

03 Series Modular Valves

Type of Modular Valve

Class	Name and Model Numbers	Graphic Symbols	Page	Class	Name and Model Numbers	Graphic Symbols	Page
Solenoid Operated Directional Valves							
(S-) DSG-03-***-50 E-DSG-03-***-D-50 T-DSG-03-***-D24-50 G-DSG-03-***-51							
Pressure Control Valves	Relief Valves (for "P-Line") MBP-03-**-70		F-48	Flow Control Valves	Temperature Compensated Throttle and Check Valves (for "A&B-Lines", Meter-out) MSTW-03-X-20		F-58
	Relief Valves (for "A-Line") MBA-03-**-70		F-48		Throttle Valves (for "P-Line") MSP-03-30		F-60
	Relief Valves (for "B-Line") MBB-03-**-70		F-48		Check and Throttle Valves (for "P-Line") MSCP-03-20		F-61
	Relief Valves (for "A&B-Lines") MBW-03-**-70		F-48		Throttle and Check Valves (for "A-Line", Meter-out) MSA-03-X-70		F-62
	Reducing Valves (for "P-Line") MRP-03-**-70		F-50		Throttle and Check Valves (for "A-Line", Meter-in) MSA-03-Y-70		F-62
	Reducing Valves (for "A-Line") MRA-03-**-70		F-50		Throttle and Check Valves (for "B-Line", Meter-out) MSB-03-X-70		F-62
	Reducing Valves (for "B-Line") MRB-03-**-70		F-50		Throttle and Check Valves (for "B-Line", Meter-in) MSB-03-Y-70		F-62
	Reducing Valves for Low Pressure Setting (for "P-Line") MRLP-03-10		F-52		Throttle and Check Valves (for "A&B-Lines", Meter-out) MSW-03-X-70		F-62
	Reducing Valves for Low Pressure Setting (for "A-Line") MRLA-03-10		F-52	Directional Control Valves	Throttle and Check Valves (for "A&B-Lines", Meter-in) MSW-03-Y-70		F-62
	Reducing Valves for Low Pressure Setting (for "B-Line") MRLB-03-10		F-52		Check Valves (for "P-Line") MCP-03-**-70		F-64
	Sequence Valves (for "P-Line") MHP-03-**-20		F-54		Check Valves (for "A-Line") MCA-03-**-70		F-64
	Counterbalance Valves (for "A-Line") MHA-03-**-20		F-54		Check Valves (for "B-Line") MCB-03-**-70		F-64
	Counterbalance Valves (for "B-Line") MHB-03-**-20		F-54		Check Valves (for "T-Line") MCT-03-**-70		F-64
Flow Control Valves	Flow Control Valves (for "P-Line") MFP-03-11		F-56		Check Valves (for "A&B-Lines") MCW-03-**-70		F-64
	Flow Control and Check Valves (for "A-Line", Meter-in) MFA-03-X-11		F-56		Check Valves (for "P&T-Lines") MCPT-03-P-**-T-10		F-66
	Flow Control and Check Valves (for "A-Line", Meter-in) MFA-03-Y-11		F-56		Anti-Cavitation Valves MAC-03-10		F-67
	Flow Control and Check Valves (for "B-Line", Meter-out) MFB-03-X-11		F-56		Pilot Operated Check Valves (for "A-Line") MPA-03-**-70		F-68
	Flow Control and Check Valves (for "B-Line", Meter-in) MFB-03-Y-11		F-56		Pilot Operated Check Valves (for "B-Line") MPB-03-**-70		F-68
	Flow Control and Check Valves (for "A&B-Lines", Meter-out) MFW-03-X-11		F-56		Pilot Operated Check Valves (for "A&B-Lines") MPW-03-**-70		F-68
	Flow Control and Check Valves (for "A&B-Lines", Meter-in) MFW-03-Y-11		F-56	Modular Plates and Mounting Bolts	End Plates (Blocking Plates) MDC-03-A-10		F-70
	Temperature Compensated Throttle and Check Valves (for "A-Line", Meter-out) MSTA-03-X-20		F-58		End Plates (Bypass Plates) MDC-03-B-10		F-70
	Temperature Compensated Throttle and Check Valves (for "B-Line", Meter-out) MSTB-03-X-20		F-58		Connecting Plates MDS-03-10		F-70
					Base Plates MMC-03-T-**-21		F-71
					Bolt Kits MBK-03-**-10		F-73

★ 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 *-03-A-70*	35	80
MR *-03-B/C/H-70		120

★ If the pressure is set below 1.2 MPa, the maximum flow is limited.
See the "Min. Adjustment Pressure vs. Max. Flow" of this page.

