

04 Series Modular Valves

For hydraulics systems with high flow rates, which 03 series valves (Maximum Flow rate of 70 L/min.) are not capable of handling, 06 series modular valves (may flow rates of 500 L/min.) have been conventionally used. In such cases, the use of 04 series valves for hydraulic systems with flow rates up to 300 L/min. will help to reduce both cost and system size.



Types Of Modular Valves

Name	Model Numbers	Graphic Symbols	Page	Remarks
Pres. Control Valves	Solenoid Operated Directional Valve DSHG-04-※※※-※-50		EIC-E-1003	
	Reducing Modular Valves (for "P-Line") MRP-04-※-10		2	Δ Pressure Adjustment Range A : 7 ~ 70 Kgf/cm ² B : 15 ~ 70 Kgf/cm ² C : 35 ~ 140 Kgf/cm ² H : 70 ~ 250 Kgf/cm ²
	Reducing Modular Valves (for "A-Line") MRA-04-※-10		2	
	Reducing Modular Valves (for "B-Line") MRB-04-※-10		2	
Flow Control Valves	Throttle and Check Modular Valve (for "A-Line") MSA-04-X-10		4	Direction Of Flow X : Metre - out Y : Metre - In
	Throttle and Check Modular Valve (for "A-Line") MSA-04-Y-10		4	
	Throttle and Check Modular Valve (for "B-Line") MSB-04-X-10		4	
	Throttle and Check Modular Valve (for "B-Line") MSB-04-Y-10		4	
	Throttle Check Modular Valve (for "A,B-Line") MSW-04-X-10		4	
	Throttle Check Modular Valve (for "A,B-Line") MSW-04-Y-10		4	
Direction Control	Pilot Operated Check Modular Valve (for "A-Line") MPA-04-※-10		7	※ : Cracking Pressure 2 : 2 Kgf/cm ² 4 : 4 Kgf/cm ²
	Pilot Operated Check Modular Valve (for "B-Line") MPB-04-※-10		7	
	Pilot Operated Check Modular Valve (for "A,B-Line") MPW-04-※-10		7	
	Check Modular Valve (for "P-Line") MCP-04-※-10		9	0 : 0.35 Kgf/cm ² 2 : 2 Kgf/cm ² 4 : 4 Kgf/cm ²
	Check Modular Valve (for "T-Line") MCT-04-※-10		9	
Modular Bolts	Bolt Kit MBK-04-※-10			Bolt No. Refer To Page No. 11 For Details

04 series valves for Phosphate Ester Fluid are also available.

To specify a model for Phosphate Ester Fluid, prefix "F" to the model number. Because the special seal (FluoroRubber) are to be used .

1/2 Reducing Modular Valves

Specifications

Model Number	Max. Operating Pressure Kgf/cm ²	Max. Flow L/min.
(F-) MR※-04-A-10	350	100
(F-) MR※-04- B C-10 H		300

Model Number Designation

F-	MRP	-04	-A	-10
Special Seals	Series Number	Valve Size	Pres. Adj. Range Kgf/cm ²	Design Number
F: Special Seals for Phosphate Ester Type Fluids (Omit if not required)	MRP: Reducing Modular Valves for P-Line MRA: Reducing Modular Valves for A-Line MRB: Reducing Modular Valves for B-Line	04	A: 7 ~ 70 B: 15 ~ 70 C: 35 ~ 140 H: 70 ~ 250	10

