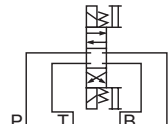

















# 005 Series Modular Valves

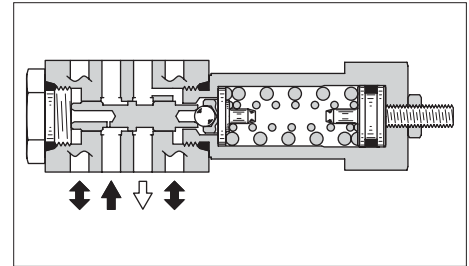
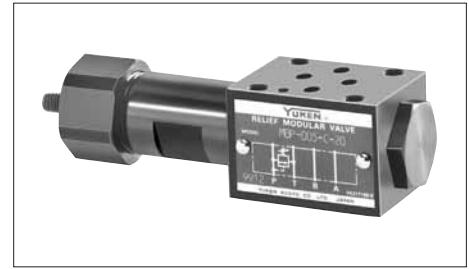
## Type of Modular Valve

Class	Model Numbers	Graphic Symbols	Page
	Solenoid Operated Directional Valve DSG-005-***-*-40		336
Pressure Control Valves	Relief Valves (for "P-Line") MBP-005-*-20		518
	Reducing Valves (for "P-Line") MRP-005-*-20/2090		521
Flow Control Valves	Throttle and Check Valves (for "A-Line", Metre-out) MSA-005-X-20		524
	Throttle and Check Valves (for "A-Line", Metre-in) MSA-005-Y-20		
	Throttle and Check Valves (for "B-Line", Metre-out) MSB-005-X-20		
	Throttle and Check Valves (for "B-Line", Metre-in) MSB-005-Y-20		
	Throttle and Check Valves (for "A&B-Lines", Metre-out) MSW-005-X-20		
	Throttle and Check Valves (for "A&B-Lines", Metre-in) MSW-005-Y-20		
Directional Control Valves	Pilot Operated Check Valves (for "A-Line") MPA-005-2-20		527
	Pilot Operated Check Valves (for "B-Line") MPB-005-2-20		
	Pilot Operated Check Valves (for "A&B-Lines") MPW-005-2-20		
	Check Valves (for "P-Line") MCP-005-0-20		
Modular Plates and Mounting Bolts	End Plates (Blocking plates) MDC-005-A-20		530
	Base Plates MMC-005-*-20/2080/2090		531
	Bolts Kits MBK-005-*-20/2090		534

## Relief Modular Valves

### Specifications

Model Numbers	Max. Operating Pressure MPa (PSI)	Max. Flow L/min (U.S.GPM)
MBP-005-*-20	25 (3630)	15 (3.96)



### Model Number Designation

F-	MBP	-005	-C	-20	*
Special Seals	Series Number	Valve Size	Pres. Adj. Range MPa (PSI)	Design Number	Design Standard
<b>F:</b> Special Seals for Phosphate Ester Type Fluids (Omit if not required)	<b>MBP:</b> Relief Valve for P-Line	<b>005</b>	<b>C:</b> *-16 <sup>★1</sup> (*-2320) <b>H:</b> 7-25 (1020-3630)	<b>20</b>	Refer to <sup>★2</sup>

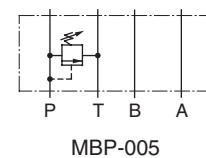
★1. See the "Minimum Adjustment Pressure" of the next page for the item marked \*.

★2. Design Standards: None..... Japanese Standard "JIS", European Design Standard and N. American Design Standard

### Instructions

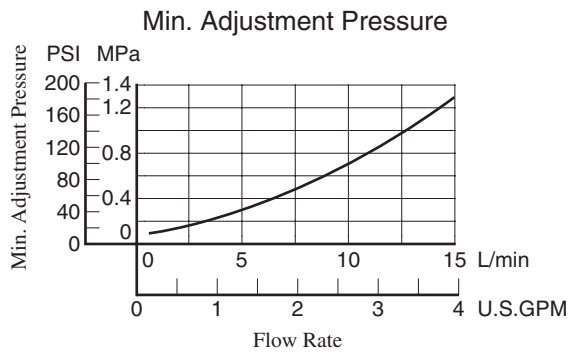
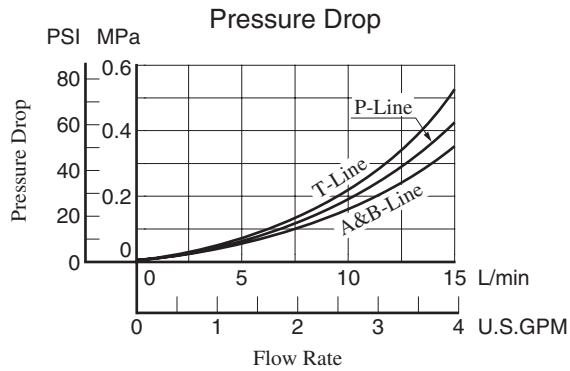
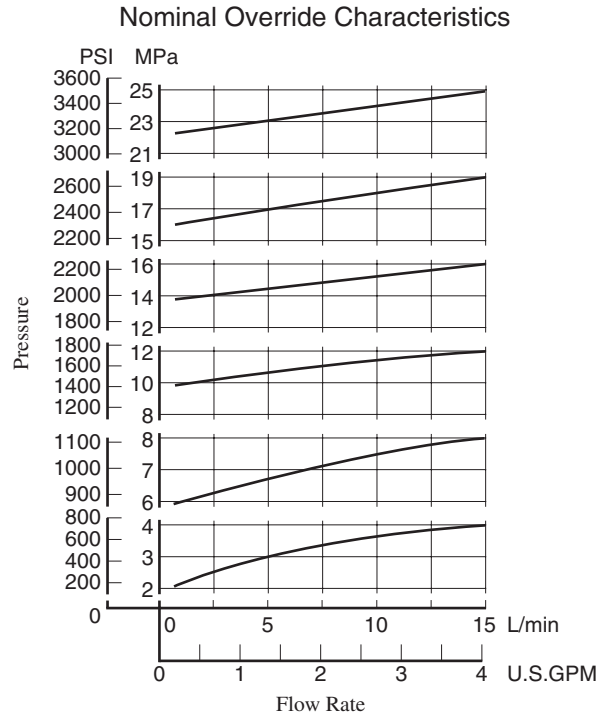
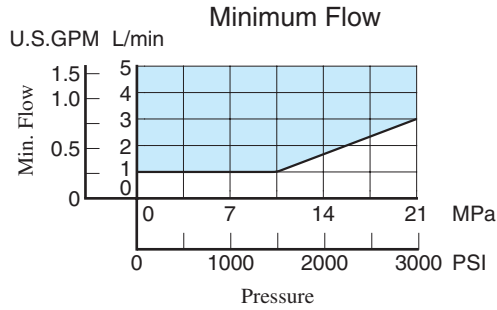
- The minimum adjustment pressure equals the value obtained from the minimum adjustment pressure characteristics plus the tank line back pressure of the next page. This back pressure should include the value of the T-line pressure drop characteristics of the valves stacked to the base plate side of the modular valve.
- 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.
- In case of a small flow, the setting pressure may become unstable. To avoid this, refer to the minimum flow characteristic curve of the [next page](#) and use the valve within a range as shown with .

