

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 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 | | 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 ² 4 : 4 Kgf/cm ² |
| | 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 ² 2 : 2 Kgf/cm ² 4 : 4 Kgf/cm ² |
| | 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

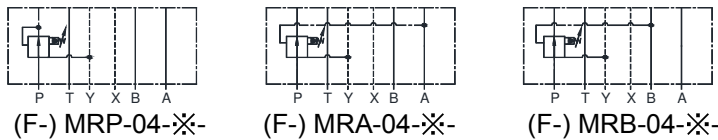
Specifications

| Model Number | Max. Operating Pressure Kgf/cm 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 |

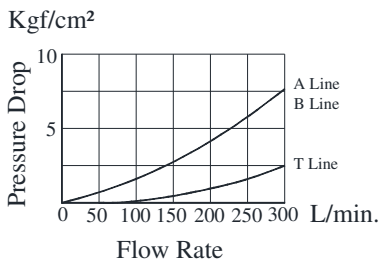
Graphic Symbol



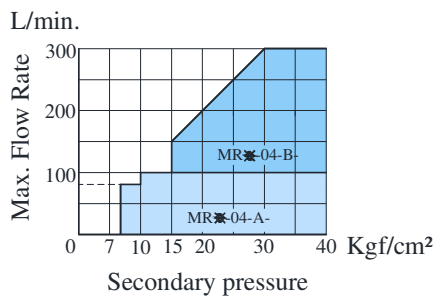
Typical Performance Characteristics

Hydraulic Fluid: Viscosity 35cSt, Specific Gravity 0.850

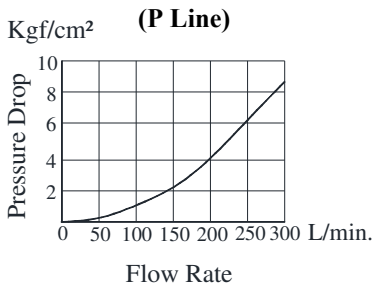
Pressure Drop



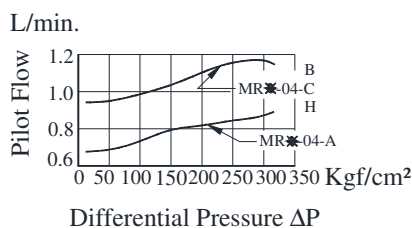
Secondary Pr. Vs Max. Flow



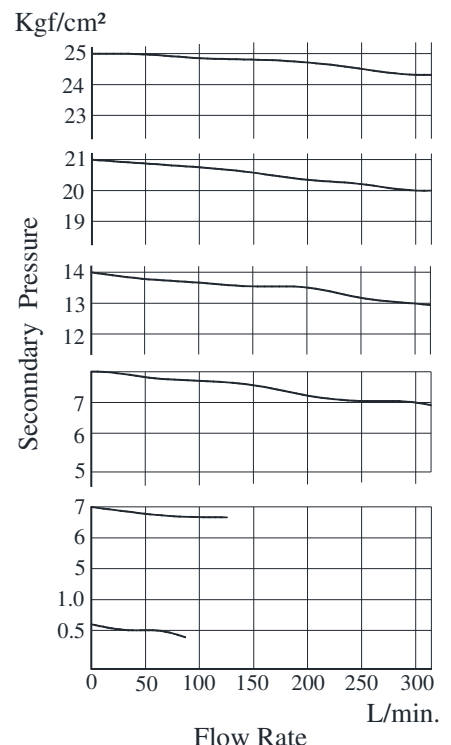
Pr. Drop At Spool Fully Open (P Line)



