

03 Series Modular Valves

Features

Installation and mounting space can be minimized.

No special skill is required for assembly. Any addition/alteration to the hydraulic circuit can be made quickly and easily.

Problems such as oil-leaks, vibration and noise which may be caused by piping are minimized, increasing the reliability of the hydraulic system.

Maintenance and system check-ups can be easily carried out as they are normally installed in stackable units.

Specifications

Series	Valve Size	Max. Oper. Pressure Kgf/cm ²	Max. Flow L/min.	Number of Stack
03 Series	3/8	250	70	(Note) 1 to 5 Stacks

Note: Solenoid operated directional valve is included in the number of stack

Mounting Surface

Mounting surface dimensions conform to ISO 4401 (Hydraulic fluid power four port directional control valves mounting surfaces) as listed in the table below.

Name of Valve	ISO Mtg. Surface Code No.
03 Series Modular Valves	ISO 4401-AC-05-4-A

Hydraulic Fluids.

Fluid Types

Any type of hydraulic fluid. Listed in the table below can be used.

Petroleum base oil	Use fluids equivalent to ISO VG 32 or VG 46.
Synthetic fluids	Use phosphate ester or polyol ester fluid. When phosphate ester fluid is to be used, prefix "F-" to the model number because a special seal (fluororubber) will be used.
Water containing fluids	Use water-glycol fluid

Note: For use with hydraulic fluids other than those listed above, please consult for YUKEN representatives in advance.

Recommended Viscosity and Temperature

Always be sure to use hydraulic fluids within the stipulated conditions shown below.

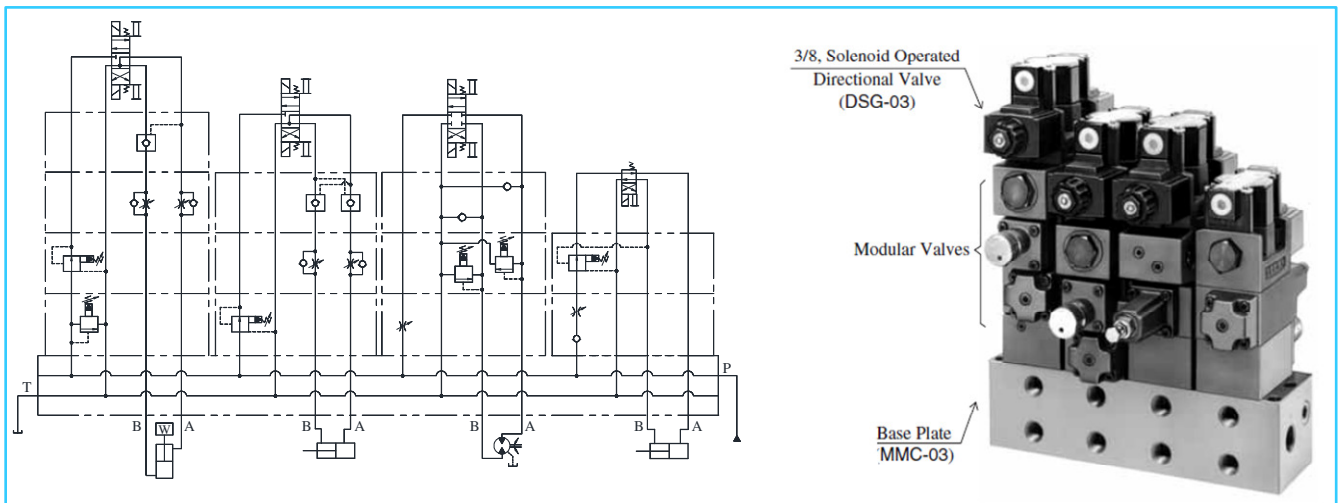
Viscosity: 15 to 400 cSt, Temperature : -15 to +70° C.

Control of Contamination

Due caution must be given for maintaining control over contamination of the hydraulic fluids which may otherwise lead to breakdowns and shorten the life of the valve. Please maintain the degree of contamination within NAS 1638-Grade 12. Use 20 µm or finer line nominal filter.

Stacking Example

03 Series



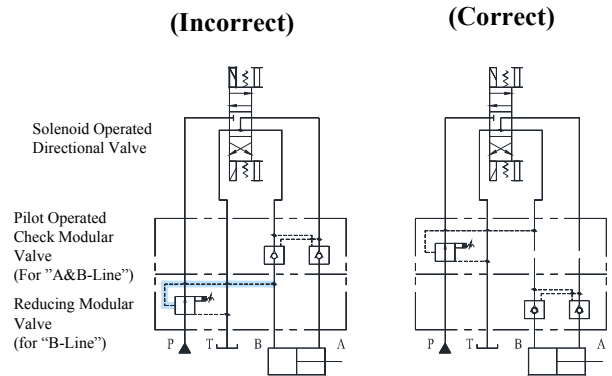
Instructions

Caution in the selection of valves and circuit designing

The selection of a modular valves, to suit a particular function or hydraulic circuit are made in exactly the same way as conventional valves, taking into account the flow and pressure of each valve to be used. In some cases, the stacking system may be restricted, so please refer to the following instructions for stacking sequence. Please note that, when designing a system using modular stacking valves, due consideration should be given to working space for future maintenance.

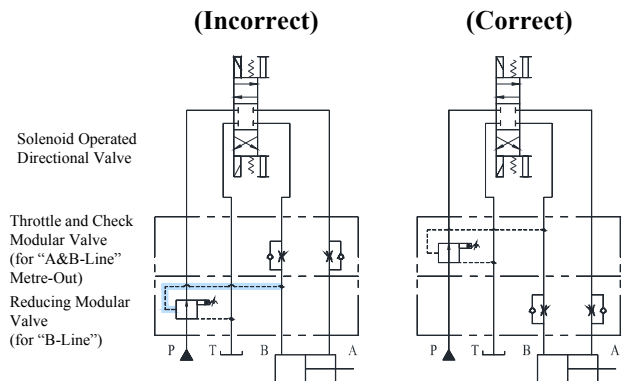
Stacking sequence when using reducing modular valves (for "A" or "B" line) and pilot operated check modular valves

Because reducing valves are spool type, there is an internal leakage. In the stacking sequence shown in the drawing left (incorrect), the cylinder moves due to leakage through the pilot pressure line. Consequently, retaining the position of the cylinder using a pilot operated check valve becomes impossible. The stacking sequence shown in the drawing right (correct) is required in order to retain the cylinder position.



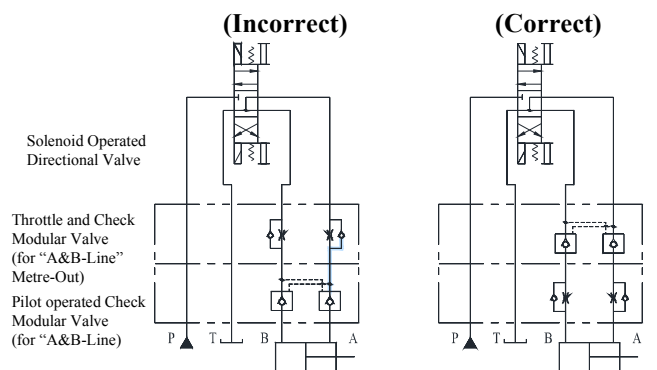
Stacking sequence when using reducing modular valves (for "A" or "B" line) and throttle and check modular valves (for metre-out)

In B to T flow in the drawing left (incorrect), pressure is generated at part with a throttle effect of the throttle and check modular valve. Depending upon the pressure so generated, the reducing modular valve may perform a pressure reducing function which causes a shortage of output power from the cylinder and spoils the smooth operation of the cylinder. Therefore, stacking sequence in the drawing right (correct) is required in this combination.



Stacking sequence when using pilot operated check modular valves and throttle and check modular valves (metre-out)

In A to T flow in the drawing left (incorrect), pressure is generated at part with a throttle effect of the throttle and check modular valves. The pressure so generated acts to shut the pilot operated check modular valve and eventually creates an open and shut operation of the valve repeatedly which may cause the cylinder to have a knocking effect (the same effect will occur in the case of B to T flow). Therefore. The stacking sequence in the drawing right (correct) is required in this combination.



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 Valves Series	Base Plates		Sub-Plates	
	Model Numbers	Page	Model Numbers	Page
03 Series	MMC-03-※-T-※-2180	29	DSGM-03-※-2180	10

* For the details of sub plates see the solenoid operated direction control catalogue No. EIC-E-1002 Page No. 370.

Assembly

Assembly should be carried out in clean conditions and in accordance with the following procedure. Caution/attention should be paid to ensure that the interface of the valves are clean and free from dirt or other foreign materials.

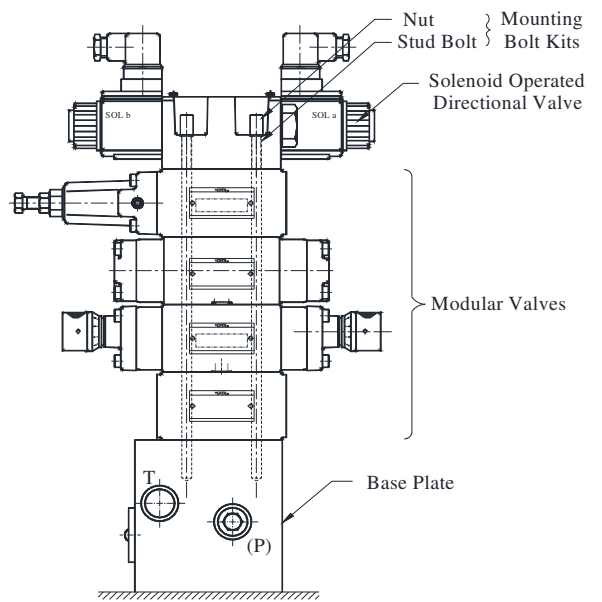
Assembly Procedures

- 1) Screw in the four stud bolts, fully into the tapped holes on the mounting surface of the specified base plate, sub-plate or manifold.
- 2) Stack the modular valves and solenoid operated directional valves in accordance with the hydraulic circuit, place the O-ring inserted face on the base plate and make sure that the port arrangement of the modular valves are in the correct position before stacking the valves using stud bolts.
- 3) Align both the end of the valves stacked.
- 4) Screw-in the four nuts onto the stud bolts and tighten with the specified torque. After the test run, be sure to re-tighten the nuts to a firm tightness within the specified torque.

Mounting Bolts

Modular valves are mounted using stud bolts which are supplied in a kit form. When mounting, see the following table for tightening torque. After the test run, be sure to tighten again to a firm tightness within the specified torque.

Modular Valve Series	Bolt Kit Model Numbers	Tightening Torque Kgf-m
03 Series	MBK-03-※-30	12 - 15



[Example] 03 Series Modular Valves

Pressure Drop

Pressure drop curves of the modular valves are those based on viscosity of 35cSt and specific gravity of 0.850. when using the modular valves in condition other than the above mentioned, find the appropriate valves referring to the following table and formula

- For any other Viscosity, multiply the factors in the table below.

Viscosity	cSt	15	20	30	40	50	60	70	80	90	100
Factor		0.81	0.87	0.96	1.03	1.09	1.14	1.19	1.23	1.27	1.30

- For any other specific gravity (G'), the pressure drop ($\Delta P'$) may be obtained from the following formula.

$$\Delta P' = \Delta P (G' / 0.850)$$

Modular Valves Table

3/8 Modular Valves

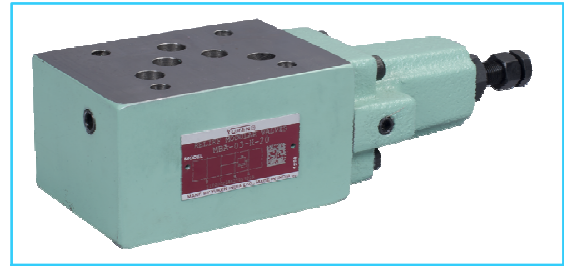
Class	Model Numbers	Graphic Symbols	Page	Class	Model Numbers	Graphic Symbols	Page
Solenoid Operated Directional Valve	DSG-03- *** -50		EIC-E-1002	Direction Control Valves	Check Modular Valves (for "P-Line") MCP-03- *** -10		494
					Check Modular Valves (for "A-Line") MCA-03- *** -10		494
Check Modular Valves (for "B-Line") MCB-03- *** -10		494					
Check Modular Valves (for "T-Line") MCT-03- *** -10		494					
Check Modular Valves (for "P&T-Line") MCPT-03-P *** T10		496					
Anti-Cavitation Modular Valves MAC-03-10		497					
Pilot Operated Check Modular Valves (for "A-Line") MPA-03- *** -20*		498					
Pilot Operated Check Modular Valves (for "B-Line") MPB-03- *** -20*		498					
Pilot Operated Check Modular Valves (for "A&B-Line") MPW-03- *** -20*		498					
Pressure Control Valves	Relief Modular Valves (for "P-Line") MBP-03- *** -20		478		Modular Plates and Mounting Bolts	End Plates (Bypass Plate) MDC-03-A-10	
	Relief Modular Valves (for "A-Line") MBA-03- *** -20		478	End Plates (Bypass Plate) MDC-03-B-10			500
	Relief Modular Valves (for "B-Line") MBB-03- *** -20		478	Connecting Plates MDS-03-10			501
	Relief Modular Valves (for "A&B-Line") MBW-03- *** -20		478	Base Plates MMC-03-T- *** -2180			502
	Reducing Modular Valves (for "P-Line") MRP-03- *** -20		481	Bolt Kits MBK-03- *** -10			504
	Reducing Modular Valves (for "A-Line") MRA-03- *** -20		481				
	Reducing Modular Valves (for "B-Line") MRB-03- *** -20		481				
	Sequence Modular Valves (for "P-Line") MHP-03- *** -20		483				
	Counterbalance Modular Valves (for "A-Line") MHA-03- *** -20		485				
	Counterbalance Modular Valves (for "B-Line") MHB-03- *** -20		485				
Flow Control Valves	Throttle Modular Valves (for "P-Line") MSP-03- *** -20		487				
	Throttle and Check Modular Valves (for "A-Line". Metre-out) MSA-03-X-20		489				
	Throttle and Check Modular Valves (for "A-Line". Metre-in) MSA-03-Y-20		489				
	Throttle and Check Modular Valves (for "B-Line". Metre-out) MSB-03-X-20		489				
	Throttle and Check Modular Valves (for "B-Line". Metre-in) MSB-03-Y-20		489				
	Throttle and Check Modular Valves (for "A&B-Line". Metre-out) MSW-03-X-20		489				
	Throttle and Check Modular Valves (for "A&B-Line". Metre-in) MSW-03-Y-20		489				
	Check and Throttle Modular Valves (for "P-Line") MSCP-03-10		492				

