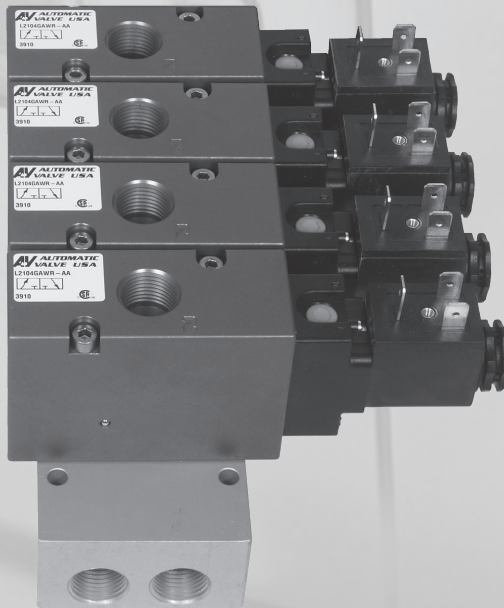
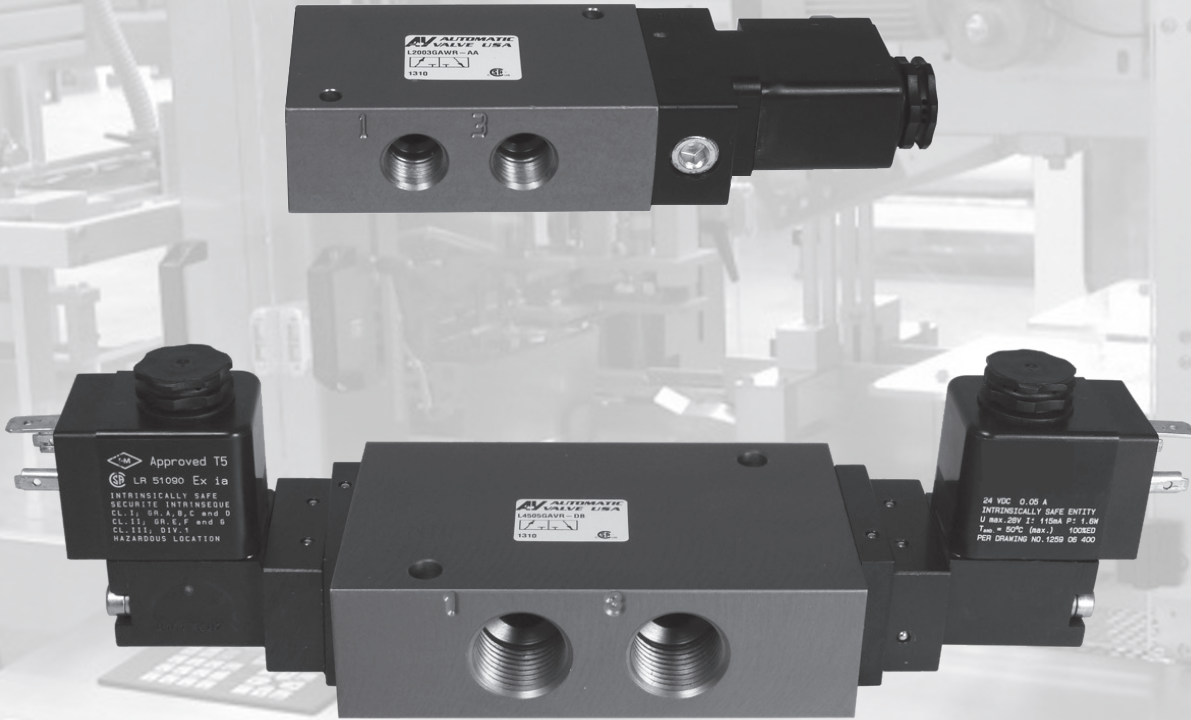


AV Automatic Valve

A ROSS CONTROLS Company



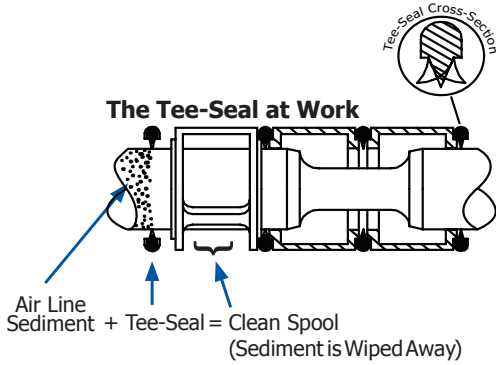
3 Way Compact Spool Valves

	Page
Design Features	B2
Specifications	B3
Model Number	B3
How to Read the Model Number Charts	B3
Standard Solenoid	B4-B5
Air Pilot	B6-B7
Manual	B8-B9
Lockout	B8-B9
Top Mount	B10-B11
Manifolds	B10-B11
Configuration Example	B12
Electrical Information	B13
Options	B14



3 Way Compact Spool Valves

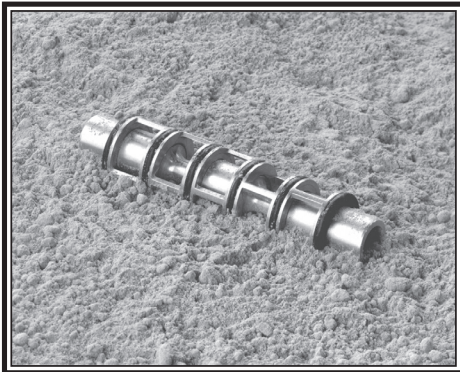
Design Features



Valves

- Compact size, high flow.
- Inline or manifold mount (L21 only): flexible, efficient.
- Wide variety of options and operators available.
- Lockout tested and approved to SAE specifications.
- Specific application needs? Consult the factory. We will build it for you.

