

### 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		507	Δ Pressure Adjustment Range A : 7 ~ 70 Kgf/cm <sup>2</sup> B : 15 ~ 70 Kgf/cm <sup>2</sup> C : 35 ~ 140 Kgf/cm <sup>2</sup> H : 70 ~ 250 Kgf/cm <sup>2</sup>
	Reducing Modular Valves (for "A-Line") MRA-04-※-10		507	
	Reducing Modular Valves (for "B-Line") MRB-04-※-10		507	
Flow Control Valves	Throttle and Check Modular Valve (for "A-Line") MSA-04-X-10		509	Direction Of Flow X : Metre - out Y : Metre - In
	Throttle and Check Modular Valve (for "A-Line") MSA-04-Y-10		509	
	Throttle and Check Modular Valve (for "B-Line") MSB-04-X-10		509	
	Throttle and Check Modular Valve (for "B-Line") MSB-04-Y-10		509	
	Throttle Check Modular Valve (for "A,B-Line") MSW-04-X-10		509	
	Throttle Check Modular Valve (for "A,B-Line") MSW-04-Y-10		509	
Direction Control	Pilot Operated Check Modular Valve (for "A-Line") MPA-04-※-10		512	※ : Cracking Pressure 2 : 2 Kgf/cm <sup>2</sup> 4 : 4 Kgf/cm <sup>2</sup>
	Pilot Operated Check Modular Valve (for "B-Line") MPB-04-※-10		512	
	Pilot Operated Check Modular Valve (for "A,B-Line") MPW-04-※-10		512	
	Check Modular Valve (for "P-Line") MCP-04-※-10		514	0 : 0.35 Kgf/cm <sup>2</sup> 2 : 2 Kgf/cm <sup>2</sup> 4 : 4 Kgf/cm <sup>2</sup>
	Check Modular Valve (for "T-Line") MCT-04-※-10		514	
Modular Bolts	Bolt Kit MBK-04-※-10			Bolt No. Refer To Page No. 516 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**

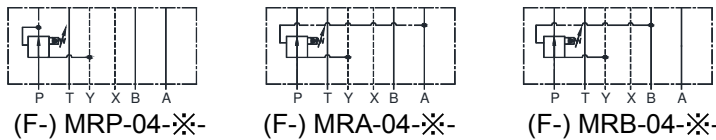
**Specifications**

Model Number	Max. Operating Pressure Kgf/cm <sup>2</sup>	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 <sup>2</sup>	Design Number
<b>F:</b> Special Seals for Phosphate Ester Type Fluids (Omit if not required)	<b>MRP:</b> Reducing Modular Valves for P-Line <b>MRA:</b> Reducing Modular Valves for A-Line <b>MRB:</b> Reducing Modular Valves for B-Line	<b>04</b>	<b>A:</b> 7 ~ 70 <b>B:</b> 15 ~ 70 <b>C:</b> 35 ~ 140 <b>H:</b> 70 ~ 250	<b>10</b>