03 Series Modular Valves

3/8 Relief Modular Valves

Specifications

Max. Operating Pressure Kgf/cm ²	Max. Flow L/min.
250	70



Model Number Designation

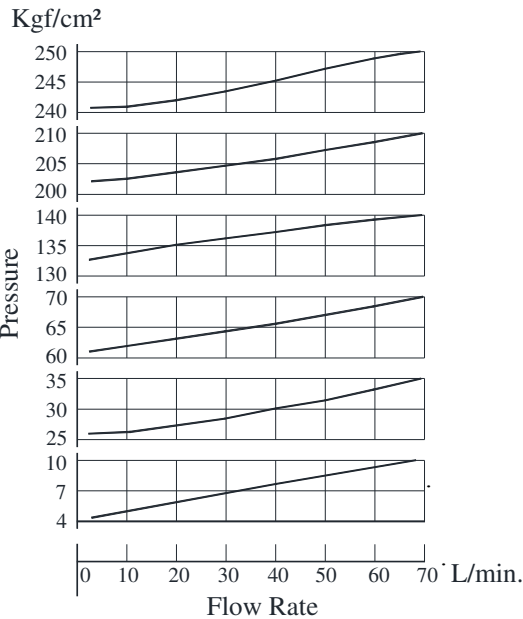
F-	MBA	-03	-B	-20
Special Seals	Series Number	Valve Size	Pres. Adj. Range Kgf/cm ²	Design Number
F: Special Seals for Phosphate ester Type Fluids (Omit if not required)	MBP: Relief Modular Valves for P-Line MBA: Relief Modular Valves for A-Line MBB: Relief Modular Valves for B-Line MBW: Relief Modular Valves for A&B-Line	03	B^{*1} : * -70 H: 35-250	20

*1 See the minimum adjustment pressure for the item marked *

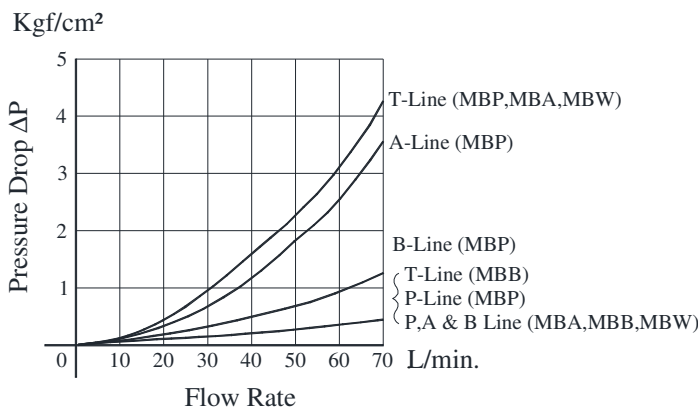
Typical Performance Characteristics

Hydraulic Fluid: viscosity 35cSt,
Specific gravity 0.850

Nominal Override Characteristics

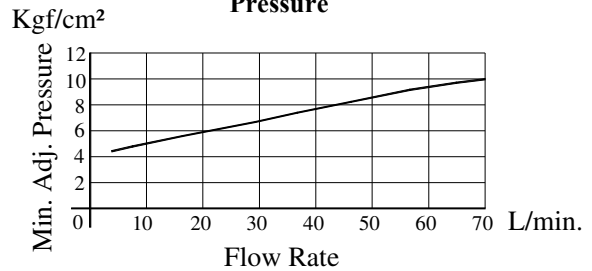


Pressure Drop

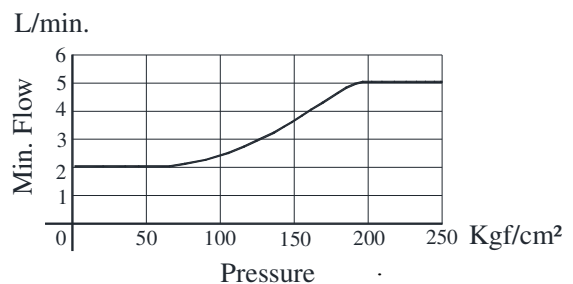


Model Numbers	Graphic Symbols	Detailed Graphic Symbols
MBP-03		
MBA-03		
MBB-03		
MBW-03		

Min. Adjustment Pressure



Min. Flow Vs. Adjustment Pressure



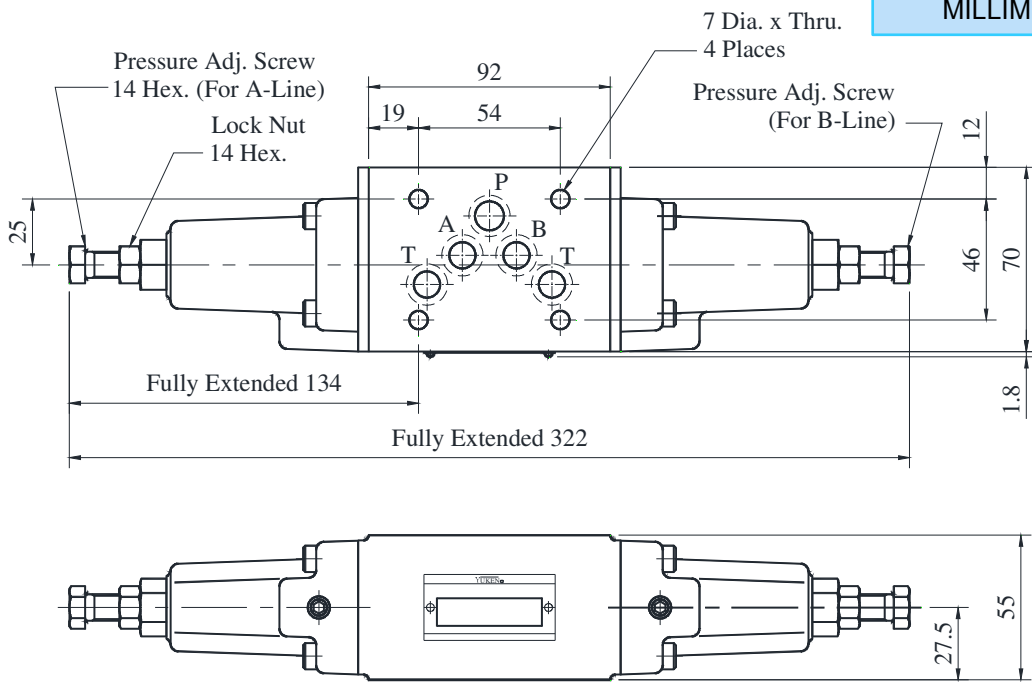
Instructions

- **Min. adjustment pressure** varies with tank line back pressure and may be obtained from the following formula.

$$\text{Min. adjustment pressure} = \text{Min. adjustment pressure value} + \text{Tank line back pressure.}$$
 Add T-Line pressure drop value of the valve to be stacked on the base plate side to the tank line back pressure.
- To make pressure adjustment, loosen the lock nut and turn the pressure adjustment screw clockwise or anti-clockwise. Be sure to re-tighten the lock nut firmly after making adjustment to the pressure.
- In case of a small flow, the setting pressure may become unstable. To avoid this, refer to the minimum flow characteristic curve of the previous page and use the valve within a range as shown with .

• **MBW-03-※-20**

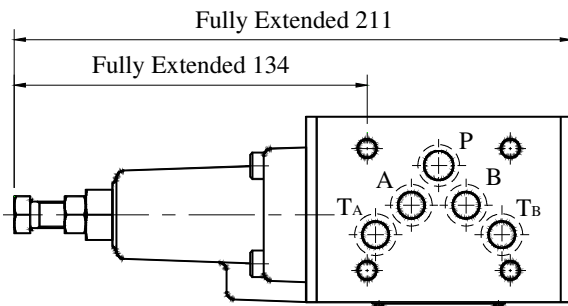
DIMENSIONS IN MILLIMETRES



Mass..... 4.2 Kg (Approx.)

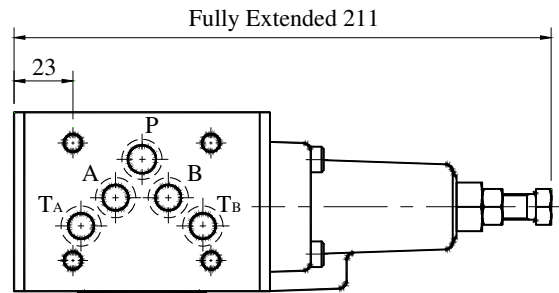
• **MBP-03-※-20**

MBA-03-※-20



Mass..... 3.5 Kg (Approx.)
 For Other Dimensions, refer to left
 (MBW-03) Drawing

• **MBB-03-※-20**



Mass..... 3.5 Kg (Approx.)
 For Other Dimensions, refer to left
 (MBW-03) Drawing

03 Series Modular Valves

■ Spare Parts List

● List of Seals

Sl.No.	Name of Parts	Part Numbers	Qty.			
			MBP-03	MBA-3	MBB-03	MBW-03
1	O-Ring	AS568A-014	5	5	5	5
2	O-Ring	SO-NB-P6	1	1	1	2
3	O-Ring	SO-NA-P9	1	1	1	2
4	O-Ring	SO-NB-P16	1	1	1	2
5	O-Ring	SO-NB-P20	1	1	1	2
6	O-Ring	SO-NB-P28	1	1	1	2

Note : When ordering the seals, please specify the seal kit number from the table below.

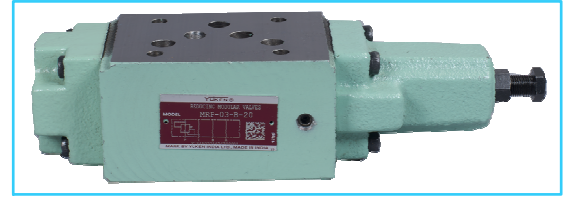
● List of Seal Kits

Model Numbers	Seal Kit Numbers
MBP-03	KS-MBP-03-20
MBA-03	
MBB-03	
MBW-03	KS-MBW-03-20

3/8 Reducing Modular Valves

Specifications

Max. Operating Pressure Kgf/cm ²	Max. Flow L/min.
250	50 ^(Note)



Note: When setting secondary pressure to a value less than 15 Kgf/cm² with the primary pressure of more than 70 Kgf/cm², maximum flow will be limited to 40 L/min.

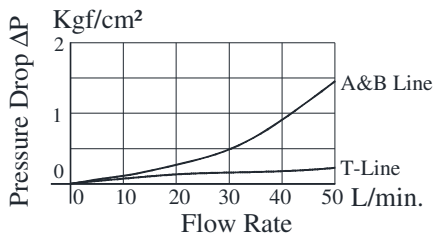
Model Number Designation

F-	MRA	-03	-B	-20
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	03	B: 10-70 H: 35-245	20

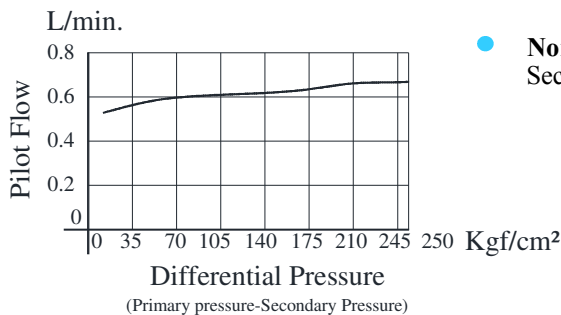
Typical Performance Characteristics

Hydraulic Fluid: viscosity 35cSt, Specific gravity 0.850

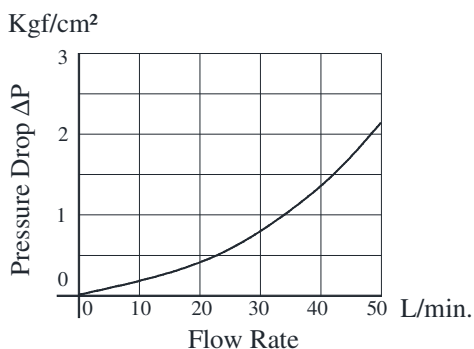
Pressure Drop



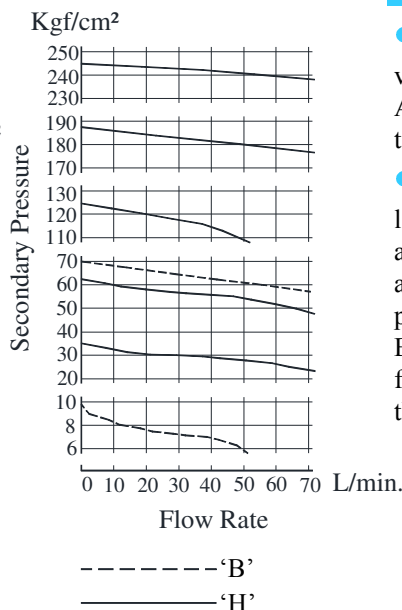
Pilot Flow



Pressure Drop at spool Fully Opened (P-Line)



