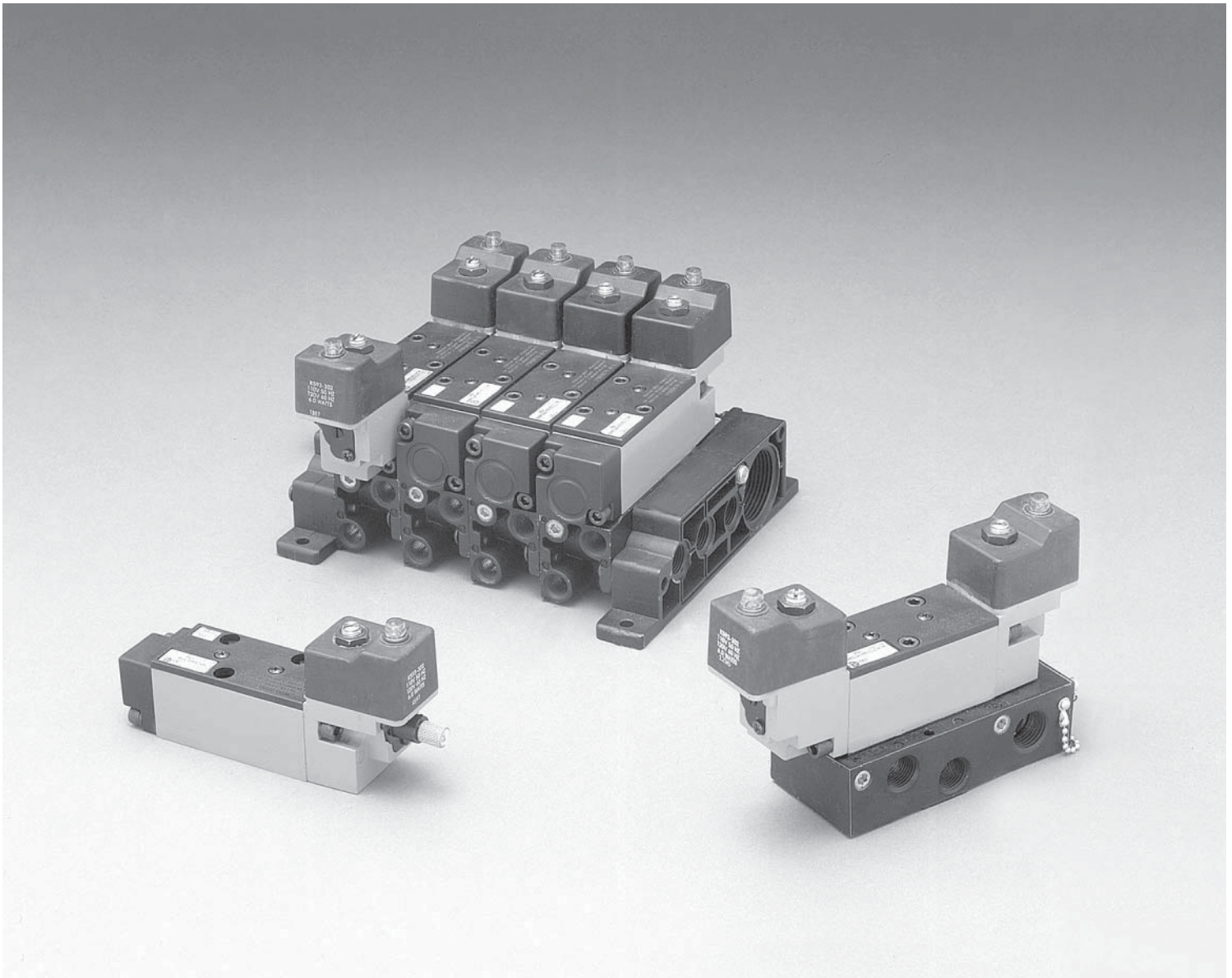




Valvair Sprint™

Pneumatic Valves
Solenoid & Pilot-Operated
Directional Spool Valves

Catalog VAL-VS-E/USA
April 2004



SUBBASE & MANIFOLD MOUNTED

1/4" & 3/8" PORTS

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DIRECT PIPE PORTED (INLINE MOUNTED)

1/4" PORTS

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Single & Double Remote Air Pilot Operated Valves	3
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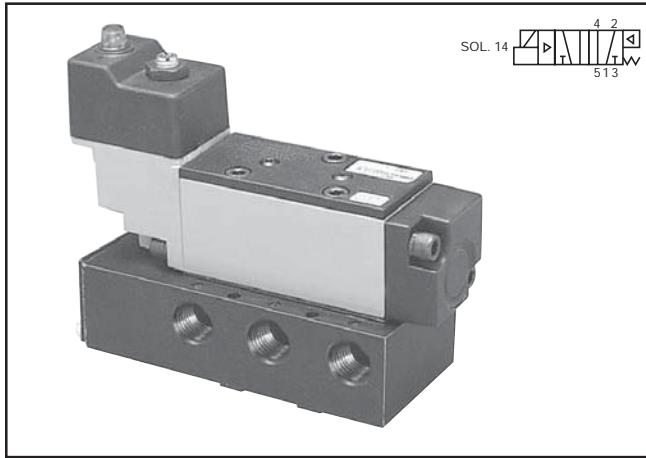
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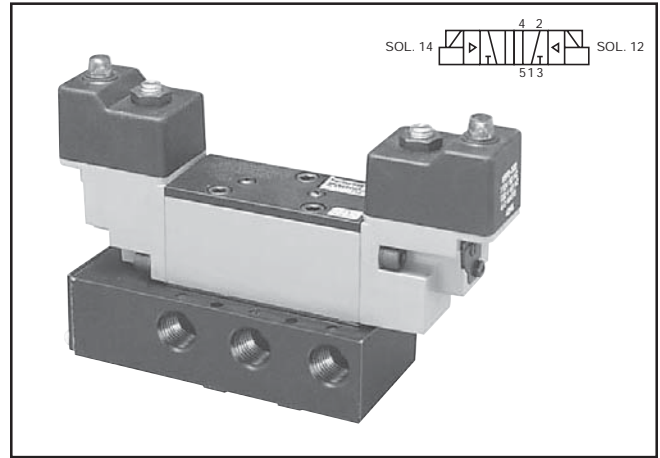
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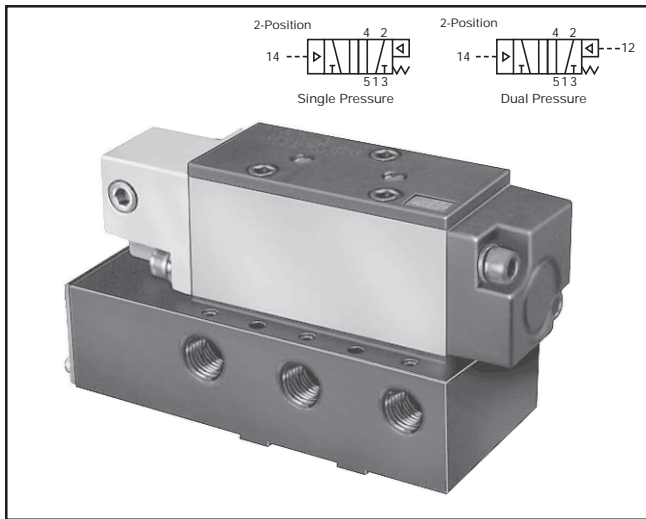
Subbase & Manifold Mounted,
 Single Solenoid, 2-Position



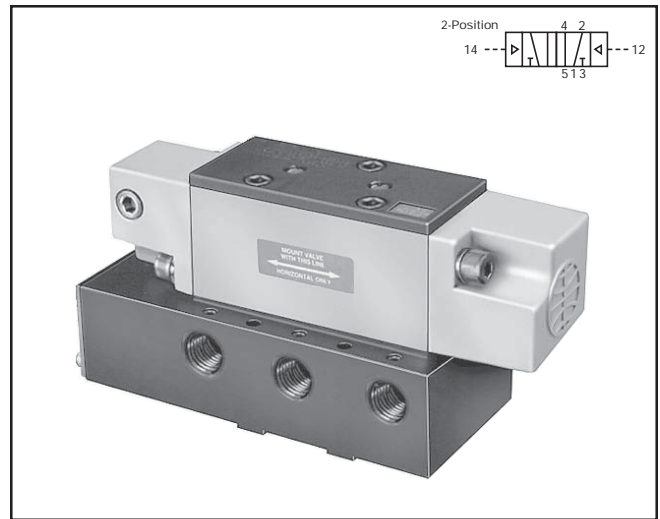
Subbase & Manifold Mounted,
 Double Solenoid, 2-Position



