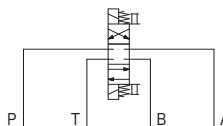

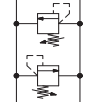












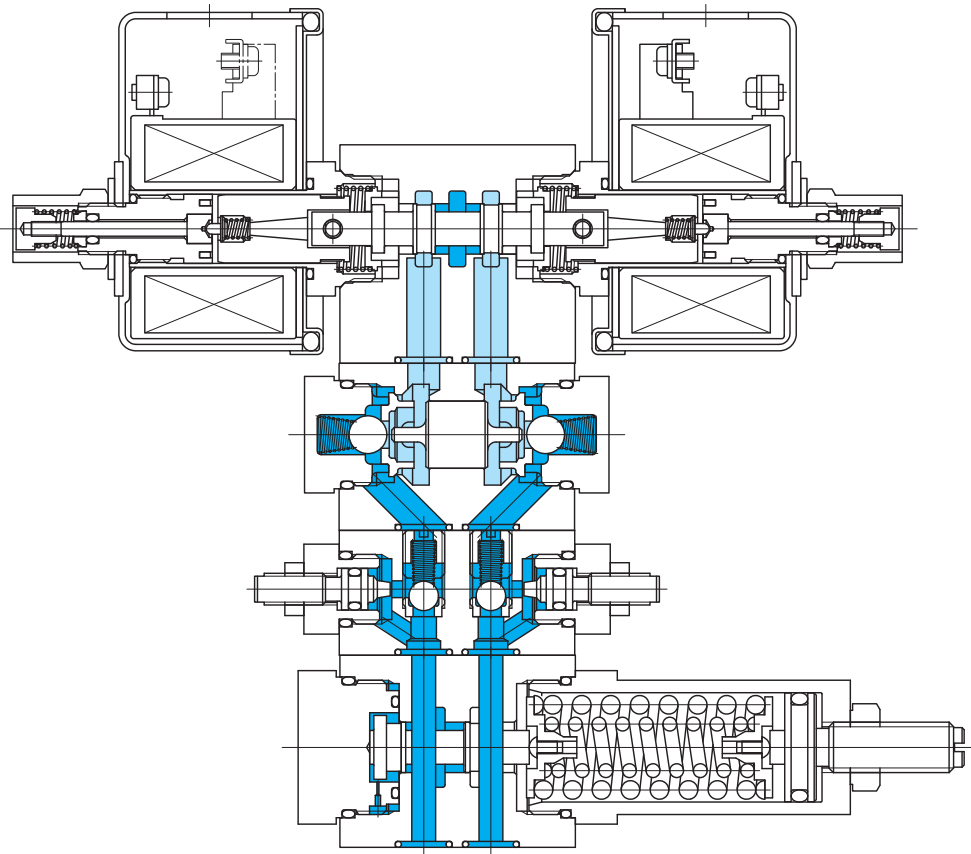


# Flui-trol series (miniature series)

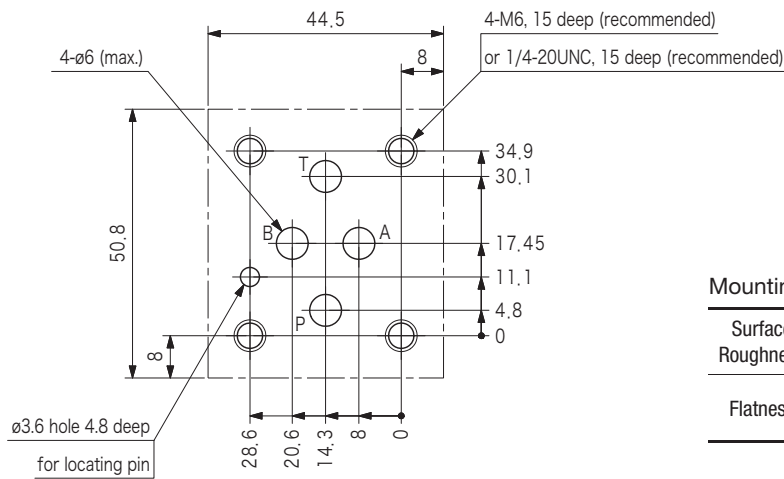
Type	Name and Model Code	Functional Symbols	Max. Working Pressure MPa	Max. Flow L/min	Page
	<b>Miniature Solenoid Directional Valves</b> DG4M4-3**-20-JA		21	20	E1-1
Pressure Control Valves	<b>Relief Valves</b> C1M-3F (K) -30-JA		14	11.3	G1-1
	<b>Double Relief Valves</b> C2M-3C (K) -30-JA			9	
	<b>Sequence Valves</b> RM-3F (K) 2-30-JA		14	11.3	G2-1
	<b>Sequence Valves</b> RM2-3F (K) 2-30-JA				
	<b>Reducing Valves</b> XM1-3F (K) 1-30-JA		14	11.3	G3-1
	<b>Reducing Valves</b> XM1-3F (K) 3A-30-JA				
	<b>Reducing Valves</b> XM1-3F (K) 3B-30-JA				
Flow Control Valves	<b>One-Way Restrictor</b> FN (1) M-3A (K) -30-JA		14	9	G4-1
	<b>One-Way Restrictor</b> FN (1) M-3B (K) -30-JA				
	<b>Restrictors (Meter-In, Meter-Out)</b> FN (1) M-3C (K) -30-JA				
Directional Control Valves	<b>Check Valves</b> DM8M-3-15-30-JA		14	9	G5-1
	<b>Check Valves</b> DM8M-3T-15-30-JA				
	<b>Check Valves</b> DM8M-3A-15-30-JA				
	<b>Check Valves</b> DM8M-3B-15-30-JA				

Type	Name and Model Code	Functional Symbols				Max. Working Pressure MPa	Max. Flow L/min	Page