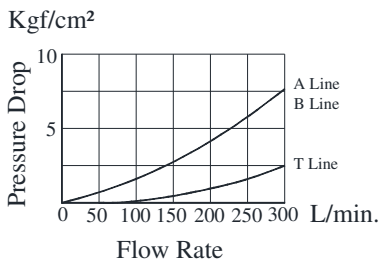
**Graphic Symbol**



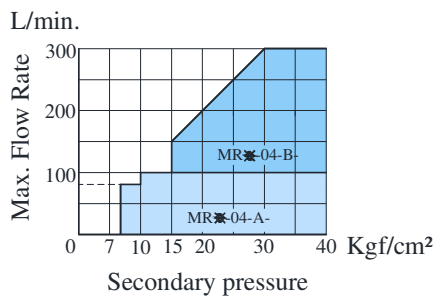
**Typical Performance Characteristics**

Hydraulic Fluid: Viscosity 35cSt, Specific Gravity 0.850

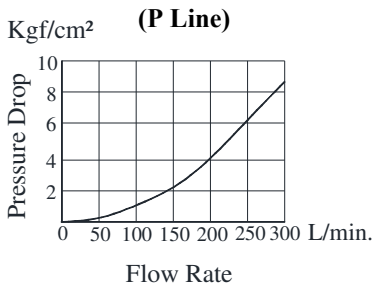
**Pressure Drop**



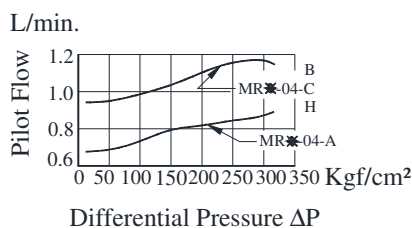
**Secondary Pr. Vs Max. Flow**



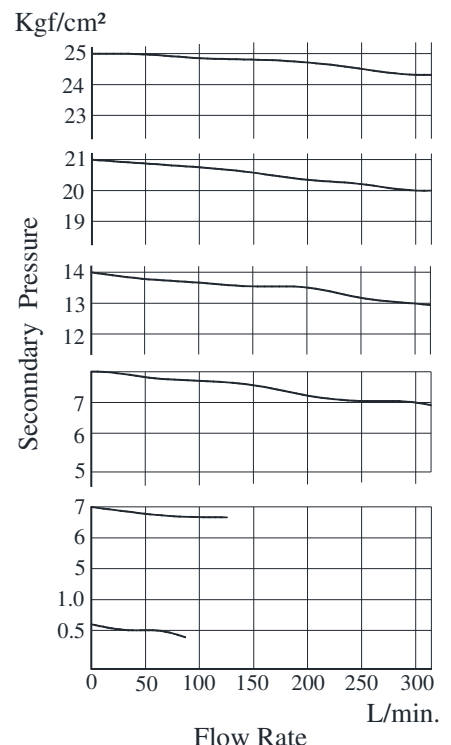
**Pr. Drop At Spool Fully Open (P Line)**



**Pilot Flow**



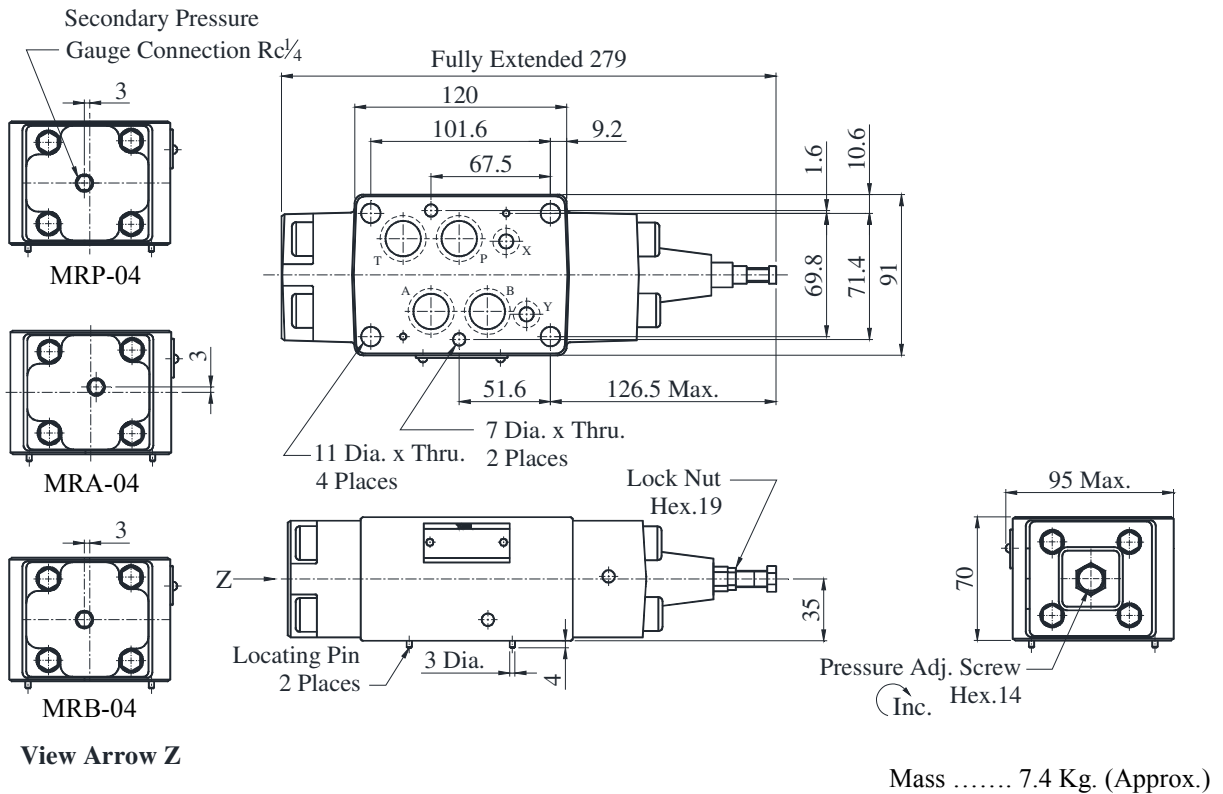
**Nominal Over ride Characteristics**



**Instructions**

- **Min. adjustment pressure** which varies with tank line back pressure may be obtained from the formula below.  
**Min. Adjustment pressure = Min. adjustment pressure value + Tank line Back pressure.**  
 Add T-Line pressure drop value of the valve to be stacked on the base plate side to tank line back pressure.
- 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.

