01 Series Modular Valves

Features

Installation and mounting space can be minimized.
No special skill is required for assembly. Any alteration/addition 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. Operating Pressure Kgf/cm^2	Max. Flow L/min.	Number of Stack
01 Series	1/8	250	35	(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 surface) as listed in the table below.

Name of Valve	ISO Mtg. Surface Code No.
01 Series Modular Valve	ISO 4401-AB-03-4-A

Hydraulic Fluids.

Fluids 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) are required to be used.
Water containing fluids	Use water-glycol fluid

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

Recommended Viscosity and Temperatures

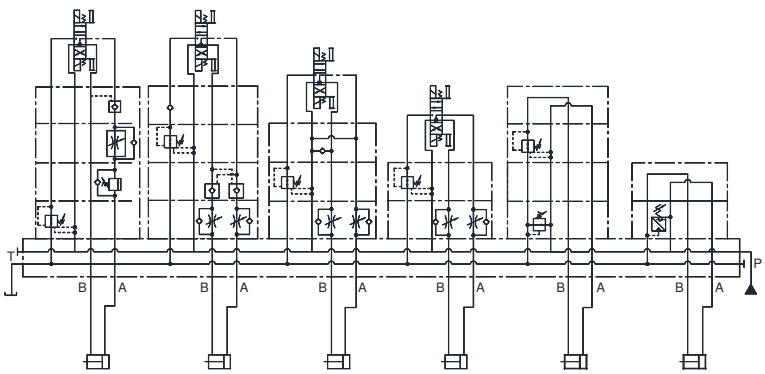
Always be sure to use hydraulic fluids within the stipulated conditions shown below:
Viscosity: 15 to 400cSt Temperature : -15^0 to +70^{0}C

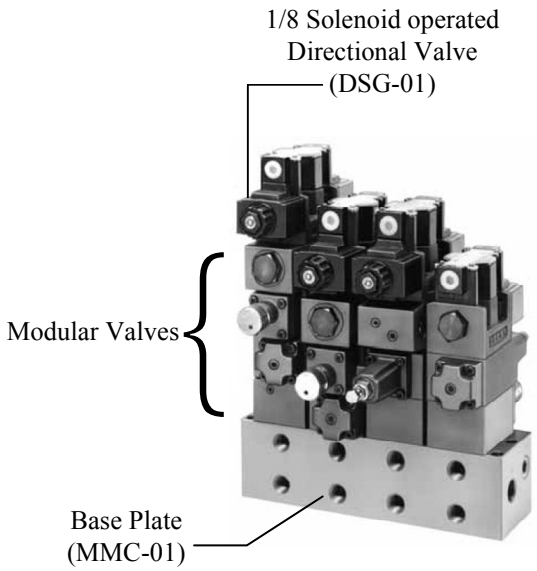
Control of Contamination

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 valve. Please maintain the degree of contamination Within NAS 1638-Grade 12. Use 20µm or finer line normal filter.

Stacking Example

01 Series

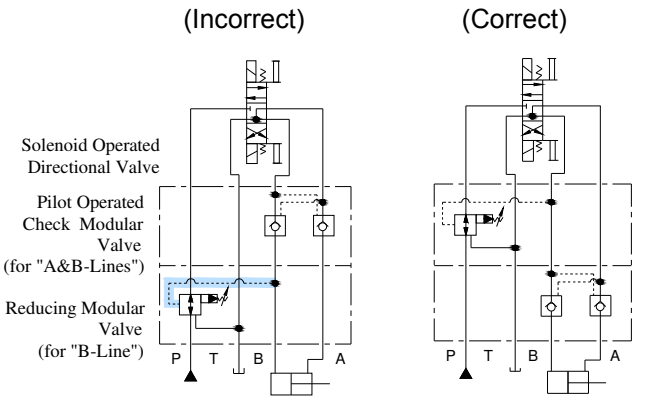




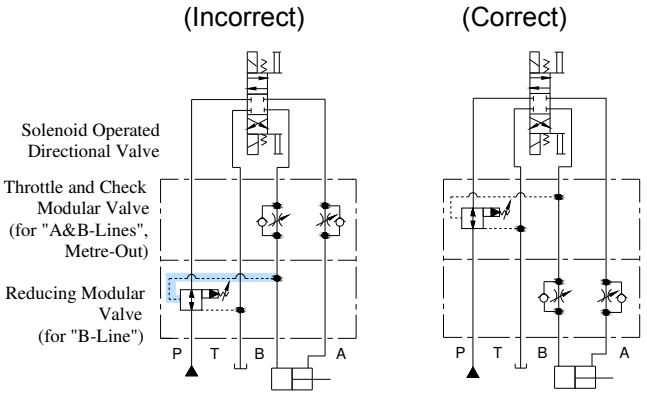
Instructions

- **Caution in the selection of valves and circuit designing**
  The selection of modular valves, to suit a particular function or hydraulic circuit are made in exactly the same way as conventional valves, taking into account of 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.

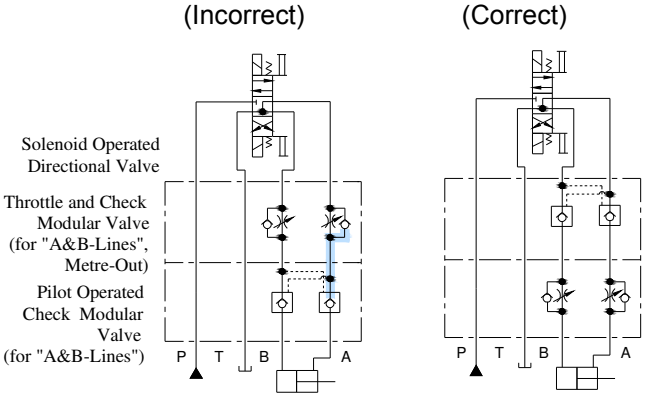
- **Stacking sequence when using reducing modular valves (for "A" or "B" line) and pilot operated check modular valves.**
  Because reducing valves are spool type, there is an internal leakage. In the stacking sequence shown in the drawing left (incorrect), the cylinder moves due to leakage through the 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.



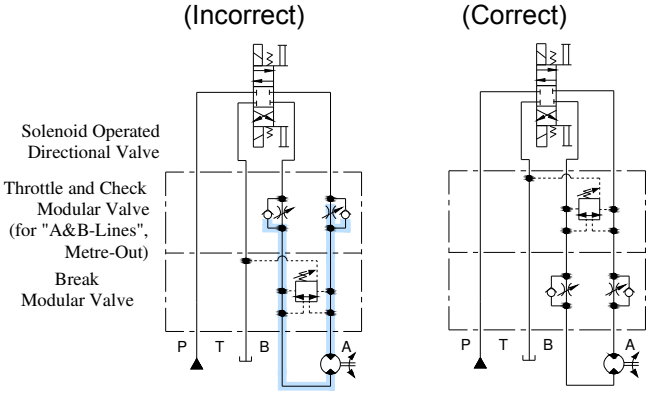
- **Stacking sequence when using reducing modular valves (for "A" or "B" line) and throttle and check modular valves (for metre-out)**
  B to T flow as in the drawing left (incorrect), pressure is generated at part with a throttle effect of the throttle and check valve. Depending upon the pressure so generated, the reducing modular valve may perform a pressure reducing function which causes a shortage of output power of 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).**
  A to T flow as in the drawing left (incorrect), pressure is generated at part with a throttle effect of the throttle and check modular valve.
  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.



- **Stacking sequence when using brake modular valves and throttle and check modular valves.**
  In the drawing left (incorrect), pressure is generated at part (a load pressure and a back pressure from throttle effect). For structural reasons of the brake valve, the load pressure and back pressure act to open the valve. Therefore the setting pressure should be more than the pressure equal to the load pressure plus back pressure (Pa+Pb). If the setting pressure is less then Pa+Pb, the brake valve acts and brakes the movement of the actuator in operation, this eventually reduces the speed of the actuator. On the contrary, if the setting pressure is more than Pa+Pb, shock may occur when braking the actuator since the setting pressure is too high against the load pressure. 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 Valve Series	Base Plate		Sub-Plates	
	Model Number	Page	Model Number	Page
01 Series	MMC-01-※-4080	471	DSGM-01-※-3080	*

* For the details of sub plates see the solenoid operated direction control valve catalogue No. EIC-E-1001, Page no. 358.

Mounting Bolts

Modular valves are mounted using stud bolts which are supplied in a kit from. 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.

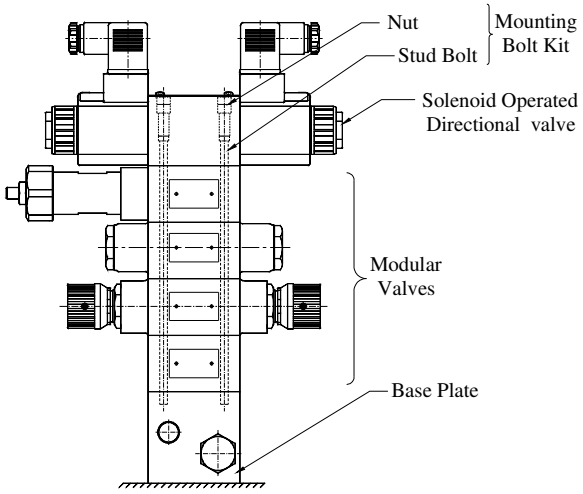
Modular Valve Series	Bolt kit Model Number	Tightening torque Kgf-m
01 Series	MBK-01-※-30	0.5 – 0.6

Assembly

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

Assembly Procedure :

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 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.



[Example] 01 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 (ΔP') may obtained from the following formula.

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

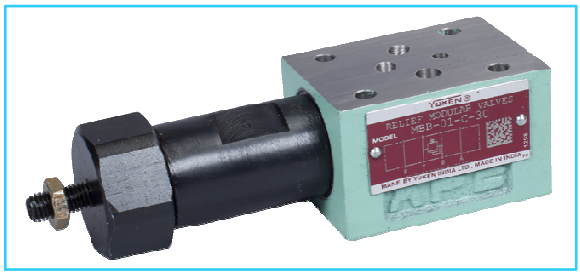
Modular Valve Table

1/8 Modular Valves

Class	Model Numbers	Graphic Symbols	Page
	Solenoid Operated Directional Valve DSG-01-※※※-50	P T B A	EIC-E-1001
Pressure Control Valves	Relief Modular Valves (for "P-Line") MBP-01-※-30		447
	Relief Modular Valves (for "A-Line") MBA-01-※-30		447
	Relief Modular Valves (for "B-Line") MBB-01-※-30		447
	Reducing Modular Valves (for "P-Line") MRP-01-※-30*		449
	Reducing Modular Valves (for "A-Line") MRA-01-※-30*		449
	Reducing Modular Valves (for "B-Line") MRB-01-※-30*		449
	Brake Modular Valves MBR-01-※-30		451
	Sequence Modular Valves (for "P-Line") MHP-01-※-30		453
	Counterbalance Modular Valves (for "A-Line") MHA-01-※-30		455
	Pressure Switch Modular Valves (for "P-Line") MJP-01-※-※-10		457
	Pressure Switch Modular Valves (for "A-Line") MJA-01-※-※-10		457
	Pressure Switch Modular Valves (for "B-Line") MJB-01-※-※-10		457
Flow Control Valves	Throttle Modular Valves (for "P-Line") MSP-01-30		459
	Check & Throttle Modular Valves (for "P-Line") MSCP-01-30		461
	Throttle & Check Modular Valves (for "A-Line", Metre-out) MSA-01-X-30		463
	Throttle & Check Modular Valves (for "A-Line",Metre-in) MSA-01-Y-30		463
	Throttle & Check Modular Valves (for "B-Line",Metre-out) MSB-01-X-30		463
	Throttle & Check Modular Valves (for "B-Line",Metre-in) MSB-01-Y-30		463
	Throttle & Check Modular Valves (for "A&B-Line",Metre-out) MSW-01-X-30		463
	Throttle & Check Modular Valves (for "A&B-Line",Metre-in) MSW-01-Y-30		463
	Throttle & Check Modular Valves (for "A&B-Line",Metre-out,Metre-in) MSW-01-XY-30		463
	Throttle & Check Modular Valves (for "A&B-Line",Metre-in,Metre-out) MSW-01-YX-30		463

Class	Model Numbers	Graphic Symbols	Page
Direction Control Valves	Check Modular Valves (for "P-Line") MCP-01-※-31		465
	Check Modular Valves (for "T-Line") MCT-01-※-31		465
	Check Modular Valves (for "A-Line") MCA-01-※-31		465
	Check Modular Valves (for "B-Line") MCB-01-※-31		465
	Anti-Cavitation Modular Valves MAC-01-※-30		466
	Pilot Operated Check Modular Valves (for "A-Line") MPA-01-※-40*		467
	Pilot Operated Check Modular Valves (for "B-Line") MPB-01-※-40*		467
	Pilot Operated Check Modular Valves (for "A&B-Line") MPW-01-※-40*		467
Modular Plates and Modular Bolts	End Plates (Blocking Plates) MDC-01-A-30		469
	End Plates (Bypass Plates) MDC-01-B-30		469
	Connecting Plates (for "P&A-Lines") MDS-01-PA-3080		470
	Connecting Plates (for "P&B-Lines") MDS-01-PB-3080		470
	Connecting Plates (for "A&T-Lines") MDS-01-AT-3080		470
	Base Plates MMC-01-※-4080		471
	Bolt Kits MBK-01-※-30		473

1/8 Relief Modular Valves



Specifications

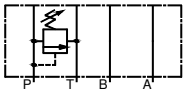
Max. Operating Pressure Kgf/cm^2	Max. Flow L/min.
210	35

Model Number Designation

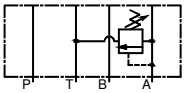
F-	MBP	-01	-C	-30
Special Seals	Series Number	Valve Size	Pres. Adj. Range Kgf/cm^2	Design Number
F: Special Seals for Phosphate Ester Type Fluids (Omit if not required)	**MBP:** Relief Modular Valves for P-Line **MBA:** Relief Modular Valves for A-Line **MBB:** Relief Modular Valves for B-Line	**01**	**C:** *~140 *1 **H:** 70~210	**30**

