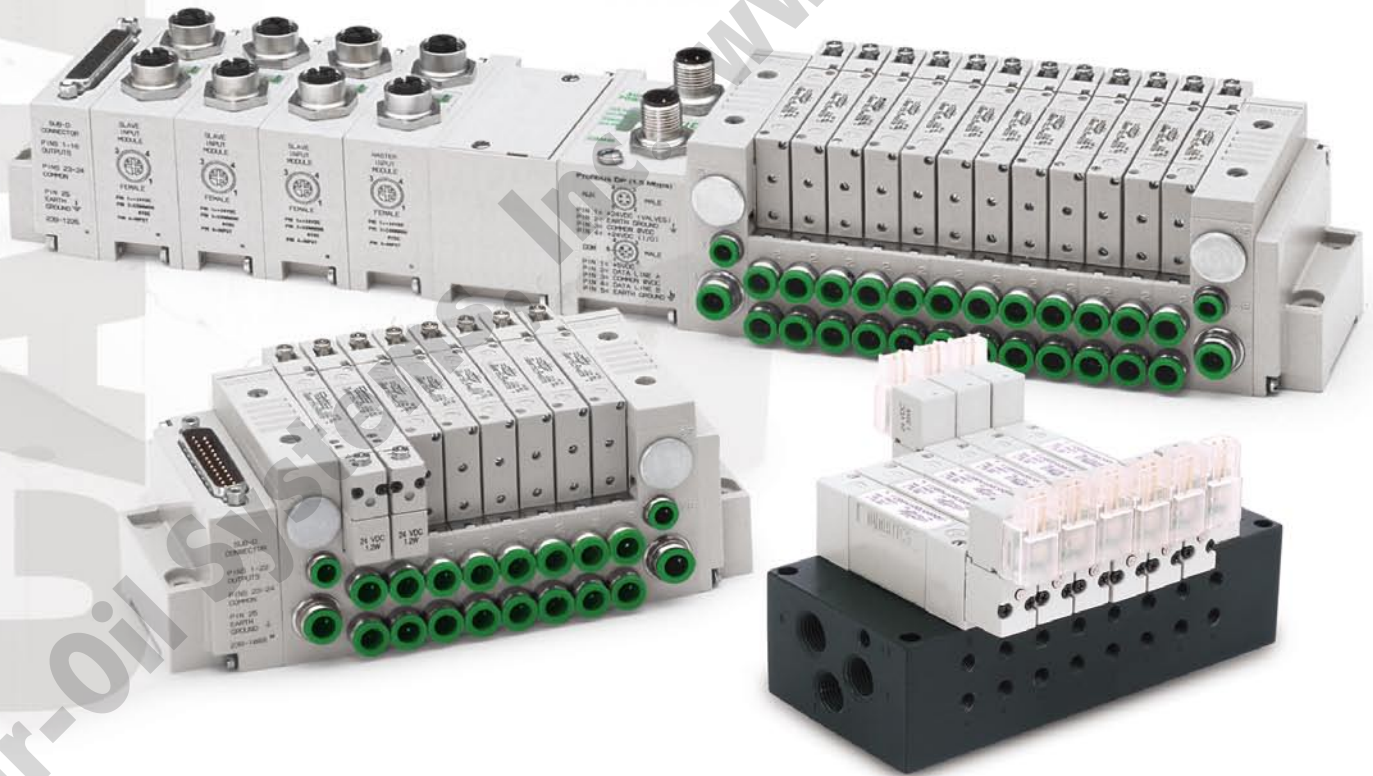


valves

# 2002 Series

Solenoid Air Pilot Actuated Valves

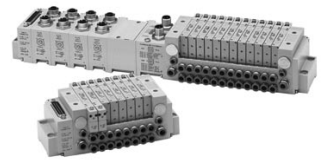


# numatics®

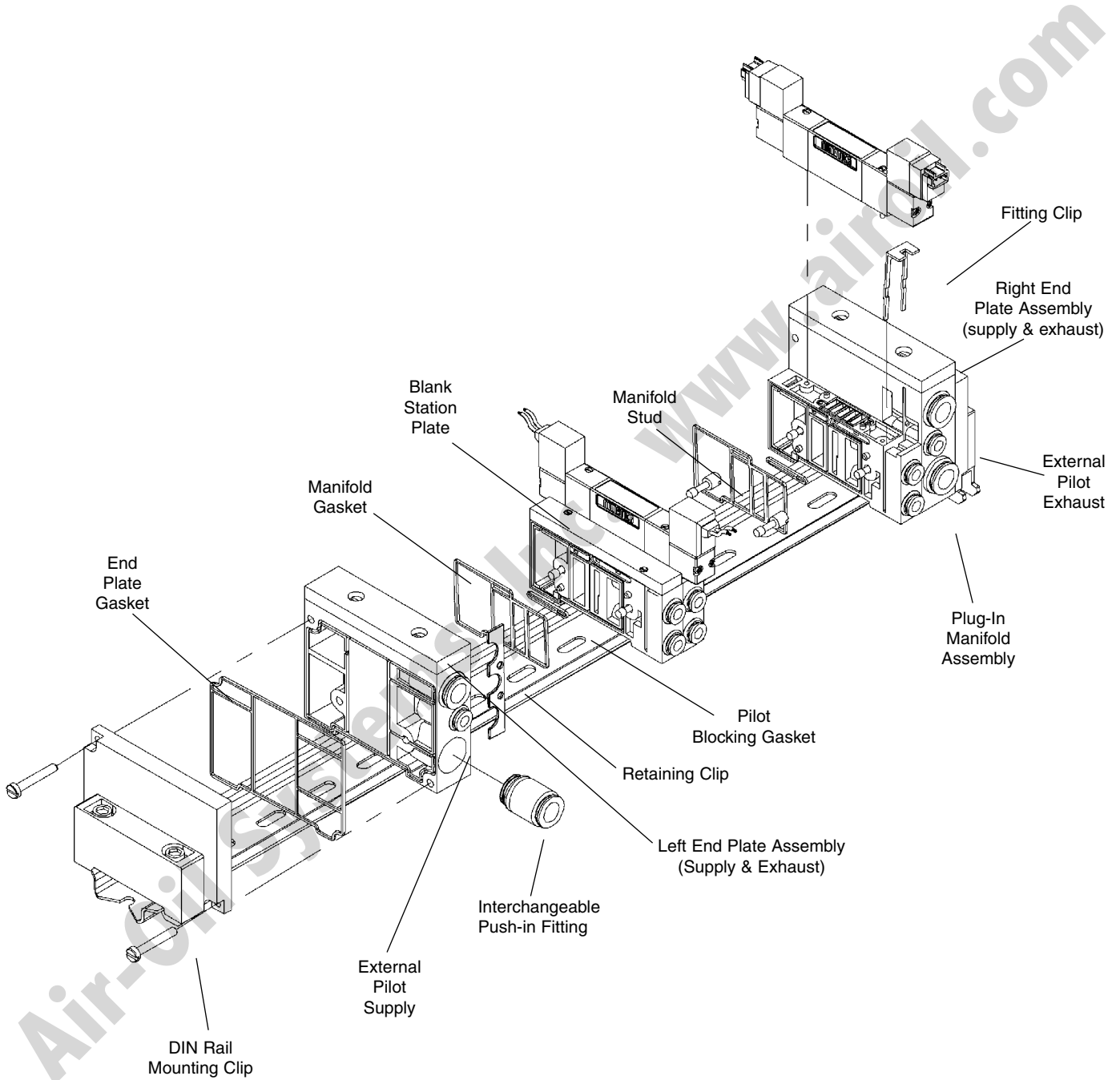
# Table of Contents

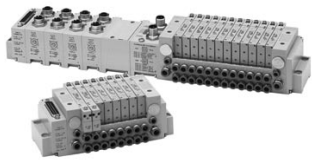
**NUMATICS®**

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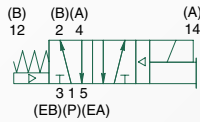
### Hardwired and Plug-In Solenoid Valve Manifold (exploded view)



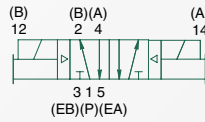


## 2002 Series

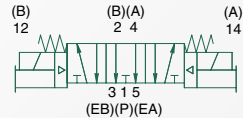
single solenoid  
2 position 4-way



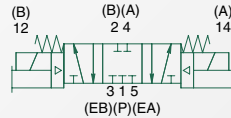
double solenoid  
2 position 4-way



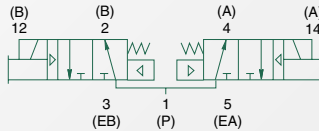
double solenoid  
3 position 4-way  
open center



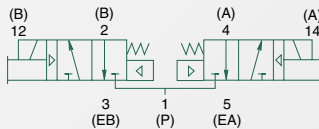
double solenoid  
3 position 4-way  
closed center



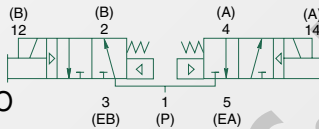
double solenoid  
2 position dual 3-way  
"14(A)" & "12(B)" NO



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 "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)  
 0 = Blank Station Plate

##### Mounting

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

#### Manifold Assembly

**AK 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

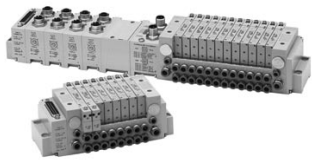
STD = Standard  
 DRM = DIN Rail Mounting (Std. 35mm)  
 MUF = Muffler in End Plates  
 DWM = DIN Rail with MUF

