

Compendium of Air valve

3 port 2 position			
P29	Product feature	Photo	Manifold
3A100~3A300 Series	<ul style="list-style-type: none"> •Sliding column structure •Single air control and double air control are optional •NO and NC are available for single air control •Manifold is available 		
5 port 2 position, 5 port 3 position			
P32	Product feature	Photo	Manifold
4A100~4A400 Series	<ul style="list-style-type: none"> •Sliding column structure •Single air control and double air control are optional •5/2 Way and 5/3 Way are available •Closed center, exhaust center and pressure center are available for 5/3 Way •Manifold is available 		

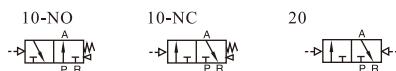
Installation and Application

1. Before installing, be sure the valve hasn't been damaged via transportation.
2. It's suggested to use the medium lubricated by 40μm filter element. Be aware of the flow direction and port size.
3. Please notice whether the installation condition accords with technical requirements (such as "actuation frequency", "working pressure" and "scope of application temperature"), then the equipment can be installed and used.
4. Notice the flow direction of air during installation, P is the air intake, A (B) is the work port and R (S) is the exhaust outlet.
5. Take measure to avoid vibration and frozen.
6. Firstly press the base gasket into the base, and then connect the base with the valve body by the affiliated screws. The base gasket can be pressed into the installation places that are not used temporarily, and then seal them with affiliated blank cap. When the system expands, take the blank cap off and install relative air valves;
7. To keep the dust away, please use the silencer for the exhaust ports. Never forget to install dirt-proof boot in air intake and outlet during dismounting.

3A100 Series



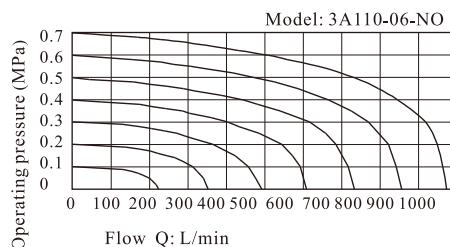
Symbol



Product feature

- Structure in sliding column mode: good tightness and sensitive reaction.
- Double air control valves have memory function.
- Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.
- No need to add oil for lubrication.
- Multi-mounting helps to install and apply.
- Integrate with the manifold to save installation space.

Flow chart



Specification

Model	3A110-M5	3A120-M5	3A110-06	3A120-06
Fluid	Air(to be filtered by 40 μm filter element)			
Acting	Exterior control			
Port size [Note1]	M5	1/8"		
Orifice size	5.5mm ² (Cv=0.31)	12.0mm ² (Cv=0.67)		
Valve type	3 port 2 position			
Lubrication [Note2]	Not required			
Operating pressure	0.15~0.8MPa(21~114psi)			
Proof pressure	1.2MPa(175psi)			
Temperature	-20~70°C			
Material of body	Aluminum alloy			
Max. frequency [Note3]	5 cycle/sec			

[Note1] PT thread, G thread and NPT thread are available.

[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. Lubricants like ISO VG32 or equivalent are recommended.

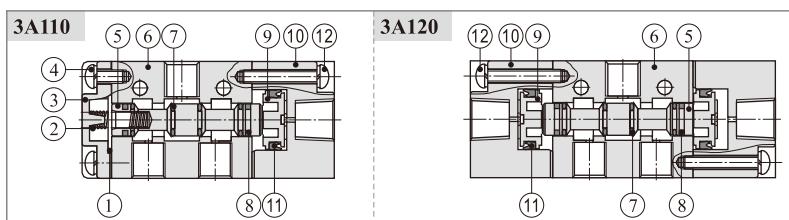
[Note3] The maximum actuation frequency is in the no-load state.

Ordering code

3 A 1 1 0 0 6 N O □					
①Model	②Code	③Valve type	④Port size	⑤Acting type	⑥Thread type
3A: Air Valve (3/2 way)	1: 100 Series	10: Single air control 20: Double air control	M5: M5 06: 1/8"	NC: Normally close NO: Normally open No this code	M5 1/8" Blank: PT G: G T: NPT

Please refer to 114 for manifold specification and the order way.

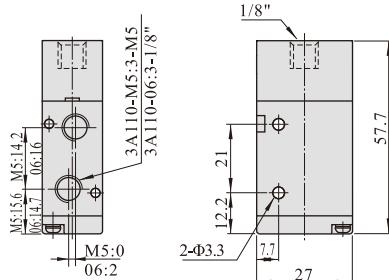
Inner structure



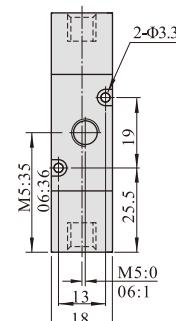
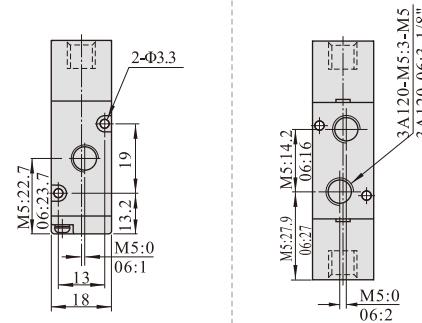
No.	Item	No.	Item	No.	Item
1	Bottom cover gasket	5	Spool	9	Piston
2	Spring	6	Body	10	Pilot body
3	Bottom cover	7	O-ring	11	Piston O-ring
4	Bottom cover screw	8	Wear ring	12	Piston screw

Dimension

3A110



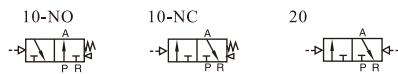
3A120



3A200 Series



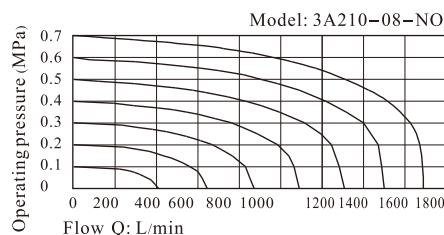
Symbol



Product feature

- Structure in sliding column mode: good tightness and sensitive reaction.
- Double air control valves have memory function.
- Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.
- No need to add oil for lubrication.
- Multi-mounting helps to install and apply.
- Integrate with the manifold to save installation space.

Flow chart



Specification

Model	3A210-06	3A220-06	3A210-08	3A220-08
Fluid	Air(to be filtered by 40 μm filter element)			
Acting	Exterior control			
Port size [Note1]	In=Out=1/8"	In=Out=1/4"		
Orifice size	14.0mm ² (Cv=0.78)	16.0mm ² (Cv=0.89)		
Valve type	3 port 2 position			
Lubrication [Note2]	Not required			
Operating pressure	0.15~0.8MPa(21~114psi)			
Proof pressure	1.2MPa(175psi)			
Temperature	-20~70°C			
Material of body	Aluminum alloy			
Max. frequency [Note3]	5 cycle/sec			

[Note1] PT thread, G thread and NPT thread are available.

[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. Lubricants like ISO VG32 or equivalent are recommended.