B



Tapered Tee-Seal Eats Dirt

- Bidirectional tapered Tee-Seal eliminates sticking problems.
 - Flexes to clean spool
 - Mechanically Locked
 - No Spiral Twist
 - No Extrusion
 - Air Line Sediment is Wiped Away.
- 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 is standard. (Extended Turn and Turn-Locking available)



Products Certified To:

- CSA - (C22.2 and UL STD 429)
- Factory Mutual - Explosion Proof Environments
- ATEX - Explosion Proof Environments
- CE - EMF and Low Voltage Directives



3 Way Compact Spool Valves Specs & Model Numbers

3/2



3 Way Compact Spool Valves

Specifications

Valve Operation		Valve Operation	
<p>L20 L45</p>		<p>ENERGIZED 10 ENERGIZED 12</p>	
<p>3/2 Normally Closed De-Energized: Exhausts Pressure from Port 2 to Port 3 Blocks Pressure at Port 1 Energized: Pressure from Port 1 to Port 2</p>		<p>3/2 Normally Open De-Energized: Pressure from Port 1 to Port 2 Energized: Exhausts Pressure from Port 2 to Port 3 Blocks Pressure at Port 1</p>	
Operating Temperatures 	Solenoid Pilot Operated	Treated Buna-N Seals (Treated NBR, Standard)	Fluoroelastomer Seals (FPM (FKM), Option A)
	Standard	-18°C to +50°C (0°F to +123°F)	-18°C to +50°C (0°F to +123°F)
Operating Pressures 	Solenoid Pilot Operated	Inlet Port	External Pilot Port
	Standard 2 Position	240 - 1030 kPa (35 - 150 PSIG)	-
Filtration & Lubrication 	Media - Air Or Inert Gas		
	Air Line 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 between 82°C (180°F) and 99°C (210°F). Filter to 50 microns or better. For temperatures below 40°F, air must be dry to prevent formation of ice. Refer to the Maintenance section of this catalog for recommended lubricants.		

B

Model Numbers

Series	Body Type	Port Size	Function	Body Design	Operator 1	Operator 2	Voltage ²	Options*
L20	0 Inline	3 1/4 4 3/8	G 3 WAY NC H 3 WAY NO	A Single B Double	A Air Pilot	A Air Pilot	-AA 110/50, 120/60 -AB 220/50, 240/60, 125VDC	B External Pilot Connection C Conduit Coil CT Conduit Coil High Temperature D Dustproof G 18" Flying Leads L Low Watt Coil (2.5 Watts) LL Lowest Watt Coil (0.7 Watts) with Type 2 override only (24VDC only) W G (BSPP)Threads Y Explosion-Proof Coil (CSA,FM) Z Explosion-Proof Coil (ATEX) 1 Push Turn-Locking Override 2 Extended Turn-Locking Override 4 No Override
					F Hand Lever - Line I Palm Button K Foot Pedal V Intrinsically-Safe Solenoid ¹ (24VDC only) W Weather-Proof Solenoid	M 2 Position Detent Manual R 2 Position Spring V Intrinsically-Safe Solenoid ¹ (24VDC only) W Weather-Proof Solenoid		
L45	0 Inline	5 1/2			V Intrinsically-Safe Solenoid ¹ (24VDC only) W Weather-Proof Solenoid	V Intrinsically-Safe Solenoid ¹ (24VDC only) W Weather-Proof Solenoid	-DA 22/50, 24/60, 12VDC -DB 24VDC	
					L21	0 Inline, Manifold		3 1/4 4 3/8

Series	Body Type	Port Size	Function	Body Design	Operator 1	Operator 2	Voltage	Options*
L45 Lockout	0 Inline	5 1/2 6 3/4	H 3 WAY NO	A Single	L Lockout	M Detent - Lockout		A Fluoroelastomer Seals

*Not all Options are available for all models. Refer to "Options" at the end of this Section for additional information.
¹ Can not be used on a manifold. ² Consult the Factory for additional voltages.

How to Read the Model Number Chart

The model number digits are in the shaded columns, descriptions of each digit are in the white columns.
 Example of L2003GAWR-AAB: L20 Series inline valve (body type) with 1/4" ports, 3 way normally closed (function) single body with a weather-proof solenoid, 2 position spring return, 110 volt din coil, and an external pilot connection.

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	W Weather-Proof Solenoid	R 2 Position Spring	-AA 110/50, 120/60	B External Pilot Connection

3/2



3 Way Compact Spool Valves Standard Solenoid



Double

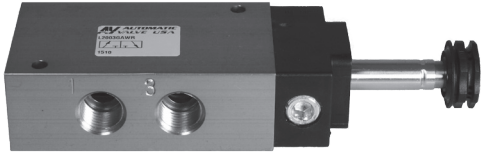


L4505GBWW



L4505GBVV-DB
Intrinsically-Safe, 24 VDC only
(connector included, not shown)

Single



L2003GAWR



L2003GAVR-DB
Intrinsically-Safe, 24 VDC only
(connector included, not shown)

B

Model Numbers

Series	Operator	Port Size	Flow l/min (Cv)	3 Way Normally Closed		3 Way Normally Open		Mat'l		Wt Kg (lb)
				Single	Double	Single	Double	Body	Seal	
L20	Weather-Proof and Explosion-Proof	1/4	1770 (1.8)	L2003GAWR-**	L2003GBWW-**	L2003HAWR-**	L2003HBWW-**	Aluminum	NBR	0,27 (0.6)
		3/8		L2004GAWR-**	L2004GBWW-**	L2004HAWR-**	L2004HBWW-**			
	Intrinsically-Safe	1/4		L2003GAVR-DB	L2003GBVV-DB	L2003HAVR-DB	L2003HBVV-DB			0,4 (0.9)
		3/8		L2004GAVR-DB	L2004GBVV-DB	L2004HAVR-DB	L2004HBVV-DB			
L45	Weather-Proof and Explosion-Proof	1/2	3940 (4.0)	L4505GAWR-**	L4505GBWW-**	L4505HAWR-**	L4505HBWW-**	Aluminum	NBR	0,68 (1.5)
				Intrinsically-Safe	L4505GAVR-DB	L4505GBVV-DB	L4505HAVR-DB			L4505HBVV-DB

** = Coil Voltage Code. Coils also sold separately. Refer to "Electrical Information" at the end of this Section for additional information.