##### Port Type

L = Push-In  
 N = Bar Stock Manifold (NPTF)  
 G = Bar Stock Manifold (G Tap)

##### End Plate Port Size

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



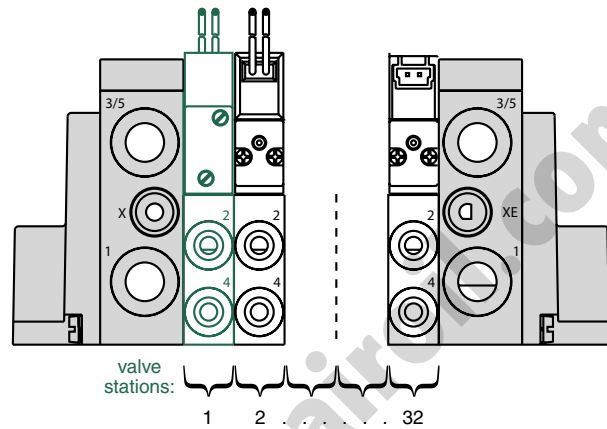
### When Ordering:

#### AK0 Hardwired Valve Manifold

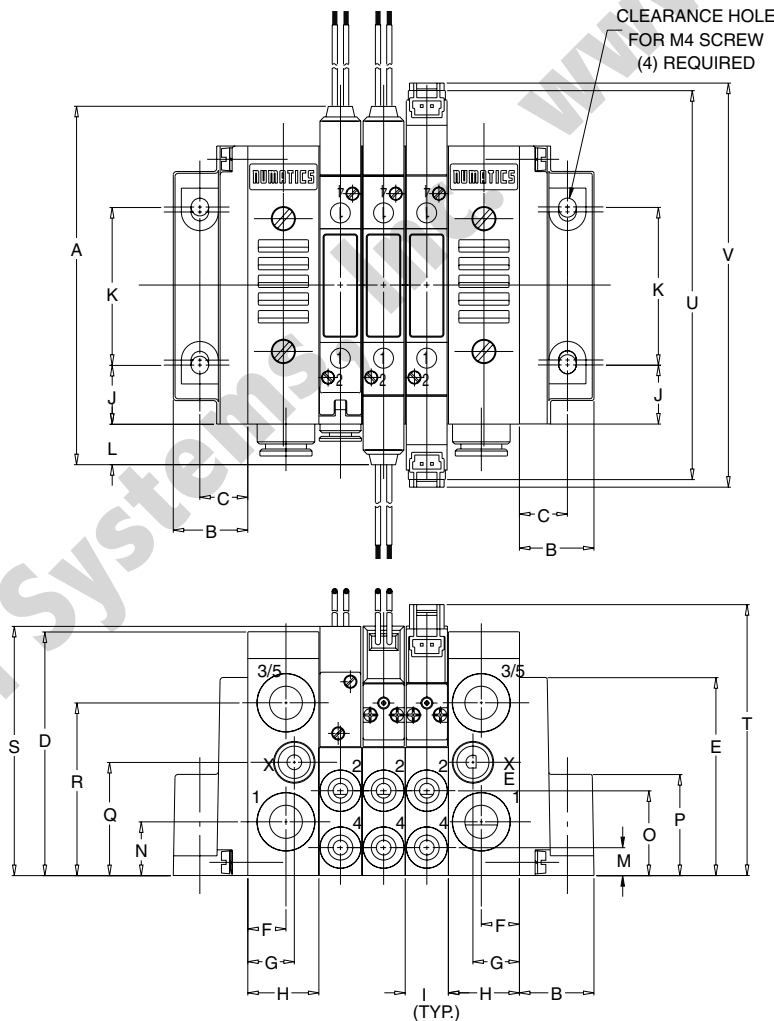
- Shaded components described by Assembly Kit (AK) model number designation (page 5).
- Each valve manifold station is listed in sequential order from left to right when facing the port side of the manifold as indicated.

Example order:

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



### Valve Manifold Assembly



### Dimensions

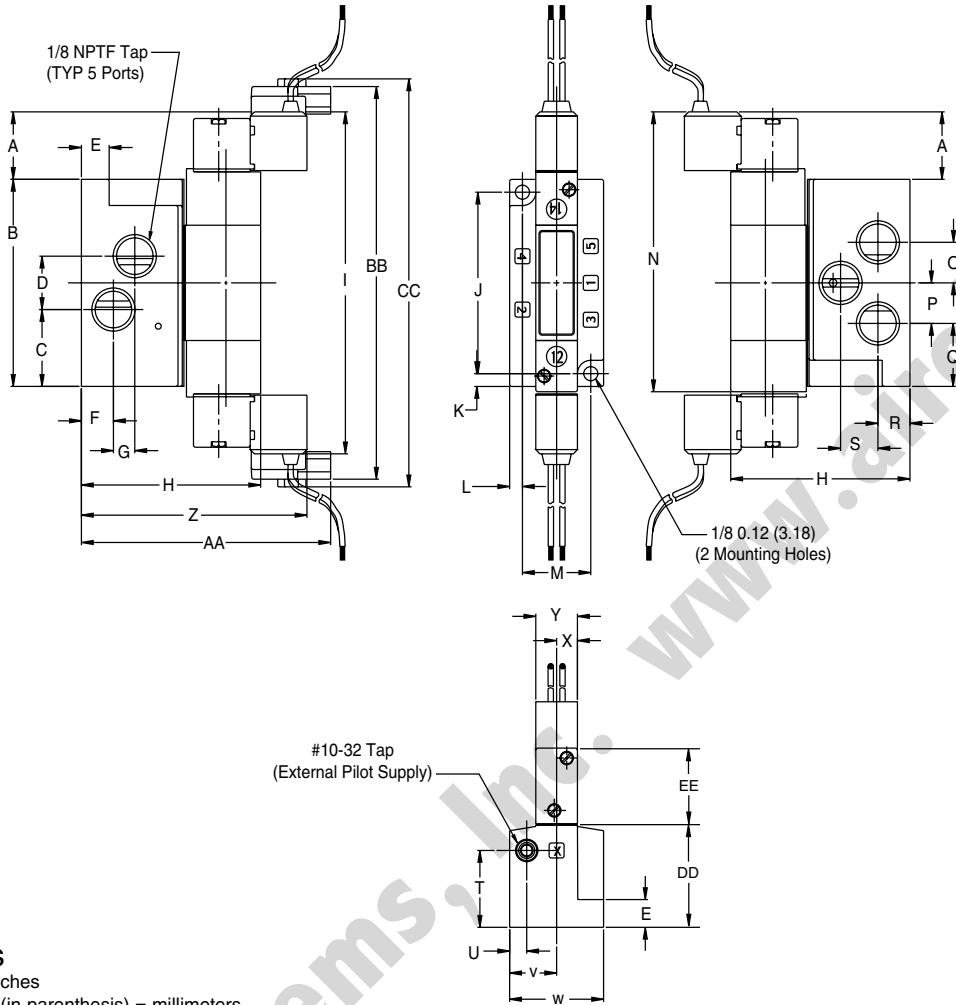
top dimensions = inches

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

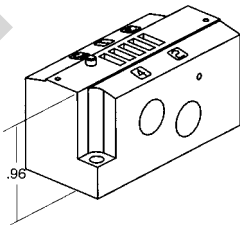


### Dimensions

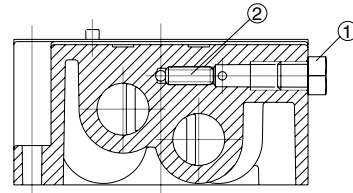
top dimensions = inches  
bottom dimensions (in parenthesis) = millimeters

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

### Individual Base Assembly Kits

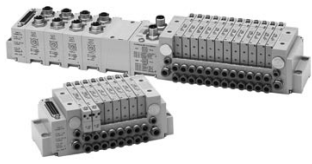


### For External Pilot Supply



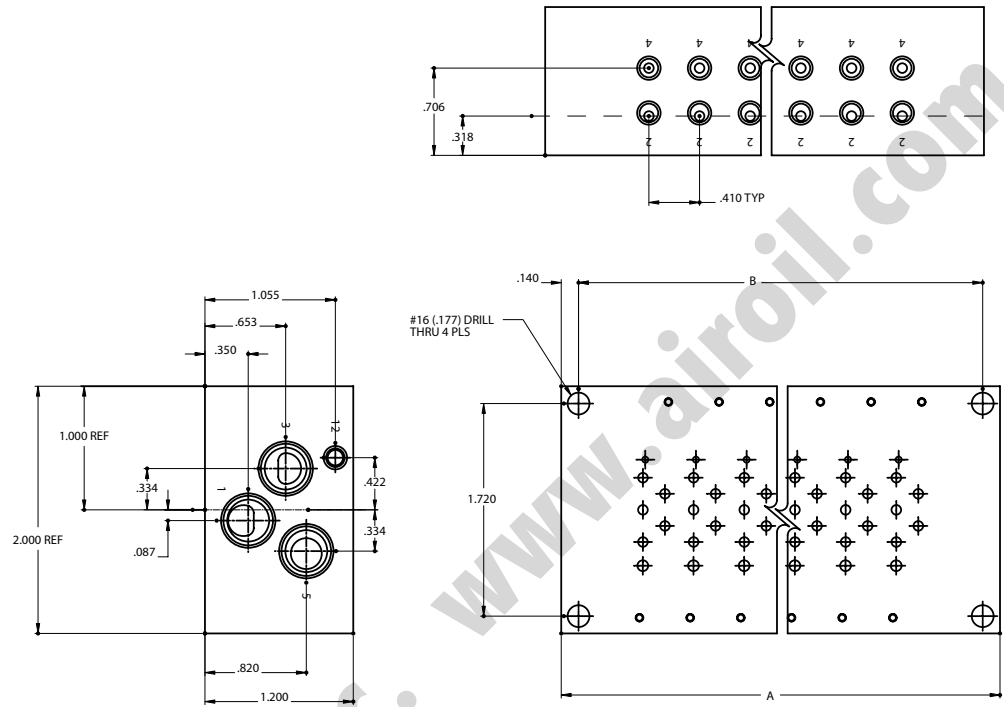
For External Pilot Supply, remove Plug 1 (129-127) and insert M3 Pipe Plug 2 (127-693) as shown