### Graphic Symbol



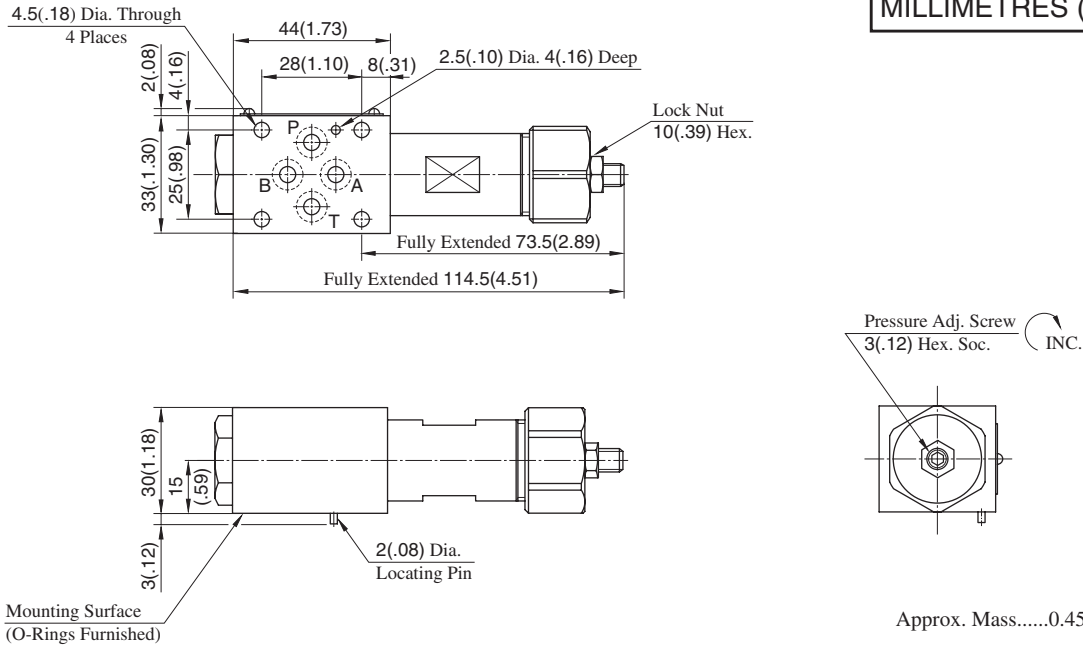
## Typical Performance Characteristics

Hydraulic Fluid: Viscosity 35 mm<sup>2</sup>/s (164 SSU), Specific Gravity 0.850



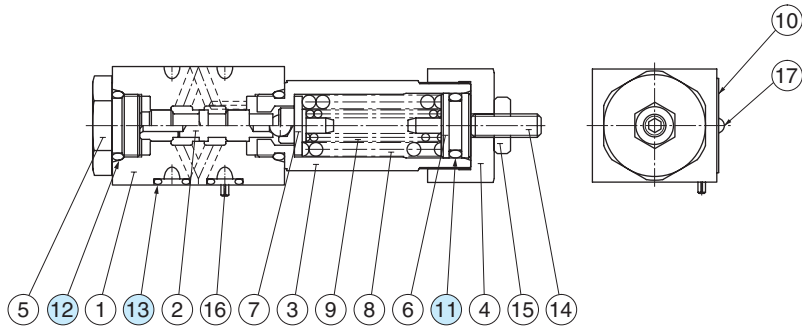
**MBP-005-\*-20**

**DIMENSIONS IN MILLIMETRES (INCHES)**



**Spare Parts List**

**MBP-005-\*-20**



**List of Seals**

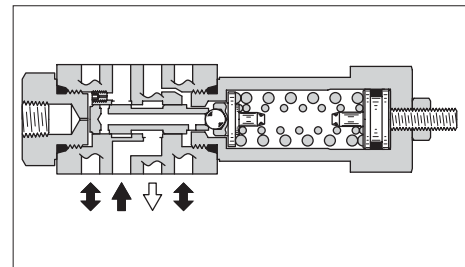
Item	Name of Parts	Part Numbers	Qty.	Remarks
11	O-Ring	SO-NA-P12.5	1	Included in Seal Kit Kit No. : KS-MBP-005-20
12	O-Ring	SO-NB-P14	2	
13	O-Ring	SO-NB-P6	4	

## Reducing Modular Valves

### Specifications

Model Numbers	Max. Operating Pressure MPa (PSI)	Max. Flow L/min (U.S.GPM)
MRP-005-*-20/2090	25 (3630)	15 (3.96) *

★ If the pressure is set below 1.6 MPa (232 PSI), the maximum flow is limited. See the minimum adjustment pressure vs. maximum flow characteristics and during use, stay within the shaded zone on the graph.



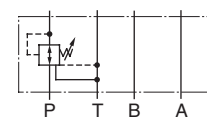
### Model Number Designation

F-	MRP	-005	-B	-20	*
Special Seals	Series Number	Valve Size	Pres. Adj. Range MPa (PSI)	Design Number	Design Standard
<b>F:</b> Special Seals for Phosphate Ester Type Fluids (Omit if not required)	<b>MRP:</b> Reducing Valve for P-Line	<b>005</b>	<b>B:</b> *-7 (*-1020) ★ <b>C:</b> 3.5-16 (510-2320) <b>H:</b> 7-24.5 (1020-3550)	<b>20</b>	Refer to ★2

★ 1. See the "Minimum Adjustment Pressure vs. Maximum Flow" of the next page for the item marked \*.

★ 2. Design Standards: None ..... Japanese Standard "JIS" and European Design Standard 90 ..... N. American Design Standard

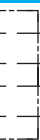
### Graphic Symbol



MRP-005

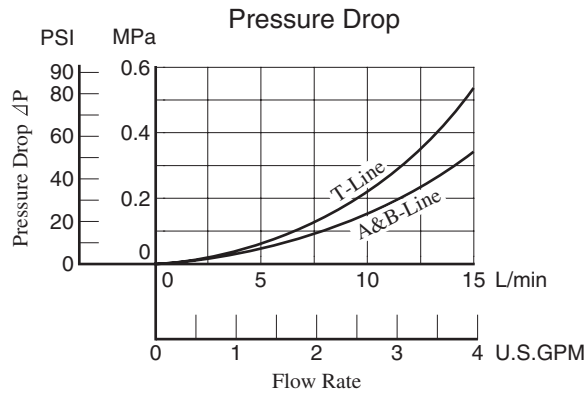
### Instructions

- The minimum adjustment pressure equals the value obtained from the minimum adjustment pressure characteristics plus the tank line back pressure of the [next page](#). This back pressure should include the value of the T-line pressure drop characteristics of the valves stacked to the base plate side of the modular valve.
- 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.