- **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-P28	2
2	O-Ring	SO-NB-P22	4
3	O-Ring	SO-NB-P9	7
4	O-Ring	SO-NA-P9	1

● **List of Seal Kits**

Model Numbers	Seal Kit Numbers
MRP-04	KS-MRP-04-10
MRA-04	
MRB-04	

**1/2 Throttle and Check Modular Valves**

**Specifications**

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

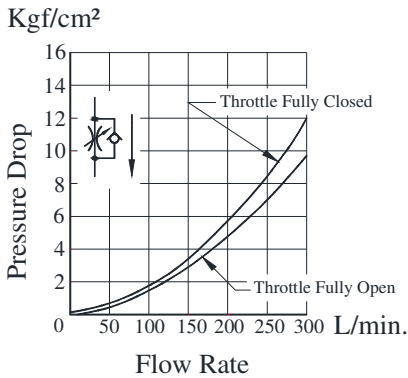
**Model Number Designation**

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

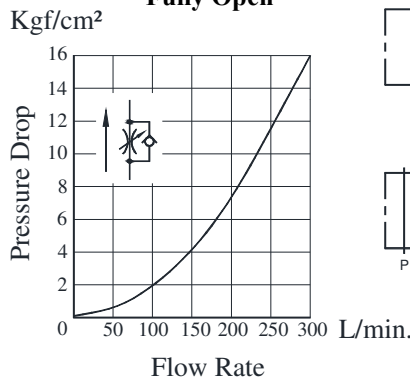
**Typical Performance Characteristics**

Hydraulic Fluid: Viscosity 35cSt, Specific Gravity 0.850

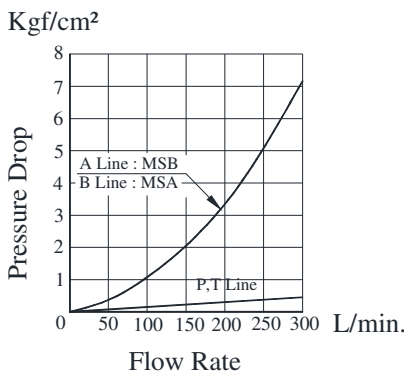
**Pressure Drop For Free Flow**



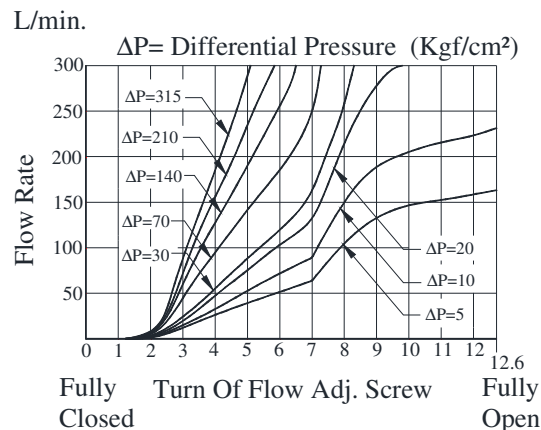
**Pressure Drop At Throttle Fully Open**



