B7B	409D653B7B	409E653B7B	409C653B9B	409D653B9B	409E653B9B			4,4 (9.6)
			3/4	409C673B7B	409D673B7B	409E673B7B	409C673B9B	409D673B9B	409E673B9B			
			1	409C603B7B	409D603B7B	409E603B7B	409C603B9B	409D603B9B	409E603B9B			
	VALVE WITH MANIFOLD (BOTTOM CYLINDER PORTS)		1/2	413C653B7B	413D653B7B	413E653B7B	413C653B9B	413D653B9B	413E653B9B			3.9 (8.7)
			3/4	413C673B7B	413D673B7B	413E673B7B	413C673B9B	413D673B9B	413E673B9B			

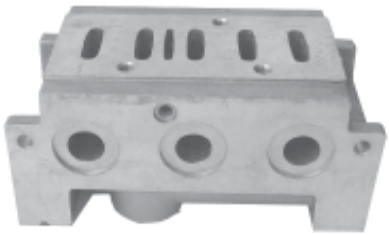
SUB-BASE AND MANIFOLDS



SUB-BASE
(409)



413
A04 (shown), A06, A10



416
A04, A06 (shown)

MANIFOLD
(413/416)

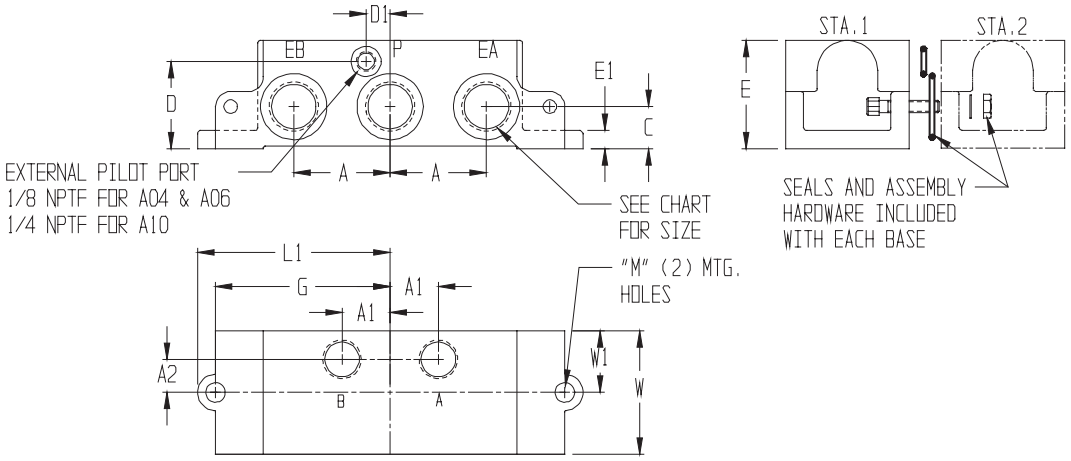
MODEL NUMBERS

SERIES AV (SAE)	AUTO SERIES	409		413					416					
		INDIVIDUAL BASE		MANIFOLD*			MANIFOLD ACCESSORIES		MANIFOLD*			MANIFOLD ACCESSORIES		
		409 MODEL NUMBERS	PORT SIZE	413 MODEL NUMBERS	PORTS P,EA,EB SIZE	PORTS A & B SIZE	BLOCKING DISK	BLANK STATION COVER#	416 MODEL NUMBERS	PORTS P,EA,EB SIZE	PORTS A & B SIZE	BLOCKING DISK	BLANK STATION COVER#	END PLATE KIT
A04 (125)	125	A6318-025	1/4	A6250-025	3/8	1/4	0957-038	A6658	A6880-110	3/8	1/4	A7002-010	A6658	B6882
		A6318-038	3/8	A6250-038	3/8	3/8			A6880-120	3/8	3/8			
A06 (250)	250	A6331-050	1/2	A6265-050	3/4	1/2	0957-075	A5903	A6886-120	3/4	1/2	A7002-020	A5903	B6891
		A6331-075	3/4	A6265-075	3/4	3/4			A6886-130	3/4	3/4			
		A6331-100	1	-	-	-			-	-	-			
A10 (500)	500	A5209-050	1/2	A5285-050	3/4	1/2	0957-075	-	-	-	-	-	-	-
		A5209-075	3/4	A5285-075	3/4	3/4								
		A5209-100	1	-	-	-								
A20 (1000)	1000	A5247-100	1	-	-	-	-	-	-	-	-	-	-	-
		A5247-125	1 1/4											
		A5247-150	1 1/2											

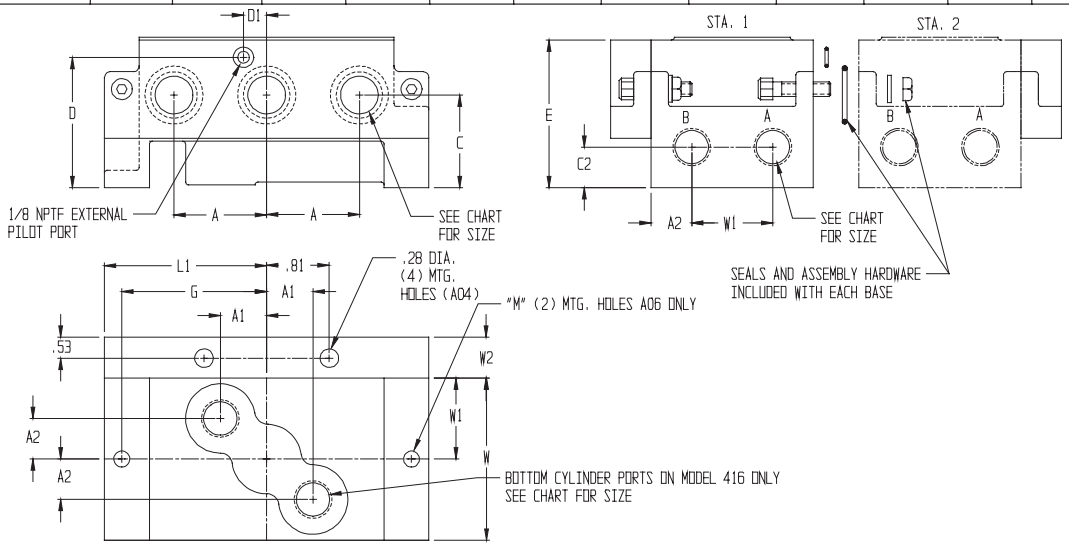
*Seals and mounting hardware included.

#Each blank station requires a cover.

DIMENSIONAL INFORMATION
413 AND 416



SERIES AV (SAE)	MODEL	A	A1	A2	C	D	D1	E	E1	G	L1	M	W	W1
A04 (125)	413	34,9 1.38	1,75 .69	00,0 0.0	17,5 .69	36,5 1.44	7,6 .30	46,0 1.81	9,5 .38	57,2 2.25	66,7 2.62	7,1 .28	46,3 1.82	23,1 .91
A06 (250)	413	50,8 2.00	25,4 1.00	00,0 0.0	22,2 .88	46,0 1.81	12,7 .50	57,2 2.25	10,3 .41	92,1 3.63	102 4.00	10,3 .41	65,1 2.56	32,5 1.28
A10 (500)	413	69,9 2.75	31,8 1.25	17,5 .69	20,6 .81	40,5 1.60	15,9 .63	50,8 2.00	12,7 .50	103 4.06	111 4.38	7,9 .31	82,6 3.25	41,3 1.63



SERIES AV (SAE)	MODEL	A	A1	A2	C	D	D1	E	G	L1	M	W	W1	W2
A04 (125)	416	34,9 1.38	19,1 .75	12,7 .50	28,6 1.12	46,0 1.81	7,6 .30	52,4 2.06	-	66,7 2.63	-	50,8 2.00	25,4 1.00	19,1 .75
A06 (250)	416	50,8 2.00	25,4 1.00	22,2 .88	50,8 2.00	71,5 2.81	12,7 .50	82,6 3.25	79,4 3.12	88,9 3.50	8,7 .34	88,9 3.50	44,5 1.75	22,2 .88

Units of Measure: Top - mm, Bottom - inches

OPTIONS

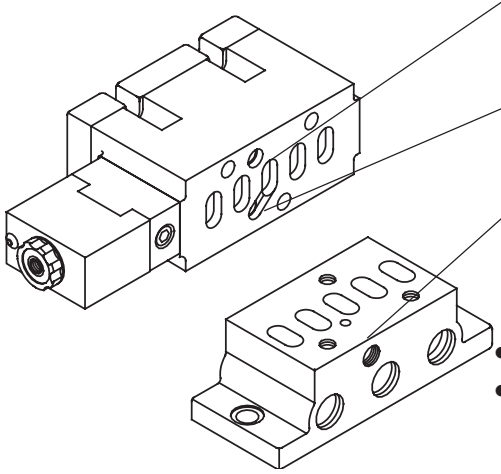
(LISTED AT THE END OF THE MODEL NUMBER IN ALPHA-NUMERIC ORDER)

A - FLUOROELASTOMER SEALS

For applications where fluid media or ambient conditions are not compatible with nitrile seals. Note: Fluorocarbon seals do not increase the effective temperature range of the valve. For high temperature applications, consult the factory. Available for A04, A06 only.

B - EXTERNAL PILOT

For solenoid applications when the pressure to port is less than 35 PSIG (2 BAR). See example below for field conversion.



1/16 NPTF External Pilot Supply Port.
Plugged for standard internal pilot supply.
Open for external pilot supply - Option B.

1/16 NPTF Internal Pilot Supply Port.
Plugged for external pilot supply - Option B.
Open for standard internal pilot supply.

External Pilot Supply
1/8 NPTF - Series A04 and A06
1/4 NPTF - Series A10 and A20

FIELD CONVERSION

- Remove the valve from the sub-base and turn upside down.
- Remove the 1/16 NPTF pipe plug from the external pilot supply port in the valve and install it in the internal supply port.
- Connect air supply to the external pilot supply port in the base.

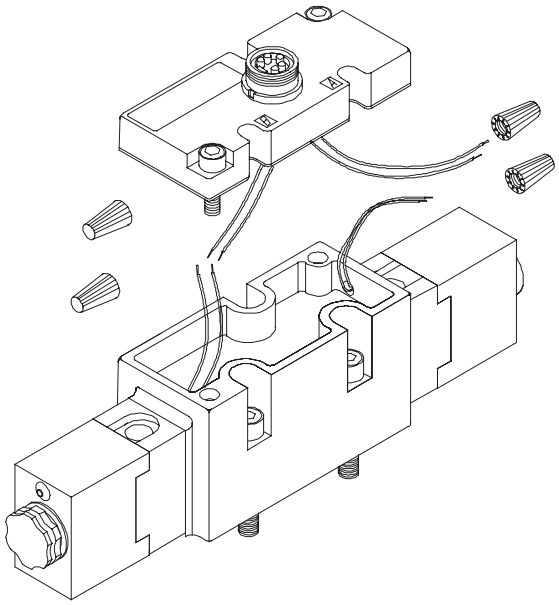
D - DUSTPROOF

For applications in extremely dusty and contaminated environments. Standard vent ports are plugged. Operators breathe through the exhaust ports via flats on the end of the spools.

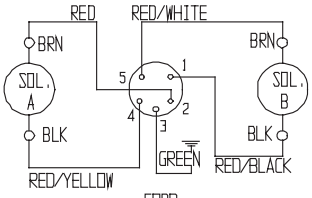
0-7 - WIRING

OPTIONS				PIN NUMBER									
4 PIN MICRO	5 PIN MICRO	5 PIN MINI	CUSTOMER SPEC.	1		2		3		4		5	
	0		GM	RED/WHITE	SOL A (BRN)	RED	SOL B (BLK)	GREEN	GRD	RED/YELLOW	SOL B (BRN)	RED/BLACK	SOL A (BLK)
	1		FORD	RED/WHITE	SOL B (BRN)	RED	SOL A (BRN)	GREEN	GRD	RED/YELLOW	SOL A (BRN)	RED/BLACK	SOL B (BLK)
	2 - AC		CHRYSLER	RED/WHITE	SOL A (BRN)	RED	SOL A (BLK)	GREEN	GRD	RED/YELLOW	SOL B (BRN)	RED/BLACK	SOL B (BLK)
	2 - DC		CHRYSLER	RED/WHITE	SOL A (BRN)	RED	SOL B (BRN)	GREEN	GRD	RED/YELLOW	SOL A (BLK))	RED/BLACK	SOL B (BLK)
		3	GM	RED/WHITE	SOL A (BRN)	RED	SOL B (BLK)	GREEN	GRD	RED/YELLOW	SOL B (BRN)	RED/BLACK	SOL A (BLK)
		4	FORD	RED/WHITE	SOL B (BRN)	RED	SOL A (BRN)	GREEN	GRD	RED/YELLOW	SOL A (BLK)	RED/BLACK	SOL B (BLK)
		5	CHRYSLER	RED/WHITE	SOL A (BRN)	RED	SOL A (BLK)	GREEN	GRD	RED/YELLOW	SOL B (BRN)	RED/BLACK	SOL B (BLK)
6			GM	BROWN	SOL A (BRN)	WHITE	-	BLUE	SOL A SOLB (BLK)	BLACK	SOL B (BRN)	NONE	
7			FORD	BROWN	-	WHITE	SOL A (BRN)	BLUE	SOL A SOL B (BLK)	BLACK	SOL B (BRN)	NONE	

SERVICE INFORMATION

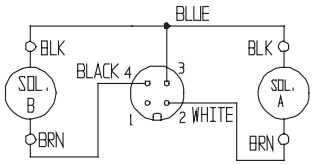


5-PIN MICRO



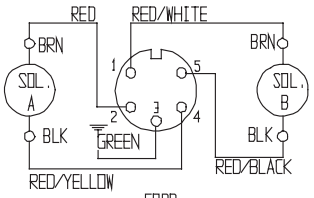
FORD
OPTION 1

4-PIN MICRO

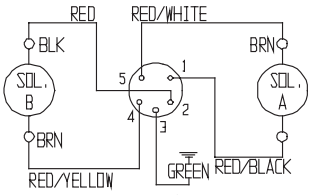


FORD
OPTION 7

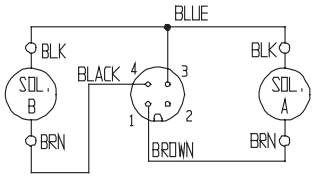
5-PIN MINI



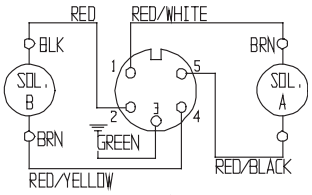
FORD
OPTION 4



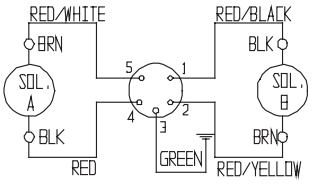
GENERAL MOTORS
OPTION 0



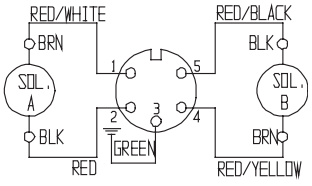
GENERAL MOTORS
OPTION 6



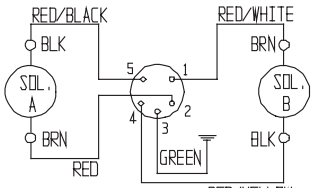
GENERAL MOTORS
OPTION 3



CHRYSLER
OPTION 2-AC

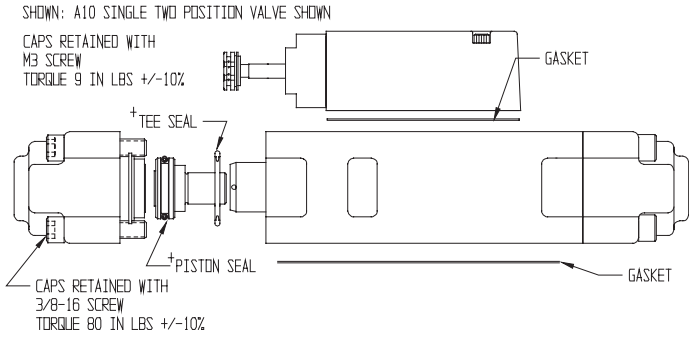


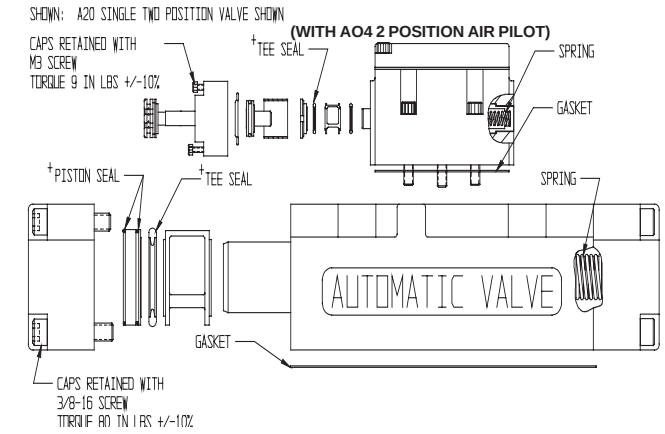
CHRYSLER
OPTION 5



CHRYSLER
OPTION 2-DC

SERVICE KIT INFORMATION





SERVICE KIT INSTALLATION

1. Remove screws from cap of operator.
2. Remove cap.
3. Remove existing serviceable components.
4. Replace with kit components. **+All seals must be lubricated with Magnalube-G or equivalent.**
5. Align pilot hole in body with pilot hole in cap.
6. Torque screws as shown above.

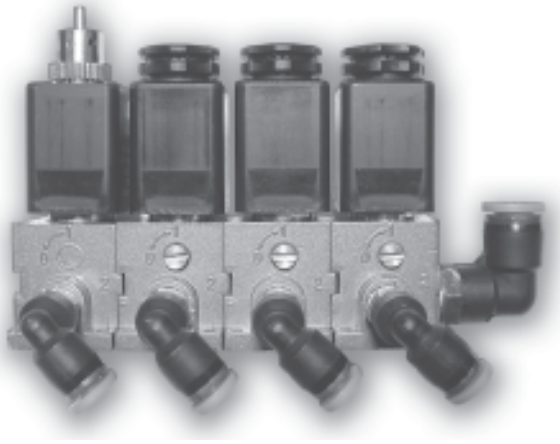
Lubrication of Automatic Valve products is not required but is recommended to maximize service life. Oils should be compatible with seal material, have an ISO 32 or lighter viscosity, and have an aniline point between 82°C (180°F) and 99°C (210°F). Refer to Maintenance section of catalog for recommended lubricants.

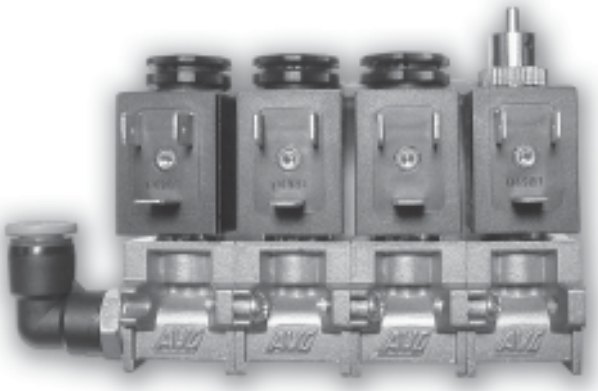
MODEL NUMBERS

SERIES	FUNCTION			
	SINGLE		DOUBLE	
	PART NUMBER	DESCRIPTION	PART NUMBER	DESCRIPTION
A04	K-A04-SGL K-A04-SGL-A (Fluoroelastomer)	Tee Seals (6) Piston Seal (1) Spring (1) Gasket (1)	K-A04-DBL K-A04-DBL-A (Fluoroelastomer)	Tee Seals (6) Piston Seal (2) Gasket (1)
A06	K-A06-SGL K-A06-SGL-A (Fluoroelastomer)	Tee Seals (6) Piston Seal (1) Spring (1) Gasket (2)	K-A06-DBL K-A06-DBL-A (Fluoroelastomer)	Tee Seals (6) Piston Seal (2) Gasket (2)
A10	K-A10-SGL	Tee Seals (6) Piston Seal (1) Gasket (2)	K-A10-DBL	Tee Seals (6) Gasket (2)
A20	K-A20-SGL	Tee Seals (12) Piston Seal (3) Spring (2) Gasket (2)	K-A20-DBL	Tee Seals (12) Piston Seal (6) Gasket (2)

ISO 9001

AUTOMATIC VALVE



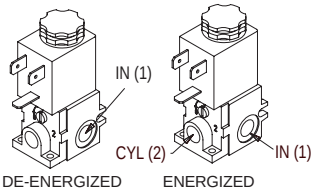


DIRECT INLINE POPPET VALVES

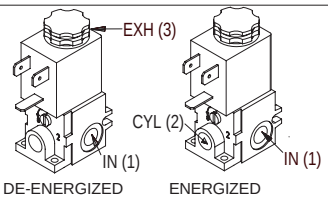
SPECIFICATIONS

2/2
3/2

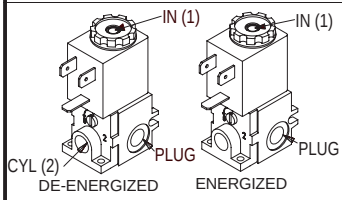
VALVE OPERATION



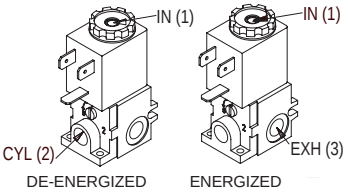
2/2 NC - 2 way 2 position normally closed valves shift and apply pressure when a maintained signal is applied to the operator then reset and block pressure when the signal is removed.



3/2 NC - 3 way 2 position normally closed valves shift and apply pressure when a maintained signal is applied to the operator then reset and exhaust pressure when the signal is removed.



2/2 NO - 2 way 2 position normally open valves shift and block pressure when a maintained signal is applied to the operator then reset and apply pressure when the signal is removed.



3/2 NO - 3 way 2 position normally open valves shift and exhaust pressure when a maintained signal is applied to the operator then reset and apply pressure when the signal is removed.

OPERATING TEMPERATURES	Solenoid Pilot Operated	BUNA-N SEALS (NBR, Standard 260A/360A)	FLUOROELASTOMER SEALS (FPM (FKM), Standard K02-Option A 260A/360A)
	Standard	-18°C to +52°C (0°F to +125°F)	-18°C to +66°C (0°F to +150°F)

OPERATING PRESSURES	Solenoid Pilot Operated	INLET PORT			EXTERNAL PILOT PORT
	Standard	K02	AC	100 - 1030 kPa (Vacuum - 150 PSIG)	Not Required
			DC	100 - 1030 kPa (Vacuum -150 PSIG)	
	Standard	K03	AC	100 - 517 kPa (Vacuum - 75 PSIG)	
			DC	100 - 690 kPa (Vacuum - 100 PSIG)	

FILTRATION AND LUBRICATION

MEDIA AIR OR INERT GAS

Lubrication of Automatic Valves is not required but recommended to maximize service life. Oils should be compatible with seal material, have an ISO 32 or lighter viscosity, and have an aniline range of 82°C (180°F) to 99°C (210°F). Refer to Maintenances section of catalog for recommended lubricants.

Filter to 50 microns or better.
For temperatures below 40°F, air must be dry to prevent formation of ice.