Pilot Flow



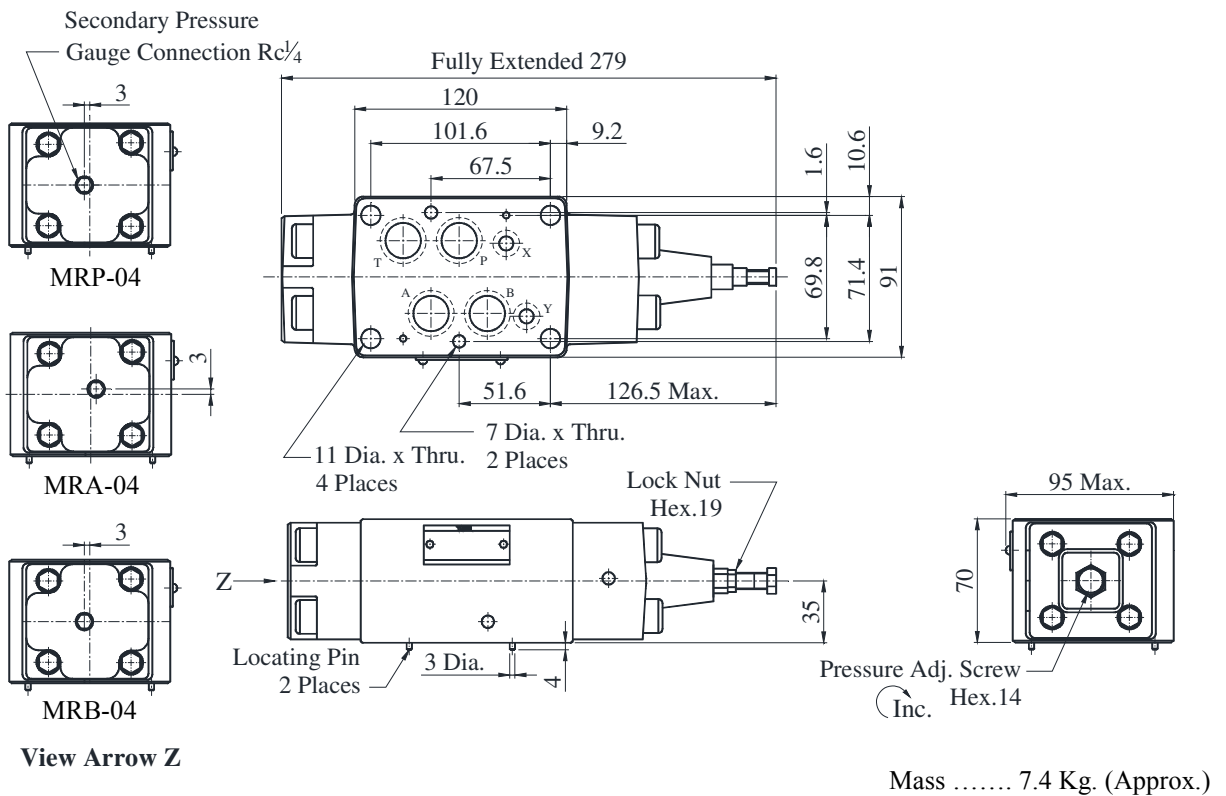
Nominal Over ride Characteristics



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 ² | Max. Flow L/min. |
|------------------|--|---------------------|
| (F-) MSA-04-※-10 | 350 | 300 |
| (F-) MSB-04-※-10 | 350 | 300 |
| (F-) MSW-04-※-10 | 350 | 300 |