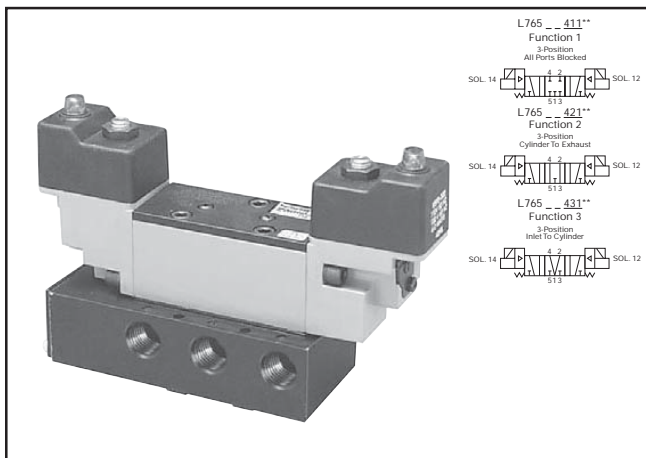
Subbase & Manifold Mounted,
 Single Remote, 2-Position



Subbase & Manifold Mounted,
 Double Remote, 2-Position



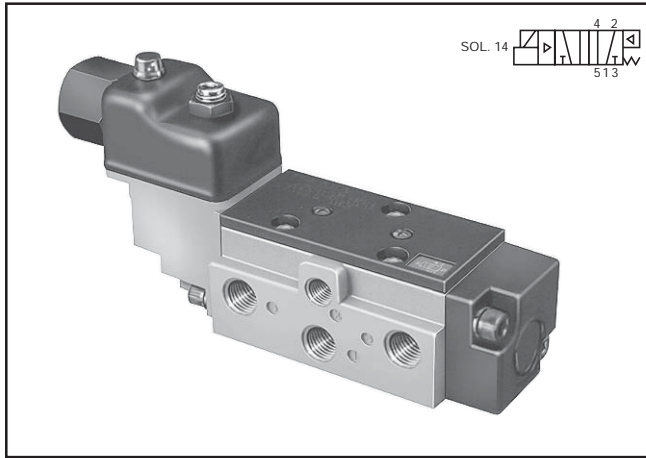
Subbase & Manifold Mounted,
 Double Solenoid, 3-Position



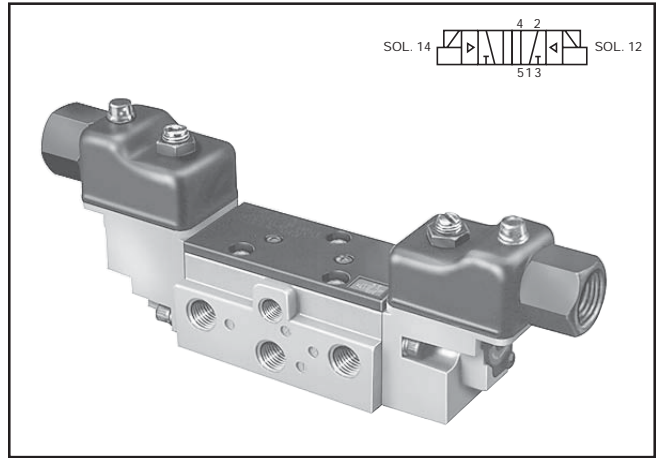
Plug-In / Non Plug-In

Subbase	Manifold	Port		Port Adaptor	
		Side	End		
K022112	—	1/4"	1/2"	—	Plug-In
K022113	—	3/8"	1/2"	—	
—	K142175	3/8"	1-1/4"	K122022	
K022077	—	1/4"	—	—	Non Plug-In
K022078	—	3/8"	—	—	
—	K142174	3/8"	3/8"	K122022	

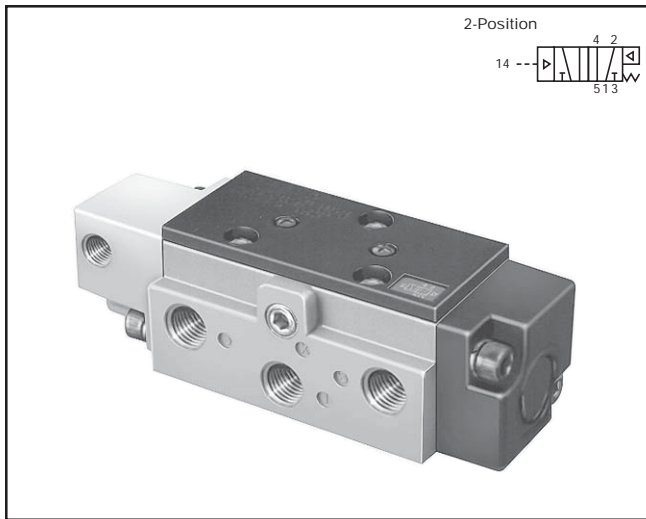
Direct Pipe Ported,
Single Solenoid, 2-Position



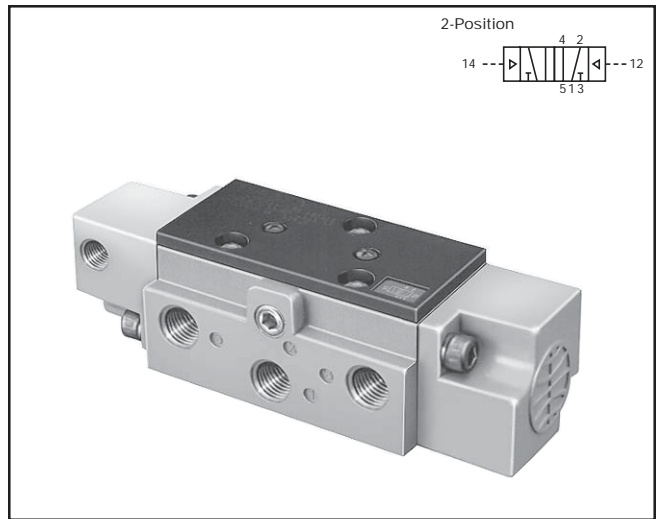
Direct Pipe Ported,
Double Solenoid, 2-Position



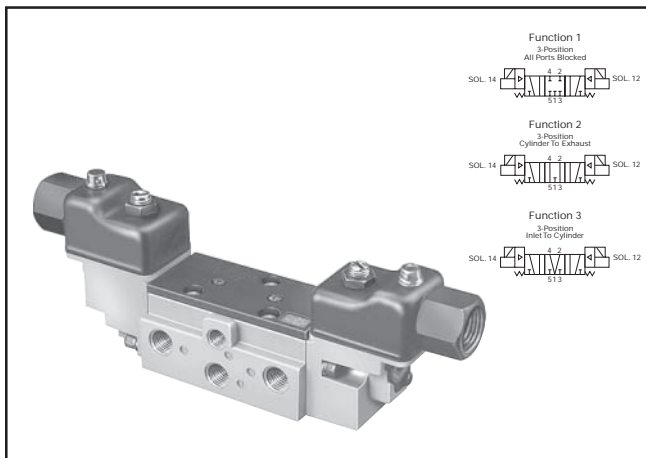
Direct Pipe Ported,
Single Remote, 2-Position