Nominal Override Characteristics
Secondary Pressure 250 Kgf/cm²



Care in Application

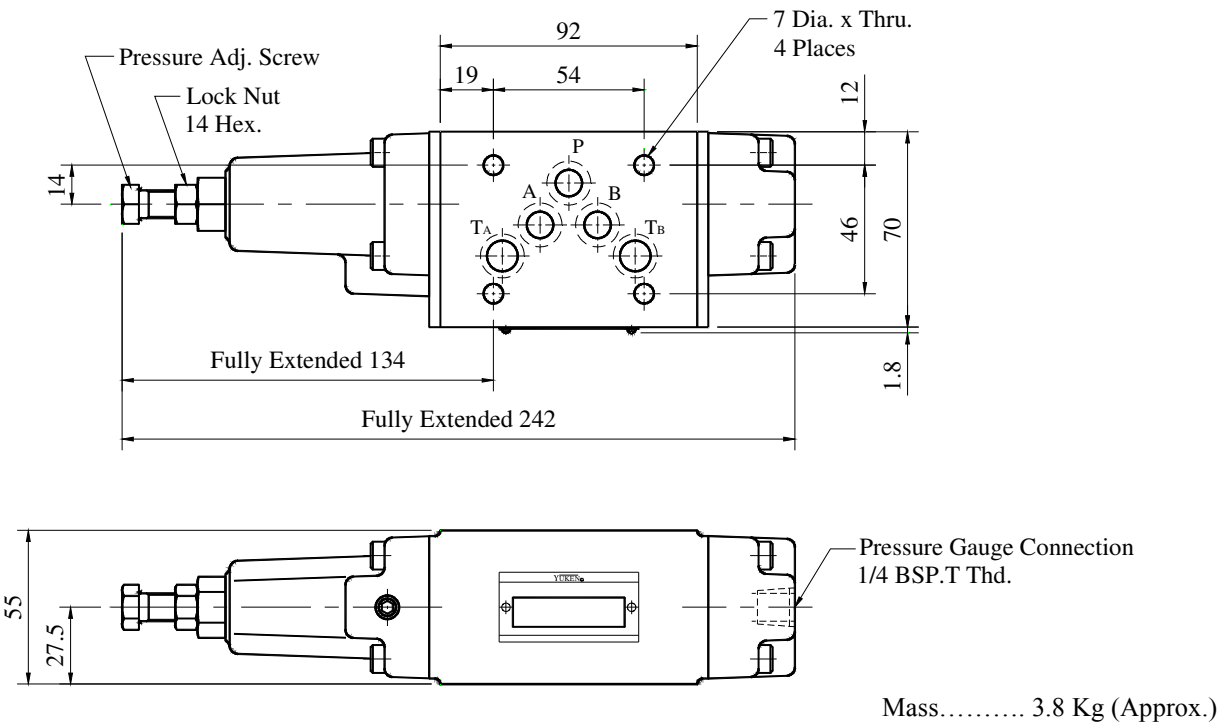
- **Min. adjustment pressure** varies with tank line back pressure. Add T-Line pressure drop stacked to tank line back pressure.
- To adjust pressure, loosen the lock nut and turn the pressure adjustment screw clockwise or anti-clockwise. For an increase of pressure, turn the screw clockwise. Be sure to re-tighten the lock nut firmly after making adjustment to the pressure.

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

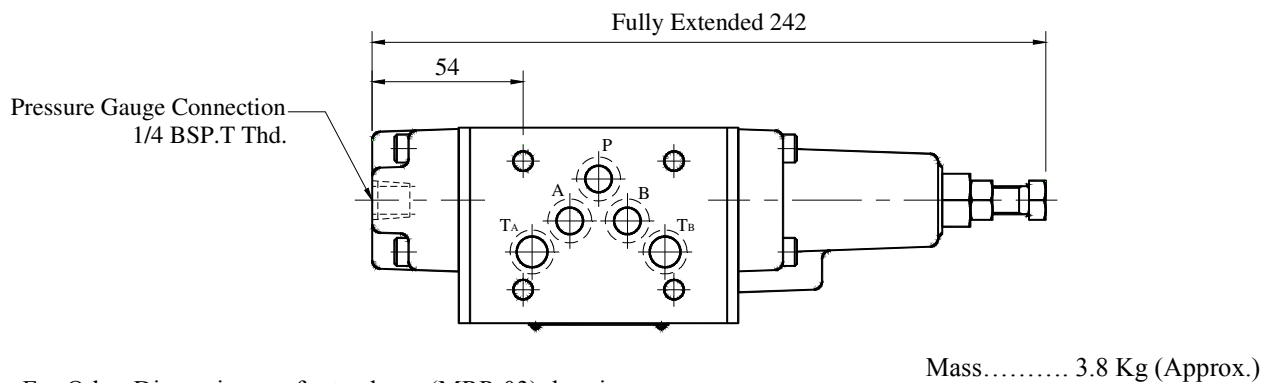
03 Series Modular Valves

- **MRP-03-※-20**
MRB-03-※-20

DIMENSIONS IN
MILLIMETRES



- **MRA-03-※-20**



For Other Dimensions, refer to above (MRP-03) drawing.

Spare Parts List

- **List of Seals**

Sl.No.	Name of Parts	Part Numbers	Qty.
			MR※-03
1	O-Ring	AS568A-014	5
2	O-Ring	SO-NA-P6	3
3	O-Ring	SO-NA-P9	1
4	O-Ring	SO-NB-P22	1
5	O-Ring	SO-NB-P28	1

- **List of Seal Kits**

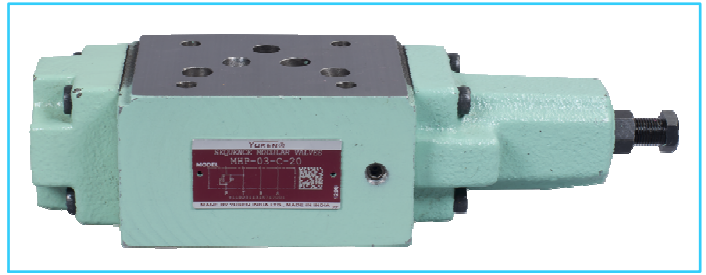
Model Numbers	Seal Kit Numbers
MRP-03	KS-MRP-03-20
MRA-03	
MRB-03	

Note: When ordering the seals, please specify the seal kit number from the table right.

■ **3/8 Sequence Modular Valves**

■ **Specifications**

Max. Operating Pressure Kgf/cm ²	Max. Flow L/min.
250	50



■ **Model Number Designation**

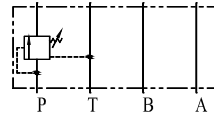
F-	MHP	-03	-B	-20
Special Seals	Series Number	Valve Size	Pres. Adj. Range Kgf/cm ²	Design Number
F: Special Seals for Phosphate ester Type Fluids (Omit if not required)	MHP: Sequence Modular Valves for P-Line	03	N: *-18* ¹ B: 35-70 A: 18-35 C: 70-140	20

*1 See the "Minimum Adjustment Pressure" for the item marked *.

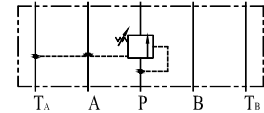
■ **Typical Performance Characteristics**

Hydraulic Fluid: viscosity 35cSt, Specific gravity 0.850

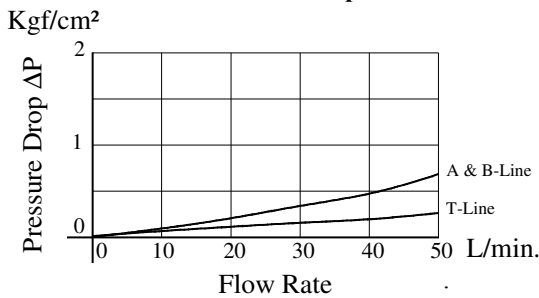
Graphic Symbol



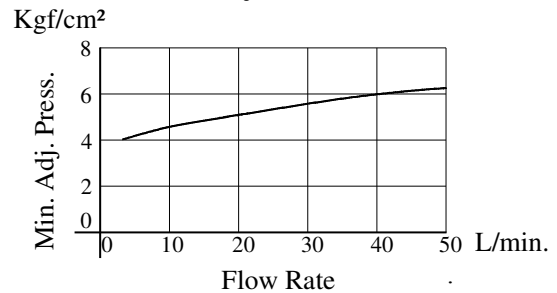
Detailed Graphic Symbols



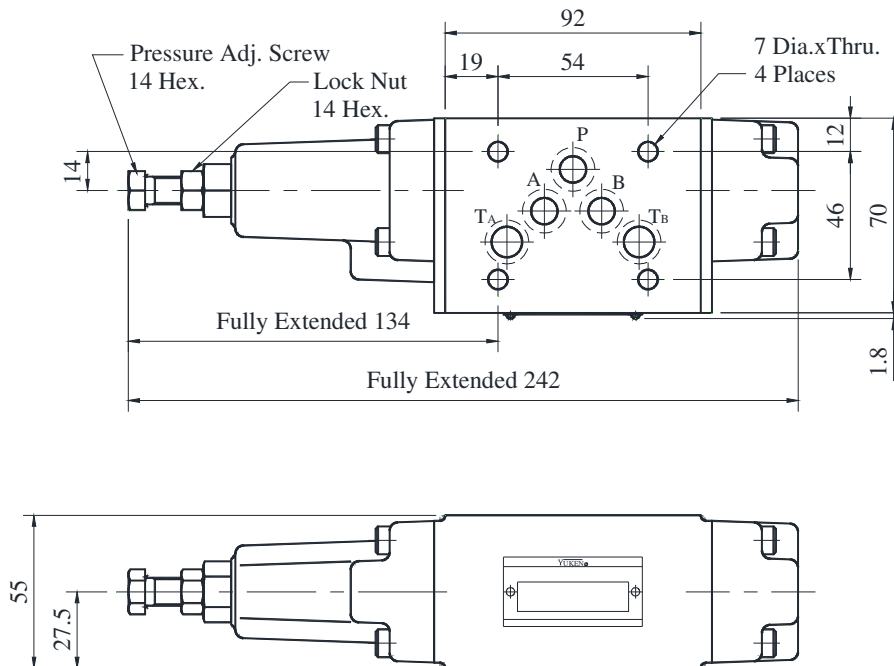
● **Pressure Drop**



● **Min. Adjustment Pressure**



● **MHP-03-※-20**



DIMENSIONS IN MILLIMETRES

Mass..... 3.5 Kg (Approx.)

■ Instructions

- **Min. adjustment pressure** 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 adjust pressure, 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.

■ Spare Parts List

● List of Seals

Sl.No.	Name of Parts	Part Numbers	Qty.
1	O-Ring	AS568A-014	5
2	O-Ring	SO-NA-P16	1
3	O-Ring	SO-NB-P29	1
4	O-Ring	SO-NB-P32	1

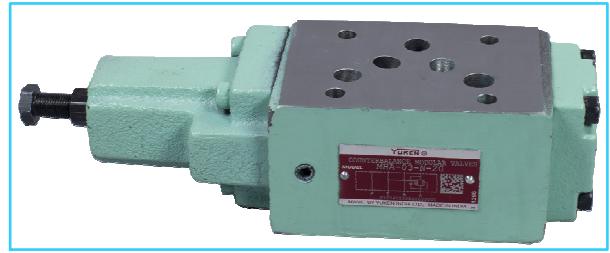
Note: When ordering the seals, please specify the seal kit number from the table below.