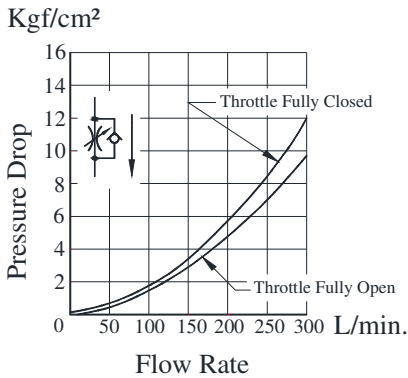
Model Number Designation

| 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 |

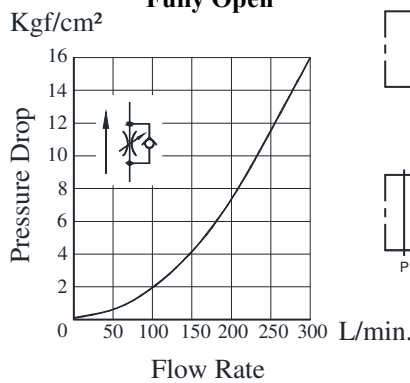
Typical Performance Characteristics

Hydraulic Fluid: Viscosity 35cSt, Specific Gravity 0.850

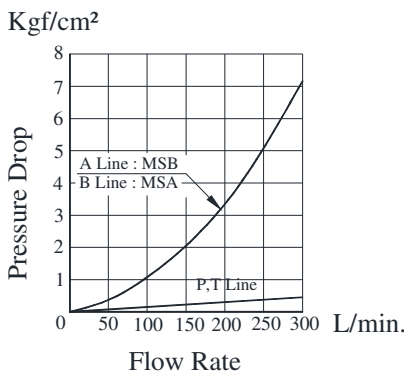
Pressure Drop For Free Flow



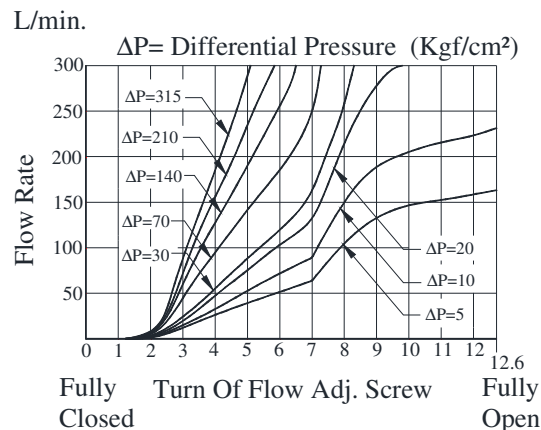
Pressure Drop At Throttle Fully Open



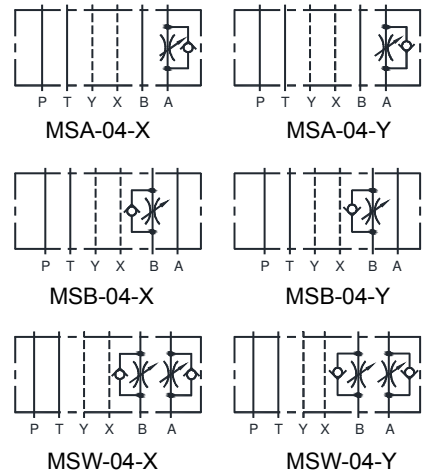
Pressure Drop



Metered Flow Vs Screw Position

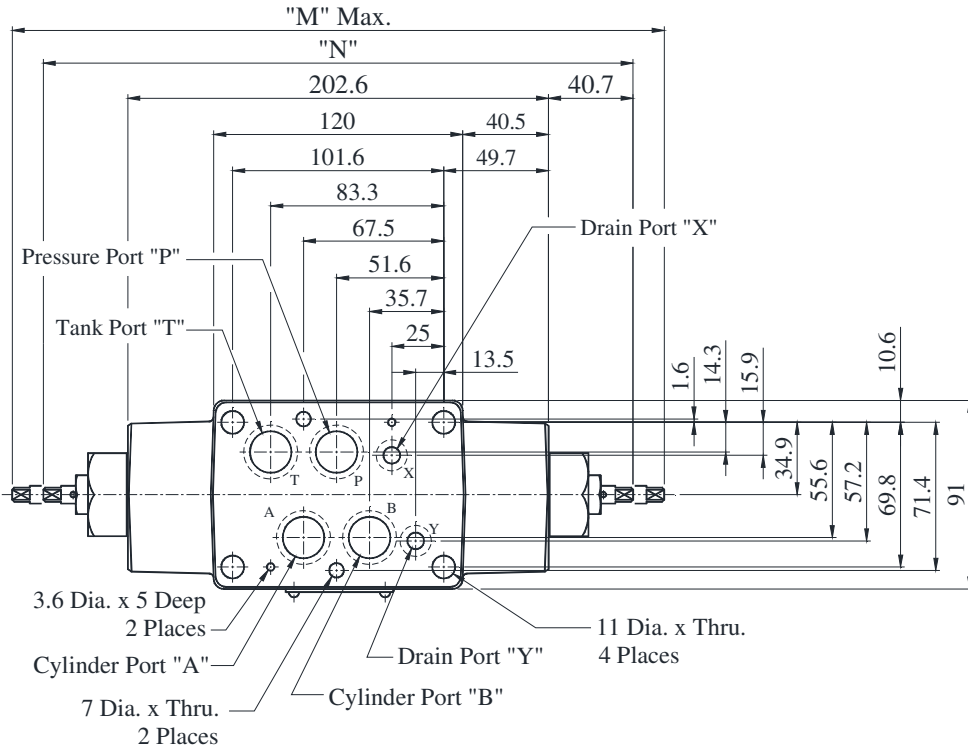


Graphic Symbols



