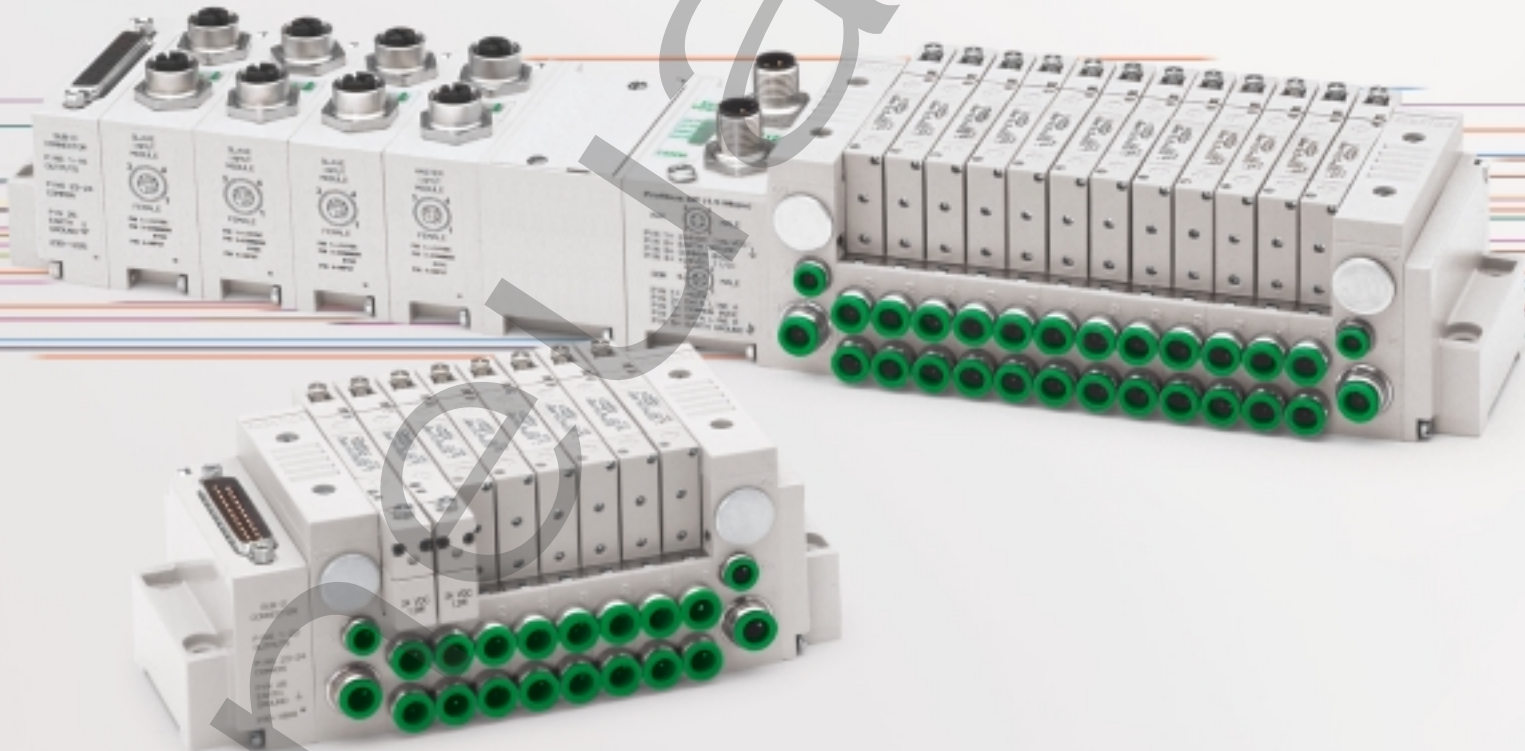




Valves



# ***2002 Series***

## ***Solenoid Air Pilot Actuated Valves***

*We're everywhere you need us to be!*



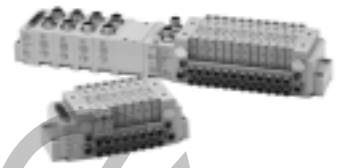
## 2002 Series ..... 3-24

## F2 Series ..... 3-10

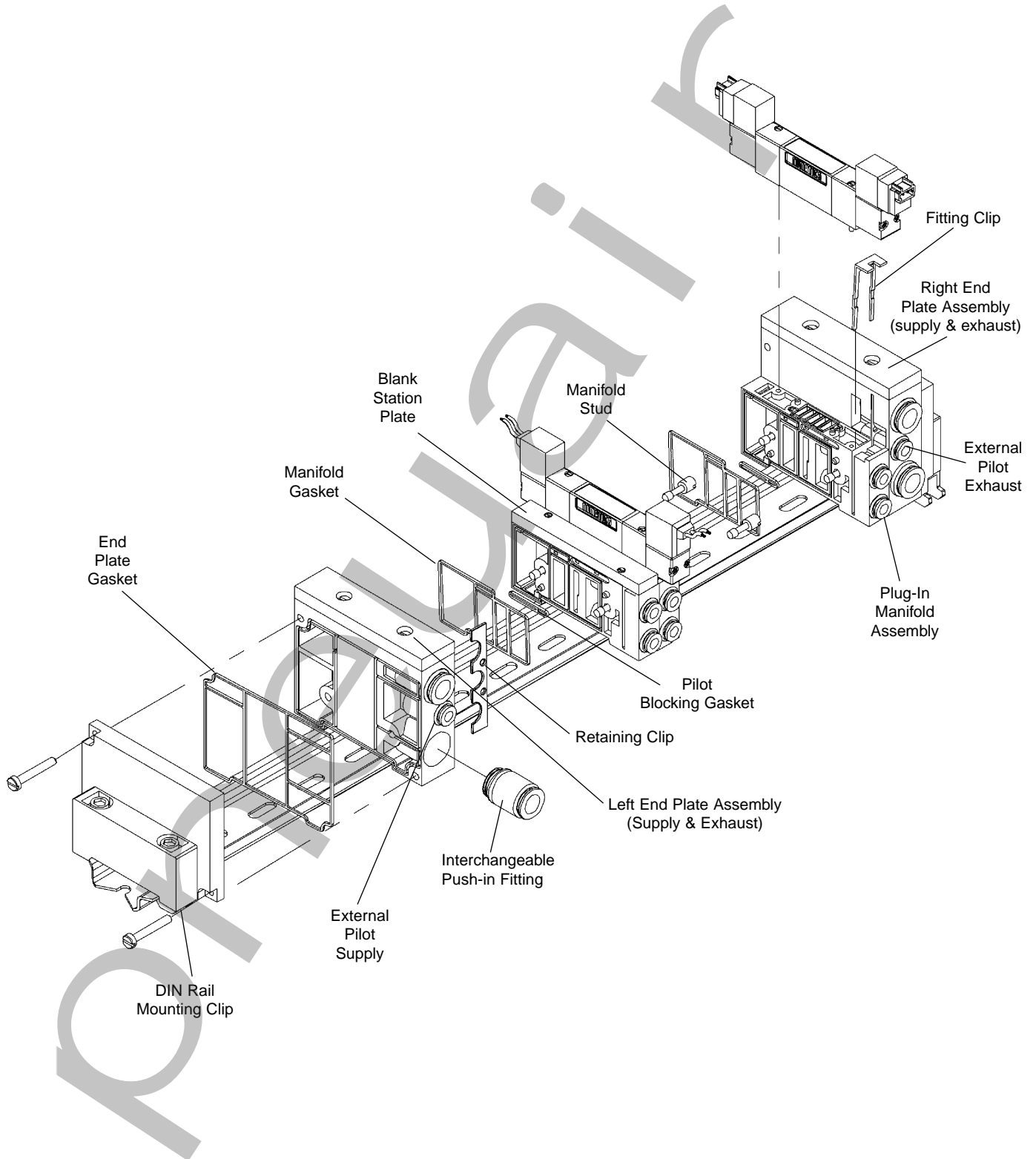
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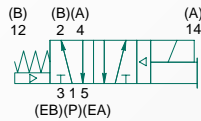
# Hardwired and Plug-In Solenoid Valve Manifold (exploded view)



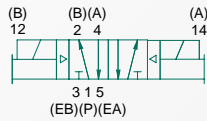


2002 Series

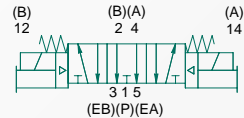
single solenoid  
2 position 4-way



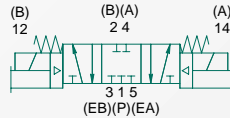
double solenoid  
2 position 4-way



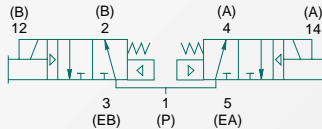
double solenoid  
3 position 4-way  
open center



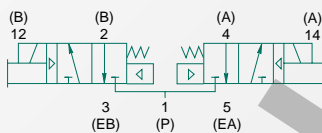
double solenoid  
3 position 4-way  
closed center



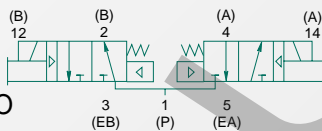
double solenoid  
2 position dual 3-way  
"14(A)" & "12(B)" NO



double solenoid  
2 position dual 3-way  
"14(A)" & "12(B)" NC



double solenoid  
2 position dual 3-way  
"14(A)" NC, "12(B)" NO



F2 Series – Individual Base Mount  
– Hardwired Manifold Mount

5 Ported, 2 and 3 position, 4-way and dual 3-way,  
Packed Spool  
Cv: 0.25

- Low current requirements
- Elimination of internal wiring
- Buna-N seals provide leakproof sealing
- Pusher piston – high spool shifting force
- Adjustable port sizes utilizing interchangeable cartridge fittings



Technical Data

VALVE DATA	ENGLISH	METRIC
Cv	0.25	0.25
Flow Capacity	11.5 SCFM @ 80 PSIG upstream pressure to atmosphere	246 NI/m @ 6 bar upstream to 5 bar downstream
Operating Pressure Range	28" Hg. Vacuum to 150 PSIG	Vacuum to 10 bar
Pilot Pressure Range	35 to 115 PSIG	2.5 to 8 bar
Temperature Range (Ambient)	-10°F to +115°F	-23°C to +46°C

Operating Data

ALL SOLENOIDS ARE CONTINUOUS DUTY RATED	24 VDC	12 VDC
Power (Watts)	0.75	0.75
Holding Current (Amps)	0.032	0.064

RESPONSE TIME IN SECONDS	ENERGIZE	DE-ENERGIZE	ENERGIZE	DE-ENERGIZE
2 - Position, Single, Spring Return	0.013	0.013	0.013	0.013
2 - Position, Double, Detented	0.006	N/A	0.006	N/A
3 - Position, Spring Centered	0.008	0.022	0.008	0.022
Dual 3-way	0.011	0.010	0.011	0.010



## How To Order

### Valves

F 2 1 B B A 4 1 B L 0 0 0 6 1

**Series Identifier**

F2 = Rubber Packed Spool Without Body to Base Plug

**Port Size**

0\* = 10/32 UNF-3B (Port types "N" or "G" only)  
 1 = 1/8 (All port types)  
 2 = 1/4 (Port type "L and D" only)  
 C = M5 (Port type "G" only)  
 D = 5/32 (4mm) (Port type "L" only)  
 F = 6mm (Port type "L" only)  
 \* Use for valve unit only (mounting = 00).

