

10 Series Modular Valves

Type of Modular Valve

Class	Name and Model Numbers	Graphic Symbols	Page	Class	Name and Model Numbers	Graphic Symbols						Page	
						P	T	Y	X	B	A		
★1 Solenoid Controlled Pilot Operated Directional Valve (S-) DSHG-10-***-43			★2	Directional Control Valves	Pilot Operated Check Valves (for "A-Line", Internal Pilot-Internal Drain Type) MPA-10- *-30							F-103	
					Pilot Operated Check Valves (for "A-Line", External Pilot-External Drain Type) MPA-10 *- *-X-30							F-103	
					Pilot Operated Check Valves (for "A-Line", External Pilot-Internal Drain Type) MPA-10 *- *-Y-30							F-103	
Pressure Control Valves	Reducing Valves (for "P-Line") MRP-10- *-30		F-99		Pilot Operated Check Valves (for "B-Line", Internal Pilot-Internal Drain Type) MPB-10- *-30							F-103	
	Reducing Valves (for "A-Line") MRA-10- *-30		F-99		Pilot Operated Check Valves (for "B-Line", External Pilot-External Drain Type) MPB-10 *- *-X-30							F-103	
	Reducing Valves (for "B-Line") MRB-10- *-30		F-99		Pilot Operated Check Valves (for "B-Line", External Pilot-Internal Drain Type) MPB-10 *- *-Y-30							F-103	
Flow Control Valves	Throttle and Check Valves (for "A-Line", Meter-out) MSA-10-X-30		F-101		Pilot Operated Check Valves (for "A&B-Lines", Internal Pilot-Internal Drain Type) MPW-10- *-30							F-103	
	Throttle and Check Valves (for "A-Line", Meter-in) MSA-10-Y-30		F-101			Mounting Bolts MBK-10- *-10							F-106
	Throttle and Check Valves (for "B-Line", Meter-out) MSB-10-X-30		F-101										
	Throttle and Check Valves (for "B-Line", Meter-in) MSB-10-Y-30		F-101										
	Throttle and Check Valves (for "A&B-Lines", Meter-out) MSW-10-X-30		F-101										
	Throttle and Check Valves (for "A&B-Lines", Meter-in) MSW-10-Y-30		F-101										

★1. Because drain ports "V" and "W" are not provided for solenoid controlled pilot operated directional valves of Pressure Centered Type (3H*) and models with Pilot Piston (P*), those valves cannot be used in combination with modular valves.

★2. Refer to the relevant pages of catalog "E: DIRECTIONAL CONTROLS"

Reducing Modular Valves

Specifications

Model Numbers	Max. Operating Pressure MPa	Max. Flow * L/min
MR*-10-A-30	25	250
B		800
MR*-10-C-30 H		

★ In the pressure adjustment ranges "A" and "B", maximum flow rates are limited by the pressure setting on the secondary side. See the "Secondary Pressure vs. Max. Flow" of this page, use the valve at the maximum flow rate within a zone highlighted with .

Model Number Designation

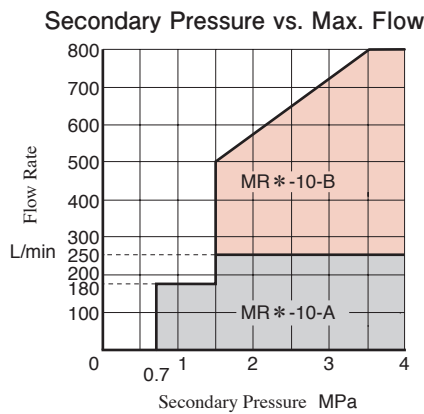
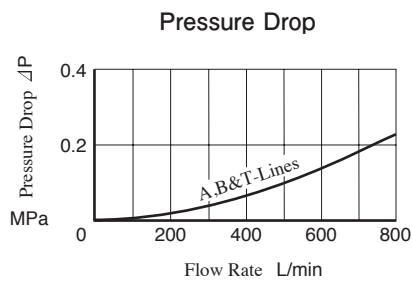
MRP	-10	-B	-30
Series Number	Valve Size	Pres. Adj. Range MPa	Design Number
MRP: For P-Line MRA: For A-Line MRB: For B-Line	10	A: 0.7-7 B: 1.5-7 C: 3.5-14 H: 7-21	30
Reducing Valve			