Model Number Designation

MRP	-03	-B	-70
Series Number	Valve Size	Pres. Adj. Range MPa	Design Number
MRP: Reducing Valve for P-Line MRA: Reducing Valve for A-Line MRB: Reducing Valve for B-Line	03	A: ★-3.5 B: 1-7 C: 3.5-14 H: 7-31.5	70

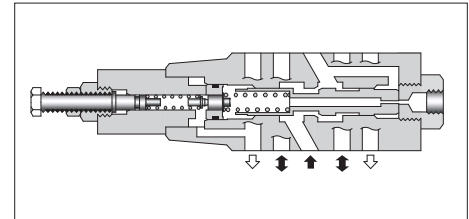
★ See the "Min. Adjustment Pressure vs. Max. Flow" of this page.

Instructions

The minimum adjustment pressure equals the value obtained from the minimum adjustment pressure characteristics plus the tank line back pressure of this page. This back pressure should include the value of the T-line pressure drop characteristics of the valves stacked to the base plate side of the modular valve. To make pressure adjustment, loosen the lock nut and turn the pressure adjustment screw clockwise or anticlockwise. For an increase of pressure, turn the screw clockwise. Be sure to re-tighten the lock nut firmly after making adjustment to the pressure.

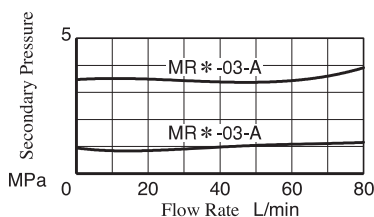
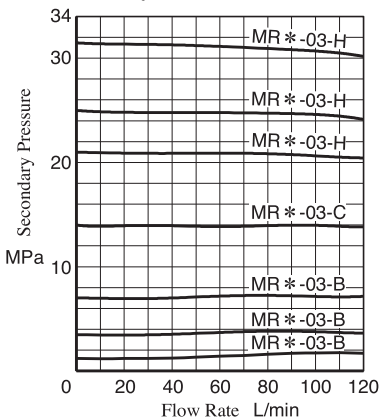
Typical Performance Characteristics

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

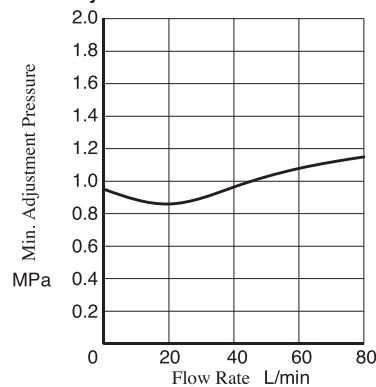


Model Numbers	Graphic Symbols	Graphic Symbols
MRP-03		
MRA-03		
MRB-03		

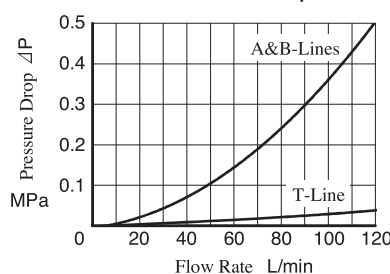
Nominal Override Characteristics
Primary Pressure 35 MPa