**"A" & "B" Actuator**

B = Solenoid Pilot with Flush Non-locking Override (4th or 4th and 5th Position)  
 W = Differential Air Return (5th Position Only)  
 00 = Manifold Block without Valve (Blank Station)

**Function**

4 = 2 Position, 4-Way  
 5 = 3 Position, 4-Way, Open Center, Dual Pressure  
 6 = 3 Position, 4-Way, Closed Center  
 A = Dual 3-Way, A Normally Open - B Normally Open  
 C = Dual 3-Way, A Normally Closed - B Normally Open  
 D = Dual 3-Way, A Normally Closed - B Normally Closed  
 P = Indicates Blank Station Plate

**Voltage**

60 = 12 VDC  
 61 = 24 VDC  
 00 = Not Applicable

**Options**

14A = External Pilot Supply  
 000 = No Option

**Port Type**

L = Push-in Fitting (Manifold Mount Only)  
 N = NPTF (Individual Base Only)  
 0 = Valve Unit Only  
 G = G Tap (Individual Base Only)  
 D = Barbed Fitting (Manifold Mount Only)

**Wiring Option**

3 = Straight 2 Pin Plug-in with Light (DC Voltage)  
 B = Hardwired (DC Voltage)  
 D = 90 Degree 2 Pin Plug-in with Light (DC Voltage)  
 O = Blank Station Plate

**Mounting**

41 = Individual Base Mount, Side Ports, Individual Exhaust  
 11 = Manifold Mount, Side Ports, Individual Exhaust  
 00 = Valve Unit Only

### Manifold Assembly

A K 0 6 H 0 0 0 0 2 L DRM

**Electrical/Electronics Type & Location**

0 = Hardwired Valve Manifold

**Valve Line**

6 = 2002 Series

**Number of Valve Stations**

A = 1 I = 9 Q = 17  
 B = 2 J = 10 R = 18  
 C = 3 K = 11 S = 19  
 D = 4 L = 12 T = 20  
 E = 5 M = 13 U = 21  
 F = 6 N = 14 V = 22  
 G = 7 O = 15 W = 23  
 H = 8 P = 16 X = 24

**Options**

STD = Standard  
 DRM = DIN Rail Mounting (Std. 35mm)  
 MUF = Muffler in End Plates  
 DWM = DIN Rail with MUF

**Port Type**

L = Push-In  
 D = Barbed Fitting

**End Plate Port Size**

2 = 1/4 (Port type "L" only)  
 H = 8mm (5/16)



2002 Series

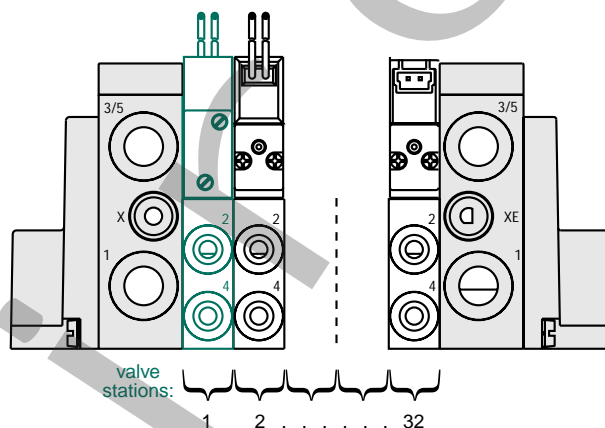
When Ordering:

AK0 Hardwired Valve Manifold

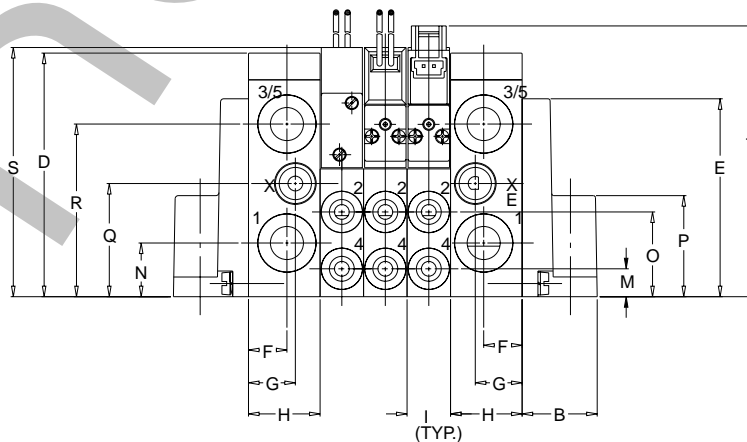
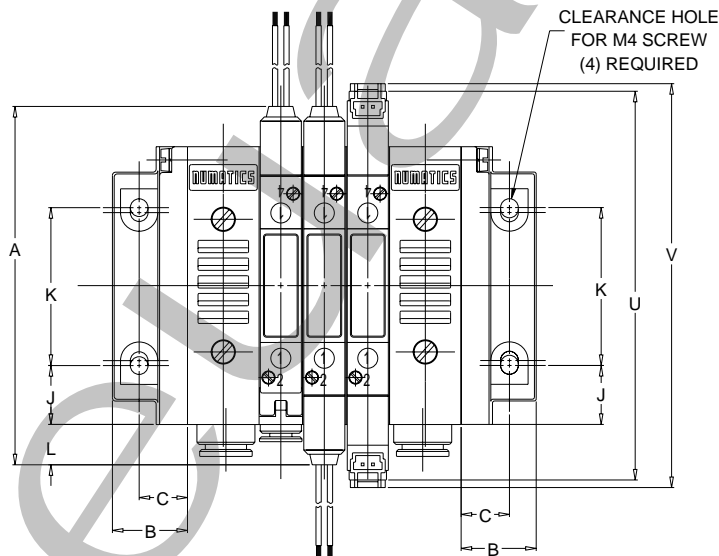
- Shaded components described by Assembly Kit (AK) model number designation (page 5).
- Each valve manifold station is listed in sequential order from left to right when facing the port side of the manifold as indicated.

Example order:

Valve Station 1 AK06D00002LSTD  
 Valve Station 2 F21BBA11BL00061  
 Valve Station 3 F21BBA11BL00061  
 Valve Station 4 F21BBA11BL00061  
 ASSEMBLED



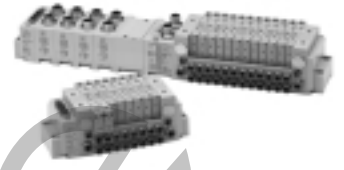
Valve Manifold Assembly



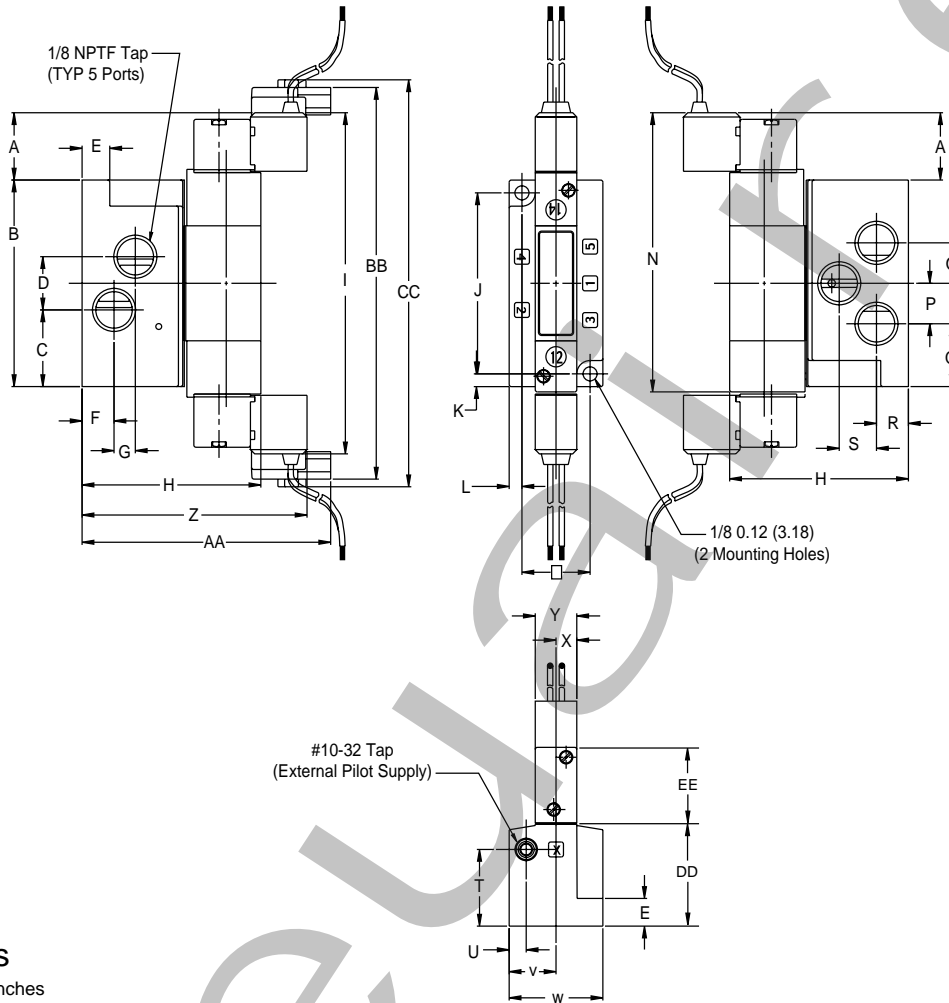
Dimensions

top dimensions = inches  
 bottom dimensions (in parenthesis) = millimeters

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
3.41	0.71	0.46	2.31	1.88	0.37	0.45	0.68	0.41	0.56	1.50	0.38	0.27	0.51	0.81	0.96	1.08	1.64	2.37	2.57	3.69	3.84
(86.6)	(18.0)	(11.9)	(58.7)	(47.8)	(9.4)	(11.4)	(17.3)	(10.5)	(14.2)	(38.1)	(9.7)	(6.9)	(13.0)	(20.6)	(24.4)	(27.4)	(41.7)	(60.2)	(65.3)	(93.7)	(97.5)



## Individual Base Mount Assembly

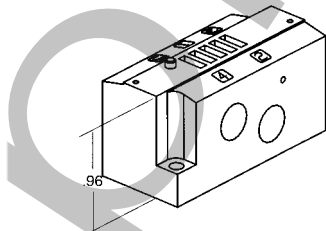


### Dimensions

top dimensions = inches  
bottom dimensions (in parenthesis) = millimeters

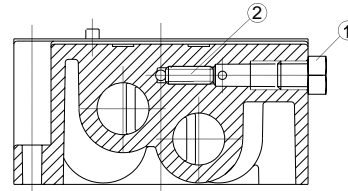
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
0.63	1.94	0.72	0.50	0.26	0.30	0.20	1.68	3.20	1.70	0.12	0.12	0.64	2.62	0.38	0.38	0.59	0.30	0.35	0.72	0.16
(16.0)	(49.3)	(18.3)	(12.7)	(6.6)	(7.70)	(5.1)	(42.7)	(81.3)	(43.2)	(3.0)	(3.0)	(16.3)	(66.5)	(9.7)	(9.7)	(15.0)	(7.6)	(8.9)	(18.3)	(4.1)
V	W	X	Y	Z	AA	BB	CC	DD	EE											
0.44	0.88	0.195	0.39	2.11	2.33	3.68	3.82	0.96	0.72											
(11.2)	(22.4)	(5.00)	(9.9)	(53.6)	(59.2)	(93.5)	(97.0)	(24.4)	(18.3)											