Instructions

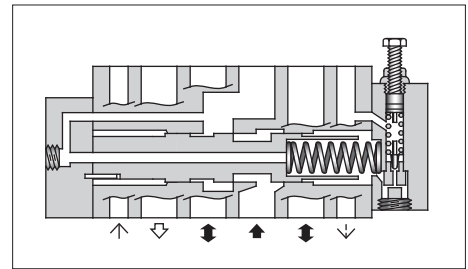
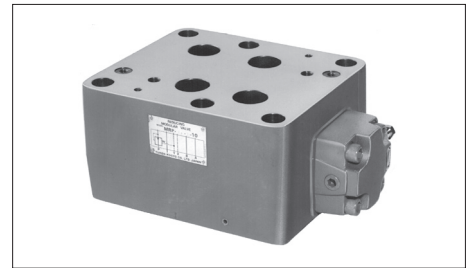
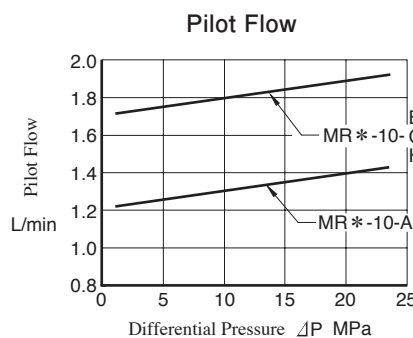
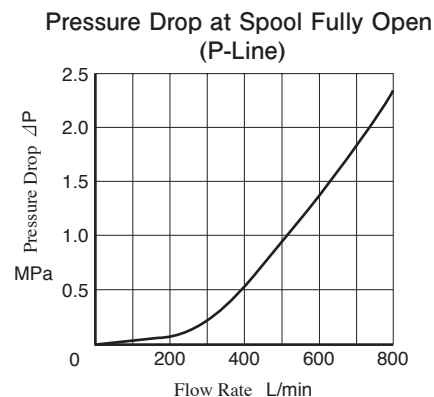
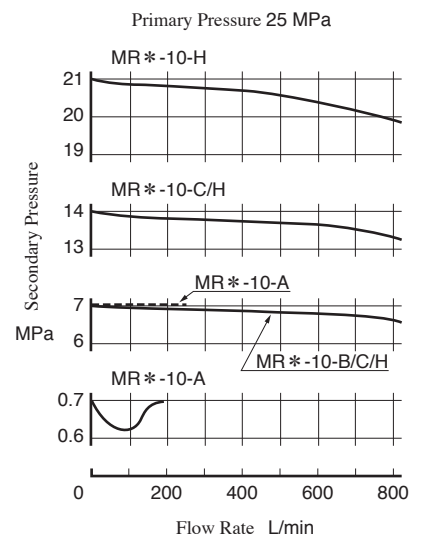
- Connect Drain Line (Y port) to oil tank independently so as to obtain stable pressure setting. At the same time, the solenoid controlled pilot operated directional valve to be used in combination with this valve must be of internal drain type (with T).
- To make pressure adjustment, loosen the lock nut and turn the pressure adjustment screw clockwise or anti-clockwise. For an increase of pressure, turn the screw clockwise. Be sure to re-tighten the lock nut firmly after making adjustment to the pressure.