MODEL NUMBER CHART

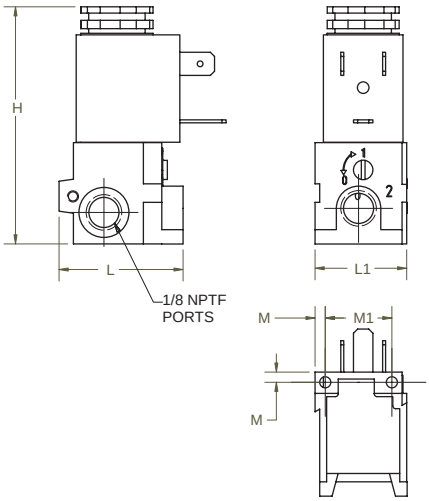
SOLENOID MODELS

SERIES	BASE TYPE		PORT SIZE		BODY TYPE		DESIGN		OPERATOR 1		OPERATOR 2		VOLTAGE		OPTIONS	
K02	2	INLINE or MANIFOLD	2	1/8	G	3 WAY NC	A	SINGLE	X	STANDARD SOLENOID	R	SPRING RETURN	AA	110/50, 120/60	C	CONDUIT COIL
					H	3 WAY NO							AB	220/50, 240/60, 125VDC	CT	CONDUIT COIL HIGH TEMPERATURE
	2	SUB-BASE	3	1/4	J	2 WAY NC							DA	22/50, 24/60, 12VDC	G	18" FLYING LEADS
					K	2 WAY NO							DB	24VDC	Y	EXPLOSION-PROOF COIL
															Z	EXPLOSION-PROOF COIL
K03	0	INLINE	2	1/8					B	WEATHER-PROOF SOLENOID					A	FLUOROELASTOMER SEALS
			3	1/4					D	EXPLOSION-PROOF SOLENOID					F	POTTED SOLENOID
															G	GROMMET SOLENOID 24" LEAD WIRE
															T	HIGH TEMP COIL

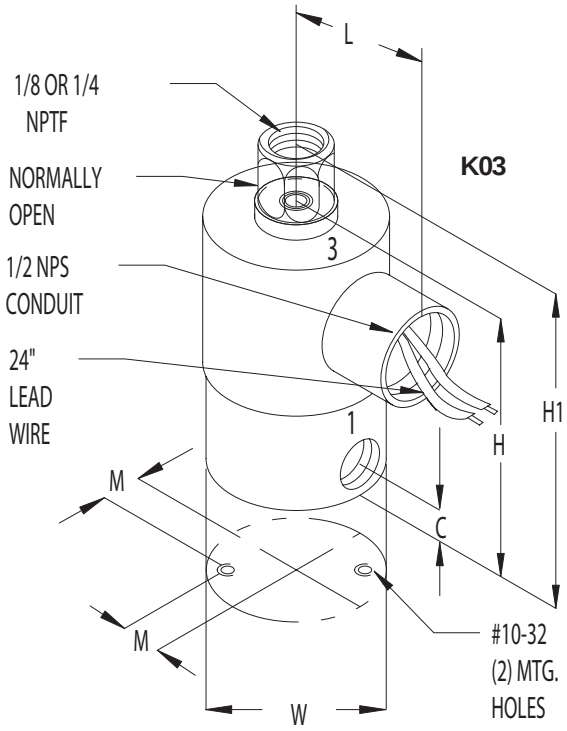
DIMENSIONAL INFORMATION

2/2
3/2

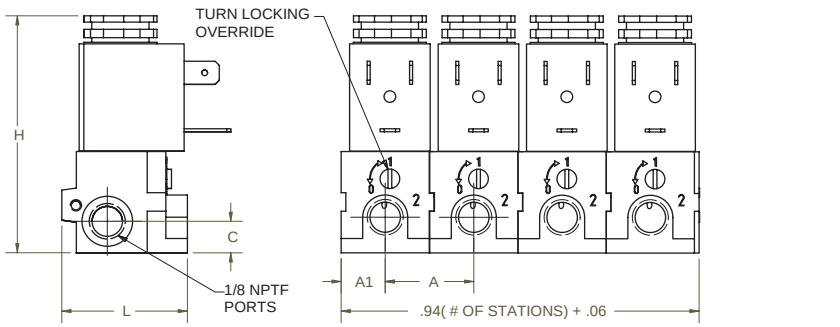
INDIVIDUAL **K02** (NORMALLY CLOSED SHOWN)

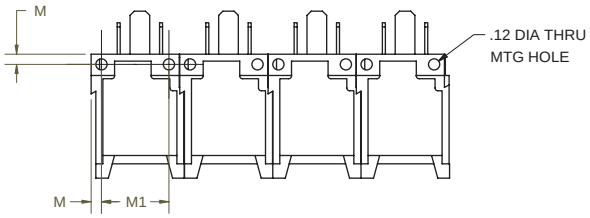


K03



MANIFOLD **K02** (NORMALLY CLOSED SHOWN)





EACH STATION MOUNTS TO ADJACENT STATION USING A SINGLE MOUNTING SCREW AND O-RING (PROVIDED WITH INDIVIDUAL UNIT)

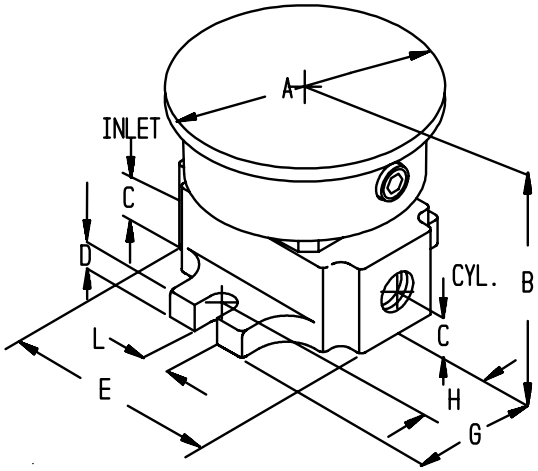
SERIES	A	A1	C	H	H1	L	L1	M	M1	W
K02	24.1 .95	11.9 .47	8.9 .35	65.0 2.56	- -	34 1.34	25.1 .99	2.8 .11	18.0 .71	-
K03	- -	- -	8,6 .34	62.7 2.47	87,3 3.44	39.7 1.56	-	11.2 .44	-	41.3 1.63

Units of Measure: Top - mm, Bottom - inches

DIMENSIONAL INFORMATION

2/2
3/2

MANUAL

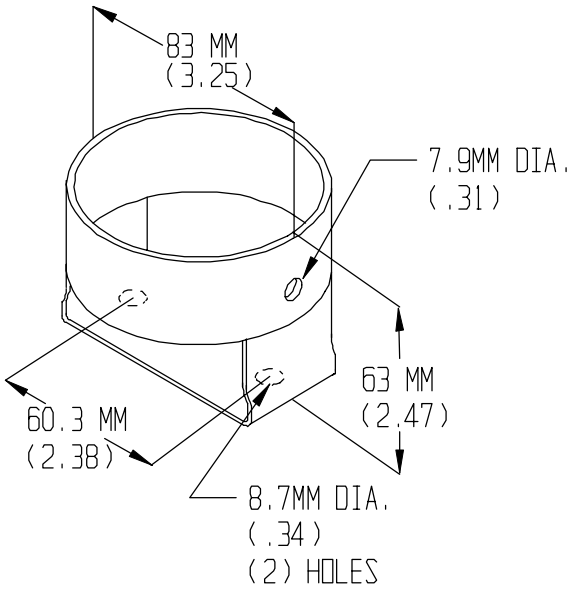


SERIES	A	B	C	D	E	G	H	L
260A	69,9 2.75	65,1 2.56	12,7 .50	7,9 .31	65,1 2.56	34,9 1.38	29,4 1.16	7,9 .31
360A	69,9 2.75	65,1 2.56	12,7 .50	7,9 .31	65,1 2.56	34,9 1.38	29,4 1.16	7,9 .31

AIR PRESSURE	HAND FORCE
20 LB	4 LB
40 LB	6 LB
60 LB	8 LB
80 LB	9 LB
100 LB	10 LB

Units of Measure: Top - mm, Bottom - inches

GUARD



ELECTRICAL INFORMATION

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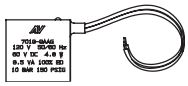
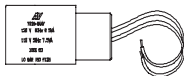
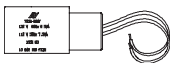
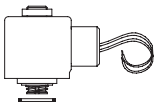
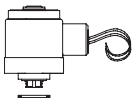
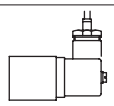
3/2

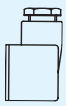
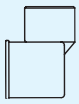
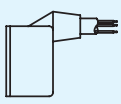
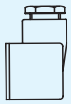
DESCRIPTION		WHEN THE 8TH CHARACTER OF MODEL NUMBER IS:	INSTRUCTIONS	COIL PART NUMBER ** = VOLTAGE
NEMA 4 WITH DIN 43650 CONNECTION		X	Order coil separately (specify voltage code from below)	7019-9**
NEMA 4X WITH 18" LEADS		X	Order coil separately (specify voltage code from below)	7019-9**G
NEMA 4X 1/2" CONDUIT WITH 30" LEADS		X	Order coil separately (specify voltage code from below)	7019-9**C
EXPLOSION-PROOF 1/2" CONDUIT WITH 24" LEADS [CSA 202633X FM APPROVED CL. I; ZONE1Ex m II T4; AEx m II CL. I; Div. 1; GR. A, B, C, D CL. II; GR. E, F, G CL. III T4 Ta= -20°C to +60°C NEMA: 4, 4X, 7C, 7D]		X	Order coil separately (specify voltage code from below)	7019-9**Y
NEMA 4X 1/2" CONDUIT WITH 24" LEADS		B	Solenoid included (specify voltage code from below)	A5983-**F
EXPLOSION-PROOF 1/2" CONDUIT WITH 24" LEADS [NEMA 4, 4x, 7c, 70, 9E, 9F, 9G UL CLASS I GROUP C&D: CLASS II, GROUPS E,F&G]		D	Solenoid included (specify voltage code from below)	A6454-**F
EXPLOSION-PROOF WITH 3m CABLE AND STRAIN RELIEF (Ex II 2G EExm II T - I EC Exm II T-)		Z	Order coil separately (specify voltage code from below) Cannot be used on a manifold	7152-9**

K02

VOLTAGE +/- 10 %		** CODE	CURRENT (AMPS)						RESISTANCE (OHMS @ 25° C)			POWER (AC = VA DC = WATTS)		
			INRUSH			HOLDING								
			NEMA											
4	7		4	7	Z	4	7	Z	4	7	Z	4	7	Z
24/50 24/60	-	DA	.40	.55	-	.40	.32	-	31	19	-	4.8	4.5	-
110/50 120/60	110/50 120/60	AA	.08	.096	-	.06	.54	.029	840	530	1164	4.8	6.5	3.0
230/50 230/60	220/50 240/60	AB	.04	.048	-	.03	.027	.015	3400	2345	6730	6.0	6.5	3.0
12 VDC	12 VDC	DA	.40	-	-	.40	.375	.267	31	32	45	4.8	7	3.5
24 VDC	24 VDC	DB	.20	-	.136	.20	.187	.136	121	128	177	4.8	-	3.5
140 VDC	-	AB	.04	-	-	.04	.06	-	3400	2000	-	4.8	7	-

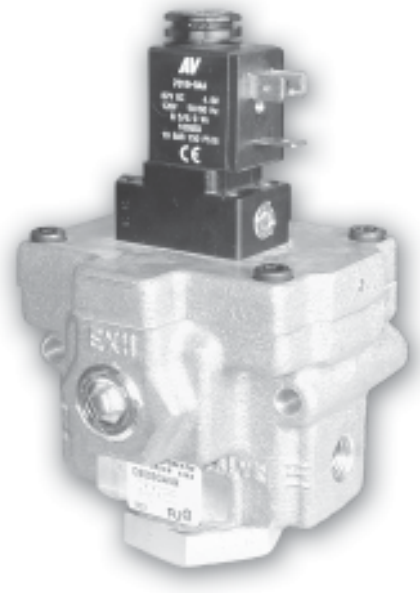
K03

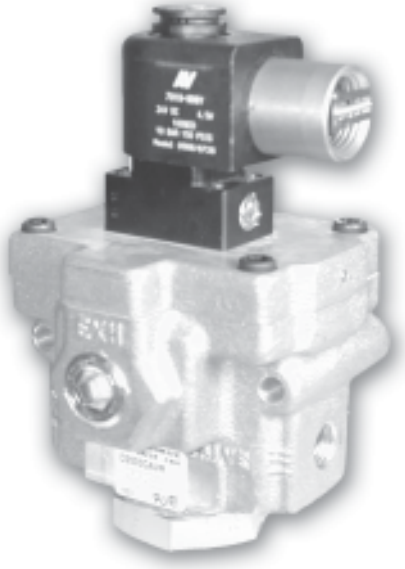
VOLTAGE +/- 10 %	** CODE	CURRENT (AMPS)				RESISTANCE (OHMS @ 25° C)		POWER (AC = VA DC = WATTS)	
		INRUSH		HOLDING					
		B	D	B	D	B	D	B	D
22/50 24/60	DA	-	-	-	-	-	-	-	-
110/50 120/60	AA	.259	.26	.163	.16	156	156	8.7	7.3
220/50 240/60	AB	.130	.13	.082	.08	636	636	8.7	7.3
12 VDC	DA	.795	-	.795	.80	15.1	15.1	9.5	9.5
24 VDC	DB	.387	-	.387	.39	62	62	9.5	9.5
120 VDC	AB	-	-	.11	.08	636	636	-	-

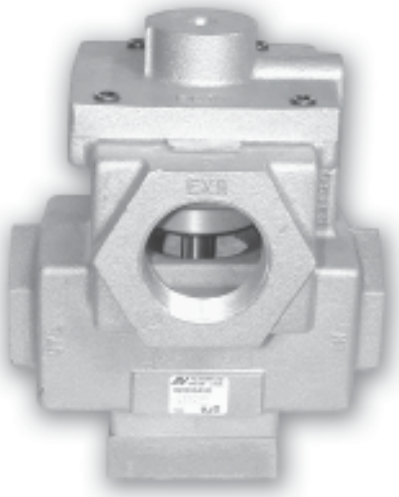
DIN 43650 CONNECTORS						
TYPE	STRAIN RELIEF WITHOUT CORD	1/2" CONDUIT WITHOUT CORD	MOLDED WITH 6' CORD	STRAIN RELIEF WITH LIGHT		STRAIN RELIEF WITH LIGHT + 6' CORD	
				100-240 AC 48-120 DC	6-48 AC/DC	100-240 AC 48-120 DC	6-48 AC/DC
PART NUMBER	7020-001	7039-001	7020-006	7020-AA	7020-DB	7094-006	7094-007

ISO 9001

AUTOMATIC VALVE







PILOT INLINE POPPET VALVES

DESIGN FEATURES

VALVES

- Reliable - used world-wide in power plant applications.
- High flow design with short stroke for fast response.
- Front or rear mounting.
- Flow from 6 to 36 Cv.

TAPERED CUSH-N-SEAL

- Molded from superior, tough, Carboxylated Nitrile. Provides five times the abrasion resistance and service life of standard Buna-N (NBR) seals.
- Cushion design increases life.
- Self-cleansing, cushioned poppet allows quieter operation.

SOLENOID ... Guaranteed Against Burnout

- Three-way pilot uses full air line pressure to shift the valve.
- Pilot is internally supplied when the pressure at port one is 35 to 150 PSIG (241 to 1034 kPa).
- Coil is hermetically sealed as an integral watertight molded unit.
- Push non-locking override. (Extended turn and turn lock available)

PRODUCTS CERTIFIED TO INCLUDE

- CSA - (C22.2)
- UL - (STD 429)
- ATEX - (2018x)
- PTB - (EExmIIT5) (EExiaIICT6)
- CE - (73/23/EEC), (89/336/EEC)

INDEX

SPECIFICATIONS

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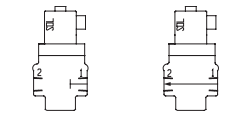
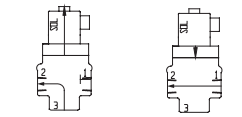
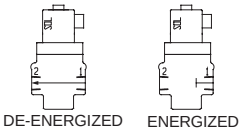
VALVE OPERATION



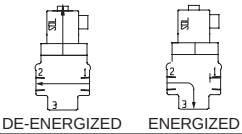
2/2 NC - 2 way 2 position normally closed valves shift and apply pressure when a maintained signal is applied to the operator then reset and block pressure when the signal is removed.



3/2 NC - 3 way 2 position normally closed valves shift and apply pressure when a maintained signal is applied to the operator then reset and exhaust pressure when the signal is removed.



2/2 NO - 2 way 2 position normally open valves shift and block pressure when a maintained signal is applied to the operator then reset and apply pressure when the signal is removed.



3/2 NO - 3 way 2 position normally open valves shift and exhaust pressure when a maintained signal is applied to the operator then reset and apply pressure when the signal is removed.

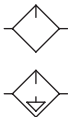
OPERATING TEMPERATURES

	BUNA-N SEALS (NBR, Standard)	FLUOROELASTOMER SEALS (FPM (FKM), Option A)
Solenoid Pilot Operated Standard	-18°C to +52°C (0°F to +125°F)	-18°C to +66°C (0°F to +150°F)
Solenoid Pilot Operated High Temp Coil (Option)T	-18°C to +82°C (0°F to +180°F)	-18°C to +82°C (0°F to +180°F)
Air Pilot Operated Standard	-18°C to +82°C (0°F to +180°F)	-18°C to +121°C (0°F to +250°F)

OPERATING PRESSURES

SOLENOID PILOT OPERATED	INLET PORT	EXTERNAL PILOT PORT
Standard	240 - 1030 kPa (35 - 150 PSIG)	Not Required
External Pilot (Option B)	0 - 1030 kPa (0 - 150 PSIG)	240 - 1030 kPa (35 - 150 PSIG) and ≥ inlet
Vacuum Spring (Option J)	Vacuum	240 - 1030 kPa (35 - 150 PSIG) and ≥ inlet
Air Pilot Operated		
Standard	0 - 1720 kPa (0 - 250 PSIG)	Min 240 kPa (35 PSIG) and ≥ inlet
Vacuum Spring (Option J)	Vacuum	240 - 1030 kPa (35 - 150 PSIG)

FILTRATION AND LUBRICATION



Media - Air or Inert Gas

Lubrication of Automatic Valves is not required but recommended to maximize service life. Oils should be compatible with seal material, have an ISO 32 or lighter viscosity, and have an aniline range of 82°C (180°F) to 99°C (210°F). Refer to Maintenances section of catalog for recommended lubricants.

Filter to 50 microns or better.
For temperatures below 40°F, air must be dry to prevent formation of ice.

MODEL NUMBER CHART

SERIES	BODY TYPE		PORT SIZE		FUNCTION		BODY DESIGN		OPERATOR 1		OPERATOR 2		VOLTAGE		OPTIONS	
P06	0	INLINE	3	1/4	G	3 WAY NC	A	SINGLE ACTUATOR	A	AIR PILOT	R	2-POSITION SPRING	AA	110/50,120/60	A	FLUOROELASTOMER SEALS
			4	3/8	H	3 WAY NO			W	WEATHER-PROOF SOLENOID			AB	220/50,240/60, 125VDC	B	EXTERNAL PILOT CONNECTION
			5	1/2	J	2 WAY NC							DA	22/50,24/60, 12VDC	C	CONDUIT COIL
					K	2 WAY NO							DB	24VDC	CT	CONDUIT COIL HIGH TEMP
															G	COIL WITH 18" LEADS
P14			5	1/2											J	VACUUM SPRING
			6	3/4											T	HIGH TEMP COIL (FOR P36)
			7	1											Y	EXPLOSION-PROOF COIL (CSA,FM)
P36			7	1					A	AIR PILOT					Z	EXPLOSION-PROOF COIL (ATEX,PTB)
			8	1 1/4					B	WEATHER-PROOF SOLENOID					1	PUSH TURN LOCKING OVERRIDE
			9	1 1/2					D	EXPLOSION-PROOF SOLENOID					2	EXTENDED TURN LOCKING OVERRIDE

H

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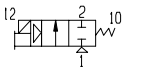
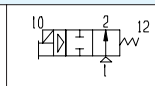
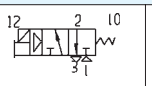
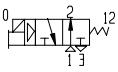
P06 / P14 STANDARD SOLENOID MODELS

MODEL NUMBERS

SERIES	PORT SIZE		Cv (l/min)	2/2		3/2		BODY MATERIAL	SEAL MATERIAL	Kg (LB)
										
	1,2	3		NORMALLY CLOSED	NORMALLY OPEN	NORMALLY CLOSED	NORMALLY OPEN			
P06	1/4	1/2	3.2 (3150)	P0603JAWR*	P0603KAWR*	P0603GAWR*	P0603HAWR*	ALUMINUM	NBR	1,8 (4.0)
	3/8	1/2	3.9 (3840)	P0604JAWR*	P0604KAWR*	P0604GAWR*	P0604HAWR*			
	1/2	1/2	5.5 (5410)	P0605JAWR*	P0605KAWR*	P0605GAWR*	P0605HAWR*			
P14	1/2	1	8.3 (8170)	P1405JAWR*	P1405KAWR*	P1405GAWR*	P1405HAWR*	ALUMINUM	NBR	2,3 (5.1)
	3/4	1	11.3 (11120)	P1406JAWR*	P1406KAWR*	P1406GAWR*	P1406HAWR*			
	1	1	13.8 (13580)	P1407JAWR*	P1407KAWR*	P1407GAWR*	P1407HAWR*			

*Coils sold separately. Refer to Electrical Section for selection.