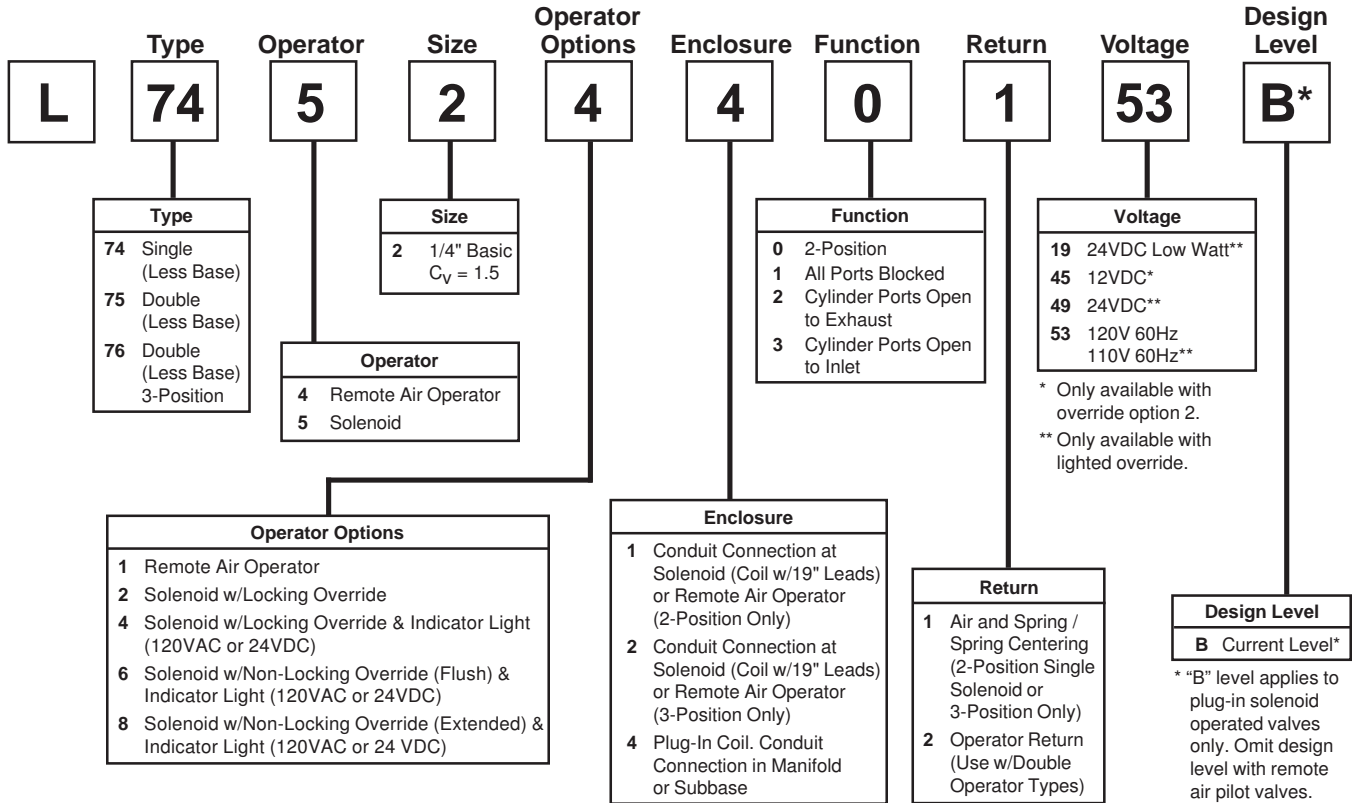
Direct Pipe Ported,
Double Remote, 2-Position



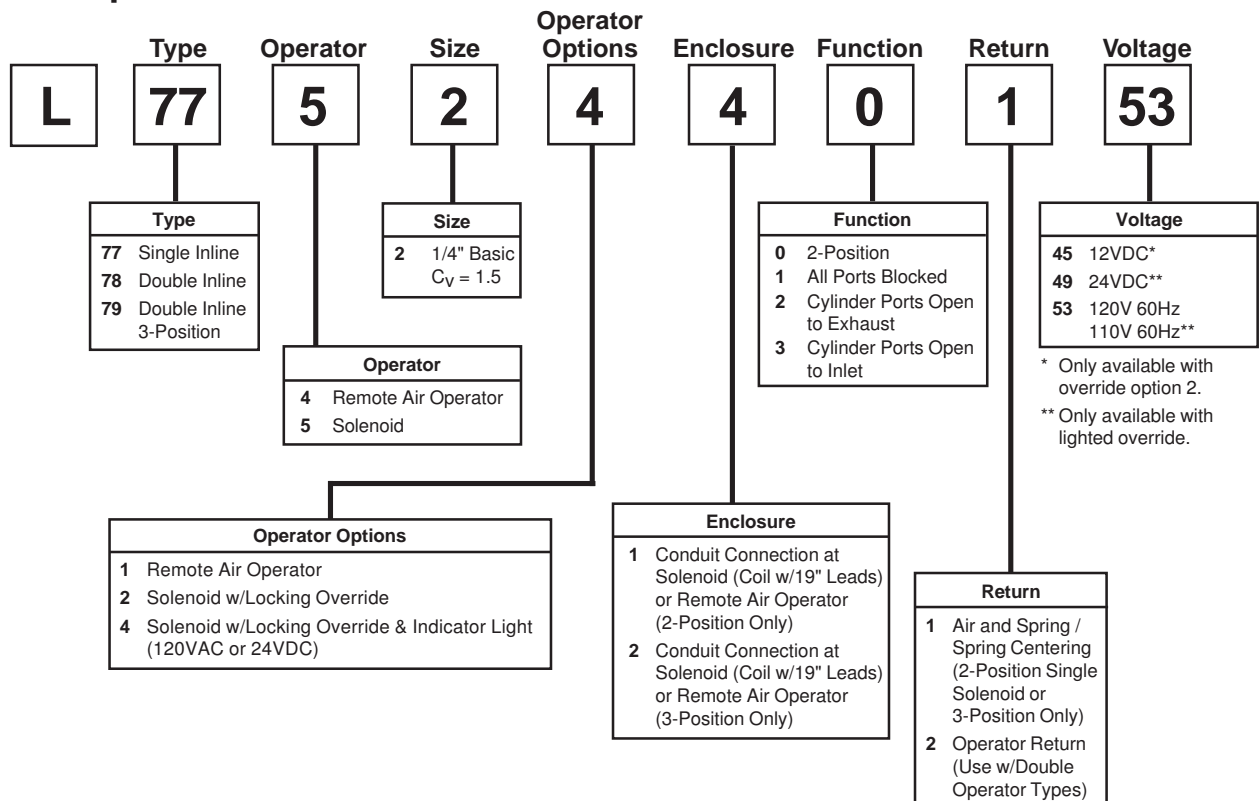
Direct Pipe Ported,
Double Solenoid, 3-Position



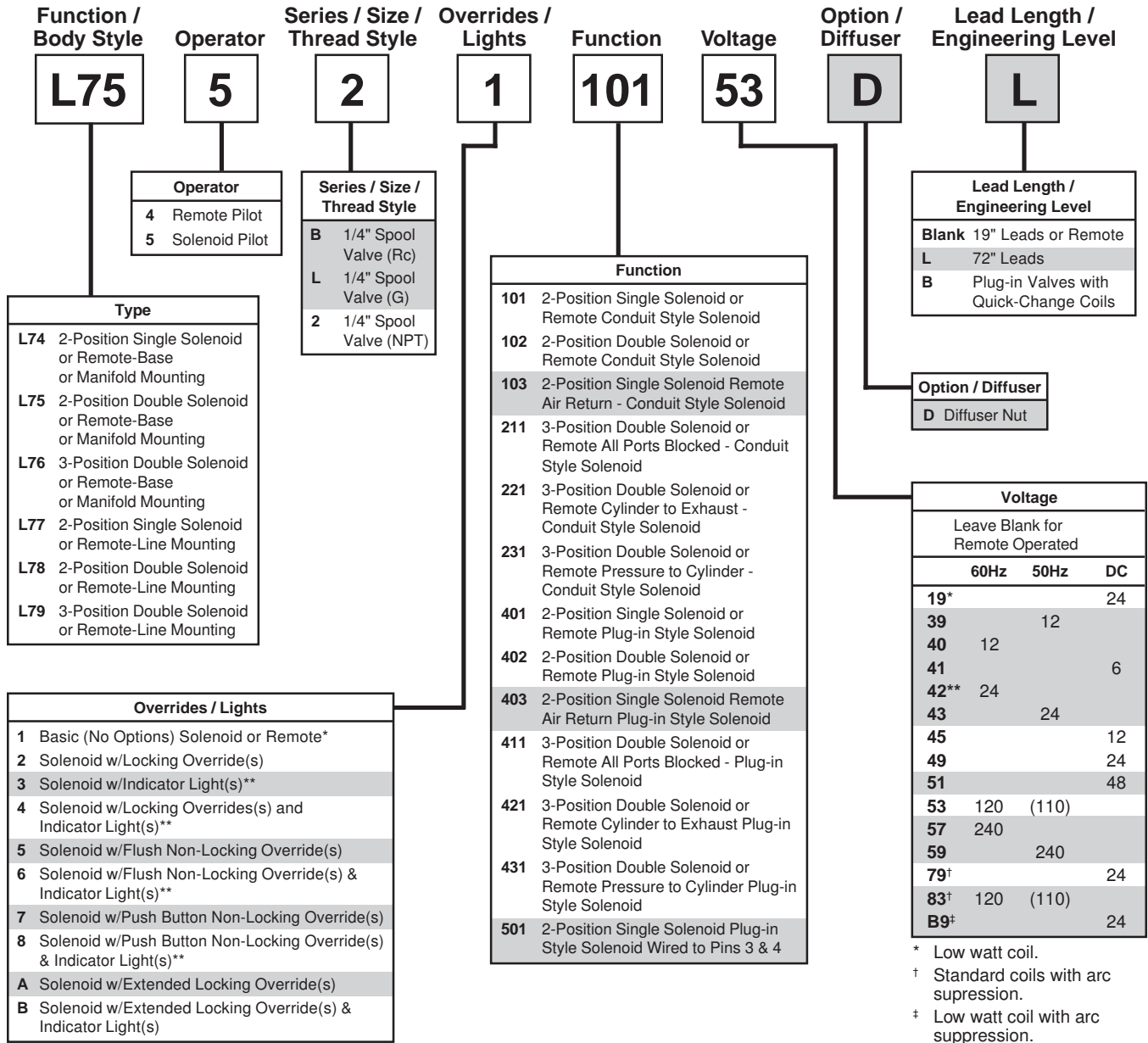
Subbase & Manifold Mounted 2-Position and 3-Position