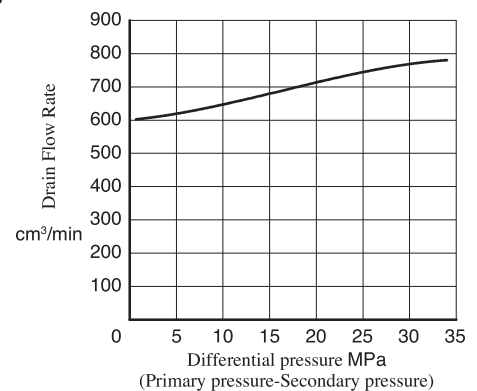
Min. Adjustment Pressure vs. Max. Flow



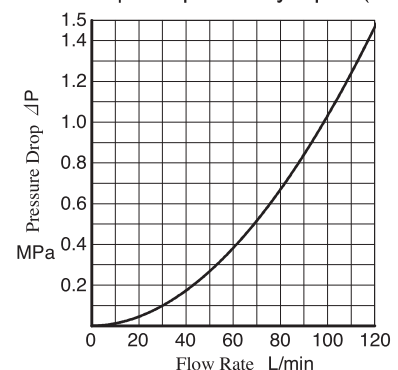
Pressure Drop



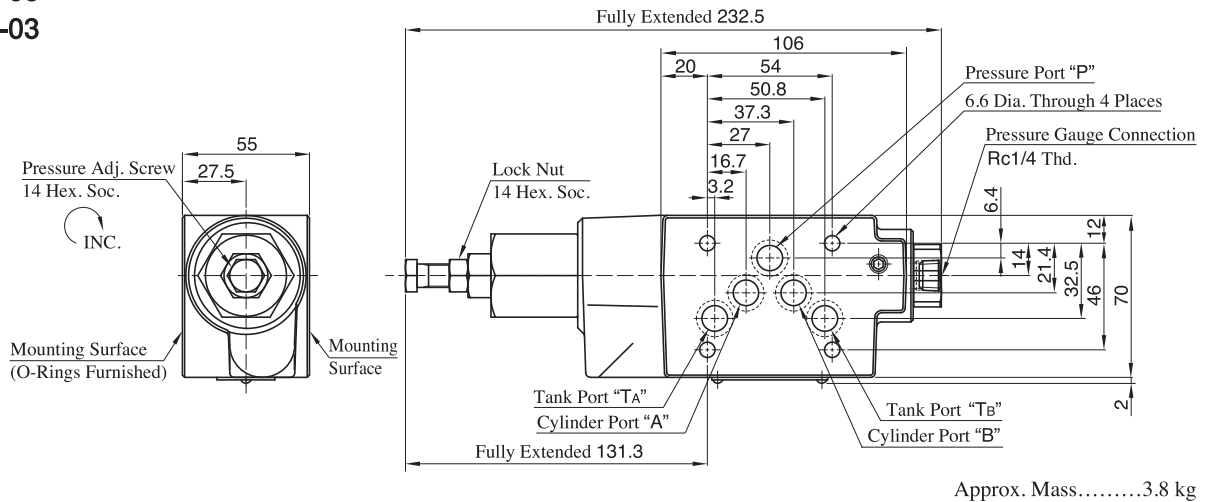
Drain Flow Rate



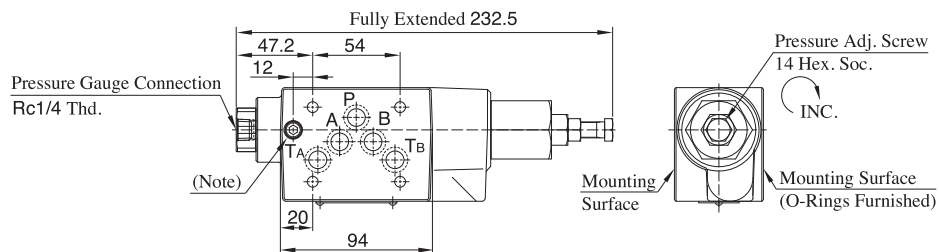
Pres. Drop at Spool Fully Open (P-Line)



MRP-03 MRB-03



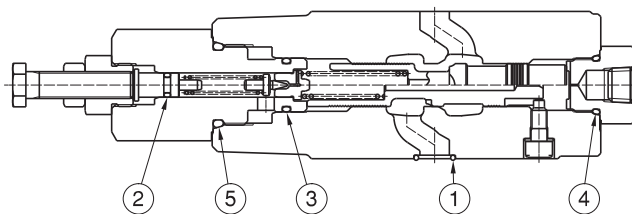
MRA-03



Note: If mounting surface dimension equipped with the valves based on ISO 4401-05-05-0-05, pilot port of stacking valves will interfere with bolt hole of MRA-03, so check gasket surface of the stacking valves.

List of Seals

MRP-03 MRA-03 MRB-03



MRP-03

Item	Name of Parts	Part Numbers	Qty.
1	O-Ring	AS568-014 (NBR-90)	5
2	O-Ring	OR NBR-70-1 P6-N	1
3	O-Ring	OR NBR-90 P16-N	1
4	O-Ring	OR NBR-90 P18-N	1
5	O-Ring	OR NBR-90 P26-N	1

- MRA-03:The pressure adjustment part is assembled on the right side.
- MRB-03:The pressure adjustment part is assembled on the left side.

Interchangeability in Installation between Current and New Design

The following models of 03 Series Modular Valves have changed to 70 design numbers model to operate higher pressure and modification for large flow use.