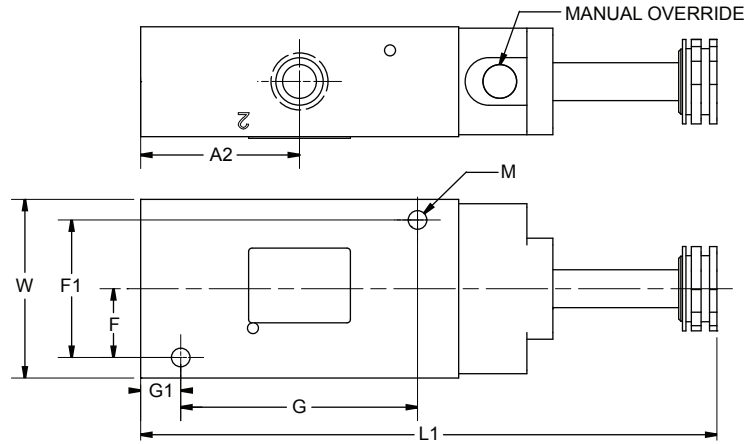
3 Way Compact Spool Valves Standard Solenoid

3/2

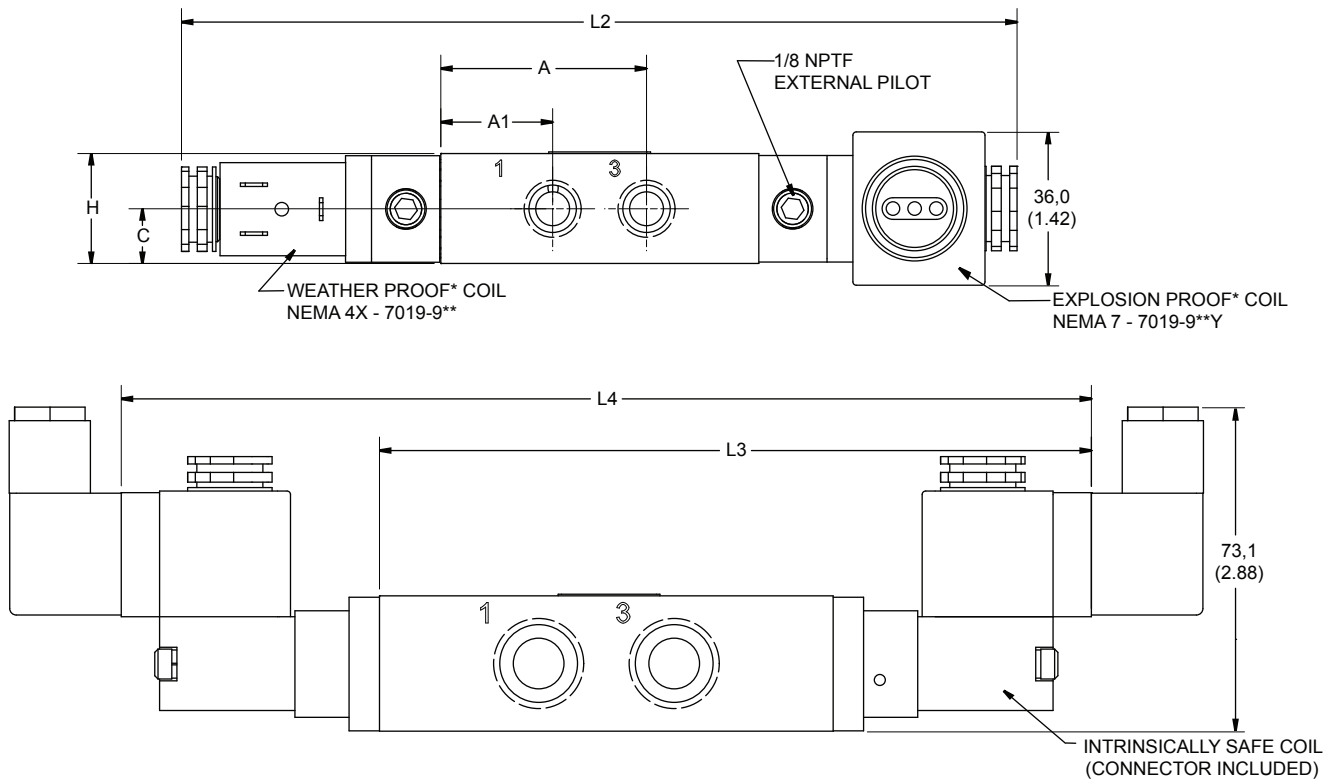


Dimensional Information

Single



Double



Series	A	A1	A2	C	F	F1	G	G1	H	L1	L2	L3	L4	M	W
L20	48,2	26,2	37,3	12,7	16,1	32,3	55,6	9,7	25,4	135	196	127	179	4,3	41,9
	1.90	1.03	1.47	0.50	0.64	1.27	2.19	0.38	1.00	5.32	7.70	5.00	7.06	0.17	1.65
L45	69,1	37,3	53,1	16,0	23,9	47,8	69,8	18,3	31,8	174	241	166	225	6,6	63,5
	2.72	1.47	2.09	0.63	0.94	1.88	2.75	0.72	1.25	6.87	9.49	6.54	8.88	0.26	2.50

Units of Measure: Top - mm, Bottom - inches

3/2



3 Way Compact Spool Valves Air Pilot



B

Single



L2003GAAR



L4505GAAR

Double



L2003GBAA



L4505GBAA

Model Numbers

Series	Port Size	Flow l/min (Cv)	3 Way Normally Closed		3 Way Normally Open		Materials		Wt Kg (lb)
			Single	Double	Single	Double	Body	Seal	
L20	1/4	1770 (1.8)					Aluminum	NBR	0,4 (0.9)
	3/8								
L45	1/2	3940 (4.0)							0,9 (1.9)