Graphic Symbol



(F-) MRP-04-※-



(F-) MRA-04-※-

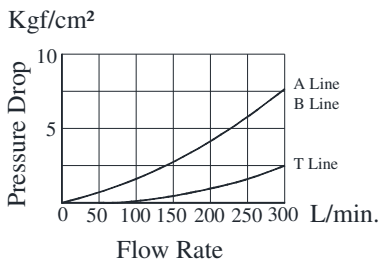


(F-) MRB-04-※-

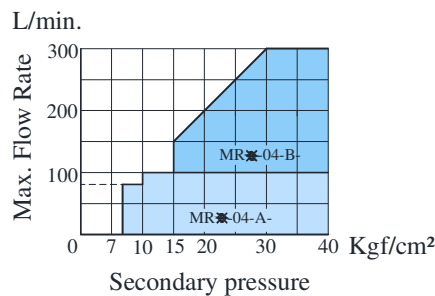
Typical Performance Characteristics

Hydraulic Fluid: Viscosity 35cSt, Specific Gravity 0.850

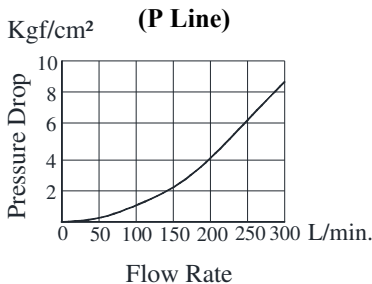
Pressure Drop



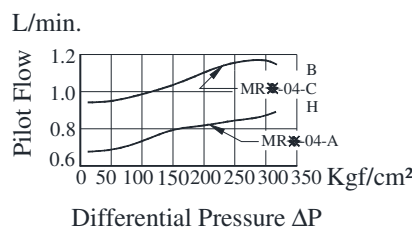
Secondary Pr. Vs Max. Flow



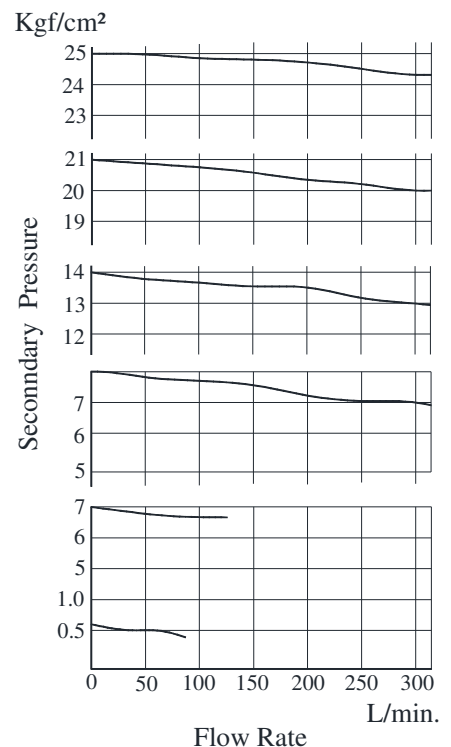
Pr. Drop At Spool Fully Open (P Line)



Pilot Flow



Nominal Over ride Characteristics



Instructions

Minimum Adjustment Pressure

varies according to the back pressure at tank line. Therefore, please obtain it from the following formula.

Min. Adjustment pressure = value obtained from minimum adjustment pressure characteristics curve and back pressure at tank line.

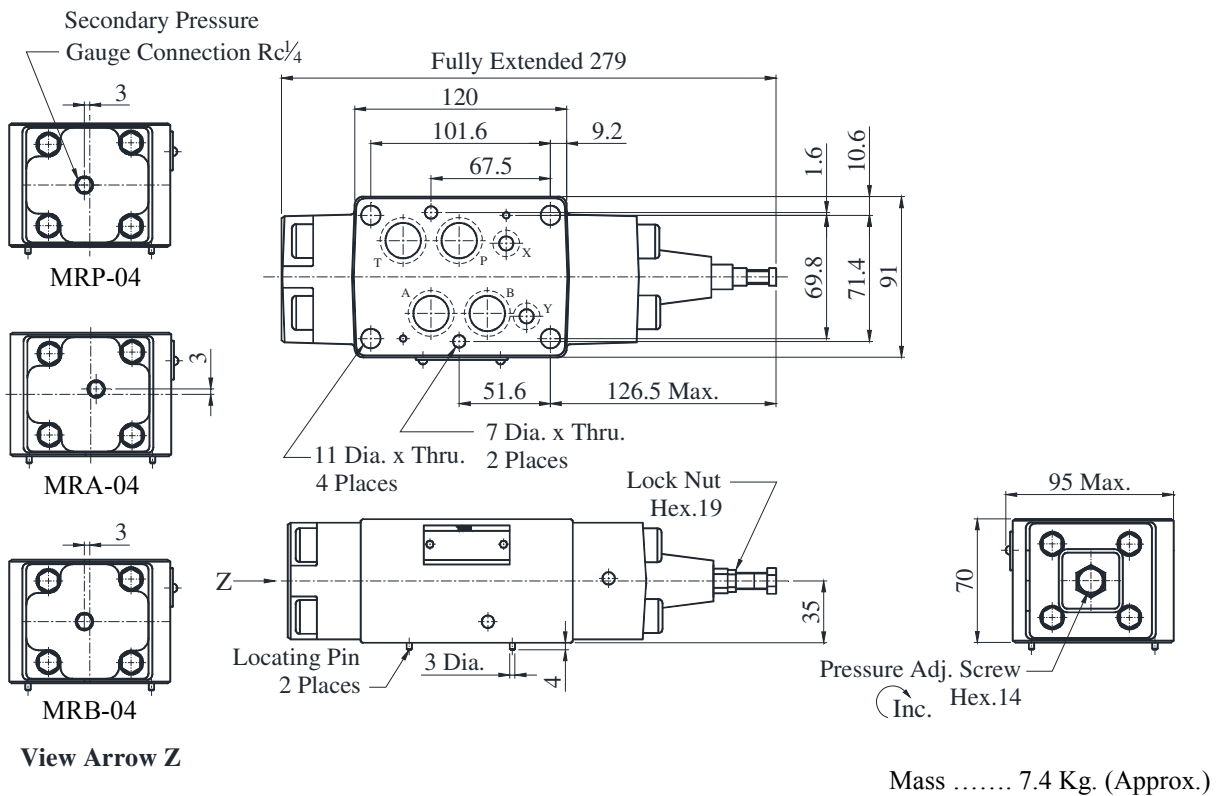
The back pressure at the tank line should be obtained by adding the tank line pressure drop for each valve to be stacked.

To make pressure adjustment, loosen the lock nut and turn the pressure adjustment screw clockwise for an increase of pressure. Be sure to re-tighten the lock nut firmly after pressure adjustment.

● **MRP-04-※-10**

● **MRA-04-※-10**

● **MRB-04-※-10**



Spare Parts List

List of Seals

Sl. No.	Name of Parts	Parts Numbers	Qty.
1	O-Ring	SO-NB-P9	2
2	O-Ring	SO-NB-P9	2
3	O-Ring	SO-NB-P22	4
4	O-Ring	SO-NB-P22	4

Note : When ordering the seals, please specify the seal kit number KS-MRP-04-10.