Direct Pipe Ported 2-Position and 3-Position



Historical Model Index with Full Options



* Remote Air Operator only.

** Available in 120 V/60 Hz and 24 VDC Only.

* Low watt coil.

† Standard coils with arc suppression.

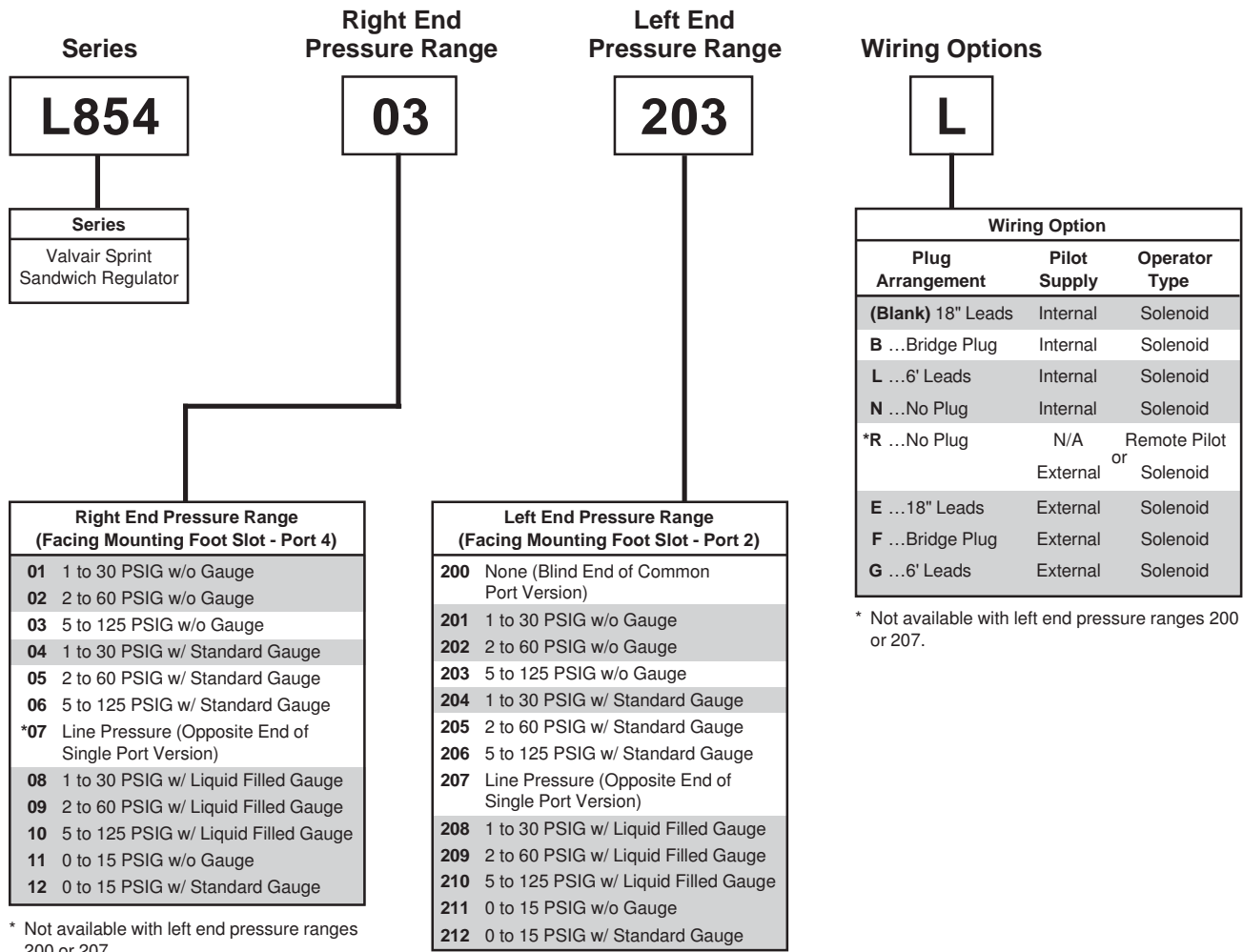
‡ Low watt coil with arc suppression.

** Only available with L77, L78, L79 Function / Body Style

FOR REFERENCE ONLY

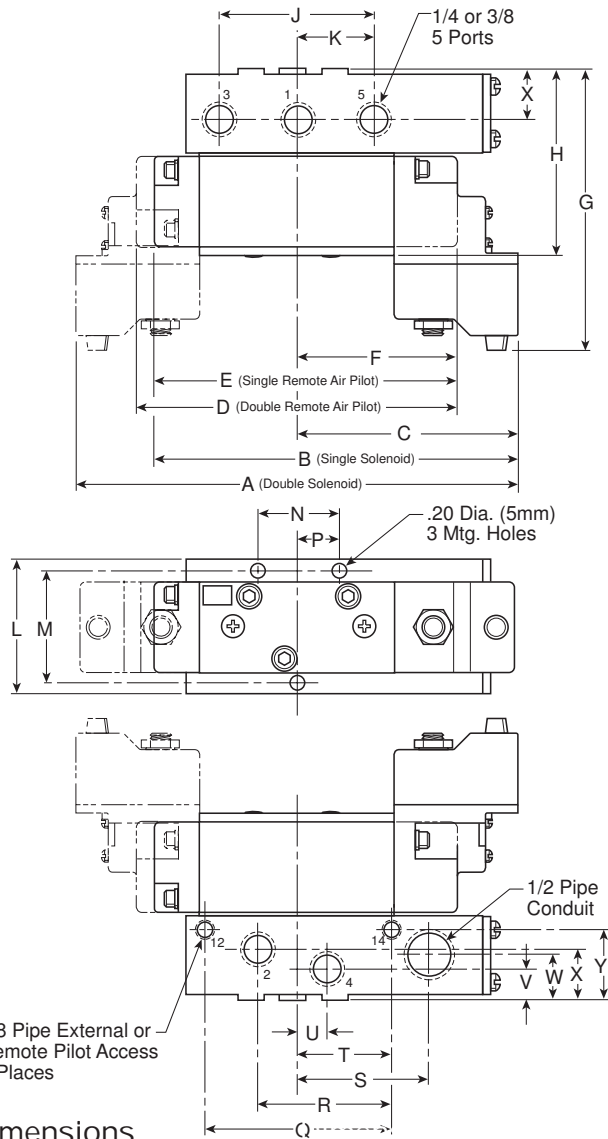
Note: Shaded options have been discontinued. Refer to back of Catalog for Cross Reference Information.





Note: Shaded options have been discontinued. Refer to back of Catalog for Cross Reference Information.