### Individual Base Assembly Kits



PORT SIZE	PART NO.
1/8 NPTF	203-1073
10/32 UNF-3B	203-1071
M5	203-1072

### For External Pilot Supply



For External Pilot Supply, remove Plug 1 (129-127) and insert M3 Pipe Plug 2 (127-693) as shown

2002 Series

Plug Connector



LEAD LENGTH	PART NO.
12" Lead	230-443
48" Lead	230-476
120" Lead	230-486

PART NAME	PART NO.
Housing	140-384
Terminal	140-385

Plug connector is not included with solenoid assemblies or valve models. Must order separately.  
Note: Wire Gage = 22 AWG

Pilot Valve Assembly



Hardwired



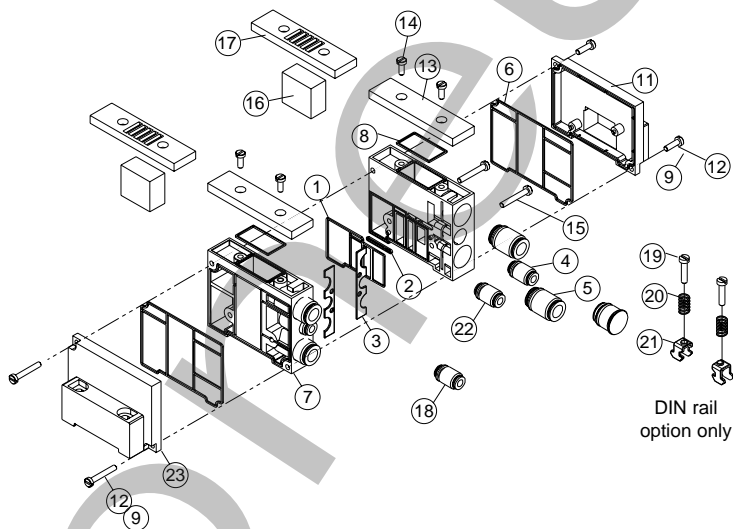
Straight Plug-in



90° Plug-in

VOLTAGE	HARDWIRED	STRAIGHT PLUG-IN	90 DEGREE PLUG-IN
12 VDC	236-378	236-374	236-376
24 VDC	236-379	236-375	236-377

End Plate Kits



PORT TYPE	PUSH-IN			PUSH-IN		
	1	3/5	X, XE	1	3/5	X, XE
PORT SIZE	1/4	1/4	5/32	8mm	8mm	6mm
End Plate Kit w/o muffler, w/o DIN Rail	239-1210			239-1208		
End Plate Kit w/o muffler, w/ DIN Rail	239-1209			239-1207		
End Plate Kit w/ muffler, w/o DIN Rail	239-1214			239-1212		
End Plate Kit w/ muffler, w/ DIN Rail	239-1213			239-1211		

DET. NO.	NO. REQ'D	PART NAME	PART NO.
1	1	Gasket	113-518
2	1	Gasket	113-515
3	2	Fitting Clip	125-780
4	1	5/32 Slip-in Fitting	134-498
4	1	6mm Slip-in Fitting	134-499
5	4	Fitting	See p. 21
6	2	Gasket	113-503
7	1	LH End Plate	104-696
8	2	Gasket	113-519
9	4	Lockwasher	128-192
10	1	RH End Plate	104-697
11	1	RH Mounting Cover	105-385
12	4	Screw	127-844
13	2	End Plate Cover	105-387
14	4	Screw	127-838
15	2	Screw	127-839
16	2	Muffler (optional)	125-791
17	2	Vented Cover (optional)	105-388
18	2	Exhaust Plug (optional)	239-1085
19	4	Screw	127-472
20	4	Spring	115-355
21	4	Clamp	125-720
22	1	Pilot Exhaust Plug	239-1086
23	1	LH Mounting Cover	105-381

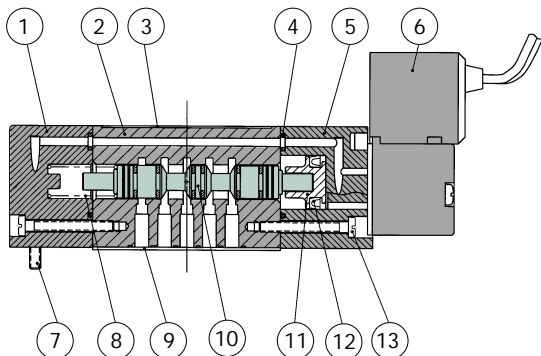




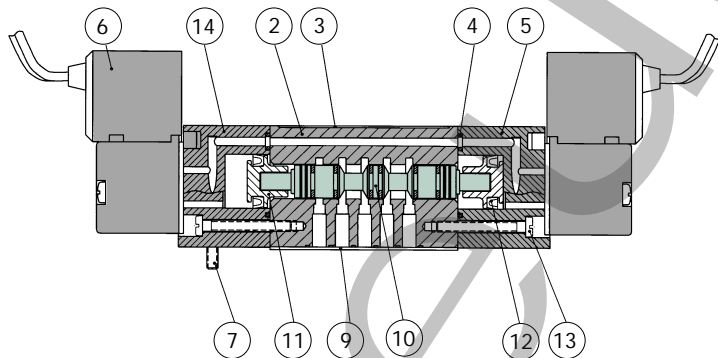
2002 Series

F2 Valve Service Kits and Parts, 2 and 3 Position 4-Way

Kit No. MKF2-K1  
(for models F20BW4, F21BW4, F2CBW4)

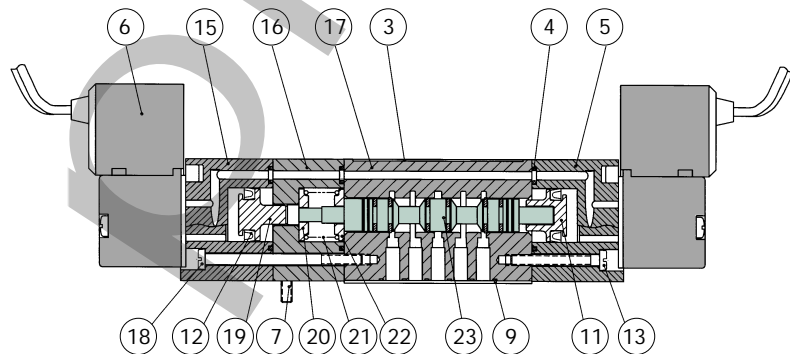


Kit No. MKF2-K2  
(for models F20BB4, F21BB4, F2CBB4)



Kit No. MKF2-K35 (for models F20BB5, F21BB5, F2CBB5)

Kit No. MKF2-K36 (for models F20BB6, F21BB6, F2CBB6)



DET. NO.	BW4	BB4	BB5/6	PART NAME	PART NO.
1	1	N/A	N/A	Spring Cover Ass'y	204-594
2	1	1	N/A	Body (not sold separately)	
3	1	1	1	Nameplate	122-1059
4	2*	2*	3*	Gasket	113-517
5	1	1	1	Pilot Adaptor Ass'y	219-391
6	1	2	2	Pilot Valve Ass'y	See p. 8
7	2	2	2	Screw	127-832
8	1*	N/A	N/A	Spring	115-357
9	1*	1*	1*	Gasket	113-525
10	1*	1*	N/A	Spool Ass'y (BA4, BB4)	221-176
11	1*	2*	1*	Piston	117-238
12	1*	2*	2*	U-Cup Seal	124-333
13	4	4	2	Screw	127-834
14	N/A	1	N/A	Pilot Adaptor Ass'y	219-393
15	N/A	N/A	1	Pilot Adaptor Ass'y	219-392
16	N/A	N/A	1	Adaptor	119-613
17	N/A	N/A	1	Body	101-721
18	N/A	N/A	2	Screw	127-840
19	N/A	N/A	1*	Piston	117-240
20	N/A	N/A	1*	Spring Retainer	116-506
21	N/A	N/A	1*	Spring	115-360
22	N/A	N/A	1	Spring Retainer	116-507
23	N/A	N/A	1*	Spool Ass'y (BB5)	221-175
23	N/A	N/A	1*	Spool Ass'y (BB6)	221-177

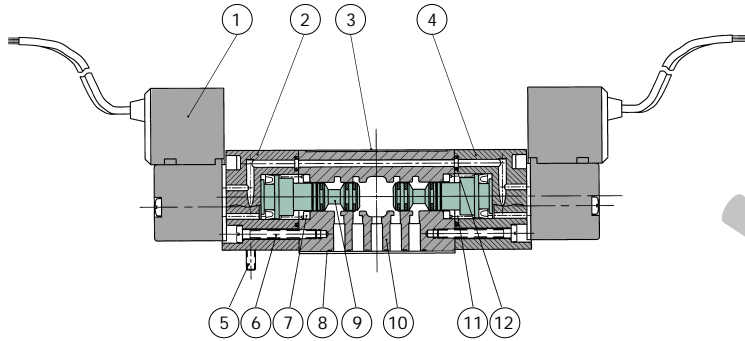
\*Indicated part included in kit.



2002 Series

F2 Valve Service Kits and Parts, Dual 3-Way

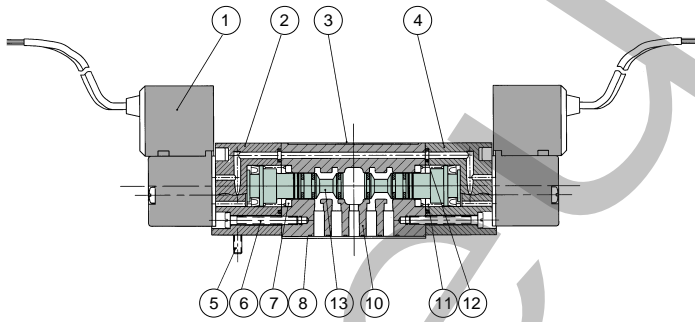
Kit No. MKF2-K3A  
(for models F20BBA, F21BBA, F2CBBA)



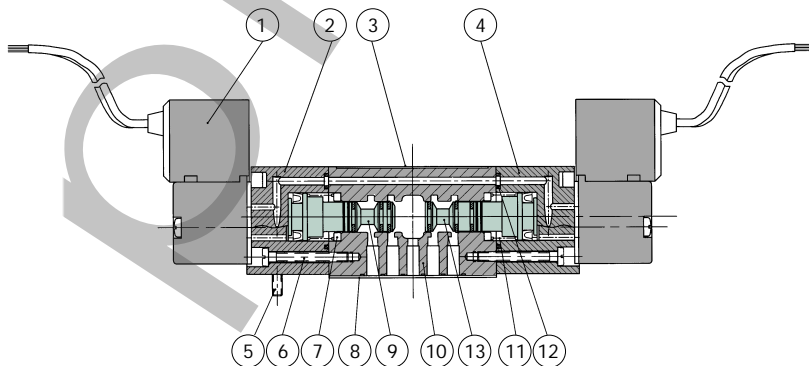
DET. NO.	BBA	BBD	BBC	PART NAME	PART NO.
1	2	2	2	Pilot Valve Ass'y	See p. 8
2	1	1	1	Pilot Adaptor Ass'y	219-393
3	1	1	1	Nameplate	122-1059
4	1	1	1	Pilot Adaptor Ass'y	219-391
5	2	2	2	Screw	127-832
6	4	4	4	Screw	127-834
7	2*	2*	2*	Bumper	114-189
8	1*	1*	1*	Gasket	113-525
9	2*	N/A	1*	Spool Ass'y (N.O.)	221-178
10	1	1	1	Body (not sold separately)	
11	2*	2*	2*	Spring	115-361
12	2*	2*	2*	Gasket	113-517
13	N/A	2*	1*	Spool Ass'y (N.C.)	221-179

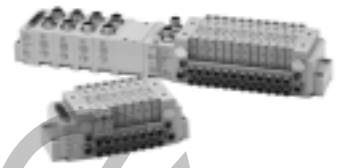
\* Indicates parts included in kit.