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

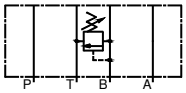
Graphic Symbol



MBP-01



MBA-01

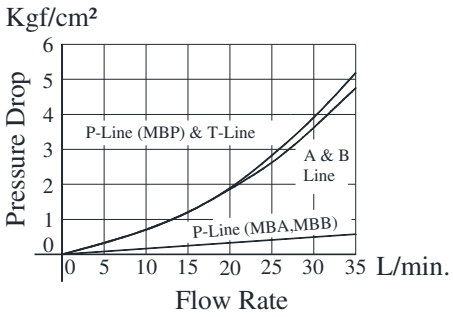


MBB-01

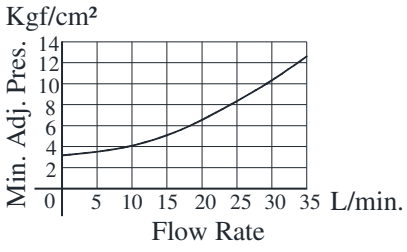
Typical Performance Characteristics

Hydraulic Fluid: Viscosity 35cSt, Specific Gravity 0.850

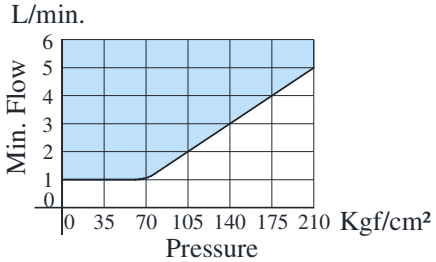
- **Pressure Drop**



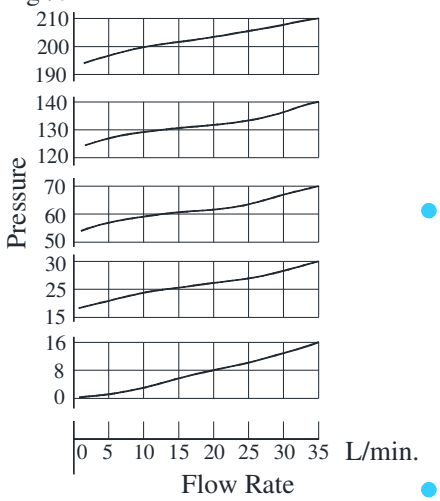
- **Min. Adjustment Pressure**



- **Minimum Flow**



- **Nominal Override Characteristics**

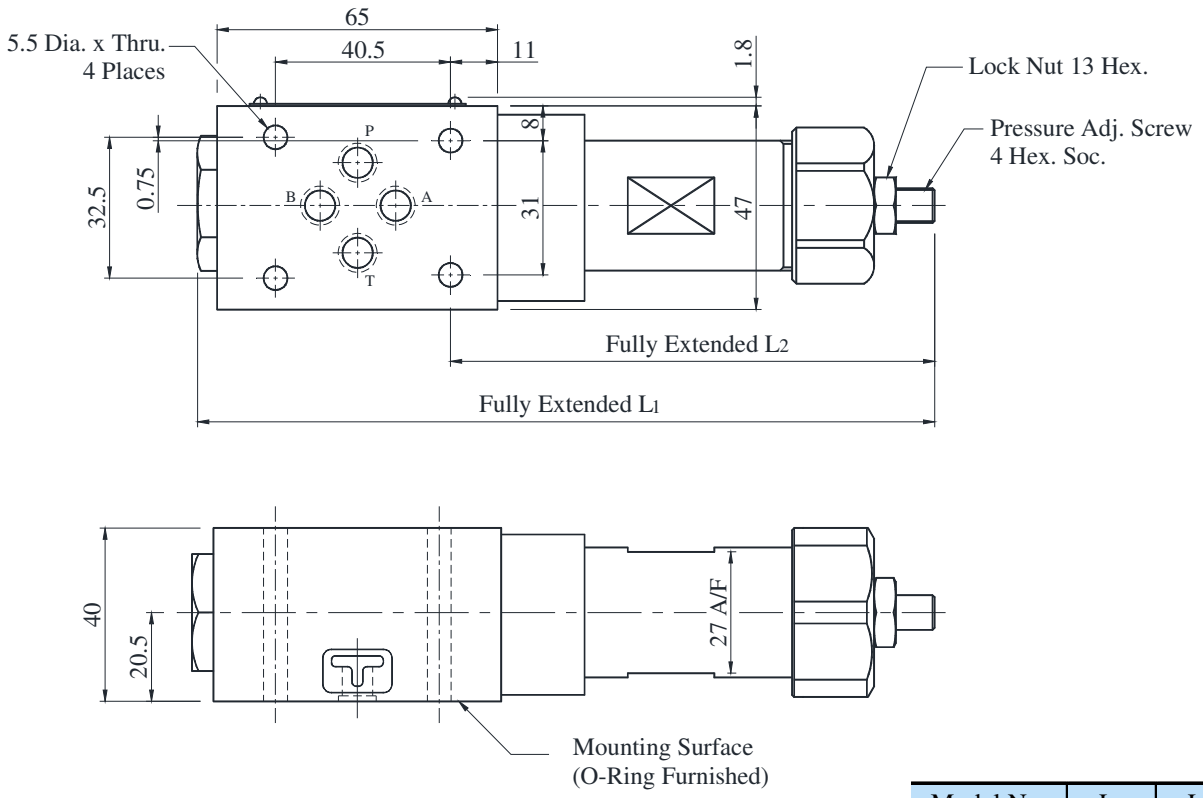


Instructions

- **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 or anticlockwise.
  For an increase of pressure, turn the screw clockwise. Be sure to re-tighten the lock nut firmly after making adjustment to the pressure.
- In case of a small flow, the setting pressure may become unstable. To avoid this, refer to the minimum flow characteristic curves to the left and use the value within a range as shown with

● MBP-01-※-30
MBB-01-※-30

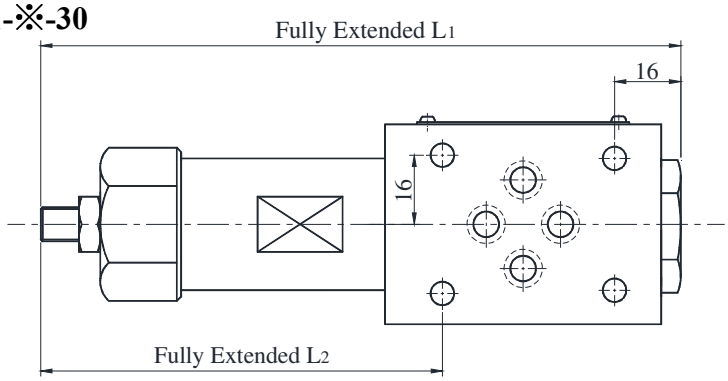
DIMENSIONS IN MILLIMETRES



Mass ……. 1.1Kg.

Model No.	L_1	L_2
MB※-01-C	151	92
MB※-01-H	166.5	107.5

● MBA-01-※-30



For other dimensions, refer to above (MBP-01) Drawing.

Mass ……. 1.1Kg.

Spare Parts List

● List of Seals

Sl. No.	Name of Parts	Parts Numbers	Qty.
1	O-Ring	SO-NB-P9	4
2	O-Ring	SO-NB-P18	2
3	O-Ring	SO-NA-P20	1

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

● List of Seal Kit

Model Numbers	Seal Kit Numbers
MBP-01	KS-MBP-01-30
MBA-01	
MBB-01	

1/8 Reducing Modular Valves

Specifications

Max. Operating Pressure Kgf/cm^2	Max. Flow L/min.
250	35

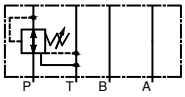
Model Number Designation

F-	MRP	-01	-B	-30H16
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	**01**	**A:** 3 ~40 **B:** * ~ 70 *1 **C:** 35 ~140 **H:** 70 ~210	**30H16**

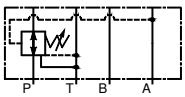
*1. See the "Minimum Adjustment Pressure" for the item marked *

Note : If the setting pressure is less than 19 Kgf/cm^2 maximum flow is limited. See the following "Minimum Adjustment Pressure vs. Max. Flow" for serviceable range.

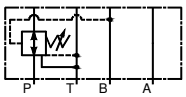
Graphic Symbol



MRP-01



MRA-01

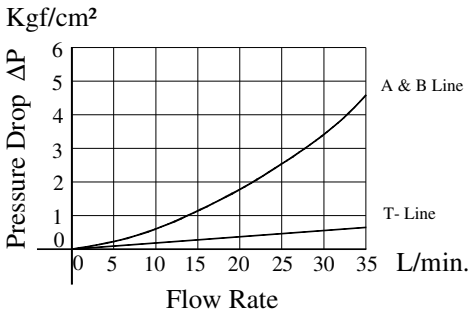


MRB-01

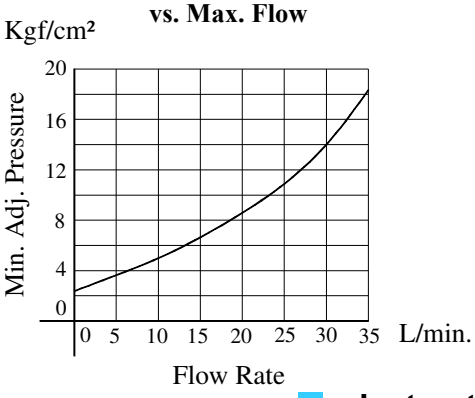
Typical Performance Characteristics

Hydraulic Fluid: Viscosity 35cSt, Specific Gravity 0.850

Pressure Drop

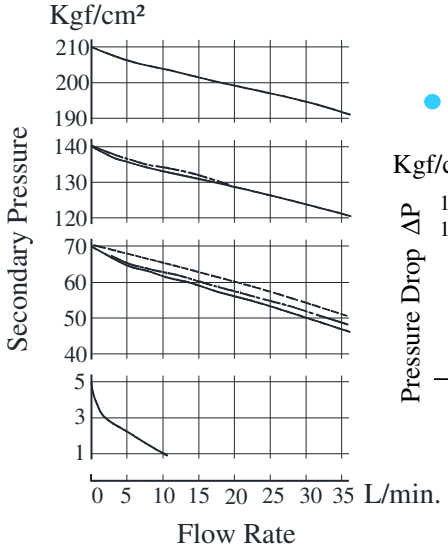


Min. Adjustment Pressure vs. Max. Flow



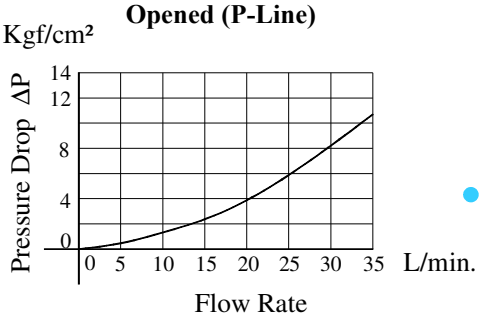
Nominal Override Characteristics

Primary Pressure 250 Kgf/cm²



– – – – – – – 'B'
—·—·— 'C'
——— 'H'

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



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.

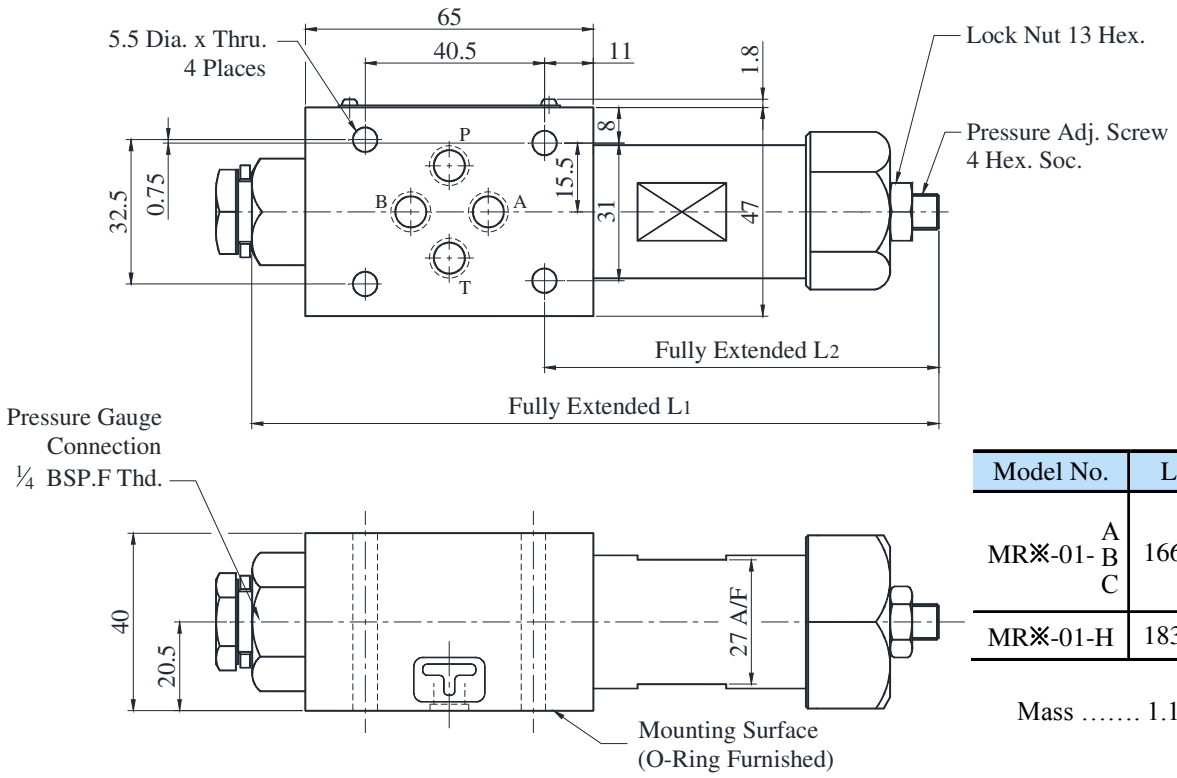
The back pressure at the tank line should be obtained by adding the tank line pressure drop for each valve to be stacked.

To make pressure adjustment, loosen the lock nut and turn the pressure adjustment screw clockwise or anticlockwise.

For an increase of pressure, turn the screw clockwise. Be sure to re-tighten the lock nut firmly after making adjustment to the pressure.

DIMENSIONS IN MILLIMETRES

- **MRP-01-※-30H16**
  MRA-01-※-30H16
  MRB-01-※-30H16



Model No.	L_1	L_2
MR※-01-A B C	166.2	92
MR※-01-H	183.2	109

Mass ……. 1.1Kg.