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



### Bar Stock Manifold

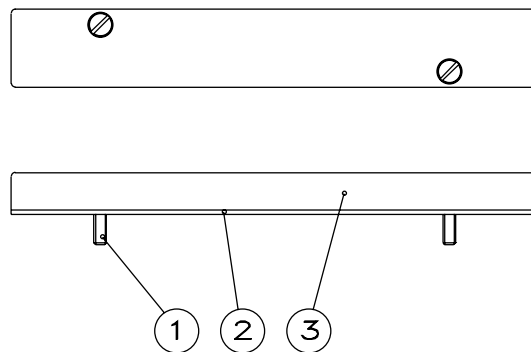
STATIONS	PART NO.
2	106-1355
4	106-1356
6	106-1357
8	106-1358
10	106-1359
12	106-1360
14	106-1361
16	106-1362
18	106-1363
20	106-1364



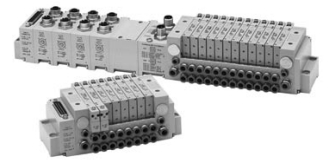
### Blank Station Plate Kit

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







### Plug Connector



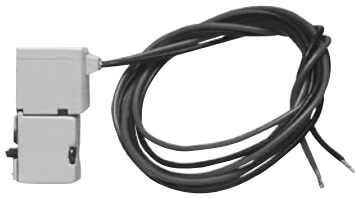
LEAD LENGTH	PART NO.
12" Lead	230-443
48" Lead	230-476
120" Lead	230-486

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



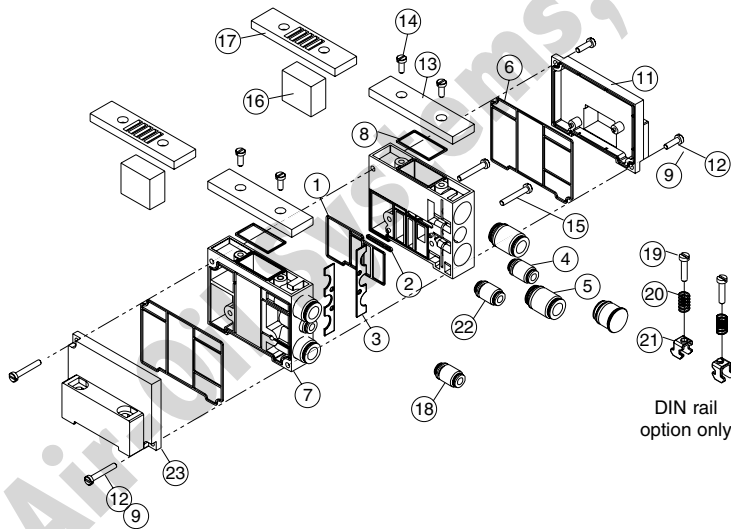
Straight Plug-in



90° Plug-in

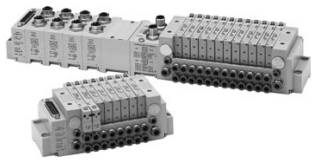
VOLTAGE	HARDWIRED	STRAIGHT PLUG-IN	90 DEGREE PLUG-IN
12 VDC	236-378	236-374	236-376
24 VDC	236-379	236-587	236-583

### End Plate Kits



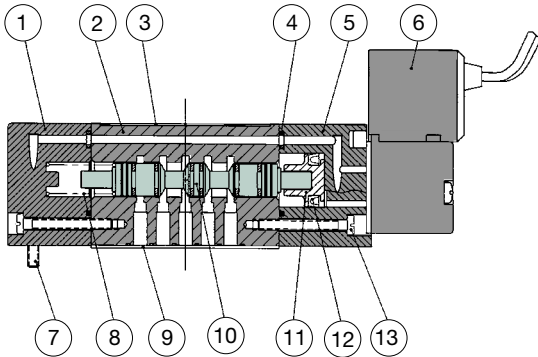
PORT TYPE	PUSH-IN			PUSH-IN		
PORT	1	3/5	X, XE	1	3/5	X, XE
PORT SIZE	1/4	1/4	5/32	8mm	8mm	6mm
End Plate Kit w/o muffler, w/o DIN Rail	239-1210			239-1208		
End Plate Kit w/o muffler, w/ DIN Rail	239-1209			239-1207		
End Plate Kit w/ muffler, w/o DIN Rail	239-1214			239-1212		
End Plate Kit w/ muffler,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

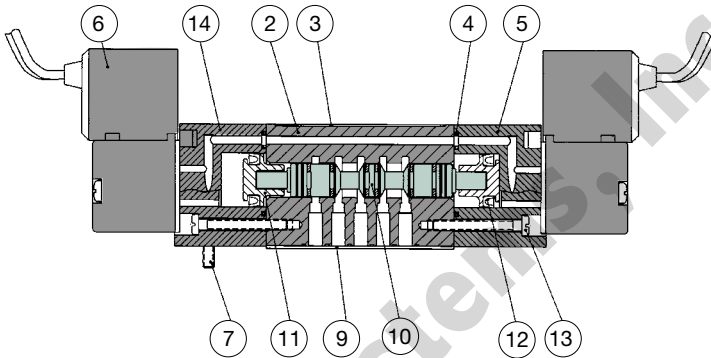


### F2 Valve Service Kits and Parts, 2 and 3 Position 4-Way

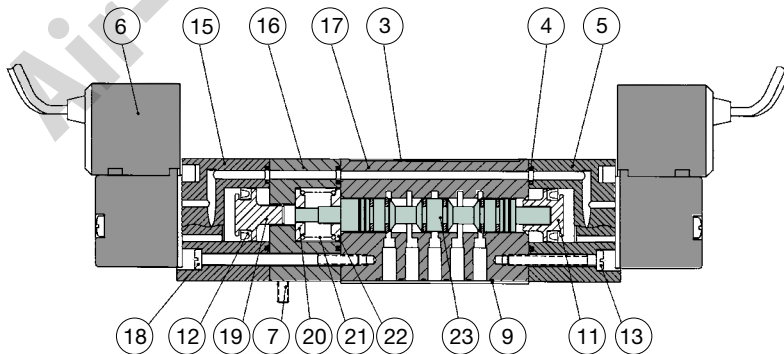
Kit No. MKF2-K1  
(for models F20BW4, F21BW4, F2CBW4)



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

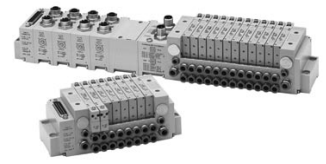


Kit No. MKF2-K35 (for models F20BB5, F21BB5, F2CBB5)  
Kit No. MKF2-K36 (for models F20BB6, F21BB6, F2CBB6)



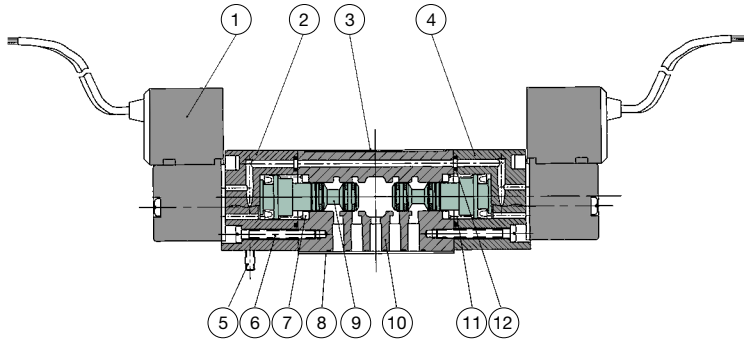
DET. NO.	BW4	BB4	BB5/6	PART NAME	PART NO.
1	1	N/A	N/A	Spring Cover Ass'y	204-594
2	1	1	N/A	Body (not sold separately)	
3	1	1	1	Nameplate	122-1059
4	2*	2*	3*	Gasket	113-517
5	1	1	1	Pilot Adaptor Ass'y	219-391
6	1	2	2	Pilot Valve Ass'y	See p. 8
7	2	2	2	Screw	127-832
8	1*	N/A	N/A	Spring	115-357
9	1*	1*	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.