Name	Model Numbers
Relief Modular Valves	MB *-03- *-70
Reducing Modular Valves	MR *-03- *-70
Throttle and Check Modular Valves	MS *-03- *-70
Check Modular Valves	MC *-03- *-70
Pilot Operated Check Modular Valves	MP *-03- *- *-70

Major Changes

- (1) Max. Operating Pressure (35MPa) & Max. Flow have substantially increased respectively.
- (2) Selectable low pilot operation type as standard model for Pilot Operated Check Modular Valves.

Mounting Interchangeability

Yes

Mounting surface is not changed from current models.

Specifications

Max. Operating Pressure

Name	Current		New	
	Model Numbers	Max. Operating Pressure MPa	Model Numbers	Max. Operating Pressure MPa
Relief Modular Valves	MB *-03- *-30	31.5	MB *-03- *-70	35
Reducing Modular Valves	MR *-03- *-30	25	MR *-03- *-70	
Throttle and Check Modular Valves	MS *-03- *-40		MS *-03- *-70	
Check Modular Valves	MCP/MCT-03- *-10 MCA/MCB/MCW-03- *-20		MC *-03- *-70	
Pilot Operated Check Modular Valves	MP *-03- *-20		MP *-03- *-70	
	MP *-03- *-2001		MP *-03- *-L-70	

Max. Flow

Name	Current		New	
	Model Numbers	Max. Flow L/min	Model Numbers	Max. Flow L/min
Relief Modular Valves	MB *-03- *-30	70	MB *-03- *-70	120
Reducing Modular Valves	MR *-03- *-30	70	MR *-03-A-70	80
			MR *-03-B/C/H-70	120
Throttle and Check Modular Valves	MS *-03- *-40	120	MS *-03- *-70	160
Check Modular Valves	MCP/MCT-03- *-10 MCA/MCB/MCW-03- *-20	70	MC *-03- *-70	120
Pilot Operated Check Modular Valves	MP *-03- *-20		MP *-03- *-70	
	MP *-03- *-2001		MP *-03- *-L-70	

● Model Number Designation

Function Addition

Name	Model Numbers	Additional Functions
Pilot Operated Check Modular Valves	MP *-03- *-L-70	Low pilot operation type, selectable as standard product

Pressure Adjustment Range

Name	Current		New	
	Model Numbers	Pres. Adj. Range MPa	Model Numbers	Pres. Adj. Range MPa
Relief Modular Valves	MB *-03- *-30	B: ★-7 H: 3.5-31.5	MB *-03- *-70	B: ★-7 C: 3.5-14 K: 7-35
Reducing Modular Valves	MR *-03- *-30	B: 1-7 H: 3.5-24.5	MR *-03- *-70	A: ★-3.5 B: 1-7 C: 3.5-14 H: 7-31.5

Cracking Pressure

Name	Current		New	
	Model Numbers	Cracking Pressure MPa	Model Numbers	Cracking Pressure MPa
Check Modular Valves	MCP/MCT-03- *-10 MCA/MCB/MCW-03- *-20	0: 0.035 2: 0.2	MC *-03- *-70	0: 0.035 2: 0.2 2: 0.4
Pilot Operated Check Modular Valves	MP *-03- *-20	2: 0.2 2: 0.4	MP *-03- *-70	0: 0.035 2: 0.2 4: 0.4
	MP *-03- *-2001		MP *-03- *-L-70	

● Typical Performance Characteristics

Characteristics of all models have been changed.

● Approx. Mass

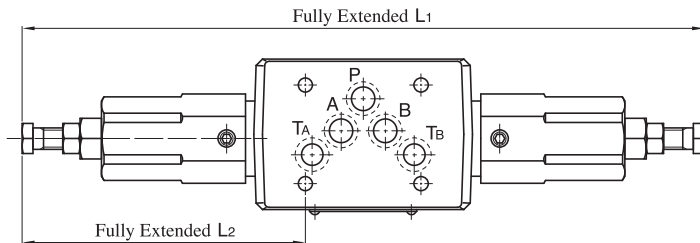
Name	Current		New	
	Model Numbers	Approx. Mass kg	Model Numbers	Approx. Mass kg
Relief Modular Valves	MBP/MBA/MBB-03- *-30	3.1	MBP/MBA/MBB-03- *-70	3.4
	MBW-03- *-30	3.8	MBW-03- *-70	4.0
Reducing Modular Valves	MR *-03- *-30	3.3	MR *-03- *-70	3.8
Throttle and Check Modular Valves	MSA/MSB-03- *-40	3.5	MSA/MSB-03- *-70	2.8
	MSW-03- *-40	3.7	MSW-03- *-70	3.5
Check Modular Valves	MCP-03- *-10	2.5	MCP-03- *-70	2.6
	MCA/MCB-03- *-20	3.5	MCA/MCB-03- *-70	3.0
	MCW-03- *-20	3.5	MCW-03- *-70	3.7
	MCT-03- *-10	2.8	MCT-03- *-70	3.0
Pilot Operated Check Modular Valves	MPA/MPB-03- *-20	3.5	MPA/MPB-03- *-70	3.0
	MPW-03- *-2001	3.5	MPW-03- *-70	3.7