● List of Seals Kits

Model Number	Seal Kit Number
MHP-03	KS-MHP-03-20

3/8 Counter Balance Modular Valves
Specifications

Max. Operating Pressure Kgf/cm ²	Max. Flow L/min.	Free Flow L/min.
250	50	70

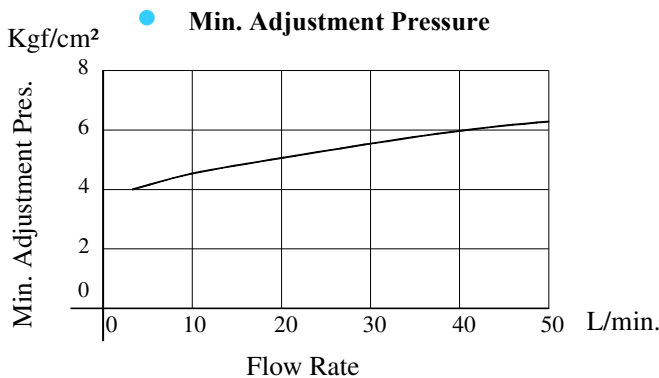
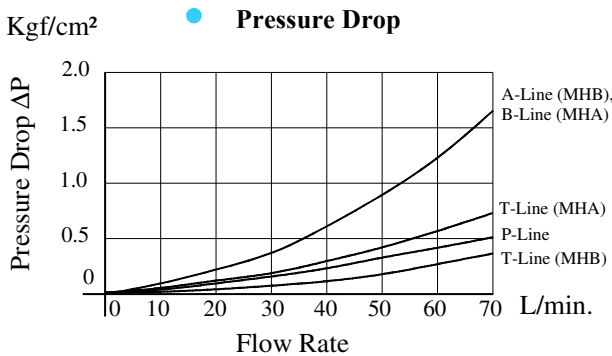


Model Number Designation

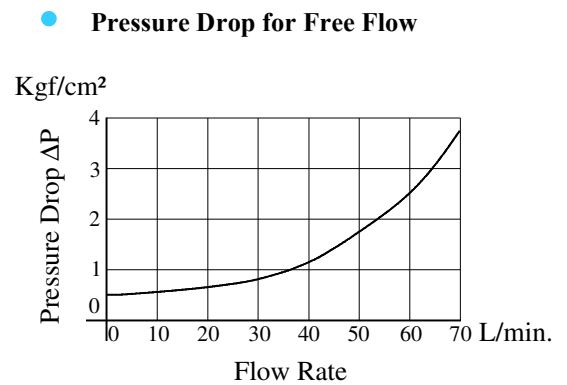
F-	MHA	-03	-B	-20
Special Seals	Series Number	Valve Size	Pres. Adj. Range Kgf/cm ²	Design Number
F: Special Seals for Phosphate ester Type Fluids (Omit if not required)	MHA: Counterbalance Modular Valves for A-Line MHB: Counterbalance Modular Valves for B-Line	03	N: *-18 ^{*1} A: 18-35 B: 35-70 C: 70-140	20

*1 See the "Minimum Adjustment Pressure" for the item marked *

Typical Performance Characteristics
 Hydraulic Fluid: viscosity 35cSt, Specific gravity 0.850



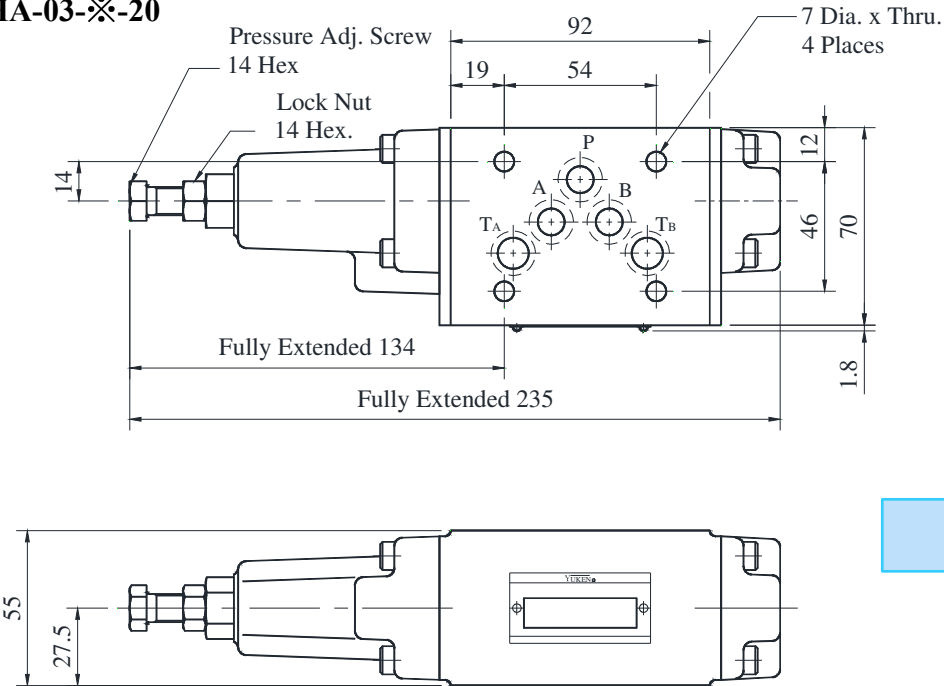
Model Numbers	Graphic Symbols	Detailed Graphic Symbols
MHA-03		
MHB-03		



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.

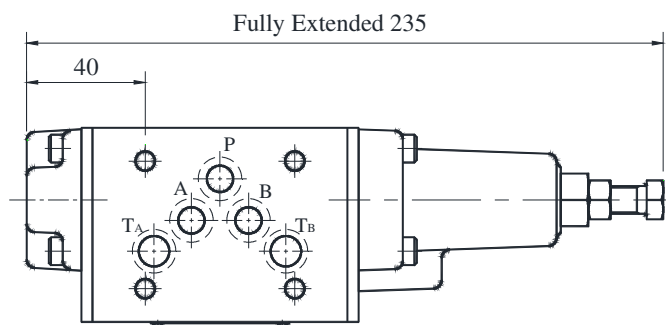
● **MHA-03-※-20**



DIMENSIONS IN MILLIMETRES

Mass..... 3.5 Kg (Approx.)

● **MHB-03-※-20**



Mass..... 3.5 Kg (Approx.)

For Other Dimensions, refer to top (MHA-03) drawing.

Spare Parts List

● **List of Seals**

Sl.No.	Name of Parts	Part Numbers	Qty.
			MH※-03
1	O-Ring	AS568A-014	5
2	O-Ring	SO-NA-P16	1
3	O-Ring	SO-NB-P29	1
4	O-Ring	SO-NB-P32	1

Note: When ordering the seals, please specify the seal kit number from the table below.

● **List of Seals Kits**

Model Numbers	Seal Kit Number
MHA-03	KS-MHP-03-20
MHB-03	

3/8 Throttle Modular Valves

Specifications

Max. Operating Pressure Kgf/cm ²	Max. Flow L/min.
250	70

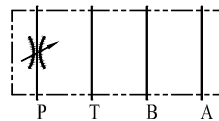
Note: Maximum flow decreases when the differential pressure is less than 10 Kgf/cm². See "Pressure Drop at Throttle fully open"



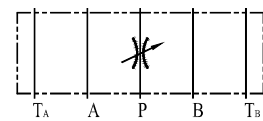
Model Number Designation

F-	MSP	-03	-L	-20
Special Seals	Series Number	Valve Size	Differential Pressure Range Kgf/cm ²	Design Number
F: Special Seals for Phosphate ester Type Fluids (Omit if not required)	MSP: Throttle Modular Valves for P-Line	03	L: Pressure Diff. 5-50 H: Pressure Diff. 50-250	20

Graphic Symbol



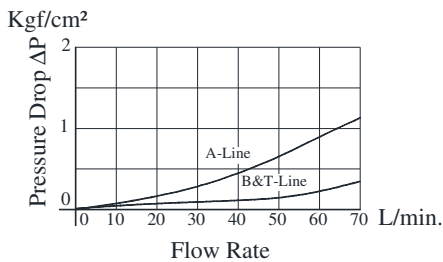
Detailed Graphic Symbol



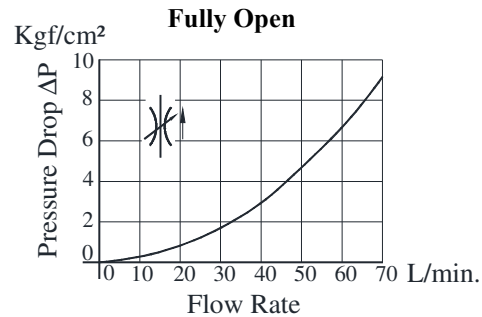
Typical Performance Characteristics

Hydraulic Fluid: viscosity 35cSt, Specific gravity 0.850

Pressure Drop

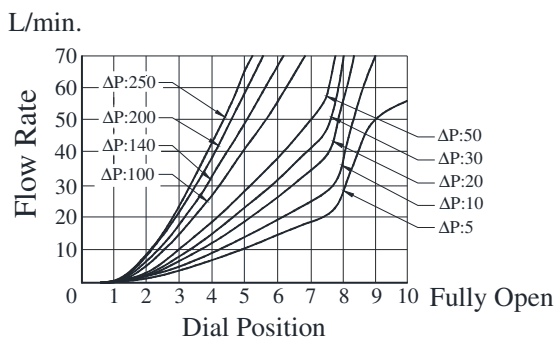


Pressure Drop at Throttle Fully Open



Metered Flow Vs. Dial Position

(ΔP: Differential Pressure)



Instructions

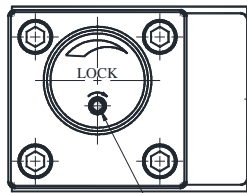
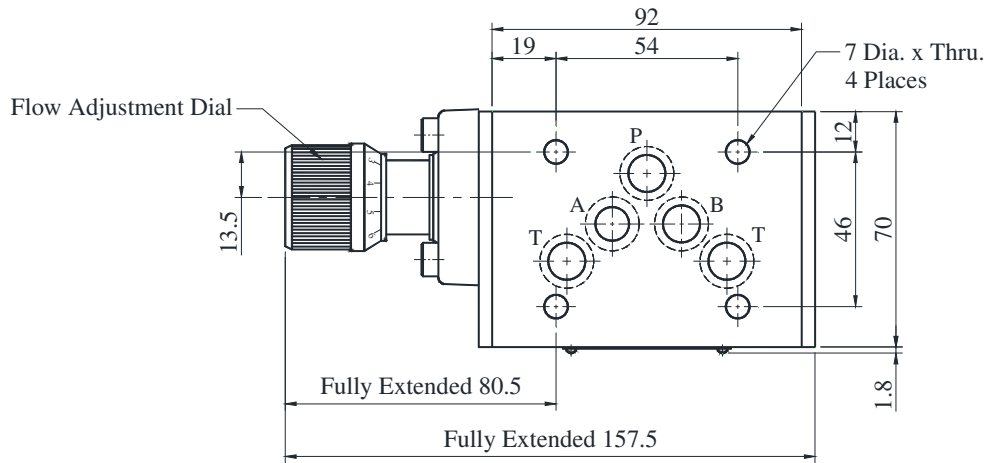
- To make flow rate adjustment, loosen locking screw for the dial and turn the flow adjustment dial clockwise or anti clockwise. For decrease of flow, turn the dial clockwise. Be sure to re tighten the locking screw firmly after the adjustment of the flow rate.

Instructions

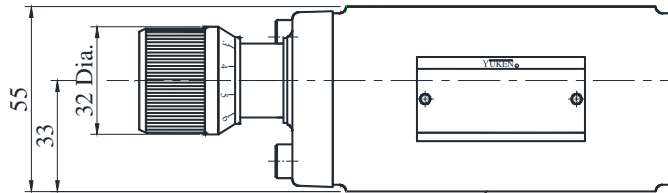
- To adjust flow, loosen locking screw for the dial and turn the flow adjustment dial clockwise or anti-clockwise. For a decrease of flow, turn the dial clockwise. Be sure to re-tighten the locking screw firmly after the adjustment of the flow rate.

MSP-03-※-20

DIMENSIONS IN MILLIMETRES



Locking Screw
2 Hex. Soc.



Mounting Surface
(O-Rings Furnished)

Mass..... 3.0 Kg (Approx.)

Spare Parts List

List of Seals

Sl.No.	Name of Parts	Part Numbers	Qty.
			MSP-03
1	O-Ring	SO-NA-P7	1
2	O-Ring	SO-NB-P26	1
3	O-Ring	AS568A-014	5
4	Back up Ring	SO-BB-P7	1

Note: When ordering the seals, please specify the seal kit number from the table below.

List of Seal Kits

Model Numbers	Seal Kit Numbers
MSP-03	KS-MSP-03-20

3/8 Throttle and check Modular Valves

Specifications

Max. Operating Pressure Kgf/cm ²	Max. Flow L/min.
250	70



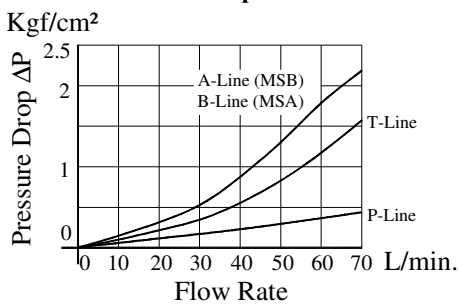
Model Number Designation

F-	MSA	-03	-X	-L	-20
Special Seals	Series Number	Valve Size	Direction of Flow	Differential Pressure Range Kgf/cm ²	Design Number
F: Special Seals for Phosphate ester Type Fluids (Omit if not required)	MSA: A-Line MSB: B-Line MSW: A.B-Line	03	X: Meter -Out Y: Meter -In	L: Pressure Diff. 5-50 H: Pressure Diff. 50-250	20

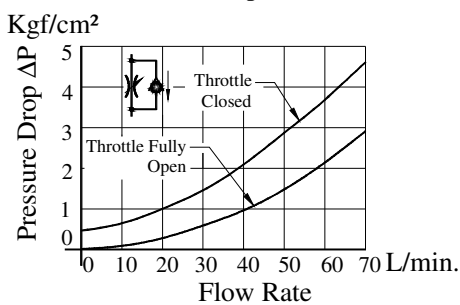
Typical Performance Characteristics

Hydraulic Fluid: viscosity 35cSt, Specific gravity 0.850

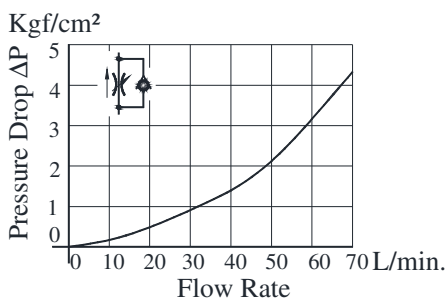
Pressure Drop



Pressure Drop for Free Flow



Pressure Drop at Throttle Fully Open



Model Numbers	Graphic Symbols	Detailed Graphic Symbols
	Meter-Out	
MSA-03-X		
MSB-03-X		
MSW-03-X		
Meter-In		
MSA-03-Y		
MSB-03-Y		
MSW-03-Y		

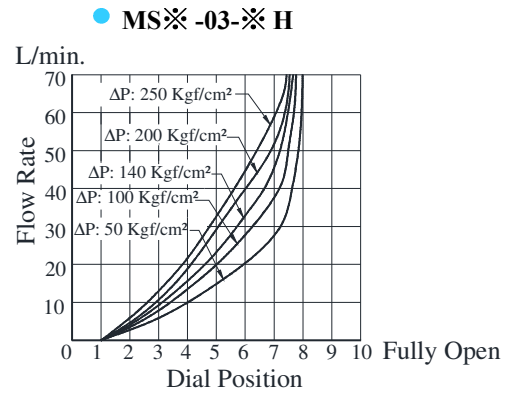
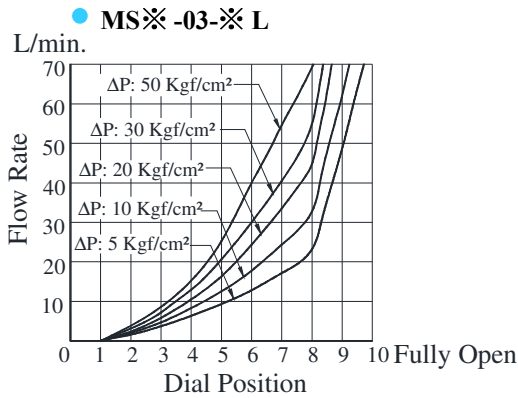
Instructions

- To make flow rate adjustment, loosen locking screw for the dial and turn the flow adjustment dial clockwise or anti clockwise. For decrease of flow, turn the dial clockwise. Be sure to re tighten the locking screw firmly after the adjustment of the flow rate.