F
04 Series Modular Valves

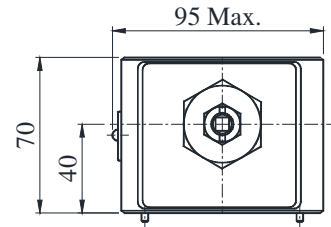
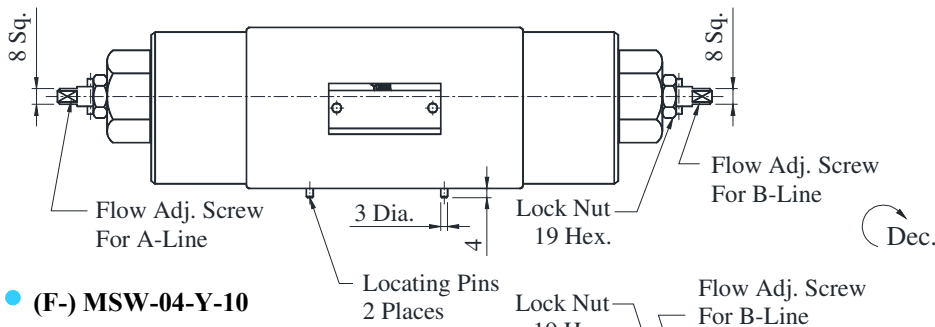
● (F-) MSW-04-X-10



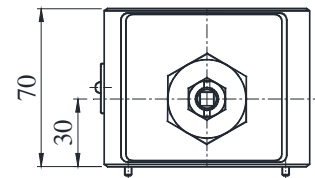
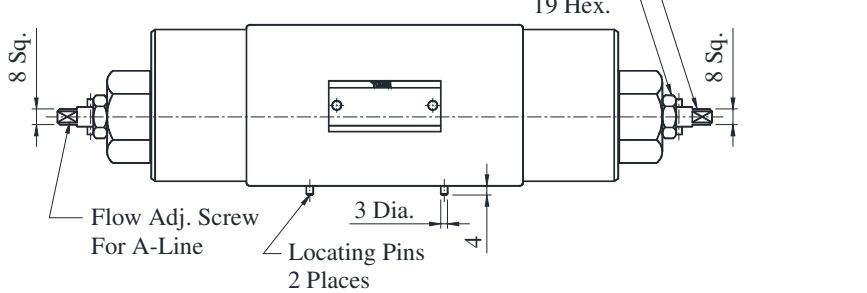
| Sl. No. | Model Numbers | "M" | "N" |
|---------|---------------|-----|-----|
| 1 | MSA-04 | 268 | 253 |
| 2 | MSB-04 | 268 | 284 |
| 3 | MSW-04 | 314 | 284 |

DIMENSIONS IN MILLIMETRES

● (F-) MSW-04-X-10

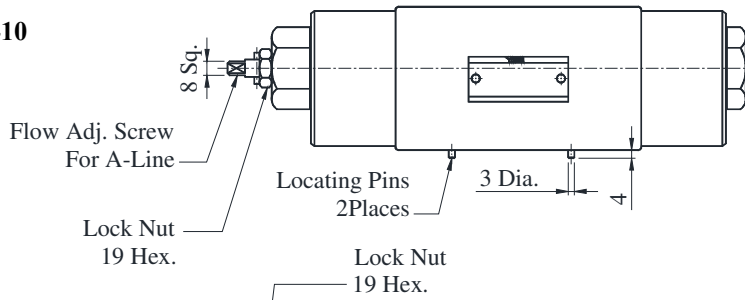


● (F-) MSW-04-Y-10

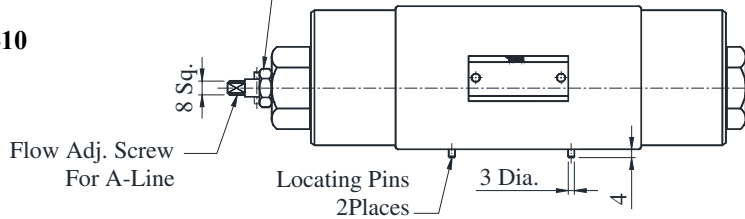


Mass 7.6 Kg. (Approx.)