●Dimensions

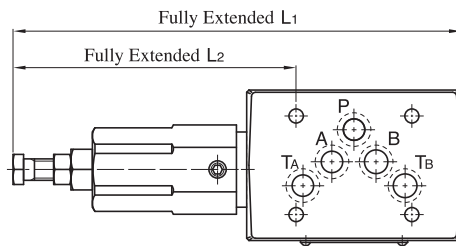
As of fully extended dimensions, height (55mm) and depth (70mm) are same between current and new models. Width is same except for the models below.

(1) Relief Modular Valves

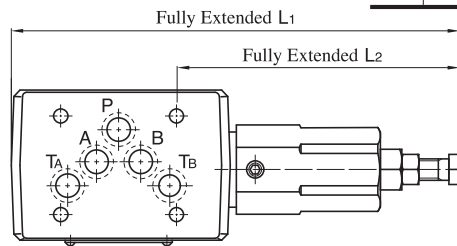
MBW-03



MBP/MBA-03



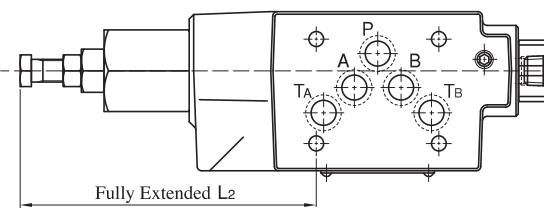
MBB-03



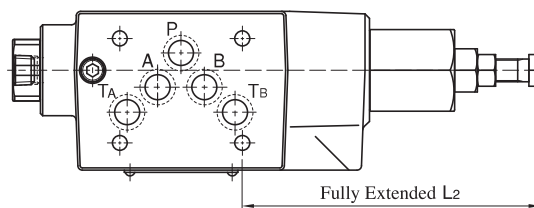
Model Numbers		L1	L2
Current	MBP-03- *-30	214	134
	MBA-03- *-30	214	134
	MBB-03- *-30	214	—
New	MBW-03- *-30	320	133
	MBP-03- *-70	209	132
	MBA-03- *-70	207	132
	MBB-03- *-70	207	—
	MBW-03- *-70	318	132

(2) Reducing Modular Valves

MRP/MRB-03



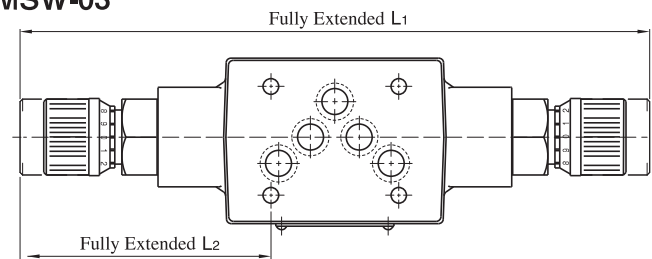
MRA-03



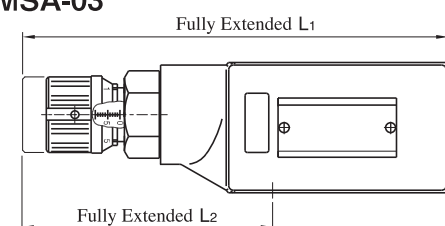
Model Numbers		L2
Current	MR *-03- *-30	131
New	MR *-03- *-70	131.3

(3) Throttle and Check Modular Valves

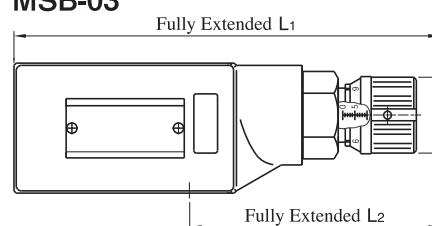
MSW-03



MSA-03



MSB-03



Model Numbers		L1	L2
Current	MSA-03- *-40	193.5	91.5
	MSB-03- *-40	193.5	
	MSW-03- *-40	237	
New	MSA-03- *-70	180	106
	MSB-03- *-70	180	
	MSW-03- *-70	266	