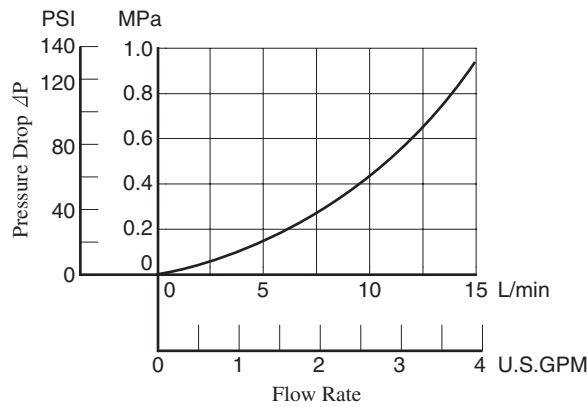


■ Typical Performance Characteristics

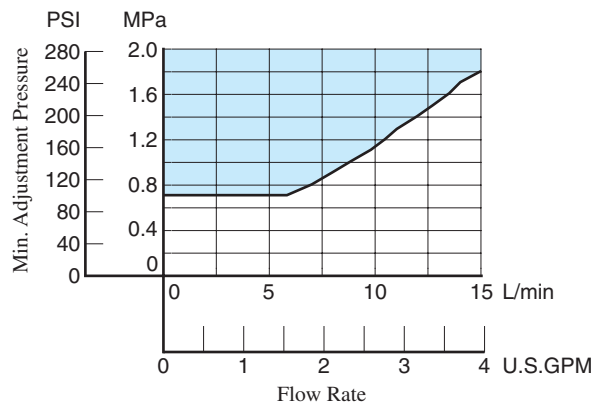
Hydraulic Fluid: Viscosity 35 mm<sup>2</sup>/s (164 SSU), Specific Gravity 0.850



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

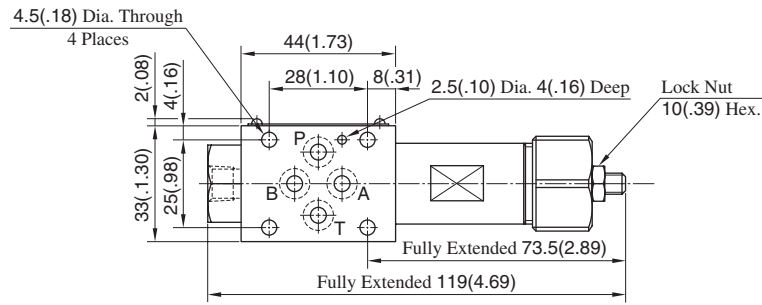


Min. Adjustment Pressure vs. Max. Flow



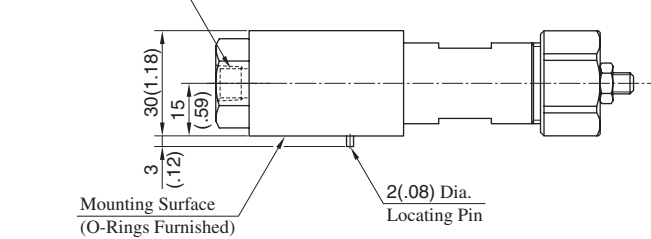
## MRP-005-\*-20/2090

**DIMENSIONS IN MILLIMETRES (INCHES)**

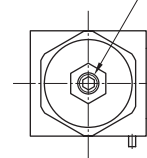


Model Numbers	Thread Size "C" Thd.
MR*-005-*-20	Rc 1/8 = 1/8 BSP.Tr
MR*-005-*-2090	1/8 NPT

Pressure Gauge Connection "C" Thd.



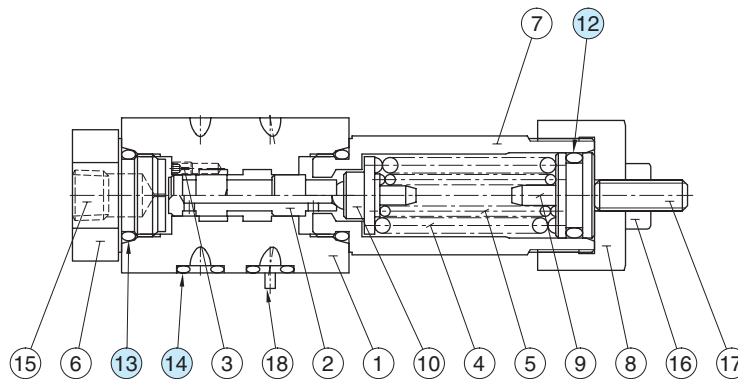
Pressure Adj. Screw 3(.12) Hex. Soc. INC.



Approx. Mass.....0.45 kg(.99 lbs.)

### Spare Parts List

## MRP-005-\*-20/2090



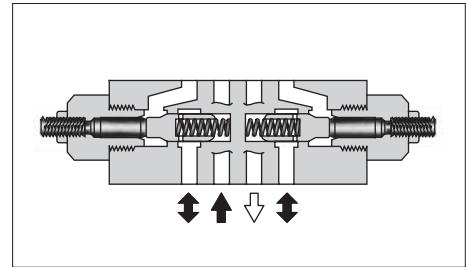
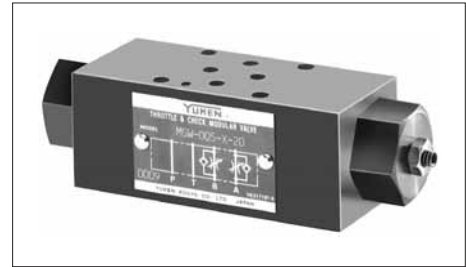
### List of Seals

Item	Name of Parts	Part Numbers	Qty.	Remarks
12	O-Ring	SO-NA-P12.5	1	Included in Seal Kit Kit No. : KS-MRP-005-20
13	O-Ring	SO-NB-P14	2	
14	O-Ring	SO-NB-P6	4	

## Throttle and Check Modular Valves

### Specifications

Model Numbers	Max. Operating Pressure MPa (PSI)	Max. Flow L/min (U.S.GPM)
MSW-005-*-20 MSA-005-*-20 MSB-005-*-20	25 (3630)	15 (3.96)



### Model Number Designation

F-	MSW	-005	-X	-20	*
Special Seals	Series Number	Valve Size	Direction of Flow	Design Number	Design Standard
<b>F:</b> Special Seals for Phosphate Ester Type Fluids (Omit if not required)	<b>MSA:</b> Throttle and Check Valve for A-Line	<b>005</b>	<b>X:</b> Metre-out <b>Y:</b> Metre-in	<b>20</b>	Refer to ★
	<b>MSB:</b> Throttle and Check Valve for B-Line				
	<b>MSW:</b> Throttle and Check Valve for A&B-Lines				

★ Design Standards: None ..... Japanese Standard "JIS", European Design Standard and N. American Design Standard

### Flow Adjustment

To make flow rate adjustment, loosen the lock nut and turn the flow adjustment screw clockwise or anti-clockwise. To throttle the flow, turn the screw clockwise. Be sure to re-tighten the lock nut firmly after the adjustment of the flow rate is completed.