2 & 3-Position
 Subbase Mounted Valves

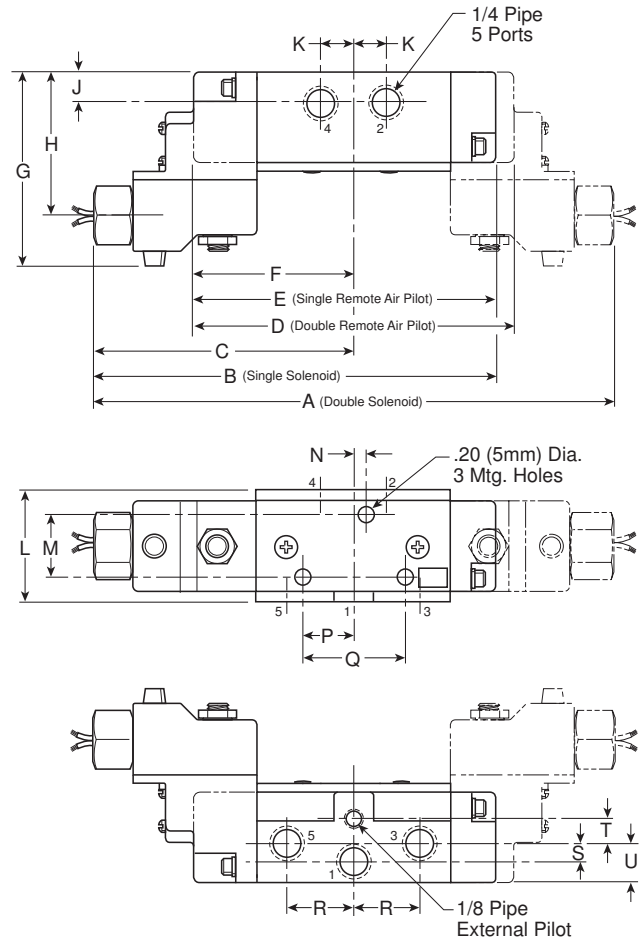


Dimensions

	inches	mm
A	7.27	185
B	6.03	153
C	3.66	92
D	5.84	148
E	5.29	134
F	2.92	74
	4.81	122
H	3.27	83
	2.56	65
	1.28	32
L	2.25	57
M	1.90	48

	inches	mm
N	1.28	32
P	.64	16
	3.10	79
R	2.22	56
S	2.25	57
T	1.55	39
	.50	13
	.47	12
	.75	19
	.94	24
	1.14	29

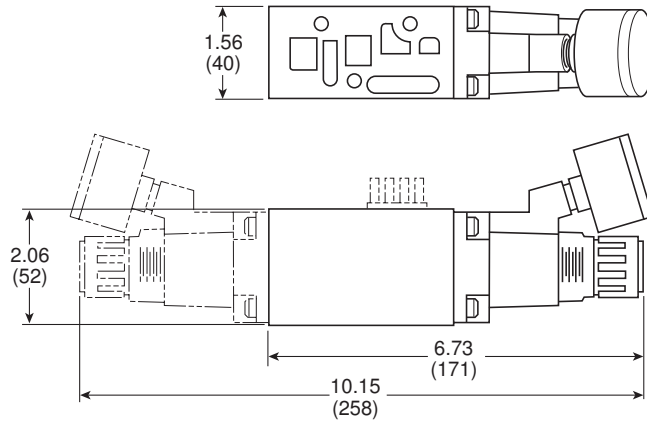
2 & 3-Position
 Direct Pipe Ported Valves



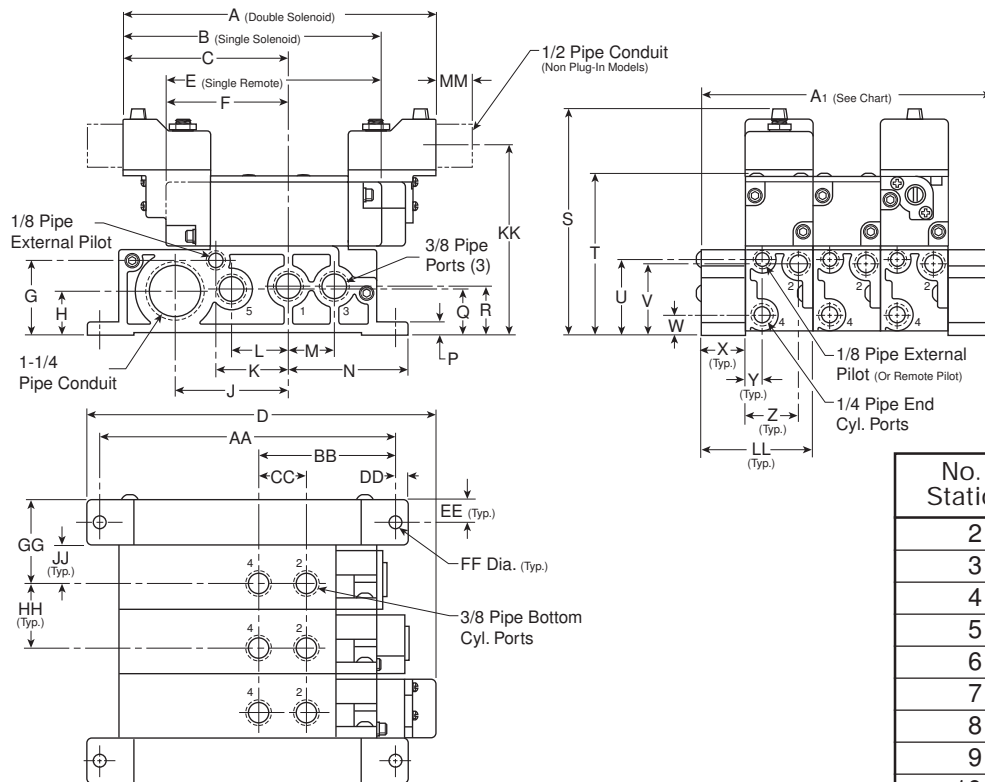
Dimensions

	inches	mm
A	8.70	221
B	6.75	172
C	4.35	110
D	5.82	148
E	5.31	135
F	2.91	74
	3.31	84
H	2.37	60
	.56	14
	.60	15
L	2.00	84
M	1.03	20

	inches	mm
N	.19	5
P	.98	25
	1.56	40
R	1.20	30
S	.31	8
T	.44	11
	.69	18



Manifold System Dimensions



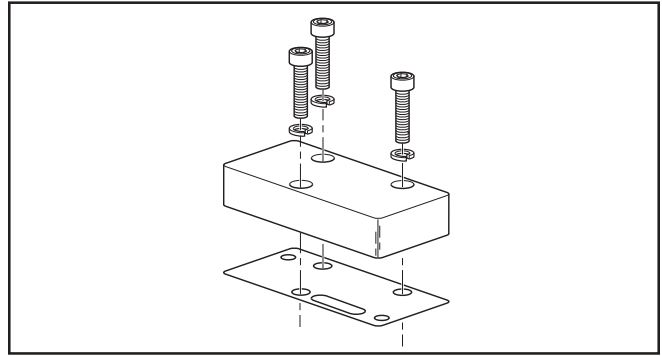
No. of Stations	A ₁ Dimension	mm
2	5.26	133
3	6.85	174
4	8.44	214
5	10.03	255
6	11.62	295
7	13.21	336
8	14.80	376
9	16.40	417
10	17.98	457

	A	A ₁	B	C	D	E	F		H		L	M	
inches	7.27	See Chart	6.03	3.63	8.31	5.29	2.92	1.75	1.02	2.65	1.68	1.30	1.00
mm	185		153	92	211	134	74	44	26	67	43	33	25
	N	P		R	S	T						AA	
inches	2.83	.31	1.06	1.13	5.28	3.75	1.75	1.66	.46	1.04	.36	1.24	6.84
mm	72	8	27	29	134	95	44	42	12	26	9	32	174
	BB	CC	DD	EE	FF		HH			LL	MM		
inches	3.10	1.10	.33	.52	.28	2.03	1.59	.99	4.35	2.63	.75		
mm	79	28	8	13	7	52	40	25	110	67	19		

Blank Station Plate

Model No. 342 5

- Allows customizing of Manifold assemblies.
- May be used with either Plug-In or Non-Plug-In Manifolds.
- Includes mounting screws & gasket.