Typical Performance Characteristics

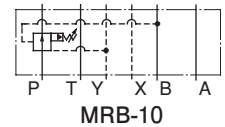
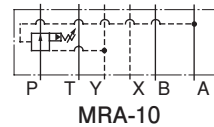
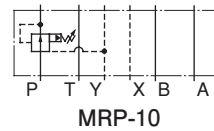
Hydraulic Fluid: Viscosity 35 mm²/s, Specific Gravity 0.850



Nominal Override Characteristics



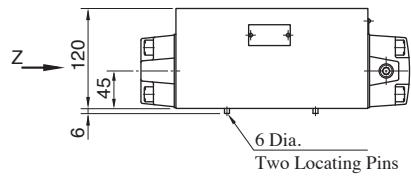
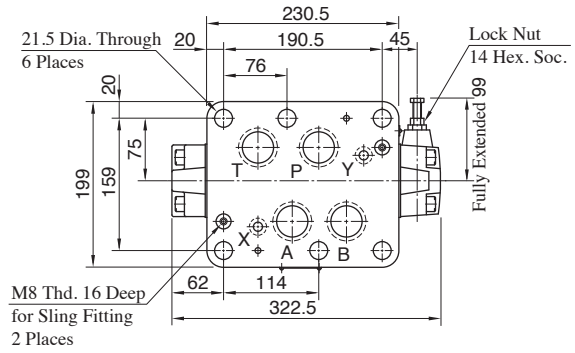
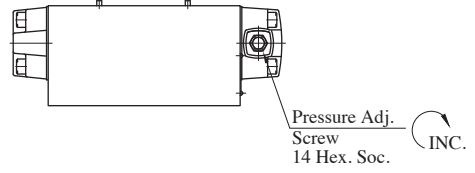
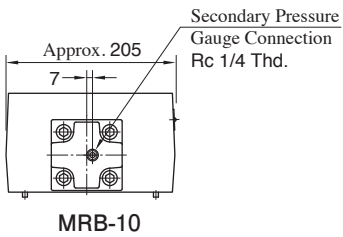
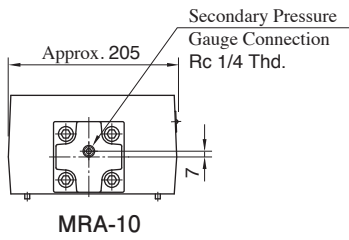
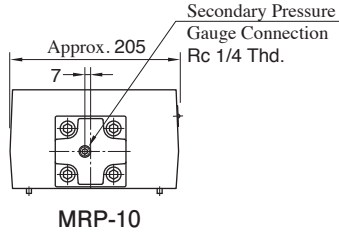
Graphic Symbols



10 Series Modular Valves

**MRP-10
MRA-10
MRB-10**

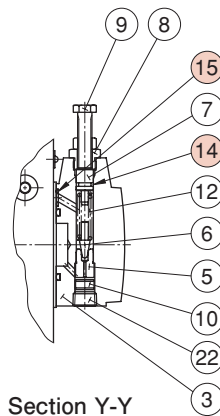
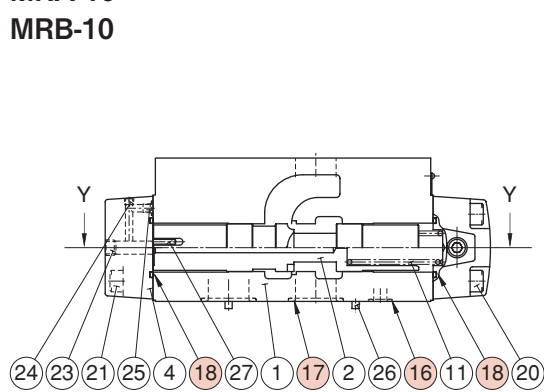
View Arrow Z



Approx. Mass.....36.6 kg

List of Seals

**MRP-10
MRA-10
MRB-10**



Item	Name of Parts	Part Numbers	Qty.
14	O-Ring	OR NBR-70-1 P9-N	1
15	O-Ring	OR NBR-90 P9-N	5
16	O-Ring	OR NBR-90 P16-N	2
17	O-Ring	OR NBR-90 P40-N	4
18	O-Ring	OR NBR-90 P44-N	2