1/2 Throttle and Check Modular Valves

Specifications

Model Number	Max. Operating Pressure Kgf/cm ²	Max. Flow L/min.
(F-) MSA-04-※-10	350	300
(F-) MSB-04-※-10	350	300
(F-) MSW-04-※-10	350	300

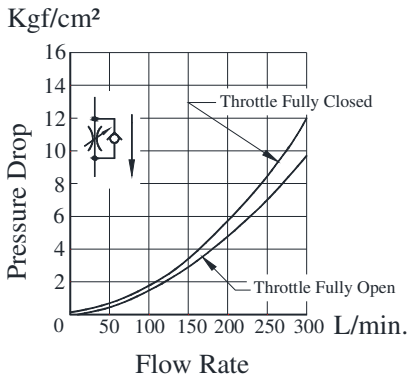
Model Number Designation

F-	MSA	-04	-X	-10
Special seals	Series Number	Valves Size	Direction of Flow ("A" line)	Design Number
F: Special Seals For Phosphate Ester Type Fluids (Omit if not required)	MSA: Throttle and Check Modular Valves for A-Line MSB: Throttle and Check Modular Valves for B-Line MSW: Throttle and Check Modular Valves for A,B-Line	04	X : Meter - Out Y : Meter - In	10

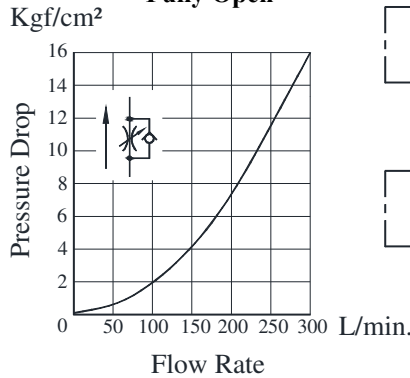
Typical Performance Characteristics

Hydraulic Fluid: Viscosity 35cSt, Specific Gravity 0.850