Spare Parts List

List of Seals

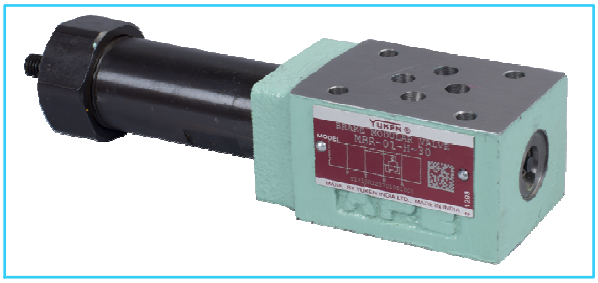
Sl. No.	Name of Parts	Parts Numbers	Qty. MR※-01
1	O-Ring	SO-NB-P9	4
2	O-Ring	SO-NB-P18	2
3	O-Ring	SO-NA-P20	1

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

List of Seal Kit

Model Numbers	Seal Kit Number
MRP-01	KS-MBP-01-30
MRA-01	
MRB-01	

1/8 Brake Modular Valves



Specifications

Max. Operating Pressure Kgf/cm^2	Max. Flow L/min.
250	35

Model Number Designation

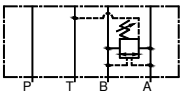
F-	MBR	-01	-C	-30
Special Seals	Series Number	Valve Size	Pres. Adj. Range Kgf/cm^2	Design Number
F: Special Seals for Phosphate Ester Type Fluids (Omit if not required)	**MBR:** Brake Modular Valves	**01**	**C:** *~140 *1 **H:** 70~210	**30**

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

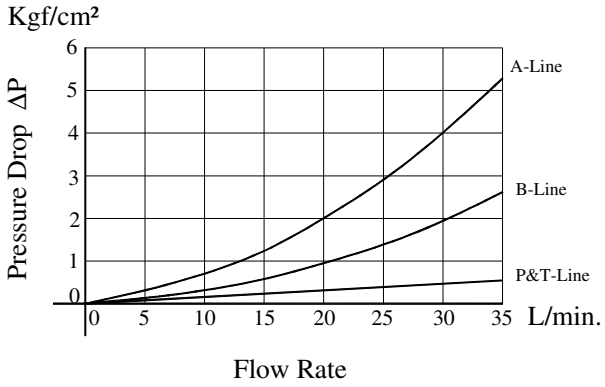
Typical Performance Characteristics

Hydraulic Fluid: Viscosity 35cSt, Specific Gravity 0.850

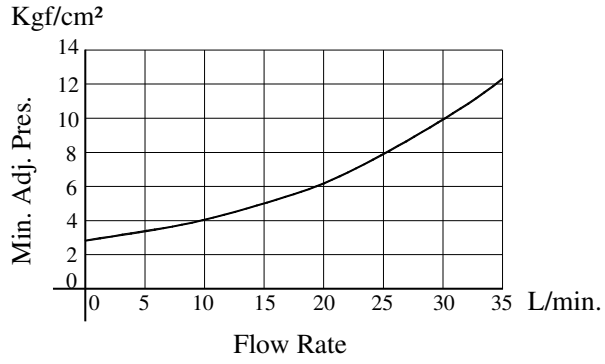
Graphic Symbol



- **Pressure Drop**



- **Min. Adjustment Pressure**

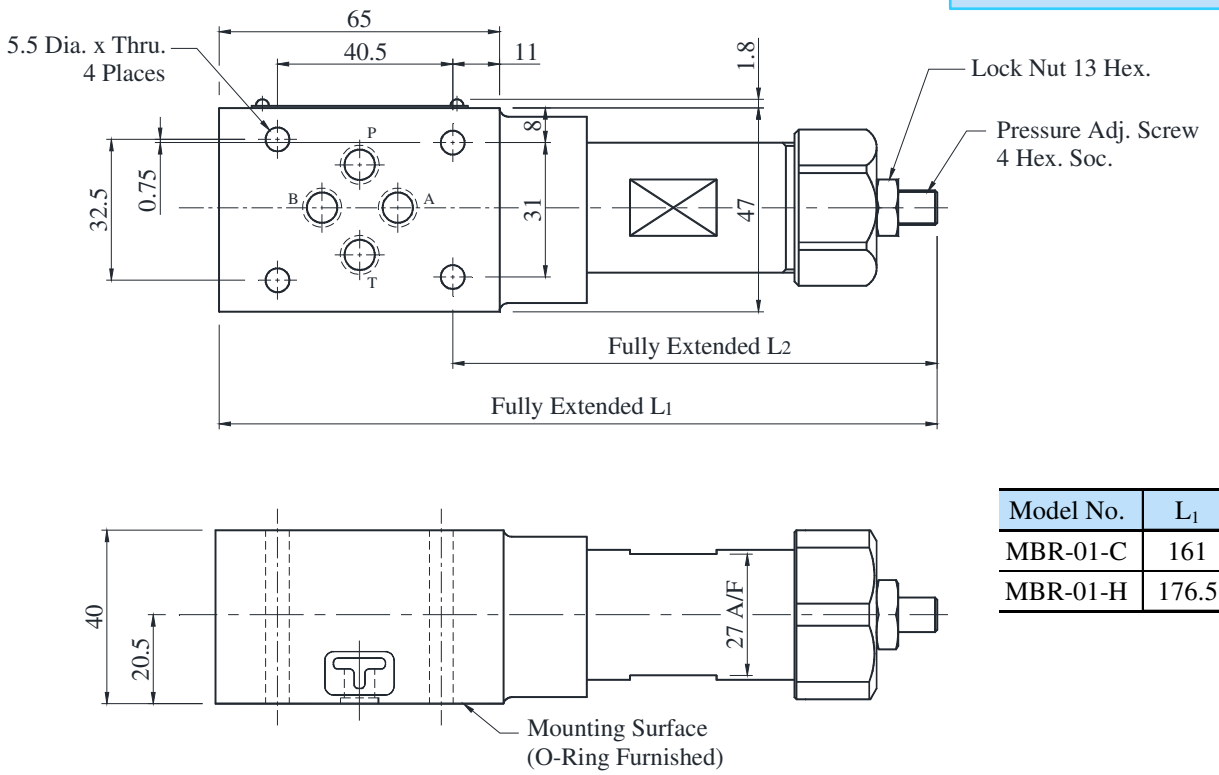


Instructions

- **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 or anticlockwise.
  Be sure to re-tighten the lock nut firmly after making adjustment to the pressure.

DIMENSIONS IN MILLIMETRES

MBR-01-※-30



Model No.	L_1	L_2
MBR-01-C	161	107
MBR-01-H	176.5	122.5

Mass ……. 1.3Kg.

Spare Parts List

List of Seals

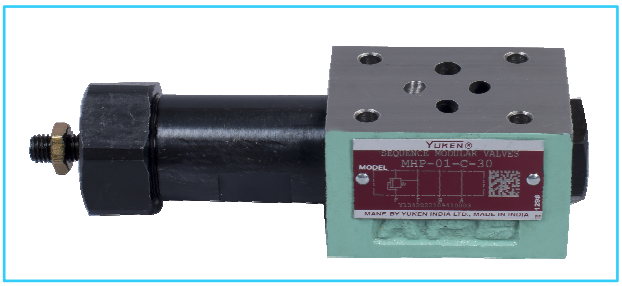
Sl. No.	Name of Parts	Parts Numbers	Qty.
1	O-Ring	SO-NB-P7	1
2	O-Ring	SO-NB-P9	4
3	O-Ring	SO-NB-P18	1
4	O-Ring	SO-NA-P20	1

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

List of Seal Kit

Model Number	Seal Kit Number
MBR-01	KS-MBR-01-30

1/8 Sequence Modular Valves



Specifications

Max. Operating Pressure Kgf/cm^2	Max. Flow L/min.
250	35

Model Number Designation

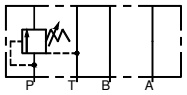
F-	MHP	-01	-C	-30
Special Seals	Series Number	Valve Size	Pres. Adj. Range Kgf/cm^2	Design Number
F: Special Seals for Phosphate Ester Type Fluids (Omit if not required)	**MHP:** Sequence Modular Valves For P-Line	**01**	**C:** * ~ 140 *1 **H:** 70 ~ 210	**30**

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

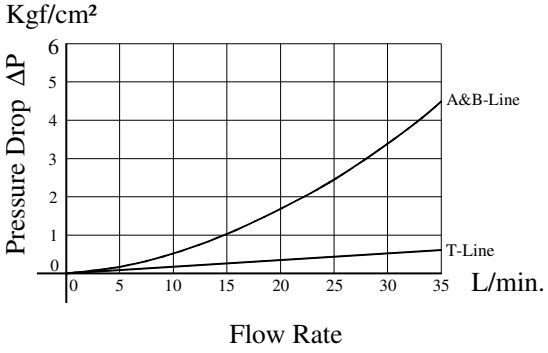
Typical Performance Characteristics

Hydraulic Fluid: Viscosity 35cSt, Specific Gravity 0.850

Graphic Symbol

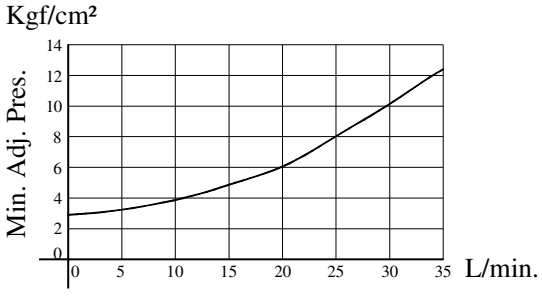


- **Pressure Drop**



Flow Rate

- **Min. Adjustment Pressure**



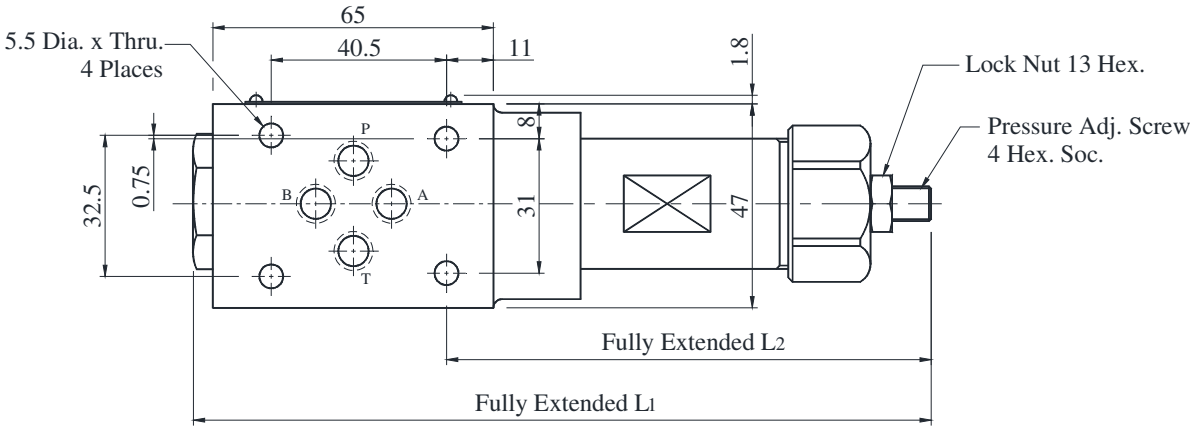
Flow Rate

Instructions

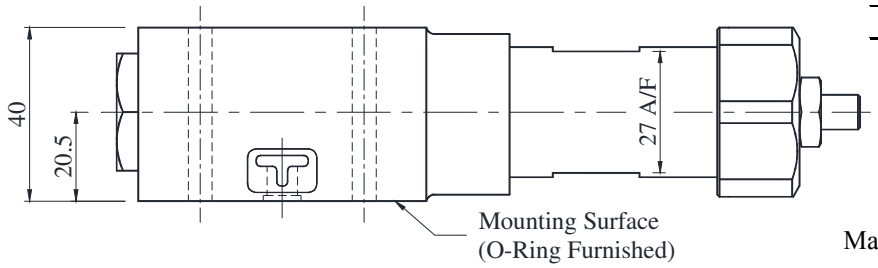
- **Minimum Adjustment Pressure** varies according to the back pressure at tank line. Therefore, please obtain it from the following formula.
  Min. Adjustment Pressure = Value obtained from minimum adjustment pressure characteristics curve and back pressure at tank line.
  The back pressure at the tank 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 or anticlockwise.
  Be sure to re-tighten the lock nut firmly after making adjustment to the pressure.

MHP-01-※-30

DIMENSIONS IN MILLIMETRES



Model No.	L_1	L_2
MHP-01-C	151	92
MHP-01-H	166.5	107.5



Mass ……. 1.1Kg.

Spare Parts List

List of Seals

Sl. No.	Name of Parts	Parts Numbers	Qty.
1	O-Ring	SO-NB-P9	4
2	O-Ring	SO-NB-P18	2
3	O-Ring	SO-NA-P20	1

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

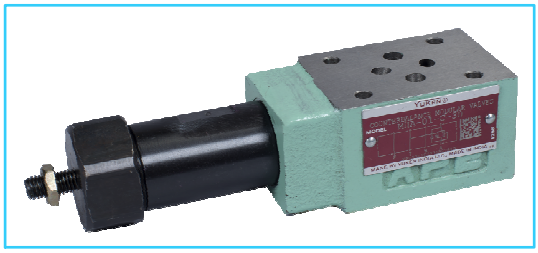
List of Seal Kit

Model Number	Seal Kit Number
MHP-01	KS-MHP-01-30

1/8 Counterbalance Modular Valves

Specifications

Max. Operating Pressure Kgf/cm^2	Max. Flow L/min.
250	35

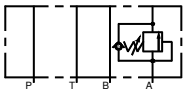


Model Number Designation

F-	MHA	-01	-C	-30
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	**01**	**C:** * ~ 140 *1 **H:** 70 ~ 210	**30**

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

Graphic symbols

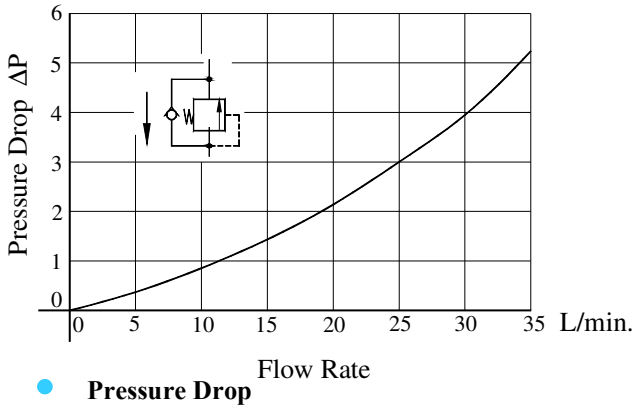


Typical Performance Characteristics

Hydraulic Fluid: Viscosity 35cSt, Specific Gravity 0.850

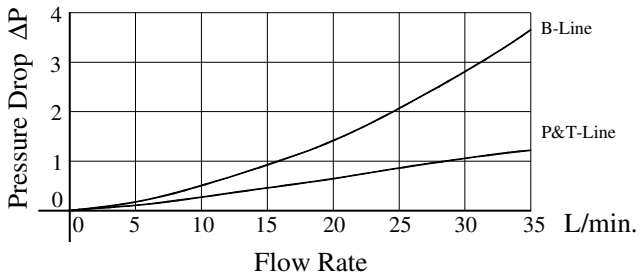
Pressure Drop for Free Flow

Kgf/cm²



Pressure Drop

Kgf/cm²



Instructions

Minimum Adjustment Pressure

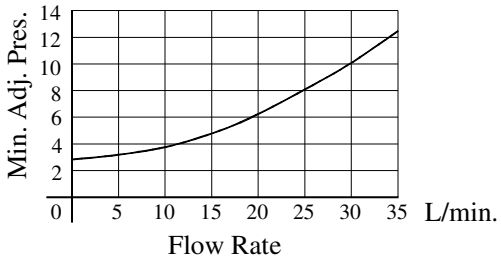
Is affected by T-Line Back Pressure. Minimum by Adj. Pres. can be found by using the formula Min Adj. Pres. = Min. Adj. Pres. Characteristic *1 plus the outlet -side back pressure of the valve.
The outlet side back pressure of the valve include the valves of the A-Line & T-Line pressure drop characteristics of the valves to be stacked due to the valve with internal drain.