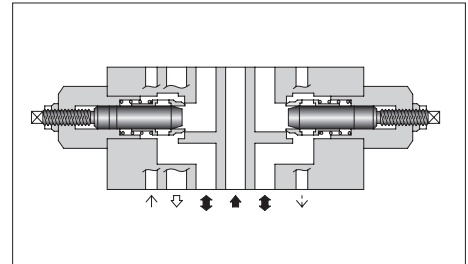
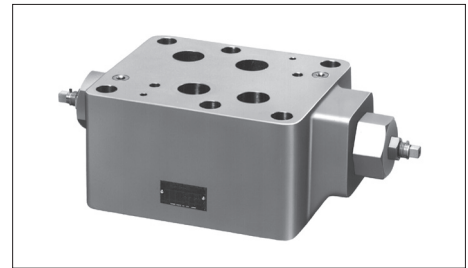
Throttle and Check Modular Valves

Specifications

Model Numbers	Max. Operating Pressure MPa	Max. Flow L/min
MS*-10-* -30	25	800

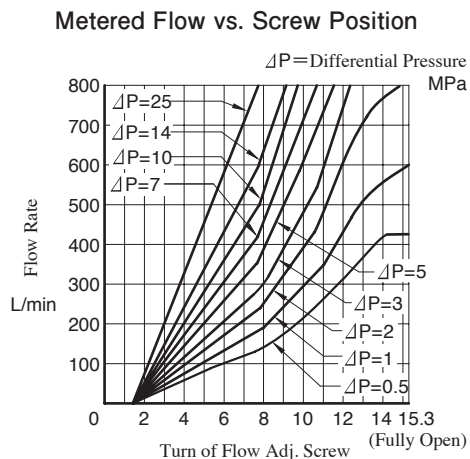
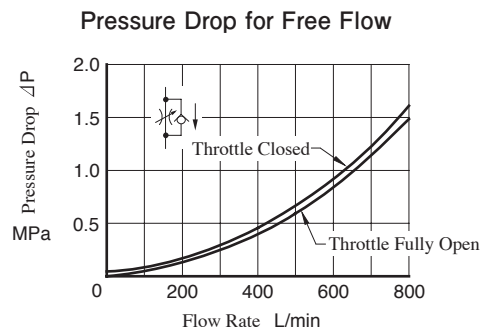
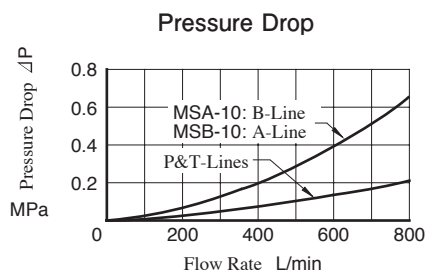
Model Number Designation

MSA	-10	-X	-30
Series Number	Valve Size	Direction of Flow	Design Number
MSA: For A-Line MSB: For B-Line MSW: For A&B-Line	10	X: Meter-out Y: Meter-in	30