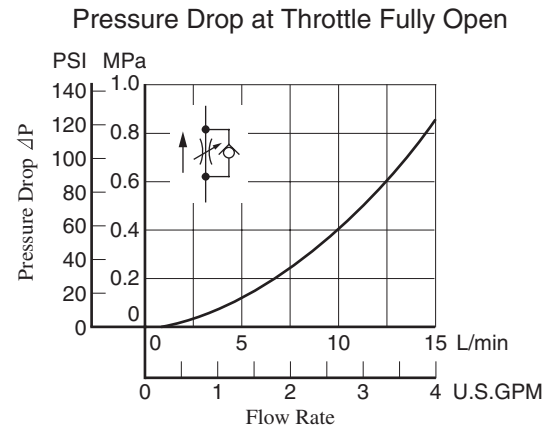
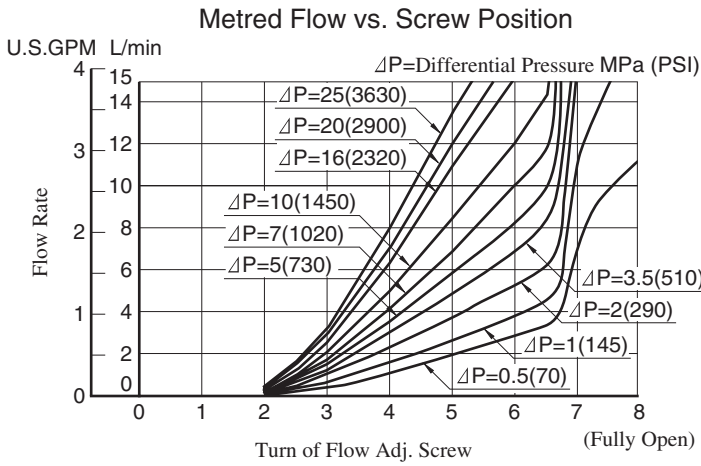
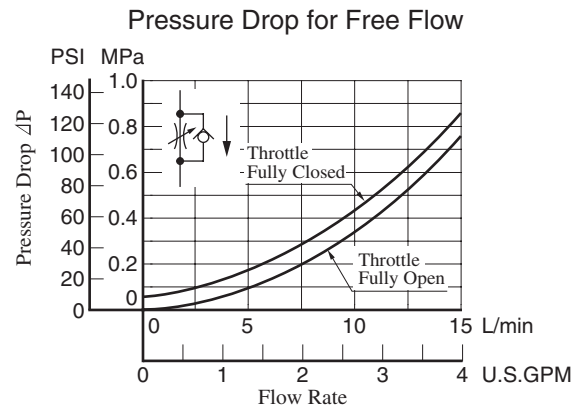
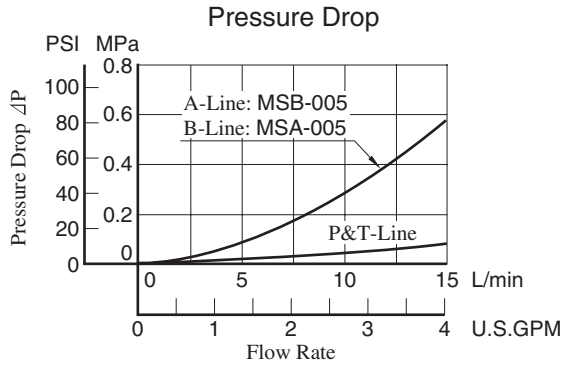
### Graphic Symbols

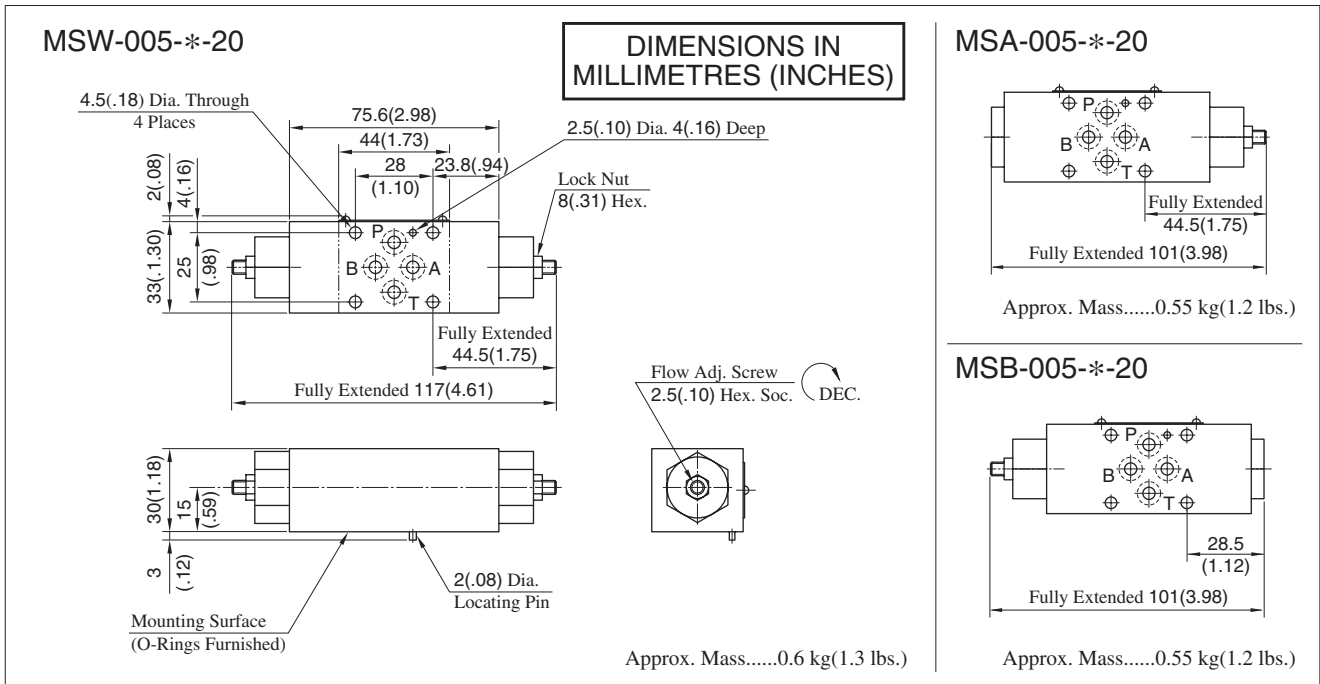
Metre-out	Metre-in
<p>MSA-005-X</p>	<p>MSA-005-Y</p>
<p>MSB-005-X</p>	<p>MSB-005-Y</p>
<p>MSW-005-X</p>	<p>MSW-005-Y</p>



## Typical Performance Characteristics

Hydraulic Fluid: Viscosity 35 mm<sup>2</sup>/s (164 SSU), Specific Gravity 0.850





**■ Spare Parts List**

### MSA-005-X<sub>Y</sub>-20

### MSB-005-X<sub>Y</sub>-20

### MSW-005-X<sub>Y</sub>-20

**● List of Seals**

Item	Name of Parts	Part Numbers	Qty.	
			MSA MSB	MSW
7	O-Ring	SO-NA-P3	1	2
8	O-Ring	SO-NB-P6	4	4
9	O-Ring	SO-NB-P14	2	2
10	Back Up Ring	SO-BB-P3	1	2

**● List of Seal Kits**

Valve Model Numbers	Seal Kit Numbers
MSA-005	KS-MSA-005-20
MSB-005	
MSW-005	KS-MSW-005-20

## Pilot Operated Check Modular Valves

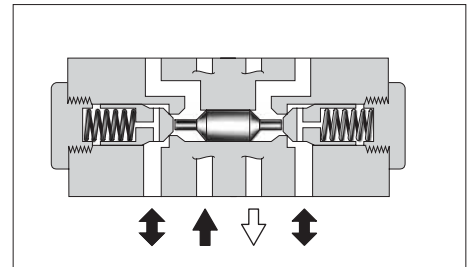
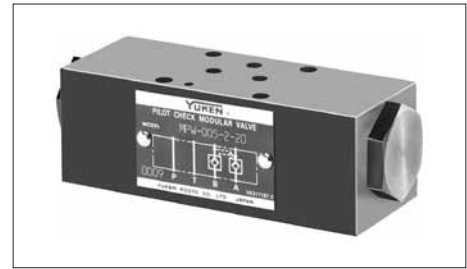
### Specifications

Model Numbers	Max. Operating Pressure MPa (PSI)	Max. Flow L/min (U.S.GPM)
MPA-005-2-20 MPB-005-2-20 MPW-005-2-20	25 (3630)	15 (3.96)

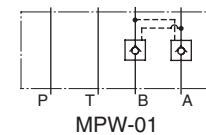
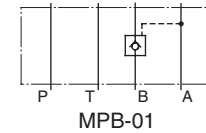
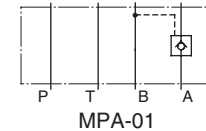
### Model Number Designation