● (F-) MSA-04-X-10



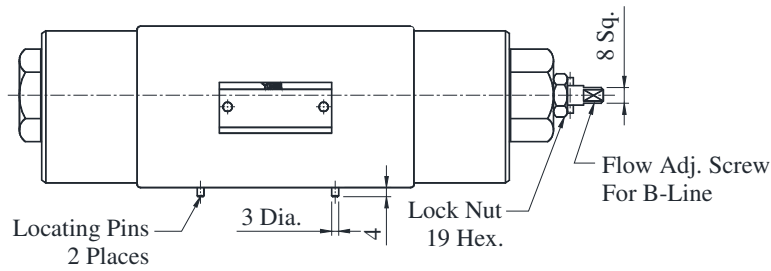
● (F-) MSA-04-Y-10



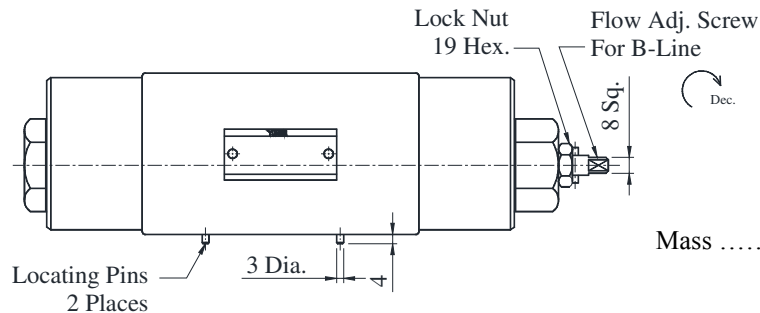
Mass 7.4 Kg. (Approx.)

Note : For all other dimensions refer MSW-04-X_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. | | |
|---------|---------------|---------------|--------|--------|--------|
| | | | 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

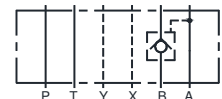
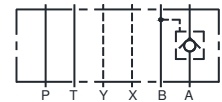
Specifications

| Model Number | Max. Operating Pressure Kgf/cm 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 |

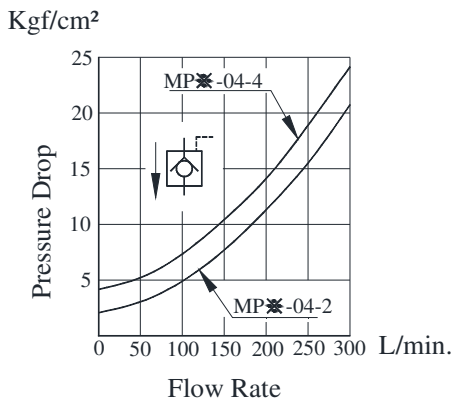
Graphic Symbols



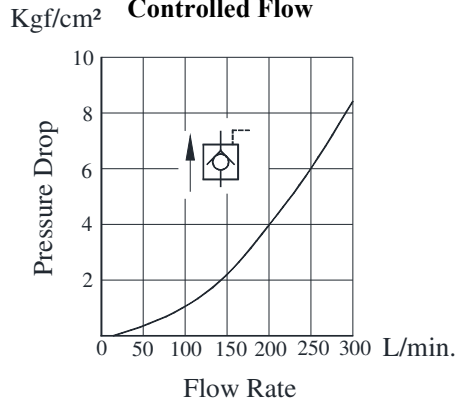
Typical Performance Characteristics

Hydraulic Fluid: Viscosity 35cSt, Specific Gravity 0.850

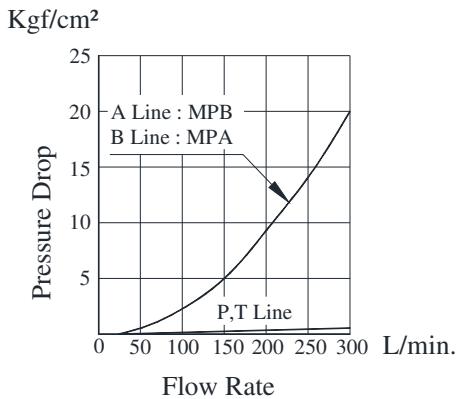
● Pressure Drop for Free Flow



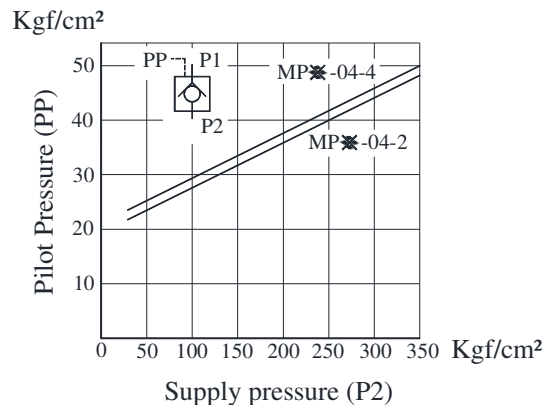
● Pressure Drop For Reversed Controlled Flow