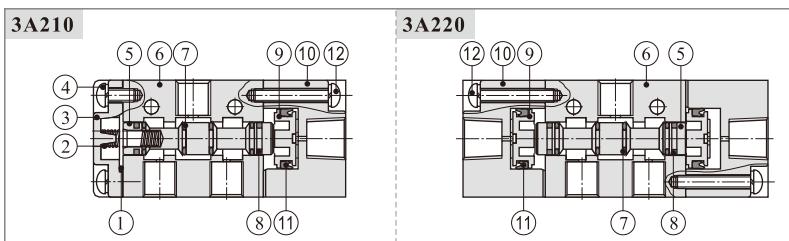
[Note3] The maximum actuation frequency is in the no-load state.

Ordering code

3A	2	10	08	NO	□
①	②	③	④	⑤	⑥
①Model 3A: Air Valve (3/2 way)	②Code 2: 200 Series	③Valve type 10: Single air control 20: Double air control	④Port size 06: 1/8" 08: 1/4"	⑤Acting type NC: Normally close NO: Normally open No this code	⑥Thread type Blank: PT G: G T: NPT

Please refer to 114 for manifold specification and the order way.

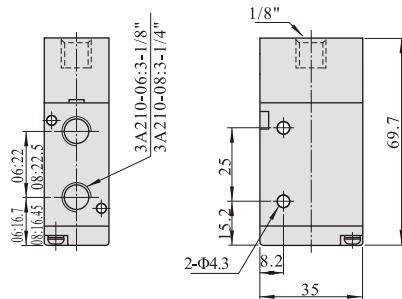
Inner structure



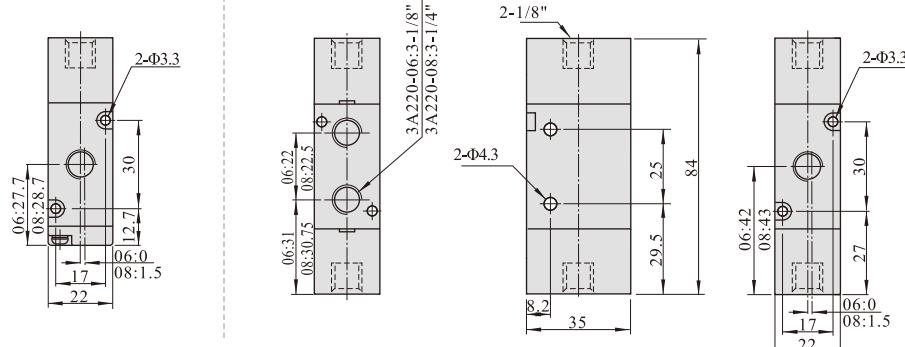
No.	Item	No.	Item	No.	Item
1	Bottom cover gasket	5	Spool	9	Piston
2	Spring	6	Body	10	Pilot body
3	Bottom cover	7	O-ring	11	Piston O-ring
4	Bottom cover screw	8	Wear ring	12	Piston screw

Dimension

3A210



3A220



3A300 Series



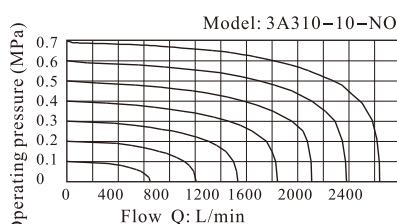
Symbol



Product feature

1. Structure in sliding column mode: good tightness and sensitive reaction.
2. Double air control valves have memory function.
3. Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.
4. No need to add oil for lubrication.
5. Multi-mounting helps to install and apply.
6. Integrate with the manifold to save installation space.

Flow chart



Specification

Model	3A310-08	3A320-08	3A310-10	3A320-10
Fluid	Air(to be filtered by 40 μm filter element)			
Acting	Exterior control			
Port size [Note1]	In=Out=1/4"	In=Out=3/8"		
Orifice size	25.0mm ² (Cv=1.39)	30.0mm ² (Cv=1.67)		
Valve type	3 port 2 position			
Lubrication [Note2]	Not required			
Operating pressure	0.15~0.8MPa(21~114psi)			
Proof pressure	1.2MPa(175psi)			
Temperature	-20~70°C			
Material of body	Aluminum alloy			
Max. frequency [Note3]	5 cycle/sec			

[Note1] PT thread, G thread and NPT thread are available.

[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. Lubricants like ISO VG32 or equivalent are recommended.

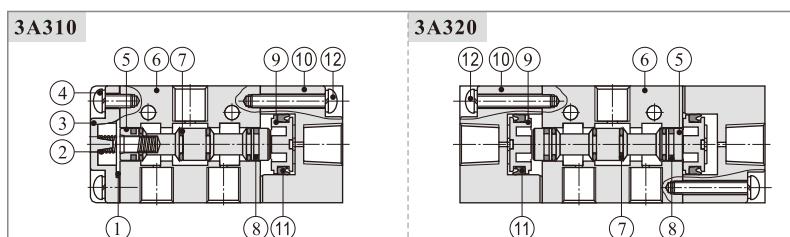
[Note3] The maximum actuation frequency is in the no-load state.

Ordering code

3 A 3 10 10 NO □					
① Model	② Code	③ Valve type	④ Port size	⑤ Acting type	⑥ Thread type
3A: Air Valve (3/2 way)	3: 300 Series	10: Single air control 20: Double air control	08: 1/4" 10: 3/8"	NC: Normally close NO: Normally open No this code	Blank: PT G: G T: NPT

Please refer to 114 for manifold specification and the order way.

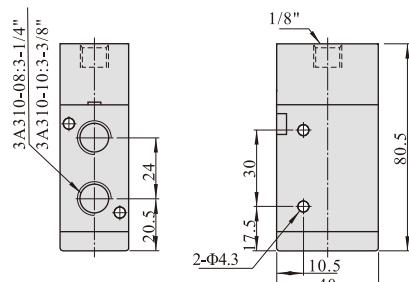
Inner structure



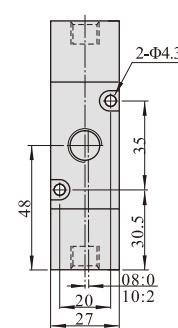
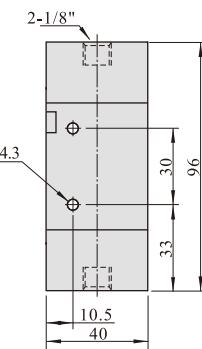
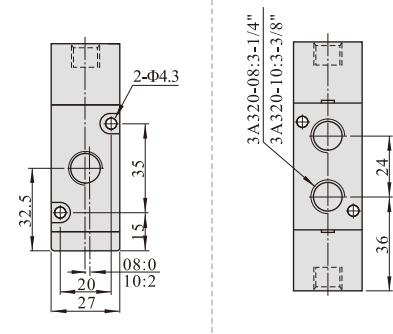
No.	Item	No.	Item	No.	Item
1	Bottom cover gasket	5	Spool	9	Piston
2	Spring	6	Body	10	Pilot body
3	Bottom cover	7	O-ring	11	Piston O-ring
4	Bottom cover screw	8	Wear ring	12	Piston screw

Dimension

3A310



3A320



Air valve(5/2 way, 5/3 way)

BITEBI[®]