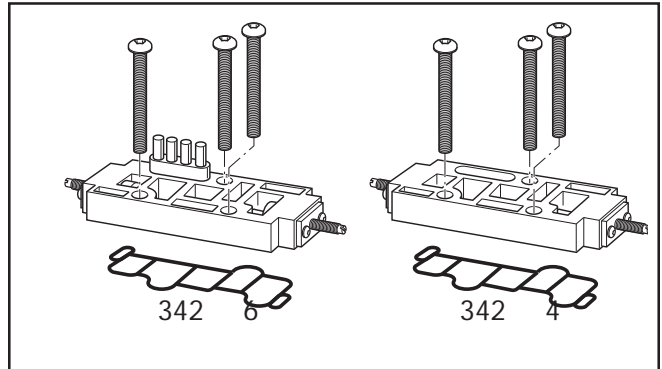


Flo Control Sandwich

Meters Cylinder Exhaust Through Valve
Plug-In Model No. 342 6

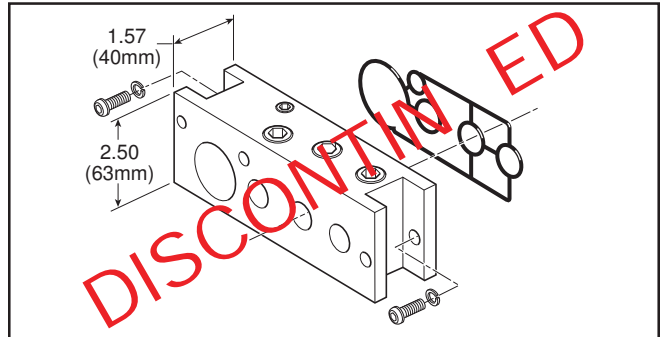
Non Plug-In Model No. 342 4

- May be used with either Subbase or Manifold Mounted Valves.
- Models shown include mounting screws & gasket.
- "Sandwich" is 1/2" thick.



Manifold Auxiliary Port Base

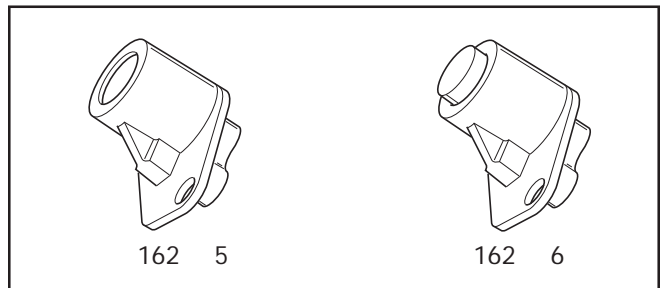
Model No. 142 176



Non-Locking Overrides

Part No. 162 5 & 162 6

- Flush or extended push-button.
- May be ordered in kit form or factory assembled in valve.
- Easily retrofits to Solenoid Operated Sprint Valves.



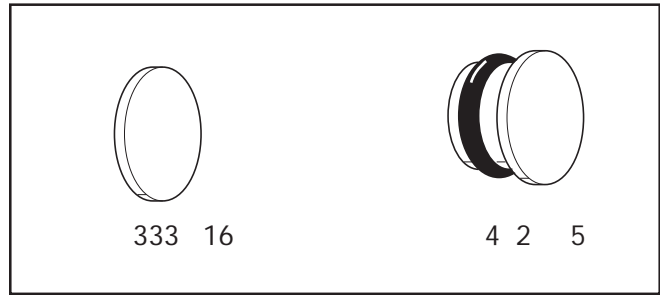
Isolator Plugs

Port Isolator Plug Part No. 333 16

- Plug separates the supply and/or exhaust ports.
- Permits multiple pressures in a manifold.
- Order (1) plug for each internal gallery to be isolated.

-Port Isolator Plug Part No. 4 2 5

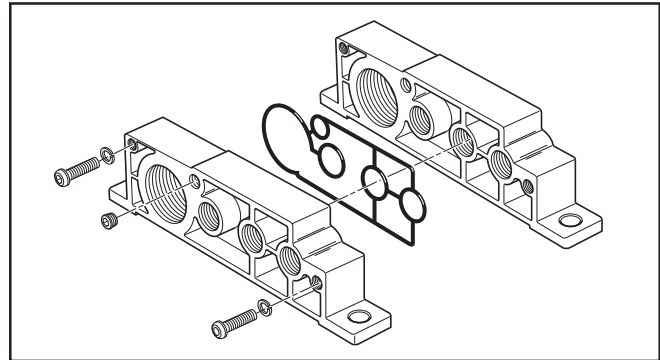
- Plug assembly isolates external pilot galleries.

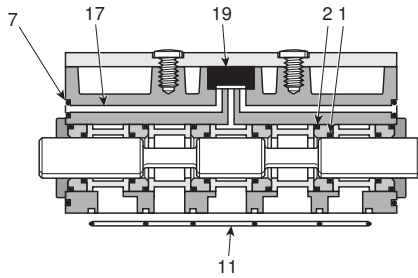


Port Adapter Kit

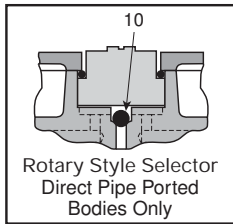
Model No. 122 22

Note Kit contains (2) side plates, (1) gasket, (2) screws, (2) washers and (2) 1/8 inch pipe plugs.

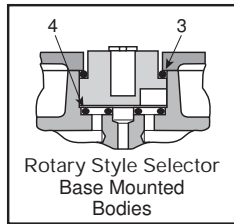




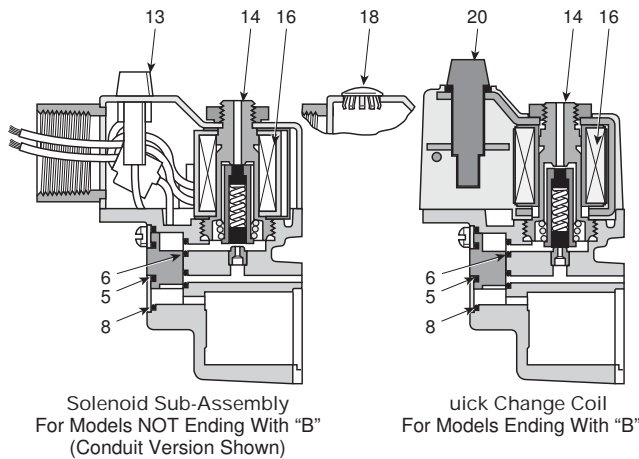
Body Assembly Plug-In Type
 with Plug Style Selector



Rotary Style Selector
 Direct Pipe Ported
 Bodies Only



Rotary Style Selector
 Base Mounted
 Bodies



Solenoid Sub-Assembly
 For Models NOT Ending With "B"
 (Conduit Version Shown)

Quick Change Coil
 For Models Ending With "B"

Solenoid Subassembly Includes Coil

Conduit Type	Plug-In Type*	Description
172 1 **	172 5 **	No Options
172 2 **	172 6 ** Override	with Manual Locking
172 3 **	172 7 **	with Indicator Light
172 4 **	172 **	with Indicator Light and Locking Override
172 **	172 13**	with Flush Non-Locking Manual Override
172 1 **	172 14 **	with Indicator Light and Flush Non-Locking Manual Override
172 11 **	172 15 ** Override	with Push Button Non-Locking Manual
172 12 **	172 16 **	with Indicator Light and Push Button Non-Locking Manual Override

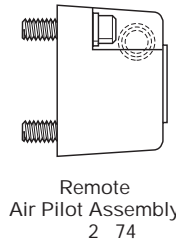
* These solenoid sub assemblies enable conversion to the "B" engineering level.

** Specify Voltage Suffix Code.

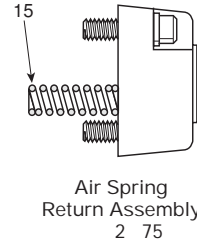
† Only available with 42 or 45 voltage codes.

‡ Only available with 19, 42, or 53 voltage codes.

Note Shaded areas are no longer available.