● Pressure Drop

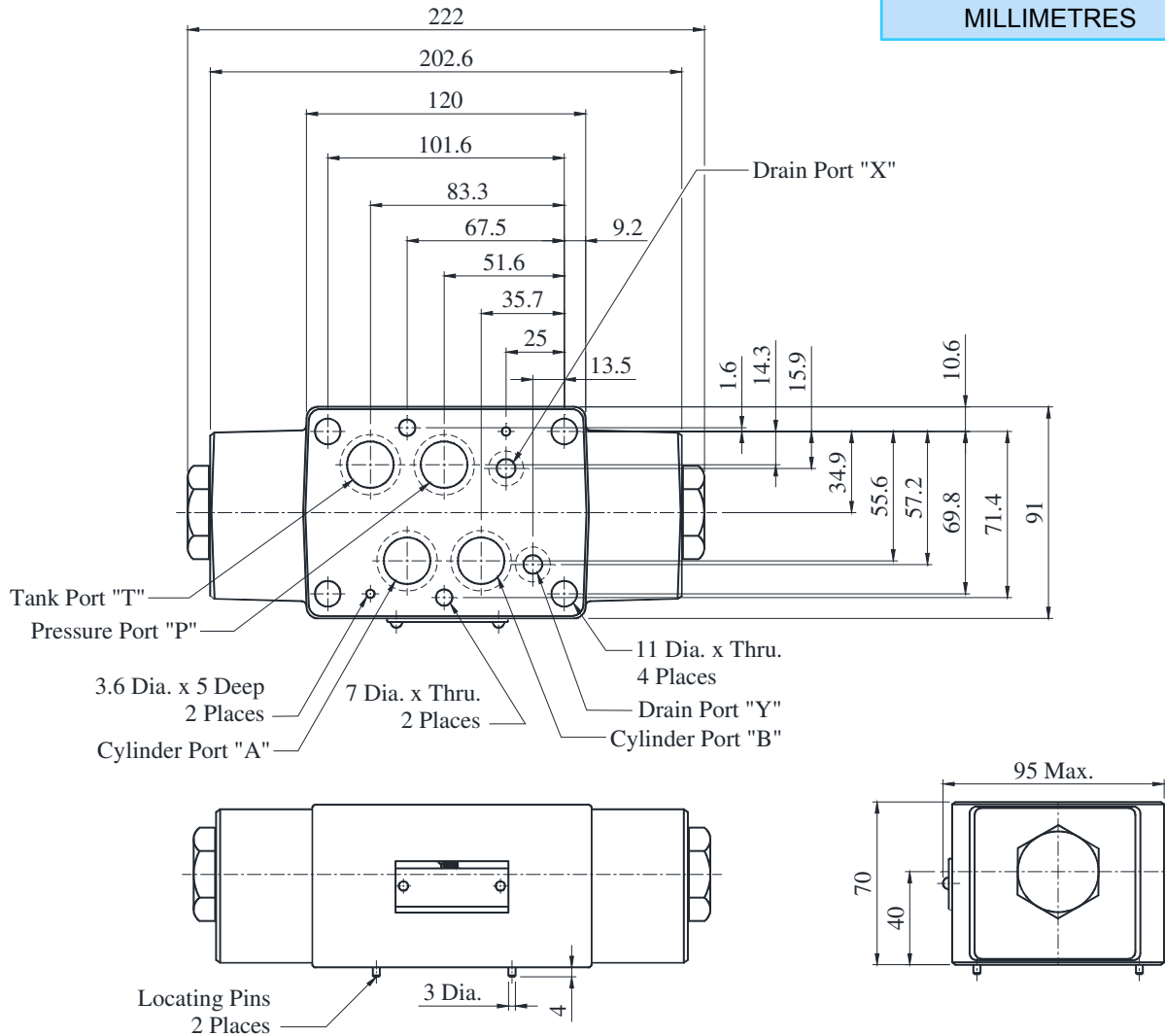


● Minimum pilot pressure



● (F-) 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 ² | Max. Flow L/min. |
|-------------------|---|------------------|
| (F-) MCP※-04-※-10 | 350 | 300 |
| (F-) MCT※-04-※-10 | | |