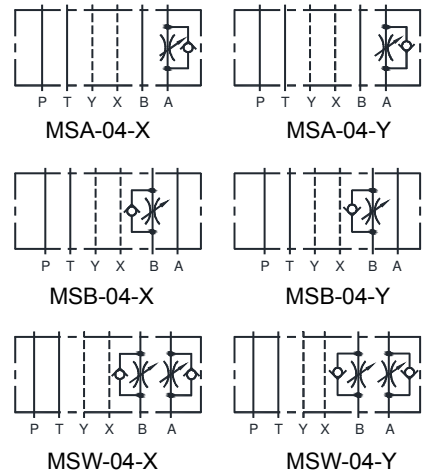
**Pressure Drop**



**Metered Flow Vs Screw Position**

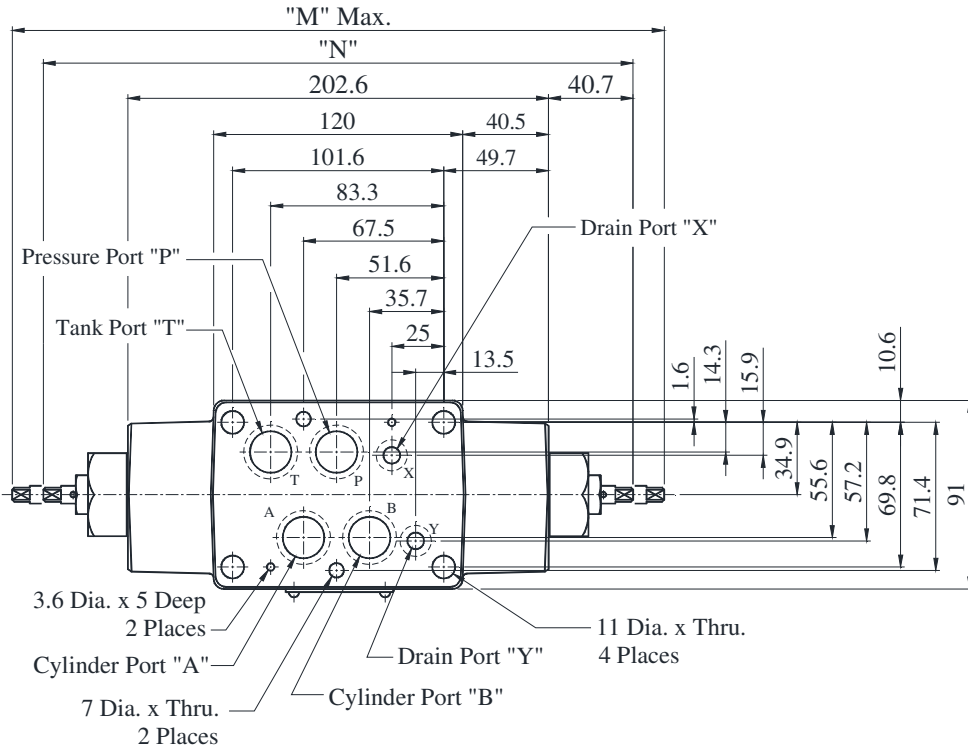


**Graphic Symbols**



F  
04 Series Modular Valves

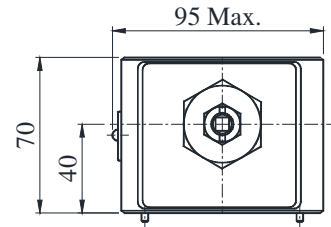
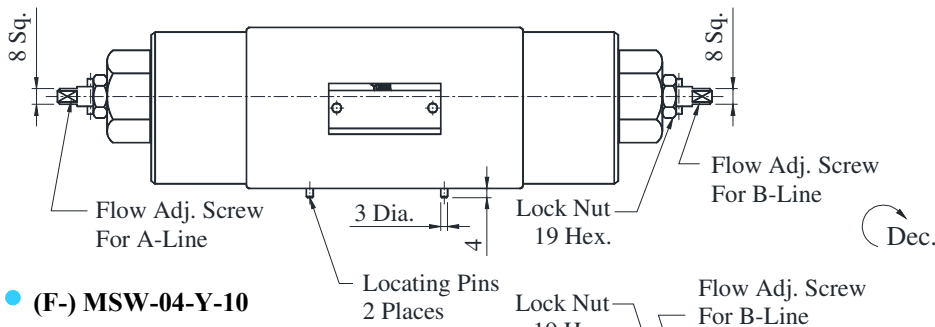
● (F-) MSW-04-X-10



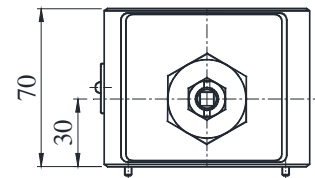
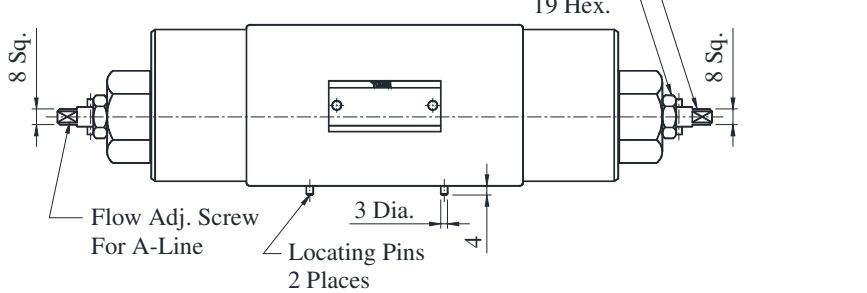
Sl. No.	Model Numbers	"M"	"N"
1	MSA-04	268	253
2	MSB-04	268	284
3	MSW-04	314	284

**DIMENSIONS IN MILLIMETRES**

● (F-) MSW-04-X-10

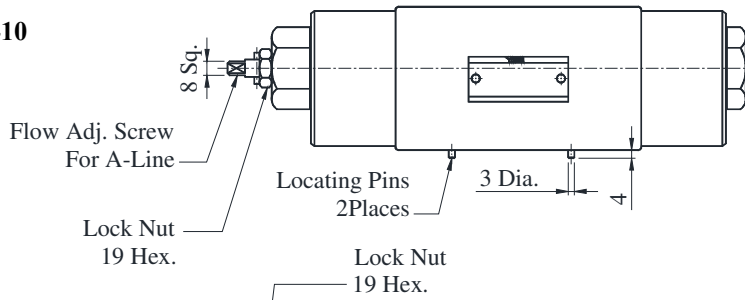


● (F-) MSW-04-Y-10

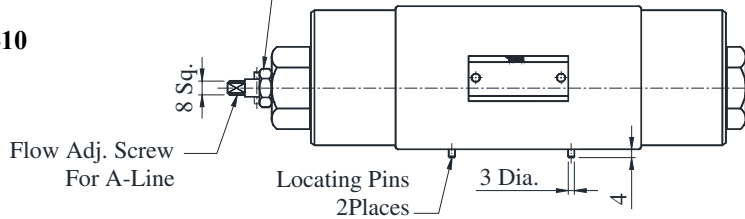


Mass ..... 7.6 Kg. (Approx.)