Kit No. MKF2-K3D  
(for models F20BBD, F21BBD, F2DBBD, F2FBBD)

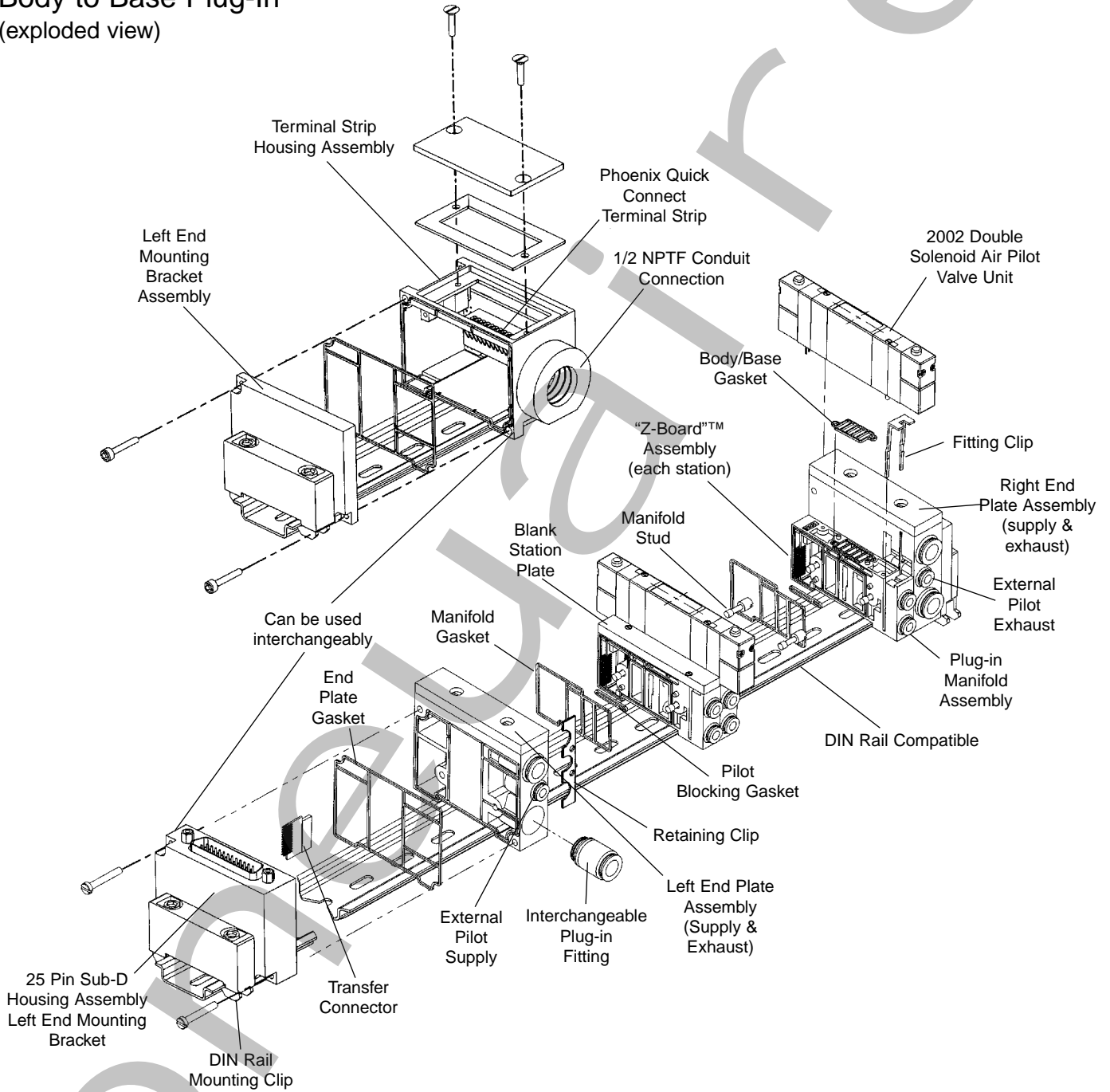


Kit No. MKF2-K3C  
(for models F20BBC, F21BBC, F2DBBC, F2FBBC,  
F20BBC, F21BBC, F2DBBC, F2FBBC)





25 Pin Sub-D and Terminal Strip Options  
Body to Base Plug-In  
(exploded view)

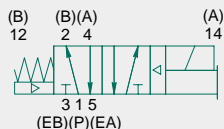




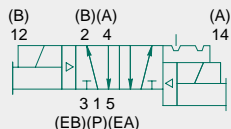
2002 Series

02 Series

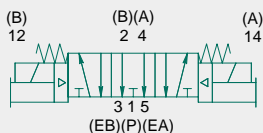
single solenoid air pilot  
2 position 4-way



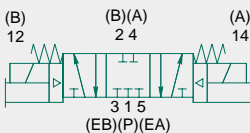
double solenoid air pilot  
2 position 4-way



double solenoid  
3 position 4-way  
open center



double solenoid  
3 position 4-way  
closed center



5 Ported, 2 and 3 position, 4-way, Spool & Sleeve  
Cv: 0.20

- Solenoid air pilot actuated
- Low current requirements
- Elimination of internal wiring
- Pusher piston – high spool shifting force
- Compact/modular Fieldbus electronics and I/O
- Adjustable port sizes utilizing interchangeable cartridge fittings



Technical Data

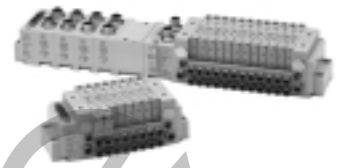
VALVE DATA	ENGLISH	METRIC
Cv	0.20	0.20
Flow Capacity	9.2 SCFM @ 80 PSIG upstream pressure to atmosphere	197 NI/m @ 6 bar upstream to 5 bar downstream
Operating Pressure Range	28" Hg. Vacuum to 150 PSIG	Vacuum to 10 bar
Pilot Pressure Range	35 to 100 PSIG	2.5 to 7 bar
Temperature Range (Ambient)	-10°F to +115°F	-23°C to +46°C

Operating Data

ALL SOLENOIDS ARE CONTINUOUS DUTY RATED	24 VDC	12 VDC
Power (Watts)	0.75	0.75
Holding Current (Amps)	0.032	0.064

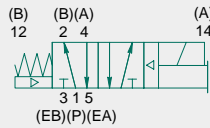
  

RESPONSE TIME IN SECONDS	ENERGIZE	DE-ENERGIZE	ENERGIZE	DE-ENERGIZE
2 - Position, Single, Spring Return	0.014	0.020	0.013	0.013
2 - Position, Double, Detented	0.010	N/A	0.006	N/A
3 - Position, Spring Centered	0.009	0.057	0.008	0.022

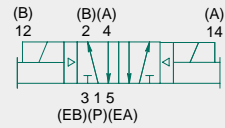


2002 Series

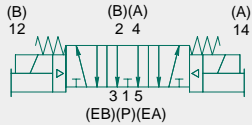
single solenoid air pilot  
2 position 4-way



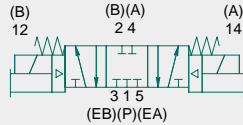
double solenoid air pilot  
2 position 4-way



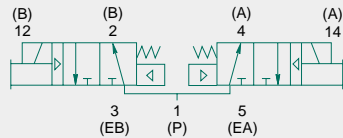
double solenoid air pilot  
3 position 4-way  
open center



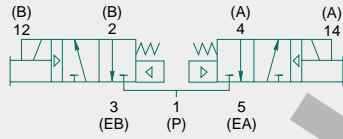
double solenoid air pilot  
3 position 4-way  
closed center



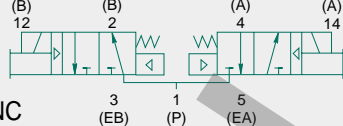
double solenoid  
air pilot  
dual 3-way  
"12(B)" & "14(A)" NO



double solenoid  
air pilot  
dual 3-way  
"12(B)" & "14(A)" NC



double solenoid  
air pilot  
2 position dual 3-way  
"12(B)" NO, "14(A)" NC



R2 Series

5 Ported, 2 and 3 position, 4-way and dual 3-way,  
Packed Spool

Cv: 0.25 (4-way) 0.20 (Dual 3-way)

- Solenoid air pilot actuated
- Low current requirements
- Elimination of internal wiring
- Buna-N seals provide leakproof sealing
- Pusher piston – high spool shifting force
- Compact/modular Fieldbus electronics and I/O
- Adjustable port sizes utilizing interchangeable cartridge fittings

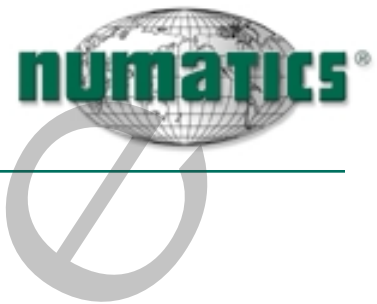


Technical Data

VALVE DATA	ENGLISH	METRIC
Cv	0.25	0.25
Flow Capacity	11.5 SCFM @ 80 PSIG upstream pressure to atmosphere	246 NL/m @ 6 bar upstream to 5 bar downstream
Operating Pressure Range	28" Hg. Vacuum to 100 PSIG	Vacuum to 7 bar
Pilot Pressure Range	35 to 100 PSIG	2.5 to 7 bar
Temperature Range (Ambient)	-10°F to +115°F	-23°C to +46°C

Operating Data

ALL SOLENOIDS ARE CONTINUOUS DUTY RATED	24 VDC	12 VDC		
Power (Watts)	0.75	0.75		
Holding Current (Amps)	0.032	0.064		
RESPONSE TIME IN SECONDS	ENERGIZE	DE-ENERGIZE	ENERGIZE	DE-ENERGIZE
2 - Position, Single, Spring Return	0.017	0.013	0.017	0.013
2 - Position, Double, Detented	0.010	N/A	0.010	N/A
3 - Position, Spring Centered	0.009	0.022	0.009	0.022
Dual 3-way	0.018	0.010	0.018	0.010



2002 Series

How To Order

Valves

R2 1 BB A Z4 G L 000 61

Series Identifier

- 02 = Spool/Sleeve with Body to Base Plug
- R2 = Rubber Packed Spool With Body to Base Plug

Port Size

- 0 = Used for Valve Unit Only, Mounting = 00
- 1 = 1/8
- 2 = 1/4
- D = 5/32 (4mm) (Port type "L" only)
- F = 6mm (Port type "L" only)

"A" & "B" Actuator

- B = Solenoid Pilot with Flush Non-locking Override (4th or 4th And 5th Position)
- W = Differential Air Return (5th Position Only)
- 00 = Manifold Block without Valve (Blank Station)

Function

- 4 = 2 Position, 4-Way
- 5 = 3 Position, 4-Way, Open Center, Dual Pressure
- 6 = 3 Position, 4-Way, Closed Center
- 7 = 3 Position, 4-Way, Open to A & B In Center
- A = Dual 3-Way, A Normally Open - B Normally Open
- C = Dual 3-Way, A Normally Closed - B Normally Open
- D = Dual 3-Way, A Normally Closed - B Normally Closed
- P = Indicates Blank Station Plate