DIMENSIONAL INFORMATION

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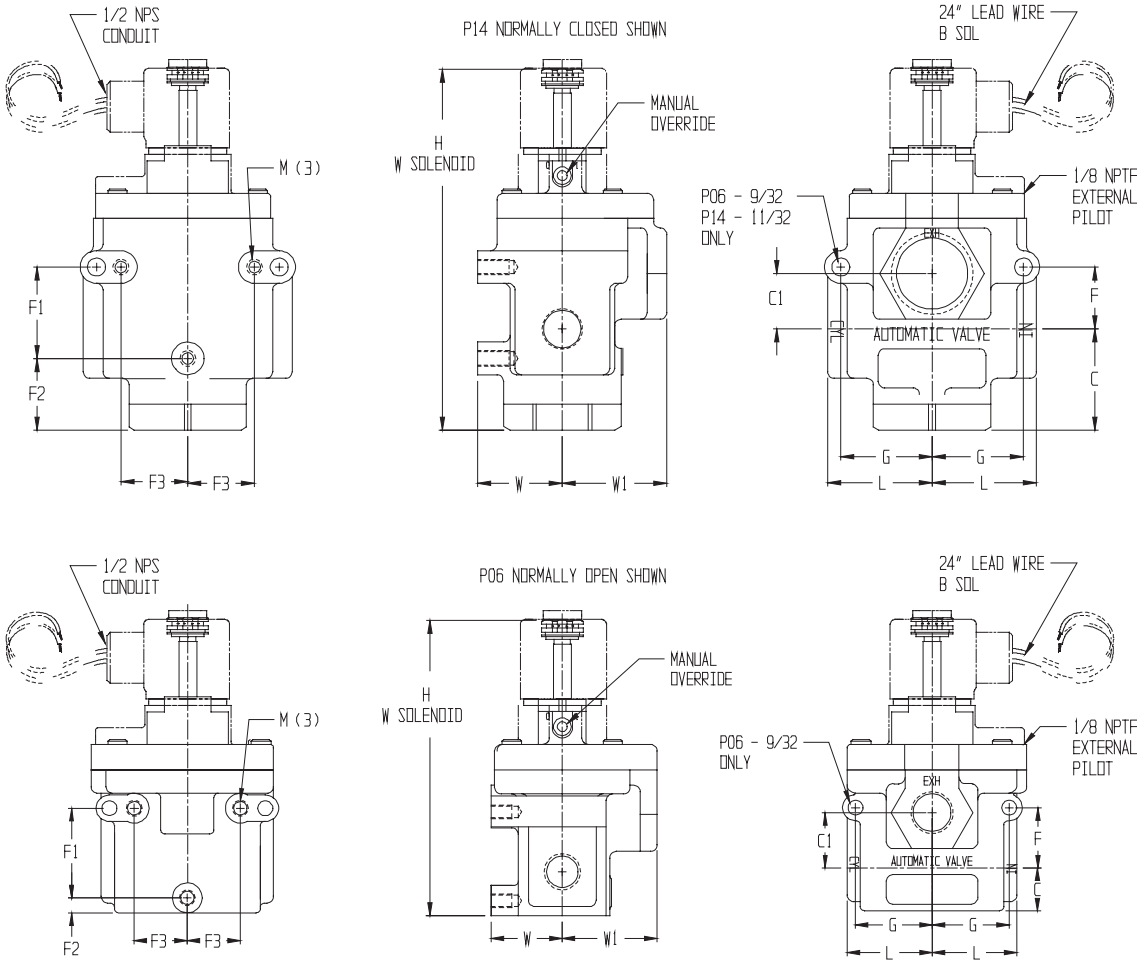

SERIES		C	C1	F	F1	F2	F3	G	H	L	M	W	W1
P06	NC	32,5 1.28	20,6 .81	20,6 .81	42,9 1.68	30,9 1.22	25,4 1.00	37,3 1.47	145 5.72	41,3 1.62	1/4-20	33,3 1.31	44,5 1.75
	NO	20,6 .81	27,0 1.06	29,5 1.16	42,9 1.68	7,16 .28	25,4 1.00	37,3 1.47	140 5.51	41,3 1.62	1/4-20	33,3 1.31	44,5 1.75
P14	NC	49,3 1.94	27,0 1.06	30,2 1.19	44,5 1.75	34,9 1.37	33,3 1.31	44,5 1.75	175 6.88	50,8 2.00	5/16-18	41,3 1.62	50,8 2.00
	NO	22,1 .87	27,0 1.06	-	44,5 1.75	7,9 .31	33,3 1.31	-	159 6.26	50,8 2.00	5/16-18	41,3 1.62	50,8 2.00

Units of Measure: Top - mm, Bottom - inches, M = Tap Size

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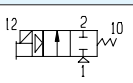
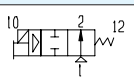
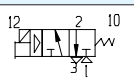
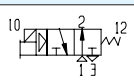
3/2

P36
STANDARD
SOLENOID MODELS

P36
WEATHERPROOF

P36
EXPLOSION-PROOF

MODEL NUMBERS

SERIES	PORT SIZE		Cv (l/min)	2/2		3/2		BODY MATERIAL	SEAL MATERIAL	Kg (LB)
										
	1,2	3		NORMALLY CLOSED	NORMALLY OPEN	NORMALLY CLOSED	NORMALLY OPEN			
WEATHER-PROOF										
P36	1	1 1/2	29.5 (29030)	P3607JABR-**	P3607KABR-**	P3607GABR-**	P3607HABR-**	ALUMINUM	NBR	4,2 (9.1)
	1 1/4	1 1/2	31.8 (31290)	P3608JABR-**	P3608KABR-**	P3608GABR-**	P3608HABR-**			
	1 1/2	1 1/2	33.8 (33260)	P3609JABR-**	P3609KABR-**	P3609GABR-**	P3609HABR-**			
EXPLOSION-PROOF										
P36	1	1 1/2	29.5 (29030)	P3607JADR-**	P3607KADR-**	P3607GADR-**	P3607HADR-**	ALUMINUM	NBR	4,2 (9.1)
	1 1/4	1 1/2	31.8 (31290)	P3608JADR-**	P3608KADR-**	P3608GADR-**	P3608HADR-**			
	1 1/2	1 1/2	33.8 (33260)	P3609JADR-**	P3609KADR-**	P3609GADR-**	P3609HADR-**			

**Coils included with valve. Refer to Electrical Section for voltage codes.

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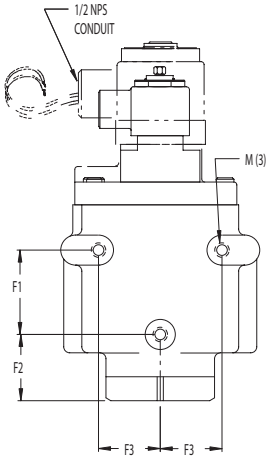
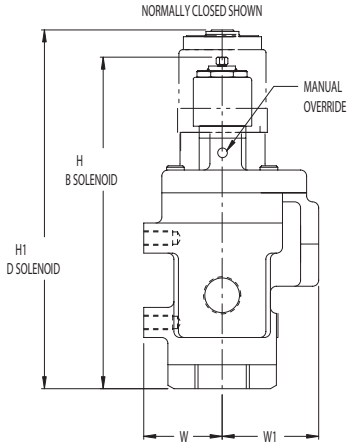
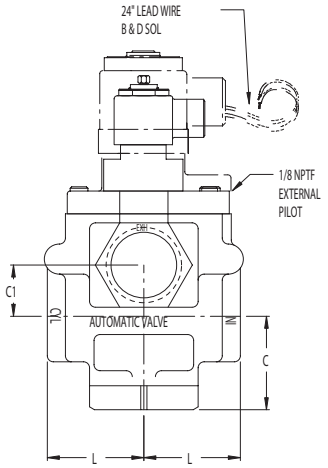
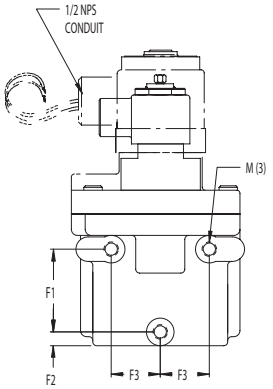
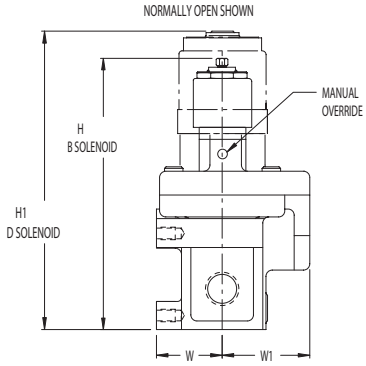
P36
DIMENSIONAL INFORMATION

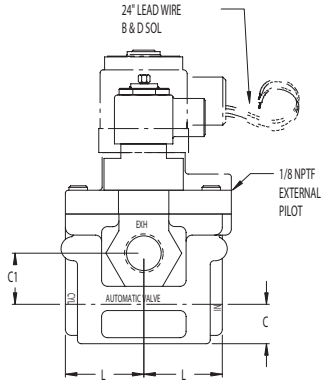












SERIES		C	C1	F1	F2	F3	H	H1	L	M	W	W1
P36	NC	67,5 2.66	50,8 2.00	100 3.94	43,7 1.72	41,3 1.62	229 9.0	239 9.39	76,2 3.00	3/8-16	60,5 2.38	79,2 3.12
	NO	35,1 1.38	50,8 2.00	100 3.94	11,1 .44	41,3 1.62	210 8.25	220 8.64	76,2 3.00	3/8-16	60,5 2.38	79,2 3.12

Units of Measure: Top - mm, Bottom - inches, M = Tap Size

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3/2

AIR PILOT MODELS

SERIES P06 AND P14

SERIES P36

MODEL NUMBER CHART

SERIES	PORT SIZE		Cv (l/min)	2/2		3/2		BODY MATERIAL	SEAL MATERIAL	Kg (LB)
	1,2	3		NORMALLY CLOSED	NORMALLY OPEN	NORMALLY CLOSED	NORMALLY OPEN			
P06	1/4	1/2	3.2 (3150)	P0603JAAR	P0603KAAR	P0603GAAR	P0603HAAR	ALUMINUM	NBR	,9 (2.0)
	3/8	1/2	3.9 (3840)	P0604JAAR	P0604KAAR	P0604GAAR	P0604HAAR			
	1/2	1/2	5.5 (5410)	P0605JAAR	P0605KAAR	P0605GAAR	P0605HAAR			
P14	1/2	1	8.3 (8170)	P1405JAAR	P1405KAAR	P1405GAAR	P1405HAAR	ALUMINUM	NBR	1,4 (3.0)
	3/4	1	11.3 (11120)	P1406JAAR	P1406KAAR	P1406GAAR	P1406HAAR			
	1	1	13.8 (13580)	P1407JAAR	P1407KAAR	P1407GAAR	P1407HAAR			
P36	1	1 1/2	29.5 (29030)	P3607JAAR	P3607KAAR	P3607GAAR	P3607HAAR	ALUMINUM	NBR	3,2 (7.0)
	1 1/4	1 1/2	31.8 (31290)	P3608JAAR	P3608KAAR	P3608GAAR	P3608HAAR			
	1 1/2	1 1/2	33.8 (33260)	P3609JAAR	P3609KAAR	P3609GAAR	P3609HAAR			

DIMENSIONAL INFORMATION

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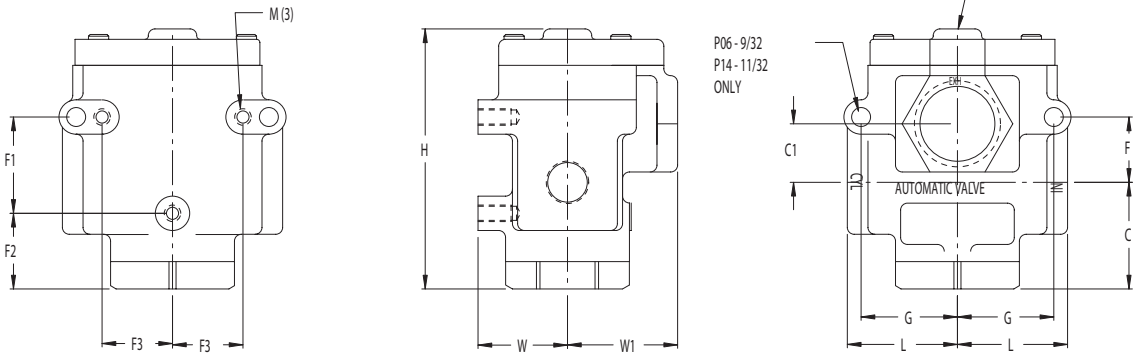
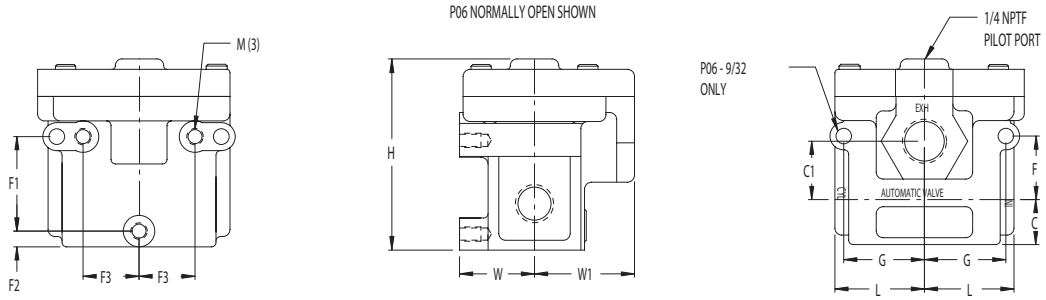
3/2

P14 NORMALLY CLOSED SHOWN



P06 NORMALLY OPEN SHOWN



SERIES		C	C1	F	F1	F2	F3	G	H	L	M	W	W1
P06	NC	32,5 1.28	20,6 .81	20,6 .81	42,9 1.68	30,9 1.22	25,4 1.00	37,3 1.47	91,3 3.59	41,3 1.62	1/4-20	33,3 1.31	44,5 1.75
	NO	20,6 .81	27,0 1.06	29,5 1.16	42,9 1.68	7,16 .28	25,4 1.00	37,3 1.47	85,8 3.38	41,3 1.62	1/4-20	33,3 1.31	44,5 1.75
P14	NC	49,3 1.94	27,0 1.06	30,2 1.19	44,5 1.75	34,9 1.37	33,3 1.31	44,5 1.75	121 4.75	50,8 2.00	5/16-18	41,3 1.62	50,8 2.00
	NO	22,1 .87	27,0 1.06	-	44,5 1.75	7,9 .31	33,3 1.31	-	105 4.13	50,8 2.00	5/16-18	41,3 1.62	50,8 2.00
P36	NC	67,5 2.66	50,8 2.00	-	100 3.94	43,7 1.72	41,3 1.62	-	186 7.32	76,2 3.00	3/8-16	60,5 2.38	79,2 3.12
	NO	35,1 1.38	50,8 2.00	-	100 3.94	11,1 .44	41,3 1.62	-	165 6.50	76,2 3.00	3/8-16	60,5 2.38	79,2 3.12

Units of Measure: Top - mm, Bottom - inches, M = Tap Size

OPTIONS

(LISTED AT THE END OF THE MODEL NUMBER IN ALPHA-NUMERIC ORDER)

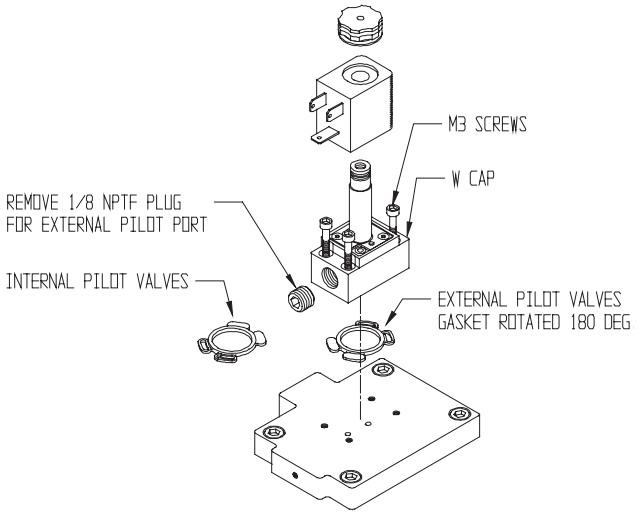
A - FLUOROELASTOMER SEALS
For applications where fluid media or ambient conditions are not compatible with nitrile seals. Note: Fluorocarbon seals do not increase the effective temperature range of the valve. For high temperature applications, consult the factory.

B - EXTERNAL PILOT
For solenoid applications when the pressure to port 1 is less than 35 PSIG (2 BAR). See example below for field conversion.

FIELD CONVERSION

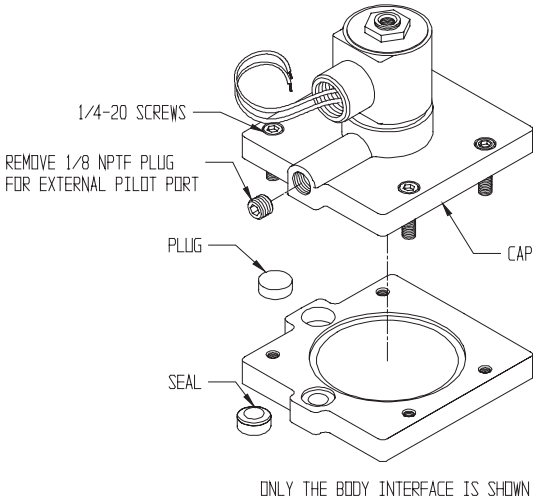
For W Solenoids

- Remove W cap.
- Remove gasket from botton of W cap.
- Rotate gasket 180° and re-position on bottom of cap so that internal pilot hole is covered.
- Reassemble W cap to body and torque screws to 9 in/lbs (+/- 10%).
- Remove pipe plug from cap and make 1/8 external pilot connection.



For B & D Solenoids

- Remove cap from valve body.
- Remove seal from internal pilot supply and replace with plug stored in body.
- Reassemble cap to body and torque screws to 55 in/lbs (+/- 10%).
- Remove pipe plug from cap and make 1/8 external pilot connection.



C - CONDUIT COIL (P06, P14)
Refer to Electrical Section for details.

CT - CONDUIT COIL HIGH TEMPERATURE
Refer to Electrical Section for details.

G - COIL WITH 18" LEADS
Refer to Electrical Section for details.

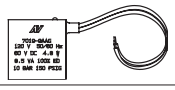
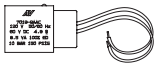
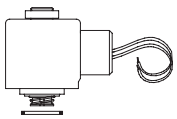
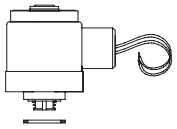
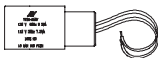
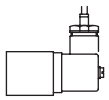
J - VACUUM SPRING
Provides additional reset force when pressure at port 1 is less than 0 PSIG (0 kPa). For solenoid pilot valves, also specify option "B".

T - HIGH TEMPERATURE COIL (P36 ONLY)
For temperatures to 95°C (200°F) maximum.

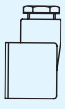
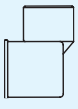
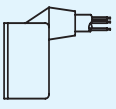
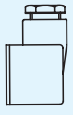
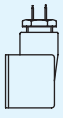
Y - EXPLOSION-PROOF COIL (CSA, FM)
Refer to Electrical Section for details.

Z - EXPLOSION-PROOF COIL (ATEX, PTB)
Refer to Electrical Section for details.

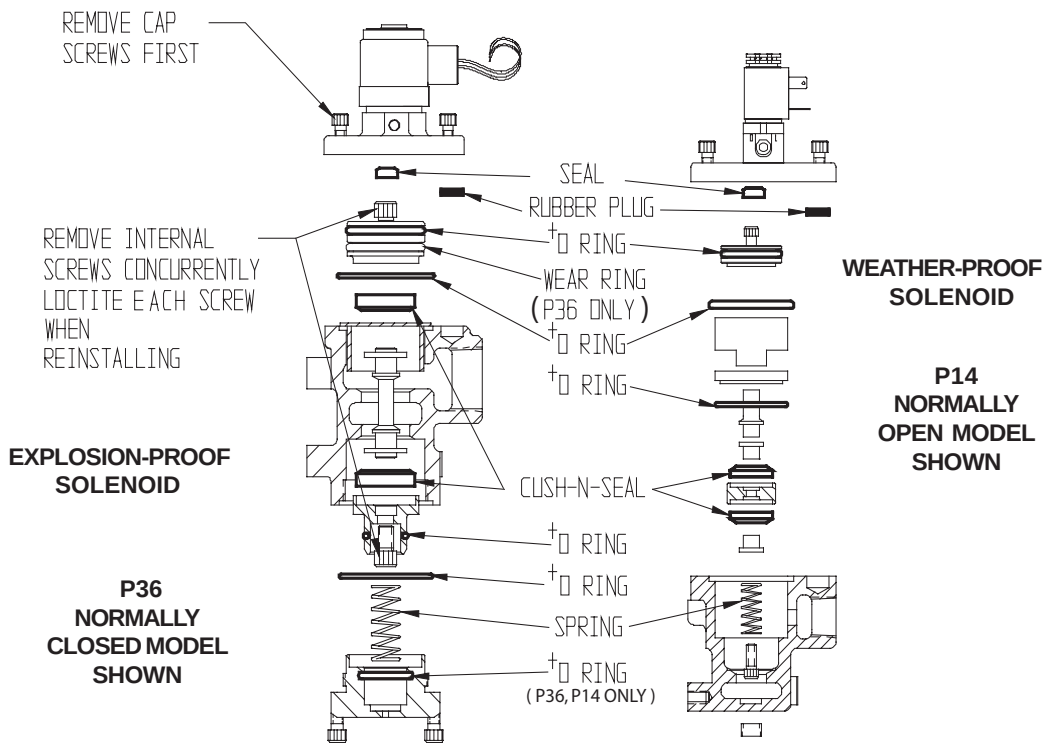
ELECTRICAL INFORMATION

DESCRIPTION		SERIES	WHEN THE 8TH CHARACTER OF MODEL NUMBER IS:	INSTRUCTIONS	COIL PART NUMBER ** = VOLTAGE
NEMA 4X WITH DIN 43650 CONNECTION		P06 P14	W	Order coil separately (specify voltage code from below)	7019-9**
NEMA 4X WITH 18" LEADS		P06 P14	W	Order coil separately (specify voltage code from below)	7019-9**G
NEMA 4X 1/2" CONDUIT WITH 30" LEADS		P06 P14	W	Order coil separately (specify voltage code from below)	7019-9**C 7019-9**CT (High Temperature 82°C maximum)
NEMA 4X 1/2" CONDUIT WITH 24" LEADS		P36	B	Coil included (specify voltage code from below)	A5983-**F A5983-4**T (High Temperature 95°C maximum)
EXPLOSION-PROOF 1/2" CONDUIT WITH 24" LEADS (NEMA: 4, 4X, 7C, 7D, 9E, 9F & 9G; UL: CLASS I, DIV 2, GROUPS A, B, C & D; CLASS I, GROUPS C & D; CLASS II, GROUPS E, F, & G)		P36	D	Coil included (specify voltage code from below)	A6454-** (P36 Only)
EXPLOSION-PROOF 1/2" CONDUIT WITH 24" LEADS [CSA 202633X FM APPROVED CL. I; ZONE1Ex m II T4; AEx m II CL. I; Div. 1; GR. A, B, C, D CL. II; GR. E, F, G CL. III T4 Ta= -20°C to +60°C NEMA: 4, 4X, 7C, 7D]		P06 P14	W	Order coil separately	7019-9**Y
EXPLOSION-PROOF WITH 3m CABLE AND STRAIN RELIEF (Ex II 2G EExm II T - I EC Exm II T-)		Z	Order coil separately (specify voltage code from below)	7152-9**	

VOLTAGE +/- 10 %		** CODE	CURRENT (AMPS)										RESISTANCE (OHMS @ 25° C)					POWER (AC = VA DC = WATTS)				
			INRUSH					HOLDING														
4	7		W	B	D	Y	Z	W	B	D	Y	Z	W	B	D	Y	Z	W	B	D	Y	Z
2450 24/60	-	DA	.40	-	-	.55	-	.40	-	-	.32	-	31	-	-	19	-	4.8	-	-	4.5	-
110/50 120/60	110/50 120/60	AA	.08	.26	.26	.096	-	.06	.16	.16	.054	.029	840	156	156	530	1164	4.8	8.7	7.3	6.5	3.0
230/50 230/60	220/50 240/60	AB	.04	.13	.13	.048	-	.03	.08	.08	.027	.015	3400	636	636	2345	6730	6.0	8.7	7.3	6.5	3.0
12 VDC	12 VDC	DA	.40	-	-	-	-	.40	.80	.80	.375	.267	31	15	15	32	45	4.8	9.5	9.5	7	3.5
24 VDC	24 VDC	DB	.20	-	-	-	.136	.20	.39	.39	.187	.136	121	62	62	128	177	4.8	9.5	9.5	-	3.5
125 VDC	140 VDC	AB	.04	-	-	-	-	.04	.11	.08	.06	-	3400	636	636	2000	-	4.8	9.5	9.5	7	-

DIN 43650 CONNECTORS					
TYPE	Strain Relief Without Cord	1/2" Conduit Without Cord	Molded With 6' Cord	Strain Relief With Light	Strain Relief With Light + 6' Cord
				100-240 AC 48-120 DC	6-48 AC/DC	100-240 AC 48-120 DC	6-48 AC/DC
PART NUMBER	7020-001	7039-001	7020-006	7020-AA	7020-DB	7094-006	7094-007

SERVICE KIT INFORMATION



SERVICE KIT INSTALLATION

1. Remove screws from cap of operator.
2. Remove cap.
3. Remove existing serviceable components.
4. Replace with kit components. **+All seals must be lubricated with Magnalube-G or equivalent.**
5. Align pilot hole in body with pilot hole in cap.
6. Torque screws as shown above.