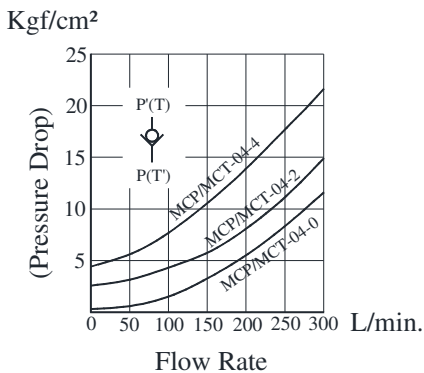
Model Number Designation

| F- | MCP | -04 | -0 | -10 |
|---|--|------------|--|---------------|
| Special Seals | Series Number | Valve Size | Cracking Pressure Kgf/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 |

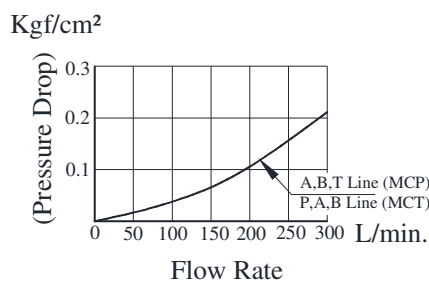
Typical Performance Characteristics

Hydraulic Fluid: Viscosity 35cSt, Specific Gravity 0.850

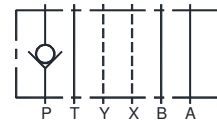
Pressure Drop For Free Flow



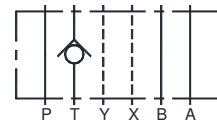
Pressure Drop



Graphic Symbols

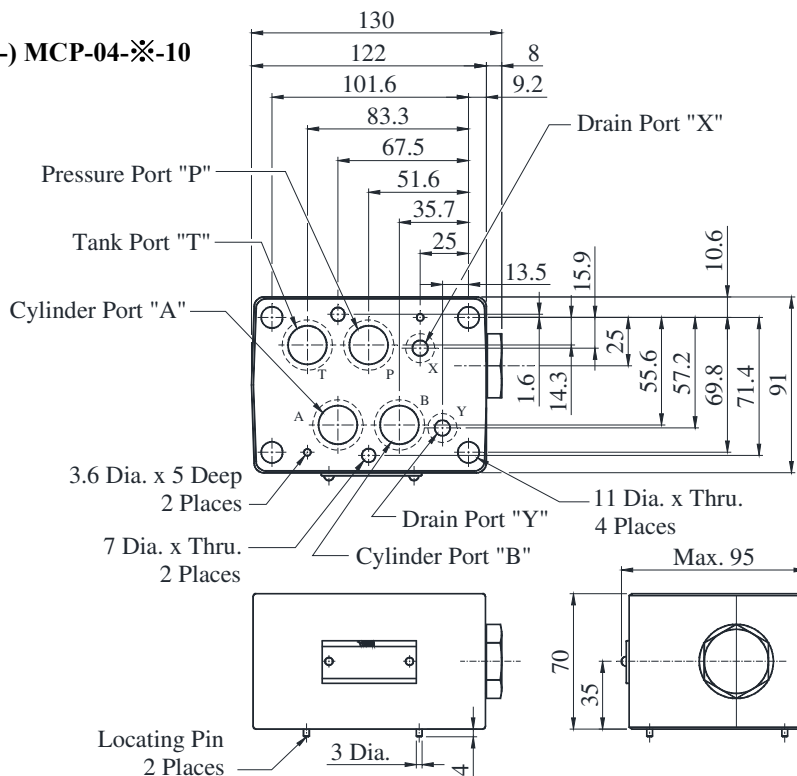


(F-) MCP-04



(F-) MCT-04

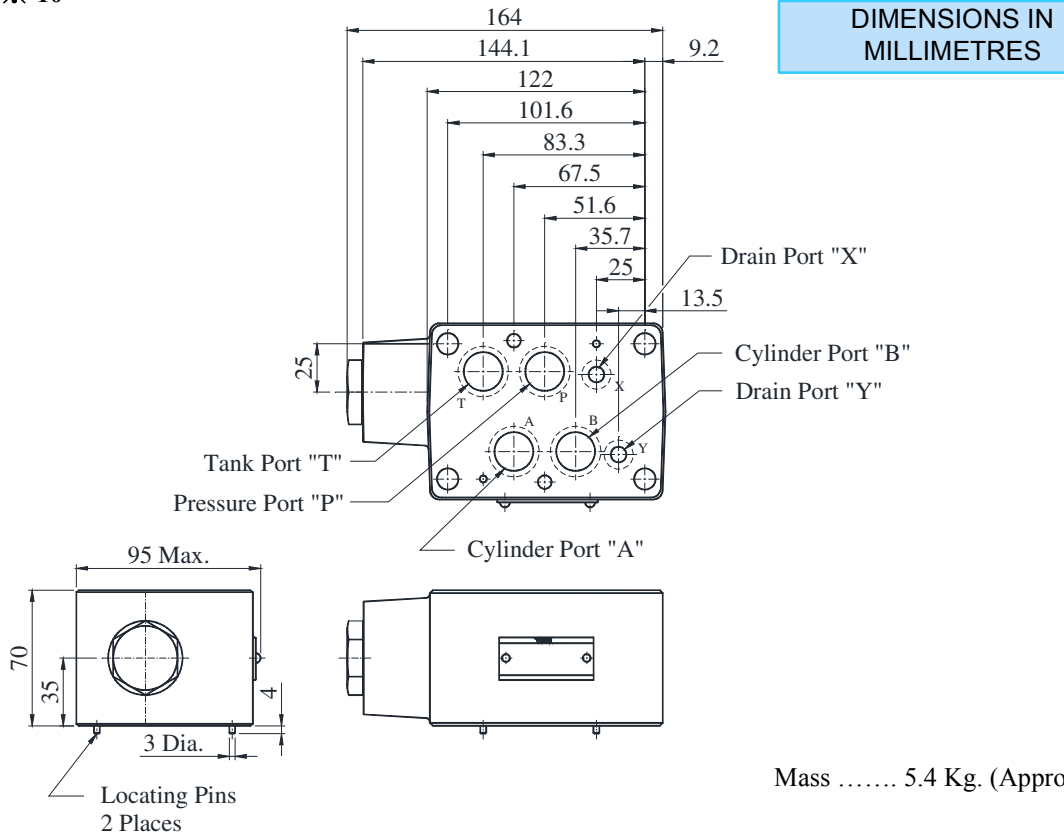
(F-) MCP-04-※-10



Mass 4.6 Kg. (Approx.)

04 Series Modular Valves

● (F-) MCT-04-※-10



Mass 5.4 Kg. (Approx.)

■ 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 |
