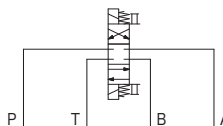

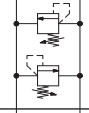







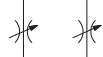






Flui-trol series (miniature series)

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

TGM-3, 50 series (ISO 4401-03)



Type	Name and Model Code	Functional Symbols	Max. Working Pressure MPa	Max. Flow L/min	Page	Type	Name and Model Code	Functional Symbols	Max. Working Pressure MPa	Max. Flow L/min	Page
	Solenoid Valves DG4V-3-54		35	See E2-3 ~ E2-6	B2-1		Restrictors TGMFN-3-Z-P*W-50		31.5	60	G14-1
	Relief Valves (Single) TGMC-3-PT-*W-50					Flow Control Valves	Restrictors TGMFN-3-Z-T*W-50				
	Relief Valves (Single) TGMC-3-AT-*W-50						One-Way Restrictor (Meter-in) TGMFN-3-X-A*W-50				
	Relief Valves (Single) TGMC-3-BT-*W-50		31.5	60	G11-1		One-Way Restrictor (Meter-in) TGMFN-3-X-B*W-50		31.5	60	G14-1
	Relief Valves (Single) TGMC-3-AB-*W-50						One-Way Restrictor (Meter-in) TGMFN-3-X-A*W-B*W-50				
	Relief Valves (Single) TGMC-3-BA-*W-50						One-Way Restrictor (Meter-out) TGMFN-3-Y-A*W-50				
	Double Relief Valves TGMC2-3-AT-*W-BT-*W-50		31.5	60	G11-1		One-Way Restrictor (Meter-out) TGMFN-3-Y-B*W-50		31.5	60	G14-1
Pressure Control Valves	Double Cross-Port Relief Valves TGMC2-3-AB-*W-BA-*W-50		31.5	60	G11-1		One-Way Restrictor (Meter-out) TGMFN-3-Y-A*W-B*W-50				
	Sequence Valves TGMR1-3-PP-*W-G-50		31.5	60	G12-1		Check Valves TGMDC-3-Y-P*-51				
	* Counterbalance Valves TGMR-3-TA-*W-G-50						Check Valves TGMDC-3-X-T*-51				
	* Counterbalance Valves TGMR-3-TB-*W-G-50		31.5	60	G12-1		Check Valves TGMDC-3-Y-A*-51				
	Reducing Valves TGMX2-3-PP-*W-G-50					Check Valves TGMDC-3-X-A*-51					
	Reducing Valves TGMX2-3-PA-*W-G-50		31.5	60	G13-1	Check Valves TGMDC-3-X-A*-51		31.5	60	G15-1	
	Reducing Valves TGMX2-3-PB-*W-G-50					Check Valves TGMDC-3-Y-B*-51					
						Check Valves TGMDC-3-Y-B*-51					
						Check Valves TGMDC-3-X-B*-51					
						Check Valves TGMDC-3-Y-A*-B*-51					
					Check Valves TGMDC-3-X-A*-B*-51						

* See page G0-4 for other counterbalance valve models.

TGM-3/DGM-3 series (ISO 4401-03)