4A100 Series



Specification

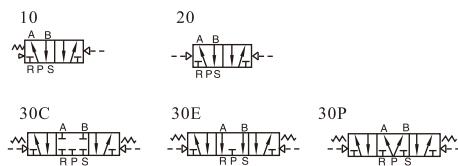
Model	4A110-M5 4A120-M5	4A130C-M5 4A130E-M5 4A130P-M5	4A110-06 4A120-06	4A130C-06 4A130E-06 4A130P-06
Fluid	Air(to be filtered by 40 μm filter element)			
Acting	Exterior control			
Port size [Note1]	In=Out=M5	In=Out=1/8"		
Orifice size	5.5mm ² (Cv=0.31)	5.0mm ² (Cv=0.28)	12.0mm ² (Cv=0.67)	9.0mm ² (Cv=0.50)
Valve type	5 port 2 position	5 port 3 position	5 port 2 position	5 port 3 position
Operating pressure	0.15~0.8MPa(21~114psi)			
Proof pressure	1.2MPa(175psi)			
Temperature	-20~70°C			
Material of body	Aluminum alloy			
Lubrication [Note2]	Not required			
Max. frequency [Note3]	5 cycle/sec	3 cycle/sec	5 cycle/sec	3 cycle/sec
Weight (g)	4A110-M5:85 4A120-M5:140	165	4A110-06:85 4A120-06:140	165

[Note1] PT thread, G thread and NPT thread are available.

[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. Lubricants like ISO VG32 or equivalent are recommended.

[Note3] The maximum actuation frequency of no-load state.

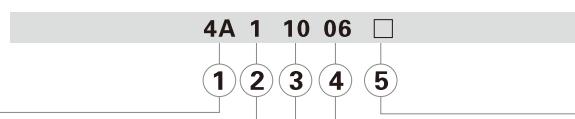
Symbol



Product feature

- Structure in sliding column mode: good tightness and sensitive reaction.
- Three position air valves have three kinds of central function for your choice.
- Double air control valves have memory function.
- Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.
- No need to add oil for lubrication.
- Integrate with the manifold to save installation space.

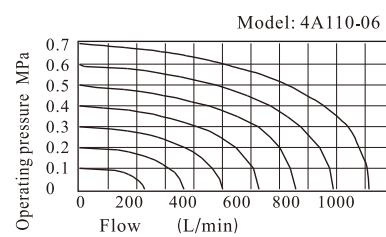
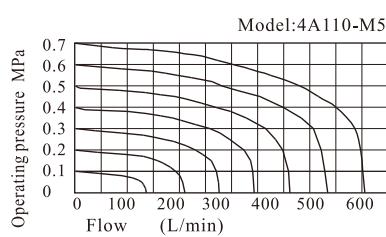
Ordering code



①Model	②Code	③Valve type	④Port size	⑤Thread type
4A: Air Valve(5/2, 5/3 way)	1: 100 Series	10: Single air control 5/2 way 20: Double air control 5/2 way 30C: Double air control 5/3 way closed center 30E: Double air control 5/3 way exhaust center 30P: Double air control 5/3 way pressure center	M5: M5 06: 1/8"	No this code Blank: PT G: G T: NPT

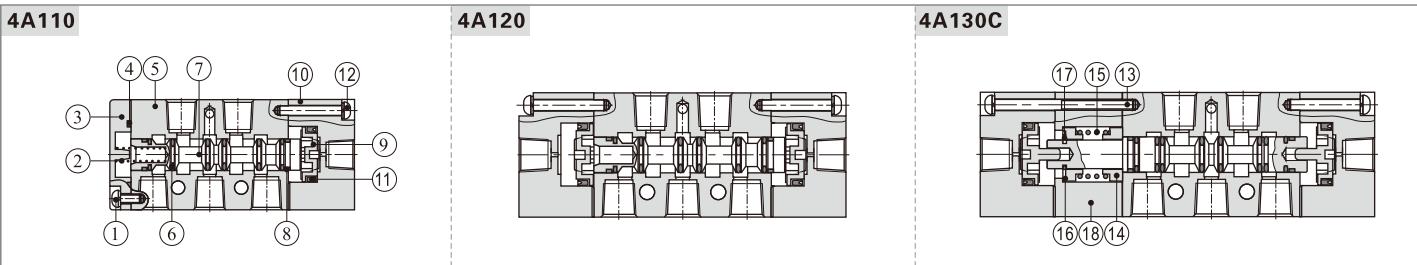
Please refer to 115 for manifold specification and the order way.

Flow chart



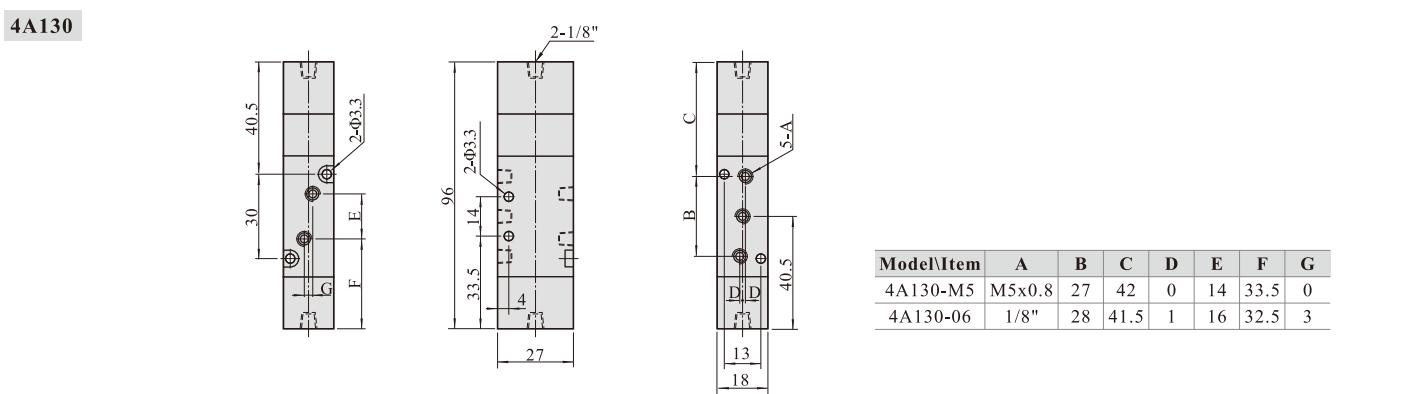
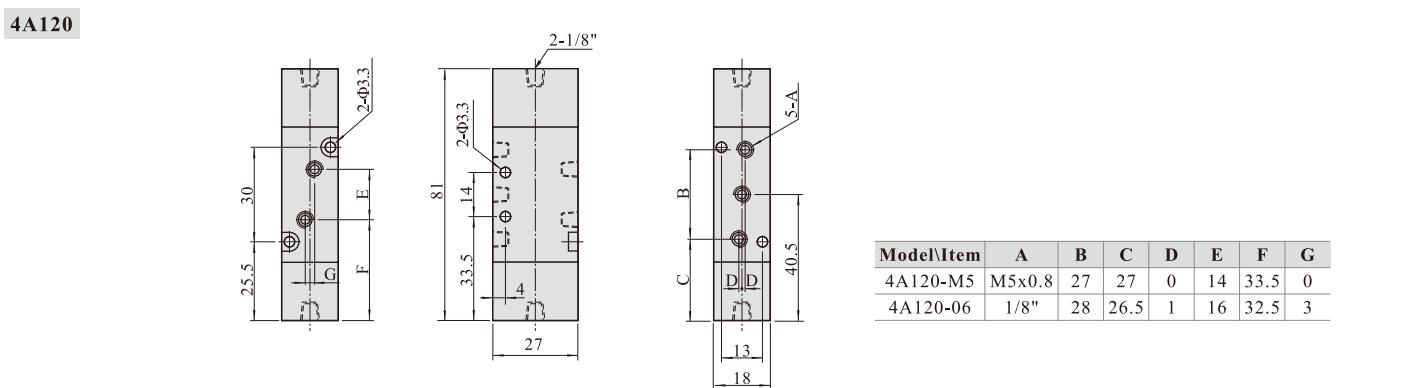
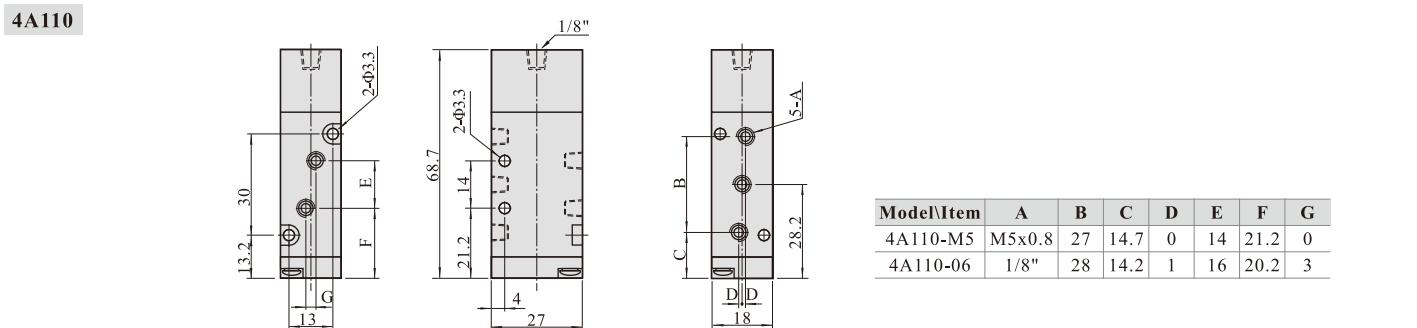
4A100 Series