3 Way Compact Spool Valves Air Pilot

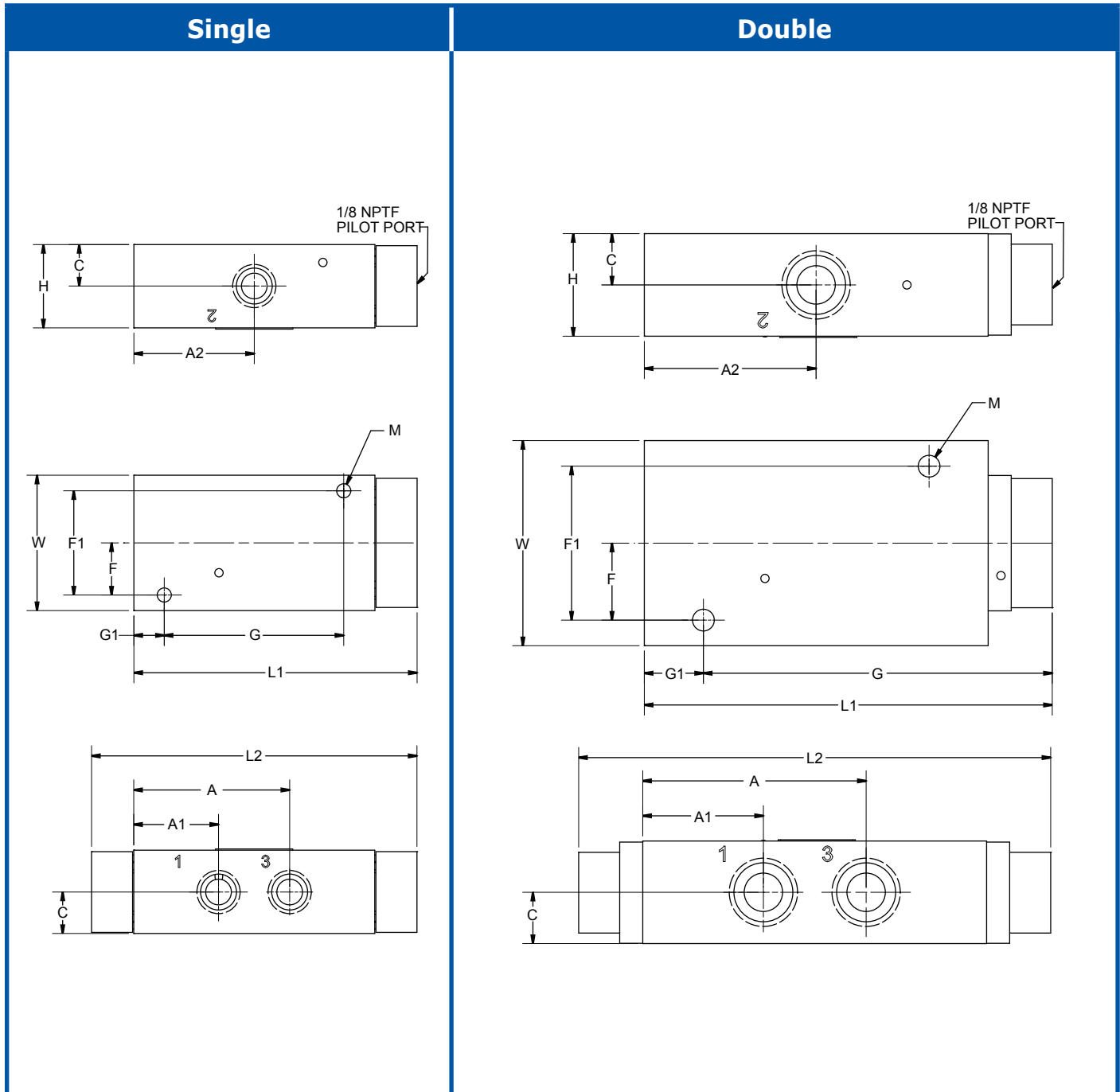
3/2



3 Way Compact Spool Valves

B

Dimensional Information



Series	A	A1	A2	C	F	F1	G	G1	H	L1	L2	M	W
L20	48,3 1.90	26,2 1.03	37,3 1.47	12,7 0.50	16,1 0.64	32,3 1.27	55,5 2.19	9,7 0.38	25,4 1.00	87,7 3.45	101 3.97	4,4 0.17	41,9 1.65
L45	69,1 2.72	37,3 1.47	53,1 2.09	16,0 0.63	23,9 0.94	47,8 1.88	69,8 2.75	18,3 0.72	31,8 1.25	126 4.97	146 5.75	6,6 0.26	63,5 2.50

Units of Measure: Top - mm, Bottom - inches

3/2



3 Way Compact Spool Valves Manual and Lockout



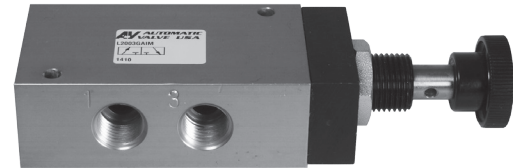
B

**Hand Lever
(Line Mounted)**



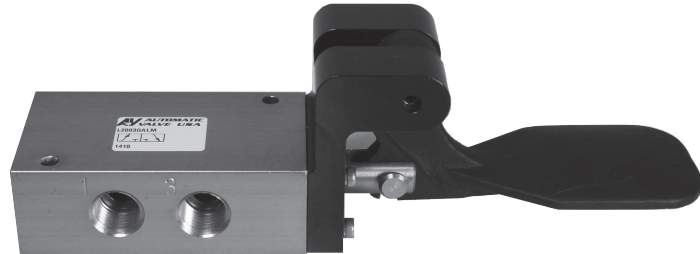
L4505GAFR

Palm Button



L2003GAIR

Foot Pedal



L2003GAKR

Model Numbers

Body Type	Operator	Port Size	Flow l/min (Cv)	3 Way Normally Closed Spring Return	3 Way Normally Open Spring Return	Materials		Wt Kg (lb)
						Body	Seal	
L20	Foot Pedal	1/4	1770 (1.8)	L2003GAKR	L2003HAKR	Aluminum	NBR	0,4 (0.9)
		3/8		L2004GAKR	L2004HAKR			
	Hand Lever Line Mounted	1/4		L2003GAFR	L2003HAFR			
		3/8		L2004GAFR	L2004HAFR			
	Palm Button	1/4		L2003GAIR	L2003HAIR			
		3/8		L2004GAIR	L2004HAIR			
L45	Foot Pedal	1/2	3940 (4.0)	L4505GAKR	L4505HAKR	Aluminum	NBR	0,9 (1.9)
	Hand Lever Line Mounted			L4505GAFR	L4505HAFR			
				Palm Button	L4505GAIR			