Type	Name and Model Code	Functional Symbols				Max. Working Pressure MPa	Max. Flow L/min	Page	Type	Name and Model Code	Functional Symbols				Max. Working Pressure MPa	Max. Flow L/min	Page		
		P	T	B	A						P	T	B	A					
Directional Control Valves	Pilot Operated Check Valves TGMPC-3-(D) AB*-51					31.5	60	G16-1	Pressure Control Valves	Pressure Compensators Valves (Series type) TGMHX-3-P-04-10					21	25	G20-1		
	Pilot Operated Check Valves TGMPC-3-(D) BA*-51								21	1	G21-1	Directional Control Valves	Shuttle Valves TGMSh-3-AB-10						
	Pilot Operated Check Valves TGMPC-3-(D) AB*-(D) BA*-51								Pressure Switches	Pressure Switches DGMPS-3-P-*11									
Pressure Control Valves	Direct Relief Valves (Single) TGMC-3-PT-*W-10					21	20	G17-1	Pressure Switches	Pressure Switches DGMPS-3-A-*11					25	-	G22-1		
	Direct Relief Valves (Single) TGMC-3-PT-*W-10-S1								Pressure Switches	Pressure Switches DGMPS-3-B-*11									
	Direct Relief Valves (Single) TGMC-3-AT-*W-10								Plates	Blanking Plates TGMA-3-B-20							31.5	-	
	Direct Relief Valves (Single) TGMC-3-BT-*W-10								Crossover Plates	Crossover Plates TGMA-3-C1-20							31.5	-	
	Direct Double Relief Valves TGMC2-3-AT-*W-BT-*W-10								Crossover Plates	Crossover Plates TGMA-3-C2-20							31.5	-	G23-1
	Counterbalance Valves TGMRC-3-AYA-*W-11								Tapping Plates	Tapping Plates TGMA-3-T1-20-B/T							31.5 / 21	-	
	Counterbalance Valves TGMRC-3-BYB-*W-11								Tapping Plates	Tapping Plates TGMA-3-T2-20-B/T							31.5 / 21	-	
	Pressure Release Valves TGMFS-3-ATH-BTH-50																		

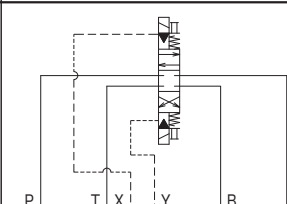

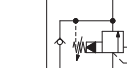







TGM-5, 50 series (ISO 4401-05)


 Stack Valves

Type	Name and Model Code	Functional Symbols	Max. Working Pressure MPa	Max. Flow L/min	Page	Type	Name and Model Code	Functional Symbols	Max. Working Pressure MPa	Max. Flow L/min	Page
	Solenoid Valves DG4V-5-40		31.5	See E3-2 E3-3	E3-1		External Drain Type Sequence Valves TGMRC-5-AX-*W-E-G-50		31.5	120	G27-1
Pressure Control Valves	Relief Valves (Single) TGMC-5-PT-*W-50		31.5	120	G25-1	Pressure Control Valves	External Drain Type Sequence Valves TGMRC-5-BX-*W-E-G-50		31.5	120	G27-1
	Relief Valves (Single) TGMC-5-AT-*W-50						Counterbalance Valves TGMRC-5-AY-*W-G-50				
	Relief Valves (Single) TGMC-5-BT-*W-50						Counterbalance Valves TGMRC-5-BY-*W-G-50				
	Double Relief Valves TGMC2-5-AT-*W-BT-*W-50		31.5	120	G25-1		Reducing Valves TGMX2-5-PP-*W-G-50		31.5	120	G28-1
	Double Cross-Port Relief Valves TGMC2-5-AB-*W-BA-*W-50		31.5	120	G25-1		Reducing Valves TGMX2-5-PA-*W-G-50				
	Sequence Valves TGMR1-5-PP-*W-G-50		31.5	120	G26-1		Reducing Valves TGMX2-5-PB-*W-G-50				
	External Drain Type Sequence Valves TGMR1-5-PP-*W-E-G-50		31.5	120	G26-1		External Drain Type Reducing Valves TGMX2-5-PP-*W-E-G-50		31.5	120	G28-1
	Sequence Valves TGMRC-5-AX-*W-G-50		31.5	120	G27-1		External Drain Type Reducing Valves TGMX2-5-PA-*W-E-G-50				
	Sequence Valves TGMRC-5-BX-*W-G-50		31.5	120	G27-1		External Drain Type Reducing Valves TGMX2-5-PB-*W-E-G-50				