Inner structure



No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item
1	Screw	3	Bottom cover	5	Body	7	Spool	9	Piston	11	O-ring	13	Screw	15	Return Spring	17	E Clip
2	Spring	4	Bottom cover gasket	6	O-ring	8	Wear ring	10	Pilot body	12	Screw	14	Spring holder	16	Spring holder	18	Side cover

Dimension



4A200 Series



Specification

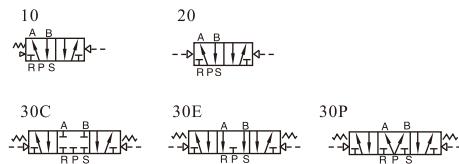
Model	4A210-06 4A220-06	4A230C-06 4A230E-06 4A230P-06	4A210-08 4A220-08	4A230C-08 4A230E-08 4A230P-08
Fluid	Air(to be filtered by 40 μm filter element)			
Acting	Exterior control			
Port size [Note1]	In=Out=Exhaust=1/8"	In=Out=1/4" Exhaust=1/8"		
Orifice size	14.0mm ² (Cv=0.78)	12.0mm ² (Cv=0.67)	16.0mm ² (Cv=0.89)	12.0mm ² (Cv=0.67)
Valve type	5 port 2 position	5 port 3 position	5 port 2 position	5 port 3 position
Operating pressure	0.15~0.8MPa(21~114psi)			
Proof pressure	1.2MPa(175psi)			
Temperature	-20~70°C			
Material of body	Aluminum alloy			
Lubrication [Note2]	Not required			
Max. frequency [Note3]	5 cycle/sec	3 cycle/sec	5 cycle/sec	3 cycle/sec
Weight (g)	4A210-06:185 4A220-06:285	365	4A210-08:185 4A220-08:285	365

[Note1] PT thread, G thread and NPT thread are available.

[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. Lubricants like ISO VG32 or equivalent are recommended.

[Note3] The maximum actuation frequency of no-load state.

Symbol



Product feature

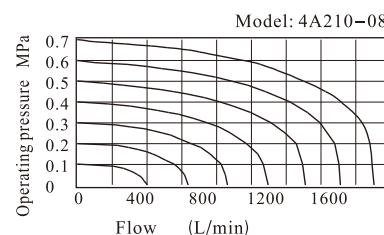
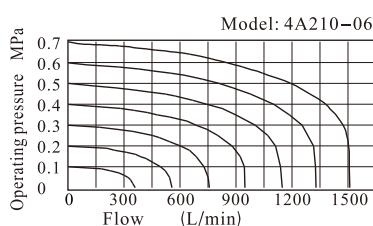
- Structure in sliding column mode: good tightness and sensitive reaction.
- Three position air valves have three kinds of central function for your choice.
- Double air control valves have memory function.
- Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.
- No need to add oil for lubrication.
- Integrate with the manifold to save installation space.

Ordering code

4A 2 10 08 □				
① Model	② Code	③ Valve type	④ Port size	⑤ Thread type
4A: Air Valve(5/2, 5/3 way)	2: 200 Series	10: Single air control 5/2 way 20: Double air control 5/2 way 30C: Double air control 5/3 way closed center 30E: Double air control 5/3 way exhaust center 30P: Double air control 5/3 way pressure center	06: 1/8" 08: 1/4"	Blank: PT G: G T: NPT

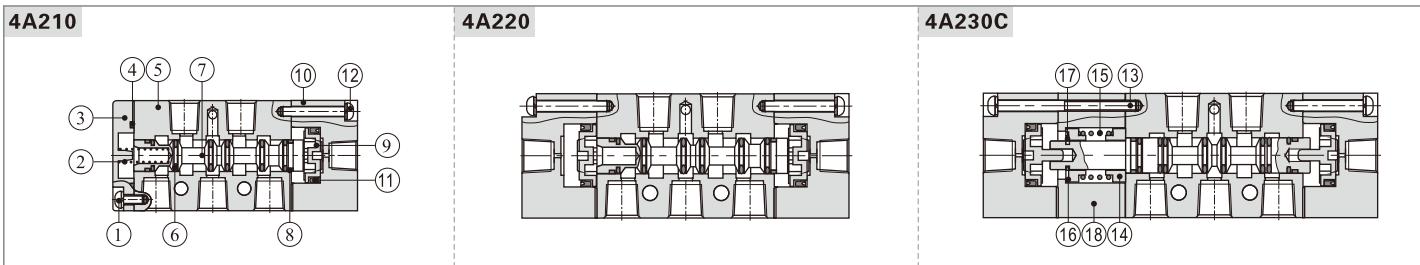
Please refer to 115 for manifold specification and the order way.