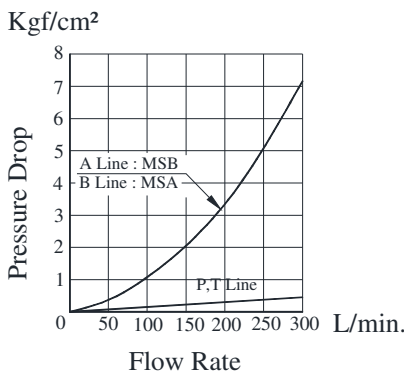
Pressure Drop For Free Flow



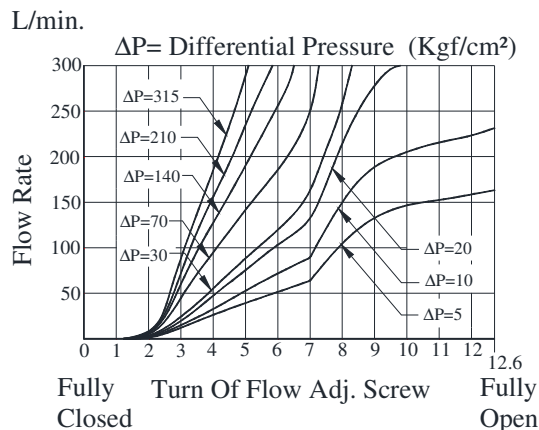
Pressure Drop At Throttle Fully Open



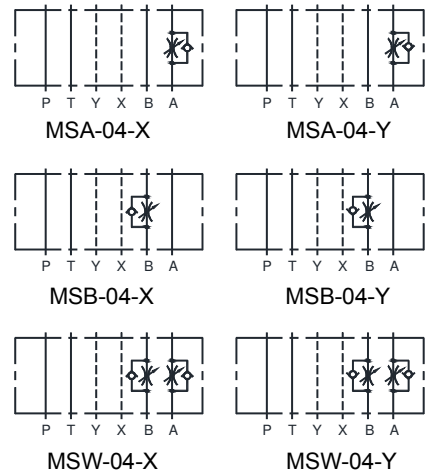
Pressure Drop



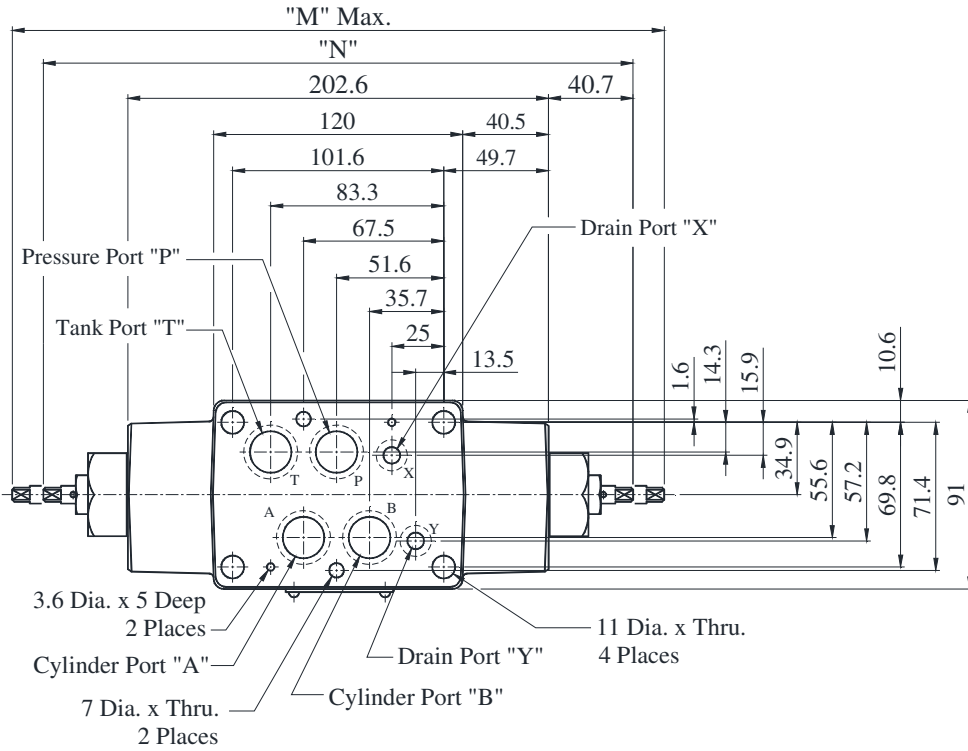
Metered Flow Vs Screw Position



Graphic Symbols



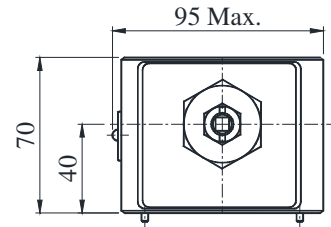
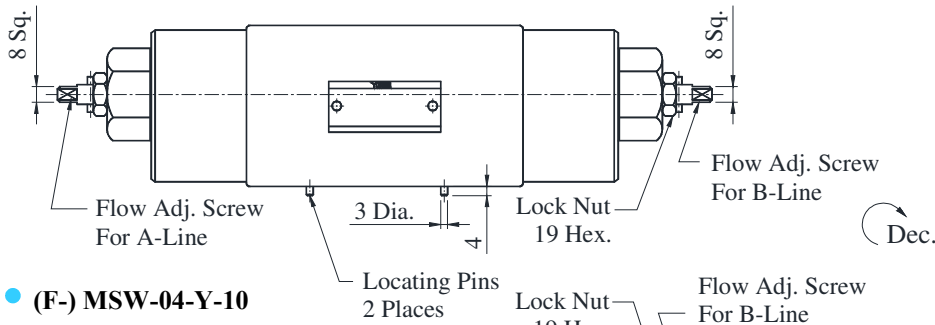
● (F-) MSW-04-X-10



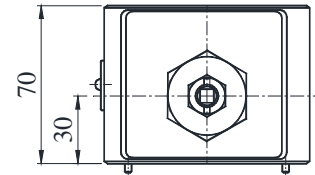
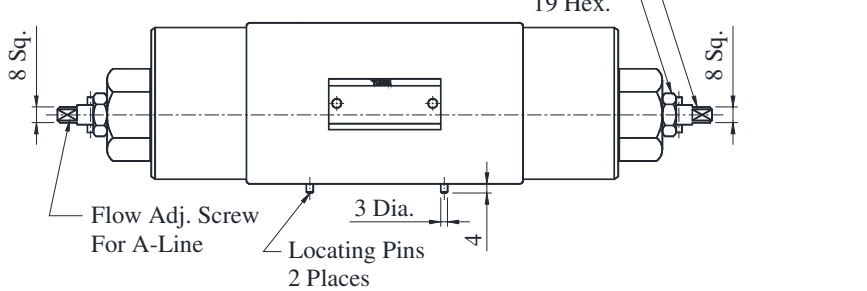
Sl. No.	Model Numbers	"M"	"N"
1	MSA-04	268	253
2	MSB-04	268	284
3	MSW-04	314	284

DIMENSIONS IN MILLIMETRES

● (F-) MSW-04-X-10



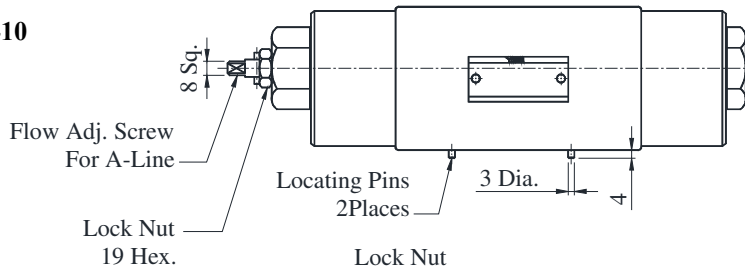
● (F-) MSW-04-Y-10



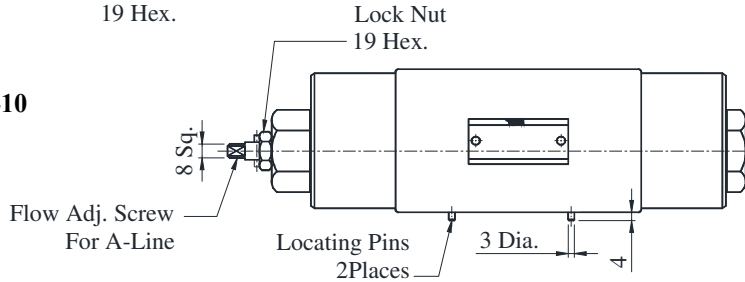
Mass 7.6 Kg. (Approx.)