Type	Name and Model Code	Functional Symbols					Max. Working Pressure MPa	Max. Flow L/min	Page	Type	Name and Model Code	Functional Symbols					Max. Working Pressure MPa	Max. Flow L/min	Page
		P	TA	TB	B	A						P	TA	TB	B	A			
Flow Control Valves	Restrictors TGMFN-5-X-P*W-50						31.5	120	G29-1	Directional Control Valves	Check Valves TGMDC-5-Y-A*-50					31.5	120	G30-1	
	One-Way Restrictors (Meter-in) TGMFN-5-X-A*W-50						31.5	120	G29-1		Check Valves TGMDC-5-Y-B*-50								
	One-Way Restrictors (Meter-in) TGMFN-5-X-B*W-50										Check Valves TGMDC-5-Y-A*-B*-50								
	One-Way Restrictors (Meter-in) TGMFN-5-X-A*W-B*W-50										Pilot Operated Check Valves TGMPC-5 (D) AB*-50								
	One-Way Restrictors (Meter-out) TGMFN-5-Y-A*W-50										Pilot Operated Check Valves TGMPC-5 (D) BA*-50								
	One-Way Restrictors (Meter-out) TGMFN-5-Y-B*W-50					31.5					120	G29-1	Pilot Operated Check Valves TGMPC-5 (D) AB*-(D) BA*-50						
	One-Way Restrictors (Meter-out) TGMFN-5-Y-A*W-B*W-50												Pressure Release Valves TGMFS-5-ATH-BTH-50						
Directional Control Valves	Check Valves TGMDC-5-Y-P*-50									31.5	120	G30-1	Plates	Blanking Plates TGMA-5-B-20					31.5
	Check Valves TGMDC-5-X-T*-50						Crossover Plates TGMA-5-C1-20									31.5	-		
	Check Valves TGMDC-5-Y-P*-X-T*-50-S47						Crossover Plates TGMA-5-C2-20									31.5	-		
							Tapping Plates TGMA-5-20-B/T									31.5 / 21	-		

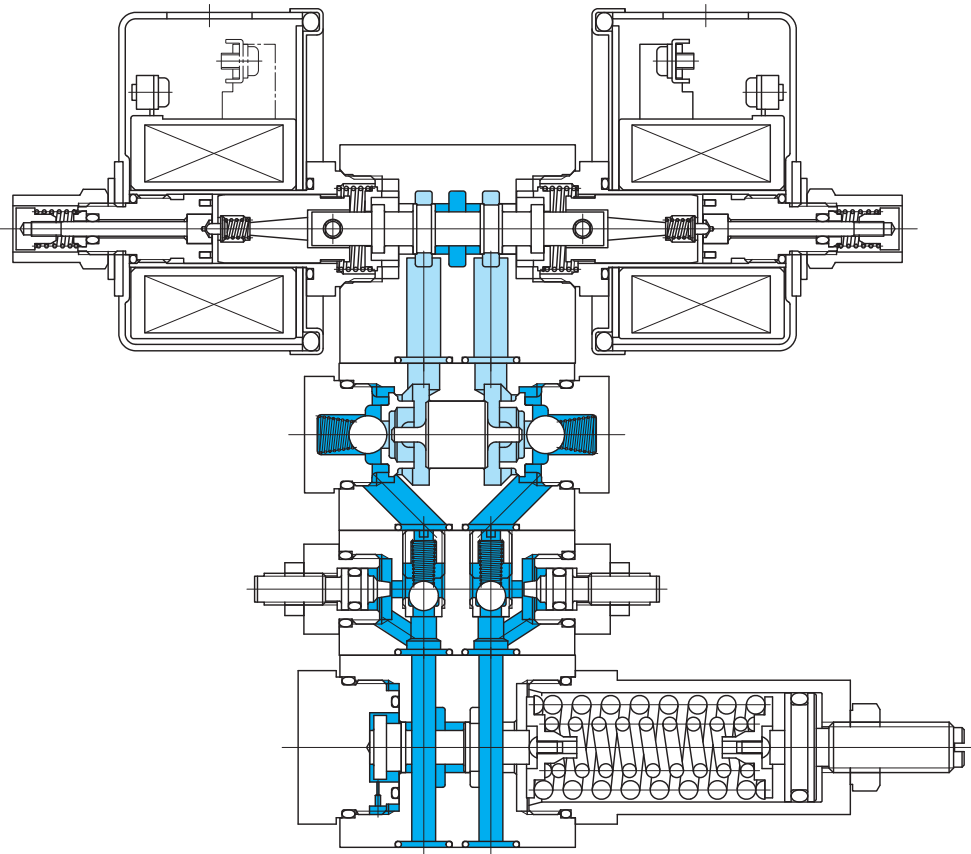
TGM-7, 50 series (ISO 4401-07)