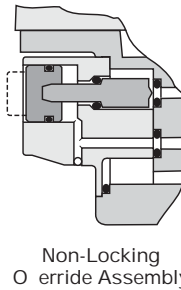


Remote
 Air Pilot Assembly
 2 74

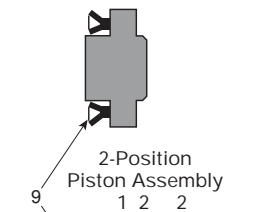


Air Spring
 Return Assembly
 2 75

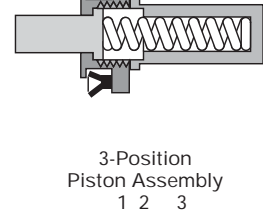
Override Kits
 Locking 152
 Non-Locking overrides are not field serviceable, however, they may be ordered using the subassembly numbers below:
 162 5 Flush
 162 6 Extended Push Button



Non-Locking
 Override Assembly



2-Position
 Piston Assembly
 1 2 2



3-Position
 Piston Assembly
 1 2 3

Service Kit 352 3 6

Item No.	Part No.	Description
•1	—	O-ring (Dynamic)
•2	—	O-ring (Static)
•3	—	O-ring (Old Style)
•4	—	O-ring (Old Style)
•5	—	O-ring
•6	—	Seal
•7	—	Seal
•8	—	Seal
•9	—	U-Cup
•10	—	Ball
•19	K213 026	Selector Plug

Sandwich Regulator

PSI	Model Number
30 PSI	H03272
60 PSI	H03273
160 PSI	H03274


Service Kit PS460BP

Item No.	Part No.	Description
11	K663 006	Seal (Body to Base)
12	K663 009 (Not Shown)	Seal (Between Manifolds and Port Plate)
13	H191 09	Light 120VAC
	H191 10	Light 24VDC
14	K232 025	Plunger & Guide Assembly
15	K473 053	Spring
16	See Page 13 for Replacement Coils	
17	K493 041	Spool 2-Position
	K493 044	Spool 3-Position (All Ports Blocked)
	K493 042	Spool 3-Position (Cyl. Ports Open to Exhaust)
	K493 043	Spool 3-Position (Cyl. Ports Open to Inlet)
18	H079 09	Plug
20	K252 008	Light 24VDC (Plug-In)
	K252 009	Light 120VAC (Plug-In)

⚠ Caution: Always remove air pressure and electricity from circuit before servicing valve.


Pressure Range

Medium	Internal	External Pilot Supply	Pilot Supply
Air	Main Valve	35-150 PSIG	0-150 PSIG
	Pilot		35-150 PSIG
Vacuum	Main Valve	Do Not Use	28" Hg. Vacuum
	Pilot		35-150 PSIG
Other	Consult Supplier		

 CAUTION When Low Watt Voltage Code 19 is specified, Max Pilot Pressure is 90 PSI.

Ambient Temperature Range °F

All Valves	
*Minimum	Maximum
20	140

 CAUTION If it is possible that the ambient temperature may fall below freezing, the medium must be moisture free to prevent internal damage or unpredictable behavior.

Voltage Code, Replacement Coils & Electrical Characteristics.

L ** _____ voltage Code

Quick Change Coils for Model Numbers Ending with B

Voltage Code **	Voltage			Coil Number		Power Consumption Watts	AC		DC
	6 H	5 H	DC	with Indicator Light	with 1 Lead		Inrush Amps	Hold Amps	Hold Amps
19*	—	—	24	K593 307	—	2.5†	—	—	.105
41	—	—	6	—	K593 286	6.0	—	—	.83
42	24	—	—	—	K593 288	6.0	.60	.41	—
45	—	24	12	—	K593 289	6.0	.57	.40	.47
49	—	—	24	K593 303	—	6.0	—	—	.23
53	120	110	—	K593 302	—	6.0	.12	.10	—
57	240	—	—	—	K593 294	6.0	.07	.045	—

† With Indicator Light, 3.1 Watts.
* Max. Pressure: 90 PSIG, 2.8 Watts, 3.4 Watts with indicator lights.

Coils for Model Numbers Not Ending with B

Voltage Code **	Voltage			Coil Number		AC		DC
	6 H	5 H	DC	Plug-In	1 Leads	Inrush Amps	Hold Amps	Hold Amps
19*	—	—	24	K593 283	K593 281	—	—	.105
41	—	—	6	K593 207	K593 167	—	—	1.30
42	24	—	—	K593 211	K593 169	.60	.40	—
45	—	—	12	K593 213	K593 170	—	—	.60
49	—	—	24	K593 215	K593 171	—	—	.34
53	120	110	—	K593 205	K593 166	.12	.08	—
57	240	—	—	K593 248	K593 175	.07	.04	—

Notes 1. Shaded areas are no longer available.
2. Indicator lights are only available for 120V/60Hz (110V/50Hz) & 24VDC coils.
3. Nominal power consumption is 6 watts.
* Max. Pressure: 90 PSIG, 2.8 Watts, 3.4 Watts with indicator lights.

 CAUTION Low Watt operator derated to 90 PSIG Max.

Materials of Construction

- Body & Bases Precision die-cast zinc alloy.
- Spool File hard, coated aluminum.
- Spacers & Seal Retainers Brass.
- Air Pistons & End Bushings Acetal Resin.
- Dynamic Seals Polyurethane.
- Static Seals Nitrile.
- Coils Class 'B', Epoxy encapsulated.

Material Selection

Safety factors are designed into each valve. However, it is important that the application requirements do not exceed the limits stated for pressure and temperature.

Life Expectancy

Normal multi-million cycle life expectancy of these valves is based on the use of properly filtered and lubricated air at room temperature. These valves are also designed to operate under non-lubricated conditions and will yield millions of maintenance free cycles.

Factory Pre-Lubrication

All valves are pre-lubricated at assembly with a Petroleum Base-Lithium Content grease.

In-Service Lubrication

In-Service Lubrication is not required. However, if lubrication is to be used, F442 oil is recommended. This oil is specially formulated to provide peak performance and maximum service life from all air operated equipment.

Other Recommended Lubricant Specifications

Use a straight Paraffin Base Mineral Oil of viscosity 100-200 SSU @ 100°F and an aniline point range greater than 200°F.

⚠ CAUTION Do not use synthetic, reconstituted, or oils with an alcohol content.

Technical Information Pneumatic Valves

Response Data

2-Position Single Solenoid

Average Response Time Seconds *

Port Size & Type	12 Cu. In. Test Chamber		1 Cu. In. Test Chamber	
	Fill	Exhaust	Fill	Exhaust
1/4" Direct Pipe (Inline Mtd.)	.061	.066	.246	.377
1/4" Subbase	.061	.068	.249	.394
1/4" Manifold	.062	.063	.234	.350
3/8" Subbase	.061	.067	.236	.390
3/8" Manifold	.059	.068	.224	.350

- * Measured through bottom ports.
- * With 90 PSIG supply, time required to fill from 0 to 81 PSIG and exhaust from 90 to 9 PSIG is measured from instant of energizing, or de-energizing 120V/60Hz. Times shown are average.

2-Position Double Solenoid

Average Response Time Seconds *

Port Size & Type	12 Cu. In. Test Chamber		1 Cu. In. Test Chamber	
	Fill	Exhaust	Fill	Exhaust
1/4" Direct Pipe (Inline Mtd.)	.038	.059	.221	.377
1/4" Subbase	.036	.063	.219	.393
1/4" Manifold	.035	.057	.208	.345
3/8" Subbase	.036	.059	.211	.380
3/8" Manifold	.035	.056	.196	.334

- * Measured through bottom ports.
- * With 90 PSIG supply, time required to fill from 0 to 81 PSIG and exhaust from 90 to 9 PSIG is measured from instant of energizing, or de-energizing 120V/60Hz. Times shown are average.

Flow Rating 2-Position Valves

Valve Mounting	C			
	Flow Path			
	Port 1 to 2	Port 1 to 4	Port 2 to 3	Port 4 to 5
On 1/4" Base	1.41	1.44	1.41	1.44
On 3/8" Base	1.38	1.42	1.48	1.44
On Manifold	1.41	1.35	1.59	1.52
•On Manifold	1.56	1.43	1.72	1.47
On Manifold w/Flow Control	1.22	1.24	1.32	1.30
Direct Pipe (Inline Mounted)	1.39	1.44	1.50	1.45

Flow Rating *3-Position Valves

Valve Mounting	C			
	Flow Path			
	Port 1 to 2	Port 1 to 4	Port 2 to 3	Port 4 to 5
On 1/4" Base	1.41	1.36	1.41	1.44
On 3/8" Base	1.37	1.39	1.48	1.39
On Manifold	1.32	1.21	1.59	1.40
•On Manifold	1.54	1.45	1.71	1.50
On Manifold w/Flow Control	1.32	1.25	1.42	1.32

- * - Flow through bottom cylinder ports.
- * - All ports blocked in neutral spool configuration (Function 1).