		P	T	B	A			
Directional Control Valves	Pilot Operated Check Valves 4C2M-3-30-JA					14	9	G6-1
	Pilot Operated Check Valves 4C2M-3-30-JA-S3							
	Pilot Operated Check Valves 4C2M-3-30-JA-S2							
Pressure Switches	Pressure Switches SM1-3FP-* -31-JA					14	-	G7-1
	Pressure Switches SM1-3FA-* -31-JA							
	Pressure Switches SM1-3FB-* -31-JA							
Filters	Inline Filters FP-3P-20					14	5	G8-1
	Inline Filters FM-3P-20						11.5	
Plates	Blanking Plates DGB-3-30-JA					14	-	G9-1
	Crossover Plates DGC-3-30-JA							
	Tapping Plates XAM-02-JA-20-J							

# Miniature modular valves (FLUITROL)



## Mounting Dimensions



Mounting surface machining accuracy

Surface Roughness	1.6 $\mu\text{m Ra}$	$\nabla 1.6$
Flatness	Less than 0.01	$\square 0.01$

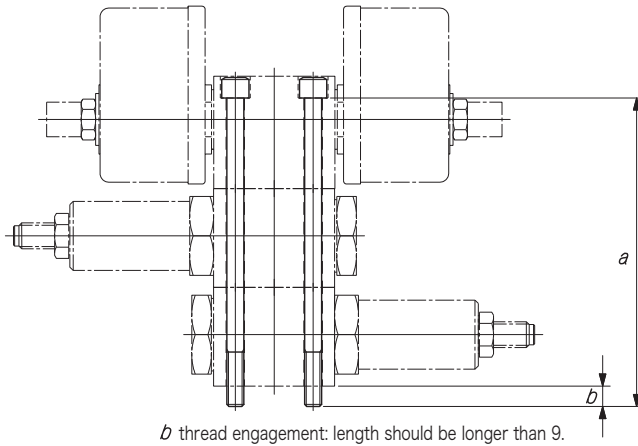
## Specifications

Size		3/16
Max. Working Pressure	MPa	14
Max. Flow	L/min	20
Rated Flow	L/min	9
Mounting Bolts		M6 or 1/4-20UNC
Tightening Torque	N·m	8~10

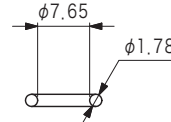
## Mounting Bolts

- Use M6 or 1/4-20UNC mounting bolts of JIS B 1176 (hex socket bolts), strength class 12.9.
- Mounting bolt length should be greater than uppermost valve bolt tightening length + total height of stacked valves + 9.
- Mounting bolts must be ordered separately.