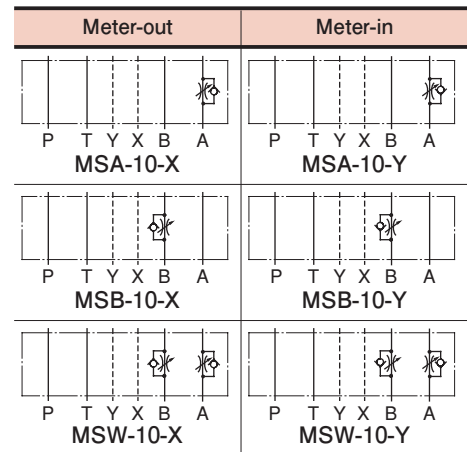


Typical Performance Characteristics

Hydraulic Fluid: Viscosity 35 mm²/s, Specific Gravity 0.850



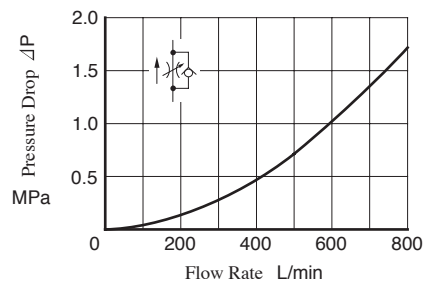
Graphic Symbols



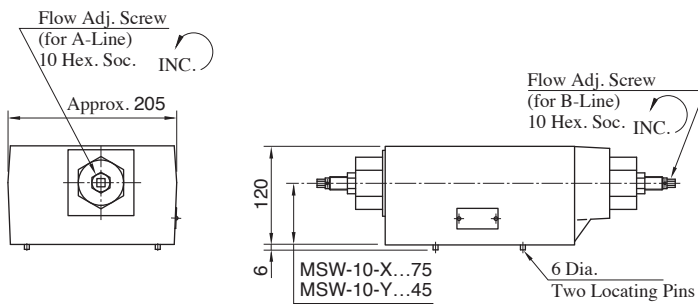
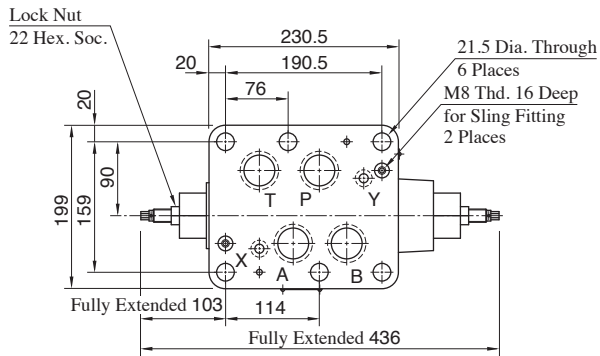
Instructions

- To make flow rate adjustment, loosen the lock nut and turn the flow adjustment screw clockwise or anti-clockwise. To throttle the flow, turn the screw clockwise. Be sure to re-tighten the lock nut after the adjustment of the flow rate is completed.

Pressure Drop at Throttle Fully Open

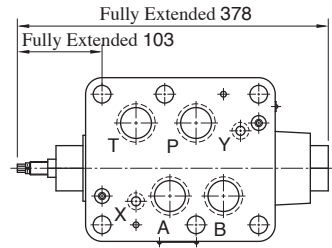


MSW-10-X_Y



Approx. Mass.....35.7 kg

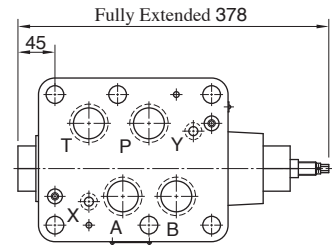
MSA-10-X_Y



Approx. Mass.....35 kg

For other dimensions, refer to "MSW-10" in the drawing left.

MSB-10-X_Y

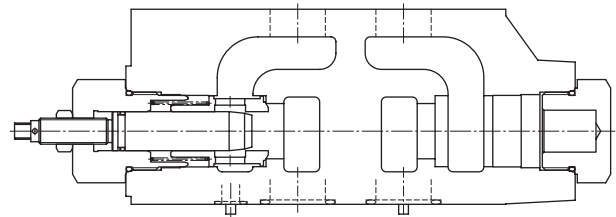
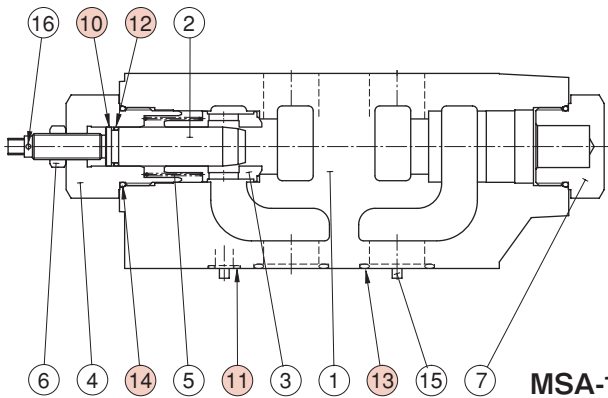


Approx. Mass.....35 kg

For other dimensions, refer to "MSW-10" in the drawing left.