To make pressure adjustment, loosen the lock nut and turn the pressure adjustment screw clockwise for decrease in pr. after setting, lock the adj. screw with lock nut.

Model No.	L_1	L_2
MHA-01-C	171	112
MHA-01-H	186.5	127.5

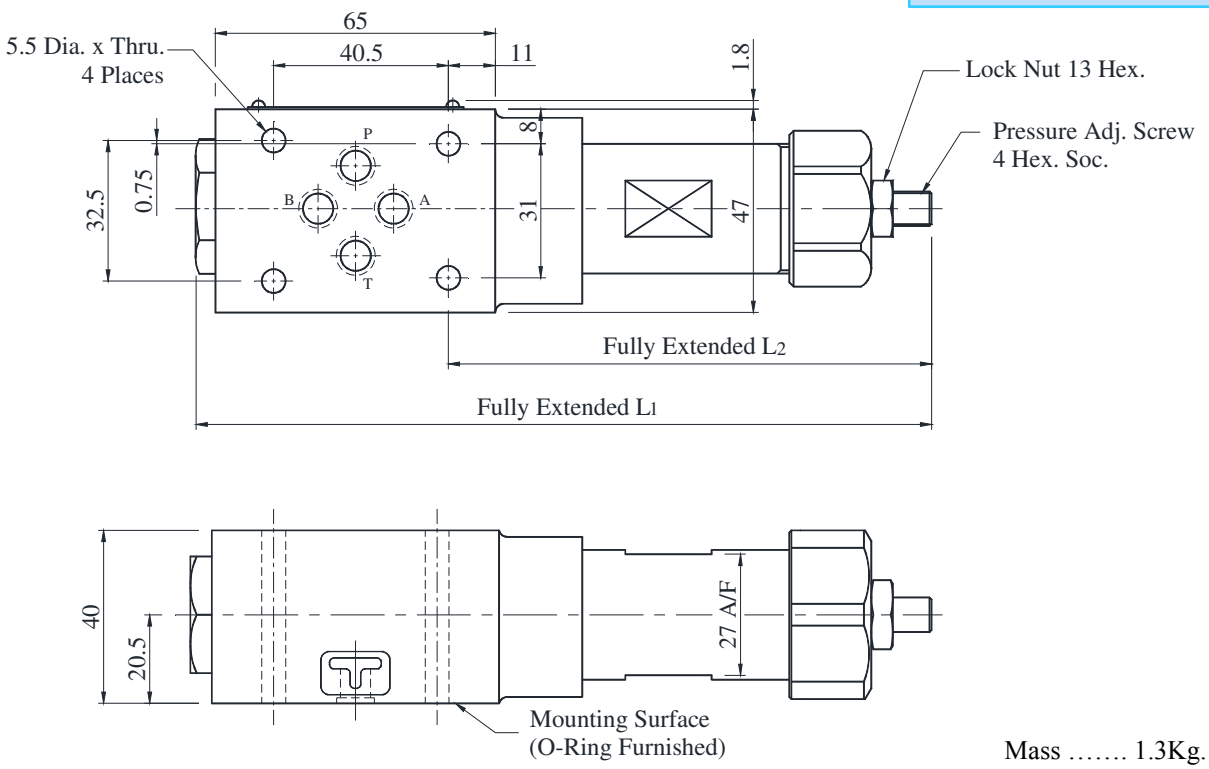
Min. Adjustment Pressure

Kgf/cm²



● MHA-01-※-30

DIMENSIONS IN MILLIMETRES



Mass ……. 1.3Kg.

Spare Parts List

● List of Seals

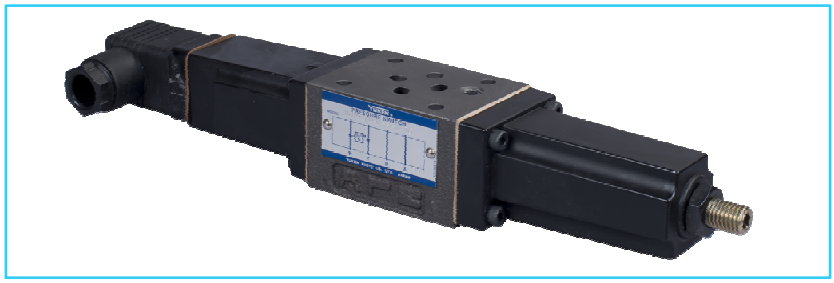
Sl. No.	Name of Parts	Parts Numbers	Qty.
1	O-Ring	SO-NB-P9	4
2	O-Ring	SO-NB-P18	2
3	O-Ring	SO-NA-P20	1

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

● List of Seal Kit

Model Number	Seal Kit Number
MHA-01	KS-MHA-01-30

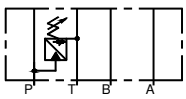
1/8 Pressure Switch Modular Valves



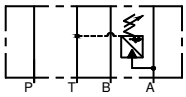
Model Number Designation

F-	MJP	-01	-M	-B	-N	-10
Special seals	Series Numbers	Valve Size	Type of switch	Pres. Adj. Range Kgf/cm^2	Type of Electrical Connection	Design Number
F: Special Seals for Phosphate Ester Type Fluids (Omit if not required)	**MJP:** P-Line **MJA:** A-Line **MJB:** B-Line Pressure Switch Modular Valves	**01**	**M:** Sensitive Switch **K:** Normally Open Proximity Switch **KC:** Normally Closed Proximity Switch	**B:** 10-70 **C:** 35-140 **H:** 70-210	**N:** With Plug-in Connector (DIN) **None:** Cable Connector Type	**10**

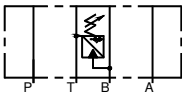
Graphic Symbols



MJP-01



MJA-01



MJB-01

Specifications

Max. Operating Pressure Kgf/cm^2	Max. Flow L/min.
250	35

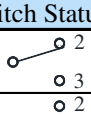
Sensitive Switch Rating

Electric Source	AC	DC	
Voltage V	125 – 250	125	250
Current A	11 A-1/3 HP	0.5	0.25

Instructions

- 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 marking adjustment to the pressure.
- Wiring of modular valves with a sensitive switch should be made correctly referring to the table as shown below. Numbers in the switch status column indicate wiring numbers in receptacles or contact numbers of connectors.

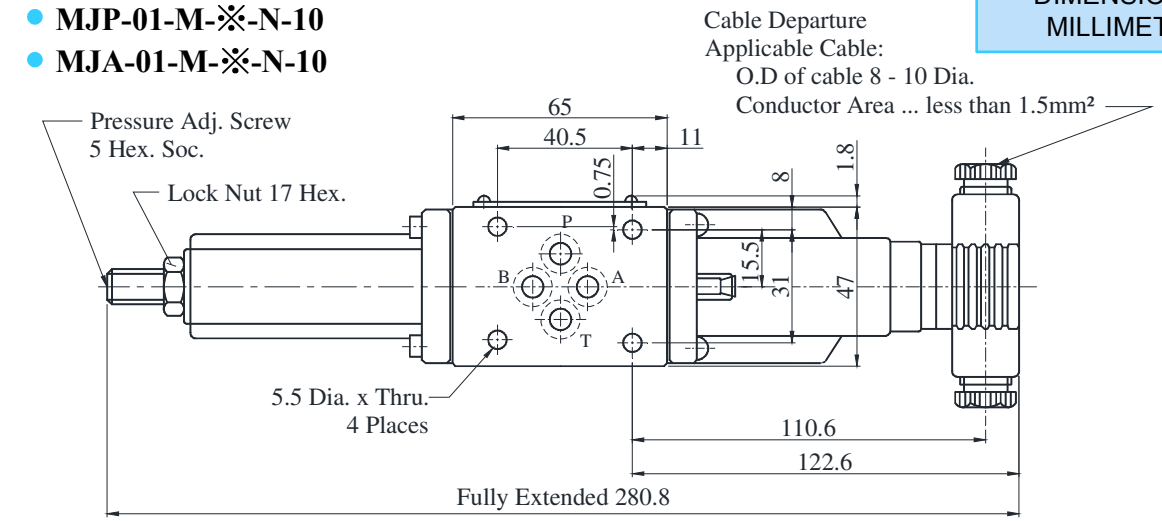
(Pressure with Sensitive Switch and the Switch Status)

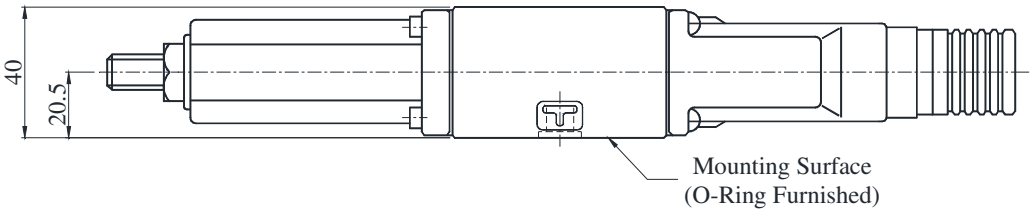
Operating Pressure	Switch Status
Less than Pressure Setting	
More than Pressure Setting	

Plug-in Connector Type with Sensitive Switch

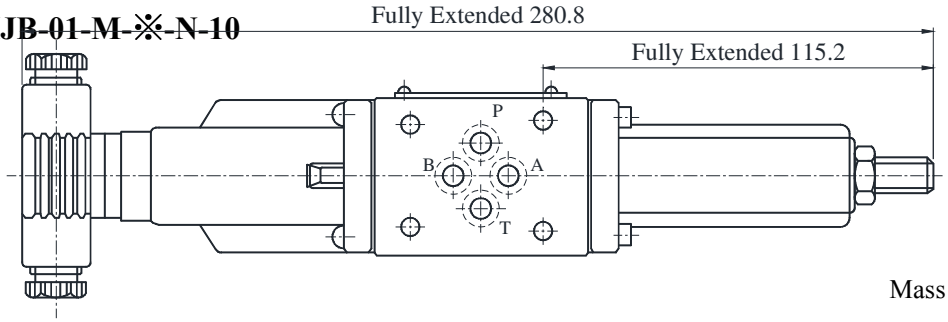
DIMENSIONS IN MILLIMETRES

- **MJP-01-M-※-N-10**
- **MJA-01-M-※-N-10**





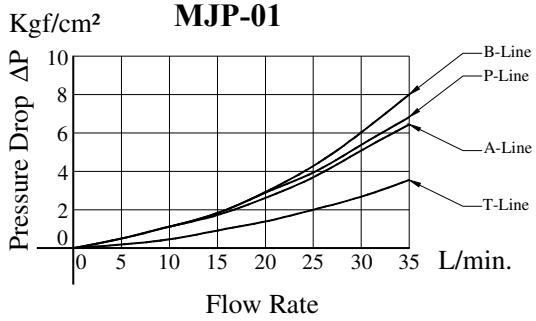
- **MJB-01-M-※-N-10**

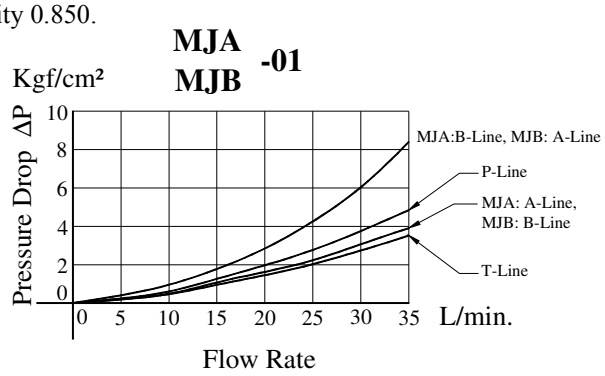


Mass 1.3Kg

Pressure Drop

Hydraulic Fluid : Viscosity 35 cSt (164 SSU), specific gravity 0.850.





Spare Parts List

- **List of Seals**

Sl. No.	Name of Parts	Parts Numbers	Qty. MJ※-01
1	O-Ring	SO-NB-P9	4
2	O-Ring	SO-NA-P5	1
3	Gasket	3116-VK4-14239-4	1
4	Gasket	3116-VK4-14240-2	1

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

- **List of Seal Kit**

Model Numbers	Seals Kit Number
MJP-01	KS-MJP-01-10
MJA-01	
MJB-01	

1/8 Throttle Modular Valves

Specifications

Max. Operating Pressure Kgf/cm^2	Max. Flow L/min.
250	35

Note: At the low differential pressure, maximum flow is limited. See "Pressure Drop at Throttle Fully Open".