F
04 Series Modular Valves

● (F-) MSA-04-X-10



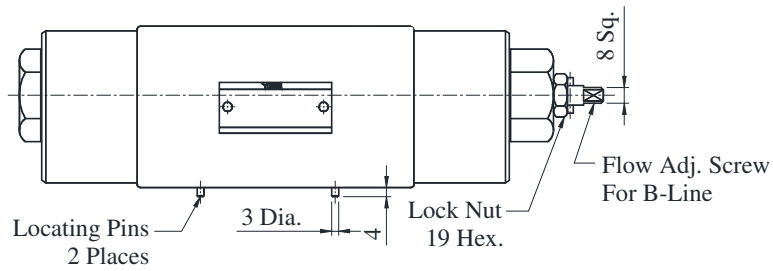
● (F-) MSA-04-Y-10



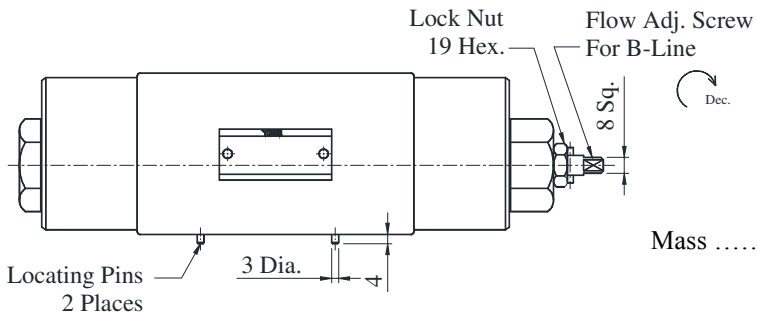
Mass 7.4 Kg. (Approx.)

Note : For all other dimensions refer MSW-04-X_Y-10 accordingly.

● (F-) MSB-04-X-10



● (F-) MSB-04-Y-10



Mass 7.4 Kg. (Approx.)

Note : For all other dimensions refer MSW-04-X_Y-10 accordingly.

■ Spare Parts List

● List of Seals

Sl. No.	Name of Parts	Parts Numbers	Qty.
1	O-Ring	SO-NB-P9	2
2	O-Ring	SO-NB-P9	2
3	O-Ring	SO-NB-P22	4
4	O-Ring	SO-NB-P22	4

Note : When ordering the seals, please specify the seal kit number KS-MRP-04-10.

1/2 Pilot Operated Check Modular Valves

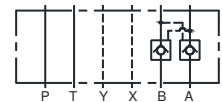
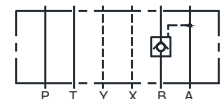
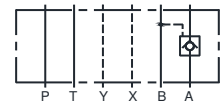
Specifications

Model Number	Max. Operating Pressure Kgf/cm ²	Max. Flow L/min.
(F-) MP*-04*-10	350	300

Model Number Designation

F-	MPA	-04	-2	10
Special seals	Series Number	Valve Size	Cracking Pressure Kgf/cm ²	Design Number
F: Special Seals For Phosphate Ester Type Fluids (Omit if not required)	MPA: A-Line MPB: B-Line MPW: A.B-Line	04	2 : 2 4 : 4	10