List of Seals

**MSA-10
MSB-10
MSW-10**

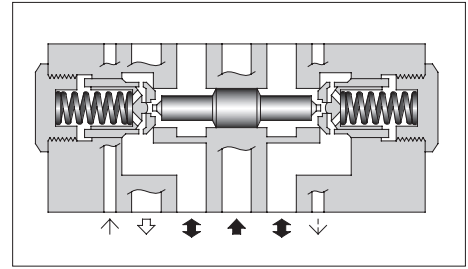
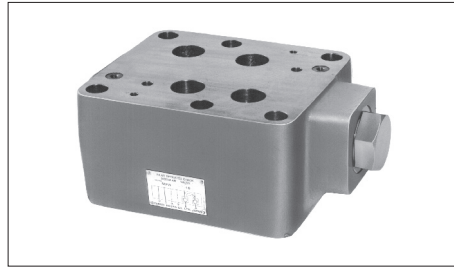


MSA-10-Y

- MSB-10 : The flow adjustment part is assembled on the right side.
- MSW-10 : The flow adjustment part is assembled on the both sides.

Item	Name of Parts	Part Numbers	Qty.		
			MSA-10	MSB-10	MSW-10
10	Back-up Ring	BR JIS B 2407-4-T2-P20	1	1	2
11	O-Ring	OR NBR-90 P16-N	2	2	2
12	O-Ring	OR NBR-70-1 P20-N	1	1	2
13	O-Ring	OR NBR-90 P40-N	4	4	4
14	O-Ring	OR NBR-90 P44-N	2	2	2

Pilot Operated Check Modular Valves



Model Number Designation

MPA	-10	S	-2	-X	-30
Series Number	Valve Size	Port Tapping Feature of Pilot-Drain Port *1	Cracking Pressure MPa	Pilot-Drain Connection	Design Number
MPA: For A-Line } Pilot Operated MPB: For B-Line } Check Valve	10	None: Rc3/8 S: G3/8	2: 0.2 4: 0.4	None: Internal Pilot-Internal Drain X : External Pilot-External Drain Y : External Pilot-Internal Drain	30
MPW: For A&B-Lines } Pilot Operated Check Valve		—		None: Internal Pilot-Internal Drain	

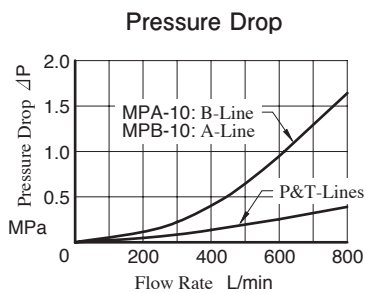
*1. This item applies only to External Pilot or External Drain Type.

Specifications

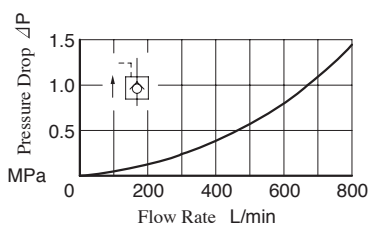
Model Numbers	Max. Operating Pressure MPa	Max. Flow L/min
MP*-10*-*-30	25	800

Typical Performance Characteristics

Hydraulic Fluid: Viscosity 35 mm²/s, Specific Gravity 0.850



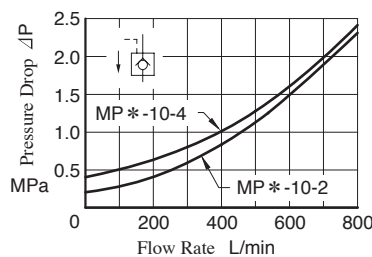
Pressure Drop for Reversed Controlled Flow



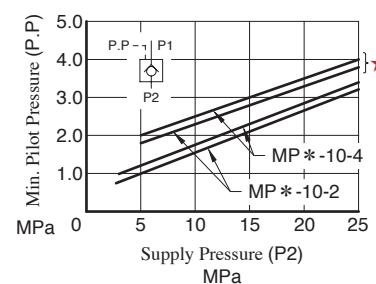
Graphic Symbols

Pilot-Drain type	Internal Pilot-Internal Drain Type	External Pilot-External Drain Type	External Pilot-Internal Drain Type
Model Numbers			
MPA-10	MPA-10-*	MPA-10*-*-X	MPA-10*-*-Y
MPB-10	MPB-10-*	MPB-10*-*-X	MPB-10*-*-Y
MPW-10	MPW-10-*		

Pressure Drop for Free Flow



Min. Pilot Pressure



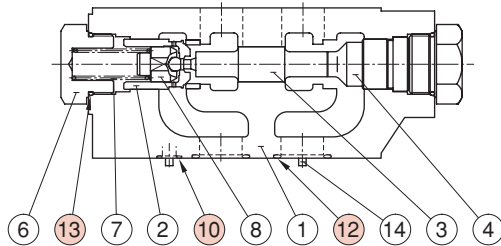
*In case of 500 L/min or more.