● (F-) MSA-04-X-10



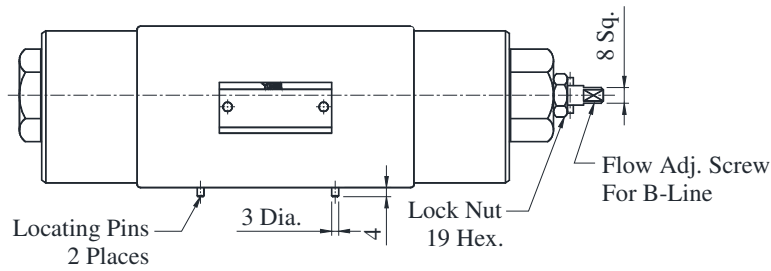
● (F-) MSA-04-Y-10



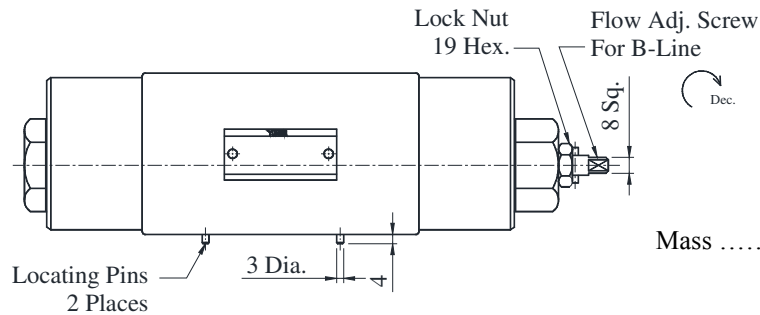
Mass ..... 7.4 Kg. (Approx.)

Note : For all other dimensions refer MSW-04-X<sub>Y</sub>-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<sub>Y</sub>-10 accordingly.

■ Spare Parts List

● List of Seals

Sl. No.	Name of Parts	Parts Numbers	Qty.		
			MSA-04	MSB-04	MSW-04
1	O-Ring	SO-NB-P26	2	2	2
2	O-Ring	SO-NB-P22	4	4	4
3	O-Ring	SO-NB-P9	2	2	2
4	O-Ring	SO-NA-P10A	1	1	2
5	Backup-Ring	SO-BB-P10A	1	1	2

● List of Seal Kits

Model Numbers	Seal Kit Numbers
MSA-04	KS-MSA-04-10
MSB-04	
MSW-04	KS-MSW-04-10

**1/2 Pilot Operated Check Modular Valves**

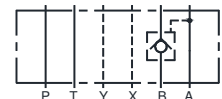
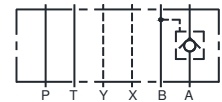
**Specifications**

Model Number	Max. Operating Pressure Kgf/cm <sup>2</sup>	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 <sup>2</sup>	Design Number
<b>F:</b> Special Seals For Phosphate Ester Type Fluids (Omit if not required)	<b>MPA:</b> A-Line <b>MPB:</b> B-Line <b>MPW:</b> A.B-Line	<b>04</b>	<b>2 : 2</b> <b>4 : 4</b>	<b>10</b>