F-	MPW	-005	-2	-20	*
Special Seals	Series Number	Valve Size	Cracking Pressure MPa (PSI)	Design Number	Design Standard
<b>F:</b> Special Seals for Phosphate Ester Type Fluids (Omit if not required)	<b>MPA:</b> Pilot Operated Check Valve for A-Line  <b>MPB:</b> Pilot Operated Check Valve for B-Line  <b>MPW:</b> Pilot Operated Check Valve for A&B-Lines	<b>005</b>	<b>2:</b> 0.2 (29)	<b>20</b>	Refer to ★

★ Design Standards: None ..... Japanese Standard "JIS", European Design Standard and N. American Design Standard

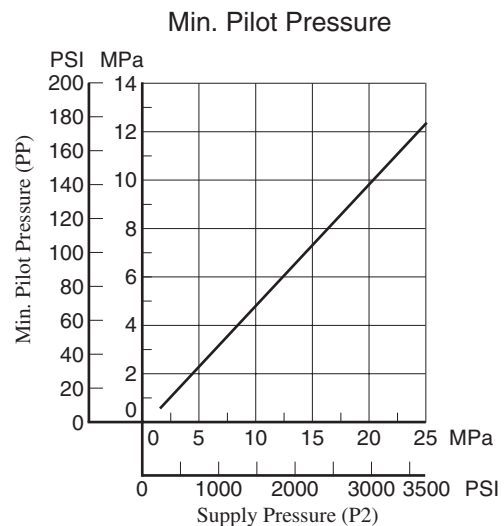
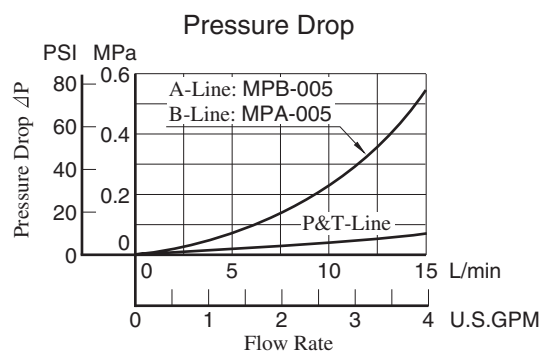
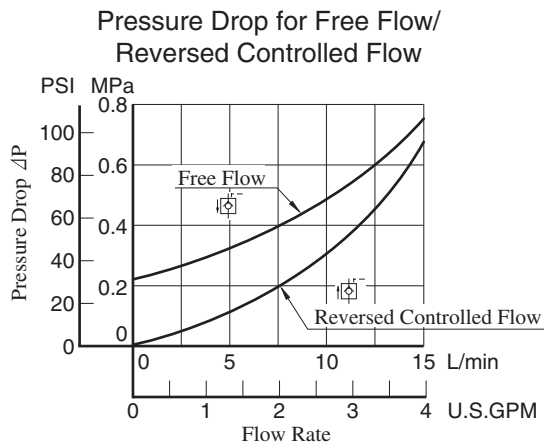


### Graphic Symbols



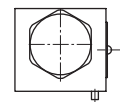
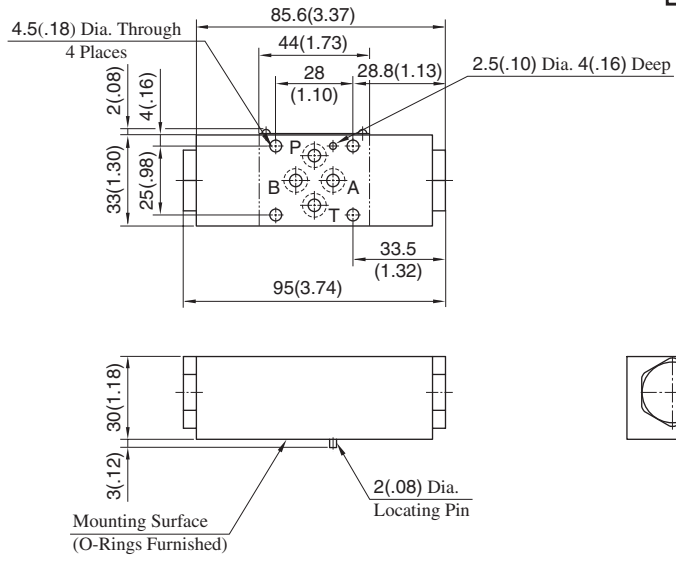
### Typical Performance Characteristics

Hydraulic Fluid: Viscosity 35 mm<sup>2</sup>/s (164 SSU), Specific Gravity 0.850



MPA-005-2-20  
 MPB-005-2-20  
 MPW-005-2-20

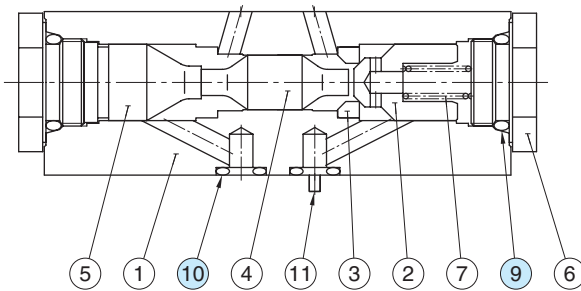
**DIMENSIONS IN  
 MILLIMETRES (INCHES)**



Approx. Mass.....0.55 kg(1.2 lbs.)

**Spare Parts List**

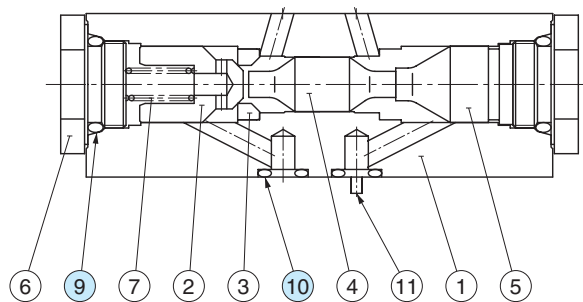
MPA-005-2-20



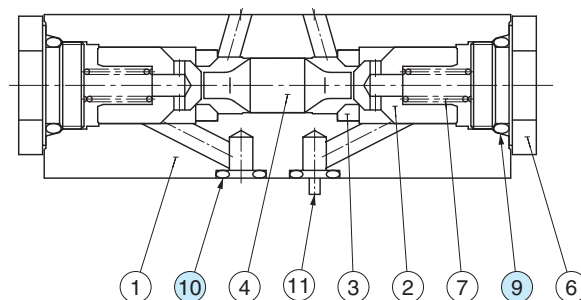
**List of Seals**

Item	Name of Parts	Part Numbers	Qty.	Remarks
9	O-Ring	SO-NB-P14	2	Included in Seal Kit
10	O-Ring	SO-NB-P6	4	Kit No. : KS-MPA-005-20

MPB-005-2-20



MPW-005-2-20



## Check Modular Valves

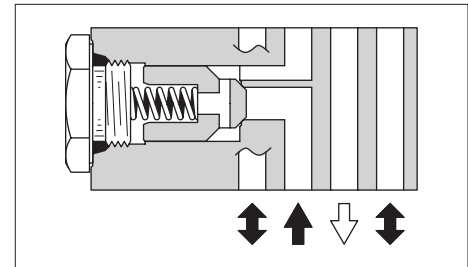
### Specifications

Model Number	Max. Operating Pressure MPa (PSI)	Max. Flow L/min (U.S.GPM)
MCP-005-0-20	25 (3630)	15 (3.96)