### F2 Valve Service Kits and Parts, Dual 3-Way

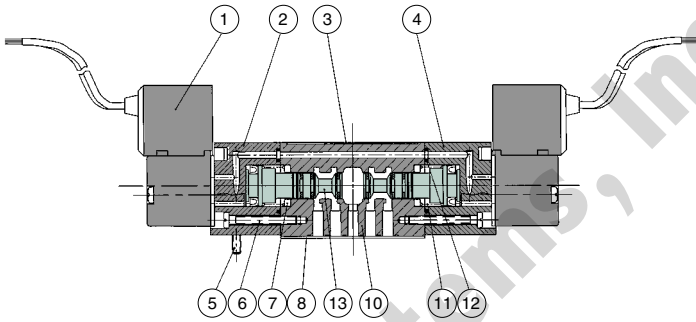
Kit No. MKF2-K3A  
(for models F20BBA, F21BBA, F2CBBA)



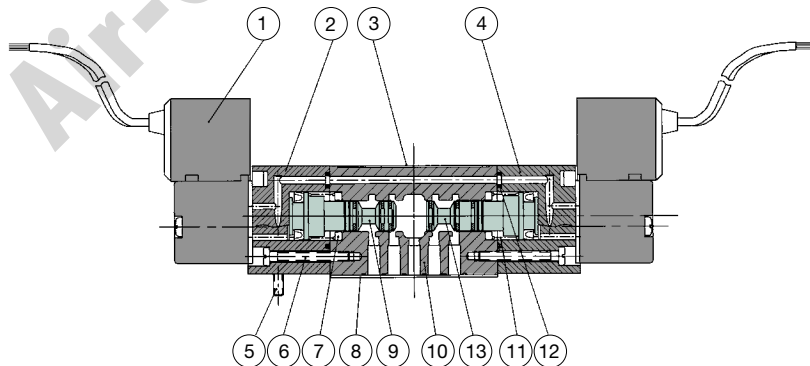
DET. NO.	BBA	BBD	BBC	PART NAME	PART NO.
1	2	2	2	Pilot Valve Ass'y	See p. 8
2	1	1	1	Pilot Adaptor Ass'y	219-393
3	1	1	1	Nameplate	122-1059
4	1	1	1	Pilot Adaptor Ass'y	219-391
5	2	2	2	Screw	127-832
6	4	4	4	Screw	127-834
7	2*	2*	2*	Bumper	114-189
8	1*	1*	1*	Gasket	113-525
9	2*	N/A	1*	Spool Ass'y (N.O.)	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

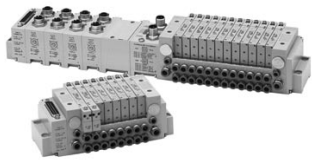
\* Indicates parts included in kit.

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

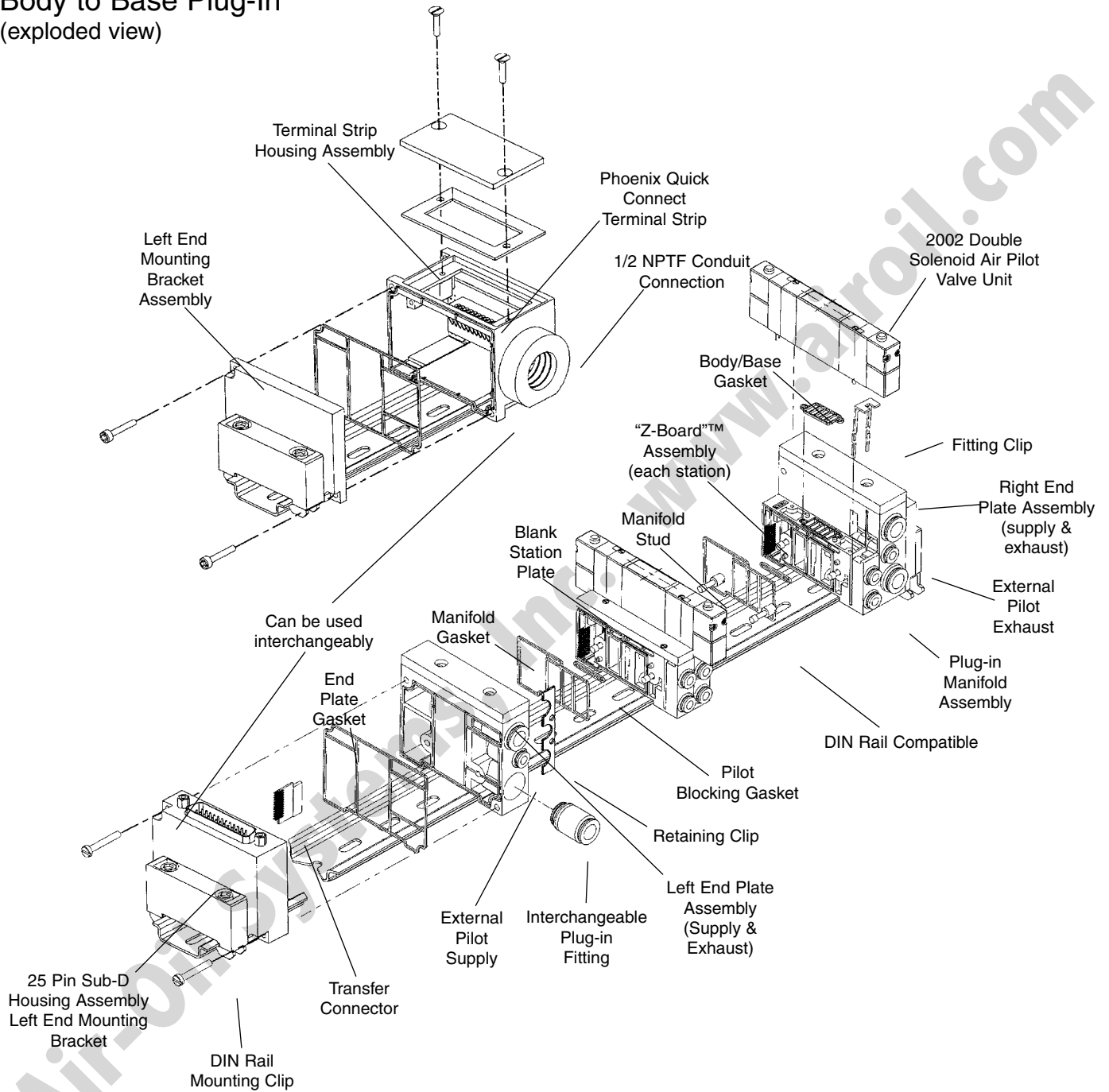


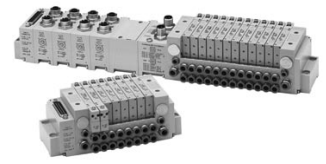
Kit No. MKF2-K3C  
(for models F20BBC, F21BBC, F2DBBC, F2FBBC)





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





## 2002 Series

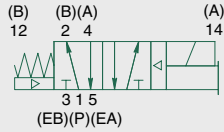
### 02 Series

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

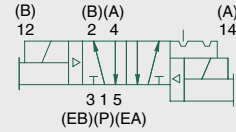
- Solenoid air pilot actuated
- Low current requirements
- Elimination of internal wiring
- Pusher piston – high spool shifting force
- Compact/modular Fieldbus electronics and I/O
- Adjustable port sizes utilizing interchangeable cartridge fittings



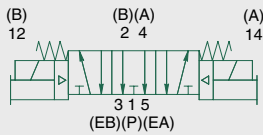
single solenoid air pilot  
2 position 4-way



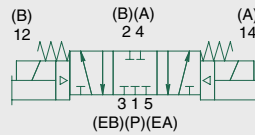
double solenoid air pilot  
2 position 4-way



double solenoid  
3 position 4-way  
open center



double solenoid  
3 position 4-way  
closed center

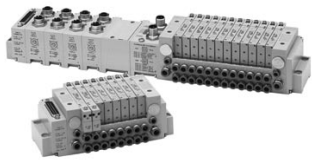


## Technical Data

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

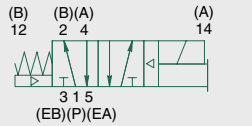
## Operating Data

ALL SOLENOIDS ARE CONTINUOUS DUTY RATED	24 VDC	12 VDC		
Power (Watts)	0.50	0.75		
Holding Current (Amps)	0.02	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

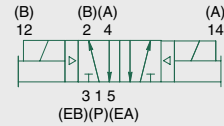


## 2002 Series

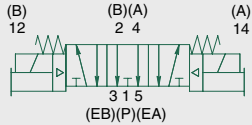
single solenoid air pilot  
2 position 4-way



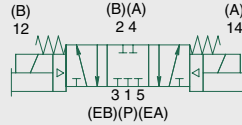
double solenoid air pilot  
2 position 4-way



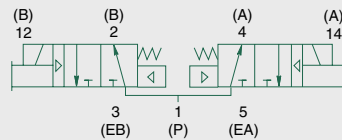
double solenoid air pilot  
3 position 4-way  
open center



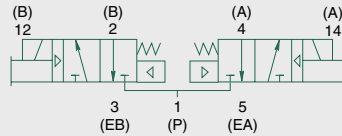
double solenoid air pilot  
3 position 4-way  
closed center



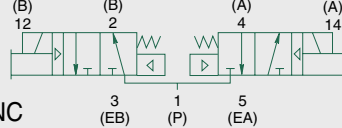
double solenoid  
air pilot  
dual 3-way  
"12(B)" & "14(A)" NO



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 NI/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