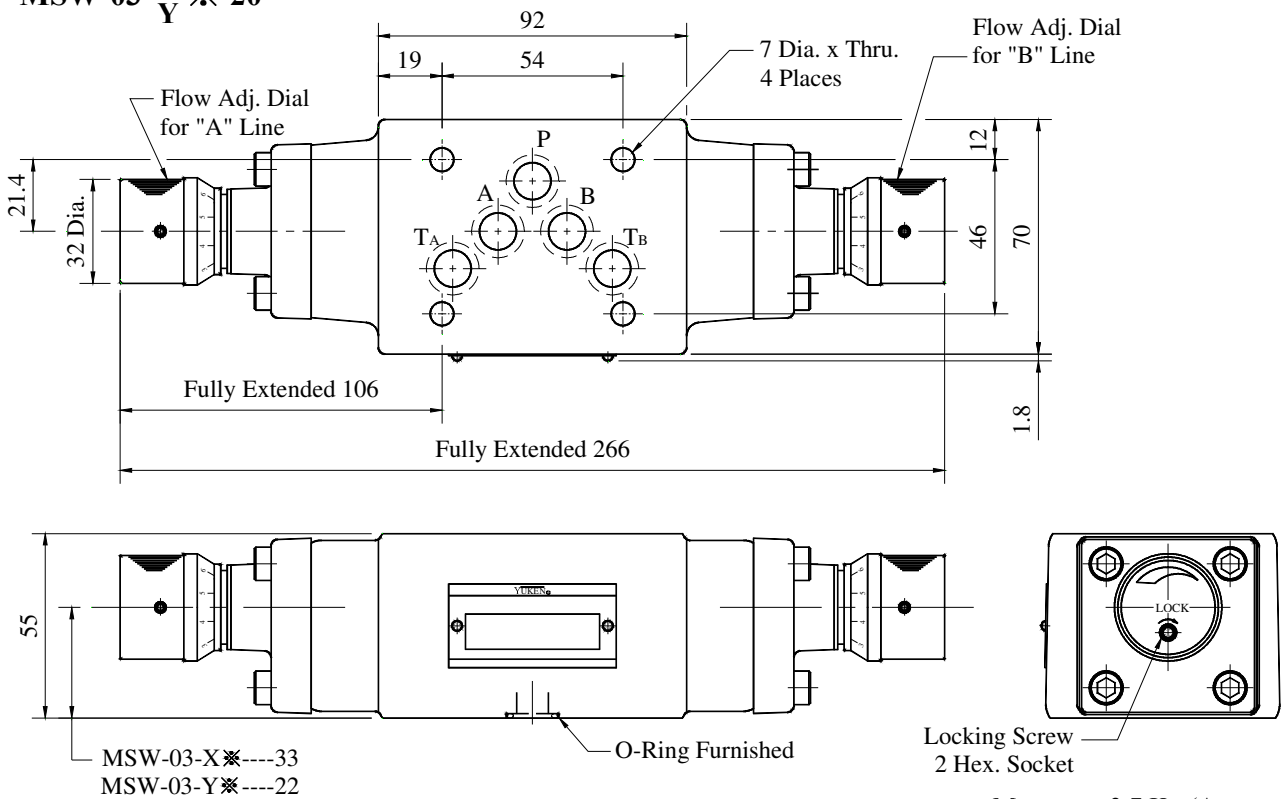
03 Series Modular Valves

• **Metered Flow Vs. Dial Position**

ΔP : Differential Pressure Kg/cm²

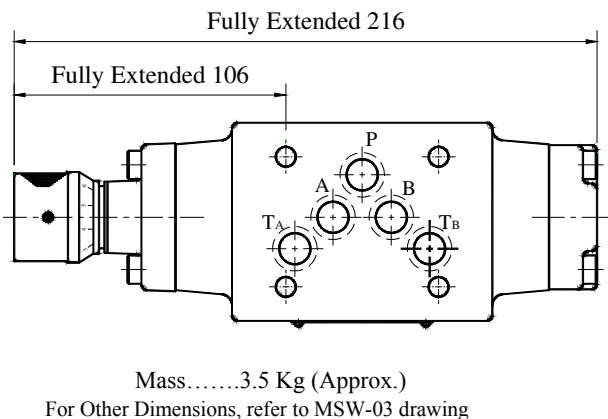


• **MSW-03- $\frac{X}{Y}$ - \times -20**

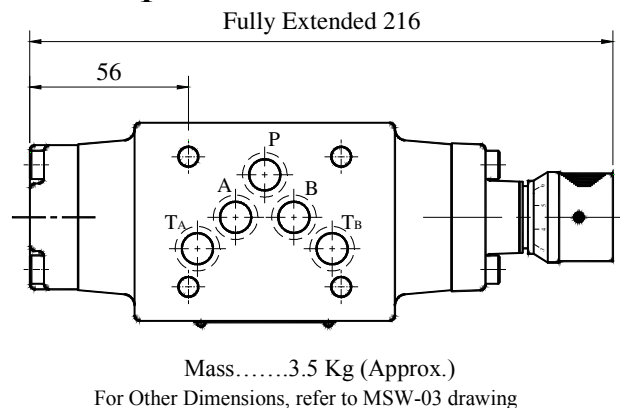


DIMENSIONS IN MILLIMETRES

• **MSA-03- $\frac{X}{Y}$ - \times -20**



• **MSB-03- $\frac{X}{Y}$ - \times -20**



■ Spare Parts List

● **List of Seals**

Sl.No.	Name of Parts	Part Numbers	Qty.		
			MSA-03	MSB-03	MSW-03
1	O-Ring	SO-NA-P7	1	1	2
2	O-Ring	SO-NB-P28	2	2	2
3	O-Ring	AS568A-014	5	5	5
4	Back up Ring	900-VK411915-2	1	1	2

Note: When ordering the seals, please specify the seal kit number from the table below.

● **List of Seal Kits**

Model Numbers	Seal Kit Numbers
MSA-03	KS-MSA-03-20
MSB-03	
MSW-03	KS-MSW-03-20

3/8 Check and Throttle Modular Valves

Specifications

Max. Operating Pressure Kgf/cm ²	Max. Flow L/min.
250	70

Note : Maximum flow decrease when the differential pressure is less than 8 Kgf/cm². See “Pressure Drop at Throttle fully open”.



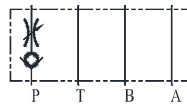
Model Number Designation

F-	MSCP	-03	-H	-10
Special Seals	Series Number	Valve Size	Differential Pressure Range Kgf/cm ²	Design Number
F: Special Seals for Phosphate ester Type Fluids (Omit if not required)	MSCP: Check and Throttle Modular Valves for P-Line	03	L: Pressure Diff. 5-50 H: Pressure Diff. 50-250	10

Typical Performance Characteristics

Hydraulic Fluid: viscosity 35cSt, Specific gravity 0.850

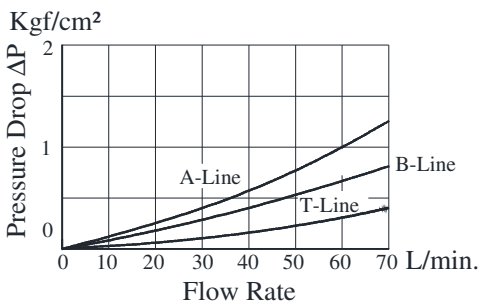
Graphical Symbol



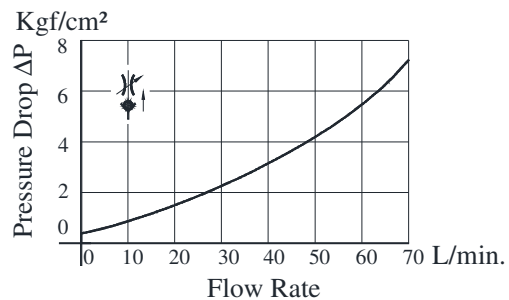
Detailed Graphic Symbols



Pressure Drop



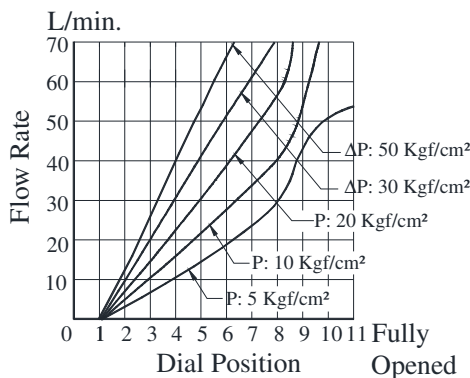
Pressure Drop at Throttle Fully Open



Metered Flow Vs. Dial Position

MSCP-03-L

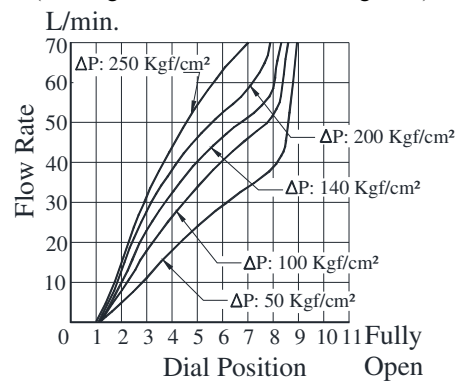
(ΔP: Low Differential Pressure Kgf/cm²)



Metered Flow Vs. Dial Position

MSCP-03-H

(ΔP: High Differential Pressure Kgf/cm²)

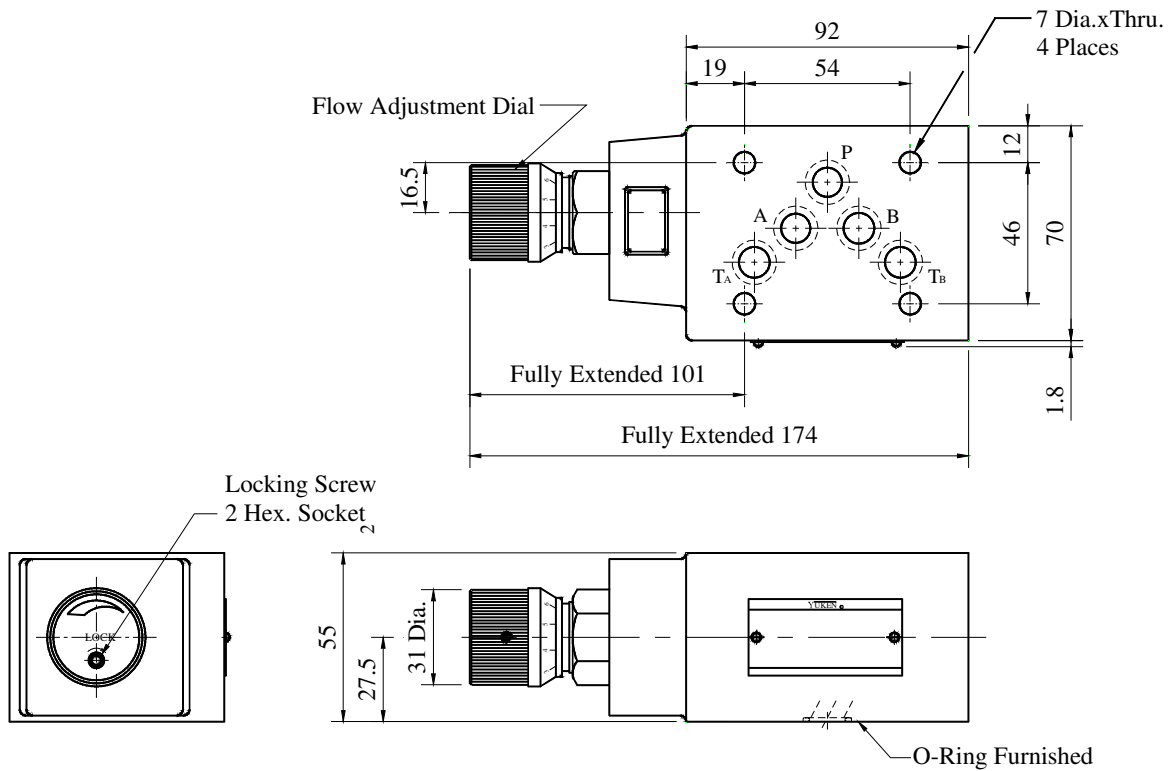


Instructions

- To flow adjust, loosen locking screw for the dial and turn the flow adjustment dial clockwise or anti-clockwise. For a decrease of flow, turn the dial clock wise. Be sure to re-tighten the locking screw firmly after the adjustment of the flow rate.