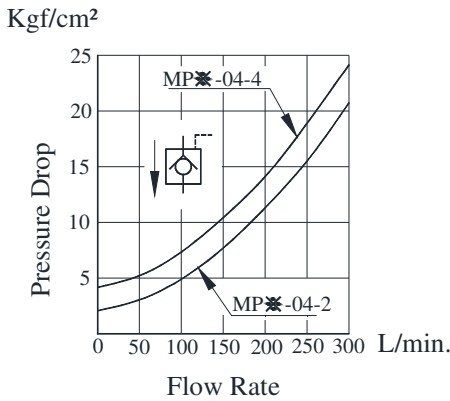
Graphic Symbols



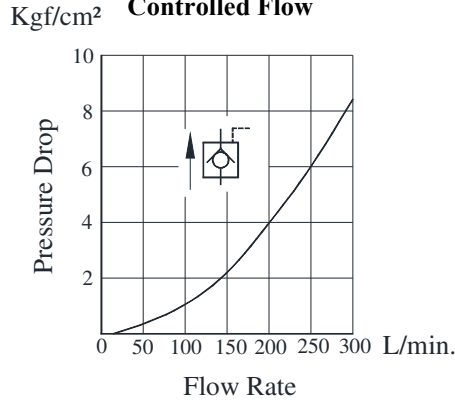
Typical Performance Characteristics

Hydraulic Fluid: Viscosity 35cSt, Specific Gravity 0.850

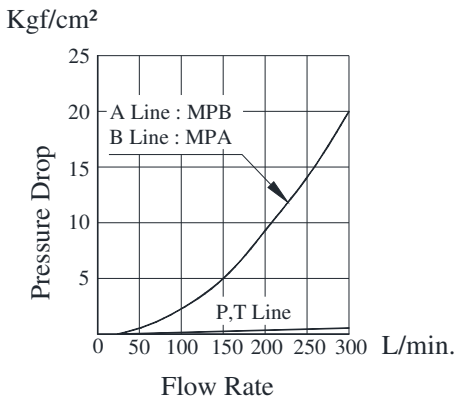
Pressure Drop for Free Flow



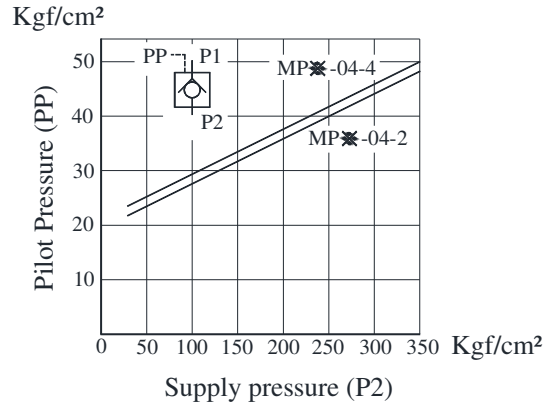
Pressure Drop For Reversed Controlled Flow



Pressure Drop



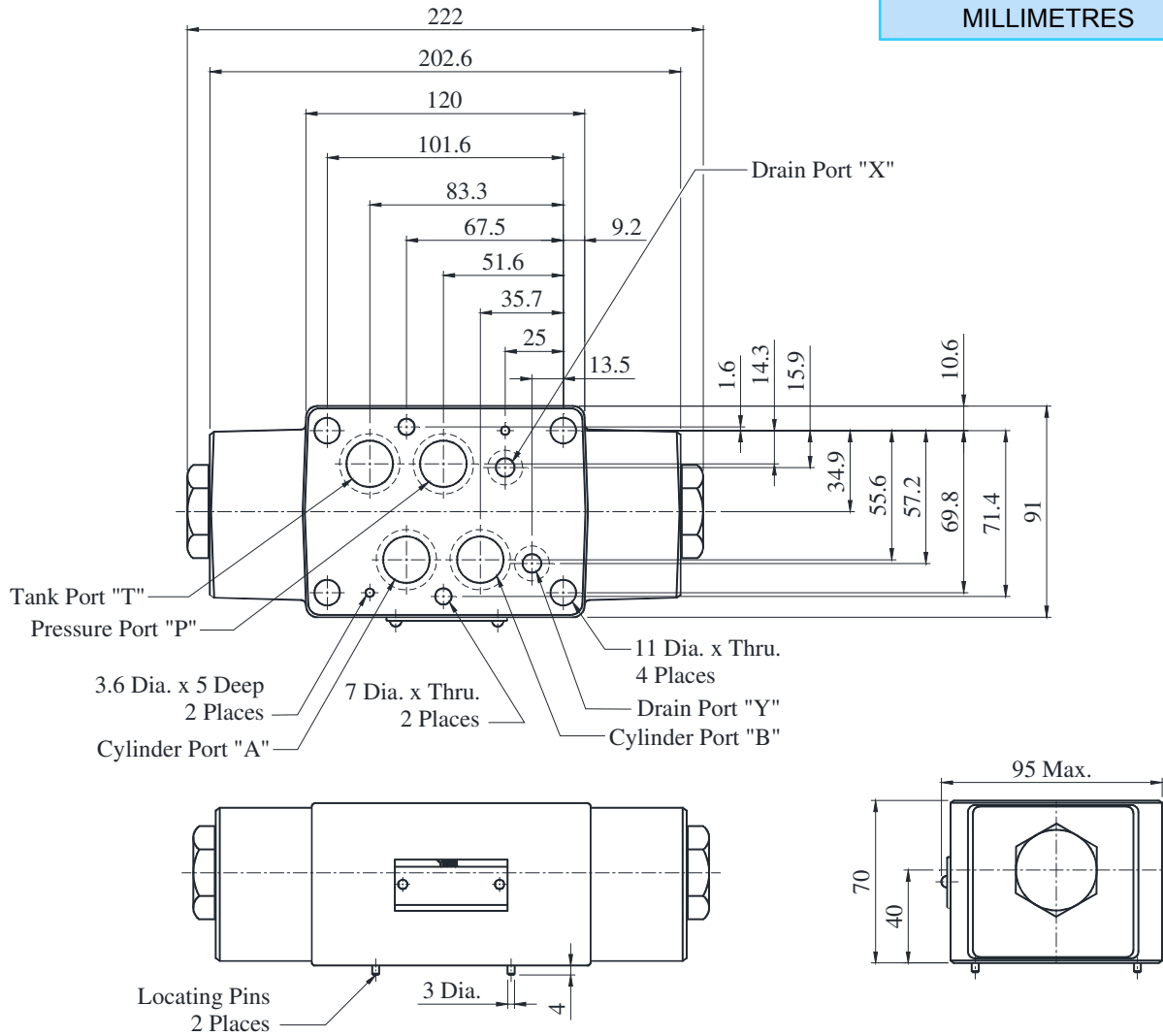
Minimum pilot pressure



F
04 Series Modular Valves

● (F-) MP※-04-※-10

DIMENSIONS IN MILLIMETRES



Mass 7.3 Kg. (Approx.)

■ **Spare Parts List**

● **List of Seals**

Sl. No.	Name of Parts	Parts Numbers	Qty.
1	O-Ring	SO-NB-P9	2
2	O-Ring	SO-NB-P9	2
3	O-Ring	SO-NB-P22	4
4	O-Ring	SO-NB-P22	4

Note : When ordering the seals, please specify the seal kit number KS-MRP-04-10.