Flow chart



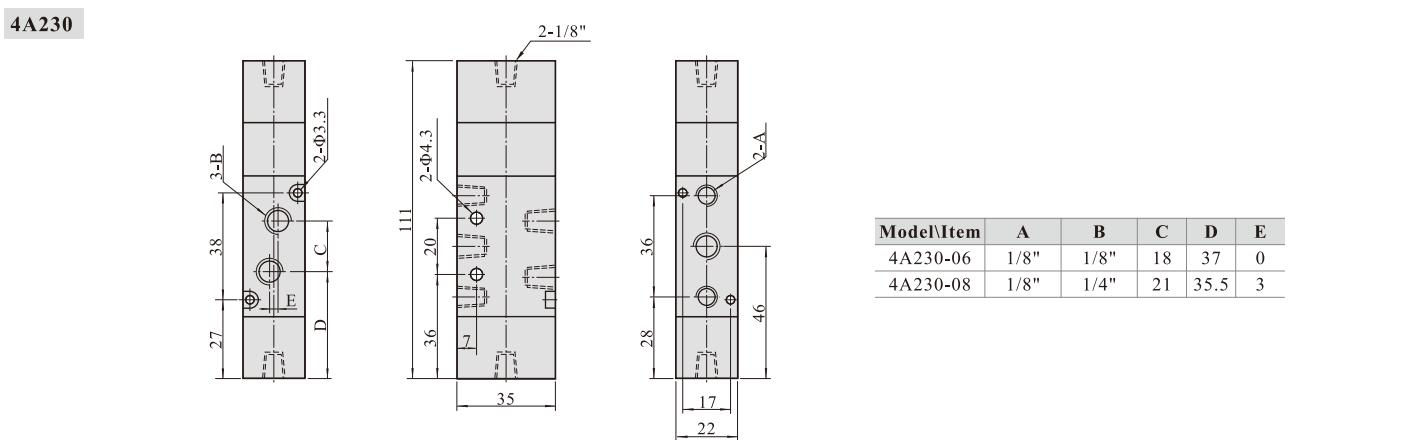
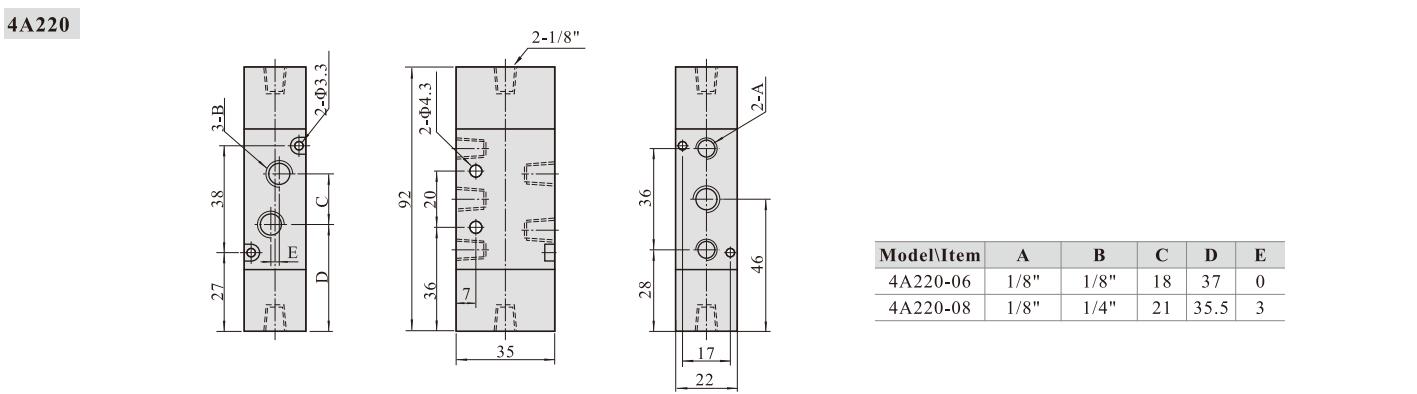
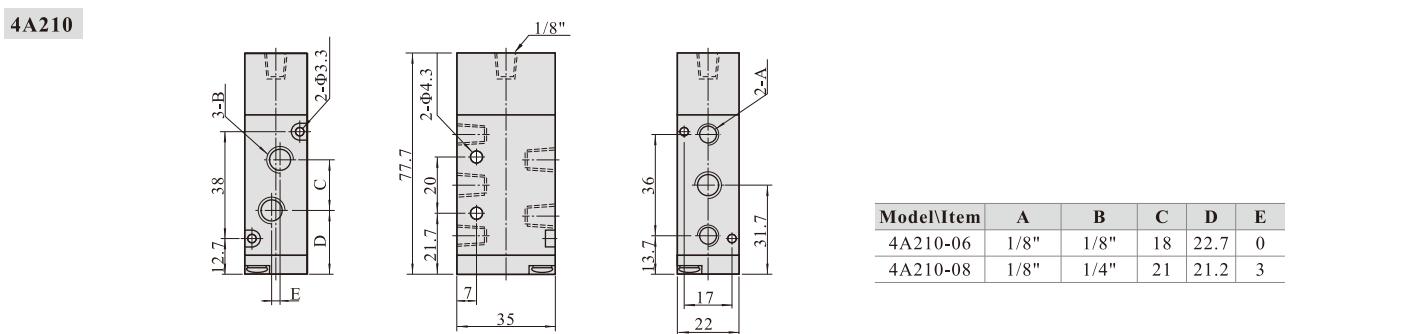
4A200 Series

Inner structure



No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item
1	Screw	3	Bottom cover	5	Body	7	Spool	9	Piston	11	O-ring	13	Screw	15	Return Spring	17	E Clip
2	Spring	4	Bottom cover gasket	6	O-ring	8	Wear ring	10	Pilot body	12	Screw	14	Spring holder	16	Spring holder	18	Side cover

Dimension



4A300 Series



Specification

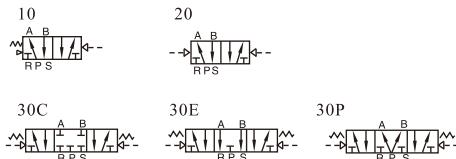
Model	4A310-08 4A320-08	4A330C-08 4A330E-08 4A330P-08	4A310-10 4A320-10	4A330C-10 4A330E-10 4A330P-10
Fluid	Air(to be filtered by 40 μ m filter element)			
Acting	Exterior control			
Port size [Note1]	In=Out=Exhaust=1/4"	In=Out=3/8" Exhaust=1/4"		
Orifice size	25.0mm ² (Cv=1.40)	18.0mm ² (Cv=1.00)	30.0mm ² (Cv=1.68)	18.0mm ² (Cv=1.00)
Valve type	5 port 2 position	5 port 3 position	5 port 2 position	5 port 3 position
Operating pressure	0.15~0.8MPa(21~114psi)			
Proof pressure	1.2MPa(175psi)			
Temperature	-20~70°C			
Material of body	Aluminum alloy			
Lubrication [Note2]	Not required			
Max. frequency [Note3]	4 cycle/sec	3 cycle/sec	4 cycle/sec	3 cycle/sec
Weight (g)	4A310-08:275 4A320-08:365	505	4A310-10:275 4A320-10:365	505

[Note1] PT thread, G thread and NPT thread are available.

[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. Lubricants like ISO VG32 or equivalent are recommended.

[Note3] The maximum actuation frequency of no-load state.