Type	Name and Model Code	Functional Symbols	Max. Working Pressure MPa	Max. Flow L/min	Page
	Solenoid Pilot Operated Directional Valves DG5V-7-84-JA		31.5	See E4-4 E4-5	E4-1
Pressure Control Valves	Relief Valves TGMRC-7-PT-*W-50		21	300	G35-1
	Counterbalance Valves TGMRC-7-AY-*W-50		21	300	G36-1
	Counterbalance Valves TGMRC-7-BY-*W-50				
	Reducing Valves TGMX2-7-PP-*W-50		21	300	G37-1
	Reducing Valves TGMX2-7-PA-*W-50				
	Reducing Valves TGMX2-7-PB-*W-50				
Flow Control Valves	One-Way Restrictors (Meter-in) TGMFN-7-X-A2W-50		21	300	G38-1
	One-Way Restrictors (Meter-in) TGMFN-7-X-B2W-50				
	One-Way Restrictors (Meter-in) TGMFN-7-X-A2W-B2W-50				

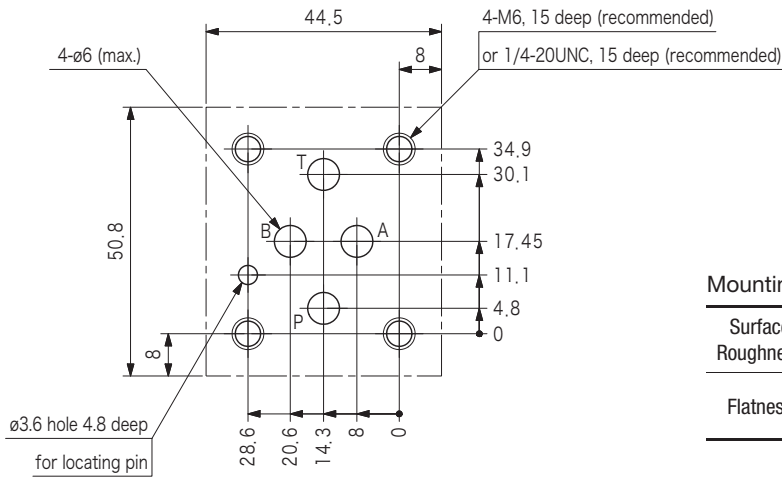
TGM-7/8, 50 series (ISO 4401-07/08)

Type	Name and Model Code	Functional Symbols					Max. Working Pressure MPa	Max. Flow L/min	Page
		P	T	X	Y	B			
Flow Control Valves	One-Way Restrictors (Meter-out) TGMFN-7-Y-A2W-50								
	One-Way Restrictors (Meter-out) TGMFN-7-Y-B2W-50						21	300	G38-1
	One-Way Restrictors (Meter-out) TGMFN-7-Y-A2W-B2W-50								
Directional Control Valves	Check Valves TGMDC-7-Y-P*-50								
	Check Valves TGMDC-7-X-T*-50						21	300	G39-1
	Check Valves TGMDC-7-Y-A*-50								
	Pilot Operated Check Valves TGMPC-7-DAB*-50								
	Pilot Operated Check Valves TGMPC-7-DBA*-50						21	300	G40-1
	Pilot Operated Check Valves TGMPC-7-DAB*-DBA*50								
Pressure Release Valves TGMFS-7-ATH-BTH-50							31.5	300	G41-1
Pressure Release Valves TGMFS-8-ATH-BTH-50							31.5	700	G41-1

Miniature modular valves (FLUITROL)