## Mounting Bolts



O-Ring Dimensions



O-Ring P/N AS568-011

Solenoid Valves	Directional		Pressure			Flow	Switches	Plates			Valve Stacked Dimensions mm (dimension less counterbore)	M6		1/4-20UNC										
	Check Valves	Pilot Operated Check Valves	Relief Valves	Double Relief Valves	Restrictors	Pressure Switches	Tapping	Crossover	Blanking	Bolt Length a mm		Bolt Part No.	Bolt Length a mm	Bolt Part No.										
DG4M4	DM8M-3 DM8M-3T (DM8M-3A) DM8M-3B	4C2M-3	C1M-3 XM1-3 RM-3 RM2-3	C2M-3	FNM-3	SM1-3	X A M I O2	D G C I 3	D G B I 3	★33.3	23.6 (17.4)	31.6	36.3	27.8	23.6	65.4	23.6	★5	1	5	16	001960161	15.9	002020161
										1										33.3	45	001960451	44.5	002020441
			1																	41.3	55	001960551	50.8	002020511
	1																			56.9	70	001960701	69.8	002020701
						1														56.9	70	001960701	69.8	002020701
		1																		64.9	75	001960751	76.2	002020761
			1																	69.6	80	001960801	82.5	002020831
	1																			80.5	90	001960901	95.2	VP10939
						1														84.7	95	001960951	95.2	VP10939
		1																		88.5	100	48473755	101.6	VP10940
	1																			93.2	105	VA23211	107.9	VP65779
																				93.2	105	VA23211	107.9	VP65779
										1										93.2	105	VA23211	107.9	VP65779
		1																		101.2	115	VA23213	114.3	VP100026
																				105.9	120	VA23214	120.7	VP207903
	1	1																		112.1	120	VA23214	120.7	VP207903
	1																			116.8	130	VA23215	127	VP207904
																				116.8	130	VA23215	127	VP207904
																				122.3	135		133.4	VP238715
		1																		124.8	135		139.7	VP238716
																				135	145	40015332	146.1	VP238717
	1																			140.4	150	VA22340	152.4	VP238151
		1																		153.9	165		165.1	VP238718

## Subplate

	Subplate Model	Mounting Thread	Connection Port Diameter Rc
Side Piping	DGME-02-JA-20-B-J	1/4-20UNC	1/4
	DGME-03-JA-20-B-J	1/4-20UNC	3/8
	DGME-02-JA-20-R-J	M6	1/4
	DGME-03-JA-20-R-J	M6	3/8

- Subplate must be ordered separately.
- See page R6-6 for dimensions.

	Subplate Model	Mounting Thread	Connection Port Diameter Rc
Bottom Piping	DGM-02-JA-20-B-J	1/4-20UNC	1/4
	DGM-03-JA-20-B-J	1/4-20UNC	3/8
	DGM-02-JA-20-R-J	M6	1/4
	DGM-03-JA-20-R-J	M6	3/8