Symbol



Product feature

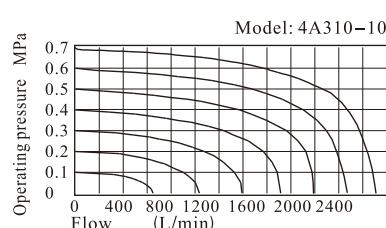
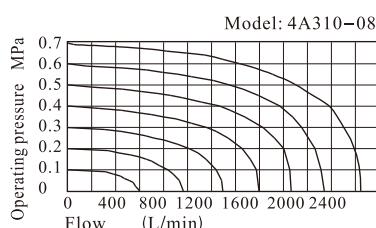
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- Integrate with the manifold to save installation space.

Ordering code

4 A 3 1 0 1 0 □				
① Model	② Code	③ Valve type	④ Port size	⑤ Thread type
4A: Air Valve(5/2, 5/3 way)	3: 300 Series	10: Single air control 5/2 way 20: Double air control 5/2 way 30C: Double air control 5/3 way closed center 30E: Double air control 5/3 way exhaust center 30P: Double air control 5/3 way pressure center	08: 1/4" 10: 3/8"	Blank: PT G: G T: NPT

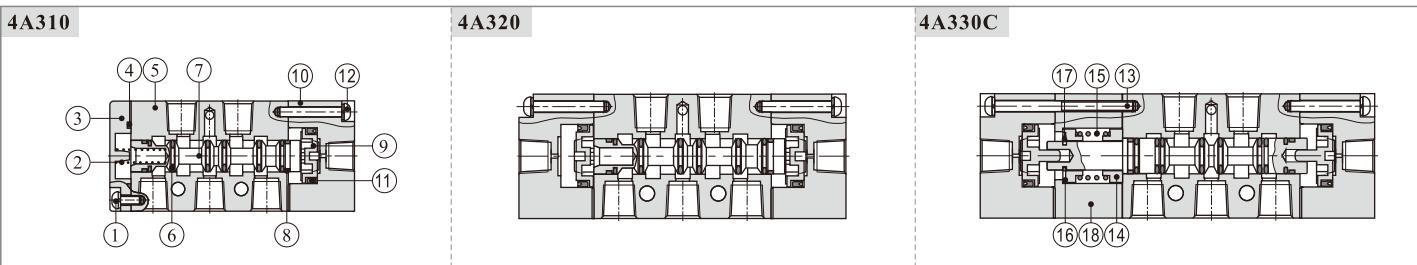
Please refer to 115 for manifold specification and the order way.

Flow chart



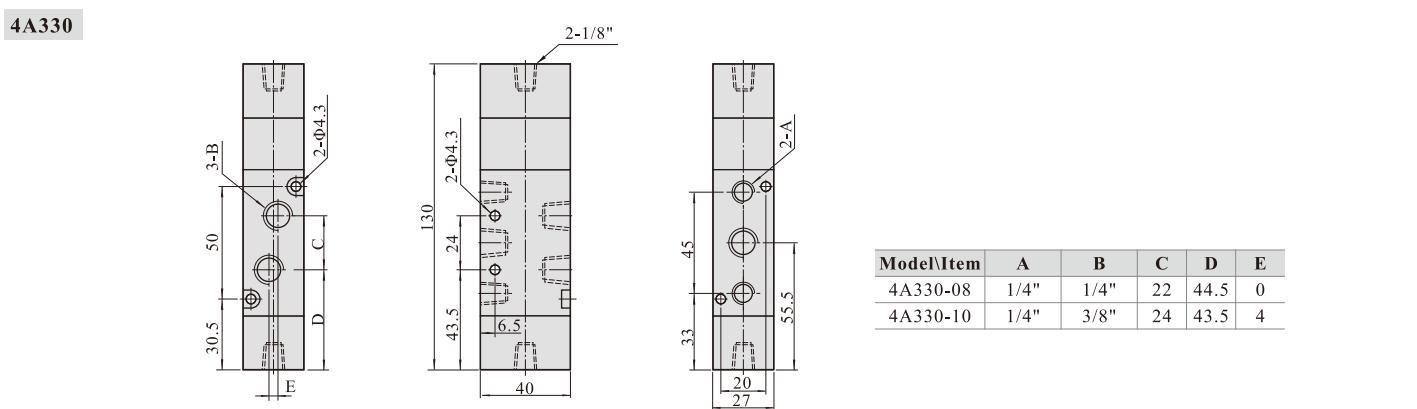
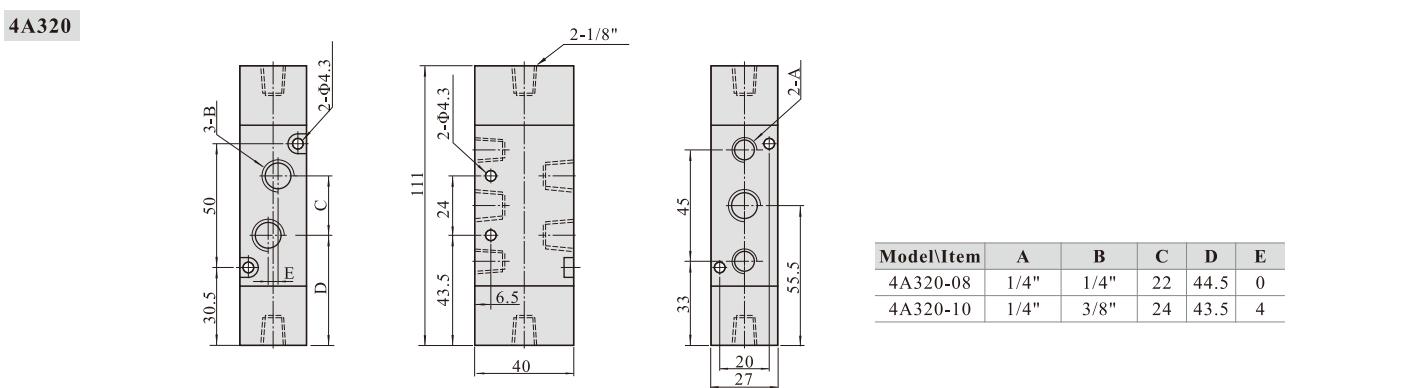
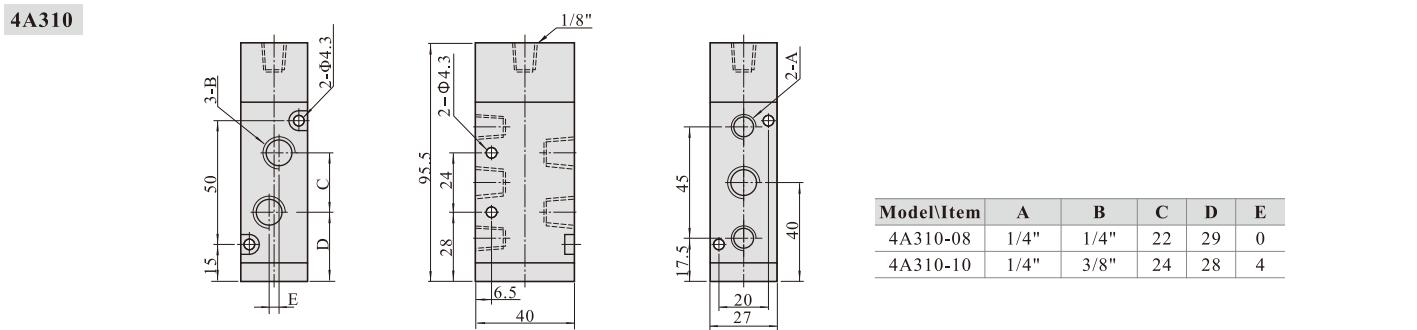
4A300 Series