Sandwich Regulators
 Flow Characteristics Chart

Mode of Regulation	C			
	Flow Path			
	Port 1 to 2	Port 1 to 4	Port 2 to 3	Port 4 to 5
Common Port	.70	.67	1.70	1.32
Single Port (#4)	1.08	.83	1.58	1.47
Single Port (#2)	.87	.99	1.58	1.47
Independent Port	.80	.74	1.58	1.47

Technical Information Pneumatic Valves

Function	Diagram	Pilot Selector Setting			Operating Requirements
		Solenoid	Single Remote	Double Remote	
4- way Directional with Speed Control		1			Pressure @ Port 1 must be 35-150 PSIG.
		2	3	4	Pressure @ Port X (12 or 14) must be 35-150 PSIG. Port 1 may be vacuum to 150 PSIG.
4- way Dual Pressure		2	4 *	4	Pressure @ Port X (12 or 14) must be 35-150 PSIG. Ports 3 & 5 may be vacuum to 150 PSIG. Port 1 may be vacuum or exhaust.* On base mounted valves, rotate selector to Position 4 and apply a pilot signal (between 35-150 PSIG) to Port "12", but do not exceed pressure applied to Port "14".
3- way Normally Closed		1			Pressure @ Port 1 must be 35-150 PSIG.
		2	3	4	Pressure @ Port X (12 or 14) must be 35-150 PSIG. Port 1 may be vacuum to 150 PSIG.
3- way Normally Open		1			Pressure @ Port 1 must be 35-150 PSIG.
		2	3	4	Pressure @ Port X (12 or 14) must be 35-150 PSIG. Port 1 may be vacuum to 150 PSIG.
Selector or Di-erter		1			Pressure @ Port 1 must be 35-150 PSIG, and supplied constantly. Port 3 may be vacuum to 150 PSIG.
		2	3	4	Pressure @ Port X (12 or 14) must be 35-150 PSIG. Port 1, 2 and 3 may be vacuum to 150 PSIG.
2- way Normally Closed		1			Pressure @ Port 1 must be 35-150 PSIG.
		2	3	4	Pressure @ Port X (12 or 14) must be 35-150 PSIG. Port 1 may be vacuum to 150 PSIG.
2- way Normally Open		1			Pressure @ Port 1 must be 35-150 PSIG.
		2	3	4	Pressure @ Port X (12 or 14) must be 35-150 PSIG. Port 1 may be vacuum to 150 PSIG.

- Notes
1. See Pilot Selector Conversion procedure.
 2. 3-Position valves are not illustrated, but they can be used for optional functions in similar fashion to the 2-Position functions shown.
 3. Δ CAUTION Always remove air pressure from valve circuit before converting valve (changing pilot selector setting) for optional function.

Subbase & Manifold Mounted, and Direct Pipe Ported, Single Solenoid, 2-Position

Application

These valves may be used to actuate double acting cylinders. A “maintained” electrical signal shifts the valve. When this signal is removed the valve returns to its normal condition. May be used for dual pressure service.

Mounting

These valves are designed for subbase or modular manifold mountings. Electrical connection from valve to base is automatic. Air & electrical connections remain undisturbed if valve is removed. Valve may be mounted in any position.

Operation

Single Pressure At Inlet Port 1

De-energized Position – Solenoid operator #14 de-energized. Port 1 is connected to port 2. Port 4 is connected to port 5. Port 3 is blocked.

Energized Position – Solenoid operator #14 energized. Port 1 is connected to port 4. Port 2 is connected to port 3. Port 5 is blocked.

Dual Pressure

May be used for dual pressure service with pressure at ports 3 & 5 (external pilot must be used). – Exhaust at port 1.

Subbase & Manifold Mounted, and Direct Pipe Ported, Single Remote, 2-Position

Application

These valves may be used to actuate double acting cylinders. A “maintained” pressure signal to the pilot port activates the valve. When this signal is removed, the valve returns to its normal condition.

Operation (Using a 3-Way N.C. Pilot Signal)

Single Pressure At Inlet Port 1

No pilot pressure applied – Port 1 is connected to port 2. Port 4 is connected to port 5. Port 3 is blocked.

Pilot signal applied to port #14 – Port 1 is connected to port 4. Port 2 is connected to port 3. Port 5 is blocked.

Dual Pressure

May be used for dual pressure service with pressure at ports 3 & 5. – Exhaust at port 1.

Subbase & Manifold Mounted, and Direct Pipe Ported, Double Solenoid, 2-Position

Application

These valves may be used to actuate double acting cylinders. A “momentary” electrical signal (exceeding .03 seconds) applied to one of the solenoids shifts the valve. It will remain in this position until a “momentary” signal is applied to the other solenoid. May be used for dual pressure service.

Mounting

These valves are designed for subbase or manifold mountings. Electrical connection from valve to base is automatic. Air & electrical connections remain undisturbed if valve is removed. Axis of main valve spool to be in horizontal plane. Valve may be mounted in any position.

Operation

Single Pressure At Inlet Port 1

Solenoid Operator #12 having been energized last – Port 1 is connected to port 2. Port 4 is connected to port 5. Port 3 is blocked.

Solenoid operator #14 having been energized last – Port 1 is connected to port 4. Port 2 is connected to port 3. Port 5 is blocked.

Dual Pressure

May be used for dual pressure service with pressure at ports 3 & 5 (external pilot must be used). – Exhaust at port 1.

Subbase & Manifold Mounted, and Direct Pipe Ported, Double Remote, 2-Position

Application

These valves may be used to actuate double acting cylinders. A “momentary” pressure signal applied alternately to each of the pilot ports shifts the valve.

Operation (Using a 3-Way N.C. Pilot Signal)

Single Pressure At Inlet Port 1

Pilot port #12 having been pressurized last – Port 1 is connected to port 2. Port 4 is connected to port 5. Port 3 is blocked.

Pilot port #14 having been pressurized last – Port 1 is connected to port 4. Port 2 is connected to port 3. Port 5 is blocked.

Dual Pressure

May be used for dual pressure service with pressure at ports 3 & 5. Exhaust at port 1.

Subbase & Manifold Mounted, and Direct Pipe Ported, Double Solenoid, 3-Position

Application

These valves may be used to actuate double acting cylinders, when “inching” or incremental rod movement is desired. A “momentary” (exceeding .03 seconds) or “maintained” electrical signal applied to one of the solenoids shifts the valve, the valve returns to the “center” condition when the electrical signal is removed. Conversion to external pilot permits the valve to be used for dual pressure service.

Operation

Single Pressure At Port 1
Both Solenoids De-energized –

Function 1, All ports blocked.

Function 2, Port 1 is blocked. Port 4 is connected to port 5. Port 2 is connected to port 3.

Function 3, Port 1 is connected to ports 2 & 4. Ports 5 & 3 are blocked.

Energize Solenoid Operator #12 – Port 1 is connected to port 2. Port 4 is connected to port 5. Port 3 is blocked.

Energize Solenoid Operator #14 – Port 1 is connected to port 4. Port 2 is connected to port 3. Port 5 is blocked.

Dual Pressure

May be used for dual pressure service with pressure at ports 3 & 5 (external pilot must be used). – Exhaust at port 1. See Engineering Data on page 39 for conversion procedures.

Sandwich Regulators

Common Port Regulation

This modular air pressure regulator assembly, installed between the valve body and subbase or manifold station, supplies an adjustable, common regulated pressure to both cylinder ports.

- Can be used with sandwich flow control. Install flow control between base and regulator.

Single Port Regulation

This modular air pressure regulator assembly, installed between the valve body and subbase or manifold station, supplies an adjustable regulated pressure to one cylinder port while supplying line pressure to the other cylinder port.

- Cannot be used with sandwich flow control.

Independent Port Regulation

This modular air pressure regulator assembly, installed between the valve body and subbase or manifold station, supplies an adjustable regulated pressure to cylinder port 2, and a separate adjustable regulated pressure to cylinder port 4.

- Cannot be used with sandwich flow control.

NOTE When using single or independent port sandwich regulators, be aware that:

- 1) Cylinder port outlets are reversed. Pilot 12 actuates port 4, pilot 14 actuates port 2.
- 2) 3-Position, cylinder ports open to exhaust and cylinder ports open to inlet functions are reversed. To produce a cylinder ports open to exhaust function, order valve with cylinder ports open to inlet. To produce a cylinder ports open to inlet function, order valve with cylinder ports open to exhaust.

△ **CAUTION** For proper operation of solenoid operated valves with a sandwich regulator, valve pilot selector should be set to the #2 position. See technical information for conversion procedure. A 35 PSIG minimum operating pressure must be supplied to solenoid operated valves.

Remote Air Pilot Operated Valves on Manifolds

Require use of a K402 005 isolator disc installed in manifold “x” gallery. This part comes with the valve assembly.