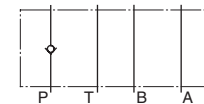
### Model Number Designation

F-	MCP	-005	-0	-20	*
Special Seals	Series Number	Valve Size	Cracking Pressure MPa (PSI)	Design Number	Design Standard
<b>F:</b> Special Seals for Phosphate Ester Type Fluids (Omit if not required)	<b>MCP:</b> Check Valve for P-Line	<b>005</b>	<b>0:</b> 0.035(5)	<b>20</b>	Refer to ★

★ Design Standards: None ..... Japanese Standard "JIS", European Design Standard and N. American Design Standard



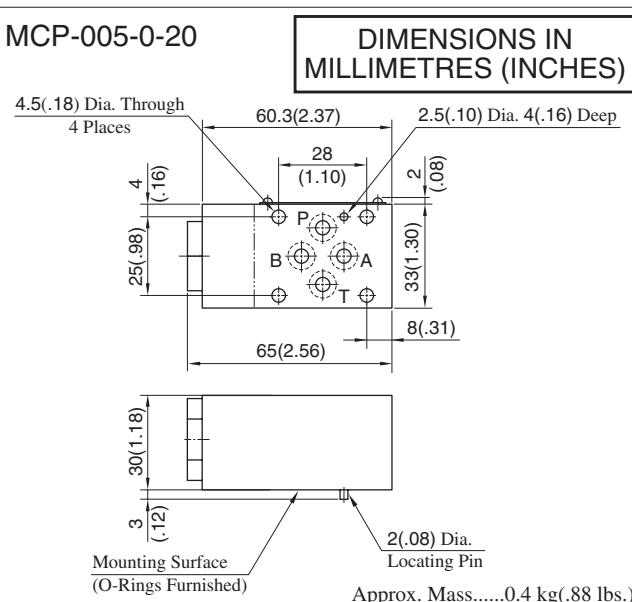
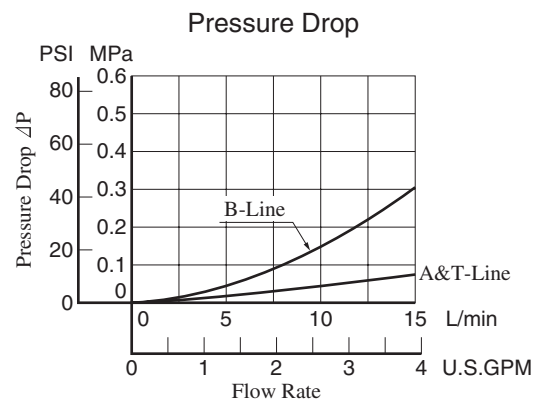
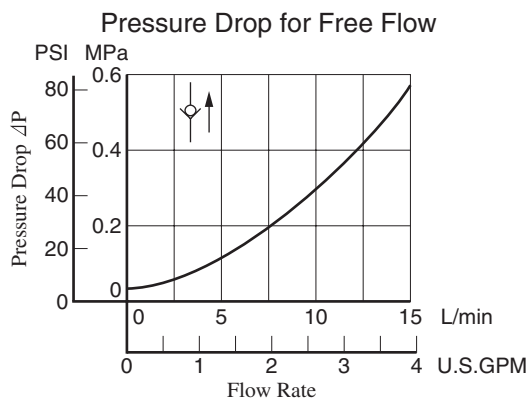
Graphic Symbol



MCP-005

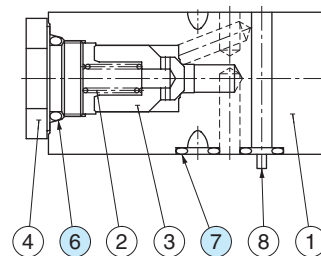
### Typical Performance Characteristics

Hydraulic Fluid: Viscosity 35 mm<sup>2</sup>/s (164 SSU), Specific Gravity 0.850



### Spare Parts List

MCP-005-0-20



### List of Seals

Item	Name of Parts	Part Numbers	Qty.	Remarks
6	O-Ring	SO-NB-P14	2	Included in Seal Kit
7	O-Ring	SO-NB-P6	4	Kit No. : KS-MPA-005-20



## End Plates

Blocking plates are used for auxiliary mounting surface or for closing unnecessary circuits.

### Specifications

Max. Operating Pressure ----- 25 MPa (3630 PSI)

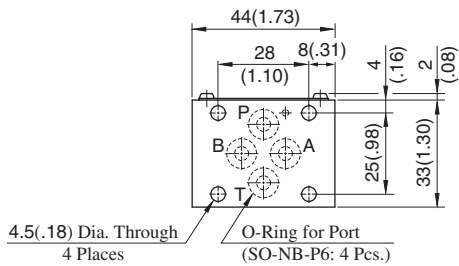


### Model Number Designation

F-	MDC	-005	-A	-20	*
Special Seals	Series Number	Plate Size	Type of Plate	Design Number	Design Standard
<b>F:</b> Special Seals for Phosphate Ester Type Fluids (Omit if not required)	<b>MDC:</b> End Plate	<b>005</b>	<b>A:</b> Blocking Plate	<b>20</b>	Refer to ★

★ Design Standards: None ..... Japanese Standard "JIS", European Design Standard and N. American Design Standard

### MDC-005-A-20



**DIMENSIONS IN MILLIMETRES (INCHES)**

Approx. Mass.....0.3 kg(.66 lbs.)

### Graphic Symbol

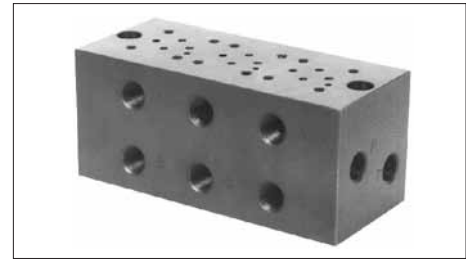


MDC-005-A

## Base Plates For Modular Valves

### Specifications

Max. Operating Pressure ----- 25 MPa (3630 PSI)



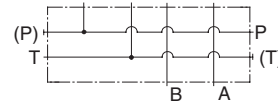
### Model Number Designation

MMC	-005	-5	-20	*
Series Number	Plate Size	Number of Stations	Design Number	Design Standard
MMC: Base Plate	005	1 : 1 Station 2 : 2 Stations 3 : 3 Stations 4 : 4 Stations 5 : 5 Stations	20	<b>None</b> : Japanese Standard "JIS" <b>80</b> : European Design Standard <b>90</b> : N.American Design Standard

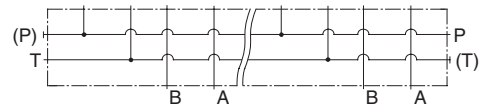
### Instructions

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

### Graphic Symbols

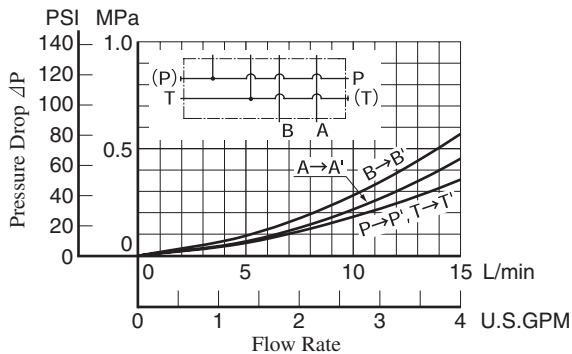


MMC-005-1



MMC-005-2-5

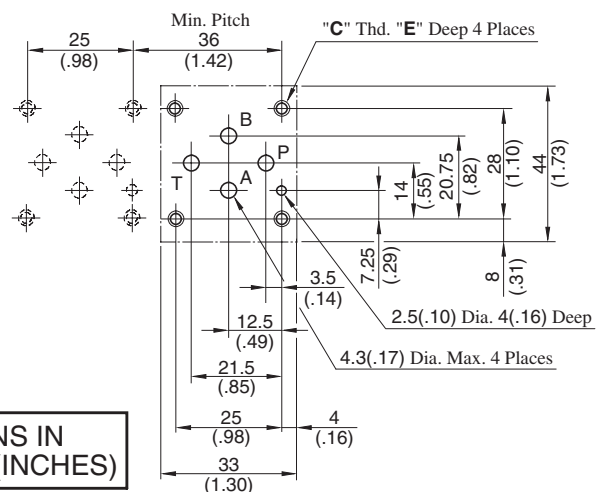
### Pressure Drop



### Mounting Surface Dimensions for 005 Series Modular Valve

When standard base plates (MMC-005) are not used, the mounting surface described on the right must be prepared. The mounting surface should have a good machined finish.