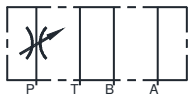
Model Number Designation

F-	MSP	-01	-30
Special Seals	Series Number	Valve Size	Design Number
F: Special Seals for Phosphate Ester Type Fluids (Omit if Not required)	**MSP:** Throttle Modular Valves for P-Line	**01**	**30**

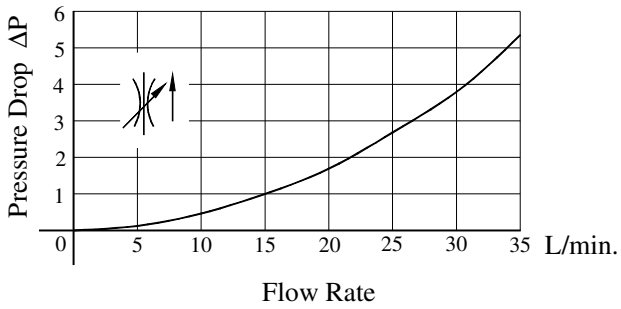
Typical Performance Characteristics

Hydraulic Fluid: Viscosity 35cSt, Specific Gravity 0.850

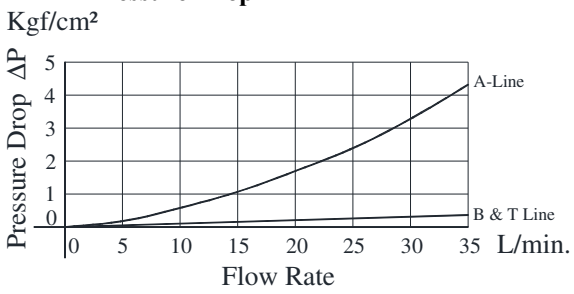
Graphic Symbols



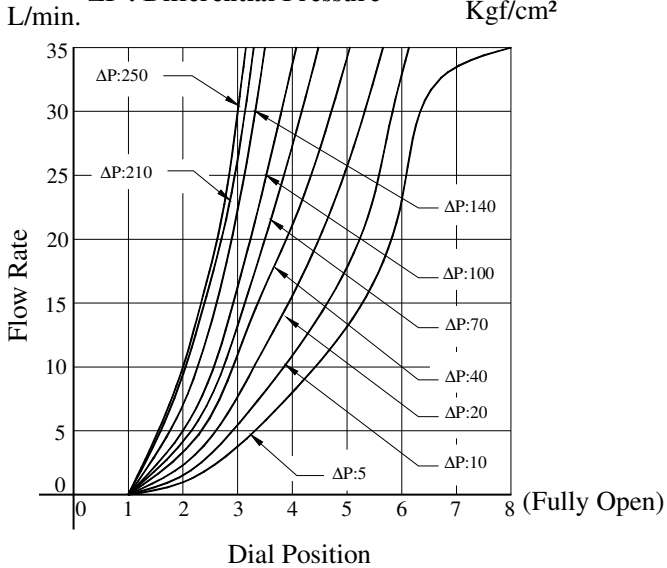
- **Pressure Drop at Throttle Fully Open**



- **Pressure Drop**



- **Metred Flow Vs. Dial Position**
  ΔP : Differential Pressure

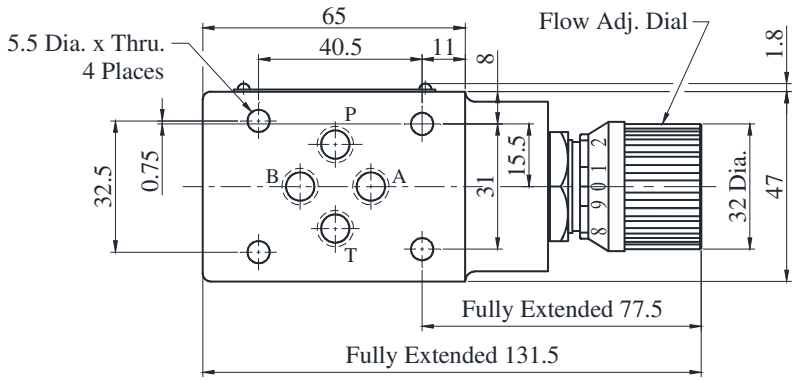


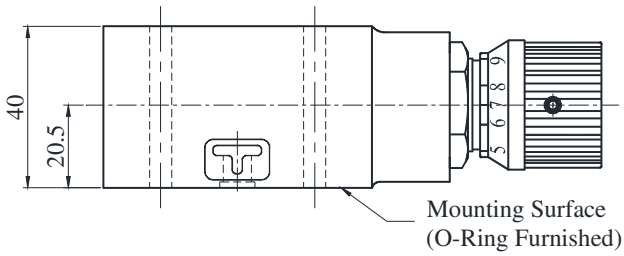
Instructions

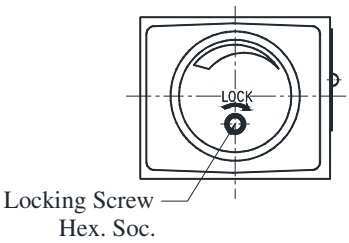
- To adjust flow rate, loosen locking screw for the dial and turn the flow rate adjustment dial clockwise or anti-clockwise. For a decrease of flow, turn the dial clock-wise. Be sure to re-tighten the locking screw firmly after the adjustment of the flow rate.

DIMENSIONS IN MILLIMETRES

● MSP-01-※-30







Mass …… 1.2Kg

Spare Parts List

● List of Seals

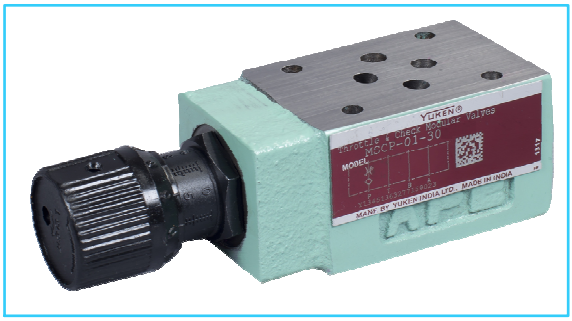
Sl. No.	Name of Parts	Parts Numbers	Qty.
1	O-Ring	SO-NA-P6	1
2	O-Ring	SO-NB-P9	4
3	O-Ring	SO-NB-P18	1
4	Back-Up Ring	SO-BB-P6	1

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

● List of Seal Kit

Model Number	Seal Kit Number
MSP-01	KS-MSP-01-30

1/8 Check and Throttle Modular Valves



Specifications

Max. Operating Pressure Kgf/cm^2	Max. Flow L/min.
250	35 Note

Note: At the low differential pressure, maximum flow is limited. See "Pressure Drop at Throttle Fully Open".

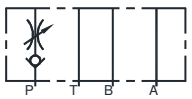
Model Number Designation

F-	MSCP	-01	-30
Special Seals	Series Number	Valve Size	Design Number
F: Special Seals for Phosphate Ester Type Fluids (Omit if not required)	**MSCP:** Check and Throttle Modular Valves for P-Line	**01**	**30**

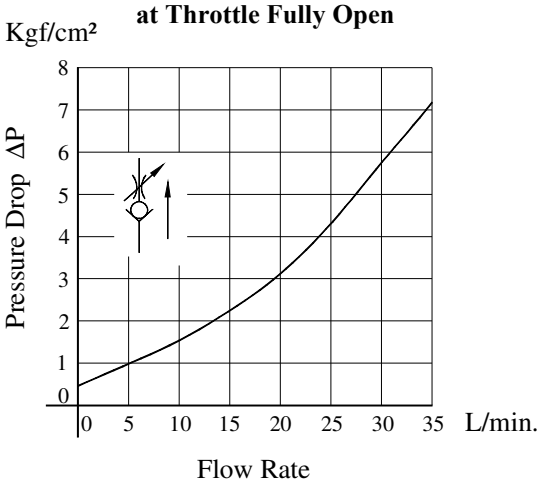
Typical Performance Characteristics

Hydraulic Fluid: Viscosity 35cSt, Specific Gravity 0.850

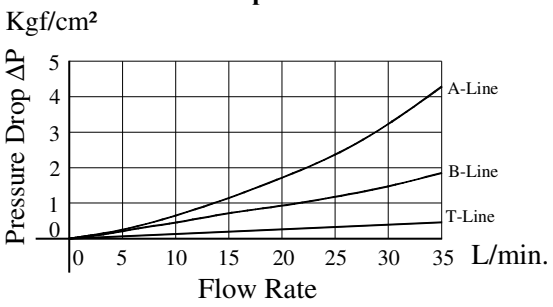
Graphic symbols



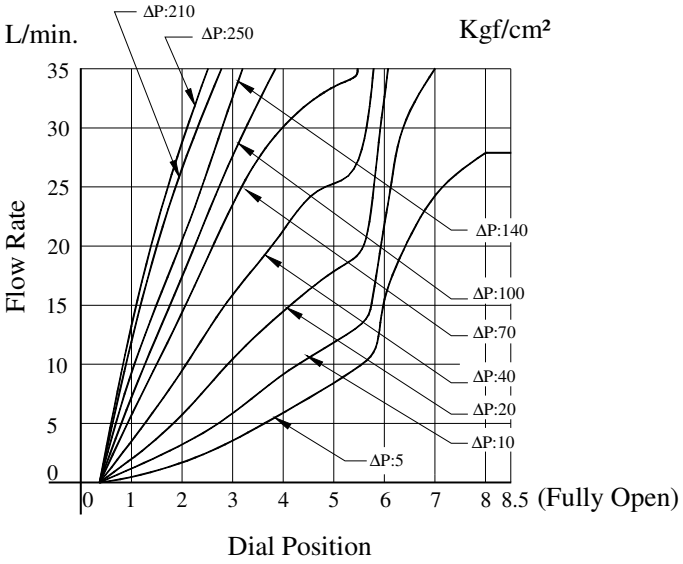
Pressure Drop at Throttle Fully Open



Pressure Drop



Metred Flow Vs. Dial Position
ΔP : Differential Pressure

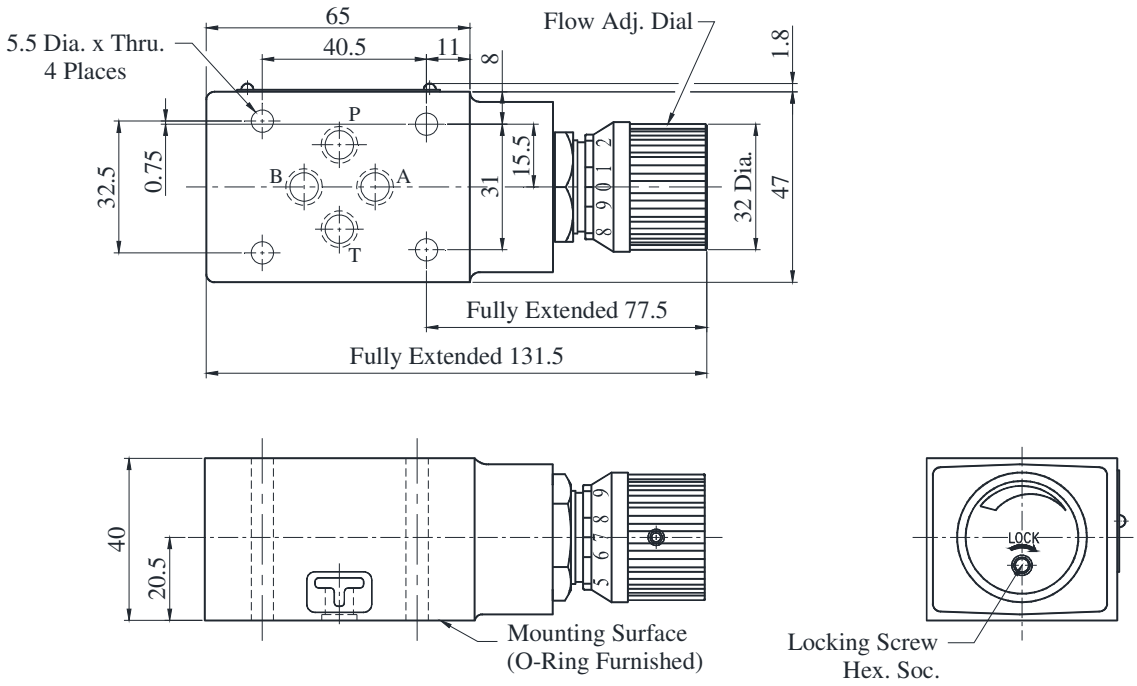


Instructions

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

DIMENSIONS IN MILLIMETRES

MSCP-01-30



Mass 1.2Kg

Spare Parts List

List of Seals

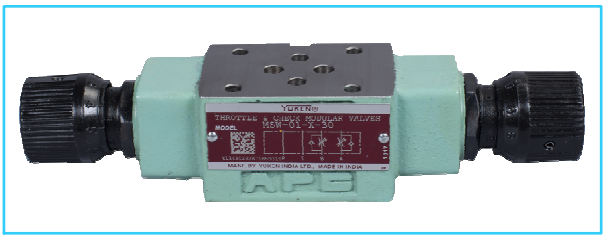
Sl. No.	Name of Parts	Parts Numbers	Qty.
1	O-Ring	SO-NA-P6	1
2	O-Ring	SO-NB-P9	4
3	O-Ring	SO-NB-P18	1
4	Back-Up Ring	SO-BB-P6	1

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

List of Seal Kit

Model Number	Seal Kit Number
MSP-01	KS-MSP-01-30

1/8 Throttle and Check Modular Valves



Specifications

Max. Operating Pressure Kgf/cm^2	Max. Flow L/min.
250	35

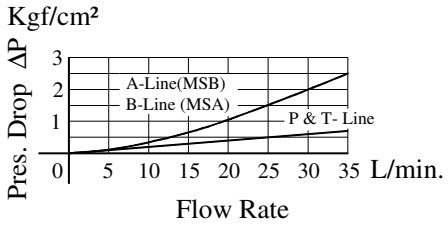
Model Number Designation

F-	MSW	-01	-X	Y	-30
Special seals	Series Number	Valves Size	Direction of Flow ("A" line)	Direction of Flow ("B" line)	Design Number
F: Special Seals For Phosphate Ester Type Fluids (Omit if not required)	**MSA:** Throttle and Check Modular Valves for A-Line	**01**	**X:** Metre-Out	---	**30**
			Y: Metre-In		
	MSB: Throttle and Check Modular Valves for B-Line		---	**X:** Metre-Out	
				Y: Metre-In	
	MSW: Throttle and Check Modular Valves for A.B-Line		**X:** Metre-Out		
			Y: Metre-In		
			X: Metre-Out	**Y:** Metre-In	
			Y: Metre-In	**X:** Metre-Out	