Voltage

- 60 = 12 VDC
- 61 = 24 VDC

Options

- 11B = Flush Locking Override
- 14A = External Pilot Supply
- 000 = No Option

Port Type

- L = Push-in Fitting (Manifold Mount Only)
- D = Barbed Fitting
- 0 = Valve Unit Only

Wiring Option

- G = Plug-In DC w/Light, Sinking
- M = Plug-In DC w/Light, Sourcing
- O = Blank Station Plate

Mounting

- Z3 = Manifold Block, Side Ports Only, Single Solenoid Output
- Z4 = Manifold Block, Side Ports Only, Double Solenoid Output
- 00 = Valve Unit Only

Manifold Assembly

AK F 6 H 0000 2 L DRM

Electrical/Electronics Type & Location

- F = Terminal Strip
- J = 25 Pin Sub-D

Valve Line

- 6 = 2002 Series

\*Number of Valve Stations

- A = 1 I = 9 Q = 17
- B = 2 J = 10 R = 18
- C = 3 K = 11 S = 19
- D = 4 L = 12 T = 20
- E = 5 M = 13 U = 21
- F = 6 N = 14 V = 22
- G = 7 O = 15
- H = 8 P = 16

Options

- STD = Standard
- DRM = DIN Rail Mounting (Std. 35mm)
- MUF = Muffler in End Plates
- DWM = DIN Rail with MUF

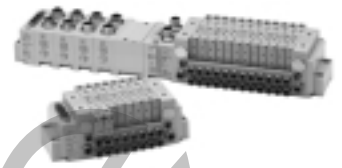
Port Type

- L = Push-in
- D = Barbed Fitting

End Plate Port Size

- 2 = 1/4 (Port type "L" only)
- H = 8mm (5/16)

- The electrical connection type.
  - Sub-D (AK"J") 22 maximum solenoid outputs
  - Terminal Strip (AK"F") 16 maximum solenoid outputs



## When Ordering

### AKJ 25 Pin Sub-D

- Shaded components described by Assembly Kit (AK) model number designation (*page 14*).
- Each valve manifold station is listed in sequential order from left to right when facing the port side of the manifold as indicated.

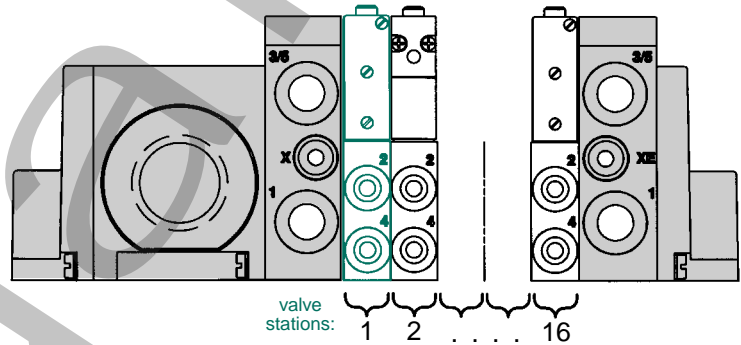
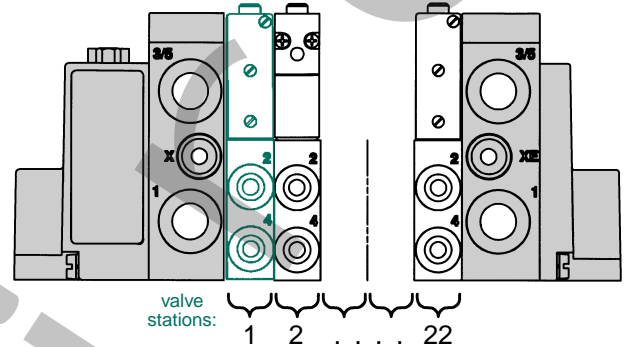
Example order:

AKJ6D00002LSTD  
 valve station 1 021BW4Z3ML00061  
 valve station 2 021BW4Z3ML00061  
 valve station 3 021BB4Z4ML00061  
 valve station 4 021BB4Z4ML00061  
 ASSEMBLED

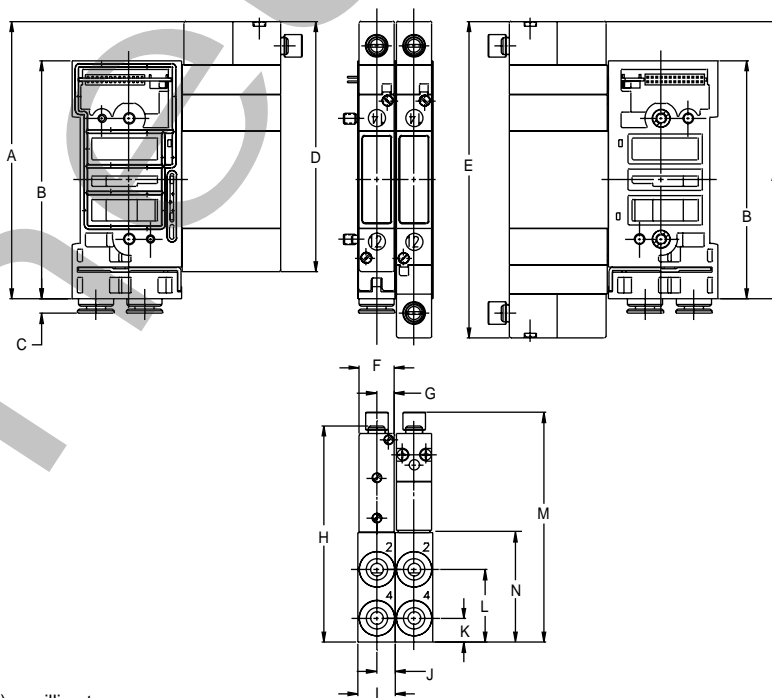
AKF Terminal Strip  
 • Ordered using the same method as for AKJ

Example order:

AKF6D00002LSTD  
 valve station 1 R21BW4Z3ML00061  
 valve station 2 R21BW4Z3ML00061  
 valve station 3 R21BB4Z4ML00061  
 valve station 4 R21BB4Z4ML00061  
 ASSEMBLED



## Assembly Dimensions Single Station Valve Manifold



### Dimensions

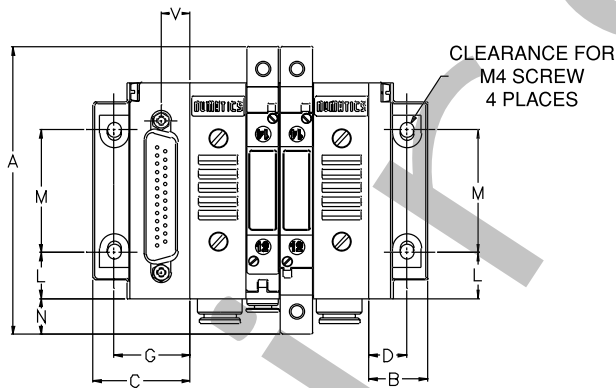
top dimensions = inches  
 bottom dimensions (in parenthesis) = millimeters

A	B	C	D	E	F	G	H	I	J	K	L	M	N
3.08	2.64	0.16	2.78	3.51	0.39	0.195	2.40	0.41	0.206	0.27	0.81	2.55	1.21
(78.1)	(67.1)	(4.2)	(70.5)	(89.2)	(9.9)	(4.95)	(61.0)	(10.5)	(5.30)	(6.9)	(20.6)	(64.8)	(30.7)

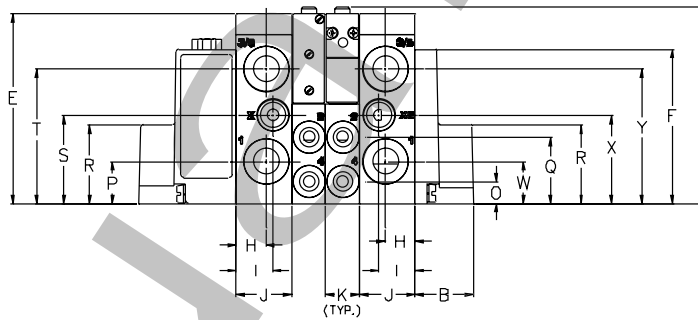


# FlexiBlok® Assembly

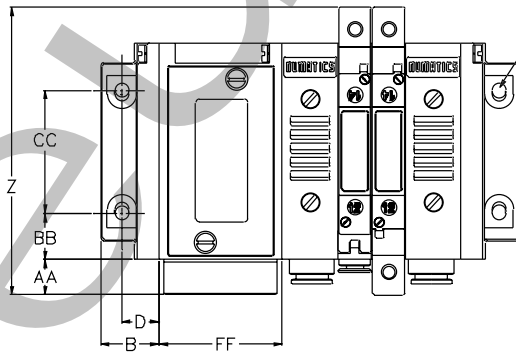
25 pin Sub-D Housing Assembly



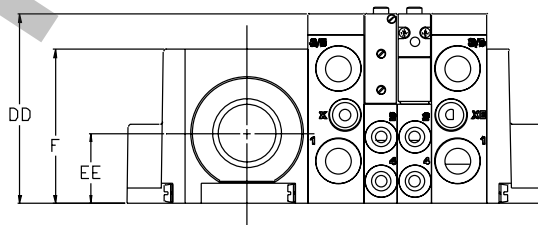
CLEARANCE FOR  
M4 SCREW  
4 PLACES



Terminal Strip Housing Assembly



CLEARANCE FOR  
M4 SCREW  
4 PLACES



## Dimensions

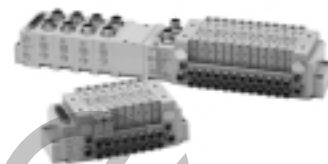
top dimensions = inches  
bottom dimensions (in parenthesis) = millimeters

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
3.51 (89.2)	0.71 (18.0)	1.18 (30.0)	0.46 (11.9)	2.31 (58.7)	1.88 (47.8)	0.93 (23.6)	0.37 (9.4)	0.45 (11.4)	0.68 (17.3)	0.41 (10.5)	0.56 (14.2)	1.50 (38.1)	0.44 (11.2)	0.27 (6.9)	0.51 (13.0)
Q	R	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD	EE	FF
0.81 (20.6)	0.96 (24.4)	1.08 (27.4)	1.64 (41.7)	2.40 (61.0)	0.36 (9.1)	0.51 (13.0)	1.08 (27.4)	1.64 (41.7)	3.50 (88.9)	0.43 (10.9)	0.56 (14.2)	1.50 (38.1)	2.31 (58.7)	0.85 (21.6)	1.50 (38.1)