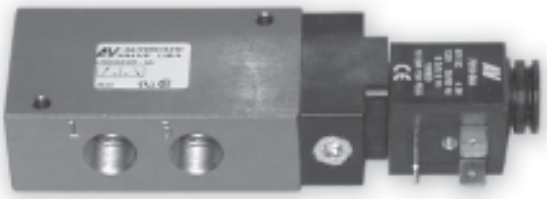
Lubrication of Automatic Valve products is not required but is recommended to maximize service life. Oils should be compatible with seal material, have an ISO 32 or lighter viscosity, and have an aniline point between 82°C (180°F) and 99°C (210°F). Refer to Maintenance section of catalog for recommended lubricants.

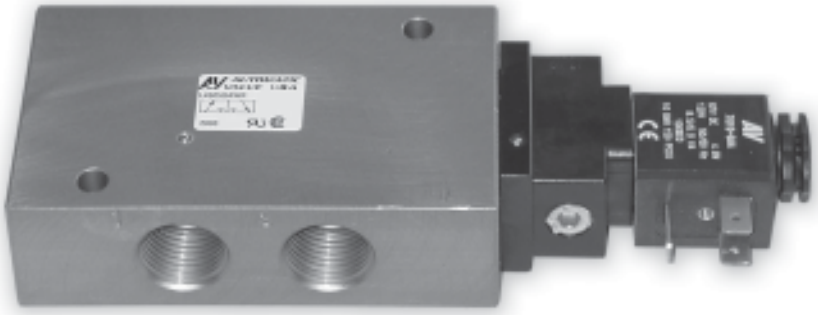
MODEL NUMBERS

SERIES	FUNCTION	NORMALLY CLOSED PART NUMBER	DESCRIPTION	NORMALLY OPEN PART NUMBER	DESCRIPTION
PO6	2 WAY 3 WAY	K-P0600J K-P0600G	Cush-N-Seal O Rings Rubber Plug Seal Spring	K-P0600K K-P0600H	Cush-N-Seal O Rings Rubber Plug Seal Spring
P14	2 WAY 3 WAY	K-P1400J K-P1400G	Cush-N-Seal O Rings Rubber Plug Seal Spring	K-P1400K K-P1400H	Cush-N-Seal O Rings Rubber Plug Seal Spring
P36	2 WAY 3 WAY	K-P3600J K-P3600G	Cush-N-Seal O Rings Plug Seal Spring	K-P3600K K-P3600H	Cush-N-Seal O Rings Seal Spring

ISO 9001

AUTOMATIC VALVE





3 WAY COMPACT SPOOL VALVES

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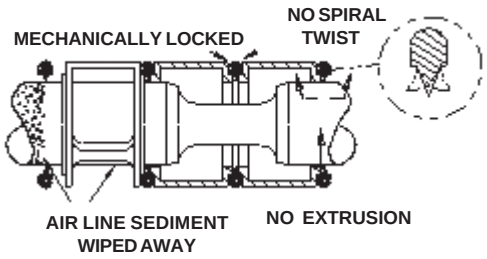
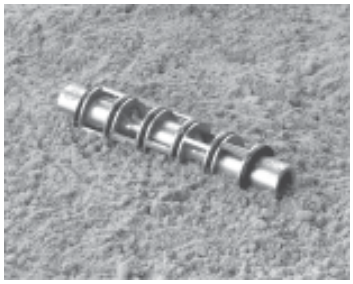
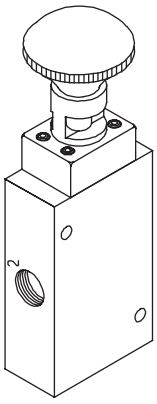
DESIGN FEATURES
L20/L45 3 WAY 2 POSITION VALVE







VALVES

- Lockout tested and approved to SAE specifications.
- Compact size, high flow.

TAPERED TEE-SEAL ..... Eats Dirt

- Bi-directional tapered Tee-Seal flexes to clean spool.
- Eliminates Monday morning sticking problems**.**
- Tested tough and proven reliable according to SAE specifications: Rust and water injected every 864,000 cycles for 20 million cycles.

SOLENOID ... Guaranteed Against Burnout

- Three-way pilot uses full air line pressure to shift the valve.
- Pilot is internally supplied when the pressure at port one is 35 to 150 PSIG (240 to 1030 kPa).
- Coil is hermetically sealed as an integral watertight molded unit.
- Intrinsically-safe and explosion-proof versions available.
- Push non-locking override. (Extended turn and turn lock available).

PRODUCTS CERTIFIED TO INCLUDE

- CSA - (C22.2)
- UL - (STD 429)
- ATEX - (2018x)
- PTB - (EExmIIT5) (EExiaIICT6)
- CE - (73/23/EEC), (89/336IEEC)

LOCKOUT

- Short stroke for quick response.
- Bright red handle for visibility.
- Padlockable in the closed position.
- When handle is pulled outward, inlet port 1 is connected to outlet port 2 and exhaust port 3 is blocked.
- When handle is pushed inward, inlet port 1 is blocked and outlet port 2 is connected to exhaust port 3.

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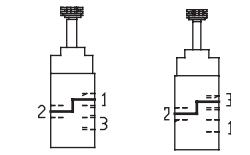
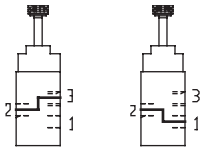
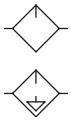
SPECIFICATIONS

VALVE OPERATION			
 DE-ENERGIZED ENERGIZED	**3/2 NC** - 3 way 2 position normally closed valves shift and apply pressure when a maintained signal is applied to the operator then reset and block pressure when the signal is removed.	 DE-ENERGIZED ENERGIZED	**3/2 NO** - 3 way 2 position normally open valves shift and exhaust pressure when a maintained signal is applied to the operator then reset and apply pressure when the signal is removed.

OPERATING TEMPERATURES	SOLENOID PILOT OPERATED	TREATED BUNA-N SEALS (TREATED NBR, Standard)	FLUOROELASTOMER SEALS (FPM (FKM), Option A)
	Standard	-18ºC to +52ºC (0ºF to +125ºF)	-18ºC to +52ºC (0ºF to +125ºF)
	High Temp Coil (Option CT)	-18ºC to +82ºC (0ºF to +180ºF)	-18ºC to +82ºC (0ºF to +180ºF)

OPERATING PRESSURES	SOLENOID PILOT OPERATED	INLET PORT	EXTERNAL PILOT PORT
	Standard 2 Position	240 - 1030 kPa (35 - 150 PSIG)	Not Required
	External Pilot (Option B)	Vacuum - 240 kPa (Vacuum - 35 PSIG)	240 - 1030 kPa (35 - 150 PSIG)

FILTRATION AND LUBRICATION	MEDIA - AIR OR INERT GAS
	Lubrication of Automatic Valve products is not required but is recommended to maximize service life. Oils should be compatible with seal material, have an ISO 32 viscosity, and have an aniline range of 82ºC (180ºF) and 99ºC (210ºF). Refer to Maintenance section of catalog for recommended lubricants. Filter to 50 microns or better. For temperatures below 40ºF, air must be dry to prevent formation of ice.

MODEL NUMBER CHART

L20	0	3	G	A	W	R	-AA	A

SERIES	BODY TYPE		PORT SIZE		FUNCTION		BODY DESIGN		OPERATOR 1		OPERATOR 2		VOLTAGE		OPTIONS	
L20	0	INLINE	3	1/4	G	3 WAY NC	A	SINGLE	A	AIR PILOT	A	AIR PILOT	AA	110/50, 120/60	A	FLUOROELASTOMER SEALS
			4	3/8	H	3 WAY NO	B	DOUBLE	F	HAND LEVER - LINE	M	2 POSITION DETENT MANUAL	AB	220/50, 240/60, 125VDC	B	EXTERNAL PILOT
									I	PALM BUTTON	R	2 POSITION SPRING			C	CONDUIT COIL
									K	FOOT PEDAL	V	INTRINSICALLY-SAFE SOLENOID	DA	22/50, 24/60, 12VDC	CT	CONDUIT COIL HIGH TEMP
									V	INTRINSICALLY-SAFE SOLENOID	W	WEATHER-PROOF SOLENOID			D	DUSTPROOF(SINGLE ONLY)
									W	WEATHER-PROOF SOLENOID			DB	24VDC	G	18" FLYING LEADS
L45			5	1/2	G	3 WAY NC							DBL	24VDC L0W WATT	Y	EXPLOSION-PROOF(CSA, FM)
					H	3 WAY NO									Z	EXPLOSION-PROO (ATEX, PTB)
			5	1/2	H	3 WAY NO	A	SINGLE	L	LOCKOUT	M	DETENT - LOCKOUT			A	FLUOROELASTOMER SEALS
			6	3/4												

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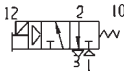
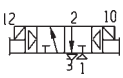
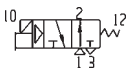
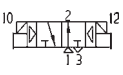
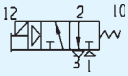
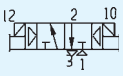
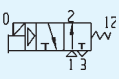
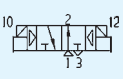
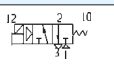
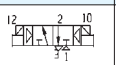
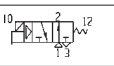
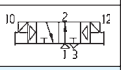
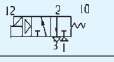
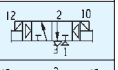
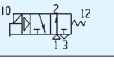
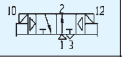
STANDARD SOLENOID MODELS

L20 L45

INTRINSICALLY-SAFE
L20 / L45

MODEL NUMBERS

SERIES	OPERATOR	SINGLE	FUNCTION		DOUBLE	FUNCTION		PORT SIZE	Cv (l/min)	BODY MATERIAL	SEAL MATERIAL	Kg (LB)
L20	WEATHER-PROOF AND EXPLOSION-PROOF	L2003GAWR*	3 WAY NC		L2003GBWW*	3 WAY NC		1/4	1.8 (1770)	ALUMINUM	NBR	,5 (.9)
		L2004GAWR*			L2004GBWW*			3/8				
		L2003HAWR*	3 WAY NO		L2003HBWW*	3 WAY NO		1/4				
		L2004HAWR*			L2004HBWW*			3/8				
	INTRINSICALLY-SAFE	L2003GAVR***	3 WAY NC		L2003GBVV***	3 WAY NC		1/4				**,9 (2.1)**
		L2004GAVR***			L2004GBVV***			3/8				
		L2003HAVR***	3 WAY NO		L2003HBVV***	3 WAY NO		1/4				
		L2004HAVR***			L2004HBVV***			3/8				
L45	WEATHER-PROOF AND EXPLOSION-PROOF	L4505GAWR*	3 WAY NC		L4505GBWW*	3 WAY NC		1/2	4.0 (3940)			,78 (1.7)
		L4505HAWR*	3 WAY NO		L4505HBWW*	3 WAY NO						
	INTRINSICALLY-SAFE	L4505GAVR***	3 WAY NC		L4505GBVV***	3 WAY NC						,9 (2.1)
		L4505HAVR***	3 WAY NO		L4505HBVV***	3 WAY NO						

*Coils sold separately. Refer to Electrical Section for selection.
***Coils included with valve. Refer to Electrical Section for additional information.

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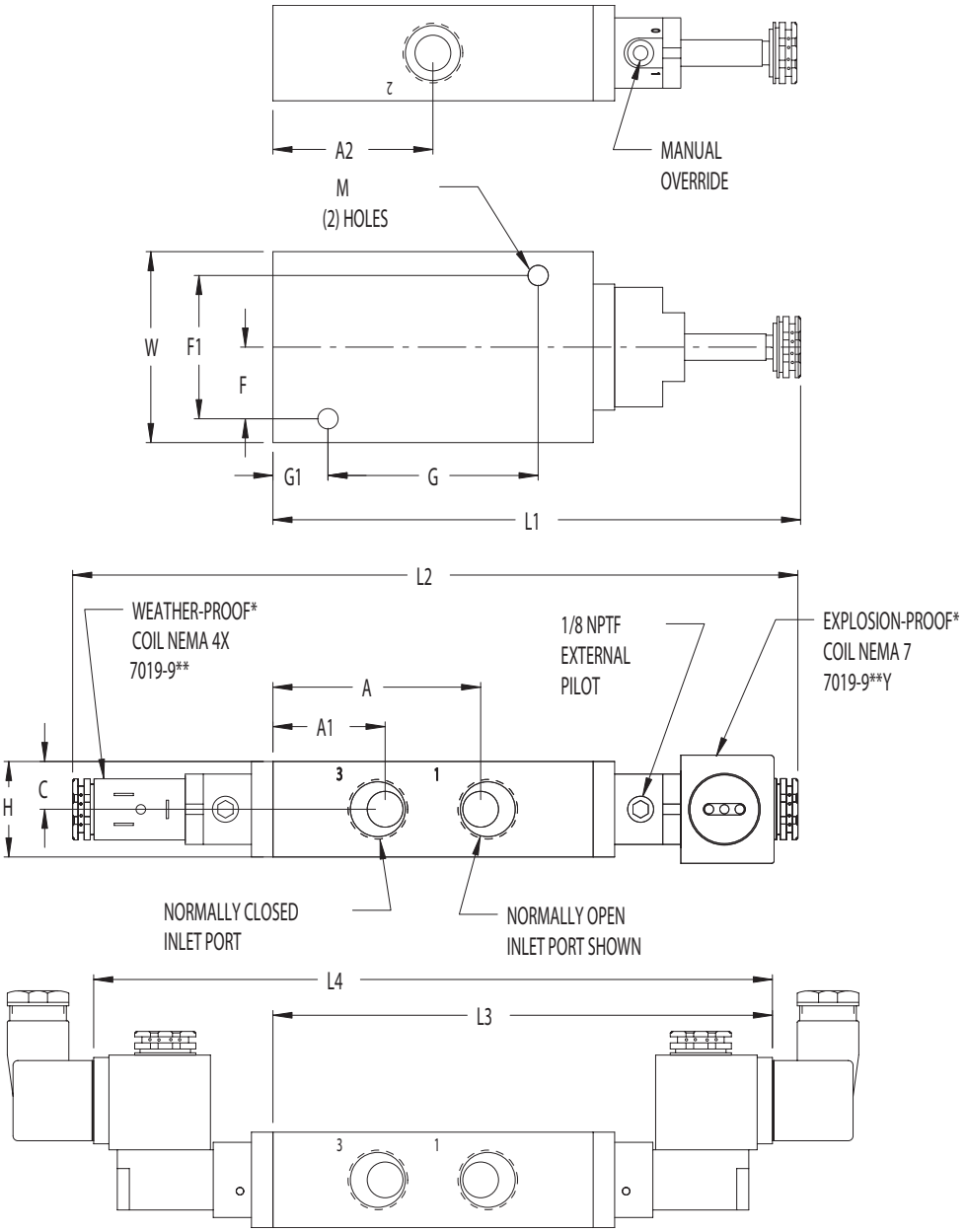
DIMENSIONAL INFORMATION



SERIES	A	A1	A2	C	F	F1	G	G1	H	L1	L2	L3	L4	M	W
L20	48,2 (1.90)	26,2 (1.03)	37,3 (1.47)	12,7 (.50)	15,9 (.63)	32,3 (1.27)	55,6 (2.19)	9,7 (.38)	25,4 (1.00)	135 (5.32)	196 (7.70)	127 (5.00)	179 (7.06)	4,3 (.17)	41,9 (1.65)
L45	69,1 (2.72)	37,3 (1.47)	53,1 (2.09)	16,0 (.63)	23,9 (.94)	47,8 (1.88)	69,8 (2.75)	18,3 (.72)	31,8 (1.25)	174 (6.87)	241 (9.49)	166 (6.54)	225 (8.88)	6,6 (.26)	63,5 (2.50)

Units of Measure: Top - mm, Bottom - inches

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L20
AIR PILOT AND MANUAL MODELS

AIR PILOT
L20

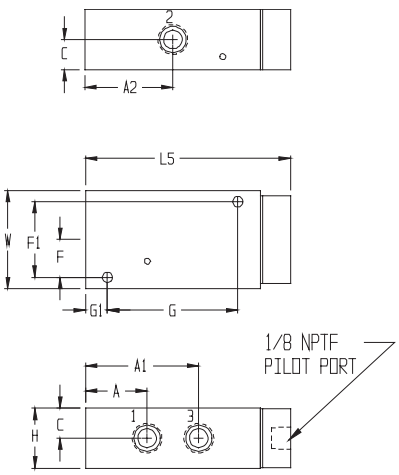
MANUAL
L20

MODEL NUMBERS

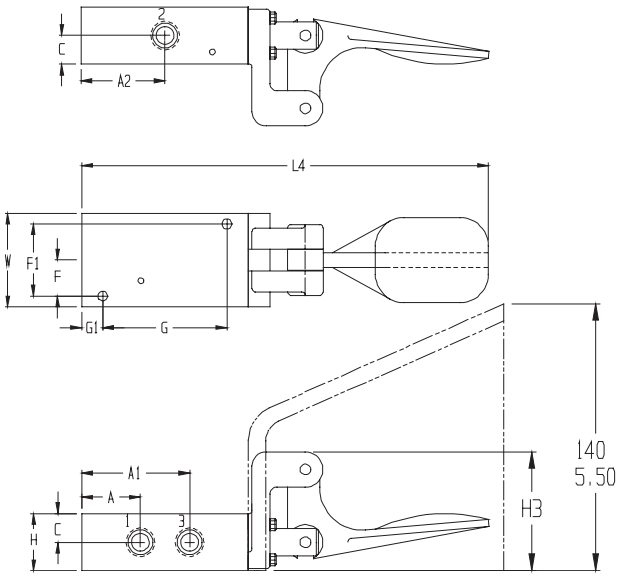
SERIES	OPERATOR		MODEL NUMBER								PORT SIZE	Cv (l/min)	BODY MATERIAL	SEAL MATERIAL	Kg (LB)
			3 WAY NC		3 WAY NO		3 WAY NC		3 WAY NO						
L20	AIR PILOT		SINGLE				DOUBLE					1.8 (1770)	ALUMINUM	NBR	.4 (.9)
			L2003GAAR		L2003HAAR		L2003GBAA		L2003HBAA		1/4				
			L2004GAAR		L2004HAAR		L2004GBAA		L2004HBAA		3/8				
	MANUAL		DETENTED				SPRING RETURN								
		FOOT PEDAL	L2003GAKM		L2003HAKM		L2003GAKR		L2003HAKR		1/4				
			L2004GAKM		L2004HAKM		L2004GAKR		L2004HAKR		3/8				
		HAND LEVER LINE MOUNTED	L2003GAFM		L2003HAFM		L2003GAFR		L2003HAFR		1/4				
			L2004GAFM		L2004HAFM		L2004GAFR		L2004HAFR		3/8				
		PALM BUTTON	L2003GAIM		L2003HAIM		L2003GAIR		L2003HAIR		1/4				
			L2004GAIM		L2004HAIM		L2004GAIR		L2004HAIR		3/8				

DIMENSIONAL INFORMATION

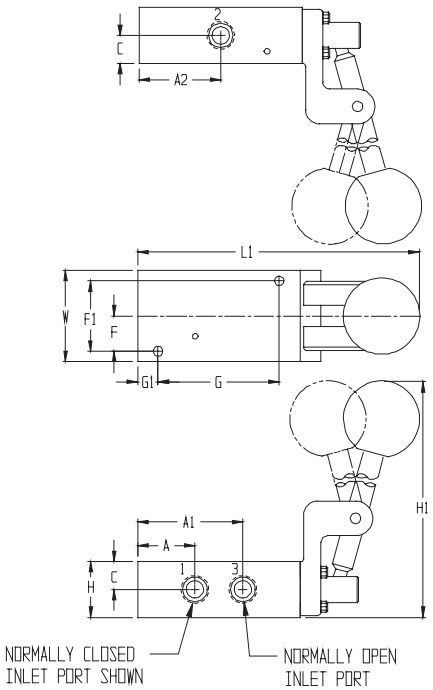
AIR PILOT



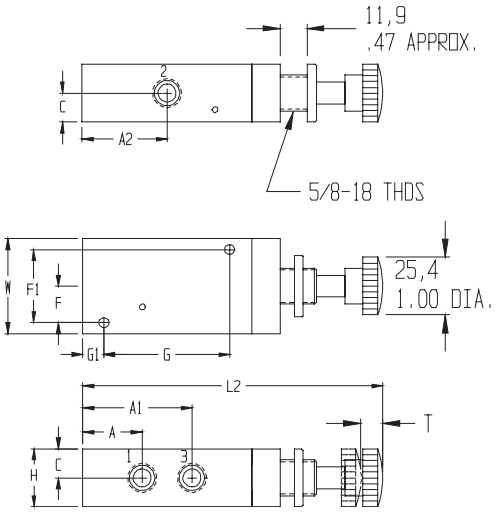
FOOT PEDAL



HAND LEVER



PALM BUTTON



SERIES	A	A1	A2	C	F	F1	G	G1	H	H1	H2	H3	L1	L2	L3	L4	L5	M	T	W
L20	26,2 (1.03)	48,2 (1.90)	37,3 (1.47)	12,7 (.50)	15,9 (.63)	32,3 (1.27)	55,6 (2.19)	9,7 (.38)	25,4 (1.00)	136 (5.35)	85,7 (3.38)	52,4 (2.06)	129 (5.09)	136 (5.22)	170 (6.71)	182 (7.16)	87,4 (3.44)	4,3 (.17)	7,5 (.38)	41,9 (1.65)

Units of Measure: Top - mm, Bottom - inches

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L45
LOCKOUT, AIR PILOT AND MANUAL MODELS

LOCKOUT
L45

AIR PILOT

HAND LEVER
(LINE MOUNTED)

MODEL NUMBERS

SERIES	OPERATOR		MODEL NUMBER								PORT SIZE	Cv (l/min)	BODY MATERIAL	SEAL MATERIAL	Kg (LB)
			3 WAY NC		3 WAY NO		3 WAY NC		3 WAY NO						
L45	LOCKOUT		SINGLE				DOUBLE				1/2	4.0 (3940)	ALUMINUM	NBR	,9 (1.9)
			-	-	L45O5HALM		-	-	-	-					
			-	-	L45O5HALM		-	-	-	-	3/4				
	AIR PILOT		SINGLE				DOUBLE				1/2				
			L45O5GAAR		L45O5HAAR		L45O5GBAA		L45O5HBAA						
	MANUAL	FOOT PEDAL	DETENTED				SPRING RETURN								
			L45O5GAKM		L45O5HAKM		L45O5GAKR		L45O5HAKR						
		HAND LEVER LINE MOUNTED	L45O5GAFM		L45O5HAFM		L45O5GAFR		L45O5HAFR						
		PALM BUTTON	L45O5GAIM		L45O5HAIM		L45O5GAIR		L45O5HAIR						