Design Std.	"C" Thd.	"E"
Japanese Std. "JIS" and European Design Std.	M4	7.5 (.30)
N. American Design Std.	No.8 - 32 UNC	10 (.39)

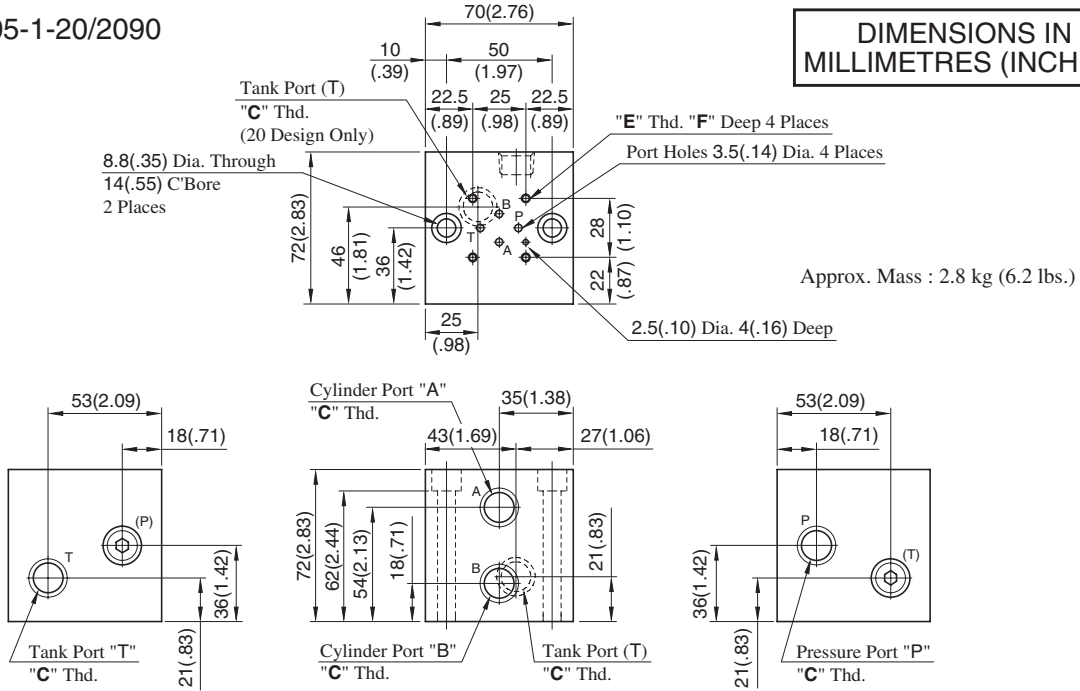


DIMENSIONS IN MILLIMETRES (INCHES)

005 Series Modular Valves

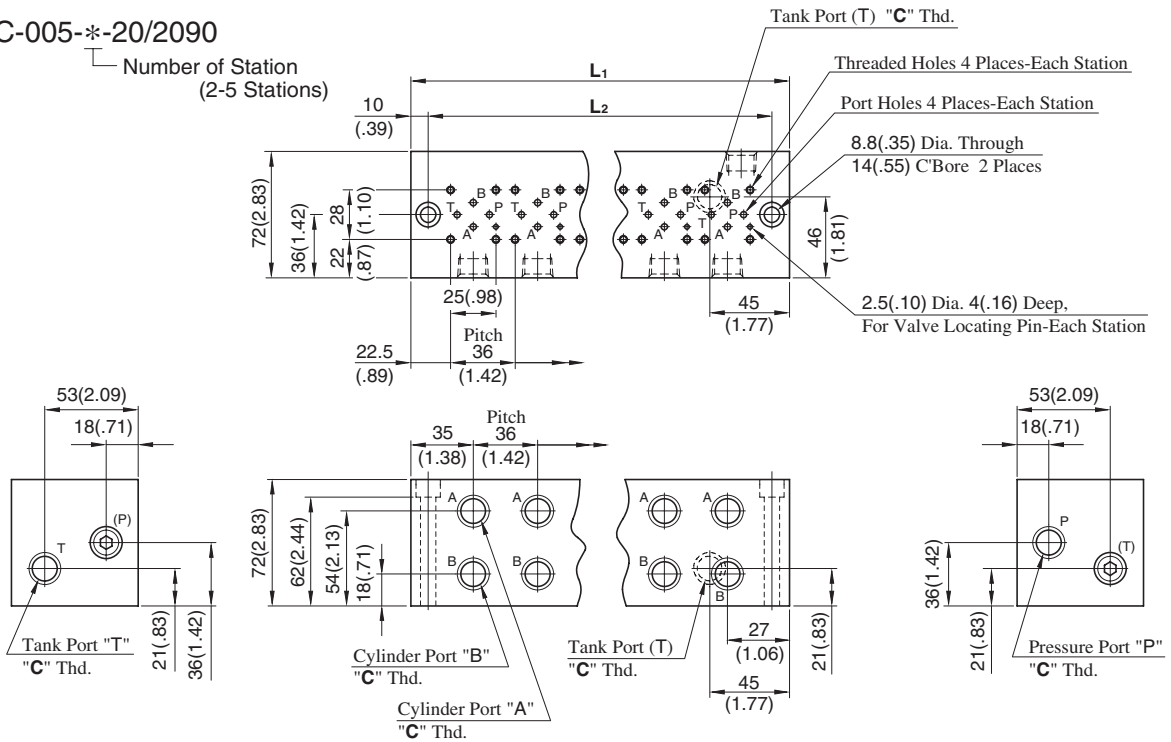
MMC-005-1-20/2090

**DIMENSIONS IN MILLIMETRES (INCHES)**



MMC-005-\*-20/2090

Number of Station  
(2-5 Stations)



• For other dimensions, refer to the above Model MMC-005-1.