● **MSCP-03-※-10**

DIMENSIONS IN MILLIMETRES



Mass.....3.0 Kg (Approx.)

■ **Spare Parts List**

● **List Of Seals**

Sl.No.	Name of Parts	Part Numbers	Qty.
			MSCP-03
1	O-Ring	SO-NA-P7	1
2	O-Ring	SO-NB-P18	1
3	O-Ring	AS568A-014	5
4	Back up Ring	SO-BB-P7	1

Note : When ordering the seals, please specify the seal kit number from the table below.

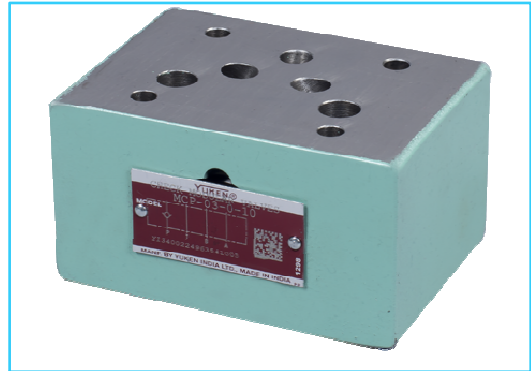
● **List of Seal Kits**

Model Number	Seal Kit Number
MSCP-03	KS-MSCP-03-10

3/8 Check Modular Valves

Specifications

Max. Operating Pressure Kgf/cm ²	Max. Flow L/min.
250	70



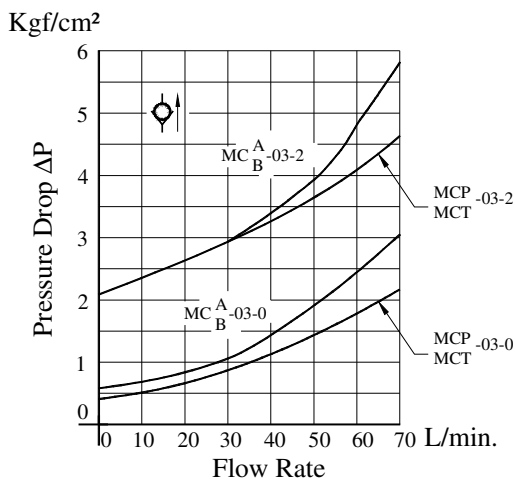
Model Number Designation

F-	MCP	-03	-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)	MCP: Check Modular valve for P-Line MCA: Check Modular valve for A-Line MCB: Check Modular valve for B-Line MCT: Check Modular valve for T-Line	03	0: 0.35 2: 2	10

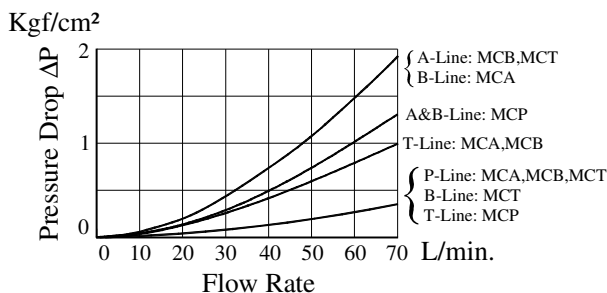
Typical Performance Characteristics

Hydraulic Fluid: viscosity 35cSt, Specific gravity 0.850

Pressure Drop for Free Flow



Pressure Drop



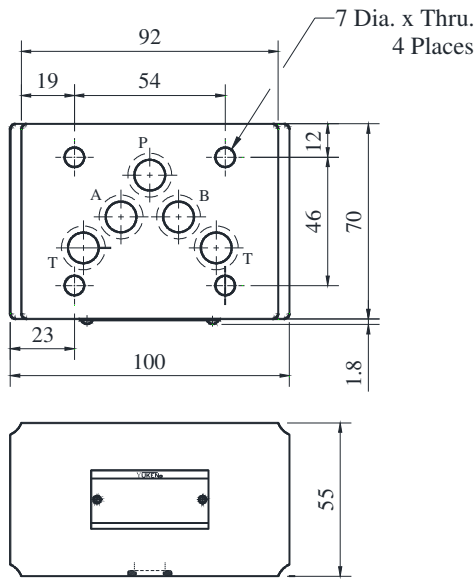
Model Numbers	Graphic Symbols	Detailed Graphic Symbols
MCP-03		
MCA-03		
MCB-03		
MCT-03		

Instructions

Tank Line Used

Check valve function of MCT-03 is included in T_A line. Therefore, the tank line for a circuit that uses this valve must be T_A line.

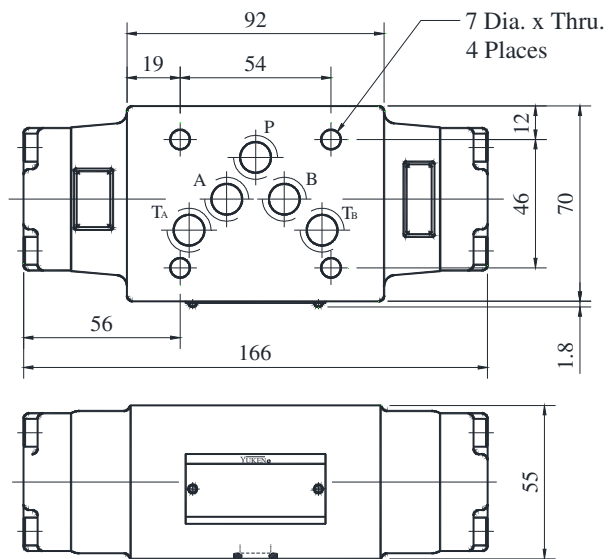
● **MCP-03-※-10**



Mass.....2.5 Kg (Approx.)

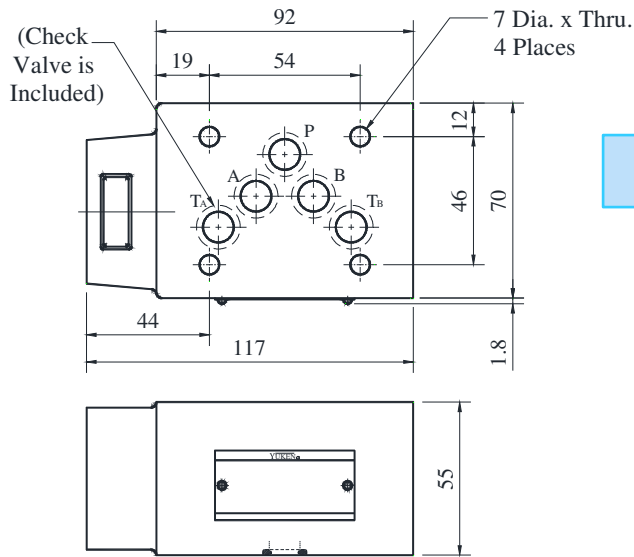
● **MCA-03-※-10**

● **MCB-03-※-10**



Mass.....3.5 Kg (Approx.)

● **MCT-03-※-10**



DIMENSIONS IN MILLIMETRES

Mass.....2.8 Kg (Approx.)

Spare Parts List

● **List of Seals**

Sl.No.	Name of Parts	Part Numbers	Qty.			
			MCP-03	MCT-03	MCA-03	MCB-03
1	O-Ring	SO-NB-P21	1	1	-	-
2	O-Ring	SO-NB-P28	-	-	2	2
3	O-Ring	AS568A-014	5	5	5	5

Note : When ordering the seals, please specify the seal kit number from the table below.

● **List of Seal Kits**

Model Numbers	Seal Kit Numbers
MCP-03	KS-MCP-03-10
MCT-03	
MCA-03	KS-MCA-03-10
MCB-03	

■ **3/8 Check Modular Valves**

■ **Specifications**

Max. Operating Pressure Kgf/cm ²	Max. Flow L/min.
250	70

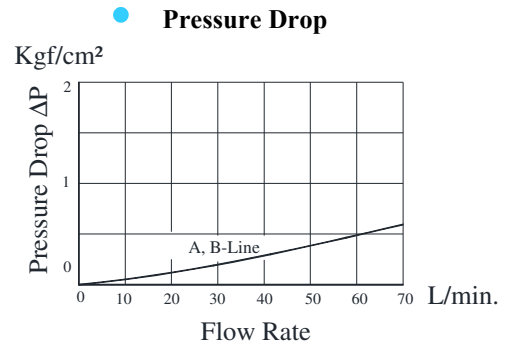
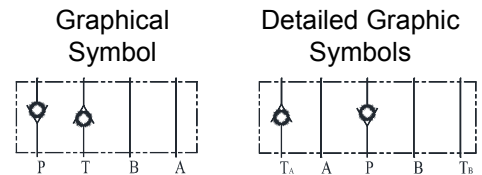
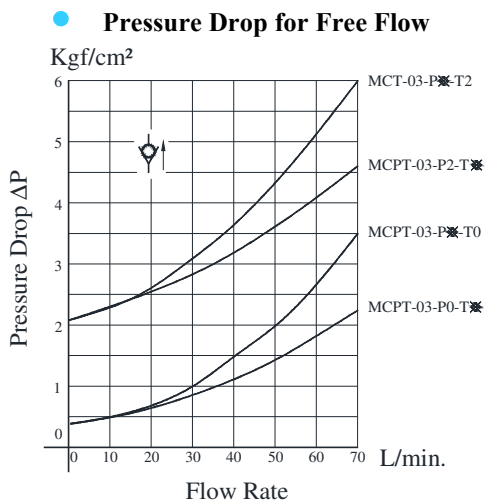


■ **Model Number Designation**

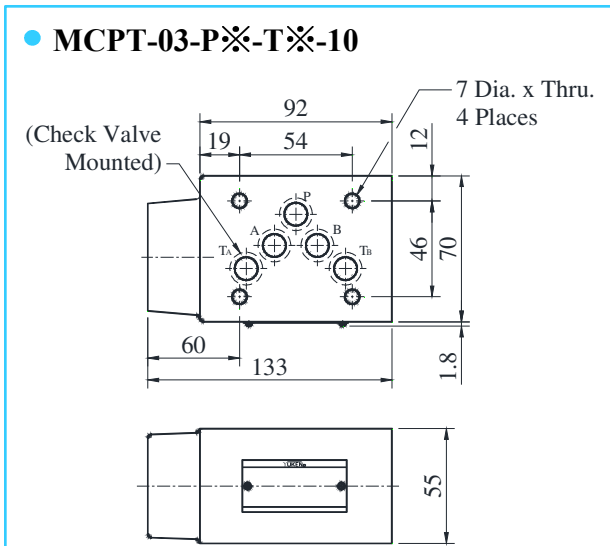
F-	MCPT	-03	-P0	-T0	-10
Special Seals	Series Number	Valve Size	Cracking Pressure of P-Line Kgf/cm ²	Cracking Pressure of T-Line Kgf/cm ²	Design Number
F: Special Seals for Phosphate ester Type Fluids (Omit if not required)	MCPT: Check Modular Valve for P, T Lines	03	P0: 0.35 P2: 2	T0: 0.35 T2: 2	10

■ **Typical Performance Characteristics**

Hydraulic Fluid: viscosity 35cSt, Specific gravity 0.850



● **MCPT-03-P※-T※-10**



Mass.....2.7 Kg (Approx.)

■ **Instructions**

- **Tank Line Used**
Check valve function of MCPT-03 is included in T_A line. Therefore, the tank line for a circuit that uses this valve must be T_A line.

■ **Spare Parts List**

● **List Of Seal**

Sl.No.	Name of Parts	Part Numbers	Qty.
1	O-Ring	SO-NB-P18	2
2	O-Ring	AS568A-014	5

Note: When ordering the seals, please specify the seal kit number from the table below.

● **List Of Seal Kits**

Model Numbers	Seal Kit Numbers
MCPT-03	KS-MCPT-03-10

3/8 Anti-Cavitation Modular Valves

Specifications

Max. Operating Pressure Kgf/cm ²	Max. Flow L/min.
250	70

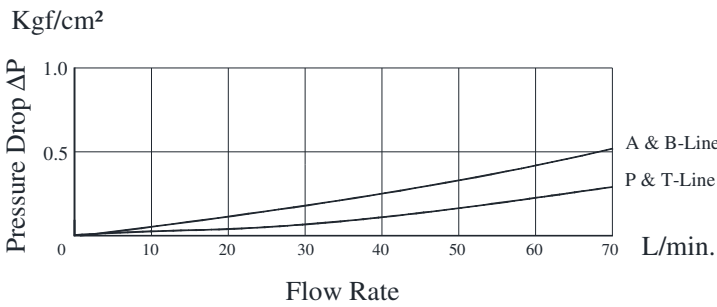


Model Number Designation

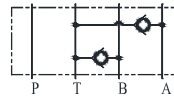
F-	MAC	-03	-10
Special Seals	Series Number	Valve Size	Design Number
F: Special Seals for Phosphate ester Type Fluids (Omit if not required)	MAC: Anti-Cavitation Modular Valves	03	10

Pressure Drop

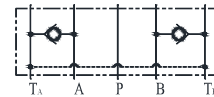
Hydraulic Fluid: Viscosity 35cSt, Specific gravity 0.850



Graphical Symbol

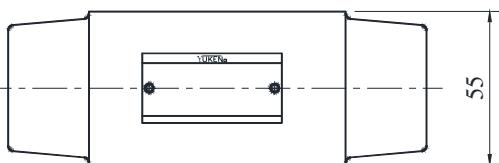
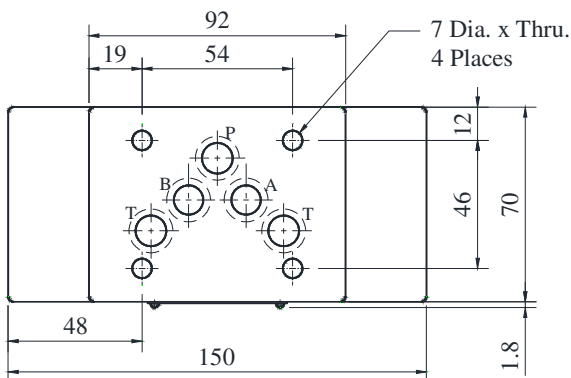


Detailed Graphic Symbols



MAC-03-10

DIMENSIONS IN MILLIMETRES



Mass.....3.8 Kg (Approx.)