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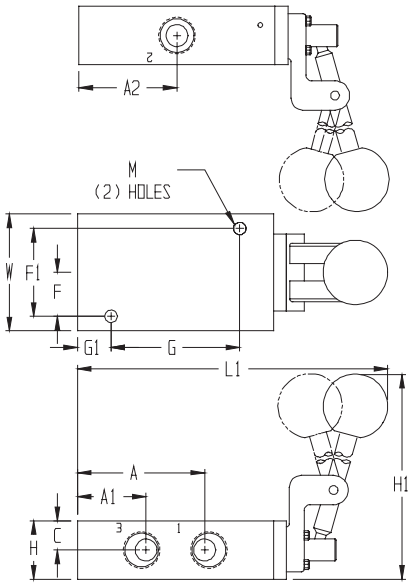
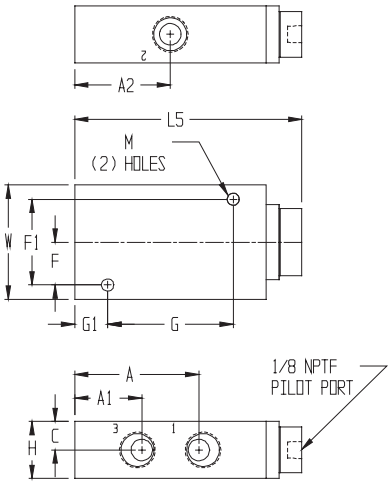
DIMENSIONAL INFORMATION

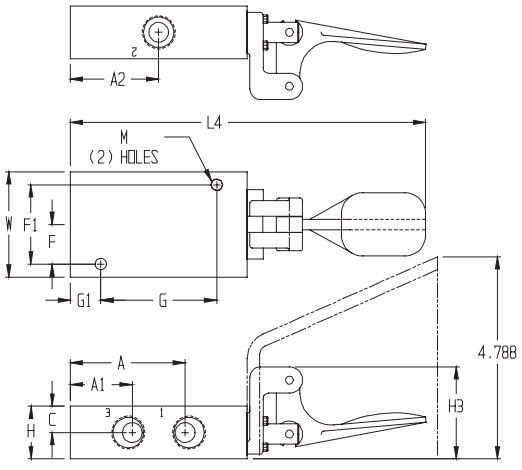
HAND LEVER



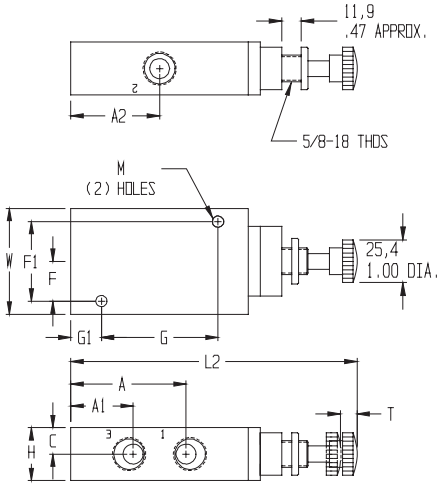
AIR PILOT



FOOT PEDAL



PALM BUTTON

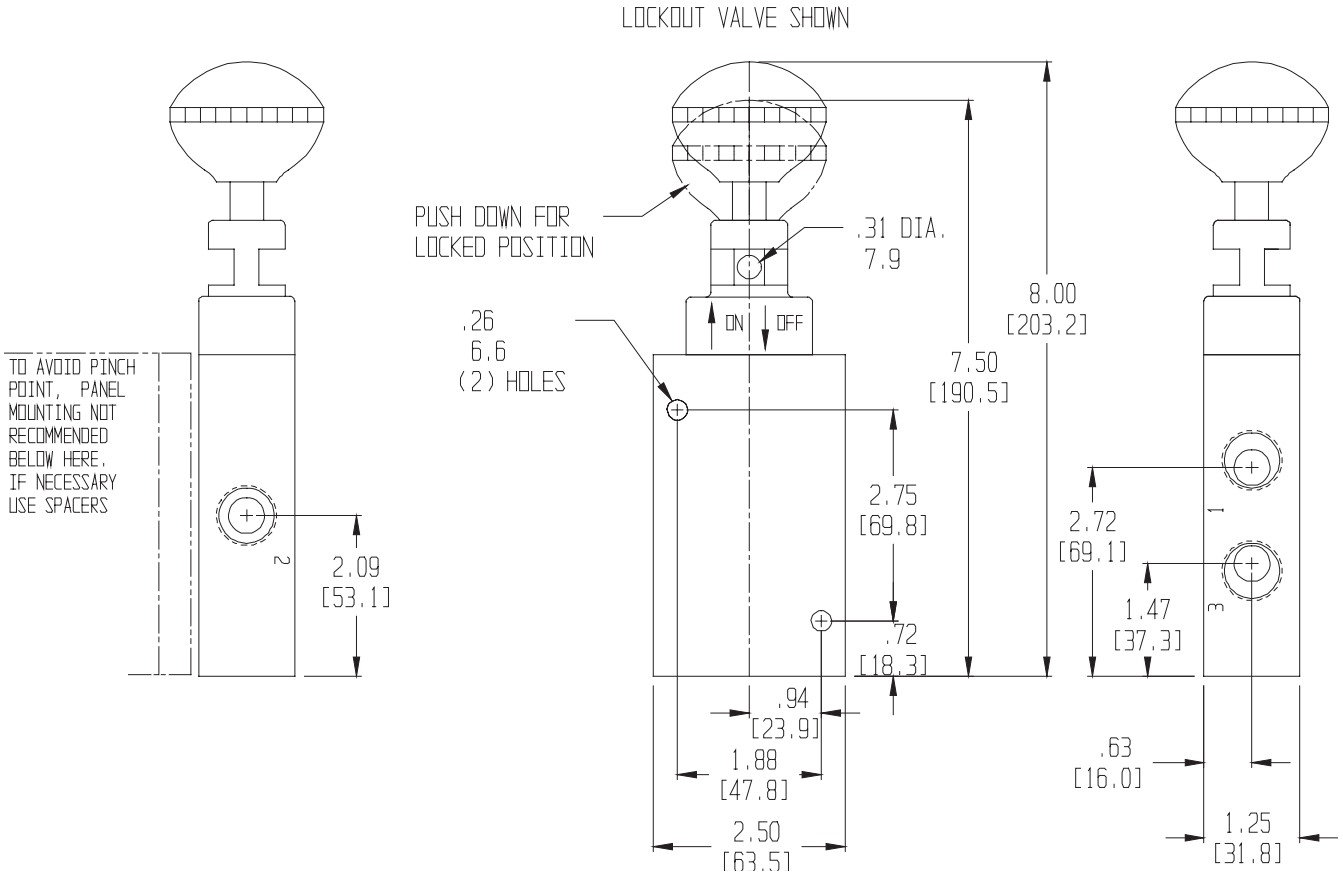


SERIES	A	A1	A2	C	F	F1	G	G1	H	H1	H2	L1	L2	L3	L4	L5	M	T	W
L45	69,1 (2.72)	37,3 (1.47)	53,1 (2.09)	16,0 (.63)	23,9 (.94)	47,8 (1.88)	69,8 (2.75)	18,3 (.72)	31,8 (1.25)	88,9 (3.50)	56,3 (2.22)	168 (6.62)	171 (6.75)	208 (8.21)	214 (8.42)	126 (4.97)	6,6 (.26)	12,7 (.50)	63,5 (2.50)

Units of Measure: Top - mm, Bottom - inches

3/2

DIMENSIONAL INFORMATION



OPTIONS

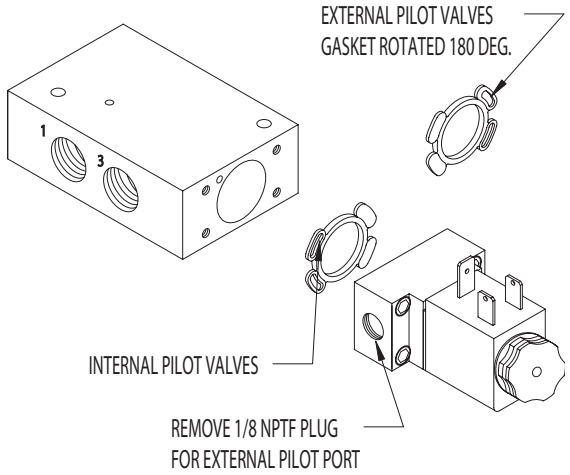
(LISTED AT THE END OF THE MODEL NUMBER IN ALPHA-NUMERIC ORDER)

A - FLUOROELASTOMER SEALS
For applications where fluid media or ambient conditions are not compatible with nitrile seals. Note: Fluorocarbon seals do not increase the effective temperature range of the valve. For high temperature applications, consult the factory.

B - EXTERNAL PILOT
For solenoid applications when the pressure to port 1 is less than 35 PSIG (2 BAR). See example below for field conversion.

FIELD CONVERSION

- Remove solenoid and cap from valve body.
- Rotate gasket 180 degrees so that the internal pilot hole in the valve body is covered by the gasket.
- Reassemble the gasket, cap and solenoid to the valve body. Make sure gasket completely covers internal pilot hole before tightening screws.
- Remove the 1/8 NPTF pipe plug from the cap and make the external pilot connection.



C - CONDUIT COIL
Refer to Electrical Section for details.

CT - CONDUIT COIL HIGH TEMPERATURE
Refer to Electrical Section for details.

D - DUSTPROOF
For applications in extremely dusty and contaminated environments. Standard vent ports are plugged. Operators breathe through the exhaust ports via flats on the end of the spools.

G - COIL WITH 18" LEADS
Refer to Electrical Section for details.

S - STAINLESS STEEL
Stainless steel body, all other external parts corrosive resistant; for corrosive environment applications.

SS - 316 STAINLESS STEEL
Stainless steel body, all other external parts corrosive resistant; for corrosive environment applications.

W - G THREADS

Y - EXPLOSION-PROOF COIL (CSA, FM)
Refer to Electrical Section for details.

Z - EXPLOSION-PROOF COIL (ATEX, PTB)
Refer to Electrical Section for details.

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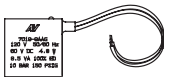
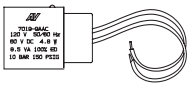
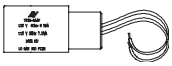
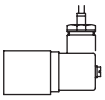
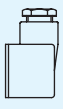
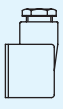
ELECTRICAL INFORMATION

DESCRIPTION		WHEN THE 8TH CHARACTER OF MODEL NUMBER IS:	INSTRUCTIONS	COIL PART NUMBER ** = VOLTAGE
NEMA 4X WITH DIN 43650 CONNECTION		W	Order coil separately (specify voltage code from below)	7019-9**
NEMA 4X WITH 18" LEADS		W	Order coil separately (specify voltage code from below)	7019-9**G
NEMA 4X 1/2" CONDUIT WITH 30" LEADS		W	Order coil separately (specify voltage code from below)	7019-9**C 7019-9**CT (high temperature 82°C maximum)
EXPLOSION-PROOF 1/2" CONDUIT WITH 24" LEADS [CSA 202633X FM APPROVED CL. I; ZONE1Ex m II T4; AEx m II CL. I; Div. 1; GR. A, B, C, D CL. II; GR. E, F, G CL. III T4 Ta= -20°C to +60°C NEMA: 4, 4X, 7C, 7D]		W	Order coil separately (specify voltage code from below)	7019-9**Y
INTRINSICALLY-SAFE WITH STRAIN RELIEF (EEx ia IICT6) CL. I: Div. 1; GR. A, B, C, D CL. II: GR. E, F, G CL. III: Div. 1 Hazardous Location		V	Coil and Connector included with valve (24VDC only)	A7106-374
EXPLOSION-PROOF WITH 3m CABLE AND STRAIN RELIEF (Ex II 2G EExm II T - I EC Exm II T-)		Z	Order coil separately (specify voltage code from below)	7152-9**

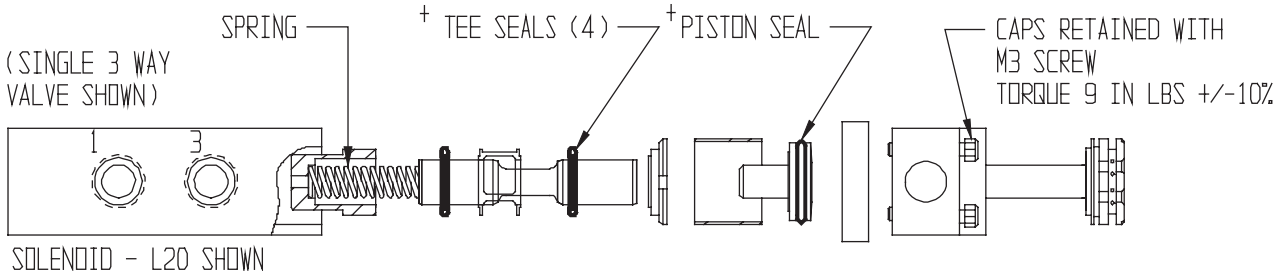
VOLTAGE +/- 10 %		** CODE	CURRENT (AMPS)								RESISTANCE (OHMS @ 25° C)				POWER (AC = VA DC = WATTS)			
			INRUSH				HOLDING											
			W		V	Z	W		V	Z	W		V	Z	W		V	Z
			NEMA				NEMA				NEMA				NEMA			
4	7		4	7	V		4	7	V		4	7	V		4	7	V	
24/50 24/60	-	DA	.40	.55	-	-	.40	.32	-	-	31	19	-	-	4.8	4.5	-	-
110/50 120/60	110/50 120/60	AA	.08	.096	-	-	.06	.054	-	.029	840	530	-	1164	4.8	6.5	-	3.0
230/50 230/60	220/50 240/60	AB	.04	.048	-	-	.03	.027	-	.015	3400	2345	-	6730	6.0	6.5	-	3.0
12 VDC	12 VDC	DA	.40	-	-	-	.40	.375	-	.267	31	32	-	45	4.8	7	-	3.5
24 VDC	24 VDC	DB	.20	-	.03	.136	.20	.187	.03	.136	121	128	275	177	4.8	-	2.1	3.5
140 VDC	-	AB	.04	-	-	-	.04	.06	-	-	3400	2000	-	-	4.8	7	-	-

For alternative lower wattage options, please consult the factory.

DIN 43650 CONNECTORS							
TYPE	STRAIN RELIEF WITHOUT CORD	1/2" CONDUIT WITHOUT CORD	MOLDED WITH 6' CORD	STRAIN RELIEF WITH LIGHT		STRAIN RELIEF WITH LIGHT + 6' CORD	
				100-240 AC 48-120 DC	6-48 AC/DC	100-240 AC 48-120 DC	6-48 AC/DC
PART NUMBER	7020-001	7039-001	7020-006	7020-AA	7020-DB	7094-006	7094-007

3/2

SERVICE KIT INFORMATION



SERVICE KIT INSTALLATION

1. Remove screws from cap of operator.
2. Remove cap.
3. Remove existing serviceable components.
4. Replace with kit components. **+All seals must be lubricated with Magnalube-G or equivalent.**
5. Align pilot hole in body with pilot hole in cap.
6. Torque screws as shown above.

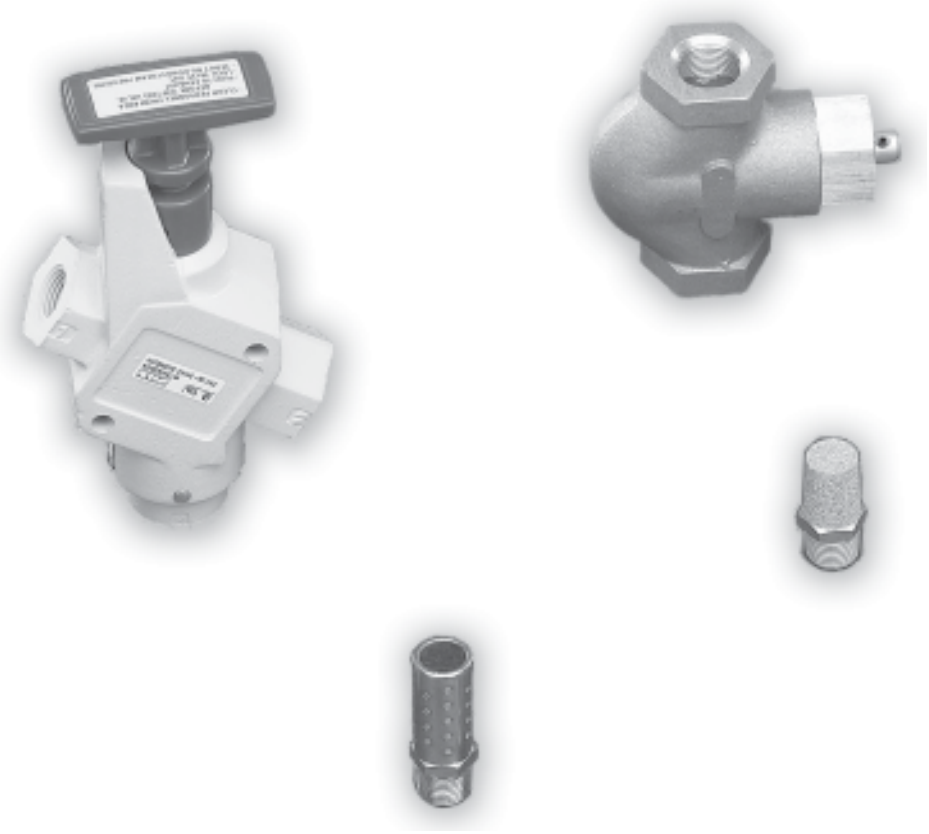
Lubrication of Automatic Valve products is not required but is recommended to maximize service life. Oils should be compatible with seal material, have an ISO 32 or lighter viscosity, and have an aniline point between 82°C (180°F) and 99°C (210°F). Refer to Maintenance section of catalog for recommended lubricants.

MODEL NUMBERS

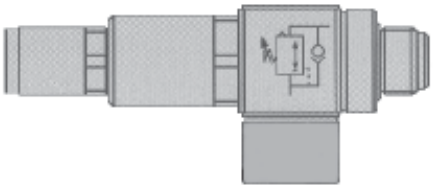
SERIES	FUNCTION			
	SINGLE		DOUBLE	
	PART NUMBER	DESCRIPTION	PART NUMBER	DESCRIPTION
L20	K-L20-SGL-3 K-L20-SGL-3-A (Fluoroelastomer)	Tee Seals (4) Piston Seal (1) Spring (1)	K-L20-DBL-3 K-L20-DBL-3-A (Fluoroelastomer)	Tee Seals (4) Piston Seal (2)
L45	K-L45-SGL-3 K-L45-SGL-3-A (Fluoroelastomer)	Tee Seals (4) Piston Seal Spring (1)	K-L45-DBL-3 K-L45-DBL-3-A (Fluoroelastomer)	Tee Seals (4) Piston Seal (2)

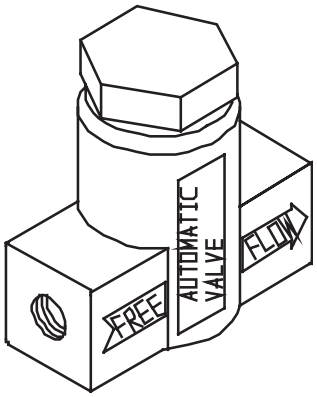
ISO 9001

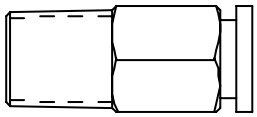
AUTOMATIC VALVE



ACCESSORIES





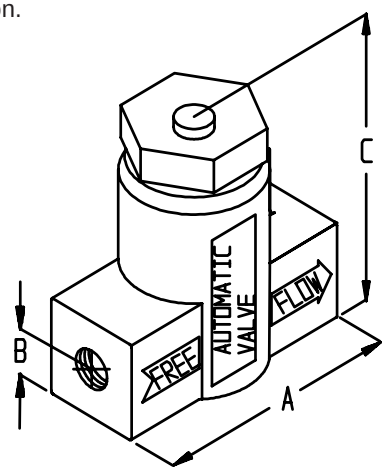


INDEX

IN-LINE MOUNTED FLOW CONTROL VALVES

DESIGN FEATURES

- Allows free flow of air in one direction and adjustable flow in the opposite direction.
- Piped between valve and cylinder.
- High flow, accurate adjustment. Tamper proof locking screw standard.
- Self-cleansing poppet eliminates sediment accumulation.



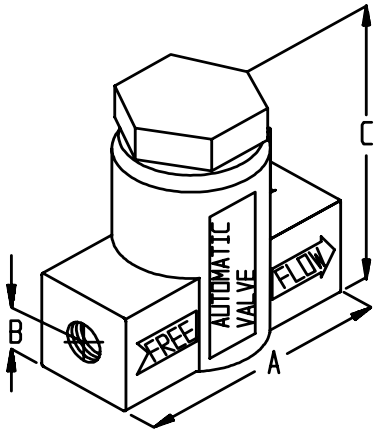
MODEL NUMBERS AND DIMENSIONAL INFORMATION

SERIES	PORT SIZE	Cv (l/min)	MODEL NUMBER	Kg (LB)	Top - mm, Bottom - inches A	B	C
MS2	1/4	1.64 (1830)	200A-2	,23 (.50)	73,2 2.88	14,2 .56	85,6 3.37
MS3	3/8	1.86 (1830	200A-3	,23 (.50)	73,2 2.88	14,2 .56	85,6 3.37
	1/2	2.50 (2460)	200A-35				
MS7	3/4	4.90 (4820)	200C-7	,56 (1.25)	102 4.00	44,5 1.75	135 5.31
	1	5.00 (4920)	200C-71				
MS8	1	13.20 (12990)	200A-10	1,81 (4.00)	140 5.50	39,6 1.56	208 8.18
	1 1/4	15.20 (14960)	200A-12				
	1 1/2	17.00 (16730)	200A-15				

IN-LINE MOUNTED CHECK VALVES

DESIGN FEATURES

- Allows low cracking pressure and full area free flow of air in one direction and instantaneous shut-off in the reverse direction.
- Self-cleansing poppet eliminates sediment accumulation.