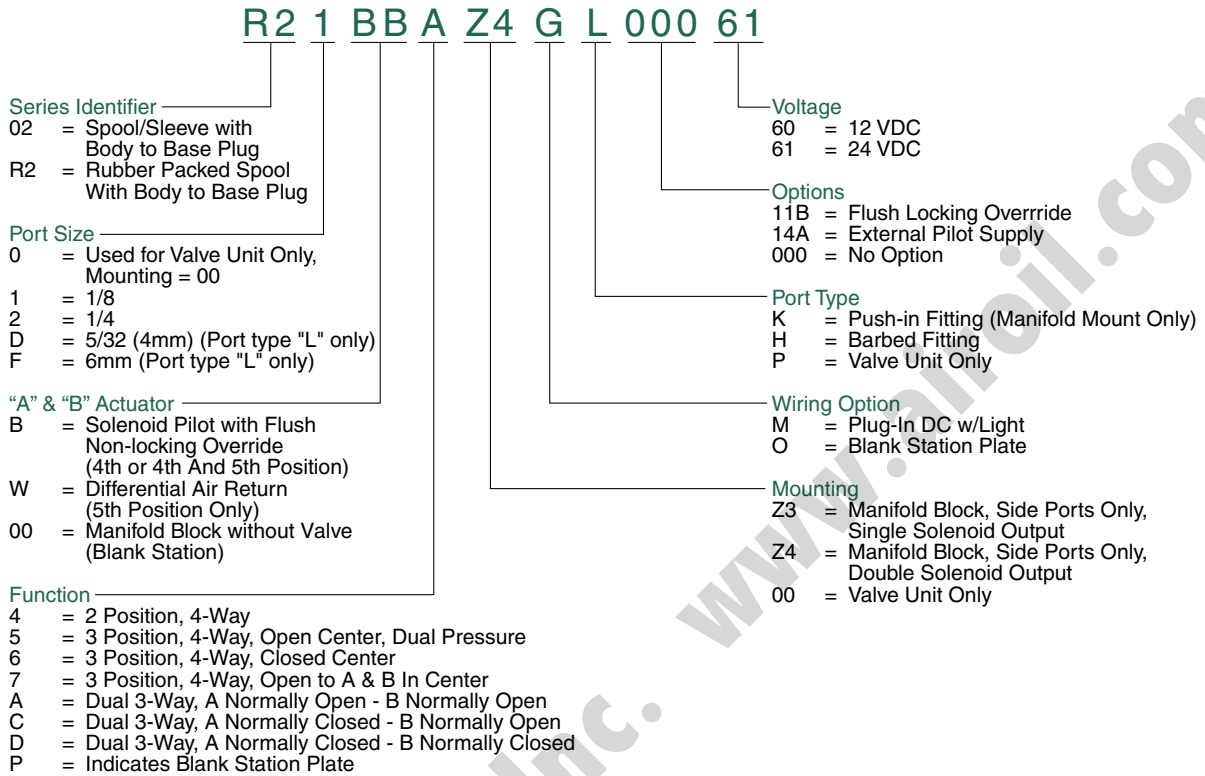
ALL SOLENOIDS ARE CONTINUOUS DUTY RATED	24 VDC	12 VDC
Power (Watts)	0.50	0.75
Holding Current (Amps)	0.02	0.064

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

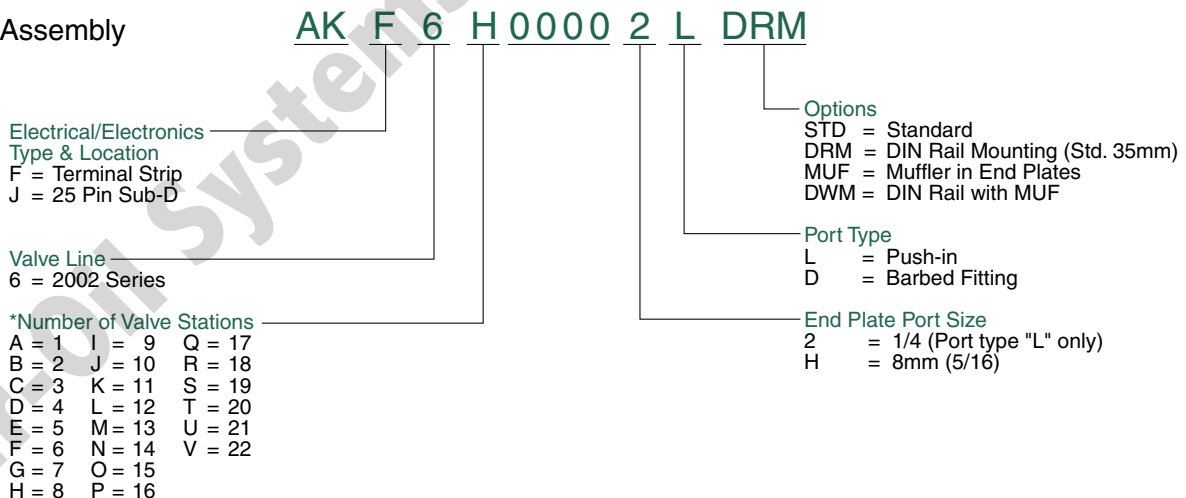


### How To Order

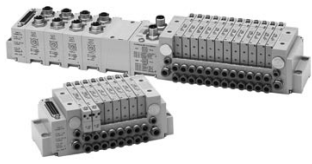
#### Valves



#### Manifold Assembly



- 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:

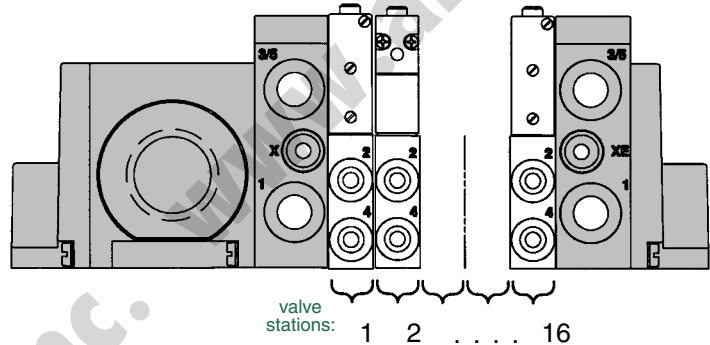
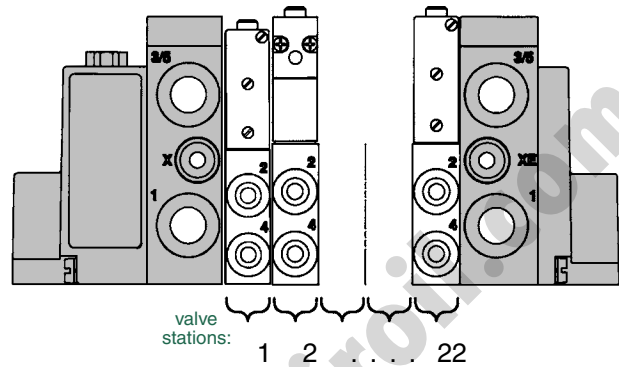
AKJ6D00002LSTD  
 valve station 1 021BW4Z3ML00061  
 valve station 2 021BW4Z3ML00061  
 valve station 3 021BB4Z4ML00061  
 valve station 4 021BB4Z4ML00061  
 ASSEMBLED

#### AKF Terminal Strip

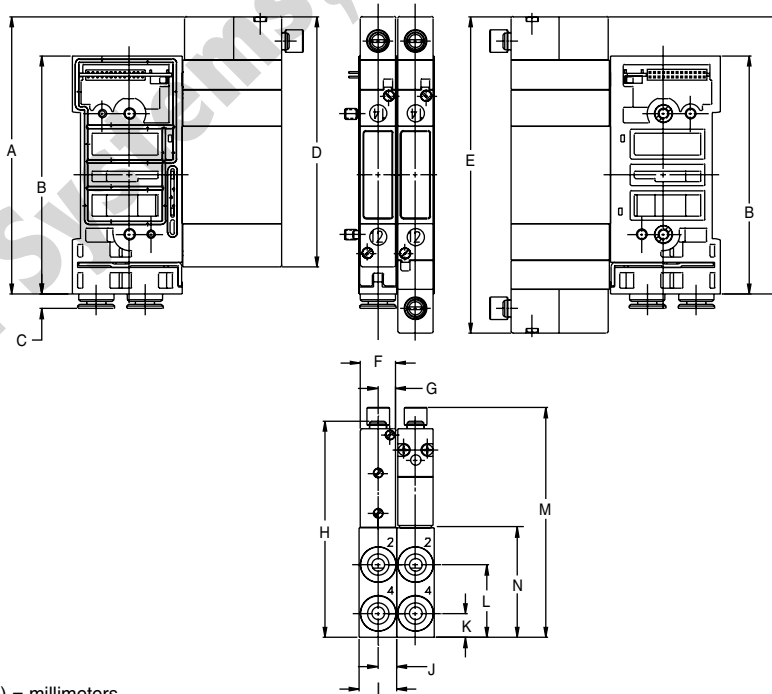
- Ordered using the same method as for AKJ