Inner structure



No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item
1	Screw	3	Bottom cover	5	Body	7	Spool	9	Piston	11	O-ring	13	Screw	15	Return Spring	17	E Clip
2	Spring	4	Bottom cover gasket	6	O-ring	8	Wear ring	10	Pilot body	12	Screw	14	Spring holder	16	Spring holder	18	Side cover

Dimension



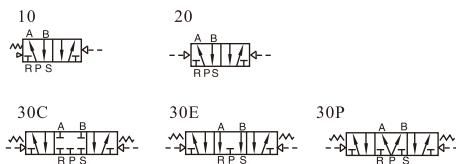
4A400 Series



Specification

Model	4A410-15	4A420-15	4A430C-15	4A430E-15	4A430P-15
Fluid	Air(to be filtered by 40 μ m filter element)				
Acting	Exterior control				
Port size [Note1]	In=Out=Exhaust=1/2"				
Orifice size	50.0mm ² (Cv=2.79)		30.0mm ² (Cv=1.68)		
Valve type	5 port 2 position		5 port 3 position		
Operating pressure	0.15~0.8MPa(21~114psi)				
Proof pressure	1.2MPa(175psi)				
Temperature	-20~70 °C				
Material of body	Aluminum alloy				
Lubrication [Note2]	Not required				
Max. frequency [Note3]	3 cycle/sec				
Weight (g)	555	685			735

Symbol



[Note1] PT thread, G thread and NPT thread are available.

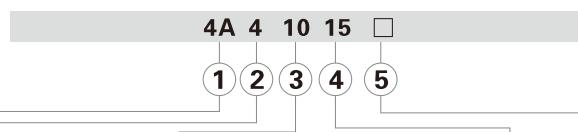
[Note2] Once lubricated air is used, continue with same medium to optimise valve life span. Lubricants like ISO VG32 or equivalent are recommended.

[Note3] The maximum actuation frequency of no-load state.

Product feature

- Structure in sliding column mode: good tightness and sensitive reaction.
- Three position air valves have three kinds of central function for your choice.
- Double air control valves have memory function.
- Internal hole adopts special processing technology which has little attrition friction, low start pressure and long service life.
- No need to add oil for lubrication.
- Integrate with the manifold to save installation space.

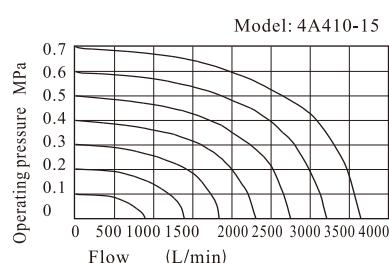
Ordering code



① Model	② Code	③ Valve type	④ Port size	⑤ Thread type
4A: Air Valve(5/2, 5/3 way)	4: 400 Series	10: Single air control 5/2 way 20: Double air control 5/2 way 30C: Double air control 5/3 way closed center 30E: Double air control 5/3 way exhaust center 30P: Double air control 5/3 way pressure center	15: 1/2"	Blank: PT G: G T: NPT

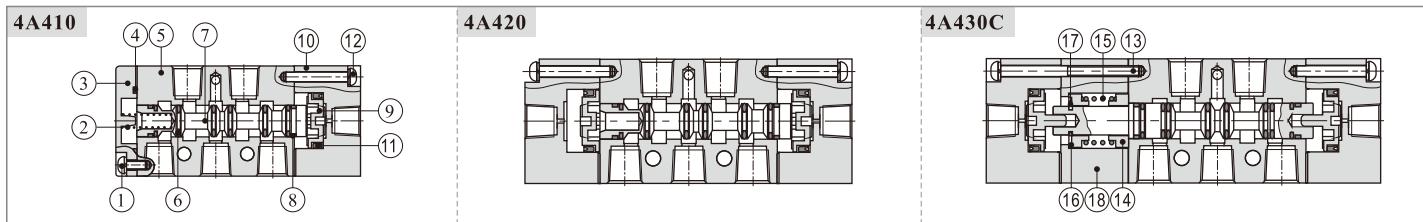
Please refer to 115 for manifold specification and the order way.

Flow chart



4A400 Series

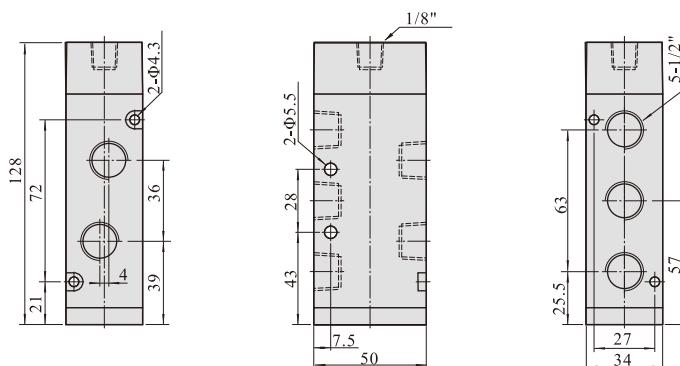
Inner structure



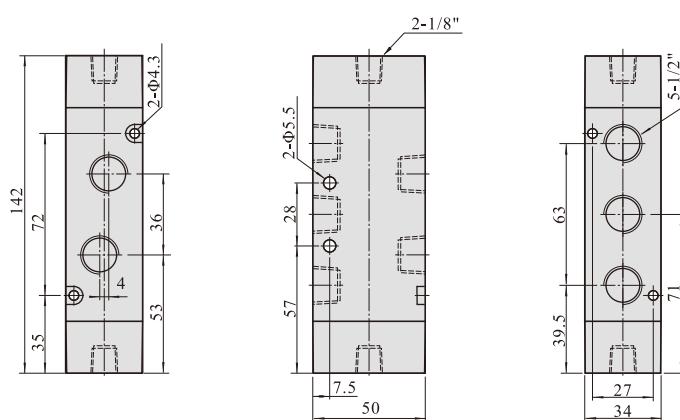
No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item	No.	Item
1	Screw	3	Bottom cover	5	Body	7	Spool	9	Piston	11	O-ring	13	Screw	15	Return Spring	17	E Clip
2	Spring	4	Bottom cover gasket	6	O-ring	8	Wear ring	10	Pilot body	12	Screw	14	Spring holder	16	Spring holder	18	Side cover

Dimension

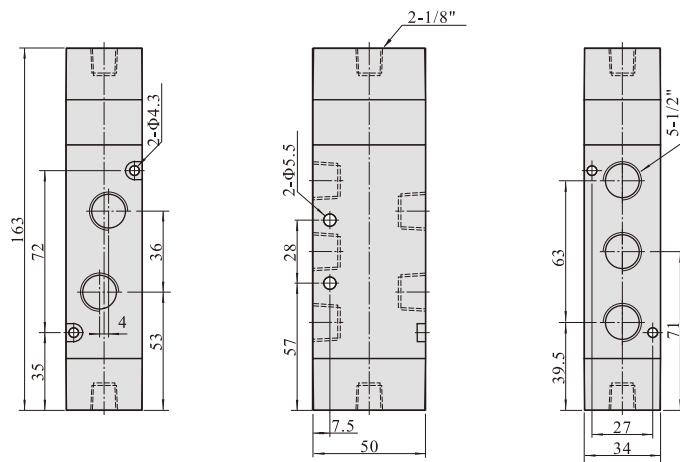
4A410



4A420



4A430



Manifold



Specification

Item\Manifold Model	100M	200M	300M
Fluid	Air(to be filtered by 40 μ m filter element)		
Temperature	-20~70°C		
Adoptable valve's series	3A100 Series	3A200 Series	3A300 Series

Product feature

- It is available to integrate the direction control valves of the same series to form valve group to save space and cost;
- It is easy to examine when there are faults owing to the unified air intake and exhaust and unified wiring;
- Flexible combination and strong expansion capability can make any combination or expansion of the numbers of direction control valves that are connected.