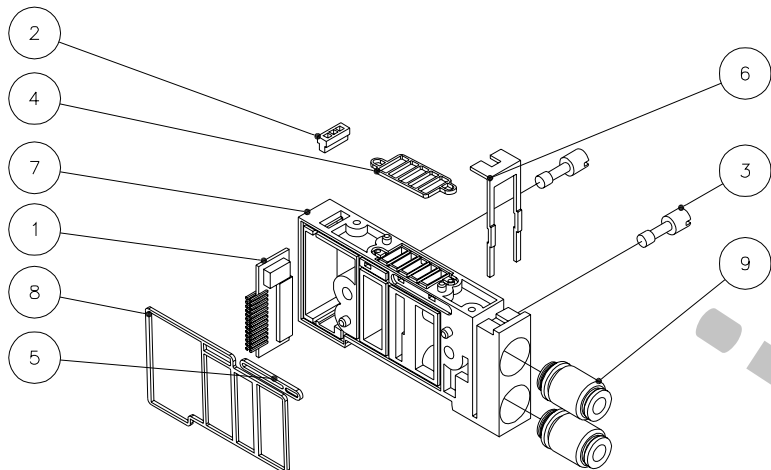




2002 Series



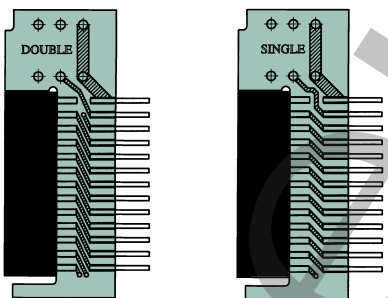
Manifold Block Assemblies



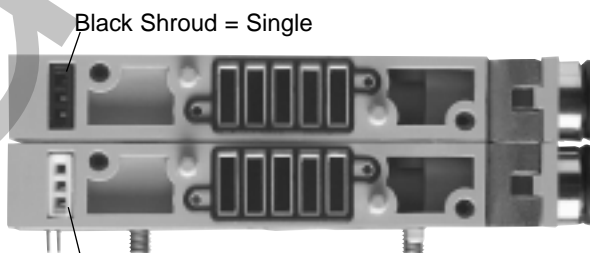
DET. NO.	NO. REQ'D	PART NAME	PART NO.
1	1	"Z-Board"™ Double	256-578
1	1	"Z-Board"™ Single	256-577
2	1	Shroud, White (Double)	125-786
2	1	Shroud, Black (Single)	125-785
3	1	Stud	125-787
4	1	Gasket (Body)	113-516
5	1	Blocking Gasket	113-515
6	1	Clip (Fitting)	125-784
7	1	Manifold	106-1208
8	1	Gasket (Manifold)	113-518
9	2	Push-in (1/4 Tube)	134-518
9	2	Push-in (1/8 Tube)	134-500
9	2	Push-in (4mm Tube)	134-498
9	2	Push-in (6mm Tube)	134-499

MANIFOLD DESCRIPTION	1/8 PUSH-IN	1/4 PUSH-IN	5/32-4mm PUSH-IN	6mm PUSH-IN
Single "Z-board"™	239-1069	239-1339	239-1071	239-1073
Double "Z-board"™	239-1070	239-1340	239-1072	239-1074
w/o "Z-board"™	N/A	239-1343	239-1206	239-1205

"Z-Boards"™



(not actual size)

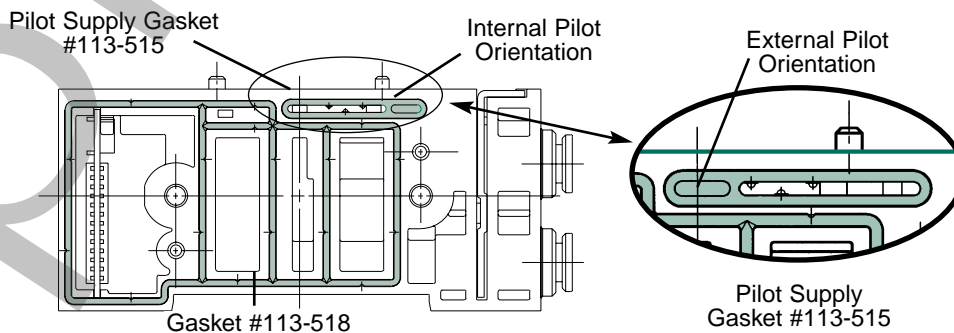


White Shroud = Double

Plug color visible from top of manifold block.

PART NAME	PART NO.
"Z-Board"™ – Single Solenoid Output	256-577
"Z-Board"™ – Single or Double Solenoid Output	256-578

Internal/External Pilot Selection



Note:

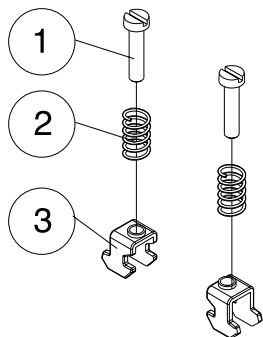
- All manifolds will have the pilot blocking gasket (113-515) installed with internal pilot supply orientation as standard.
- For external pilot supply, valve stations should be ordered with 14A option code



2002 Series

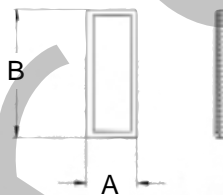
DIN Rail Clamp Kit

239-980



DET. NO.	NO. REQ'D	PART NAME	PART NO.
1	4	Screw	127-472
2	4	Spring	115-355
3	4	Clamp	125-720

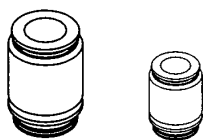
Blocking Discs



PORT	PART NO.	A	B
1	124-335	0.228	0.809
3/5	124-336	0.318	0.809

Interchangeable Cartridge Fittings and Port Plugs

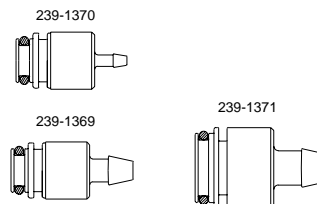
Push-in Fittings



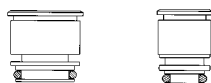
SIZE	PORTS	PART NO.
4mm (5/32")	Ports 2, 4, X, XE	134-498
6mm	Ports 2, 4, X, XE	134-499
1/8"	Ports 2, 4, X, XE	134-500
1/4"	Ports 2, 4, X, XE	134-518
8mm (5/16")	Ports 1, 3/5	134-501
1/4"	Ports 1, 3/5	134-502

Barbed Fittings

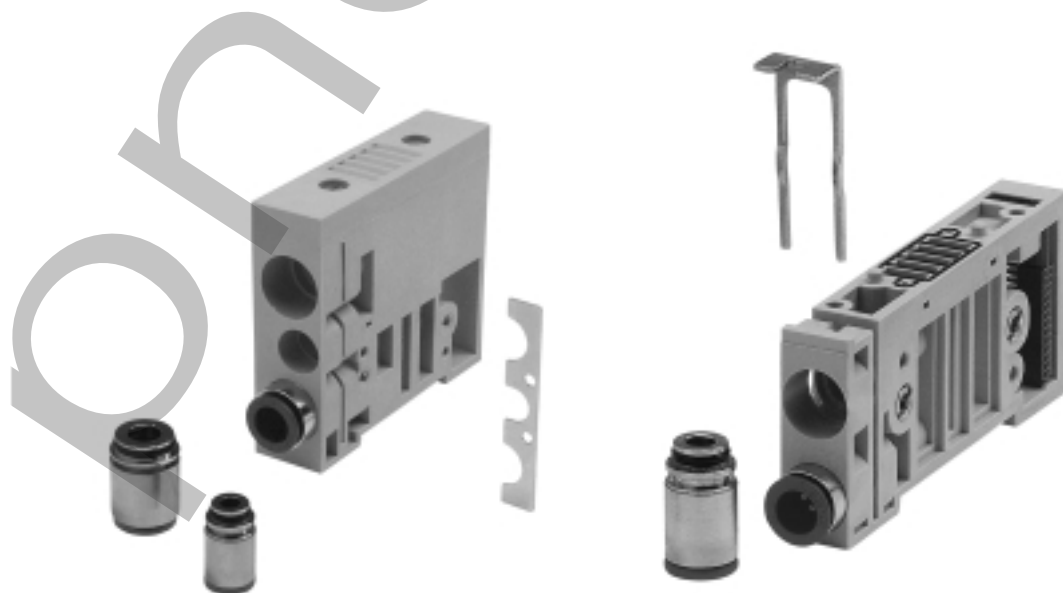
SIZE	PORTS	PART NO.
1/8"	Ports 2, 4, X, XE	239-1370
1/4"	Ports 2, 4, X, XE	239-1369
5/16"	Ports 1, 3/5	239-1371



Port Plugs



SIZE	PORTS	PART NO.
Large	Ports 1, 3/5	239-1085
Small	Ports 2, 4	239-1086



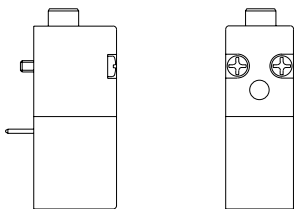


2002 Series



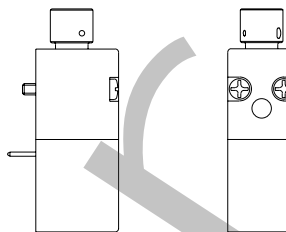
Solenoid Pilot Valve Assemblies

Non-Locking Override



VDC	PART NO.
12	236-521
24	236-522

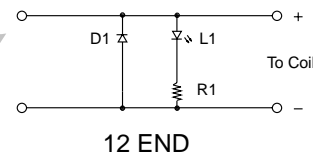
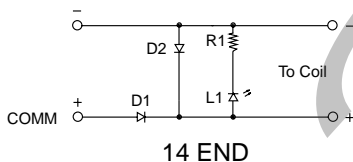
Locking Override



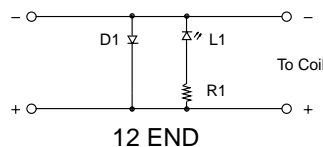
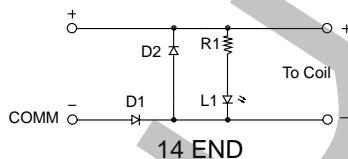
VDC	PART NO.
12	236-525
24	236-526

Solenoid Control Board Circuit Diagrams

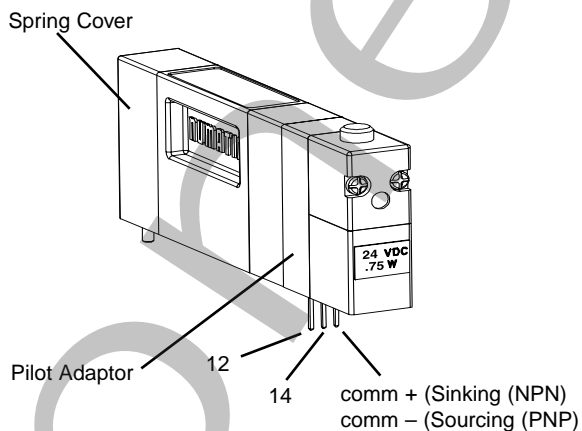
Sinking (NPN)



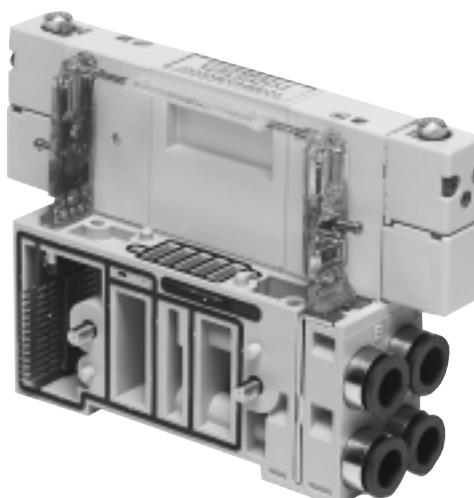
Sourcing (PNP)



Valve Unit Pin Out

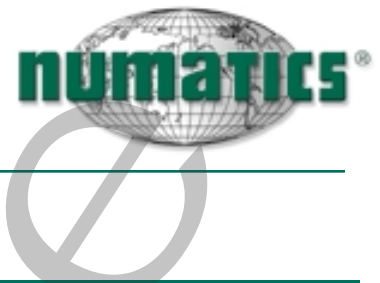


Solenoid Board Encapsulation Assembly



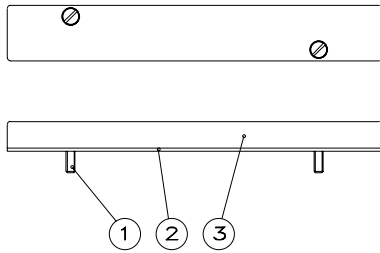
Complete elimination of internal wiring!