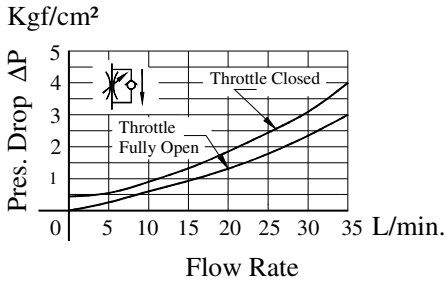
Typical Performance Characteristics

Hydraulic Fluid: Viscosity 35cSt, Specific Gravity 0.850

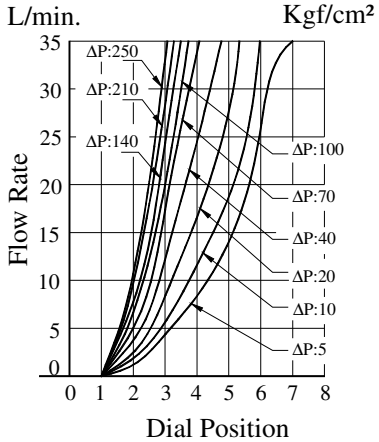
- **Pressure Drop**



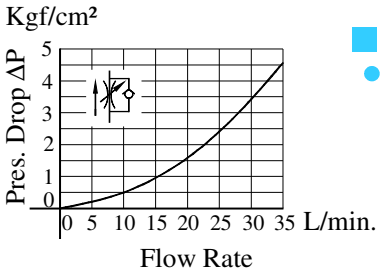
- **Pressure Drop for Free Flow**



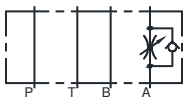
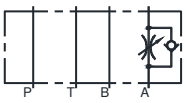
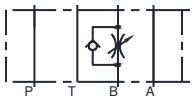
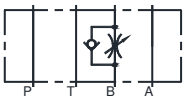
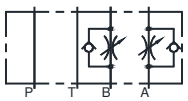
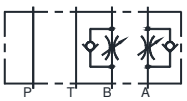
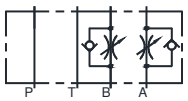
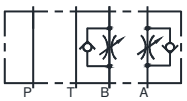
- **Metred Flow Vs. Dial Position**
  ΔP : Differential Pressure



- **Pressure Drop at Throttle Fully Open**



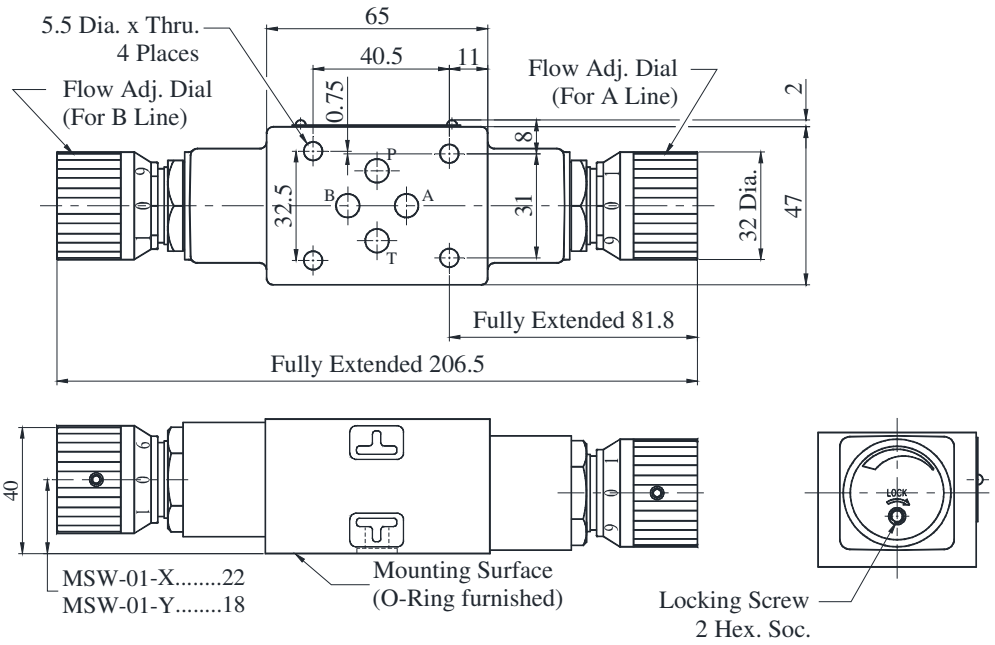
Graphic Symbols

Metre-Out	Metre-In
 MSA-01-X	 MSA-01-Y
 MSB-01-X	 MSB-01-Y
 MSW-01-X	 MSW-01-Y
Metre-Out • Metre-In	**Metre-In • Metre-Out**
 MSW-01-XY	 MSW-01-YX

Instructions

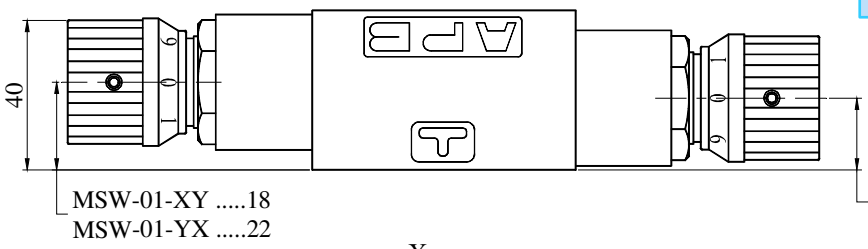
- To make flow rate adjustment, loosen locking screw for the dial and turn the flow rate adjustment dial clockwise or anti-clockwise. For a decrease of flow, turn the dial clock-wise. Be sure to re-tighten the lock- ing screw firmly after the adjustment of the flow rate.

● MSW-01-$\frac{X}{Y}$-30



● MSW-01-$\frac{XY}{YX}$-30

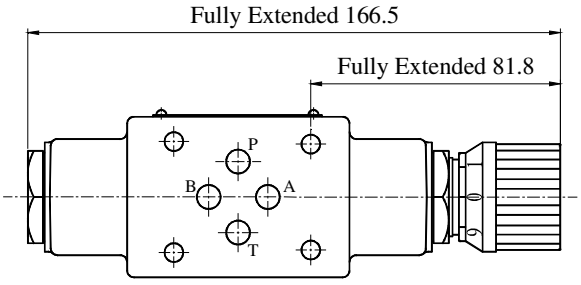
DIMENSIONS IN MILLIMETRES



For other dimensions, refer to above (MSW-01-$\frac{X}{Y}$) drawing.

Mass 1.5Kg

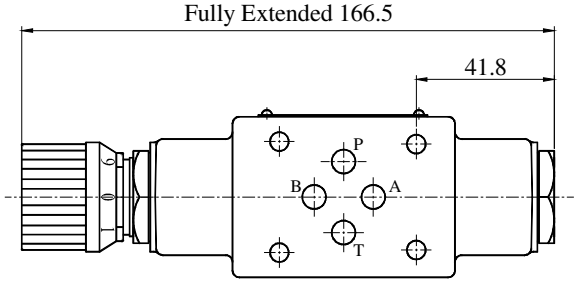
● MSA-01-$\frac{X}{Y}$-30



Mass 1.3Kg

For other dimensions, refer to above (MSW-01-$\frac{X}{Y}$) drawing.

● MSB-01-$\frac{X}{Y}$-30



Mass 1.3Kg

For other dimensions, refer to above (MSW-01-$\frac{X}{Y}$) drawing.

Spare Parts List

● List of Seals

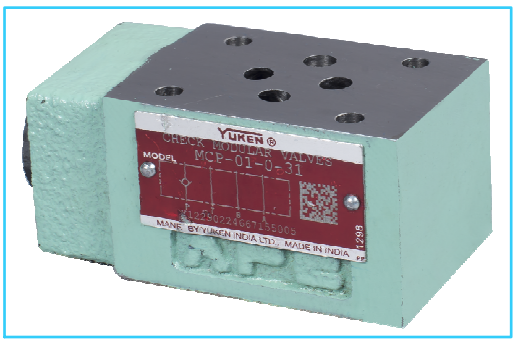
Sl. No.	Name of Parts	Part Numbers	Qty.		
			MSA-01	MSB-01	MSW-01
1	O-Ring	SO-NA-P6	1	1	2
2	O-Ring	SO-NB-P9	4	4	4
3	O-Ring	SO-NB-P18	2	2	2
4	Back-Up Ring	SO-BB-P6	1	1	2

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

● List of Seal Kits

Model Numbers	Seal Kit Numbers
MSA-01	KS-MSA-01-30
MSB-01	
MSW-01	KS-MSW-01-30

1/8 Check Modular Valves



Specifications

Max. Operating Pressure Kgf/cm^2	Max. Flow L/min.
250	35

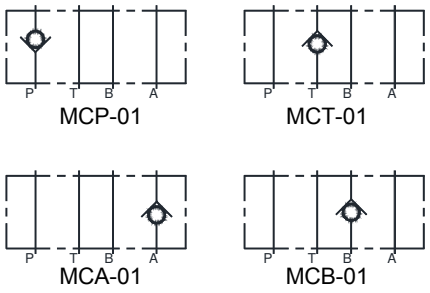
Model Number Designation

F-	MCP	-01	-0	-31
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 **MCA:** Check Modular Valves for A-Line **MCB:** Check Modular Valves for B-Line	**01**	**0:** 0.35 **2:** 2 **4:** 4	**31**

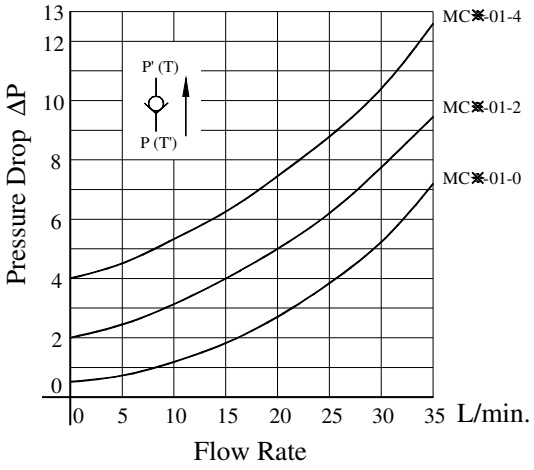
Typical Performance Characteristics

Hydraulic Fluid: Viscosity 35cSt, Specific Gravity 0.850

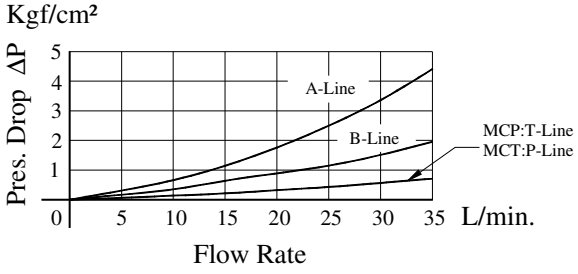
Graphic Symbols



● **Pressure Drop for Free Flow**

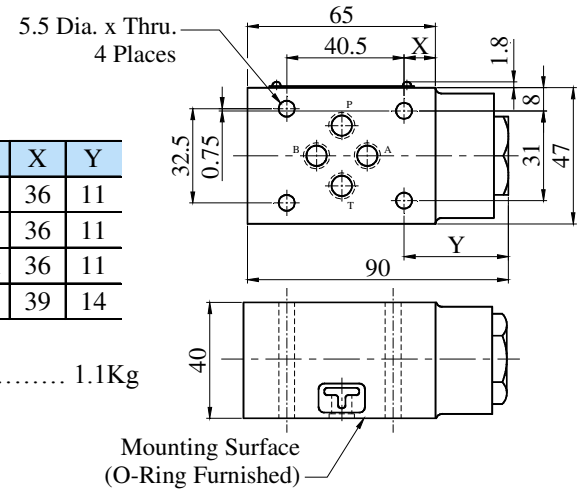


● **Pressure Drop**



● **MC※-01-※-30**

DIMENSIONS IN MILLIMETRES



Product	X	Y
MCP-01	36	11
MCT-01	36	11
MCA-01	36	11
MCB-01	39	14

Mass 1.1Kg

Spare Parts List

● **List of Seals**

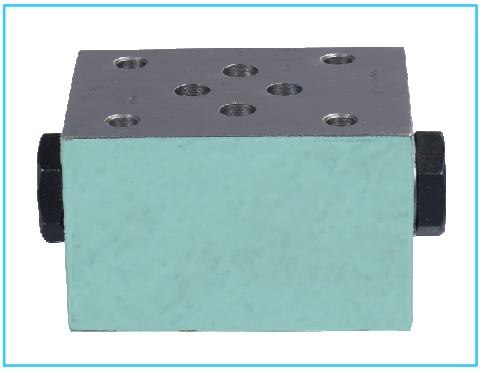
Sl. No.	Name of Parts	Parts Numbers	Qty.
1	O-Ring	SO-NB-P9	4
2	O-Ring	SO-NB-P18	1

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

● **List of Seal Kit**

Model Numbers	Seal Kit Number
MCP-01	KS-MCP-01-30
MCT-01	
MCA-01	
MCB-01	

1/8 Anti-Cavitation Modular Valves



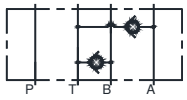
Specifications

Max. Operating Pressure Kgf/cm^2	Max. Flow L/min.
250	35

Model Number Designation

F-	MAC	-01	-30
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	**01**	**30**