Ordering code

Ordering code for manifold

3V100M 5F □		
①Model	②Number of stations	③Thread type
3V100M: 100 Series Manifold	1F: 1 Station	Blank: PT
3V200M: 200 Series Manifold	2F: 2 Station	G: G
3V300M: 300 Series Manifold	3F: 3 Station	T: NPT
	
	16F: 16 Station	

Ordering code for blank plate

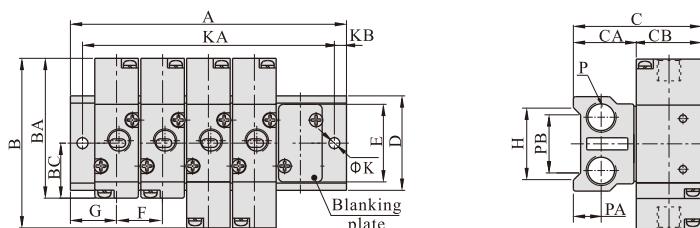
P-3V100M-R2		
①Kits code	②Model	③Code
P: Kits	3V100M: 100 Series Manifold 3V200M: 200 Series Manifold 3V300M: 300 Series Manifold	R2: Blank plate for manifold

[Note] 1. Ordering code contains the two parts of the manifold's and the blank plate's.

- Manifold kits contains manifold, seal and screw.
- Blank plate kits contains blank plate, and screw.

Dimensions

With 3A air valve



Model\Item	B	BA	BC	C	CA	CB	D	E	F	G	H	K	KB	P	PA	PB
3V100M	70	57.7	22.7	53	26	27	39	32	19	19	30	4.5	5	1/4"	11.5	22
3V200M	84	69.7	27.7	61	26	35	45	40	23	23	35	4.5	6	1/4"	11.5	25
3V300M	96	80.5	32.5	70	30	40	52	47	28	27	42	4.5	6	3/8"	13.5	28

Model\Item	1F	2F	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	15F	16F
3V100M	38	57	76	95	114	133	152	171	190	209	228	247	266	285	304	323
3V200M	46	69	92	115	138	161	184	207	230	253	276	299	322	345	368	391
3V300M	54	82	110	138	166	194	222	250	278	306	334	362	390	418	446	474

Model\Item	1F	2F	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	15F	16F
3V100M	28	47	66	85	104	123	142	161	180	199	218	237	256	275	294	313
3V200M	34	57	80	103	126	149	172	195	218	241	264	287	310	333	356	379
3V300M	42	70	98	126	154	182	210	238	266	294	322	350	378	406	434	462

Manifold



Specification

Item\Manifold Model	100M	200M	300M	400M
Fluid	Air(to be filtered by 40 μm filter element)			
Temperature	-20~70°C			
Adoptable valve's series	4A100 Series	4A200 Series	4A300 Series	4A400 Series

Product feature

- It is available to integrate the direction control valves of the same series to form valve group to save space and cost;
- It is easy to examine when there are faults owing to the unified air intake and exhaust and unified wiring;
- Flexible combination and strong expansion capability can make any combination or expansion of the numbers of direction control valves that are connected.

Ordering code

Ordering code for manifold

100M 5F □		
①Model	②Number of stations [Note1]	③Thread type
100M: 100 Series Manifold	1F: 1 Station	Blank: PT
200M: 200 Series Manifold	2F: 2 Station	G: G
300M: 300 Series Manifold	3F: 3 Station	T: NPT
400M: 400 Series Manifold	
	16F: 16 Station	

[Note1] 100M, 200M series have a maximum of 16 stations ; 300M series have a maximum of 12 stations; 400M series have a maximum of 8 stations.

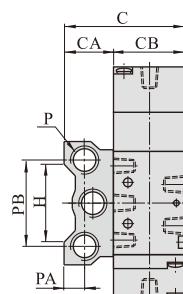
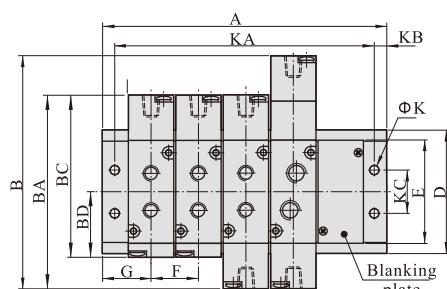
Ordering code for blank plate

P-100M-R2		
①Kits code	②Model	③Code
P: Kits	100M: 100 Series Manifold 200M: 200 Series Manifold 300M: 300 Series Manifold 400M: 400 Series Manifold	R2: Blank plate for manifold

[Note] 1. Ordering code contains the two parts of the manifold's and the blank plate's.
2. Manifold kits contains manifold, seal and screw.
3. Blank plate kits contains blank plate, and screw.

Dimension

With 4A air valve



Model\Item	B	BA	BC	BD	C	CA	CB	D	E	F	G	H	K	KC	KB	P	PA	PB
100M□F	96	81	68.7	28	50	23	27	57.5	43	19	19	36	4.5	5	20	1/4"	10	40
200M□F	111	92	77.7	31.7	60	25	35	60	52	23	22	38	4.5	5	21	1/4"	10	42
300M□F	130	111	95.5	40	69	29	40	75	64	28	26	54	4.5	5	26	3/8"	13.5	53
400M□F	163	142	128	57	84	34	50	100	94	35	30.5	75	5.5	6	32	1/2"	15	68

Model\Item	A															
	1F	2F	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	15F	16F
100M□F	38	57	76	95	114	133	152	171	190	209	228	247	266	285	304	323
200M□F	44	67	90	113	136	159	182	205	228	251	274	297	320	343	366	389
300M□F	52	80	108	136	164	192	220	248	276	304	332	360	-	-	-	-
400M□F	61	96	131	166	201	236	271	306	-	-	-	-	-	-	-	-

Model\Item	KA															
	1F	2F	3F	4F	5F	6F	7F	8F	9F	10F	11F	12F	13F	14F	15F	16F
100M□F	28	47	66	85	104	123	142	161	180	199	218	237	256	275	294	313
200M□F	34	57	80	103	126	149	172	195	218	241	264	287	310	333	356	379
300M□F	42	70	98	126	154	182	210	238	266	294	322	350	-	-	-	-
400M□F	49	84	119	154	189	224	259	294	-	-	-	-	-	-	-	-