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

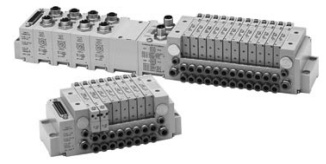


#### Dimensions

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

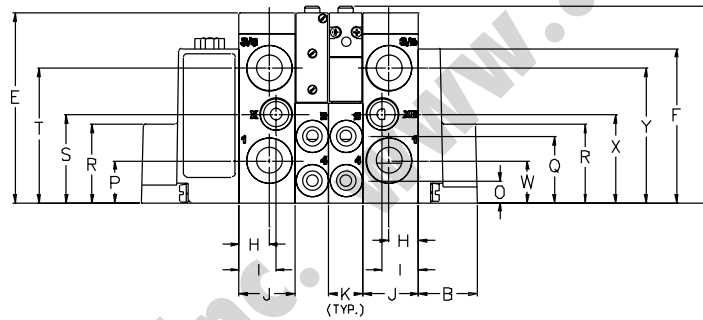
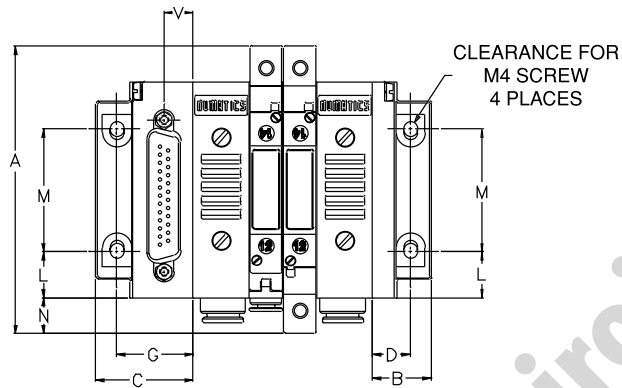
A	B	C	D	E	F	G	H	I	J	K	L	M	N
3.08	2.64	0.16	2.78	3.51	0.39	0.195	2.40	0.41	0.206	0.27	0.81	2.55	1.21
(78.1)	(67.1)	(4.2)	(70.5)	(89.2)	(9.9)	(4.95)	(61.0)	(10.5)	(5.30)	(6.9)	(20.6)	(64.8)	(30.7)



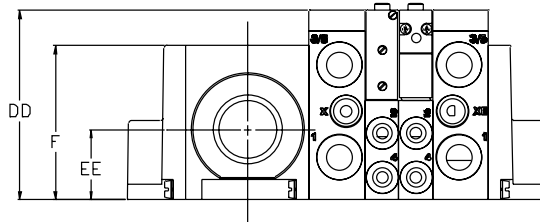
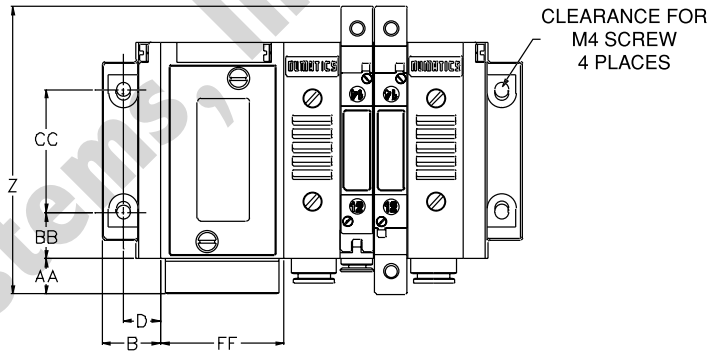


### FlexiBlok® Assembly

25 pin Sub-D Housing Assembly



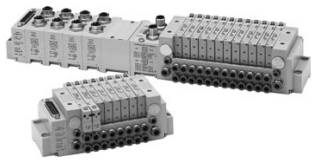
Terminal Strip Housing Assembly



### Dimensions

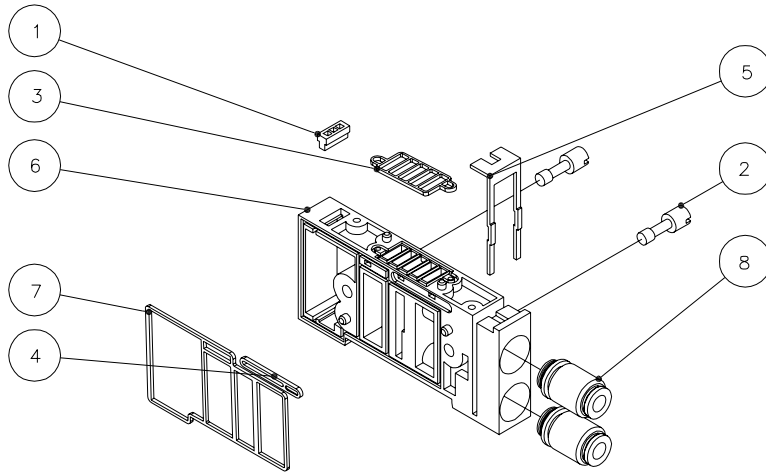
top dimensions = inches  
bottom dimensions (in parenthesis) = millimeters

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
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)



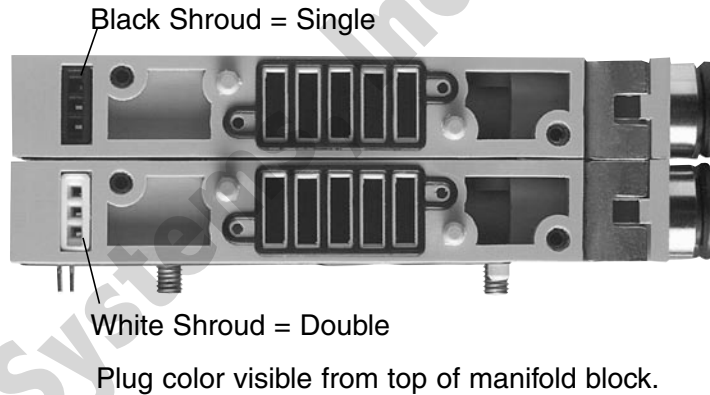
## 2002 Series

### Manifold Block Assemblies

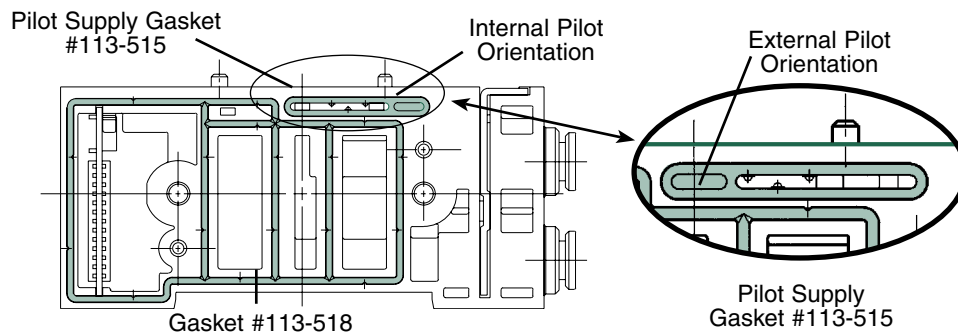


DET. NO.	NO. REQ'D	PART NAME	PART NO.
1	1	Shroud, White (Double)	125-786
1	1	Shroud, Black (Single)	125-785
2	1	Stud	125-787
3	1	Gasket (Body)	113-516
4	1	Blocking Gasket	113-515
5	1	Clip (Fitting)	125-784
6	1	Manifold	106-1208
7	1	Gasket (Manifold)	113-518
8	2	Push-in (1/4 Tube)	134-518
8	2	Push-in (1/8 Tube)	134-500
8	2	Push-in (4mm Tube)	134-498
8	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	239-1205	239-1206

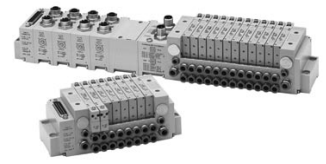


### Internal/External Pilot Selection



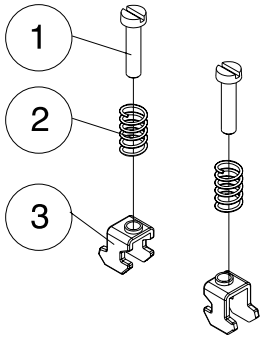
**Note:**

- 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.



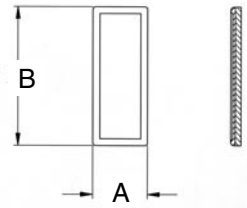
### DIN Rail Clamp Kit

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

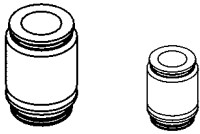
### Blocking Discs



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

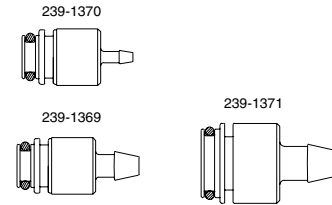
## Interchangeable Cartridge Fittings and Port Plugs

### Push-in Fittings



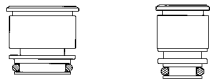
SIZE	PORTS	PART NO.
4mm (5/32")	Ports 2, 4, X, XE	134-498
6mm	Ports 2, 4, X, XE	134-499
1/8"	Ports 2, 4, X, XE	134-500
1/4"	Ports 2, 4, X, XE	134-518
8mm (5/16")	Ports 1, 3/5	134-501
1/4"	Ports 1, 3/5	134-502

### Barbed Fittings



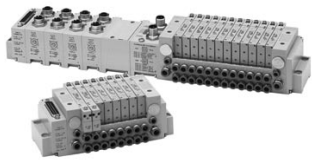
SIZE	PORTS	PART NO.
1/8"	Ports 2, 4, X, XE	239-1370
1/4"	Ports 2, 4, X, XE	239-1369
5/16"	Ports 1, 3/5	239-1371

### Port Plugs



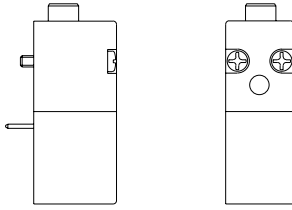
SIZE	PORTS	PART NO.
Large	Ports 1, 3/5	239-1085
Small	Ports 2, 4	239-1086