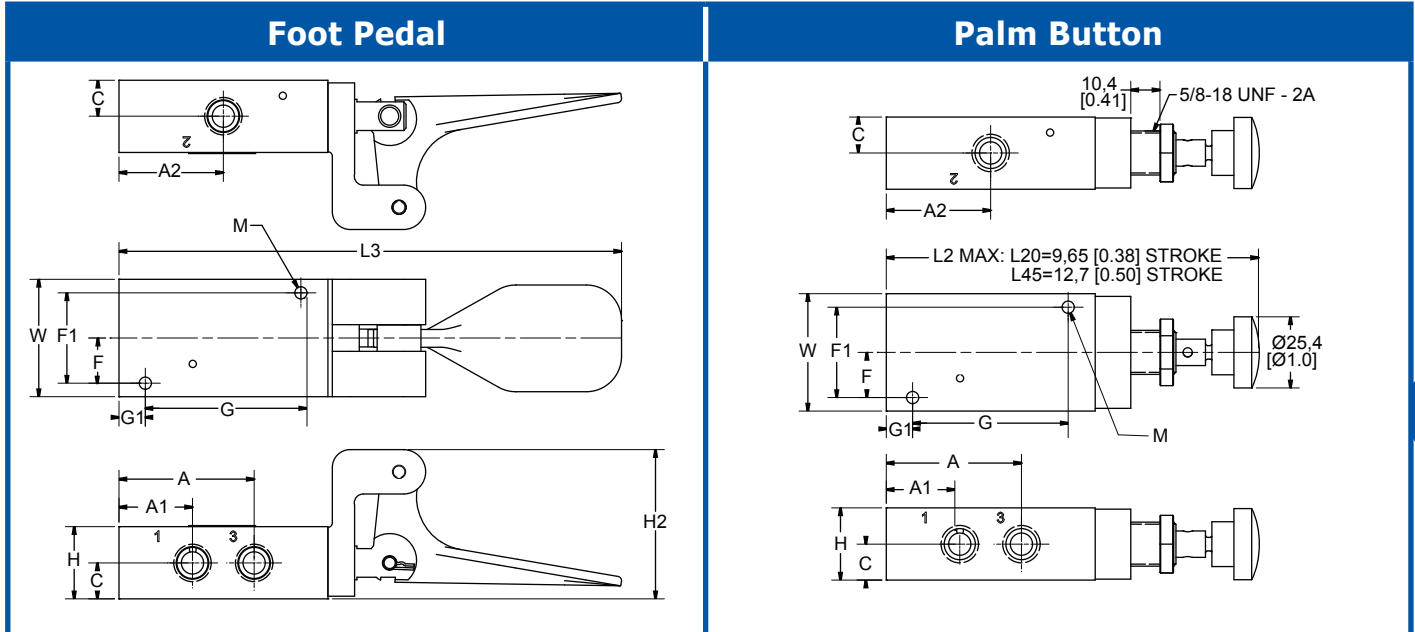


3 Way Compact Spool Valves Manual and Lockout

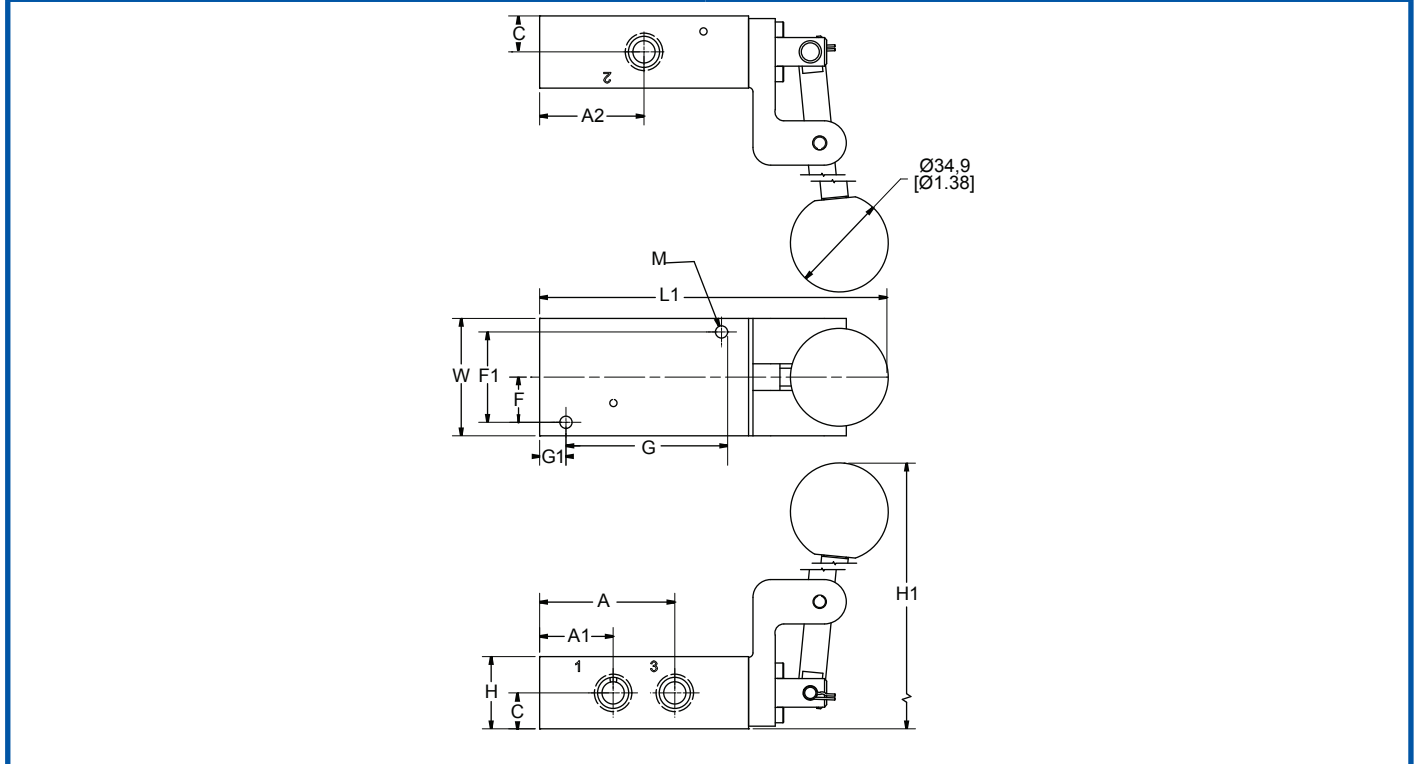
3/2



Dimensional Information



Hand Lever (Line Mounted)