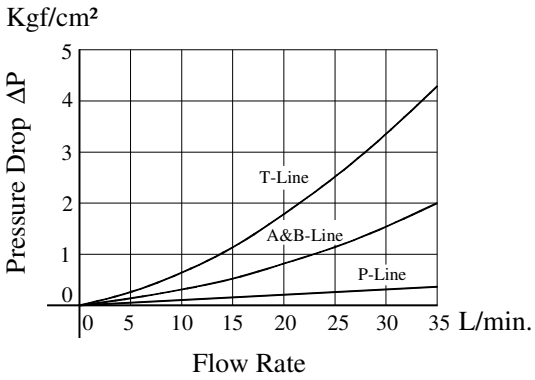
Graphic symbols



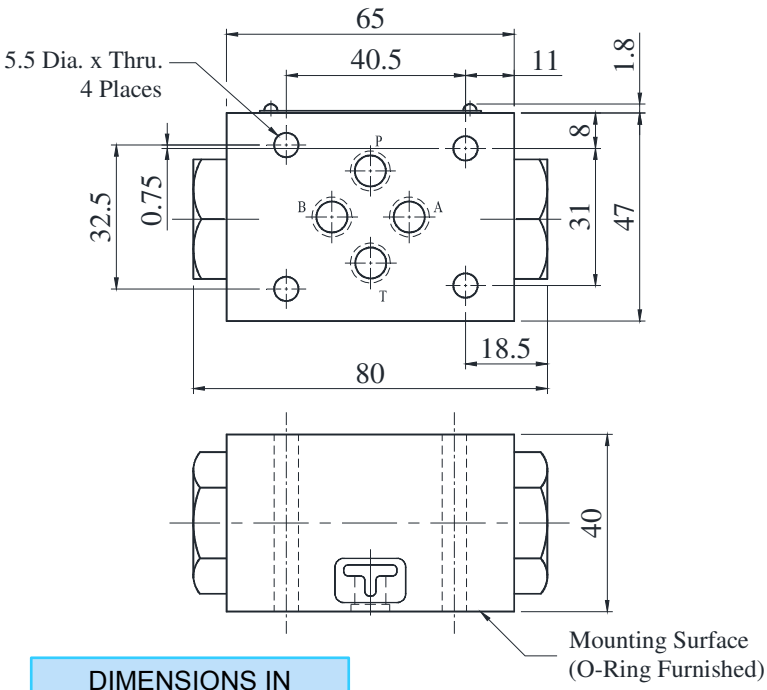
Typical Performance Characteristics

Hydraulic Fluid: Viscosity 35cSt, Specific Gravity 0.850

- **Pressure Drop**



- **MAC-01-30**



DIMENSIONS IN MILLIMETRES

Mass 0.8Kg

Spare Parts List

- **List of Seals**

Sl. No.	Name of Parts	Parts Numbers	Qty.
1	O-Ring	SO-NB-P9	4
2	O-Ring	SO-NB-P18	2

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

- **List of Seal Kit**

Model Number	Seal Kit Number
MAC-01	KS-MAC-01-30

1/8 Pilot Operated Check Modular Valves

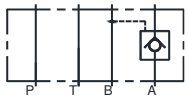
Specifications

Max. Operating Pressure Kgf/cm^2	Max. Flow L/min.
315	35

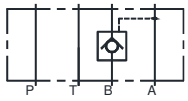
Model Number Designation

F-	MPA	-01	-2	40H01
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 Pilot Operated Check Modular Valves	**01**	**2:**2 **4:**4	**40H01** (Standard) **4001H01** (Low Pilot Pressure Control Type)

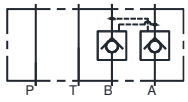
Graphic Symbols



MPA-01



MPB-01

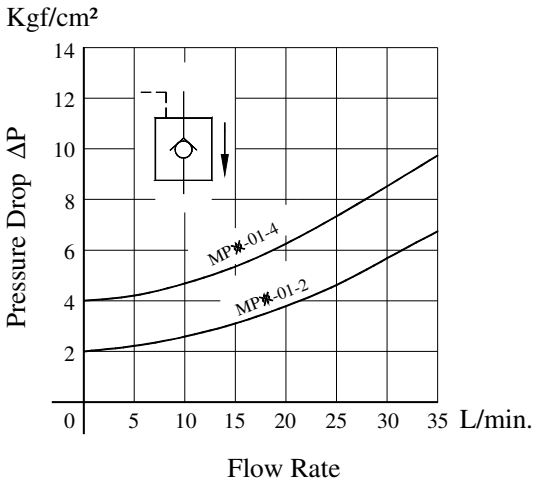


MPW-01

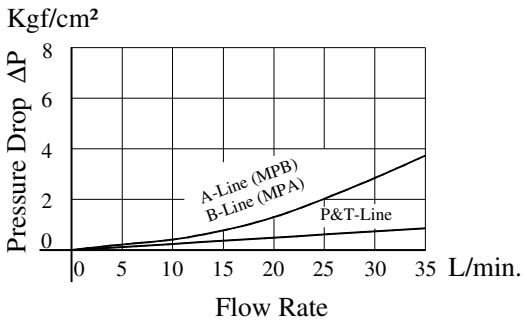
Typical Performance Characteristics

Hydraulic Fluid: Viscosity 35cSt, Specific Gravity 0.850

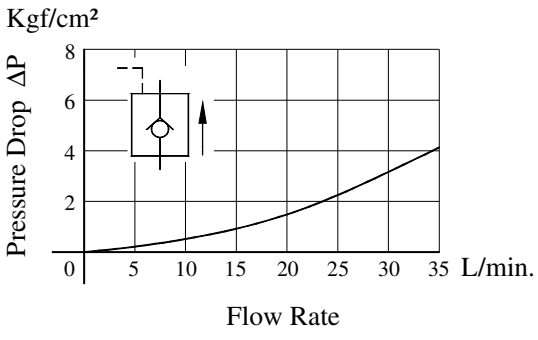
Pressure Drop for Free Flow



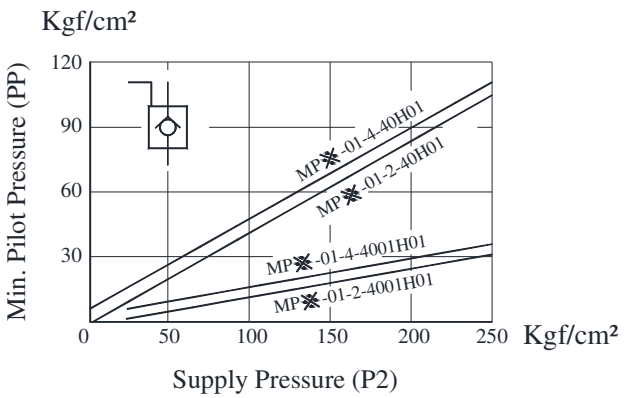
Pressure Drop



Pressure Drop for Reversed Controlled Flow

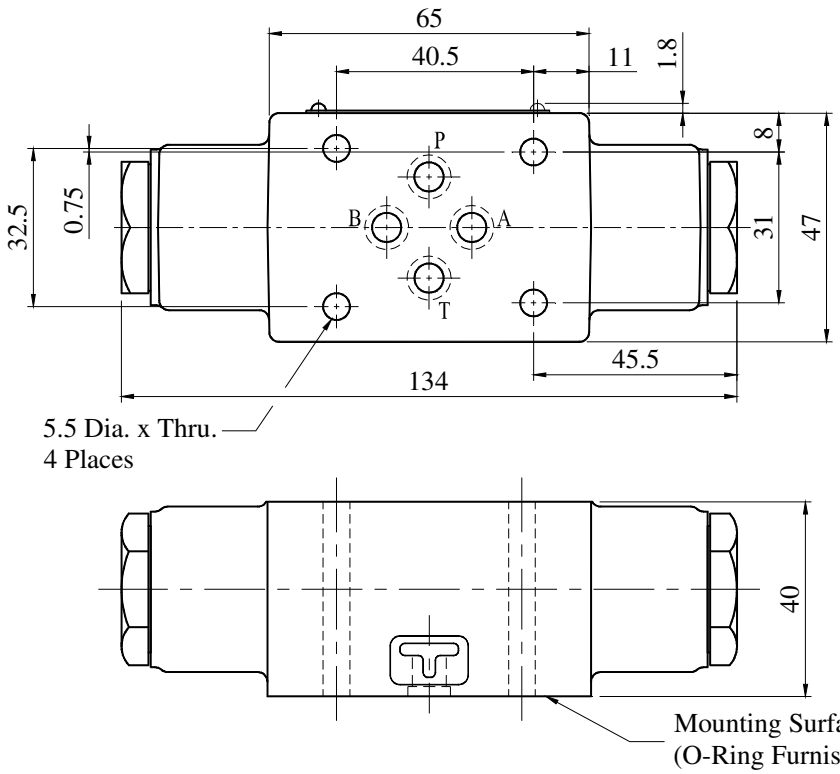


Min. Pilot Pressure



- **MPA-01-※-40H01/4001H01**
- **MPB-01-※-40H01/4001H01**
- **MPW-01-※-40H01/4001H01**

DIMENSIONS IN MILLIMETRES



Mass …… 1.2Kg

Spare Parts List

- **List of Seals**

Sl. No.	Name of Parts	Parts Numbers	Qty. MP※-01
1	O-Ring	SO-NB-P9	4
2	O-Ring	SO-NB-P18	2

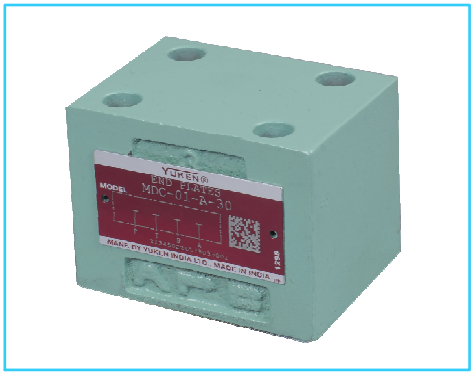
Note: When ordering the seals,
please specify the seal kit number from the table below.

- **List of Seal Kit**

Model Numbers	Seal Kit Number
MPA-01	KS-MAC-01-30
MPB-01	
MPW-01	

1/8 End Plates

Blocking Plates are used for auxiliary mounting surface or for closing unnecessary circuits.
Bypass plates are used for unidirectional circuits that require no solenoid operated directional valves.



Specifications

Max. Operating Pressure Kgf/cm^2	Max. Flow L/min.
250	35

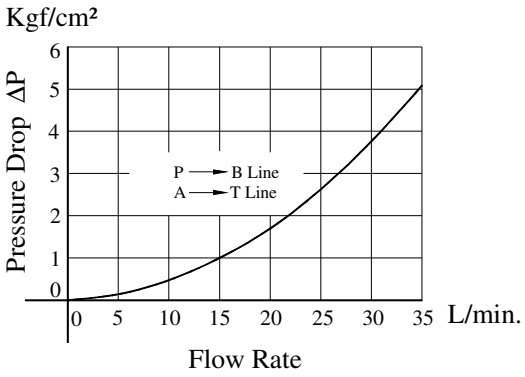
Model Number Designation

F-	MDC	-01	-A	-30
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 Plates	**01**	**A:** Blocking Plate **B:** Bypass Plate	**30**

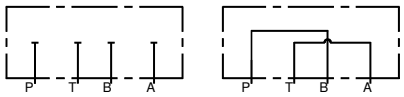
Typical Performance Characteristics

Hydraulic Fluid: Viscosity 35cSt, Specific Gravity 0.850

- **Pressure Drop**

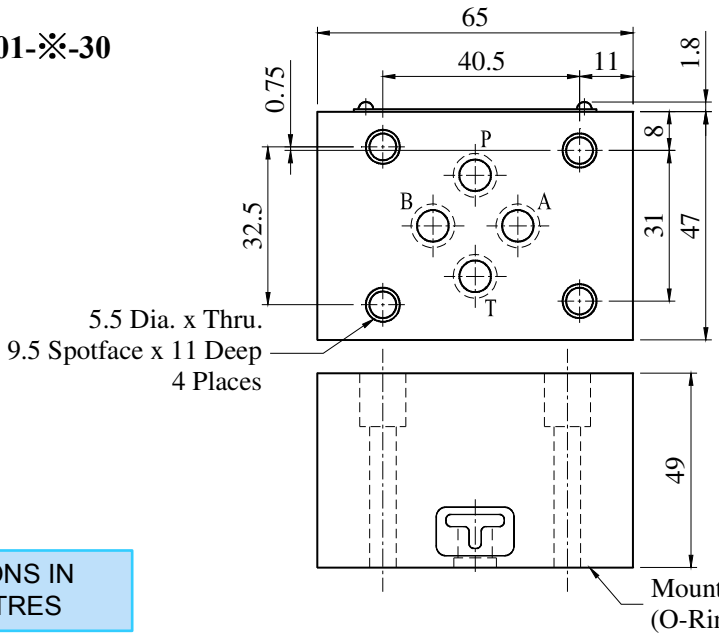


Graphic Symbols



Blocking Plate Bypass Plate

- **MDC-01-※-30**



DIMENSIONS IN MILLIMETRES

Mass 1Kg

1/8 Connecting Plates

These plates are used for detecting pressure of each line.

Specifications

Max. Operating Pressure Kgf/cm^2	Max. Flow L/min.
250	35

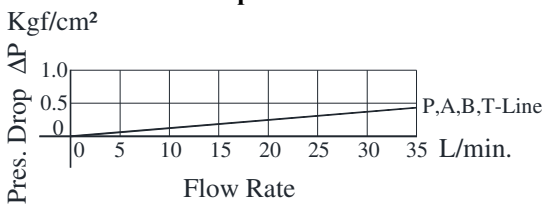
Model Number Designation

F-	MDS	-01	-PA	30	80
Special seals	Series Number	Plate Size	Type of Plate	Design Number	Design Standard
F: Special Seals For Phosphate Ester Type Fluids (Omit if not required)	**MDS:** Connecting Plates	**01**	**PA:** P.A-Line **PB:** P.B-Line **AT:** A.T-Line	**30**	**80**

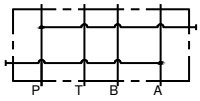
Typical Performance Characteristics

Hydraulic Fluid: Viscosity 35cSt, Specific Gravity 0.850

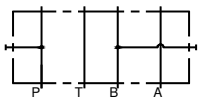
Pressure Drop



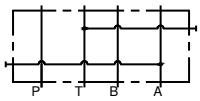
Graphic Symbols



MDS-01-PA

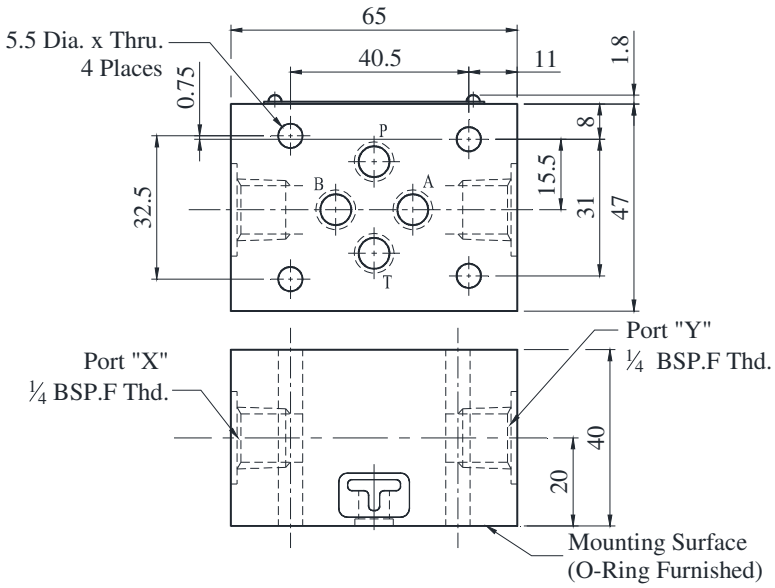


MDS-01-PB



MDS-01-AT

MDS-01-※-3080

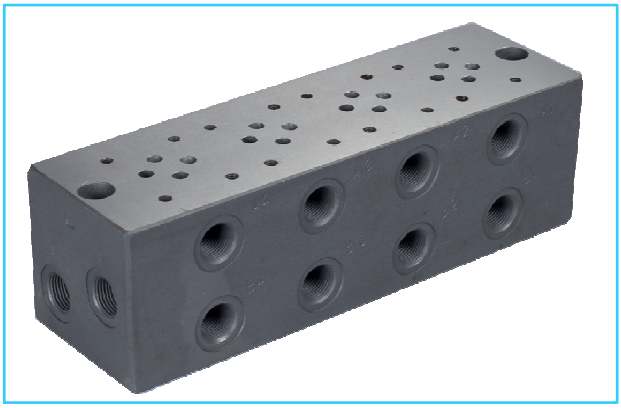


Model Numbers	Pressure Detecting Line	
	Port "X"	Port "Y"
MDS-01-PA	P-Line	A-Line
MDS-01-PB	B-Line	P-Line
MDS-01-AT	T-Line	A-Line