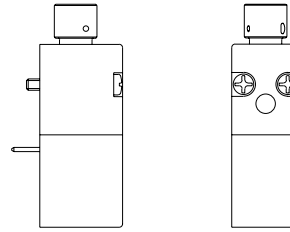
### Solenoid Pilot Valve Assemblies

#### Non-Locking Override



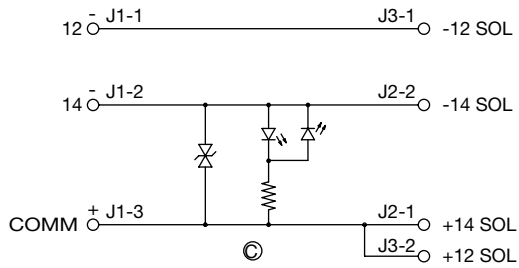
VDC	PART NO.
12	236-521
24	236-565

#### Locking Override

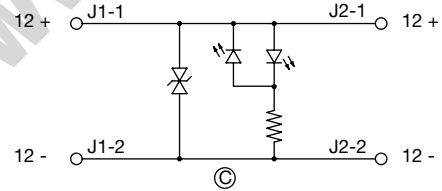


VDC	PART NO.
12	236-525
24	236-566

### Solenoid Control Board Circuit Diagrams

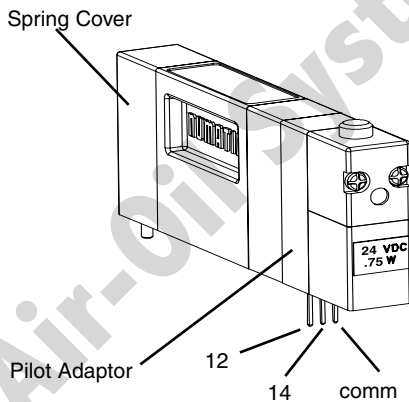


14 End

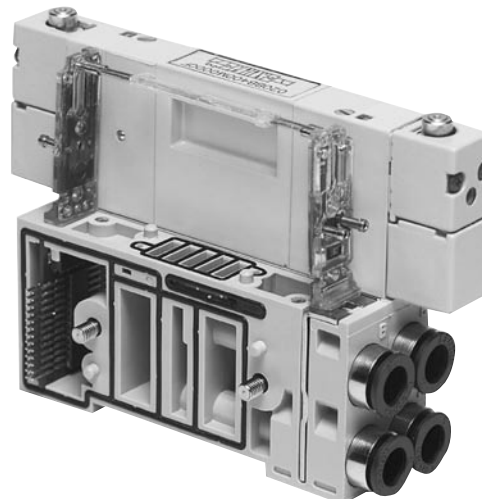


12 End

### Valve Unit Pin Out



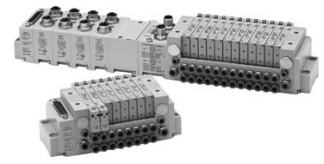
### Solenoid Board Encapsulation Assembly



Complete elimination of internal wiring!

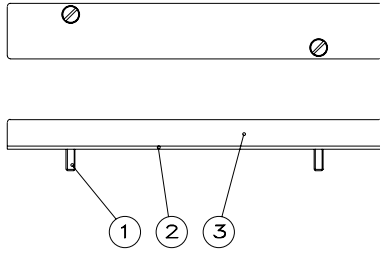
#### DESCRIPTION

"12" End	230-889
"14" End	230-888



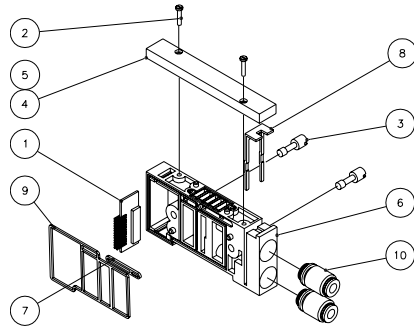
### Blank Station Plate Kit

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

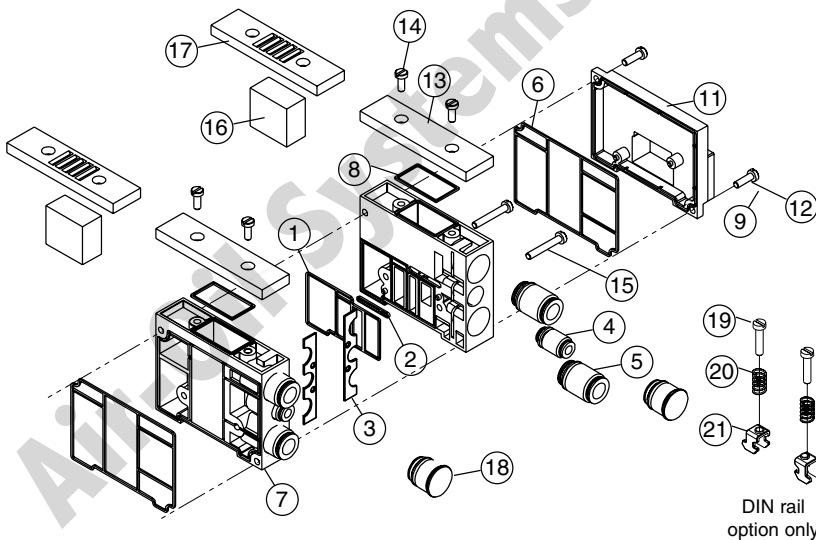
### Mid-Station Supply and Exhaust Block



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

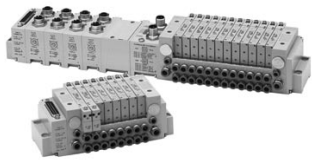
DET. NO.	NO. REQ'D	PART NAME	PART NO.
1	1	Transfer Board Ass'y	256-683
2	2	Screw	127-841
3	2	Stud	125-787
4	1	Blank Station Plug	104-698
5	1	Gasket	113-526
6	1	Mid Station Plate	125-857
7	1	Blocking Gasket	113-515
8	1	Clip (Fitting)	125-784
9	1	Gasket (Manifold)	113-518
10	2	Cartridge (6mm tube)	134-499

### End Plate Assembly Kit

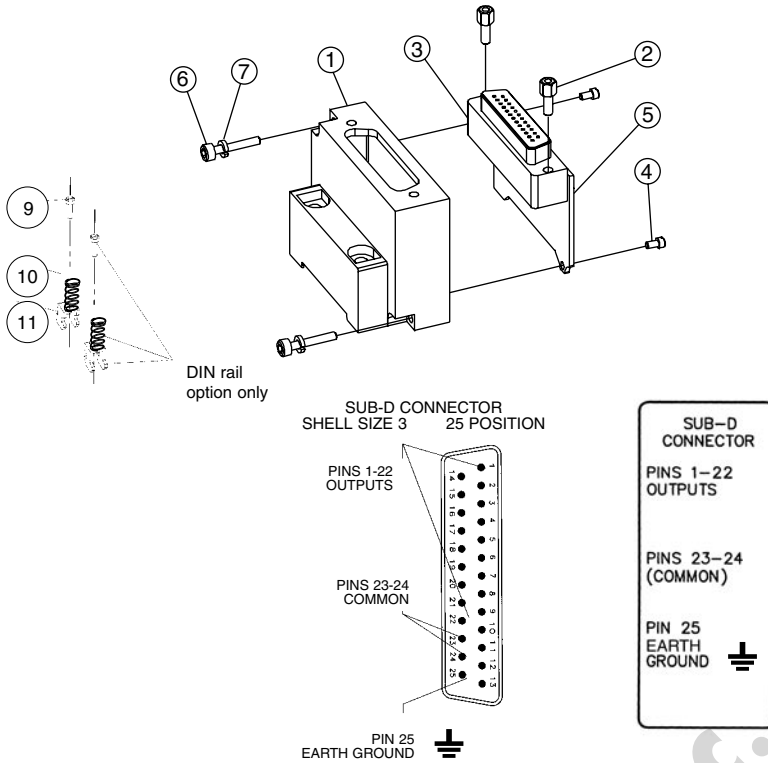


PORT TYPE	PUSH-IN			PUSH-IN		
	1	3/5	X, XE	1	3/5	X, XE
PORT SIZE	1/4	1/4	5/32	8mm	8mm	6mm
End Plate Kit w/o muffler, w/o DIN Rail	239-1068			239-1062		
End Plate Kit w/o muffler, w/ DIN Rail	239-1067			239-1061		
End Plate Kit w/ muffler, w/o DIN Rail	239-1084			239-1078		
End Plate Kit w/ muffler, w/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

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. 19
5	4	Push-in Fitting	See p. 19
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



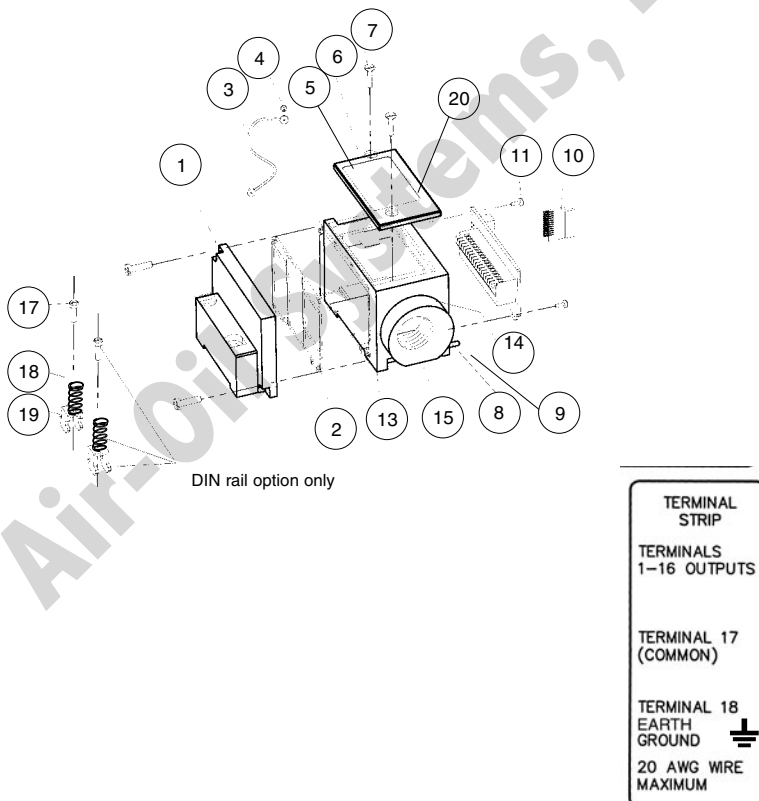
### 25 Pin Male Sub-D Housing Assembly Kit