MODEL NUMBERS AND DIMENSIONAL INFORMATION

SERIES	PORT SIZE	Cv (l/min)	CRACKING PRESSURE	MODEL NUMBER	Kg (LB)	Top - mm, Bottom - inches A	B	C
MC3	1/4	2.38 (2340)	.50 PSIG	203A-2	,23 (.50)	73,2 2.88	14,2 .56	65,8 2.59
	3/8	2.71 (2670)		203A-3				
	1/2	3.64 (3580)		203A-35				
MC7	3/4	5.29 (5210)	6.75 PSIG	203A-7	,56 (1.25)	102 4.00	44,5 1.75	95,2 3.75
	1	6.00 (5900)		203A-71				
MC8	1	15.80 (15550)	3.00 PSIG	203A-10	1,63 (3.62)	140 5.50	39,6 1.56	142 5.56
	1 1/4	18.20 (17910)		203A-12				
	1 1/2	19.00 (18700)		203A-15				

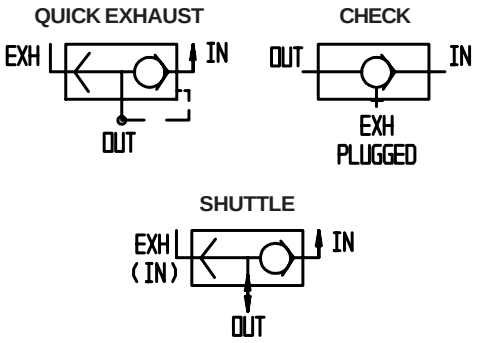
QUICK EXHAUST, CHECK AND SHUTTLE VALVES

DESIGN FEATURES

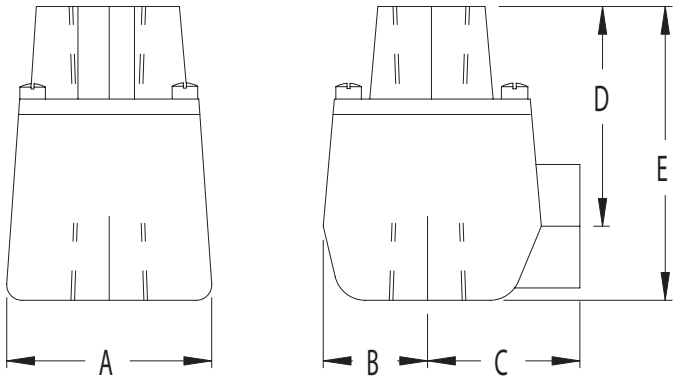
- One model does all three functions.
- Rugged internal construction outlasts and out performs competition.
- Quick Exhaust Valve: When **IN** is pressurized, flow is from **IN** to **OUT** with **EXH** blocked. When **OUT** is pressurized, flow is from **OUT** to **EXH** with **IN** blocked.
- Check Valve: Free flow from **IN** to **OUT** with **EXH** plugged. No flow from **OUT** to **IN** with **EXH** plugged.
- Shuttle Valve: When **IN** is pressurized, flow is from **IN** to **OUT** with **EXH** blocked. When **EXH** is pressurized, flow is from **EXH** to **OUT** with **IN** blocked.

MODEL NUMBERS

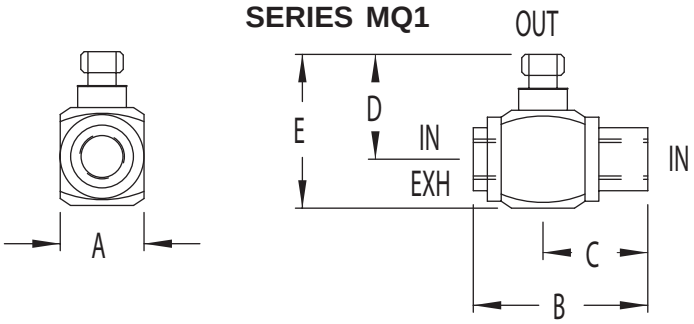
SERIES	PORT SIZE NPTF		Cv (l/min)	PRESSURE PSIG (BAR)		MODEL NUMBER	Kg (LB)
	IN, OUT	EXH		MIN	MAX		
MQ1	10-32	10-32	.1 (100)	3 (.2)	125 (8.5)	370A-11	,01 (.02)
MQ2	1/8	1/4	.72 (790)	4 (.3)	150 (10.7)	370A-21	,08 (.17)
	1/4	1/4	.97 (890)			370A-22	,07 (.16)
MQ3	1/4	3/8	1.44 (1870)	3 (.2)	150 (10.7)	370A-32	,14 (.31)
	3/8	3/8	1.48 (21600	2 (.1)		370A-33	,29 (.63)
MQ7	1/2	3/4	2.9 (2560)	1 (.1)	150 (10.7)	370A-75	,45 (.99)
	3/4	3/4	4.1 (2850)			370A-77	,41 (.90)



SERIES MQ2, MQ3, MQ7



SERIES MQ1



DIMENSIONAL INFORMATION

SERIES	MODEL NUMBER	A	B	C	D	E
MQ1	370A-11	9.6 .38	20.0 .78	11.9 .47	11.9 .47	16.8 .66
MQ2	370A-21	27,7 1.09	13,9 .55	20,5 .81	30,9 1.22	42,4 1.67
	370A-22					
MQ3	370A-32	38,1 1.50	21,1 .83	31,8 1.25	45,2 1.78	60,4 2.38
	370A-33					
MQ7	370A-75	55,4 2.18	28,9 1.14	45,9 1.81	70,6 2.78	92,9 3.66
	370A-77					

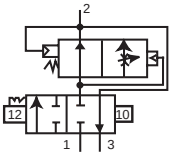
Units of Measure: Top - mm, Bottom - inches

LOCKOUT VALVES

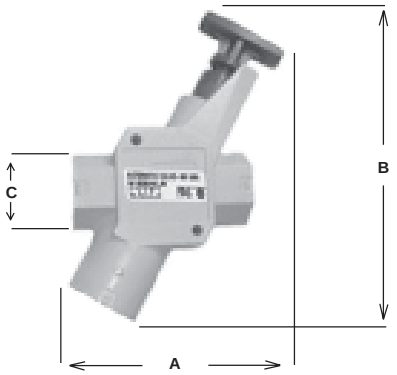
DESIGN FEATURES

- 3 way 2 position valve.
- Short stroke for quick response.
- Padlockable in the closed position.
- Bright red handle for visibility.
- When handle is pulled outward, inlet port 1 is connected to outlet port 2 and exhaust port 3 is blocked.
- When handle is pushed inward, inlet port 1 is blocked and outlet port 2 is connected to exhaust port 3.
- These products are defined as energy isolation devices, NOT AN EMERGENCY STOP DEVICE.

MODEL NUMBERS

SERIES	PORT SIZE		Cv (l/min)	3/2 NO 	BODY MATERIAL	SEAL MATERIAL	Kg (LB)
	1,2	3		DETENT			
N06	3/8	3/4	8.0 (7875)	N0604HALM	ALUMINUM	NBR	,7 (1.5)
	1/2		8.3 (8170)	N0605HALM			
	3/4		9.5 (9350)	N0606HALM			
N16	3/4	1 1/4	12.0 (12790)	N1606HALM	ALUMINUM	NBR	1,5 (3.3)
	1		14.0 (13480)	N1607HALM			
	1 1/4		14.0 (15740)	N1608HALM			

TO ADD SOFT START FEATURE - ADD “SS” TO THE MODEL NUMBER



DIMENSIONAL INFORMATION

SERIES	A	B	C
N06	163 6.4	224 8.8	51 2.0
N16	196 7.7	274 10.8	58 2.3

MUFFLERS

DESIGN FEATURES

- Reduces exhaust noise level in air systems.
- Maintains full volume air flow with minimum back pressure.
- Threads into exhaust port.

- Reduces exhaust noise level in air systems.
- Sintered bronze bonded to a copper plated male pipe fitting.
- Corrosion resistant.
- Cleanable 40 micron filter element.

- Reduces exhaust noise level in air systems.
- Allows adjustment of exhaust air flow to accurately control cylinder speeds.
- Corrosion resistant.
- Cleanable 40 micron filter element.

MODEL NUMBER	PIPE SIZE	Cv (l/min)	WEIGHT g (OZ)	HEX SIZE mm (IN)	LENGTH mm (IN)
SERIES 84C EXHAUST MUFFLER					
84C-1	1/8	1.30 (1160)	11 (.4)	11,1 (7/16)	34,9 (1.38)
84C-2	1/4	2.30 (2060)	20 (.7)	14,3 (9/16)	44,5 (1.75)
84C-3	3/8	4.90 (4380)	37 (1)	17,5 (1 1/16)	57,3 (2.25)
84C-5	1/2	6.80 (6080)	57 (2)	22,2 (7/8)	69,0 (2.72)
84C-7	3/4	14.00 (15520)	142 (5)	17,5 (11/16)	80,3 (3.16)
84C-10	1	18.00 (16090)	227 (8)	20,6 (13/16)	98,4 (3.88)
84C-12	1 1/4	23.60 (21100)	397 (14)	42,9 (1 11/16)	114 (4.50)
84C-15	1 1/2	39.00 (34870)	539 (19)	50,8 (2)	127 (5.00)
SERIES 84D SINTERED EXHAUST MUFFLER					
A7007-010	10-32	.17 (150)	-	6,3 (1/4)	8,6 (.34)
84D-1	1/8	.70 (630)	9 (.3)	11,1 (7/16)	28,6 (1.12)
84D-2	1/4	1.40 (1250)	17 (.6)	14,3 (9/16)	34,9 (1.37)
84D-3	3/8	1.90 (1700)	29 (1.0)	17,5 (11/16)	38,1 (1.50)
84D-5	1/2	3.80 (3400)	40 (1.4)	22,2 (7/8)	47,6 (1.88)
84D-7	3/4	6.50 (5810)	74 (2.6)	27,0 (1 1/16)	57,2 (2.25)
84D-10	1	10.50 (9390)	143 (5.1)	33,3 (1 5/16)	73,0 (2.88)
SERIES 266B EXHAUST RESTRICTOR/SINTERED MUFFLER					
266B-1	1/8	1.20 (1070)	19,8 (0.7)	11,1 (7/16)	37,3 (1.47)
266B-2	1/4	1.30 (1160)	25,5 (0.9)	14,3 (9/16)	55,9 (2.20)
266B-3	3/8	2.00 (1790)	39,7 (1.4)	17,5 (11/16)	63,0 (2.48)
266B-5	1/2	3/70 (3310)	74 (2.6)	22,2 (7/8)	85,1 (3.35)
266B-7	3/4	5.90 (5270)	122 (4.3)	27,0 (1 1/16)	93,5 (3.68)
266B-10	1	6.80 (6080)	292 (10.3)	33,3 (1 5/16)	126,2 (4.97)

FITTINGS

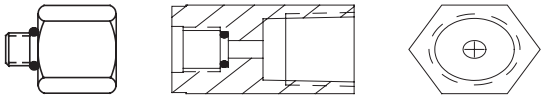
DESIGN FEATURES

- Push-in plastic or soft metal tubing for instant connection; hold down insert for instant tubing release.
- Allows leak-free, full flow operation with no internal restriction.
- Brass contruction.
- Teflon sealant pre-applied to threads.
- Internal hex aids installation.

- Push-in plastic or soft metal tubing for instant connection; hold down insert for instant tubing release.
- Allows leak-free, full flow operation with no internal restriction.
- Teflon sealant pre-applied to threads.

- Threads into cylinder port for accurate speed control with lockable settings and push-in tube connection.
- Allows full flow into cylinder and controlled flow out.
- Brass and plastic contruction.
- Teflon sealant pre-applied to threads.

- Threads into solenoid exhaust ports for external plumbing of solenoid exhaust.
- Brass and plastic construction.



PUSH-IN TUBE FITTINGS - STRAIGHT

MODEL NUMBER	THREAD NPFT	TUBE OD SIZE	EXTERNAL HEX	INTERNAL HEX	LENGTH mm (IN)
0880-123	1/8	1/4	7/16	3/16	27,0 (1.06)
0880-133	1/4	1/4	9/16	3/16	27,0 (1.06)
0880-134	1/4	3/8	9/16	5/16	32, (1.26)

PUSH-IN TUBE FITTINGS - SWIVEL

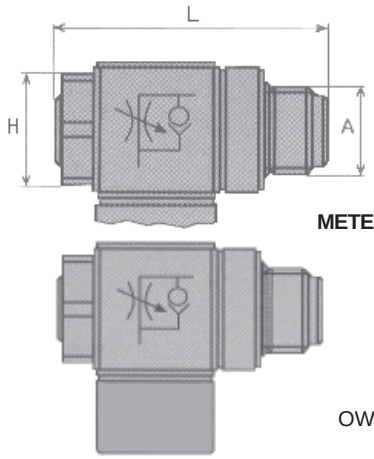
MODEL NUMBER	THREAD NPFT	TUBE OD SIZE	EXTERNAL HEX	HEIGHT mm (IN)	LENGTH mm (IN)
ELBOW					
0880-221	1/8	5/32	1/2	20,7 (.81)	26,7 (1.05)
0880-223	1/8	1/4	1/2	26,5 (1/04)	28,7 (1.13)
0880-233	1/4	1/4	9/16	26,5 (1.04)	33,7 (1.33)
0880-234	1/4	3/8	5/8	28,0 (1.10)	36,7 (1.45)
FLOW CONTROL					
0880-323	1/8	1/4	9/16	63,0 (2.48)	39,4 (1.55)
0880-333	1/4	1/4	5/8	66,3 (2.61)	39,0 (1.52)
0880-334	1/4	3/8	5/8	66,3 (2.61)	43,1 (1.70)
0880-344	3/8	3/8	7/8	72,0 (2.83)	52,6 (2.07)

FITTINGS

MODEL NUMBER	MALE THREAD	FEMALE THREAD	EXTERNAL HEX	LENGTH mm (IN)
MALE TO FEMALE				
A5983-101	5/16 -18	1/8	11/16	28,6 (1.13)
A5983-102	5/16 -18	1/4	11/16	28,6 (1.13)
A7007-015	M5	1/8	1/2	19,1 (.75)
FEMALE TO FEMALE				
A8014-004	-	1/8	5/8	22,2 (.88)
A5239-012	-	1/8	5/16	20,6 (.81)

PNEUMATIC ACCESSORIES

- Media: Compressed air or inert gas, lubricated or non-lubricated.
- Seals: NBR
- Springs and Bodies: Stainless steel.
- Internals: Brass and zinc plated brass.
- Plastic Parts: PA.
- Pressure Range: 100 kPa - 1035 kPa [(15 psi - 150 psi), (1 BAR - 10 BAR)]. Note: soft start = 310 kPa - 1035 kPa [(45 psi - 150 psi), (3 BAR - 10 BAR)].
- Temperature Range: -7°C to 65°C (20°F - 150°F).

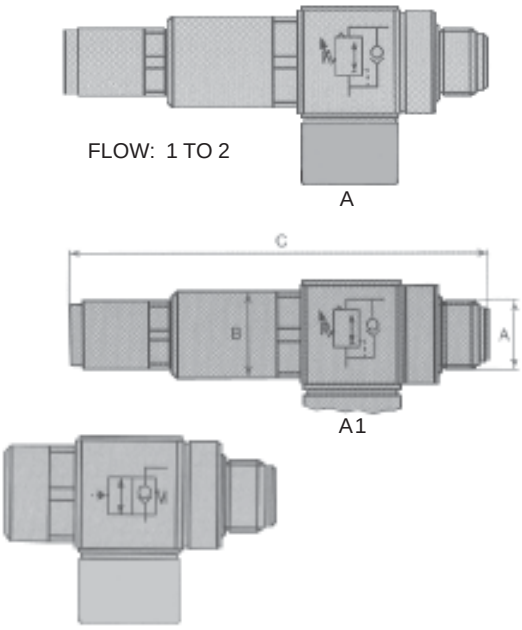


SIZE	1/8	1/4	3/8	1/2
SCFM	6.53	12.02	34.52	50.25

RIGHT ANGLE FLOW (RAF) CONTROL FEATURES

- Eliminates at least one fitting.
- Efficient control of air at source.
- Locks in place once cylinder speed is set.

MODEL NUMBER AND DIMENSIONS			
MODEL NUMBER	A PORT SIZE	H mm (Inches)	L mm (Inches)
A7209-100	1/4 NPT	41 (1.62)	19 (.75)
A7209-101	3/8 NPT	47 (1.85)	23 (.91)
A7209-102	1/4 BSPP	41 (1.62)	19 (.75)
A7209-103	3/8 O.D. TUBE FITTING	47 (1.85)	23 (.91)



PORT MOUNTED REGULATOR (PMR) FEATURES

- Return flow equals regulated flow, self-relieving.
- Incorporates by-pass check.
- Proven payback with point of use air reductions.

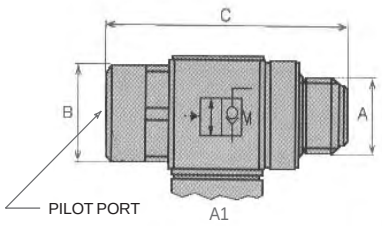
MODEL NUMBER AND DIMENSIONS				
MODEL NUMBER	A PORT SIZE	B mm (Inches)	C mm (Inches)	A1
A7209-110	1/4 NPT	17 (.69)	81 (3.18)	1/4 NPT
A7209-111	3/8 NPT	22 (.86)	88 (3.46)	3/8 NPT
A7209-112	1/4 BSPP	17 (.69)	81 (3.18)	1/4 BSPP
A7209-113	3/8 O.D. TUBE FITTING	22 (.86)	88 (3.46)	3/8 NPT

Operating pressure Primary: 1-16 BAR (15 - 235 PSIG)

PNEUMATIC ACCESSORIES

PILOT OPERATED CHECK (POC) VALVE FEATURES

- Stops flow on loss of air.
- Eliminates at least one fitting.



PORT 1 TO 2 (P12 = 90 psi)				
SIZE	1/8	1/4	3/8	1/2
SCFM	4.53	21.78	41.25	66.65

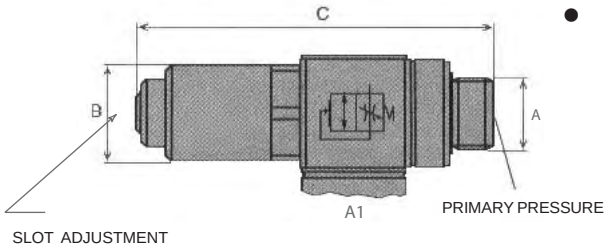
PORT 2 TO 1 (P12 = 0 psi)				
SIZE	1/8	1/4	3/8	1/2
SCFM	10.22	23.89	40.81	67.43

MODEL NUMBER AND DIMENSIONS					
MODEL NUMBER	**A PORT SIZE**	**B mm (Inches)**	**C mm (Inches)**	**PILOT* PORT**	**A1**
A7209-120	1/4 NPT	17 (.69)	42 (1.88)	10-32 UNF	1/4 NPT
A7209-121	3/8 NPT	22 (.86)	55 (2.16)	10-32 UNF	3/8 NPT
A7209-122	1/4 BSPP	17 (.69)	42 (1.88)	M5	1/4 BSPP
A7209-123	3/8 O.D. TUBE FITTING	22 (.86)	55 (2.16)	10-32 UNF	3/8 NPT

* 1/8 AVAILABLE BY SPECIAL ORDER
Operating Pressure: 1-10 BAR (15 - 150 PSIG)

SOFT START FEATURES

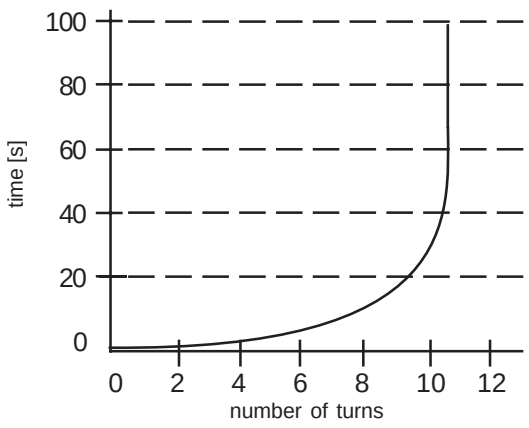
- Delays full flow based on number of turns of set screw.
- Prevents cylinders/loads from rapid extension at start up.



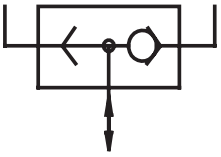
SIZE	1/8	1/4	3/8	1/2
SCFM	28.3	36.7	61.8	61.8

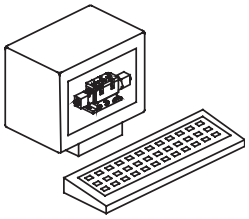
MODEL NUMBER AND DIMENSIONS				
MODEL NUMBER	**A PORT SIZE**	**B mm (Inches)**	**C mm (Inches)**	**A1**
A7209-130	1/4 NPT	17 (.69)	63 (2.48)	1/4 NPT
A7209-131	3/8 NPT	22 (.86)	69 (2.72)	3/8 NPT
A7209-132	1/4 BSPP	17 (.69)	63 (2.48)	1/4 BSPP
A7209-133	3/8 O.D. TUBE FITTING	22 (.86)	69 (2.40)	3/8 NPT

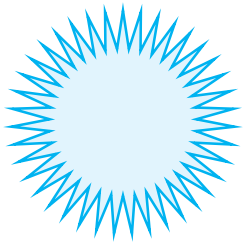
Operating Pressure: 3-10 BAR (45 - 150 PSIG)

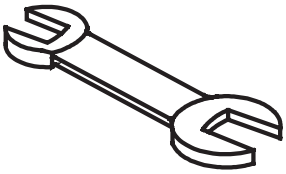


ISO 9001 AUTOMATIC VALVE



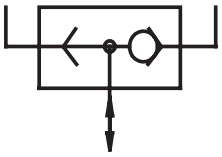


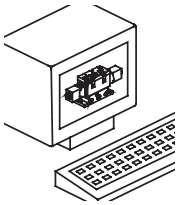


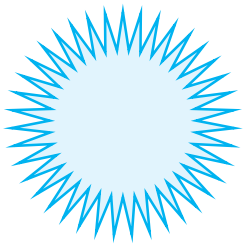


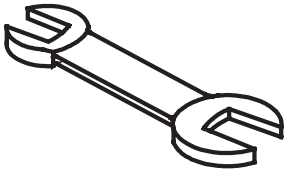
$$Cv = \frac{Q}{22.67} \times \sqrt{\frac{2 \times G \times T}{(P_1^2 - P_2^2)}}$$

PRECAUTIONS, ENGINEERING AND MAINTENANCE









$$Cv = \frac{Q}{22.67} \times \sqrt{\frac{2 \times G \times T}{(P_1^2 - P_2^2)}}$$