DIMENSIONS IN MILLIMETRES

Mass …… 0.8Kg

Base Plates, For 1/8 Modular Valves



Specifications

Max. Operating Pressure ……250Kgf/cm^2

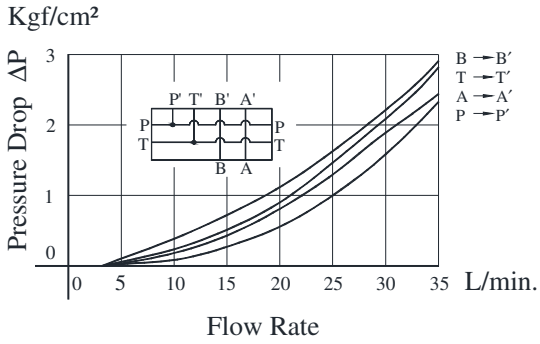
Model Number Designation

MMC	-01	-6		-40	80
Series Number	Plate Size	Number of Stations		Design Number	Design Standard
MMC: Base Plate	**01**	**1:** 1 Station **2:** 2 Station **3:** 3 Station	**4:** 4 Station **5:** 5 Station **6:** 6 Station	**40**	**80**

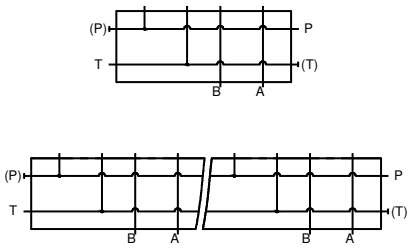
Typical Performance Characteristics

Hydraulic Fluid: Viscosity 35cSt, Specific Gravity 0.850

- **Pressure Drop**



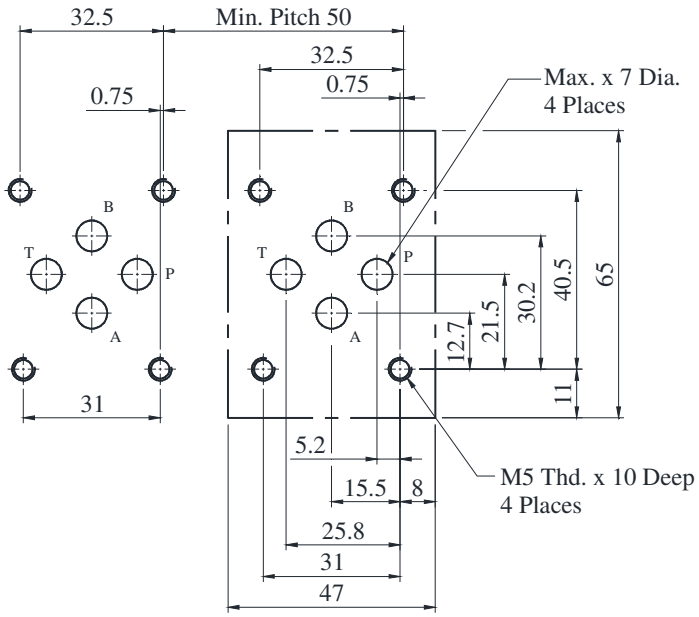
Graphic Symbols



Instructions

- **Port Used:** Base plate has two **Pressure Port "P"** and two tank port **"T"**s. Any one of these ports or two ports may be used. However, please be aware that the ports marked with (P) or (T) in the drawing are normally plugged. Remove the plug when using such ports. Make sure that ports that are not currently used are properly plugged.

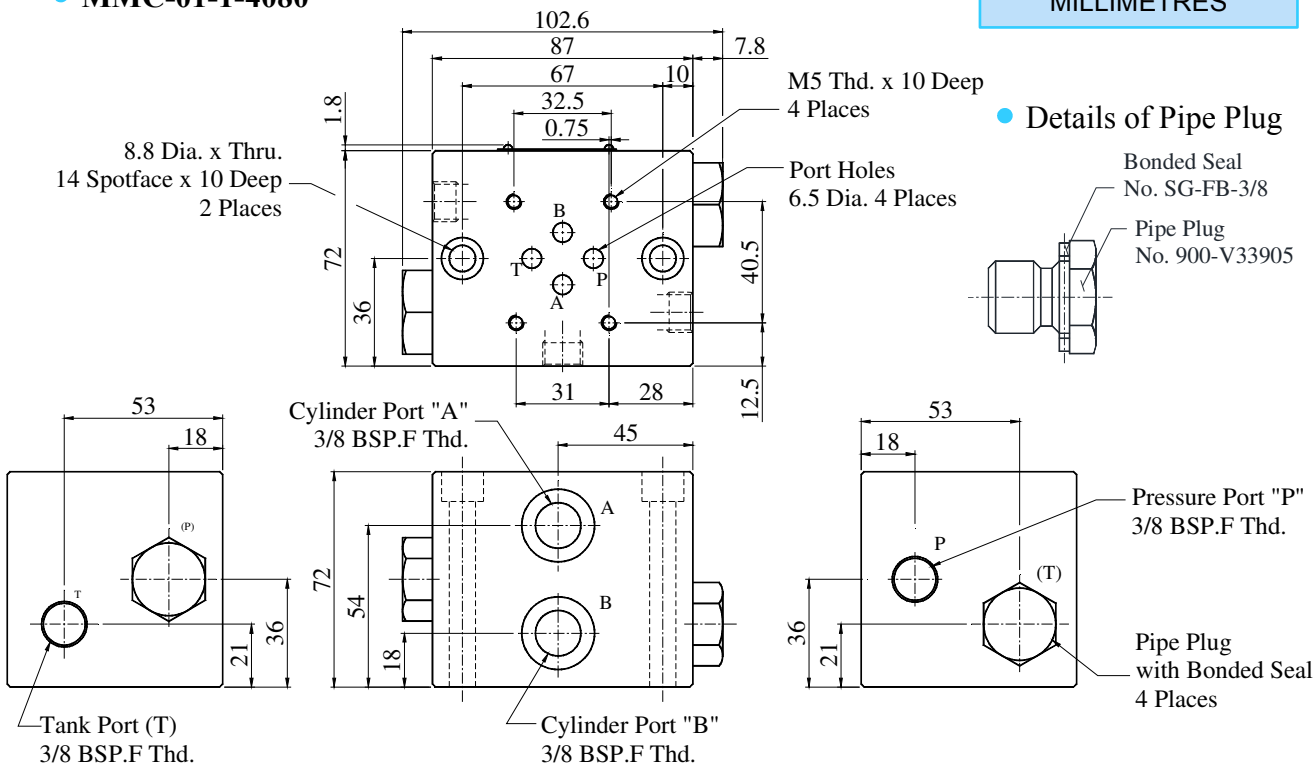
- **Interface Mounting Dimensions for 1/8 Modular Valve**
  When dedicated base plates (MMC-01) are not used, the following mounting surface must be prepared. The mounting surface should have a good machined finish.



DIMENSIONS IN MILLIMETRES

DIMENSIONS IN MILLIMETRES

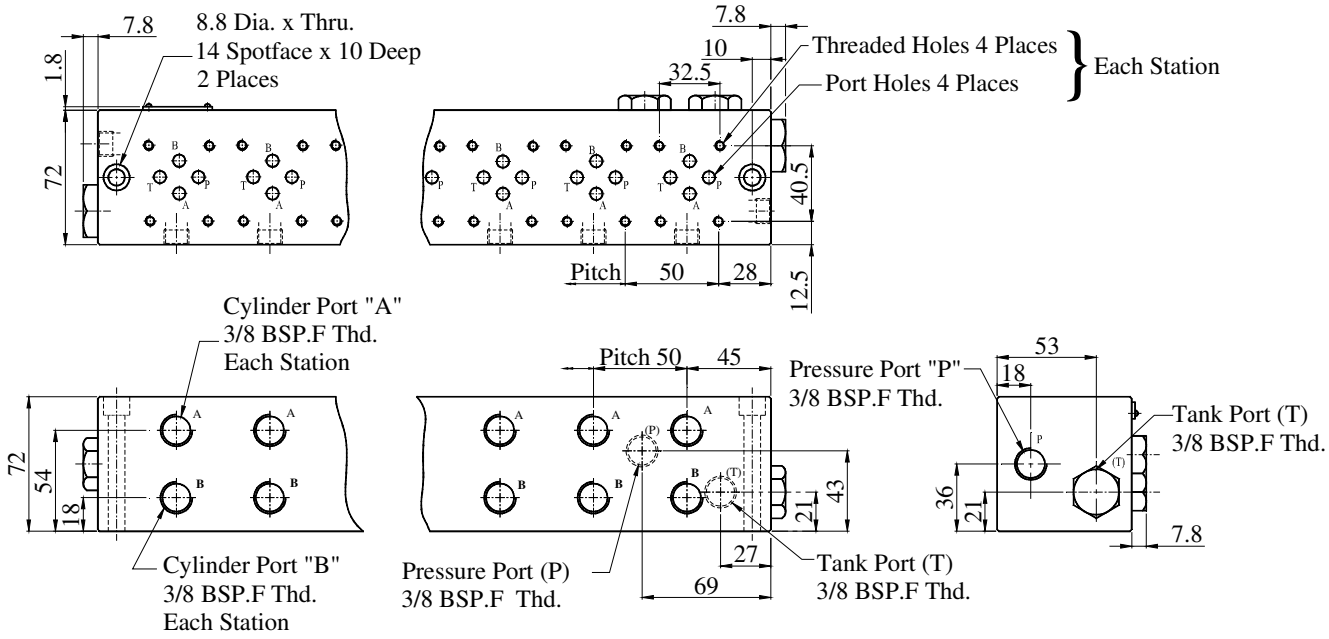
MMC-01-1-4080



Mass 3.5Kg

MMC-01- ※ -4080

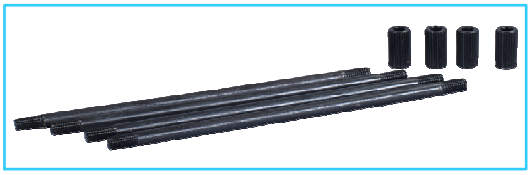
Number Of Station
(2-6 Stations)



Model Numbers	Dimensions mm		Mass Kg.
	L_1	L_2	
MMC-01-2	137	117	5.5
MMC-01-3	187	167	7.0
MMC-01-4	237	217	8.5
MMC-01-5	287	267	10.0
MMC-01-6	337	317	11.5

Mounting Bolts Kits, For 1/8 Modular Valves

Valves are mounted with four stud bolts. Valve 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	-01	-02	-30
Series Number	Size of Modular Valve	Bolt Number	Design Number
MBK: Bolt kits for Modular Valves	**01**	**01,02,03,04,05** (Refer to the following chart)	**30**

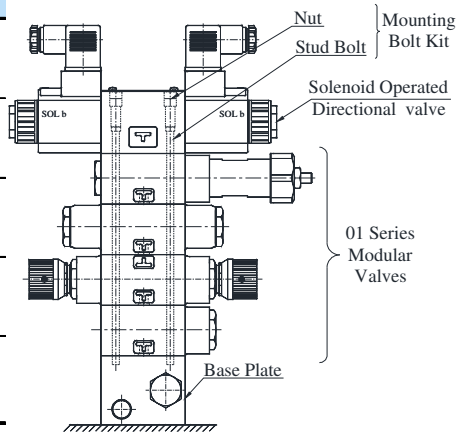
- **Bolts Kit Structure:**
  Stud Bolt …….. 4 Pcs. } 1 set
  Nut …….. 4 Pcs.

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

Bolt Kit selection chart

Model Numbers	Quantity of valves to be stacked			
	Solenoid Operated Directional Valve DSG-01	End Plate (MDC-01)	Modular Valve & Connecting Plate (M※※-01)	Mass gms
MBK-01-01-30	1	0	1	60
	0	1		
MBK-01-02-30	1	0	2	100
	0	1		
MBK-01-03-30	1	0	3	130
	0	1		
MBK-01-04-30	1	0	4	160
	0	1		
MBK-01-05-30	1 *1	0	0	40
	0	1		

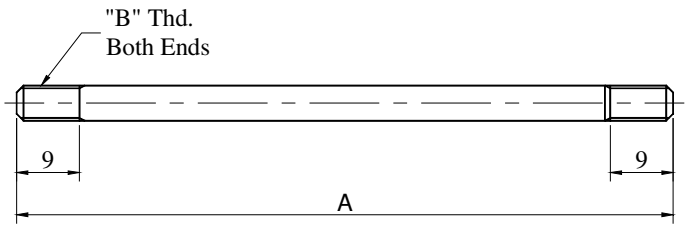
*1 The solenoid operated directional valve comes with mounting bolts.



01 Series Modular Valve Assemble

MBK-01-※-30

Stud Bolt

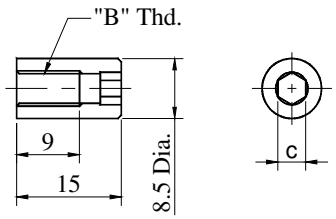


Model Numbers	A
MBK-01-01-30	94
MBK-01-02-30	134
MBK-01-03-30	174
MBK-01-04-30	214
MBK-01-05-30	See table below

MBK-01-05

Model Number	Socket Head Cap Screw
MBK-01-05-30	M5 x 45 Lg

Nut



Model Number	"B" Thd.	C
MBK-01-※-30	M5	4

DIMENSIONS IN MILLIMETRES