DESCRIPTION	SINKING (G)	SOURCING (M)
"12" End	230-889	230-891
"14" End	230-888	230-890



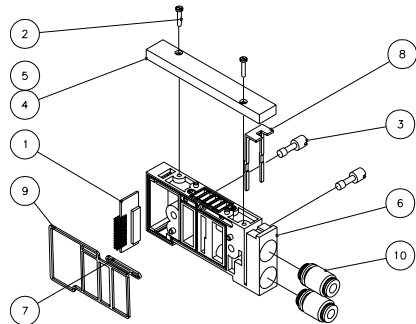
2002 Series

Blank Station Plate Kit 239-1055



DET. NO.	NO. REQ'D	PART NAME	PART NO.
1	2	Screw	127-841
2	1	Gasket	113-526
3	1	Blank Station Plate	104-698

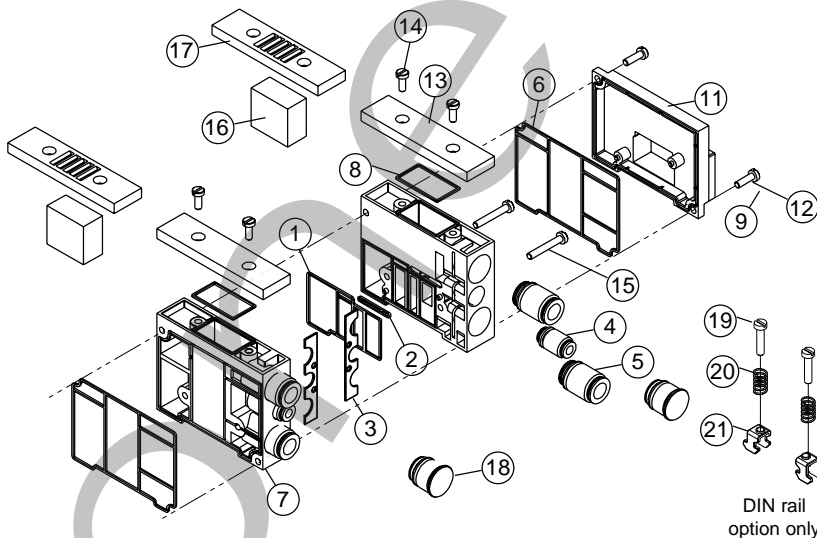
Mid-Station Supply and Exhaust Block



DET. NO.	NO. REQ'D	PART NAME	PART NO.
1	1	Transfer Board Ass'y	256-683
2	2	Screw	127-841
3	2	Stud	125-787
4	1	Blank Station Plug	104-698
5	1	Gasket	113-526
6	1	Mid Station Plate	125-857
7	1	Blocking Gasket	113-515
8	1	Clip (Fitting)	125-784
9	1	Gasket (Manifold)	113-518
10	2	Cartridge (6mm tube)	134-499

PORT SIZE	PART NO.
1/4	239-1348
6mm	239-1299

End Plate Assembly Kit

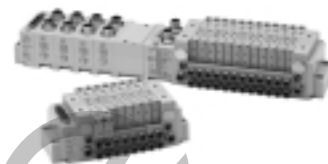


DET. NO.	NO. REQ'D	PART NAME	PART NO.
1	1	Gasket	113-518
2	1	Gasket	113-515
3	2	Fitting Clip	125-780
4	2	Push-in Fitting	See p. 18
5	4	Push-in Fitting	See p. 18
6	2	Gasket	113-503
7	1	LH End Plate	104-696
8	2	Gasket	113-519
9	2	Lockwasher	128-192
10	1	RH End Plate	104-697
11	1	RH Mounting Cover	105-385
12	2	Screw	127-844
13	2	End Plate Cover	105-387
14	2	Screw	127-838
15	2	Screw	127-839
16	2	Muffler (optional)	125-791
17	2	Vented Cover (optional)	105-388
18	2	Exhaust Plug (optional)	239-1085
19	4	Screw	127-472
20	4	Spring	115-355
21	4	Clamp	125-720

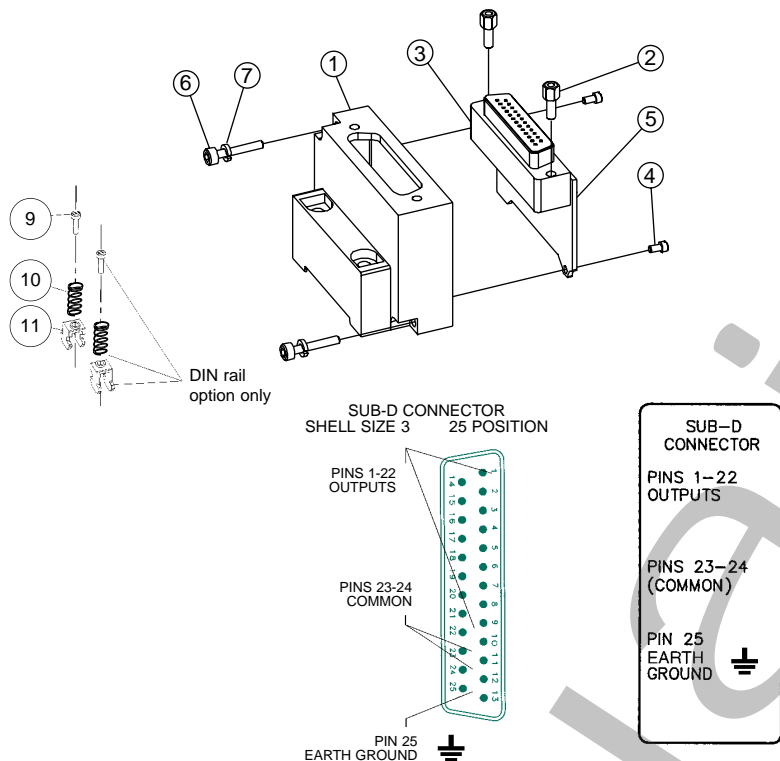
PORT TYPE	PUSH-IN			PUSH-IN		
	1	3/5	X, XE	1	3/5	X, XE
PORT SIZE	1/4	1/4	5/32	8mm	8mm	6mm
End Plate Kit w/o muffler, w/o DIN Rail	239-1068			239-1062		
End Plate Kit w/o muffler, w/ DIN Rail	239-1067			239-1061		
End Plate Kit w/ muffler, w/o DIN Rail	239-1084			239-1078		
End Plate Kit w/ muffler, w/ DIN Rail	239-1083			239-1077		



2002 Series



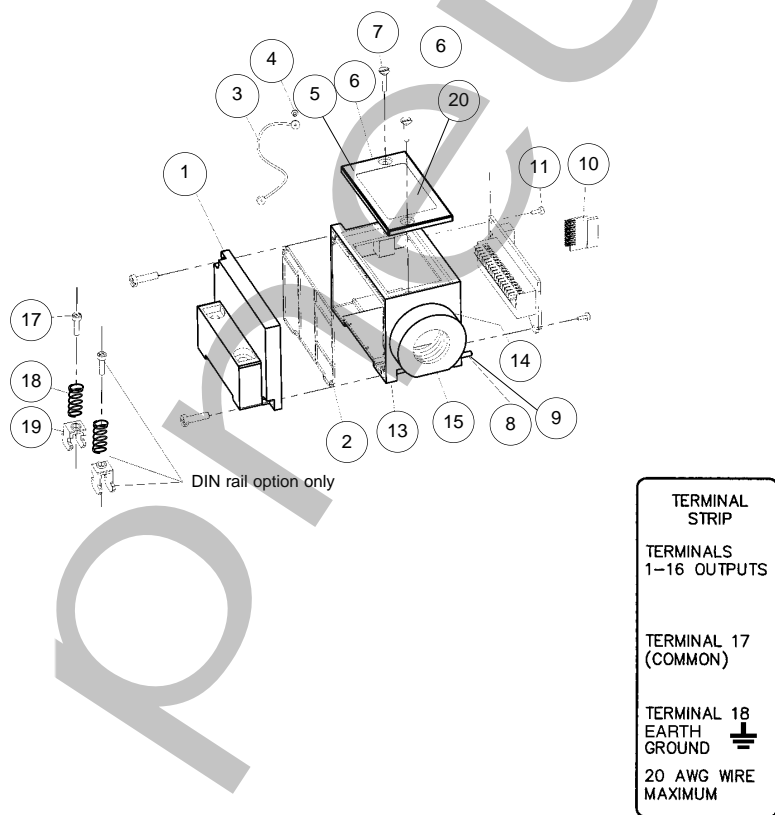
### 25 Pin Male Sub-D Housing Assembly Kit



DET. NO.	NO. REQ'D	PART NAME	PART NO.
1	1	Housing	105-379
2	1	Transfer Connector	256-583
3	2	Hex Screw	127-825
4	1	Gasket	113-507
5	2	Screw	127-794
6	1	Sub-D Board Ass'y	256-584
7	2	Screw	127-839
8	2	Lockwasher	128-192
9	2	Screw	127-472
10	2	Spring	115-355
11	2	Clamp	125-720
12	1	Nameplate	122-1057

SUB-D HOUSING KITS		PART NO.
With DIN Rail		239-1088
Without DIN Rail		239-1087

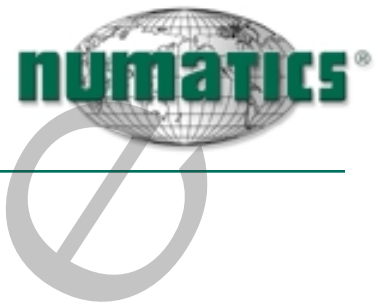
### Terminal Strip Housing Assembly Kit



DET. NO.	NO. REQ'D	PART NAME	PART NO.
1	1	LH DIN Rail Mtg Cover	105-381
2	1	Gasket	113-503
3	1	Cover Strap	125-772
4	1	Stick Screw	127-172
5	1	Cover	105-384
6	1	Gasket	113-508
7	2	Screw	127-826
8	4	Screw	127-844
9	6	Lockwasher	128-192
10	1	Transfer Connector	256-583
11	3	Screw	127-794
12	1	Terminal Strip Board	256-585
13	1	Housing	125-765
14	1	Gasket	113-509
15	1	Adaptor 1/2" NPTF	119-598
*16	2	Adaptor Mtg. Screw	127-827
17	2	Screw	127-472
18	2	Spring	115-355
19	2	Clamp	125-720
20	1	Nameplate	122-1057

\*Attaches det #15, not shown for clarity.