1/2 Check Modular Valves

Specifications

Model Number	Max. Operating Pressure Kg/cm ²	Max. Flow L/min.
(F-) MCP※-04-※-10	350	300
(F-) MCT※-04-※-10		

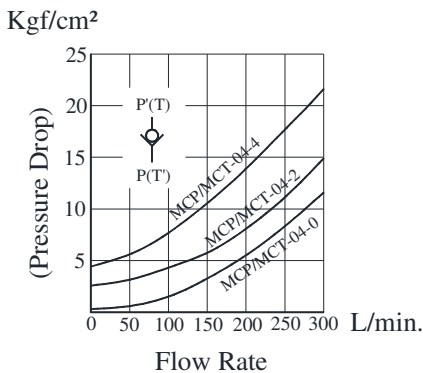
Model Number Designation

F-	MCP	-04	-0	-10
Special Seals	Series Number	Valve Size	Cracking Pressure Kg/cm ²	Design Number
F: Special Seals For Phosphate Ester Type Fluids (Omit if not required)	MCP: Check Modular Valves for P-Line MCT: Check Modular Valves for T-Line	04	0: 0.35 2: 2 4: 4	10

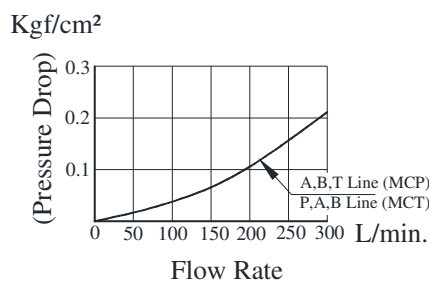
Typical Performance Characteristics

Hydraulic Fluid: Viscosity 35cSt, Specific Gravity 0.850

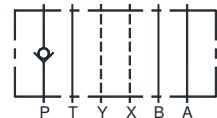
Pressure Drop For Free Flow



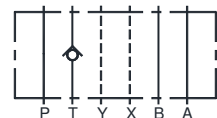
Pressure Drop



Graphic Symbols

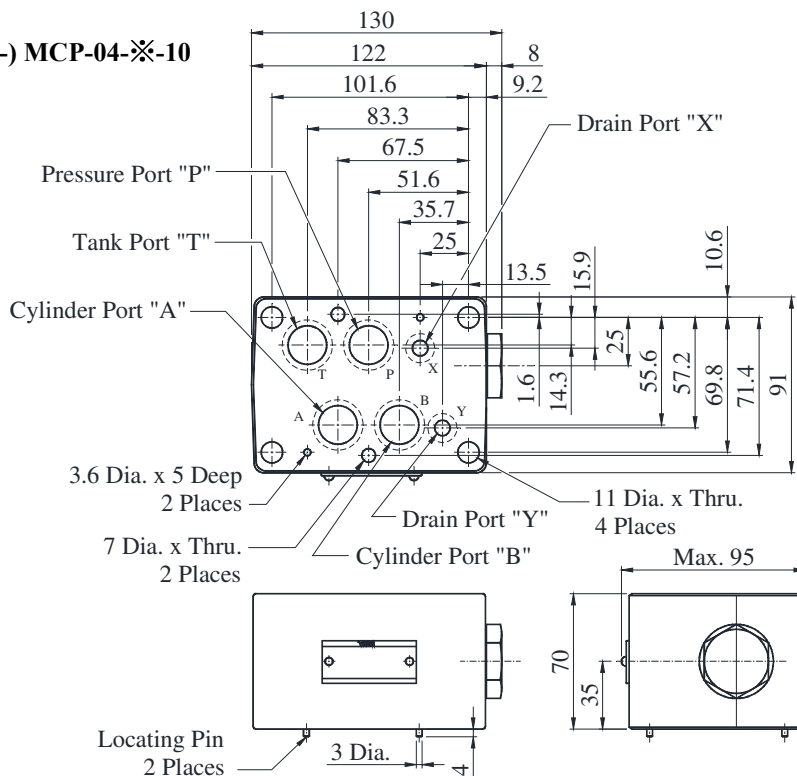


(F -) MCP-01



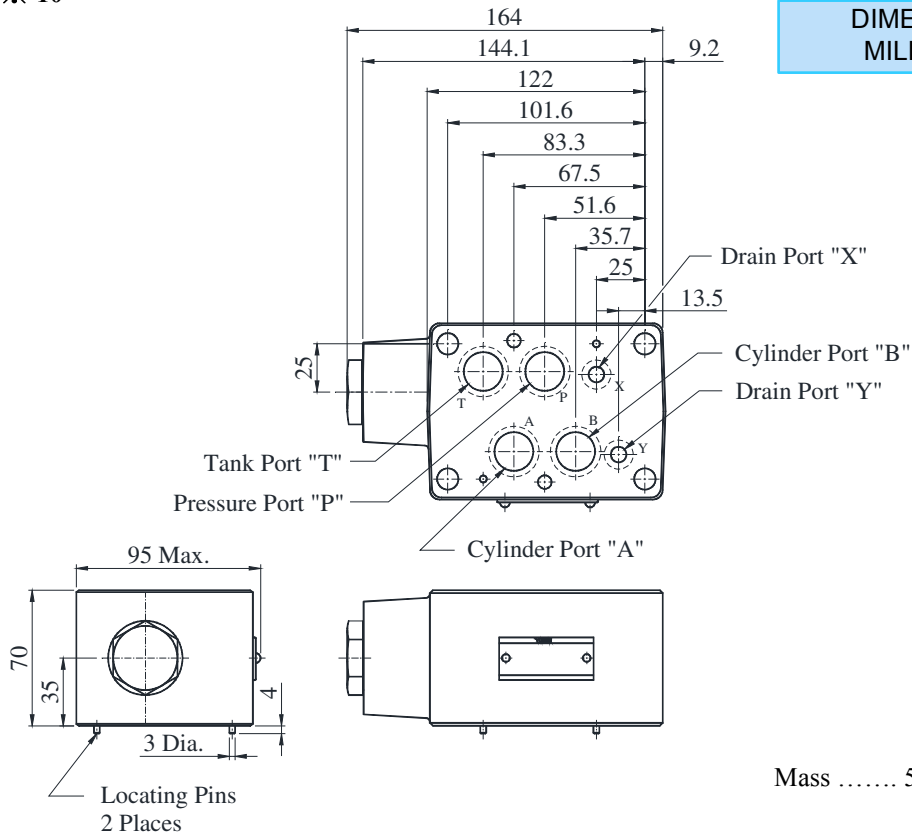
(F -) MCT-01

(F-) MCP-04-※-10



Mass 4.6 Kg. (Approx.)

● (F-) MCT-04-※-10



DIMENSIONS IN MILLIMETRES

Mass 5.4 Kg. (Approx.)

■ **Spare Parts List**

● **List of Seals**

Sl. No.	Name of Parts	Parts Numbers	Qty.
1	O-Ring	SO-NB-P9	2
2	O-Ring	SO-NB-P9	2
3	O-Ring	SO-NB-P22	4
4	O-Ring	SO-NB-P22	4

Note : When ordering the seals, please specify the seal kit number KS-MRP-04-10.

■ **Base Plates and Sub-Plates**

When mounting the modular valves, use base plates and sub-plates specified below. If these base plates and the sub-plates are not used, ensure that the mounting surface has a good machined finish.

Modular Valve Series	Sub-Plates	
	Model Number	Page
04 Series	DHGM-04-※-2080	*
04 Series	DHGM-04X-※-2080	