Mounting Dimensions



Mounting surface machining accuracy

Surface Roughness	1.6 μ m Ra	∇ 1.6
Flatness	Less than 0.01	\square 0.01

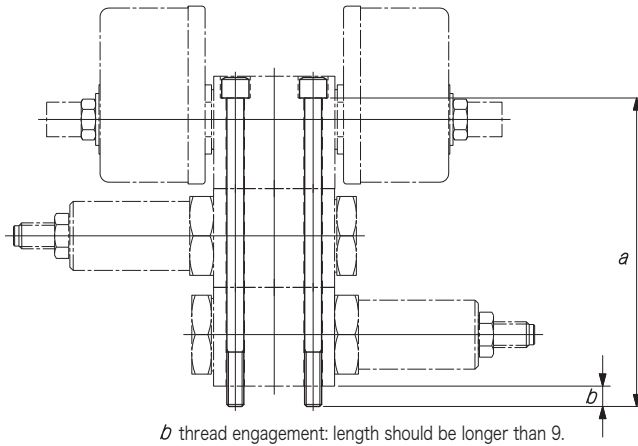
Specifications

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

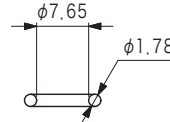
Mounting Bolts

- 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			1																93.2	105	VA23211	107.9	VP65779
				1																93.2	105	VA23211	107.9	VP65779
				1						1										93.2	105	VA23211	107.9	VP65779
		1		1																101.2	115	VA23213	114.3	VP100026
				2																105.9	120	VA23214	120.7	VP207903
	1	1	1																	112.1	120	VA23214	120.7	VP207903
	1	1		1																116.8	130	VA23215	127	VP207904
				1																116.8	130	VA23215	127	VP207904
																				122.3	135		133.4	VP238715
		1		1																124.8	135		139.7	VP238716
				1																135	145	40015332	146.1	VP238717
	1			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

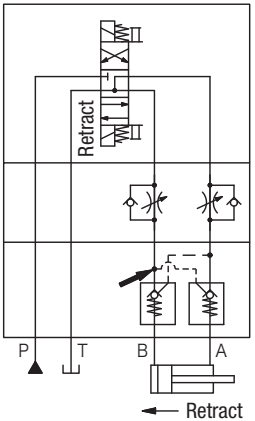
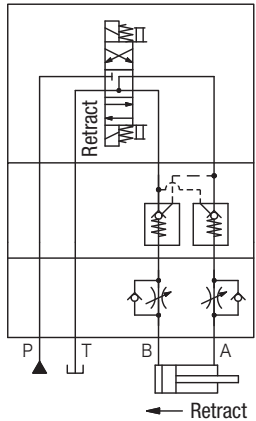
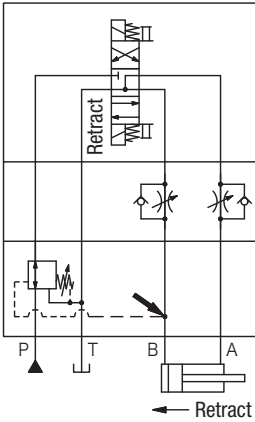
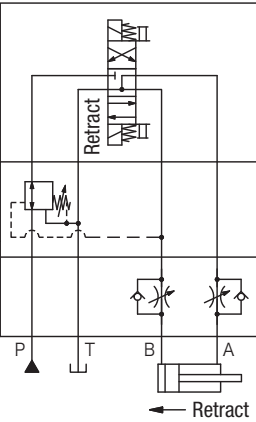
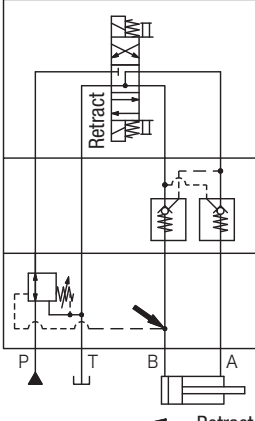
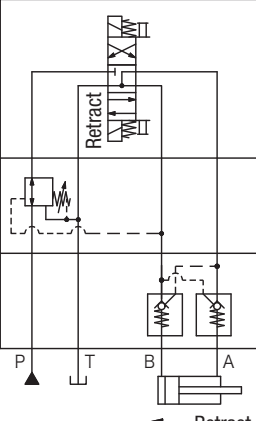
- See page R6-6 for plural mount subplates.

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 A₁</p> 	<p>Figure A₂</p> 	<ul style="list-style-type: none"> ● One-way restrictor (meter out) and pilot operated check valve <p>In Fig. A₁, 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. A₂ 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 B₁</p> 	<p>Figure B₂</p> 	<ul style="list-style-type: none"> ● One-way restrictor (meter out) and reducing valve (A, B line pilot) <p>In Fig. B₁, 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. B₂ 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 C₁</p> 	<p>Figure C₂</p> 	<ul style="list-style-type: none"> ● Pilot operated check valve and reducing valve (A, B line pilot) <p>In Fig. C₁, 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. C₂ is example of the recommended configuration which prevents this problem.</p>