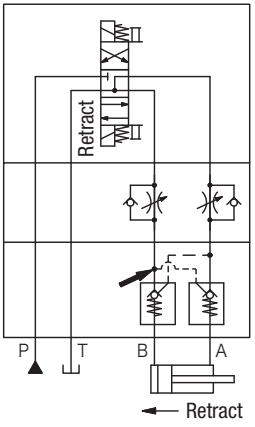
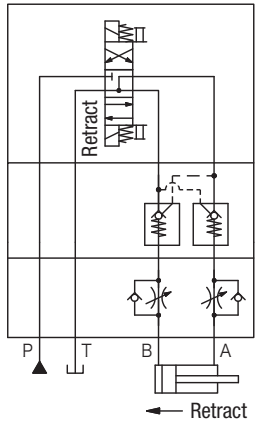
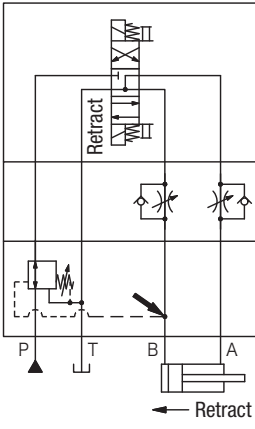
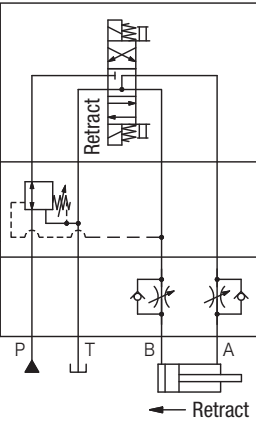
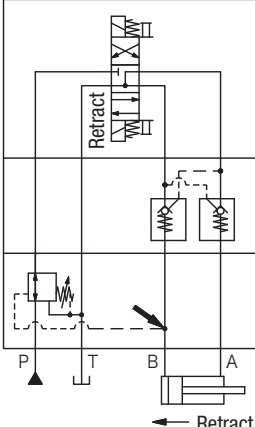
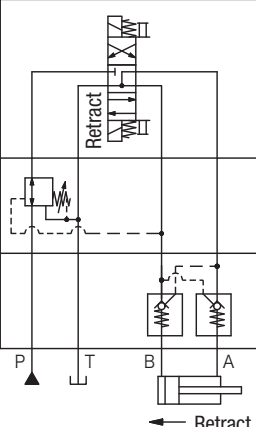
- See page R6-6 for plural mount subplates.

# Precautions for configuring systems with stack valves

## Modular Circuit Stack Restrictions

Depending on the valve function, there may be restrictions on the stacking order of some of the valves which are similar to restrictions when using valves other than stack valves.

The illustrations below show some recommended configurations for smooth flow control and leakage measures.

Name	Incorrect Stacking Example	Correct Stacking Example	Description
<p>Solenoid Valves</p> <p>One-Way Restrictors (Meter-out)</p> <p>Pilot Operated Check Valves</p>	<p>Figure A<sub>1</sub></p> 	<p>Figure A<sub>2</sub></p> 	<ul style="list-style-type: none"> <li>● One-way restrictor (meter out) and pilot operated check valve</li> </ul> <p>In Fig. A<sub>1</sub>, when the cylinder rod is retracted, meter out control by the one-way restrictor in B line causes back pressure in the area indicated by the arrow.</p> <p>Because of this back pressure, although the pilot operated check valve in B line will act to close the valve, when the check valve is closed, back pressure in the area indicated by the arrow will cause the check valve to reopen.</p> <p>This may cause unstable operation and result in “knocking” of the cylinder.</p> <p>Fig. A<sub>2</sub> is example of the recommended configuration which prevents this problem.</p>
<p>Solenoid Valves</p> <p>One-Way Restrictors (Meter-out)</p> <p>Reducing valve (B-line pilot)</p>	<p>Figure B<sub>1</sub></p> 	<p>Figure B<sub>2</sub></p> 	<ul style="list-style-type: none"> <li>● One-way restrictor (meter out) and reducing valve (A, B line pilot)</li> </ul> <p>In Fig. B<sub>1</sub>, when the cylinder rod is retracted, meter out control by the one-way restrictor in B line causes back pressure in the area indicated by the arrow.</p> <p>Pilot pressure to the reducing valve taken from B line may cause the spool to close and block flow.</p> <p>Fig. B<sub>2</sub> is example of the recommended configuration which prevents this problem.</p>
<p>Solenoid Valves</p> <p>Pilot Operated Check Valves</p> <p>Reducing valve (B-line pilot)</p>	<p>Figure C<sub>1</sub></p> 	<p>Figure C<sub>2</sub></p> 	<ul style="list-style-type: none"> <li>● Pilot operated check valve and reducing valve (A, B line pilot)</li> </ul> <p>In Fig. C<sub>1</sub>, when cylinder is stopped in mid-position, the cylinder may not be able to maintain its position due to internal leakage from the pilot line of the B line reducing valve.</p> <p>Fig. C<sub>2</sub> is example of the recommended configuration which prevents this problem.</p>