10 Series Modular Valves

List of Seals

MPA-10
MPB-10
MPW-10

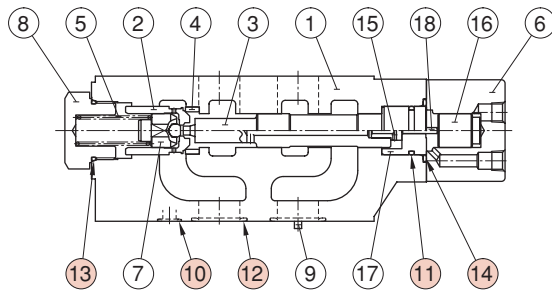
Internal Pilot - Internal Drain Type



MPA-10

- MPB-10 : The check valve is assembled on the right side.
- MPW-10 : The check valve is assembled on the both sides.

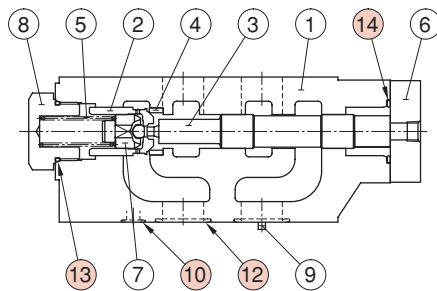
External Pilot - External Drain Type



MPA-10*-*-X

- MPB-10 : The check valve is assembled on the right side.

External Pilot - Internal Drain Type



MPA-10*-*-Y

- MPB-10 : The check valve is assembled on the right side.

Item	Name of Parts	Part Numbers	Qty.		
			Internal Pilot-Internal Drain	External Pilot-External Drain	External Pilot-Internal Drain
10	O-Ring	OR NBR-90 P16-N	2	2	2
11	O-Ring	OR NBR-90 P34-N	—	1	—
12	O-Ring	OR NBR-90 P40-N	4	4	4
13	O-Ring	OR NBR-90 P44-N	2	1	1
14	O-Ring	OR NBR-90 P46-N	—	1	1

Mounting Bolt Kits For Modular Valves

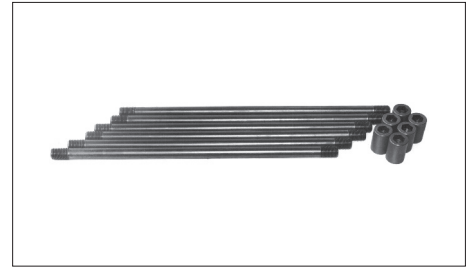
Valves are mounted with six stud bolts. Valve combination varies according to the circuit type. Hence, the mounting bolt kits are available on a combination type basis. When ordering the mounting bolt kit, be sure to give the bolt kit model number from the table below.

Model Number Designation

MBK	-10	-04	-10
Series Number	Size of Modular Valve	Bolt Number	Design Number
MBK: Mounting Bolt Kits for Modular Valves	10	01, 02, 03, 04 (Refer to the chart below)	10

Bolt Kits Selection Chart

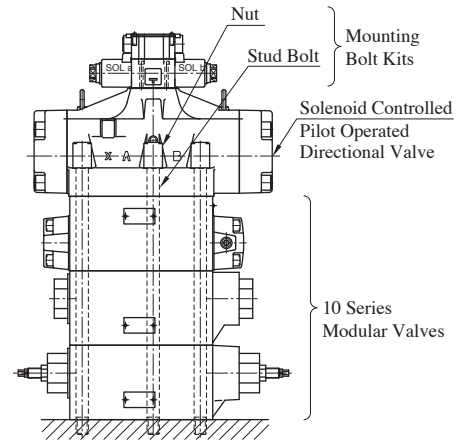
Model Numbers	Quantity of Valves to be Stacked		Approx. Mass (1 Set) kg
	Sol. Cont. Pilot Operated Directional Valves (DSHG-10)	Modular Valve	
MBK-10-01-10	1	1	3.9
MBK-10-02-10	1	2	5.7
MBK-10-03-10	1	3	7.4
MBK-10-04-10	1	4	9.2