INDEX

SYMBOLS

VALVES

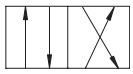
2/2 TWO WAY VALVES

NORMALLY CLOSED NORMALLY OPEN

3/2 THREE WAY VALVES

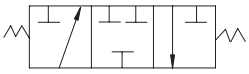
NORMALLY CLOSED NORMALLY OPEN

4/2 FOUR WAY VALVES - 4 PORTS

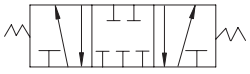


5/2 FOUR WAY VALVES - 5 PORTS

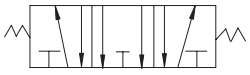
3/3 THREE WAY VALVES - 3 POSITIONS



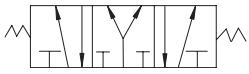
5/3 FOUR WAY VALVES - 3 POSITIONS



CLOSED CENTER



EXHAUST CENTER - INLET BLOCKED



PRESSURE CENTER - EXHAUST BLOCKED

VALVE OPERATORS

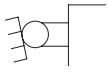
SPRING

MANUAL

PUSH BUTTON

LEVER

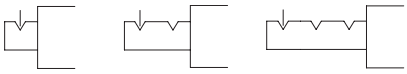
PEDAL OR TREADLE



MECHANICAL

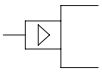
VALVE OPERATORS

DETENTS



(1) POSITION (2) POSITION (3) POSITION

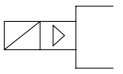
SOLENOID



PILOT PRESSURE REMOTE SUPPLY

PILOT PRESSURE INTERNAL SUPPLY

SOLENOID AND PILOT

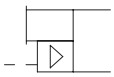


INTERNAL PILOT

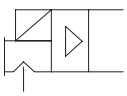
REMOTE PILOT

COMPOSITE VALVE OPERATORS

BASIC - ONE OPERATOR OPERATES VALVE

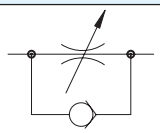


EITHER SIGNAL OPERATES VALVE



SOLENOID AND PILOT OR MANUAL OVERRIDE AND PILOT OPERATE VALVE

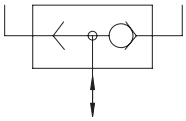
ACCESSORIES



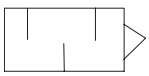
FLOW CONTROL VALVE ADJUSTABLE

CHECK VALVE

EXHAUST RESTRICTOR

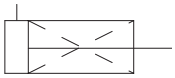


SHUTTLE VALVE



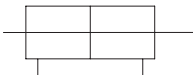
MUFFLER

CYLINDERS



SINGLE ACTING

DOUBLE ACTING



DOUBLE ROD END

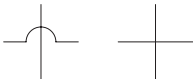
CONDUCTOR

WORKING LINE

PILOT LINE

EXHAUST LINE

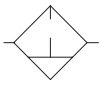
MISCELLANEOUS



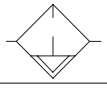
LINES CROSSING

LINES JOINING

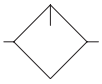
DIRECTION OF AIR FLOW



FILTER SEPARATOR MANUAL DRAIN



FILTER SEPARATOR AUTOMATIC DRAIN



LUBRICATOR

AIRLINE PRESSURE REG. ADJUSTABLE, RELIEVING

FILTER, REGULATOR AND LUBRICATOR

PRESSURE GAGE

FIXED DISPLACEMENT COMPRESSOR

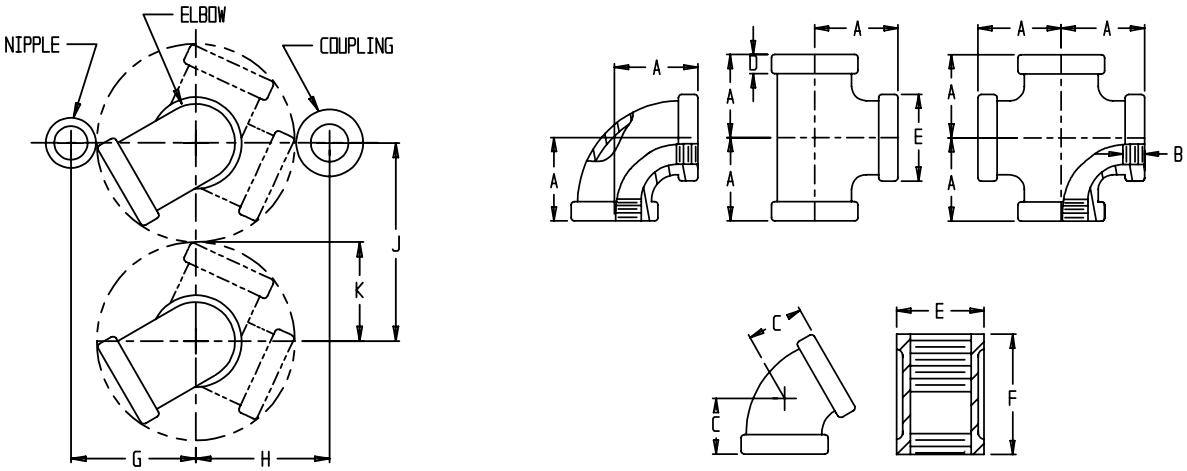
VARIABLE DISPLACE-MENT COMPRESSOR

PRESSURE SWITCH

PIPE AND FITTINGS

DIMENSIONS

DIMENSIONS & CENTERLINE DISTANCE OF AMERICAL STANDARD 150 LB. STANDARD MALLEABLE IRON SCREW FITTINGS										
PIPE SIZE	A	B (min)	C	D (min)	E	F	G	H	J	K
1/8	0.69	0.25	-	0.200	0.693	0.96	0.99	1.13	1.56	0.78
1/4	0.81	0.32	0.73	0.215	0.844	1.06	1.19	1.35	1.84	0.92
3/8	0.95	0.36	0.80	0.230	1.015	1.16	1.42	1.59	2.16	1.08
1/2	1.12	0.43	0.88	0.249	1.197	1.34	1.70	1.88	2.56	1.28
3/4	1.31	0.50	0.98	0.273	1.458	1.52	2.03	2.23	3.00	1.50
1	1.50	0.58	1.12	0.302	1.771	1.67	2.41	2.64	3.50	1.75
1 1/4	1.75	0.67	1.29	0.341	2.153	1.93	2.89	3.14	4.12	2.06
1 1/2	1.94	0.70	1.43	0.368	2.427	2.15	3.24	3.51	4.58	2.29
2	2.25	0.75	1.68	0.422	2.963	2.53	3.89	4.19	5.40	2.70



PIPE DATA - AMERICAN STANDARD TAPER PIPE THREAD - N.P.T. SCHEDULE 40								
NOMINAL SIZE	THREAD PER INCH	TAP DRILL SIZE	PIPE O.D.	PIPE I.D.	INTERNAL AREA SQ. IN.	THREAD ENGAGEMENT		NOMINAL SIZE
						HAND TIGHT	TIGHT	
1/8	27	11/32	.405	.269	.057	.16	.25	1/8
1/4	18	7/16	.540	.364	.104	.23	.38	1/4
3/8	18	37/64	.675	.493	.191	.24	.38	3/8
1/2	14	23/32	.840	.622	.304	.32	.50	1/2
3/4	14	59/64	1.050	.824	.533	.34	.56	3/4
1	11 1/2	1 5/32	1.315	1.049	.864	.40	.69	1
1 1/4	11 1/2	1 1/2	1.660	1.380	1.495	.42	.69	1 1/4
1 1/2	11 1/2	1 47/64	1.990	1.610	2.036	.42	.69	1 1/2
2	11 1/2	2 7/32	2.375	2.067	3.356	.44	.75	2

DESIGN

PRECAUTIONS

Automatic Valve products are general purpose industrial pneumatic and vacuum devices. They are not themselves inherently harmful. However, the control systems in which they operate must have necessary safeguards to prevent injury or damage should failure of system components occur.

Use Automatic Valve products only with the operating specifications stated for the product in each catalog section.

Read and be familiar with the precautions listed under the 'Design", "Installation", "Maintenance" and "Troubleshooting" portions of this section of the catalog. Provide adequate warnings and information on system components and in system operating manuals.

Power Presses: Do not use Automatic Valve for power presses. Automatic Valve does not manufacture the special purpose dual safety clutch and brake valves required by OSHA Regulation 1910.217, dated November 1, 1975, and ANSI Standard B11.1, Revision 1982, and EN 13736: 1999.

Two Position Valves: Two position 2 and 3-way valves will have a flow path from the valve's inlet port to one of the valve's outlet ports in either one or both of the two positions. 4-way valves will always have a flow path from the inlet to one of the outlet ports regardless of its position. If retaining pressurized air in the system presents a hazard during system operation or servicing, a separate method must be used to exhaust the trapped air.

Three Position Valves: Solenoid operated and air piloted three position 3-way and 4-way valves will move to the center position if one of the operators is not actuated. Manually operated three position valves may or may not return to the center position, depending on the centering operator. When one of the operators is actuated, a flow path will exist as it does in two position valves. When the valve is in the center position, the flow path described below exists.

Closed Center: All ports, including inlet and exhaust posts, are blocked when the valve is in the center position. If trapping air in either or both of the valve outlet cylinder ports presents a hazard during system operation or servicing, a separate method must be used to exhaust the trapped air or the valve should not be used.

Caution: *Valves with closed centers should be used with discretion because there is no makeup air. Any leaks in the valve, cylinder, or system lines and fittings can cause drifting (movement) of the cylinder.*

Open Center: When the valve is in the center position, the inlet port is closed and the cylinder ports are open to exhaust ports. If this condition is hazardous in either operation or during servicing, the valve should not be used.

Solenoid Manual Overrides: Some Automatic Valve air piloted and solenoid operated valves incorporate manual overrides which, when actuated, shift the valve as if the solenoid or air pilot were actuated. If accidental or intentional operation of the manual override could cause a dangerous problem, the valve should be ordered without a manual override.

DESIGN

VALVE SIZING CALCULATIONS

Find the appropriate valve size for an application by calculating the required C_v (flow coefficient) as shown below and then choose a valve with a Cv equal to or greater than the calculated valve. The equation is:

$$Cv = \frac{Q}{22.67} \times \sqrt{\frac{2 \times G \times T}{(P_1^2 - P_2^2)}}$$

Where:
- **Q** = Standard cubic feet of free air (scfm)
- **G** = Gas constant
  - = 1.00 for air
- **T** = Absolute temperature
  - = Number of F^0 + 460
- P_1 = Valve inlet pressure
  - = psia (pounds per square inch absolute)
  - = psig (pounds per square inch gage) + 14.7
- P_2 = Valve outlet pressure
  - = psia (pounds per square inch absolute)
  - = psig (pounds per square inch gage) + 14.7

Step 1: Determine the cylinder operating speed, **S** in ft/min. The equation is:

$$S = \frac{(60 \times L)}{12 \times t} \quad \text{or} \quad \frac{(5 \times L)}{t}$$

Where:
- **L** = Length of cylinder stroke in inches
- **t** = Time to extend or retract in seconds

Step 2: Determine the volume of free air, **Q**. The equation is:

$$Q = \frac{(\pi \times D^2)}{576} \times S \times \frac{P_1}{14.7}$$

Where:
- π = 3.14
- **D** = Cylinder diameter in inches
- **S** = Cylinder operating speed
- P_1 = Valve inlet pressure, psia

Step 3: Apply Step 1 and 2 results to the Cv formula.

Example: A 2" bore x 2" stroke cylinder is to extend in .500 seconds at 80 psig inlet pressure with a 10 psi drop through the valve (70 psig outlet pressure). Assume an operating temperature of 70°F.

Step 1:

$$S = \frac{(5 \times L)}{t}$$

$$= \frac{(5 \times 2)}{.500}$$

$$= 20 \text{ ft/min}$$

Step 2:

$$Q = \frac{(\pi \times D^2)}{576} \times S \times \frac{P_1}{14.7}$$

$$= \frac{(3.14 \times 2^2)}{576} \times 20 \times \frac{(80 + 14.7)}{14.7}$$

$$= 2.8 \text{ scfm}$$

Step 3:

$$Cv = \frac{Q}{22.67} \times \sqrt{\frac{2 \times G \times T}{(P_1^2 - P_2^2)}}$$

$$= \frac{2.8}{22.67} \times \sqrt{\frac{2 \times 1 \times (70 + 460)}{(80 + 14.7)^2 - (70 + 14.7)^2}}$$

$$= \mathbf{.094}$$

DESIGN

VALVE SIZING CHART

The chart below may be used instead of mathematical calculations for close approximations or required valve Cv. The Valve Sizing Chart assumes the following:

- Valve inlet pressure is 80 psig.
- Pressure drop through the valve is 10% inlet pressure or 8 psi.
- There are no line restrictions between the valve and cylinder.
- Distance between the valve and cylinder is 6 feet or less.

Step 1: Calculate the required cylinder speed in inches per second: $S = \frac{L}{t}$

Where: **S** = Cylinder speed in inches/second
L = Length of cylinder stroke in inches
t = Time to extend or retract in seconds

Step 2: Choose the applicable cylinder bore size column.

Step 3: Move vertically down the column to select a speed (inches per second) equal to or greater than the calculated speed and read the required Cv in the left hand column.

	CYLINDER BORE SIZE (inches)															
Cv		.75	1.00	1.13	1.50	2.00	2.50	3.00	3.25	4.00	5.00	6.00	7.00	8.00	10.00	12.00
	.1	26.8	15.1	11.9	6.7	3.8	2.4	1.7	1.4	.94	.60	.42	.31	.24	.15	.10
	.2	53.7	30.2	23.9	13.4	7.5	4.8	3.4	2.9	1.9	1.2	.84	.62	.47	.30	.21
	.5	134	75.5	59.6	33.6	18.9	12.1	8.4	7.1	4.7	3.0	2.1	1.5	1.2	.75	.52
	1.0	268	151	119	67.1	37.7	24.2	16.8	14.3	9.4	6.0	4.2	3.1	2.4	1.5	1.0
	2.0	537	302	239	134	75.5	48.3	33.6	28.6	18.9	12.1	8.4	6.2	4.7	3.0	2.1
	4.0	-	604	477	268	151	96.6	67.1	57.2	37.7	24.2	16.8	12.3	9.4	6.0	4.2
	8.0	-	-	-	536	302	193	134	114	75.5	48.3	33.6	24.7	18.9	12.1	8.4
	16.0	-	-	-	-	604	387	268	229	151	96.6	67.1	49.3	37.7	24.2	16.8
	32.0	-	-	-	-	-	773	537	457	302	193	134	98.6	75.5	48.3	33.6

VALVE CONVERSION CHART

FOR
Single operator spring return valves with balanced spools

PORTS:
1 = SUPPLY = P
2 = OUTLET =A
3 = EXHAUST = EA
4 = OUTLET = B
5 = EXHAUST = EB

OPERATION	PLUG	SUPPLY*	OUTLET	EXHAUST
2 WAY NORMALLY CLOSED	2,3,5	1	4	-
2 WAY NORMALLY OPEN	4,3,5	1	2	-
3 WAY NORMALLY CLOSED	2,3	1	4	5
3 WAY NORMALLY OPEN	4,5	1	2	3
3 WAY DIVERTER	3,5	1	2,4	-
3 WAY SELECTOR	3,5	2,4	1	-
4 WAY		1	2,4	3,5

*Minimum operating pressure is 35 psi. Use external pilot when using a port other than 1 for supply or when using a fluid media besides air.

DESIGN

FLOW CHARACTERISTICS

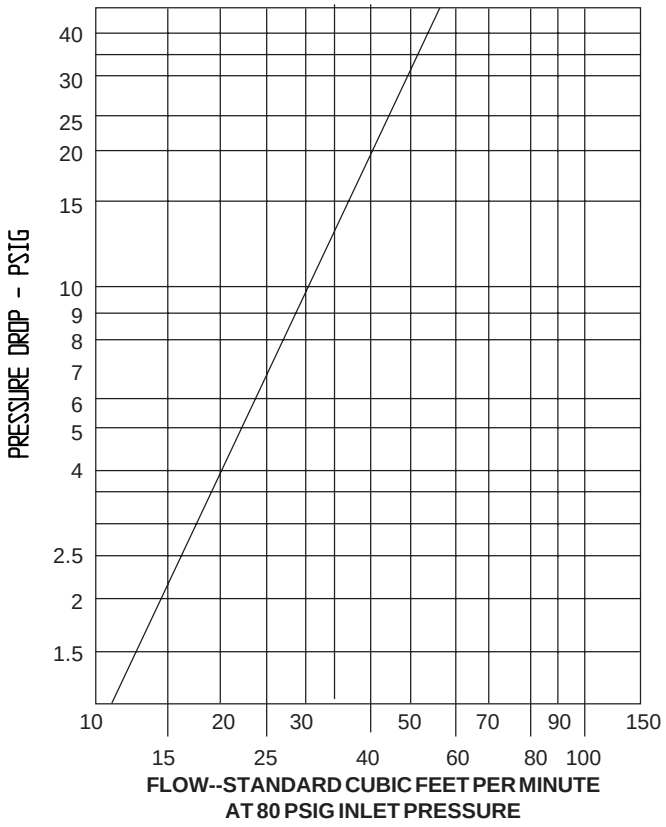
The chart at the right shows the flow (scfm) characteristics for a valve with a Cv of 1.0. Because there is a linear relationship between Cv and flow, a valve with a Cv of 3.0 will have three times the flow at the same pressure drop as does a valve with a Cv of 1.0. This linear relationship many be used to find the required Cv for any flow rate and pressure drop.

Example: Required - Flow of 200 scfm at 80 psig inlet with a 4 psi pressure drop.

Step 1: From the chart at right, a valve with a Cv of 1.0 and a pressure drop of 4 psi, has a flow of 20 scfm.

Step 2: Divide the required flow, 200 scfm, by 20 scfm to determine the required Cv:

$$\frac{200 \text{ scfm}}{20 \text{ scfm}} = \mathbf{10\ Cv}$$



The "SCFM to Cv Approximation" chart at the right is another method for determining Cv. This chart assumes conditions of 70°F with a 10% pressure drop. "Q" is the standard cubic feet of free air (scfm).

Example: Required - Flow of 200 scfm at 80 psig inlet with a 10% pressure drop and 70°F.

Step 1: From the chart at right, the formula for 80 inlet psig is:

Cv = .0376 x Q

Where: Q = 200 scfm

Step 2: **Cv = .0376 x 200 = 7.52**

An approximation of the Cv with a required flow of 200 scfm at 80 psig inlet with a 10% pressure drop could be obtained from the graph above by determining the numerical value of the 10% pressure drop (80 psig x .10) = 8 psig. This 8 psig pressure drop has a flow of about 26.5 scfm. 200 scfm divided by 26.5 = **7.47 Cv**.

SCFM TO C_v APPROXIMATION @ 70° WITH A 10% PRESSURE DROP	
INLET PRESSURE	**Cv**
30 psig	.089 x Q
40 psig	.070 x Q
50 psig	.0575 x Q
60 psig	.0489 x Q
70 psig	.0425 x Q
80 psig	.0376 x Q
90 psig	.0338 x Q
100 psig	.0306 x Q
110 psig	.0280 x Q
120 psig	.0258 x Q

INSTALLATION

PRECAUTIONS

Automatic Valve products should only be installed by trained and qualified personnel who have knowledge of how specific pneumatic products are to be piped and electrically connected.

Install Automatic Valve products only in systems which contain adequate safeguards to prevent injury or damage in the event of product failure.

Insure that the system has provisions for turning air and electrical power off and for exhausting all air trapped within the system.

OPERATING MEDIA

Automatic Valve products are designed primarily for use with air or other inert gases. For use with other media, contact your Automatic Valve distributor.

When solenoid piloted valves are used for vacuum service, an external pilot supply must be used.

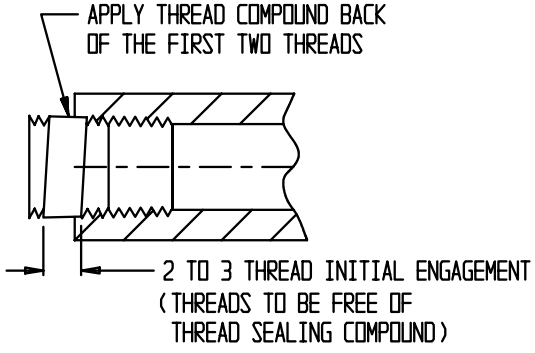
AIR LINES

Before installing any pneumatic product, air lines must be blown clean to remove all contamination. Clean air line filters after purging is completed.

Caution: *Compressed air streams are dangerous. Divert the stream away from personnel and equipment. Personnel in the area must wear suitable eye and ear protection.*

PIPE AND FITTING PREPARATION

Pipe sealant or tape should be applied behind the first two or three threads to prevent the sealant from entering and contaminating the system.



MOUNTING

Spool valves must be mounted with the spool in a horizontal position. Other valves, cylinders, and accessories maybe mounted in any position.

Where practical, mount valves so that they are accessible for service and so that solenoid manual overrides can be used.

INSTALLATION

VALVE INLET LINES

Valve inlet lines should have an inside diameter equal to or greater than the valves' inlet port size as shown in the following chart:

INLET TAP SIZE	SUPPLY ID (MIN.)
1/8 NPT	.25"
1/4 NPT	.38"
3/8 NPT	.50"
1/2 NPT	.63"

INLET TAP SIZE	SUPPLY ID (MIN.)
3/4 NPT	.75"
1 NPT	1.00"
1 1/4 NPT	1.25"
1 1/2 NPT	1.50"

Restricted inlet lines will reduce the system operating speed and can cause valve malfunction. Eliminate or minimize sharp bends and install regulators as close as possible to the valve inlet port.

VALVE OUTLET LINES

For optimum system performance, locate valves as close as possible to the device they are operating. Minimize all sharp bends and other restrictions.

VALVE EXHAUST PORTS

Spool valve exhaust ports may be restricted to provide speed control for cylinders or other devices.

Poppet valve exhaust ports must not be restricted. Such restriction can cause valve malfunction.

All open valve exhaust ports should have mufflers installed to reduce noise levels and to prevent the entry of atmospheric contaminations.

FILTRATION

Filters with 50 micron elements are adequate for all Automatic Valve products. However, where devices not made by Automatic Valve are used in the system, the manufacturer should be consulted regarding their filtration requirements.

Install filters within 20 feet of the valve or per the manufacturer's instructions.

OPERATING PRESSURES AND TEMPERATURES

Minimum and maximum operating pressures and temperatures for Automatic Valve products are specified in each catalog section. While products may function at lower or higher limits, such operation is unsafe and must be avoided.

Contact your Automatic Valve distributor if your application requires products that exceed the operating limits shown in this catalog.

PILOT PRESSURE

For proper operation, pilot pressure must be within the minimum and maximum operating pressures shown in each catalog section.

If solenoid piloted valves are to operate at lower or higher operating pressures than the specified pilot pressure limits, an external pilot supply within the proper pressure range must be used. Valves may either be ordered with an external pilot supply, option "B", or may be field converted as shown in each catalog section.

INSTALLATION

LUBRICATION

Lubrication of Automatic Valve products is not required but is recommended to maximize service life. Where devices not made by Automatic Valve are used in the system, the manufacturer should be consulted regarding their lubrication requirements.

Lubricators should be installed downstream of regulators, per the manufacturer's instructions.

Oils used in air line lubricators should be compatible with seals used in the system. Generally, Automatic Valve products use Buna "N" seals. Fluoroelastomer seals are available as option "A". Oils should be parafinic, petroleum based with oxidation inhibitors, an ISO 32 or lighter viscosity, and an aniline point between 82°C (180°F) and 99°C (210°F).

In general, lubricators should not be synthetic or reconstituted, and should not have alcohol content or detergent additives.

MAINTENANCE

PRECAUTIONS

Automatic Valve products should be serviced only by qualified and knowledgeable personnel who understand the function and operation of the product.

Before servicing any pneumatic system, verify that the air and electrical power are **off** and that all air within the system has been exhausted.

Take all necessary precautions to prevent degradation of products caused by stepping on them, dropping them or hitting them with a hammer or other object.

Return products damaged as a result of improper handling to Automatic Valve for inspection.

PREVENTATIVE MAINTENANCE

Install all pneumatic systems as described in the “Installation” portion of this catalog. Improper installation can cause sluggish system performance and, if contaminates are not purged, premature wear of components.

Drain, clean, and service air line filters on a periodic basis or as recommended by the manufacturer.

Adjust air line lubricators per the manufacturer’s recommendations (generally, one drop per minute) and fill the reservoir at scheduled intervals. When filling the reservoir, use lubricating oils as prescribed under “Installation”.

To avoid possible solenoid malfunction, keep all electrical switches and relay contacts in good condition.

Inspect mechanical actuators, such as cams and rollers, for signs of wear and replace when necessary.