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

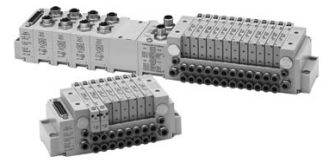
SUB-D HOUSING KITS		PART NO.
With DIN Rail		239-1088
Without DIN Rail		239-1087

### 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

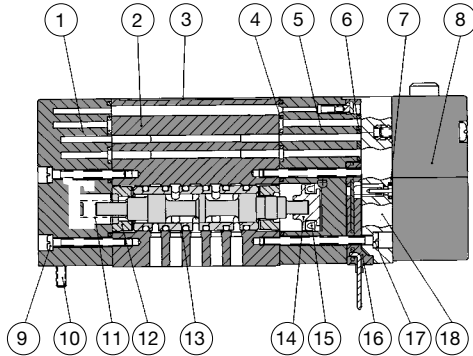
TERMINAL STRIP HOUSING KITS		PART NO.
With DIN Rail		239-1090
Without DIN Rail		239-1089



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

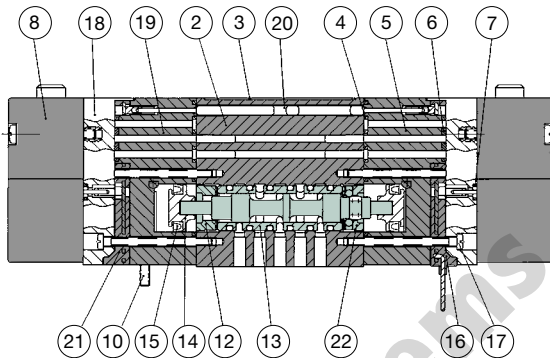
#### Kit No. MK02-K1

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



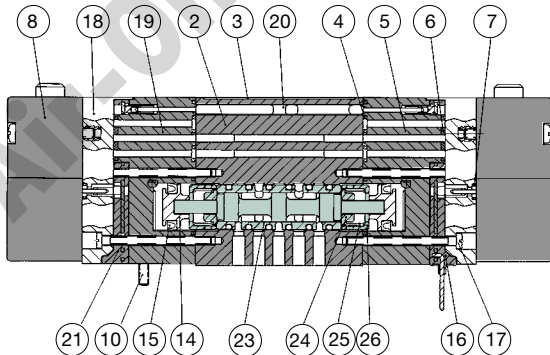
#### Kit No. MK02-K2

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



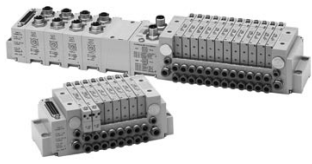
#### Kit No. MK02-K3

(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. 20
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. 20
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. 20
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

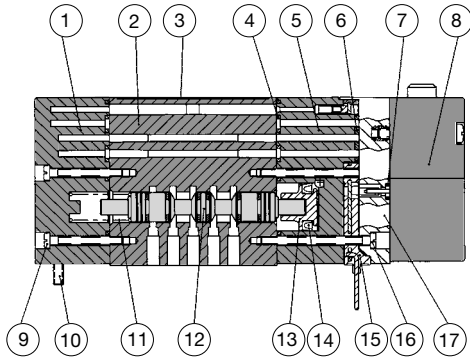
\* Indicates parts included in kit.



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

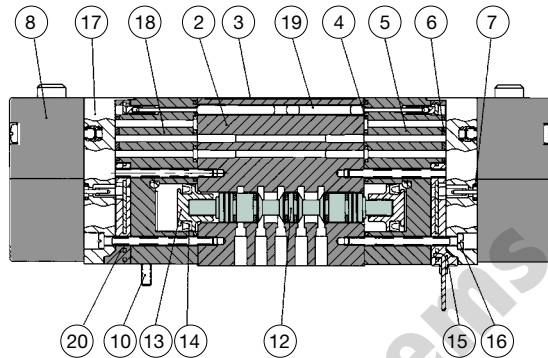
#### Kit No. MKR2-K1

(for models R20BW4, R21BW4, R2DBW4, R2FBW4)



#### Kit No. MKR2-K2

(for models R20BB4, R21BB4, R2DBB4, R2FBB4)

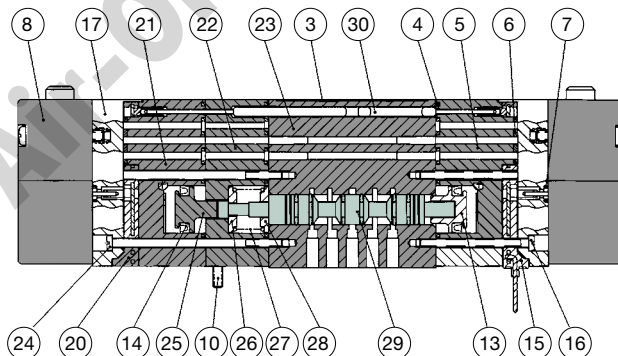


#### Kit No. MKR2-K35

(for models R20BB5, R21BB5, R2DBB5, R2FBB5)

#### Kit No. MKR2-K36

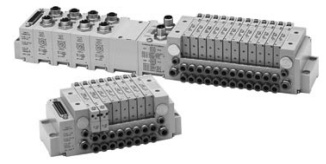
(for models R20BB6, R21BB6, R2DBB6, R2FBB6)



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. 20
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. 20
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. 20
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.

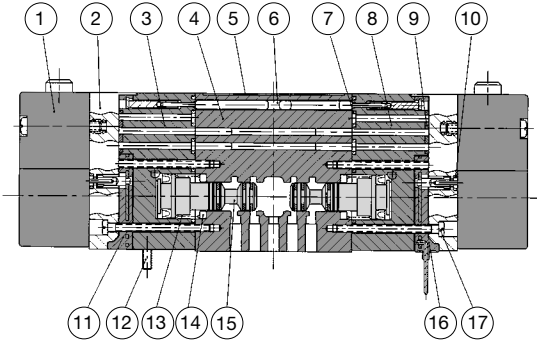




### R2 Dual 3-Way Valve Service Kits and Parts

#### Kit No. MKR2-K3A

(for models R20BBA, R21BBA, R2DBBA, R2FBBA)

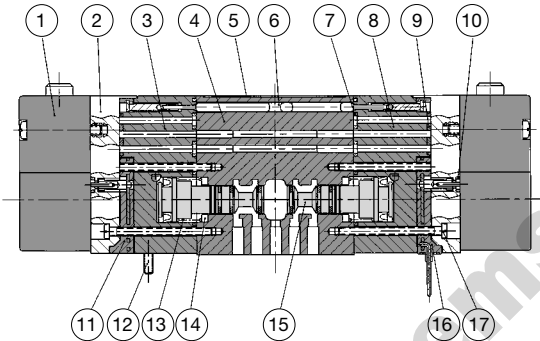


DET. NO.	BW4	BB4	BB5/6	PART NAME	PART NO.
1	2	2	2	Pilot Valve Ass'y	See p. 20
2	2	2	2	Pilot Adaptor	119-610
3	1	1	1	Pilot Adaptor Ass'y	219-390
4	1	1	1	Body (not sold separately)	
5	1	1	1	Nameplate	122-1059
6	1	1	1	14" - 12" Encap.	230-887
7	2*	2*	2*	Gasket	113-520
8	1	1	1	Pilot Adaptor Ass'y	219-388
9	2*	2*	2*	Gasket	113-521
10	2*	2*	2*	Gasket	113-513
11	1	1	1	"12" Board Encap.	See p. 20
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. 20
17	6	6	6	Screw	127-835
18	N/A	2*	1*	Spool Ass'y (N.O.)	221-179

\*Indicates parts included in kit.

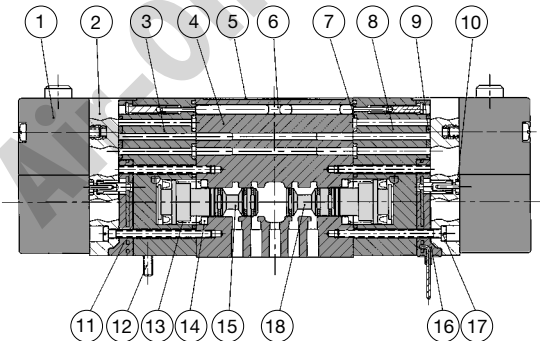
#### Kit No. MKR2-K3D

(for models R20BBD, R21BBD, R2DBBD, R2FBBD)



#### Kit No. MKR2-K3C

(for models R20BBC, R21BBC, R2DBBC, R2FBBC)



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