Spare Parts List

List of Seal

Sl.No.	Name of Parts	Part Numbers	Qty.
1	O-Ring	SO-NB-P21	2
2	O-Ring	AS568A-014	5

Note : When ordering the seals, please specify the seal kit number from the table below.

List of Seal Kits

Model Numbers	Seal Kit Numbers
MAC-03	KS-MAC-03-10

3/8 Pilot Operated Check Modular Valves

Specifications

Max. Operating Pressure Kgf/cm ²	Max. Flow L/min.
250	70



Model Number Designation

F-	MPA	-03	-2	-20	H01
Special Seals	Series Number	Valve Size	Cracking Pressure Kgf/cm ²	Design Number	Design Standard
F: Special Seals For Phosphate Ester Type Fluids (Omit if not required)	MPA: Pilot Operated Check Modular Valve A-Line MPB: Pilot Operated Check Modular Valve B-Line MPW: Pilot Operated Check Modular Valve A, B-Line	03	2: 2 4: 4	20 (Standard) 2001 (Low Pilot Pressure Control Type)	H01

* Please consult factory for availability.

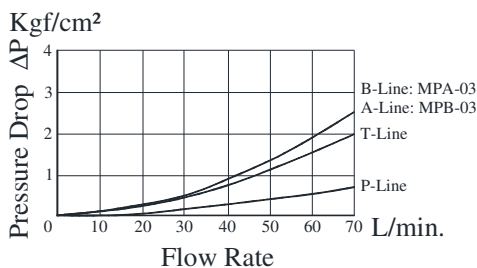
Graphic Symbols

Model Numbers	Graphic Symbols	Detailed Graphic Symbols
MPA-03		
MPB-03		
MPW-03		

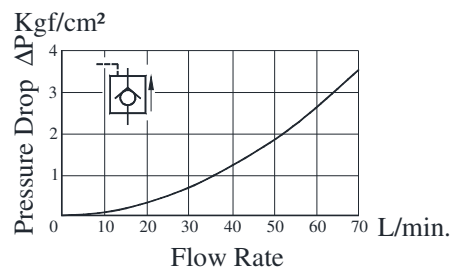
Typical Performance Characteristics

Hydraulic Fluid: viscosity 35cSt, Specific gravity 0.850

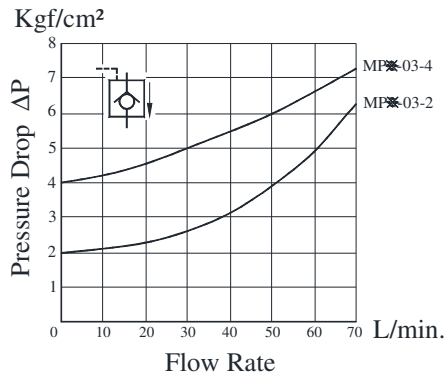
Pressure Drop



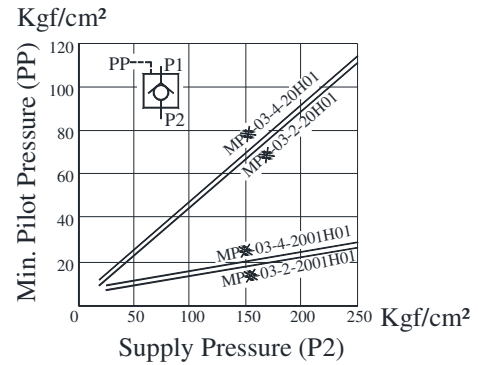
Pressure Drop for Reversed Controlled Flow



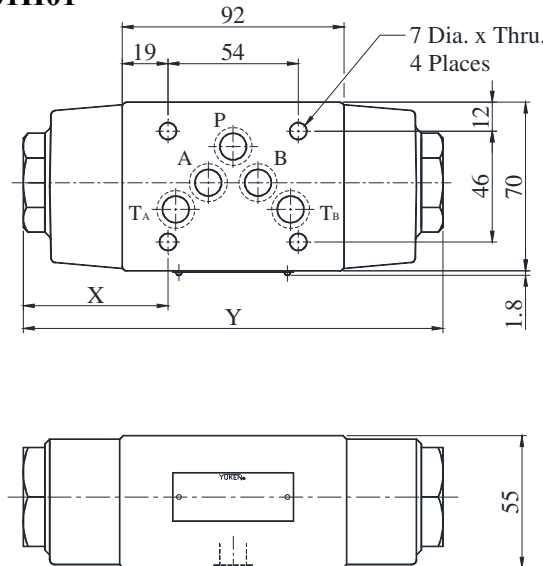
● **Pressure Drop for Free Flow**



● **Min. Pilot Pressure**



- **MPA-03-※-20H01/2001H01**
- **MPB-03-※-20H01/2001H01**
- **MPW-03-※-20H01/2001H01**



DIMENSIONS IN MILLIMETRES

Mass.....3.5 Kg (Approx.)

Sl.No.	Model Number	X	Y
1	MP※-03-※-20H01	60	174
2	MP※-03-※-2001H01	62	178

■ **Spare Parts List**

● **List of Seals**

Sl.No.	Name of Parts	Part Numbers	Qty.
			MP※-03
1	O-Ring	SO-NB-P24	2
2	O-Ring	AS568A-014	5

● **List of Seal Kits**

Model Numbers	Seal Kit Numbers
MPA-03	KS-MPA-03-20
MPB-03	
MPW-03	

Note : When ordering the seals, please specify the seal kit number from the right table.

■ **3/8 End Plates**

■ **Specifications**

Max. Operating Pressure Kgf/cm ²	Max. Flow L/min.
250	70



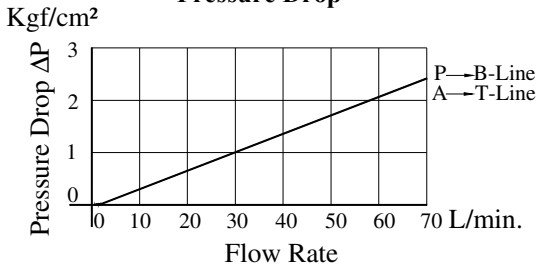
■ **Model Number Designation**

F-	MDC	-03	-A	-10
Special Seals	Series Number	Valve Size	Type of Plate	Design Number
F: Special Seals for Phosphate ester Type Fluids (Omit if not required)	MDC: End Plate	03	A: Blocking Plate B: Bypass Plate	10

■ **Typical Performance Characteristics**

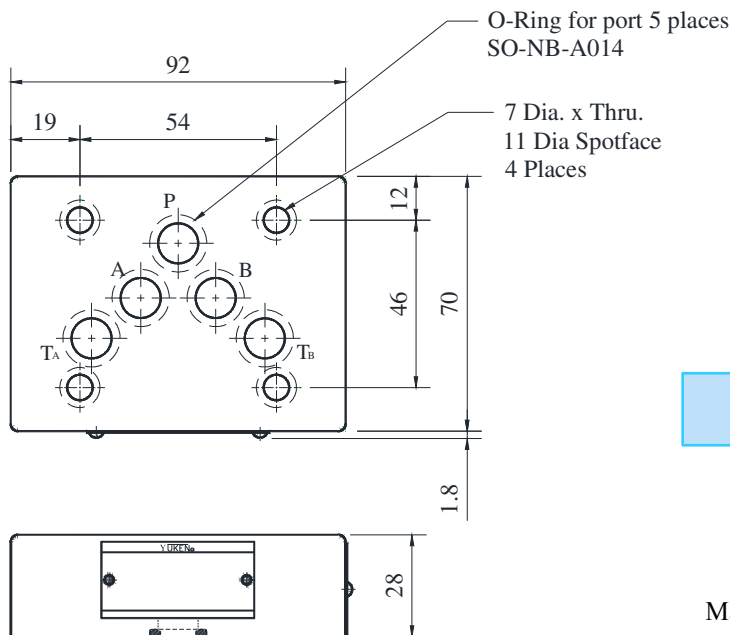
Hydraulic Fluid: Viscosity 35cSt, Specific gravity 0.850

● **Pressure Drop**



Model Numbers	Graphic Symbols	Detailed Graphic Symbols
MDC-03-A		
MDC-03-B		

● **MDC-03-※-10**



DIMENSIONS IN MILLIMETRES

Mass.....1.2 Kg (Approx.)

■ **3/8 Connecting Plates**

■ **Specifications**

Max. Operating Pressure Kgf/cm ²	Max. Flow L/min.
250	70



■ **Model Number Designation**

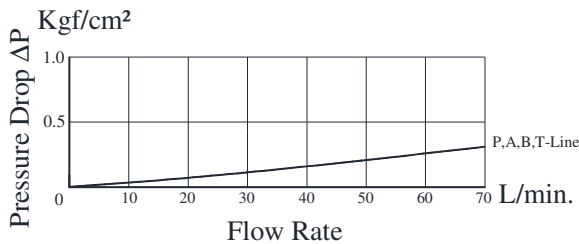
F-	MDS	-03	-10
Special Seals	Series Number	Valve Size	Design Number
F: Special Seals for Phosphate ester Type Fluids (Omit if not required)	MDS: Connecting Plates	03	10

Note: Valve with having BSP.F thread for connecting pressure gauge is also available . Please consult YUKEN for details

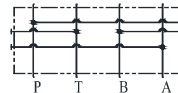
■ **Typical Performance Characteristics**

Hydraulic Fluid: viscosity 35cSt, Specific gravity 0.850

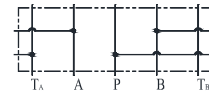
● **Pressure Drop**



Graphical Symbol

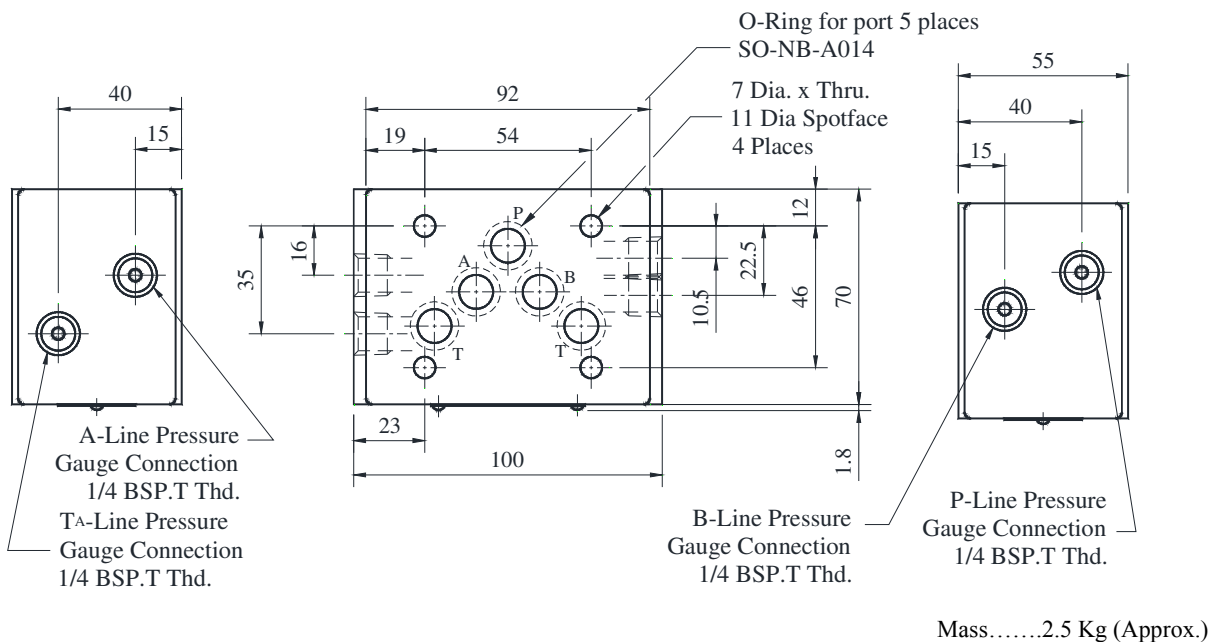


Detailed Graphic Symbols



● **MDS-03-10**

DIMENSIONS IN MILLIMETRES



F
03 Series Modular Valves

■ **Base Plates, For 3/8 Modular Valves**

■ **Specifications**

Max, operating Pressure 250 Kgf/cm²



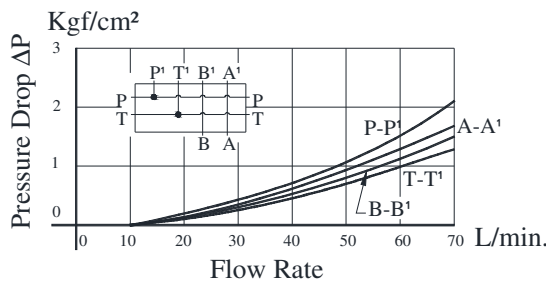
■ **Model Number Designation**

MMC	-03	-T	-6	-21	80
Series Number	Valve Size	Type of Connection	Number Of Station		Design Number
MMC: Base Plate	03	T: Threaded Connection	1: 1 Station 2: 2 Station 3: 3 Station	4: 4 Station 5: 5 Station 6: 6 Station	21 80