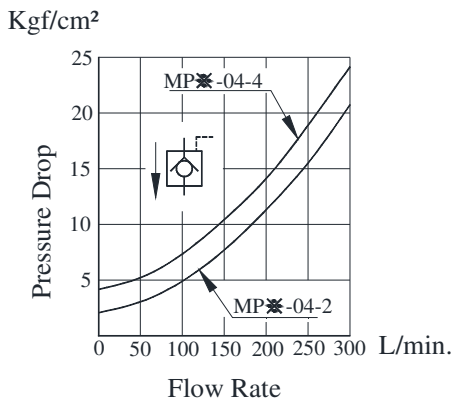
Graphic Symbols



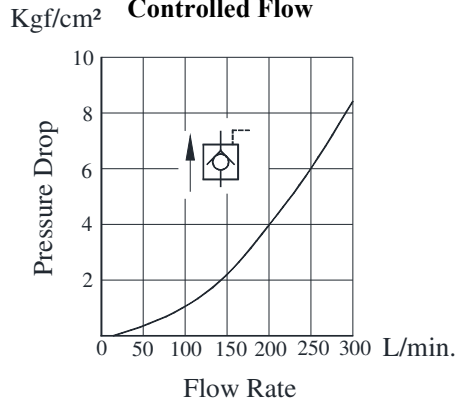
**Typical Performance Characteristics**

Hydraulic Fluid: Viscosity 35cSt, Specific Gravity 0.850

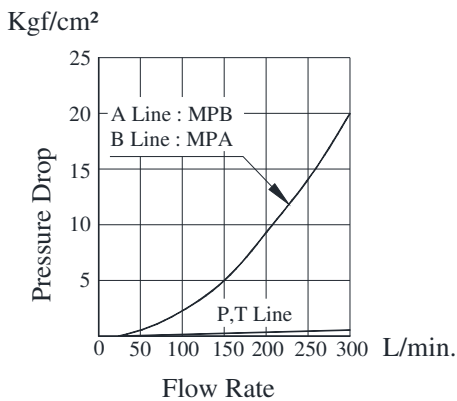
● Pressure Drop for Free Flow



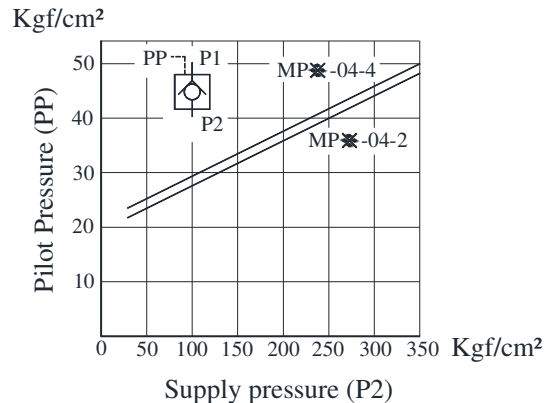
● Pressure Drop For Reversed Controlled Flow



● Pressure Drop

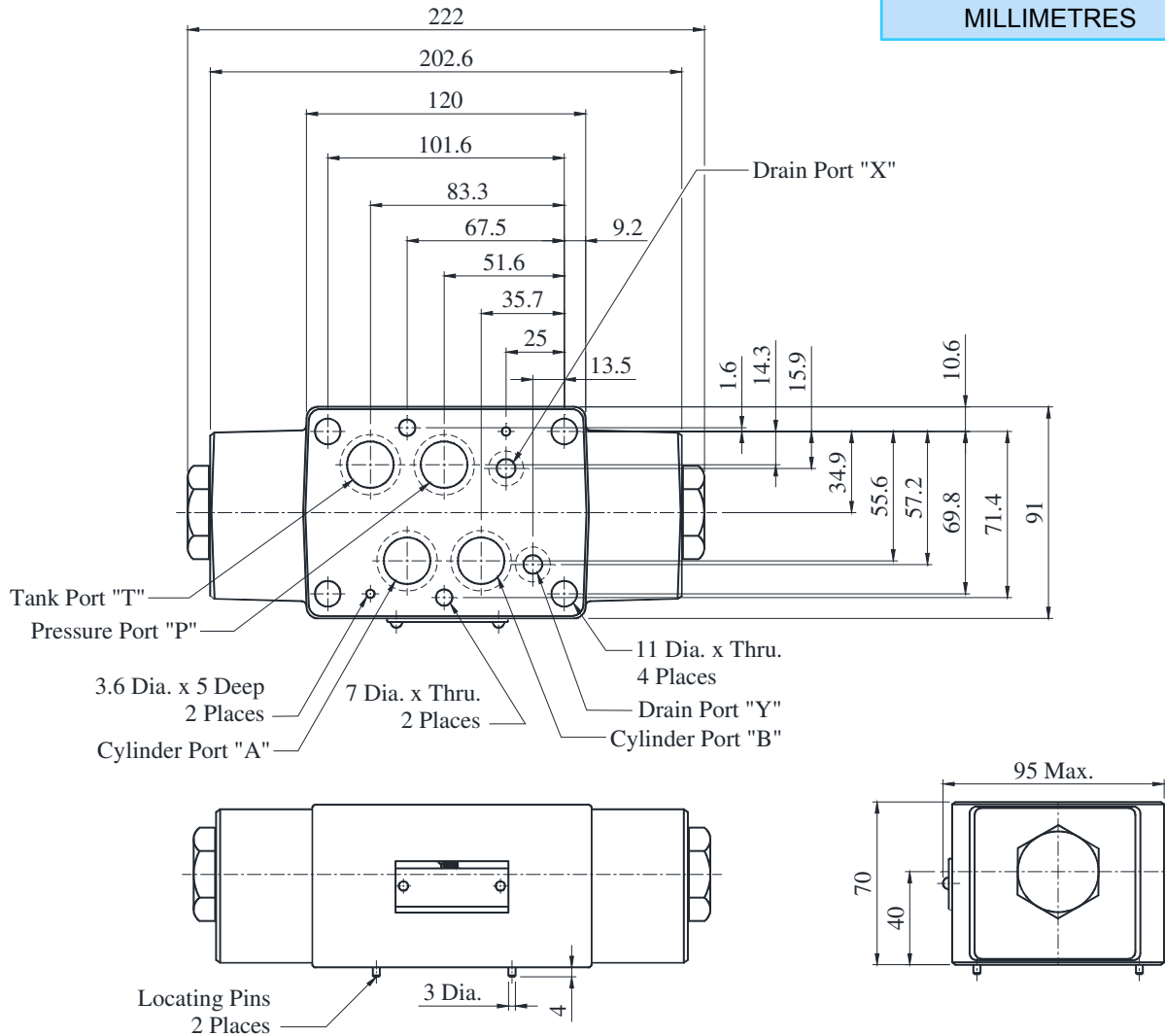


● Minimum pilot pressure



● (F-) 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-P26	2
2	O-Ring	SO-NB-P22	4
3	O-Ring	SO-NB-P9	2