* For the details of sub plates see the solenoid operated direction control valve catalogue No. EIC-E-1003, Page No. 13.

■ Mounting Bolts Kits, For 1/2 Modular Valves

Valves are mounted with four stud bolts. Valves combination varies according to the circuit type. Hence, the mounting bolts kits are available in a combination type basis.

When ordering the bolts kit, be sure to give the bolt kit model number from the table.

■ Model Number Designation

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

■ Bolts Kit Structure:

- **Stud Bolt**
M6 Thd. ----- 2 No.
M10 Thd. ----- 4 No.
- **Nut**
M6 Thd. ----- 2 No.
M10 Thd. ----- 4 No.

Note : In Case of Bolts Kit model number having “05”, there are 4 hexagon socket head cap screws only.

■ Bolts Kits selection chart

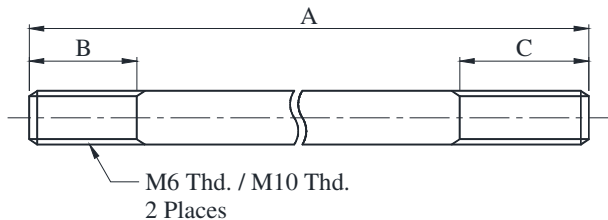
Models Number	Quantity Of Valves To Be Stacked			Approx. Mass Kg.
	DSHG-04	Modular Valve	Total Number of Stacks	
MBK-04-01-10	1	1	2	0.6
MBK-04-02-10	1	2	3	0.8
MBK-04-03-10	1	3	4	1.0
MBK-04-04-10	1	4	5	1.2

Note :

- 1 Bolt Kits are available as Bolt Kit number mentioned above.
- 2 The solenoid Operated directional valve comes with mounting bolts.

■ MBK-04

● **Stud Bolt**

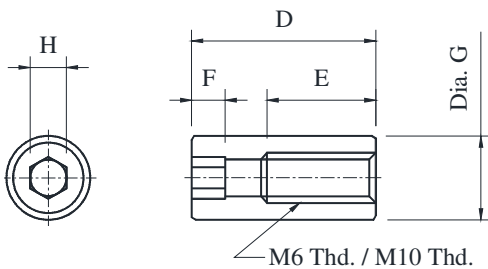


Model Numbers	A		B		C	
	M6	M10	M6	M10	M6	M10
MBK-04-01-10	125	140	12	17	12	23
MBK-04-02-10	195	210				
MBK-04-03-10	265	280				
MBK-04-04-10	335	350				

Note :

- 1 As M10 Thd. Stud Bolt is having longer thread portion (at C), suggested to use Nut at that location.
- 2 As M6 Thd. Stud Bolt thread portion is same at both ends, Nut to be used at any one side.

● **Nut**



Thread Size	D	E	F	G	H
M6	22	13	4	10	5
M10	32	24	5	16	8