Series	A	A1	A2	C	F	F1	G	G1	H	H1	H2	L1	L3	M	W
L20	48,2 1.90	26,2 1.03	37,3 1.47	12,7 0.50	16,1 0.64	32,3 1.27	55,6 2.19	9,7 0.38	25,4 1.00	136 5.35	53,3 2.10	129 5.09	182 7.16	4,3 0.17	41,9 1.65
L45	69,1 2.72	39,3 1.47	53,1 2.09	16,0 0.63	23,9 0.94	47,8 1.88	69,8 2.75	18,3 0.72	31,8 1.25	139 5.47	56,3 2.22	168 6.62	214 8.42	6,6 0.26	63,5 2.50

Units of Measure: Top - mm, Bottom - inches

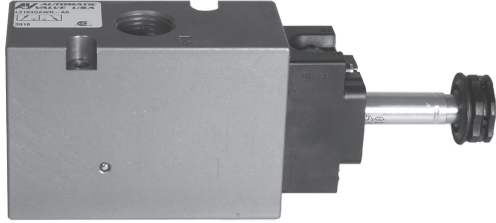
3/2



3 Way Compact Spool Valves Top Mount & Manifold

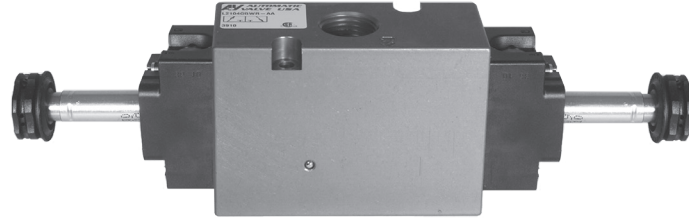


L21 Single



L2104GAWR-AA

L21 Double



L2104GBWR-AA

B

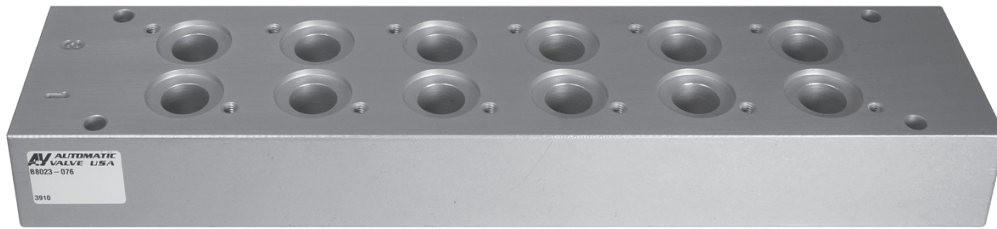
Model Numbers

Series	Operator	Port Size	Flow l/min (Cv)	3 Way Normally Closed		3 Way Normally Open		Mat'l		Wt Kg (lb)
				Single	Double	Single	Double	Body	Seal	
L21	Weather-Proof and Explosion-Proof	1/4	1770 (1.8)	L2103GAWR-**	L2103GBWW-**	L2103HAWR-**	L2103HBWW-**	Aluminum	NBR	0,4 (0.9)
		3/8		L2104GAWR-**	L2104GBWW-**	L2104HAWR-**	L2104HBWW-**			
	Intrinsically-Safe ¹	1/4		L2103GAVR-DB	L2103GBVV-DB	L2103HAVR-DB	L2103HBVV-DB			0,5 (1.2)
		3/8		L2104GAVR-DB	L2104GBVV-DB	L2104HAVR-DB	L2104HBVV-DB			

** = Coil Voltage Code. Coils also sold separately. Refer to "Electrical Information" at the end of this Section for additional information.

¹ Intrinsically-Safe coils can not be used on manifolds

Manifold



B8023-076

Model Numbers

Series	Manifold ²				Accessories	
	No. of Stations	Model Number	Ports 3, 1 & 5	Weight kg (lb)	Blocking Disk	Blank Station Cover
L21	2	B8023-072	3/8	0,45 (1.0)	A8020-202	L21-006
	4	B8023-074		0,82 (1.8)		
	6	B8023-076		1,0 (2.2)		
	8	B8023-078		1,1 (2.5)		
	10	B8023-080		1,3 (2.8)		

² Seals and Mounting Hardware included.