Bolt Kit Composition

Stud Bolt6 Pcs. } 1 Set
Nut6 Pcs. }

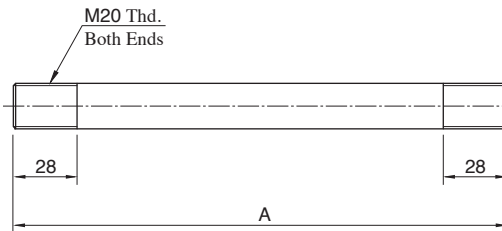
Tightening Torque...150-170 Nm



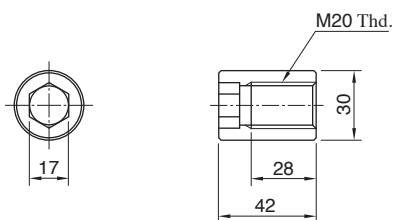
Stacking Example

MBK-10

Stud Bolt



Nut



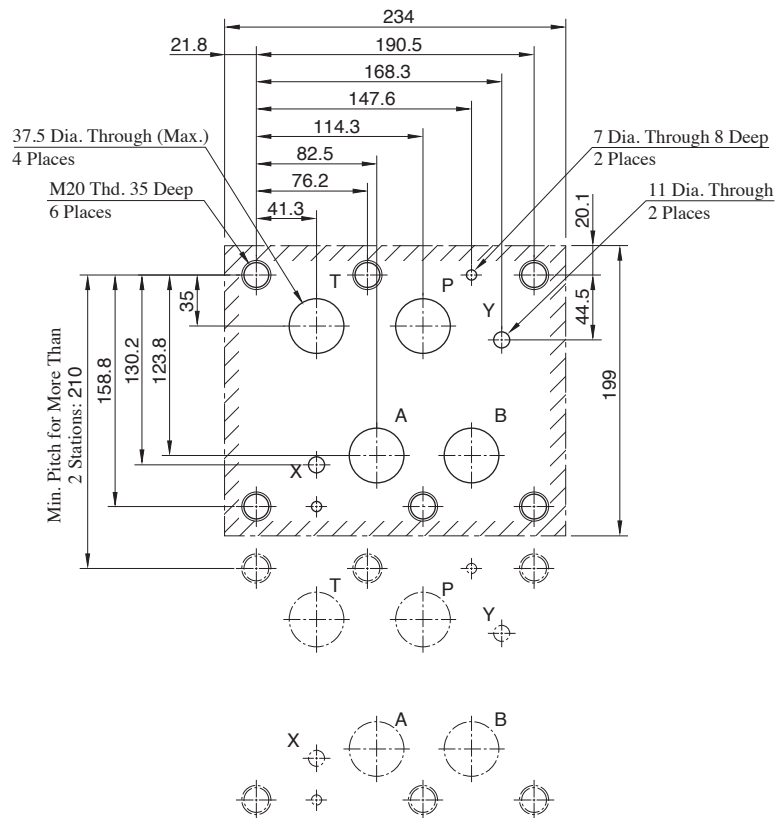
Bolt Number	A mm
01	217
02	337
03	457
04	577

— Mounting Surface Dimensions for 10 Series Modular Valve —

When mounting 10 series modular valve, be sure to use a sub-plate for 1-1/4 solenoid controlled pilot operated directional valves.

Name	Sub-plate Model Numbers	Page
Sub-plate for 1-1/4 Solenoid Controlled Pilot Operated Directional Valves	DHGM-10*-40	F-109

When no sub-plates are used, be sure to use the following mounting surface.



Note: The mounting surface of shaded parts above has a good machined finish. ($\sqrt{16}$)