● List of Seal Kits

Model Numbers	Seal Kit Numbers
MPA-04	KS-MPA-04-10
MPB-04	
MPW-04	

T  
04 Series Modular Valves



**1/2 Check Modular Valves**

**Specifications**

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

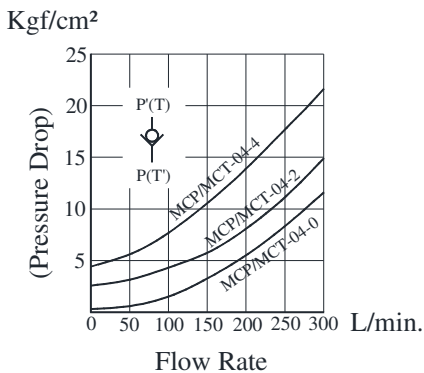
**Model Number Designation**

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

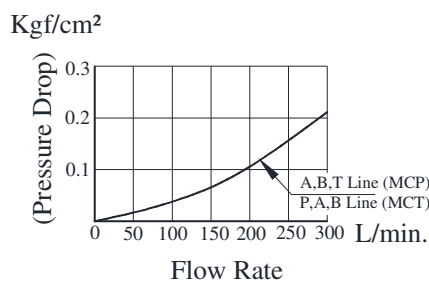
**Typical Performance Characteristics**

Hydraulic Fluid: Viscosity 35cSt, Specific Gravity 0.850

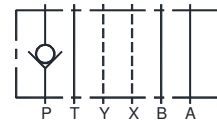
**Pressure Drop For Free Flow**



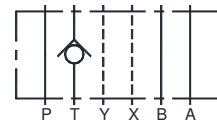
**Pressure Drop**



**Graphic Symbols**

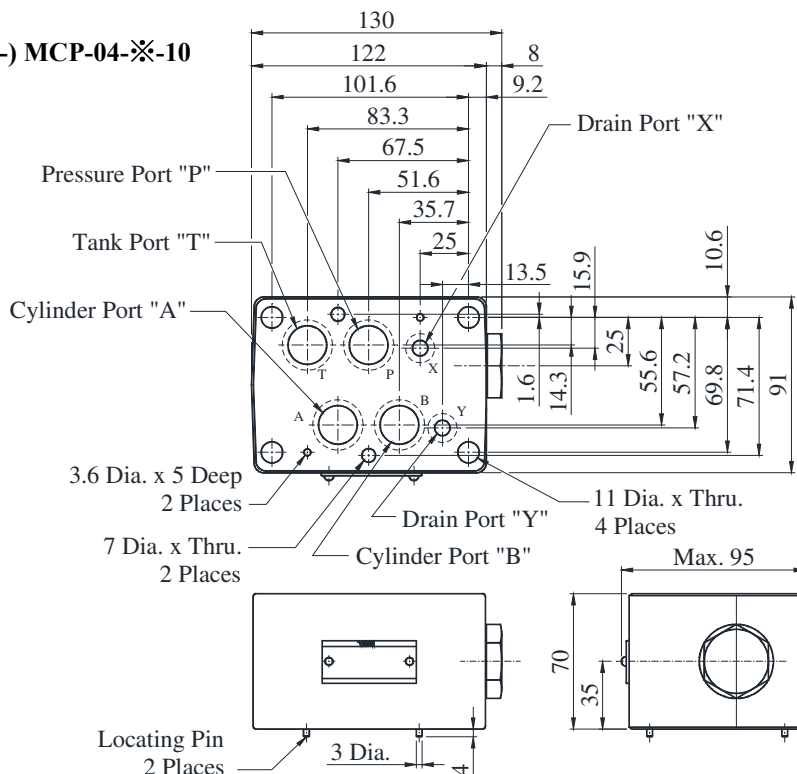


(F-) MCP-04



(F-) MCT-04

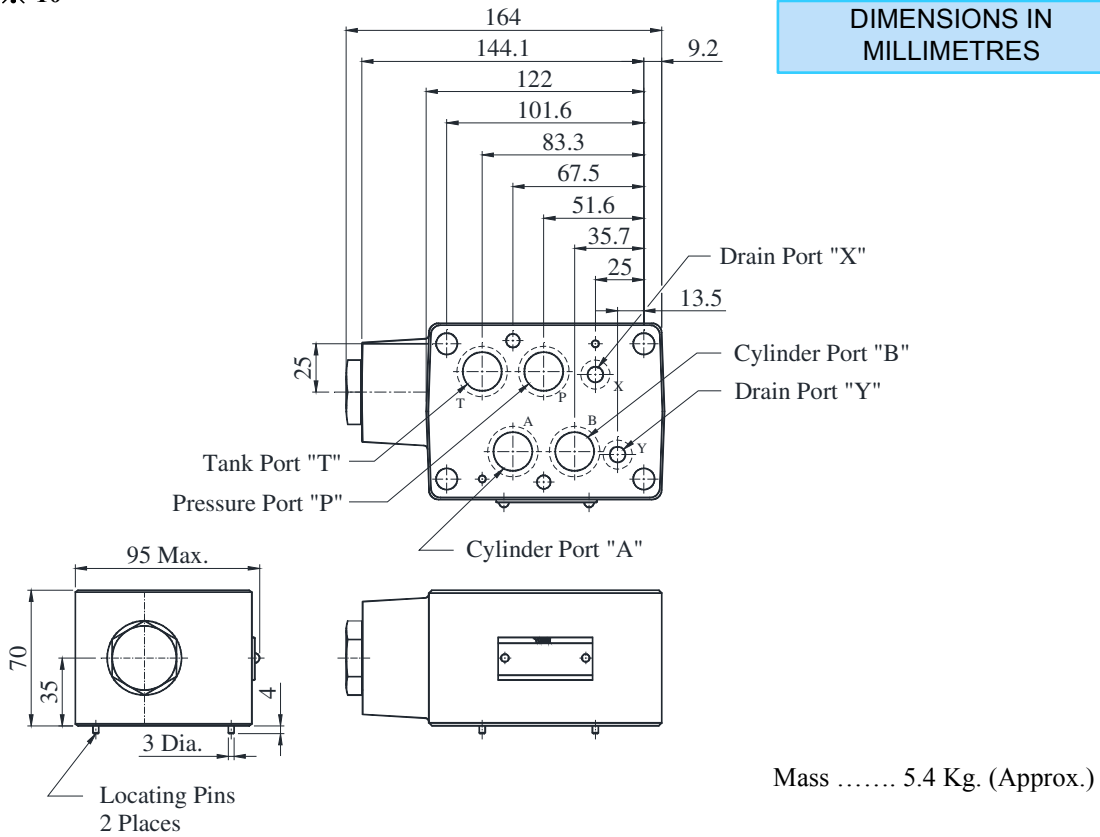
**(F-) MCP-04-※-10**



Mass ..... 4.6 Kg. (Approx.)

**04 Series Modular Valves**

● (F-) MCT-04-※-10



■ **Spare Parts List**

● **List of Seals**

Sl. No.	Name of Parts	Parts Numbers	Qty.
1	O-Ring	SO-NB-P22	4
2	O-Ring	SO-NB-P21	1