TERMINAL STRIP HOUSING KITS		PART NO.
With DIN Rail		239-1090
Without DIN Rail		239-1089

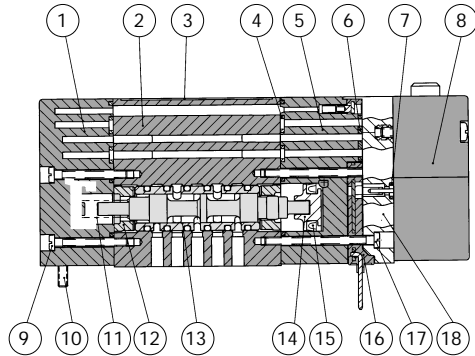


2002 Series

02 Valve Service Kits and Parts, 2 and 3 Position 4-Way

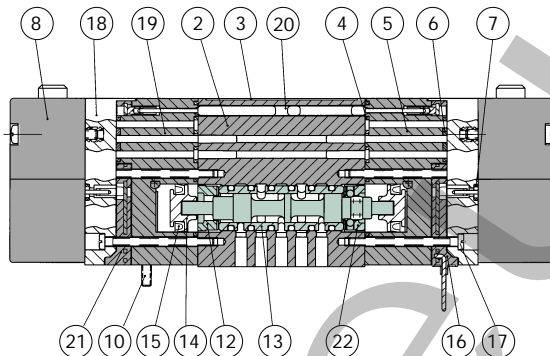
Kit No. MK02-K1

(for models 020BW4, 021BW4, 02DBW4, 02FBW4)



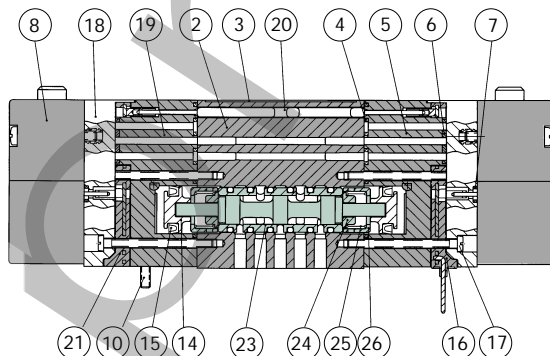
Kit No. MK02-K2

(for models 020BB4, 021BB4, 02DBB4, 02FBB4)



Kit No. MK02-K3

(for models 020BB5, 021BB5, 02DBB5, 02FBB5, 020BB6, 021BB6, 02DBB6, 02FBB6)



DET. NO.	BW4	BB4	BB5/6	PART NAME	PART NO.
1	1	N/A	N/A	Spring Cover Ass'y	204-593
2	1	1	1	Body (not sold separately)	
3	1	1	1	Nameplate	122-1059
4	2*	2*	2*	Gasket	113-520
5	1	1	1	Pilot Adaptor Ass'y	219-388
6	1*	2*	2*	Gasket	113-521
7	1*	2*	2*	Gasket	113-513
8	1	2	2	Pilot Valve Ass'y	See p. 19
9	3	N/A	N/A	Screw	127-836
10	2	2	2	Screw	127-833
11	1*	N/A	N/A	Spring	115-358
12	2*	1*	N/A	Detent Body	110-140
13	1	1	N/A	Sleeve Ass'y (BA4, BB4)	209-564
14	1*	2*	2*	Piston	117-239
15	1*	2*	2*	U-Cup Seal	124-333
16	1	1	1	14" Board Encap.	See p. 19
17	3	6	6	Screw	127-835
18	1	2	2	Pilot Adaptor	119-610
19	N/A	1	1	Pilot Adaptor Ass'y	219-390
20	N/A	1	1	14" - 12" Encap.	230-887
21	N/A	1	1	"12" Board Encap.	See p. 19
22	N/A	1*	N/A	Detent Assembly	210-140
23	N/A	N/A	1	Sleeve Ass'y (BB5)	209-565
23	N/A	N/A	1	Sleeve Ass'y (BB6)	209-570
24	N/A	N/A	2*	Spring Retainer	116-505
25	N/A	N/A	2*	Spring	115-359
26	N/A	N/A	2*	Spring Retainer	116-504

\* Indicates parts included in kit.

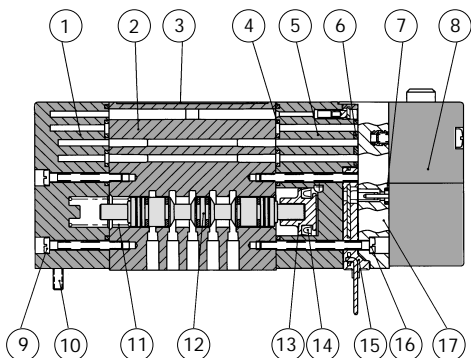


2002 Series

R2 Valve Service Kits and Parts, 2 and 3 Position 4-Way

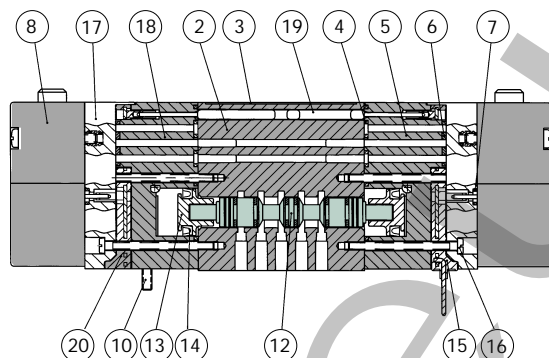
Kit No. MKR2-K1

(for models R20BW4, R21BW4, R2DBW4, R2FBW4)



Kit No. MKR2-K2

(for models R20BB4, R21BB4, R2DBB4, R2FBB4)

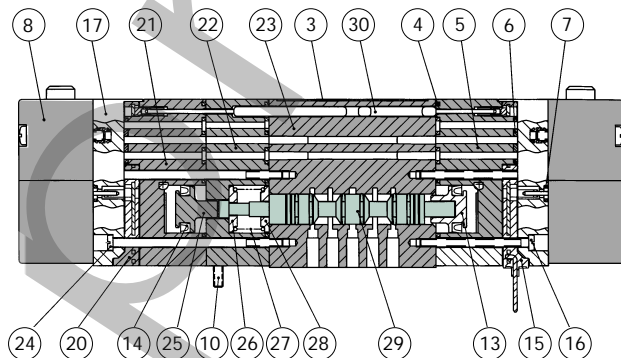


Kit No. MKR2-K35

(for models R20BB5, R21BB5, R2DBB5, R2FBB5)

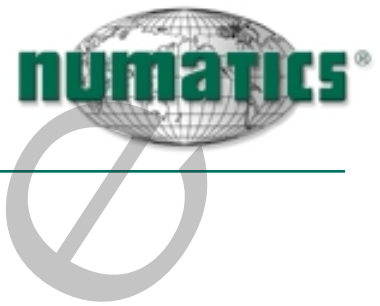
Kit No. MKR2-K36

(for models R20BB6, R21BB6, R2DBB6, R2FBB6)



DET. NO.	BW4	BB4	BB5/6	PART NAME	PART NO.
1	1	N/A	N/A	Spring Cover Ass'y	204-593
2	1	1	N/A	Body (not sold separately)	
3	1	1	1	Nameplate	122-1059
4	2*	2*	3*	Gasket	113-520
5	1	1	1	Pilot Adaptor Ass'y	219-388
6	1*	2*	2*	Gasket	113-521
7	1*	2*	2*	Gasket	113-513
8	1	2	2	Pilot Valve Ass'y	See p. 19
9	3	N/A	N/A	Screw	127-836
10	2	2	2	Screw	127-833
11	1*	N/A	N/A	Spring	115-357
12	1*	1*	N/A	Spool Ass'y (BA4, BB4)	221-176
13	1*	2*	1*	Piston	117-238
14	1*	2*	2*	U-Cup Seal	124-333
15	1	1	1	"14" Board Encap.	See p. 19
16	3	6	3	Screw	127-835
17	1	2	2	Pilot Adaptor	119-610
18	N/A	1	N/A	Pilot Adaptor Ass'y	219-390
19	N/A	1	N/A	"14" - "12" Encap.	230-887
20	N/A	1	1	"12" Board Encap.	See p. 19
21	N/A	1	1	Pilot Adaptor Ass'y	219-389
22	N/A	N/A	1	Adaptor	119-609
23	N/A	N/A	1	Body (not sold separately)	
24	N/A	N/A	3	Screw	127-837
25	N/A	N/A	1*	Piston	117-240
26	N/A	N/A	1*	Spring Retainer	116-506
27	N/A	N/A	1*	Spring	115-360
28	N/A	N/A	1*	Spring Retainer	116-507
29	N/A	N/A	1*	Spool Ass'y (BB5)	221-175
29	N/A	N/A	1	Spool Ass'y (BB6)	221-177
30	N/A	N/A	1	"14" - "12" Encap.	230-886

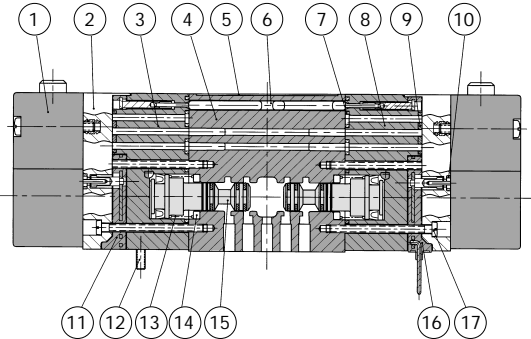
\* Indicates parts included in kit.



2002 Series

R2 Dual 3-Way Valve Service Kits and Parts

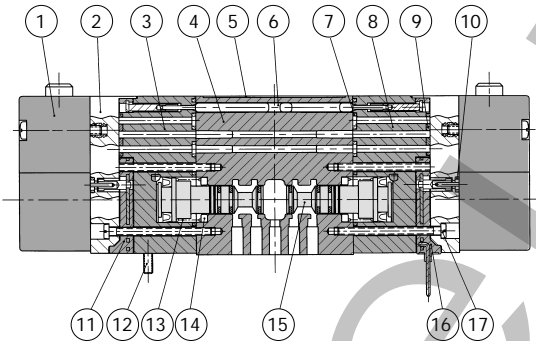
Kit No. MKR2-K3A  
(for models R20BBA, R21BBA, R2DBBA, R2FBBA)



DET. NO.	BW4	BB4	BB5/6	PART NAME	PART NO.
1	2	2	2	Pilot Valve Ass'y	See p. 19
2	2	2	2	Pilot Adaptor	119-610
3	1	1	1	Pilot Adaptor Ass'y	219-390
4	1	1	1	Body (not sold separately)	
5	1	1	1	Nameplate	122-1059
6	1	1	1	14" - 12" Encap.	230-887
7	2*	2*	2*	Gasket	113-520
8	1	1	1	Pilot Adaptor Ass'y	219-388
9	2*	2*	2*	Gasket	113-521
10	2*	2*	2*	Gasket	113-513
11	1	1	1	"12" Board Encap.	See p. 19
12	2	2	2	Screw	127-833
13	2*	2*	2*	Spring	115-361
14	2*	2*	2*	Bumper	114-189
15	2*	N/A	1*	Spool Ass'y (N.O.)	221-178
16	1	1	1	"14" Board Encap.	See p. 19
17	6	6	6	Screw	127-835
18	N/A	2*	1*	Spool Ass'y (N.O.)	221-179

\*Indicates parts included in kit.

Kit No. MKR2-K3D  
(for models R20BBD, R21BBD, R2DBBD, R2FBBD)



Kit No. MKR2-K3C  
(for models R20BBC, R21BBC, R2DBBC, R2FBBC)