Automatic Valve products are designed to operate in normal air system environments with a minimum of maintenance. In extreme conditions, as evidenced by sluggish performance or sticking problems, a periodic program for cleaning internal product components should be established.

To clean products, use a water soluble detergent. To avoid component damage, do not use abrasive compounds or scrape metal parts.

SERVICING

When servicing Automatic Valve products, use only those components furnished in Automatic Valve service kits. Items contained in these kits are designated in the service portion of each catalog section or on the drawing.

After a product has been disassembled, discard all items designated as service kit items.

Clean remaining metallic components, except for solenoid coils and housings, with a non-abrasive, water soluble detergent.

When reassembling the product, refer to the appropriate service section or the drawing and lightly lubricate items, designated to be lubricated, to the drawing instructions.

Test the product according to the drawing instructions.

TROUBLESHOOTING

PRECAUTIONS

Read and follow the precautions listed in the “Maintenance” section of this catalog. Stay clear of all moving parts that must be actuated when troubleshooting.

GENERAL COMMENTS

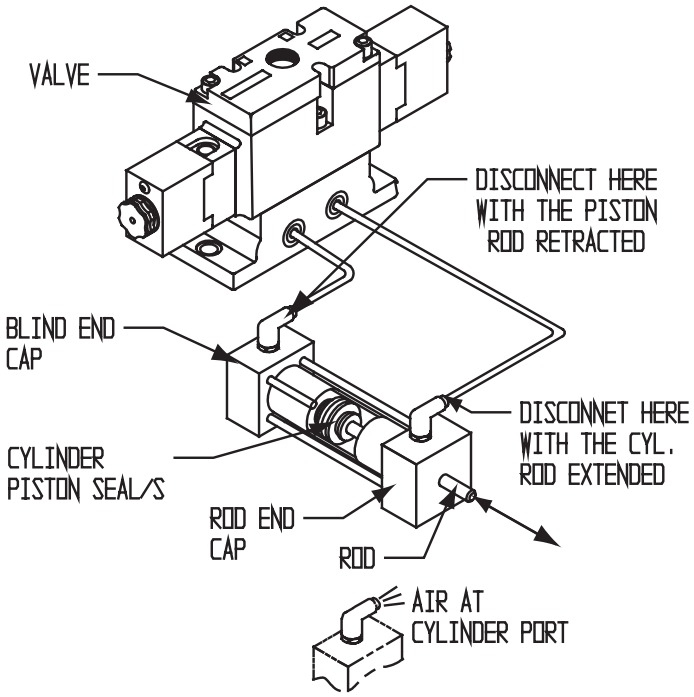
Of all the components in an electrical/mechanical/pneumatic system, it is most often the control valve that will be faulted for system malfunction. In many cases, the valve is only the symptom of the problem. Leaking cylinder seals, poor electrical connectors, clogged air line filters, and broken or jammed mechanical components are just a few of the problems that can initially be diagnosed as a valve problem.

Before disassembling any system component, use the following troubleshooting guide to try to pinpoint the exact cause of the problem.

PROBLEM	POSSIBLE CAUSE	SOLUTION
Valve leaks to exhaust Not actuated	Defective cylinder or valve seals Maintenance	Paragrpah 1 Paragraph 17
Valve leaks to exhaust Acutated	Defective cylinder or valve seals Inadequate air supply Inadequate pilot supply Contamination Maintenance	Paragrpah 1 Paragraph 2 Paragraph 3 Paragraphs 4 & 5 Paragraph 17
Solenoid pilot leakage	Dirt on seats or seal wear Maintenance	Paragraph 6 Paragraph 17
Operator vent leaks	Worn piston seal Damaged cap seal Maintenance	Paragraph 7 Paragraph 7 Paragraph 17
Sluggish operation	Contamination Inadequate air supply Inadequate pilot supply Improper or clogged muffler Inadequate or improper lubrication Mechanical binding Maintenance	Paragraphs 4 & 5 Paragraph 2 Paragraph 3 Paragraph 8 Paragraph 9 Paragraph 15 Paragraph 17
Poppet valve chatter	Inadequate air or pilot supply Contamination Improper or clogged muffler Inadequate or improper lubrication Maintenance	Paragraphs 2 & 3 Paragraphs 4 & 5 Paragraph 8 Paragraph 9 Paragraph 17
Solenoid buzzes or solenoid burnout	Incorrect voltage Faulty or dirty solenoid Maintenance	Paragraph 10 Paragraph 11 Paragraph 17
Solenoid valve fails to shift electrically but shifts with manual override	Incorrect voltage Override left activated Defective coil or wiring Maintenance	Paragraph 10 Paragraph 12 Paragraph 13 Paragraph 17
Solenoid valve fails to shift electrically or with manual override	Inadequate air supply Inadequate pilot supply Contamination Inadequate or improper lubrication Mechanical binding Maintenance	Paragraph 2 Paragraph 3 Paragraphs 4 & 5 Paragraph 9 Paragraph 15 Paragraph 17
Valve shifts but fails to return	Broken spring Mechanical binding Maintenance	Paragraph 14 Paragraph 15 Paragraph 17
Cam operated valve fails to operate	Cam or roller adjustment Maintenance	Paragraph 16 Paragraph 17

TROUBLESHOOTING

GENERAL COMMENTS - PARAGRAPH 1 - VALVE EXHAUST PORT LEAKAGE



Verify if the leakage is caused by the cylinder or valve as follows: (Use extreme caution, as the valve and cylinder will both be actuated during this procedure.)

1. With the piston rod retracted, disconnect the line at the cylinder blind end cap. If air comes out of the cylinder port fitting, as shown above, the cylinder piston seals are defective amd must be replaced. If there is no leakage, reconnect the line.

2. With the cylinder rod extended, disconnect the line at the cylinder rod end cap. If there is leakage at the cylinder port fitting, the cylinder piston seals must be replaced.

3. If there is no leakage at the fitting, the leakage is caused by defective valve seals or gaskets. Reconnect the line and install new seals and gaskets that are included in the valve body service kit.

GENERAL COMMENTS - PARAGRAPH 2 - INADEQUATE AIR SUPPLY

An inadequate air supply can cause the pilot supply pressure to drop during valve actuation. This can result in valve chatter or oscillation, particularly in poppet valves, or may keep the valve in a partially shifted condition where it continually blows to exhaust. If the pressure gage falls by more than 10% during valve actuation, there is probably a deficiency in the air supply system.

1. Airline filters should be cleaned and pressure regulators checked for proper operation. The line sizing recommendations in the “Installation” section of this catalog should be reviewed and modifications made if restrictions or undersize inlet lines are found.

2. Verify that the air compressor has sufficient capacity to meet all systems requirements.

TROUBLESHOOTING

GENERAL COMMENTS - PARAGRAPH 3 - PILOT SUPPLY

Remote air pilot signals or pilot supplies to externally piloted solenoid valves that are restricted or are below the minimum operating pressures given in this catalog can cause valve oscillation or partial actuation resulting in exhaust port leakage.

1. Verify that the operating signal is at the proper pressure and that there are no restrictions caused by clogged filter elements or improperly sized pilot lines.

2. Comments in Paragraph 2 also apply to pilot supplies.

GENERAL COMMENTS - PARAGRAPH 4 - LIQUID CONTAMINATION

Accumulation of oil and water at low points in the system, including valves, can cause erratic or sluggish performance and exhaust leaks.

1. If heavy concentrations of water or oil are found when a device is disassembled, it should be thoroughly cleaned, re-lubricated and reassembled.

2. Filters and lubricators should be cleaned and checked for proper operation. If necessary, air lines should be rerouted to eliminate low points.

3. If there are concentrations of moisture at below freezing temperatures, ice can form and cause erratic operations, or completely bind system components. In such situations, steps must be taken to dry the air to a dew point of at least 10°F below the minimum system operating temperature. Also, filters should be equipped with automatic drains.

GENERAL COMMENTS - PARAGRAPH 5 - SOLID CONTAMINANTS

Solid contaminants, such as broken pieces of pipe threads, pipe sealant or tape, or rust scale, can cause valve seal damage, scratches on spools and sealing surfaces, or system binding and possible exhaust leaks. Such problems are most often encountered in new installations that have not been properly purged or where there are heavy concentrations of atmospheric contaminants.

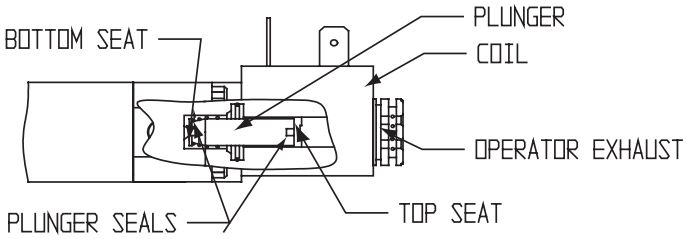
1. In may cases, cycling the valve several times will flush the particles away. If not, the item must be disassembled, the parts thoroughly examined for signs of damage and replaced as necessary.

2. Before reinstalling the product, the air line should be purged, as stated in the “Installation” section of this catalog. Air line filters should be cleaned and checked for proper operation. Properly sized mufflers should be installed in valve exhaust ports.

3. If there is heavy atmosphere contamination, valves with foundry option “D” should be installed.

TROUBLESHOOTING

GENERAL COMMENTS - PARAGRAPH 6 - SOLENOID PILOT LEAKAGE

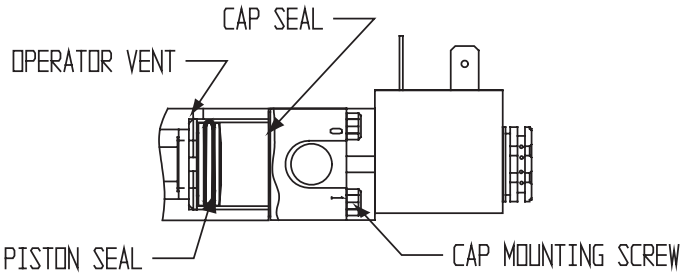


Continuous leakage from the operator exhaust port when the solenoid is de-energized can be caused by a foreign particle trapped between the bottom seat and the plunger, by a damaged bottom seat, or by a worn or damaged bottom plunger seal.

Leakage at the exhaust port and/or solenoid buzzing when the solenoid is energized can result from a foreign particle lodged in the top seat area. Leakage in this area can also be caused by worn or damaged top seats or top plunger seals.

1. The solenoid should be disassembled, cleaned, and the parts examined for wear or damage.
2. If damaged plunger seals are found, the plunger should be replaced.
3. A damaged bottom seat requires replacement of the operator.
4. A damaged top seat requires replacement of the solenoid.
5. Before reinstalling the product, follow the recommendations in Paragraph 5 regarding contaminants.

GENERAL COMMENTS - PARAGRAPH 7 - OPERATOR VENT LEAKS



Vent leakage when the solenoid is energized can be caused by either a faulty operator piston or cap seal, by an improperly placed cap seal, or by improperly tightened cap mounting screws.

Vent leakage when the solenoid is de-energized is often caused by an improperly placed cap seal or by improperly tightened cap mounting screws.

1. In either case, tighten the cap mounting screws before disassembling the operator to determine if this will stop the problem.
2. If tightening the screws does not work, disassemble the operator, clean it, replace worn or damaged seals, and reassemble taking care to properly position the cap seal.

TROUBLESHOOTING

GENERAL COMMENTS - PARAGRAPH 8 - MUFFLERS

Mufflers that are undersized for the application or that have become clogged can cause slow system response or, in the case of poppet valves, system malfunction or valve oscillation.

1. Remove the muffler and cycle the valve several times to see if it operates satisfactorily without the muffler.

2. If it does, the muffler should be cleaned or, if it is not dirty, replaced with a larger muffler with adequate exhaust flow capacity.

GENERAL COMMENTS - PARAGRAPH 9 - IMPROPER LUBRICATION

Air line lubricators that are not set at the proper flow rate or that contain lubricants not compatible with seals can cause sluggish system performance or malfunction.

1. If oil mist can be seen in the exhaust air, if films of oil are in evidence on surfaces around exhaust ports, or if pools of oil are found in valves or other devices, the lubricator is set at too high a flow rate. As a general rule, a flow rate of one drop per minute is adequate to provide a thin film of oil on moving surfaces.

2. If the flow rate is too low or the reservoir is empty, system elements that require lubrication can slow down or even bind. Lubricator reservoirs should be filled on a scheduled basis and the proper lubricator flow rate maintained.

3. Compatibility of the luburicating oil with system seals should also be verified, as stated in the “Installation” section. Incompatible lubricants can cause seals to swell which can result in sluggish performance or even binding of moving parts.

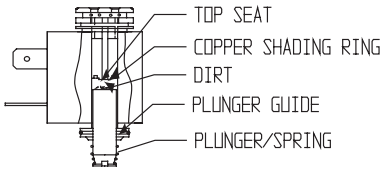
GENERAL COMMENTS - PARAGRAPH 10 - INCORRECT SOLENOID VOLTAGE

Automatic valve solenoids are designed to operate at between 90% to 110% of the rated voltage shown on the solenoid coil. A supply voltage that does not fall within the range shown can cause solenoid buzzing, failure of the valve to shift, or coil burnout.

1. To verify proper voltage, shut off and exaust the air supply to the valve.

2. Attach a voltmeter to the solenoid’s electrical supply, energize the solenoid, and note the voltage reading. If the reading is too low, the electrical supply is inadequate and must be corrected.

GENERAL COMMENTS - PARAGRAPH 11 - INCORRECT SOLENOID VOLTAGE



Improper voltage, broken or damaged shading rings, or dirt on the plunger or around the top seat can cause solenoid buzzing or even coil burnout.

TROUBLESHOOTING

GENERAL COMMENTS - PARAGRAPH 11 - INCORRECT SOLENOID VOLTAGE CONT.

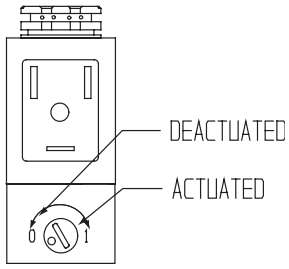
1. Correct voltage should first be verified per Paragraph 10. The electrical supply should be shut off and the pilot section disassembled for inspection.

2. If the copper shading ring around the top seat is cracked or damaged, the solenoid assembly should be replaced.

3. If dirt is found in the plunger guide and on the plunger/spring, they should be thoroughly cleaned and inspected for damage. If no damage is found the solenoid assembly can be reassembled. If damage is present, the solenoid assembly should be replaced.

GENERAL COMMENTS - PARAGRAPH 12 - MANUAL OVERRIDE LEFT ACTIVATED

DIRECT ACTING
SOLENOID
(K02 SERIES)



TYPE W AND X
SOLENOIDS

If a turn locking manual override is left in the activated position, the valve will operate when the override is again cycled, from on to off and back to on, but will fail to operate electrically. This happens because the override is holding the plunger in its activated position.

1. Verify that locking type overrides are in their normal deactived position and that non-locking overrides have not become stuck.

GENERAL COMMENTS - PARAGRAPH 13 - DEFECTIVE COIL OR WIRING

Coils used by Automatic Valve seldom burn out when operated within listed voltage limits.

1. Verify that the operating voltage is correct per Paragraph 10.

2. Verify that there is no dirt in the plunger per Paragraph 11.

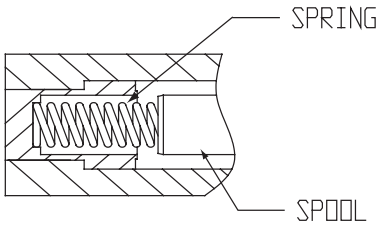
3. Verify that washdown applications have not caused thermal shock.

4. Verify the integrity of the coil by shutting electrical power off and using an ohmmeter to check continuity. If the coil is open, it is burned out and must be replaced. If there is coil continuity, the electrical system should be checked for loose or broken connections and for worn or defective switches and contacts.

5. If cam operated switches are part of the electrical system, check for worn or loose cams.

TROUBLESHOOTING

GENERAL COMMENTS - PARAGRAPH 14 - BROKEN SPRING



Broken springs on spring return valves can cause a valve to remain in the actuated position or to only partially return and perhaps leak to exhaust.

1. Broken springs must be replaced and are included in service kits.

GENERAL COMMENTS - PARAGRAPH 15 - MECHANICAL BINDING

Mechanical binding of cylinders or other mechanical components can cause symptoms that can be improperly diagnosed as sluggish valve operation or even failure of a valve to shift. If a valve appears stuck, note the flow from the valve exhaust ports as the valve is actuated and deactuated. If there is a puff of air from each exhaust port, yet the device fails to move, the probable cause is mechanical binding.

1. Turn air and electrical power off.
2. Follow all safety precautions recommended by the manufacturer of the equipment.
3. Make mechanical inspections and adjustments as required.

GENERAL COMMENTS - PARAGRAPH 16 - CAM OR ROLLER ADJUSTMENT

When cam activated valves fail to activate, check cams and rollers for proper alignment or wear.

1. Make any required adjustments.
2. Replace worn cams and rollers.

GENERAL COMMENTS - PARAGRAPH 17 - MAINTENANCE

1. When disassembling, carefully place parts in same order of removal.
2. Refer to “Installation” section for lubrication, installation, and maintenance.
3. Reassemble parts in reverse order of disassembly.

GLOSSARY

Ambient Temperature: The temperature of the immediate environment.

ATEX: European Community directive concerning equipment and protective systems intended for use in potentially explosive atmospheres.

CE: Conformite Europienne - Certification of a product to indicate that the product satisfies all the regulations governing safety laid down by the European Community. Products displaying this mark can be freely distributed within the markets of the European Community. Consult the Factory for information on products certified by CE.

Celsius, Degree: A unit of temperature measurement abbreviated °C. Celsius temperatures are calculated from Fahrenheit temperatures by the following formula:

$$C = \frac{5(F - 32)}{9}$$

CSA: Canadian Standards Association - Provides certification services for manufacturers who, under license from CSA, wish to use the appropriate CSA marks on certain products of their manufacturer to indicate conformity with CSA standards. Consult the Factory for information on products conforming to CSA standards.

Cv: Measure of calculating flow of a valve (or other pneumatic device) that takes into effect the temperature, pressure, pressure drop, and flow.

Detent: A devise for retaining movable parts in one or more fixed positions; usually a spring-loaded device fitting into a depression. Positions of parts are changed by exerting sufficient force to overcome the detent spring, or by releasing the detent.

DIN 43650/DIN 43650C: International standard for 3-pin connectors.

Fahrenheit, Degree: A unit of temperature measurement abbreviated °F. Fahrenheit temperatures are calculated from Celsius temperatures by the following formula:

$$F = \frac{9}{5} C + 32$$

Fluid: A liquid or a gas.

FM: Factory Mutual Insurance Company partnership recognized as a Nationally Recognized Testing Laboratory(NRTL) under 29 CFR 1910.7.

kPa: Kilopascals - International measure of pressure. 145 psig = 1000 kPa.

Media: The fluids used in a fluid power system. In a pneumatic system they are gases such as air, nitrogen or various inert gases.

Media Temperature: The temperature of the fluid within a valve or other device.

NEMA 4: National standard for enclosure protection. Provides protection against dirt, dust, water hosedown and rain.

NEMA 7: National standard for enclosure protection. Provides protection in Hazardous Locations. (presence of flammable vapours)

Pressure Range: The range of inlet pressures with which a device can operate satisfactorily.

psi: Pressure - pounds per square inch - A measure of force per unit area.

psia: Absolute Pressure - pounds per square inch absolute - The sum of atmospheric pressure and gauge pressure.

psig: Gauge Pressure - pounds per square inch gauge - Pressure above or below atmospheric pressure.

PTB: Physikalisch Technische Bundesanstalt - The National Institute of Natural and Engineering Sciences and the highest technical authority for metrology and physical safety engineering of the Federal Republic of Germany.

scfm: Flow Rate - standard cubic feet per minute - The volume or weight of fluid passing through a conductor per unit of time.

Signal: A fluid or electric command to the valve actuator causing the valve to change position.

Standard Air: Air at a temperature of 68°F, a pressure of 14.69 pounds per square inch absolute (psia), and a relative humidity of 36 per cent (0.0750 pounds per cubic foot). In gas industries the temperature of standard air is usually specified as 60°F.

Vacuum: Pressure less than atmospheric pressure.

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World Class Pneumatic Solutions

WARRANTY

Automatic Valve warrants its products to be free from defect in material or workmanship over a period of 18 months from the date of shipment from its factory. Automatic Valve will, at its option, either repair or replace the allegedly non-conforming product at no charge, FOB our factory, upon return of the product with transportation prepaid.

Automatic Valve will replace standard commerical Nema 4 solenoid coils which fail due to burnout when operated within their rated capacity or voltage.

Automatic Valve is not responsible for damage to its products through improper installation, maintenance, use, repairs, or operating beyond rated capacity of voltage, intentional or otherwise. Automatic Valve is not liable for claims for labor, loss of profit or good will, repairs, delay damages, direct or indirect penalties, or expenses incidental to replacement. The buyer, by acceptance of delivery, assumes all liability for the product's use or misuse in the as-shipped condition.

Automatic Valve, recognizing its goal of continuous improvement, reserves the right to discontinue or change specifications, products, or prices without incurring obligation.

PRECAUTIONS

Applications: Automatic Valves are general pupose, industrial pneumatic and vacuum service valves. They are not themselves inherently harmful. However, the control systems in which they operate must have necessary safeguards to prevent damage or injury should failure of the system components occur.

OSHA 1910.217, dated November 1, 1975, ANSI B11.1, Revision 1982, and EN 13736: 1999 specifically recommend special purpose dual (double) safety clutch and brake valves for power presses. Automatic Valve does not manufacture special purpose dual safety valves for presses. Do not use Automatic Valves for power presses.

Two position Automatic Valves, whether they are 2-way, 3-way, or 4-way, will always have a flow path from the valve's inlet port or ports to one of the outlets, regardless of which of the two positions is used. If air trapped in or exhausted from the ports presents a hazard in operation or in servicing the system, a separate method must be provided to exhaust this air or the valve should not be used.

Three position 3-way and 4-way Automatic Valves, whether solenoid operated, air piloted, or manually operated, can move to the center position if the operators are not actuated. If air trapped in or exhausted from the ports presents a hazard in operation or in servicing the system, a separate method must be provided to exhaust this air or the valve should not be used.

Some solenoid and air piloted Automatic Valves incorporate manual overrides. Manual overrides, when activated, shift the valve as if the solenoid or air pilot were actuated. If accidental or intentional operation of the manual override could cause a dangerous problem, valves without a manual override should be used.

Use Automatic Valves only within specification limits listed in our catalog.

Installation: Consult the Engineering and Maintenance section of the Automatic Valve catalog for installation instructions. Do not install Automatic Valves without first turning off air and electricity. Automatic Valves must be installed by qualified and knowledgeable personnel who understand how specfic valves are to be piped and electrically connected. Do not install valves unless the valve's flow path, as described by ANSI and ISO symbols in our catalog, conforms to the application's design specifications.

Maintenance: Disconnect air and electricity and bleed all pressurized cylinder lines before removing two and three position Automatic Valves. Consult the Engineering and Maintenance section of the Automatic Valve catalog for maintenance instructions. Automatic Valves must be serviced by qualified and knowledgeable personnel who understand the function and operation of specific valves. Care must be followed to prevent damage to valves caused by stepping on them, dropping them, or hitting them with any object. Damaged valves should be retrurned to Automatic Valve for inspection and rebuilding.

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or e-mail us: avc@automaticvalve.com

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