■ **Typical Performance Characteristics**

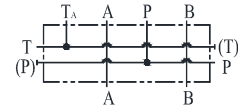
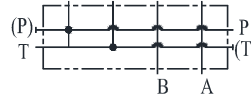
Hydraulic Fluid: viscosity 35cSt, Specific gravity 0.850

● **Pressure Drop**

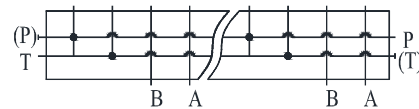


Detailed Graphic Symbols

Graphical Symbol



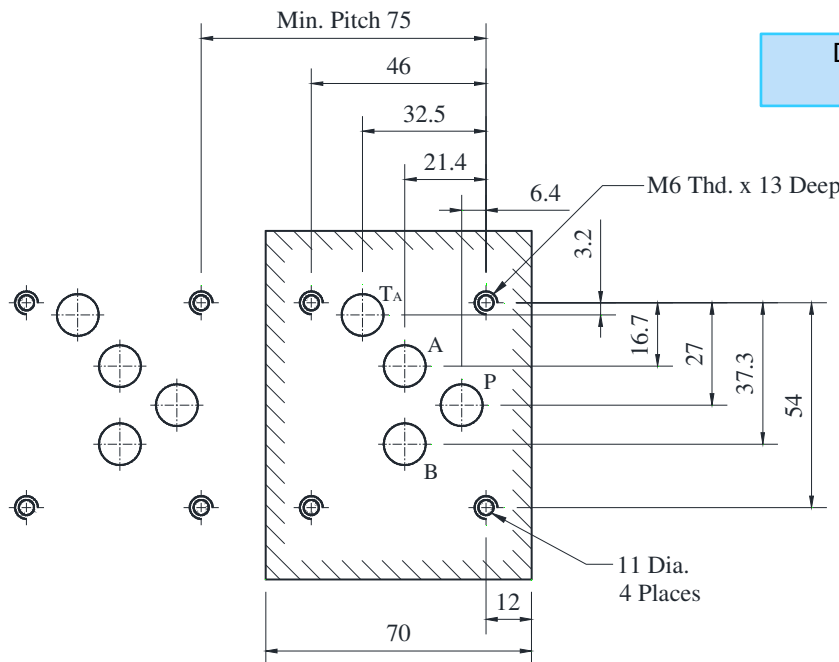
MMC-03-T-1
Graphic Symbol



MMC-03-T-2-6

■ **Interface Mounting Dimensions for 3/8 Modular Valve**

When the dedicated base plate (MMC-03) is not used, the following mounting surface must be prepared. Also, the mounting surface must have a good machined finish.



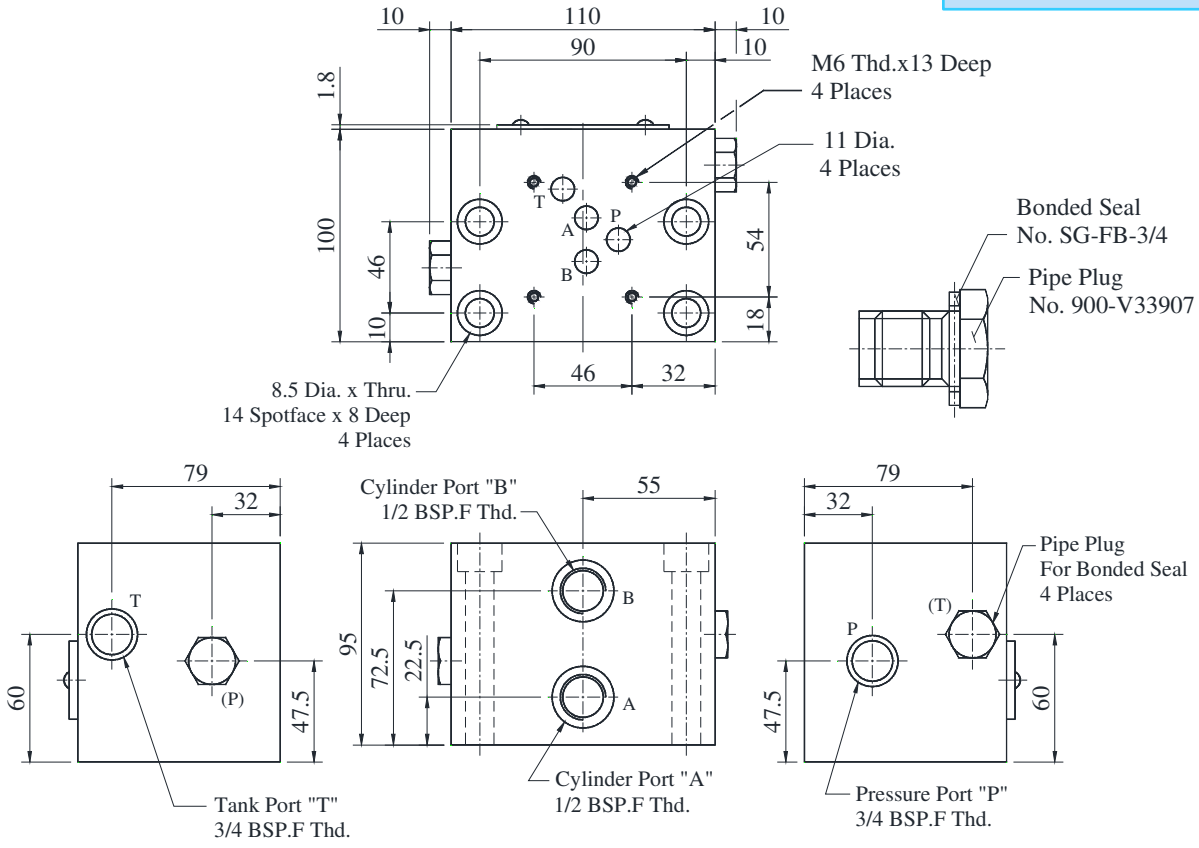
DIMENSIONS IN MILLIMETRES

■ **Instructions**

- Although two ports are provided for both **pressure port “P”** and **tank port “T”** either may be used. However, the ports having (P) or (T) in the drawing are normally plugged. Remove the plugs of the ports when they are used. Make sure that the ports that are not currently used are properly plugged.

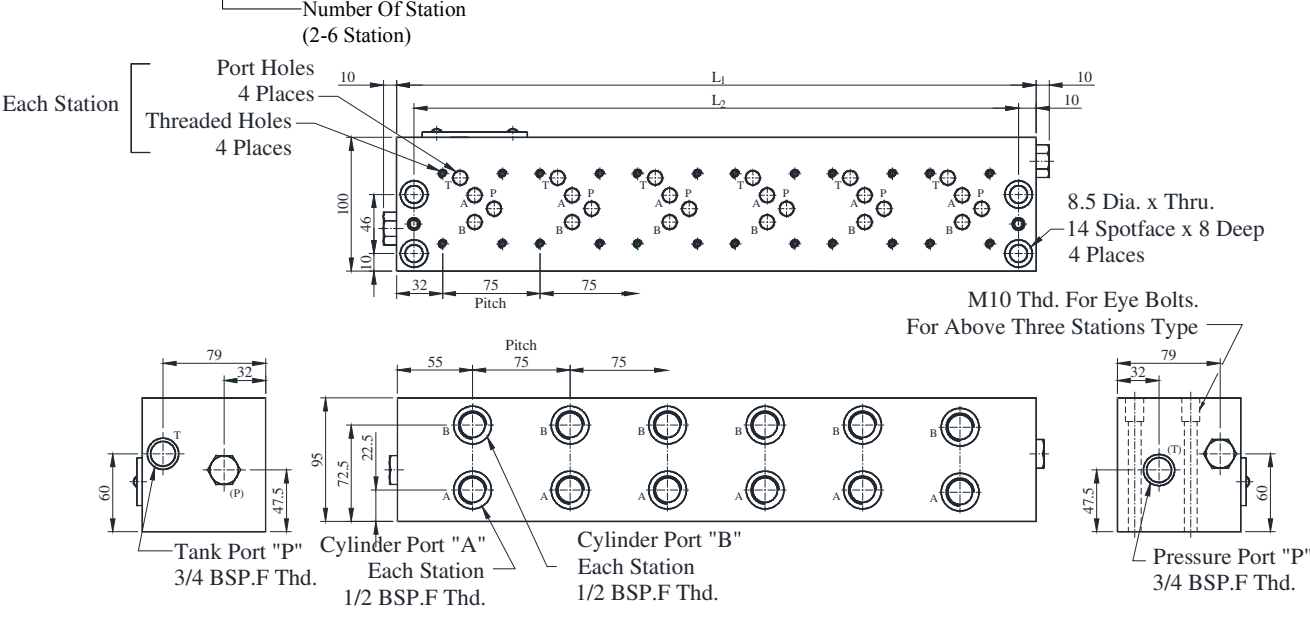
● **MMC-03-T-1-2180**

DIMENSIONS IN MILLIMETRES



Mass.....8.5 Kg (Approx.)

● **MMC-03-T-※ -2180**



For other dimensions refer to above, models MMC-03-T-1.

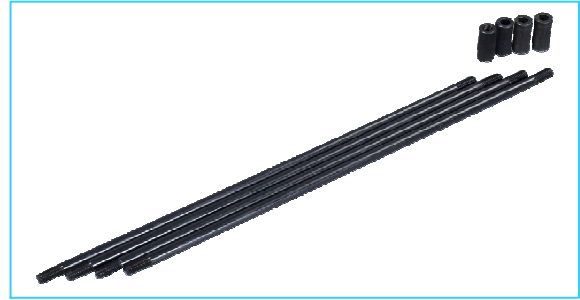
Model Numbers	Dimension in mm		Mass Kg.
	L1	L2	
MMC-03-T-2	185	165	14
MMC-03-T-3	260	240	19.5
MMC-03-T-4	335	315	25
MMC-03-T-5	410	390	30.5
MMC-03-T-6	485	465	36

03 Series Modular Valves

■ Mounting Bolt Kits For 3/8 Modular Valves

Valves are mounted with four 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	-03	-04	-10
Series Number	Size of Modular Valve	Bolt Number	Design Number
MBK: Mounting Bolt Kits for Modular Valves	03	01,02,03,04,05 (Refer to the following chart)	10

■ Bolt Kits Selection Chart

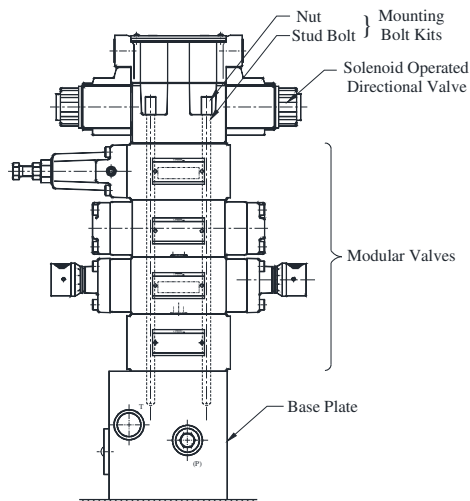
Model Numbers	Quantity of valves to be stacked			
	Solenoid Operated Directional Valve (※-DSG-03)	End Plate (MDC-03)	Modular Valve & Connecting Plate (M ※ ※ - 03)	Approx. Mass gms.
MBK-03-01-10	1	0	1	120
	0	1		
MBK-03-02-10	1	0	2	160
	0	1		
MBK-03-03-10	1	0	3	200
	0	1		
MBK-03-04-10	1	0	4	240
	0	1		
MBK-03-05-10	1 ^{*1}	0	0	40
	0	1		

*1 The solenoid operated directional valve comes with mounting bolts.

● Bolt Kit Structure:

Stud Bolt 4 Pes. } 1 set
Nut 4 Pes.

Note : In case of bolt kit model number having “05”, four hexagon socket head cap screws only.



03 Series Modular Valve Assembly

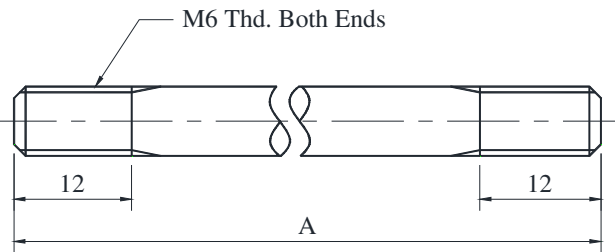
Model Numbers	A
MBK-03-01-10	103
MBK-03-02-10	159
MBK-03-03-10	213
MBK-03-04-10	268
MBK-03-05-10	See Table Below

Model Numbers	Socket Head Cap. Screw
MBK-03-05-10	M6x35 Lg.

● **MBK-03-※-10**

DIMENSIONS IN MILLIMETRES

● **Stud Bolt**



● **Nut**