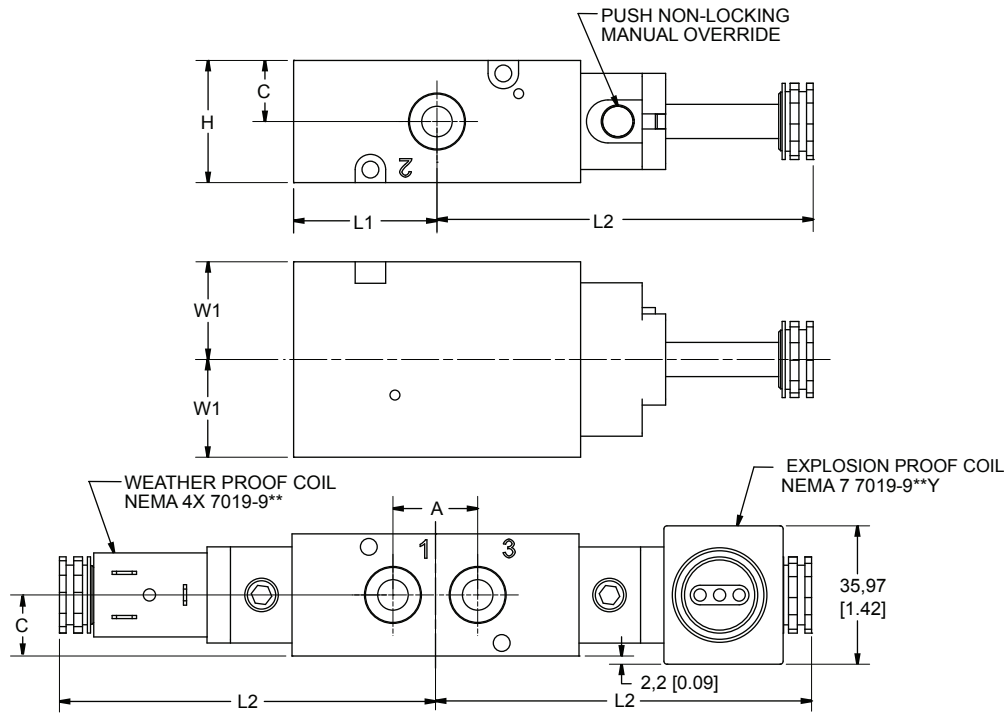
3 Way Compact Spool Valves Manifolds

3/2



Dimensional Information

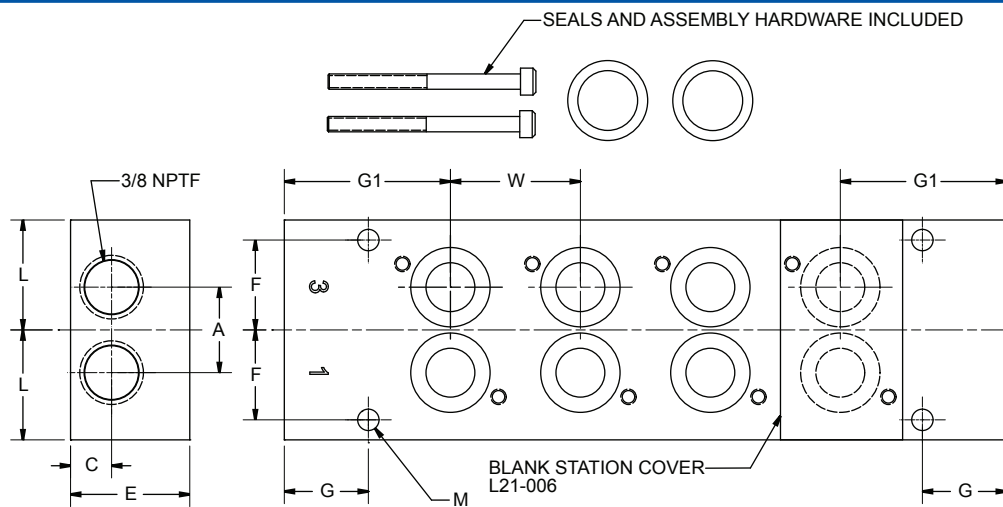
L21



Series	A	C	H	L1	L2	W1
L21	22,02 0.87	15,88 0.63	31,75 1.25	37,26 1.47	97,79 3.85	25,4 1.00

Units of Measure: Top - mm, Bottom - inches

Manifold



Series	A	C	E	F	G	G1	L	M	W
L21	22,23 0.88	10,67 0.42	30,99 1.22	23,37 0.92	21,84 0.86	43,18 1.70	28,58 1.13	5,56 0.22	33,78 1.33

Units of Measure: Top - mm, Bottom - inches

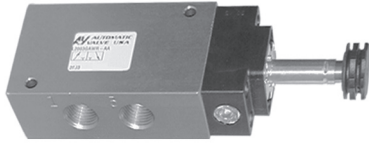
3/2



3 Way Compact Spool Valves Configuration Example



Valve With W-Solenoid Cap + Coil = Valve With Coil



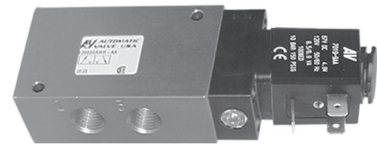
L2003GAWR

+



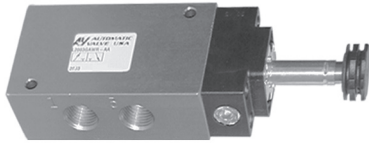
NEMA 4x with DIN
43650 Form B
Connection
7019-9**

=



L2003GAWR-**

B



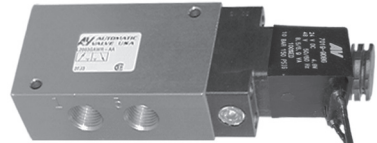
L2003GAWR

+

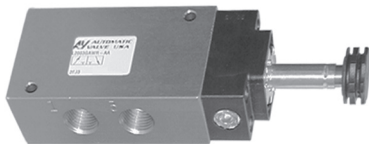


NEMA 4x with
18" Leads
7019-9**G

=



L2003GAWR-**G



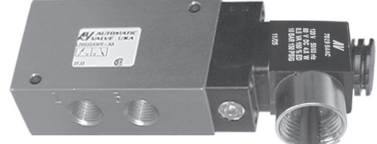
L2003GAWR

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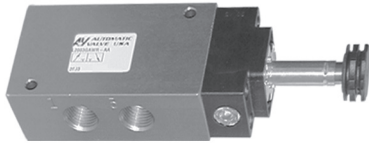