| 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.
- } 1 Set

■ Bolt Kits selection chart

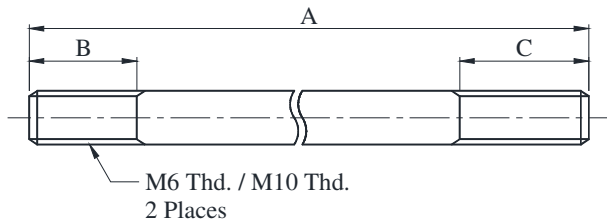
| Models Number | Quantity Of Valves To Be Stacked | | | Approx. Mass Kg. |
|---------------|----------------------------------|---------------|------------------------|------------------|
| | DSHG-04 | Modular Valve | Total Number of Stacks | |
| MBK-04-01-10 | 1 | 1 | 2 | 0.6 |
| MBK-04-02-10 | 1 | 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**

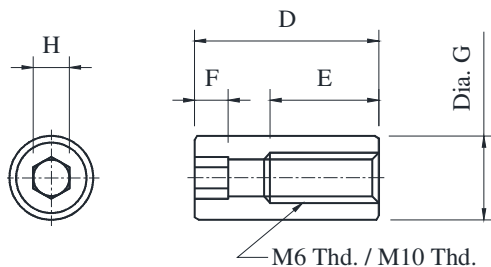


| Model Numbers | A | | B | | C | |
|---------------|-----|-----|----|-----|----|-----|
| | M6 | M10 | M6 | M10 | M6 | M10 |
| MBK-04-01-10 | 125 | 140 | 12 | 17 | 12 | 23 |
| MBK-04-02-10 | 195 | 210 | | | | |
| MBK-04-03-10 | 265 | 280 | | | | |
| MBK-04-04-10 | 335 | 350 | | | | |

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 |