3	O-Ring	SO-NB-P9	2

● **List of Seal Kits**

Model Numbers	Seal Kit Numbers
MCP-04	KS-MCP-04-10
MCT-04	

■ **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. 372.

**■ 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
<b>MBK:</b> Bolt kits for Modular Valves	<b>04</b>	<b>01,02,03,04</b> (Refer to the following chart)	<b>10</b>

**■ Bolts Kit Structure:**

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

**■ Bolt Kits selection chart**

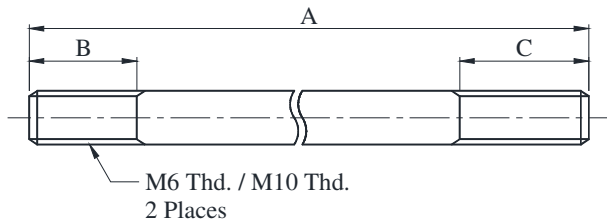
Models Number	Quantity Of Valves To Be Stacked			Approx. Mass Kg.
	DSHG-04	Modular Valve	Total Number of Stacks	
MBK-04-01-10	1	1	2	0.6
MBK-04-02-10	1	2	3	0.8
MBK-04-03-10	1	3	4	1.0
MBK-04-04-10	1	4	5	1.2

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**

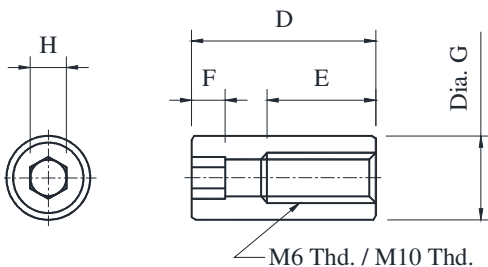


Model Numbers	A		B		C	
	M6	M10	M6	M10	M6	M10
MBK-04-01-10	125	140	12	17	12	23
MBK-04-02-10	195	210				
MBK-04-03-10	265	280				
MBK-04-04-10	335	350				

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