NEMA 4x 1/2" Conduit
with 30" Leads
7019-9**C

=



L2003GAWR-**C



L2003GAWR

+



Explosion-Proof 1/2"
Conduit with 24" Leads

=



L2003GAWR-**Y



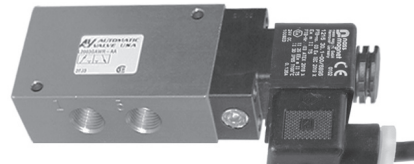
L2003GAWR

+



ATEX Explosion-Proof
with 39" Cable

=



L2003GAWR-**Z



3 Way Compact Spool Valves

Electrical Information

3/2



3 Way Compact Spool Valves

B

Part Numbers

Description	Operator Type	Instructions	Wt. Kg(lb)	Coil Part Number **=Voltage
Weather-Proof DIN 43650 Industrial Form B Connection NEMA 4X	W	Order coil separately (specify voltage code from below)	0,05 (0.12)	7019-9**
Weather-Proof 18" Leads NEMA 4X	W	Order coil separately (specify voltage code from below)	0,05 (0.12)	7019-9**G
Weather-Proof 1/2" Conduit with 30" Leads NEMA 4X	W	Order coil separately (specify voltage code from below)	0,05 (0.12)	7019-9**C 7019-9**CT (high temp 82°C max)
Explosion-Proof 1/2" Conduit with 24" Leads CSA & FM Approved CL. I; Zone1 ExmII T4; AExmII 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, 9	W	Order coil separately (specify voltage code from below)	0,20 (0.44)	7019-9**Y
Intrinsically-Safe Strain Relief Ex ia CL. I; GR. A,B,C,D CL. II; GR.E,F,G CL. III; Div.1; T5	V	Coil and Connector included with valve (24VDC only)	0,21 (0.46)	A7106-374-DB
Explosion-Proof 3m Cable & Strain Relief Ex m II T5 PTB 03 ATEX 2018 X Ex II 2 G EEx m II T5 Ex II 2 D IP65 T95°C	Z	Order coil separately (specify voltage code from below)	0,36 (0.78)	7152-9**

A7106-374 Must be Used with an Intrinsically-Safe Barrier
For more information refer to "Intrinsic Safety" insert on Page D7.

Voltage Codes (Lower wattage options available, consult factory)

** Code	Voltage +/- 10%	Current (Amps)								Resistance (OHMS @ 25°C)				Power (AC=VA, DC=Watts)				
		Inrush				Holding				W		V		W		V		
		Operator Type:		W	V	Z	W	V	Z	W	V	Z	W	V	Z	W	V	Z
		NEMA 4	NEMA 7,9 & ATEX	NEMA		ATEX		NEMA		ATEX		NEMA		ATEX		NEMA		ATEX
		4, 4x	7, 9	Exia	Exm	4, 4x	7, 9	Exia	Exm	4, 4x	7, 9	Exia	Exm	4, 4x	7, 9	Exia	Exm	
DA	24/50 24/60	-	.36	-	-	.24	-	-	-	32	-	-	-	6.9	-	-	-	
AA	120/50 120/60	120/60	.08	.10	-	.04	.05	.05	-.03	840	530	-	1664	6.9	6.5	-	3.4	
AB	230/50 230/60	240/60	.04	.05	-	.02	.03	.03	-.01	3310	2345	-	6730	6.4	6.8	-	3.3	
DA	12 VDC	12VDC	.38	.38	-	.27	.38	.38	-.27	32	32	-	45	4.8	4.5	-	3.5	
DB	24 VDC	24VDC	.20	.19	.05	.14	.20	.19	.05	.14	121	128	275	177	4.8	4.5	1.6	3.5
AB	125 VDC	-	.04	-	-	-	.04	-	-	-	3310	-	-	-	5.9	-	-	-

Connectors (Not polarity dependent)

DIN 43650 Industrial Form B	Maximum Cable Diameter: 9mm (0.35")		1/2" Conduit without Cord		Molded with 6' Cord	Strain Relief with Light & 6' Cord	
Type	Strain Relief without Cord	Strain Relief with Light				100-240 AC 48-120 DC	6-48 AC/DC
Part Number	7020-001	7020-AA	7020-DB	7039-001	7020-006	7094-006	7094-007



3 Way Compact Spool Valves Options



Options (Add the Suffix to the end of the Model Number in alpha-numeric order)

Suffix	Option	Description
A	Fluoroelastomer Seals	For applications where fluid media or ambient conditions are not compatible with nitrile seals. (Lockout Valve only) <i>Note: Fluorocarbon seals do not increase the effective temperature range of the valve. For high temperature applications, consult the factory.</i>
B	External Pilot	For solenoid applications where the pressure to port one is less than 2 BAR (35 PSIG). See example below for field conversion.
		<p style="text-align: center;">Field Conversion</p> <ul style="list-style-type: none"> Remove solenoid and cap from the valve body. Rotate the gasket 180° so that the internal pilot hole in the valve body is covered by the gasket. Refasten the gasket, cap and solenoid to the valve body. Make sure the gasket completely covers the internal pilot hole before tightening the M3 screws. Torque to 1,02 N-m (9 in-lbs) ±10%. Remove the 1/8 NPTF pipe plug from the cap and make the external pilot connection. <p style="text-align: center;">EXTERNAL PILOT VALVES GASKET ROTATED 180°</p> <p style="text-align: center;">INTERNAL PILOT VALVES</p> <p style="text-align: center;">REMOVE 1/8 NPTF PIPE PLUG FOR EXTERNAL PILOT PORT</p>
C	Conduit Coil	Refer to the "Electrical Information" page in this section for details.
CT	Conduit Coil High Temperature	Refer to the "Electrical Information" page in this section for details.
D	Dustproof	For applications in extremely dusty and contaminated environments. Vent ports are plugged and spring pad breather vent is eliminated.
G	Coil With 18" Leads	Refer to the "Electrical Information" page in this section for details.
L	Low Watt Coil	Power Consumption = 2.5 Watts. Standard as Push Non-Locking Override. Also available with Option 2, Extended Turn-Locking Override.
LL	Lowest Watt Coil	Power Consumption = 0.7 Watts. Standard as Extended Turn-Locking Override.
W	G Threads	All ports tapped to metric "G" standard.
Y	Explosion-Proof Coil (CSA, FM)	Refer to the "Electrical Information" page in this section for details.
Z	Explosion-Proof Coil (Atex, PTB)	Refer to the "Electrical Information" page in this section for details.
1	Push Turn-Locking Override	Solenoid cap provides an override that is pushed in and turned to actuate & lock in the "on" position.
2	Extended Turn-Locking Override	Solenoid cap provides an extended override that is turned to lock in the "on" position.
4	No Override	Solenoid cap does not provide a manual override.