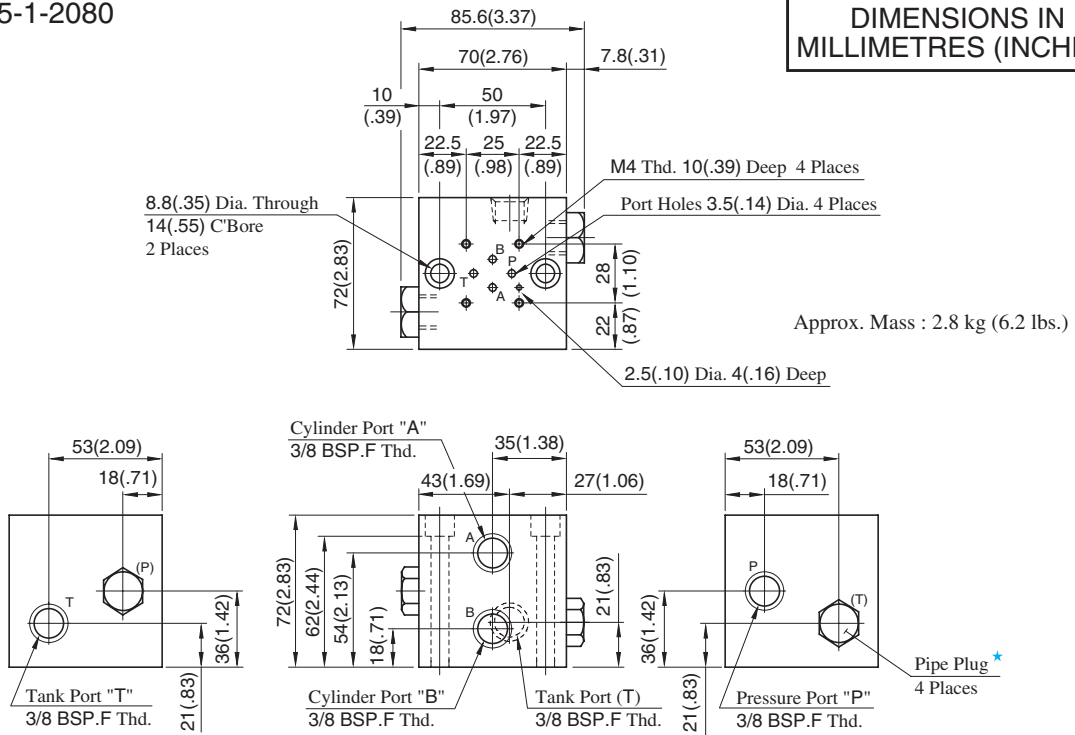
Model Numbers	Thread Size		Dimensions mm (Inches)
	"C" Thd.	"E" Thd.	F
MMC-005-*-20	Rc 3/8	M4	8 (.31)
MMC-005-*-2090	3/8 NPT	No. 8-32 UNC	10 (.39)

Model Numbers	Dimensions mm (Inches)		Approx. Mass kg (lbs.)
	L1	L2	
MMC-005-2	106 (4.17)	86 (3.39)	4.3 ( 9.5)
MMC-005-3	142 (5.59)	122 (4.80)	5.8 (12.8)
MMC-005-4	178 (7.01)	158 (6.22)	7.2 (15.9)
MMC-005-5	214 (8.43)	194 (7.64)	8.7 (19.2)

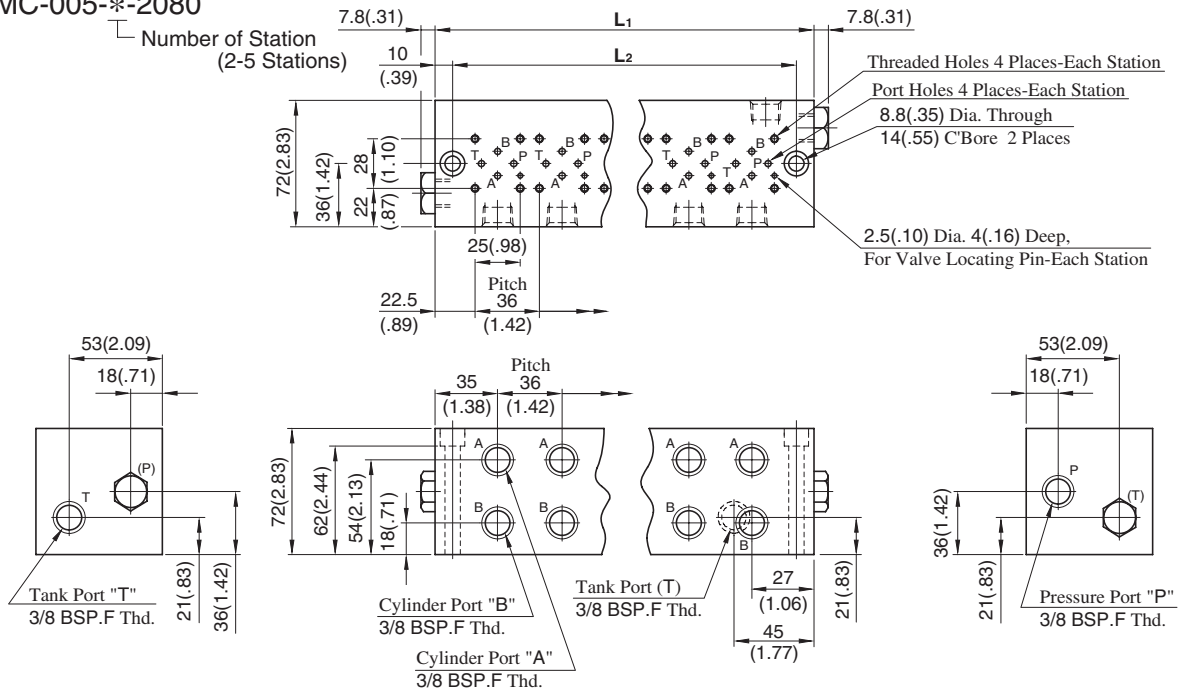


MMC-005-1-2080

**DIMENSIONS IN MILLIMETRES (INCHES)**



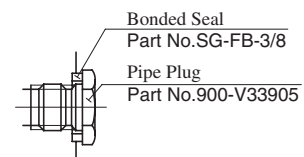
MMC-005-*\**-2080



• For other dimensions, refer to the above Model MMC-005-1.

Model Numbers	Dimensions mm (Inches)		Approx. Mass kg (lbs.)
	L <sub>1</sub>	L <sub>2</sub>	
MMC-005-2	106 (4.17)	86 (3.39)	4.3 ( 9.5)
MMC-005-3	142 (5.59)	122 (4.80)	5.8 (12.8)
MMC-005-4	178 (7.01)	158 (6.22)	7.2 (15.9)
MMC-005-5	214 (8.43)	194 (7.64)	8.7 (19.2)

★ Detail of Pipe Plug



## Mounting Bolt Kits

To mount the valves, four M4 bolts are used. The combination of valves varies with circuits. So, we have several mounting bolt kits suitable for different valve combinations. From the selection chart, choose a necessary bolt kit and specify it with model number when ordering.



### Model Number Designation

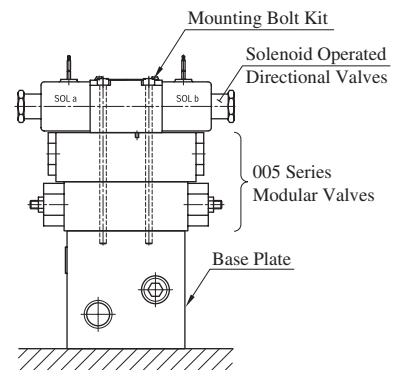
MBK	-005	-02	-20	*
Series Number	Size of Modular Valve	Bolt Number	Design Number	Design Standard
<b>MBK:</b> Bolt Kits for Modular Valves	<b>005</b>	<b>01,02,03,05</b> (Refer to the following chart)	<b>20</b>	<b>None:</b> Japanese Standard "JIS" and European Design Standard <b>90:</b> N.American Design Standard

### Bolt Kits Selection Chart

Model Numbers	Quantity of valves to be stacked			Approx. Mass g (lbs.)
	Solenoid Operated Directional Valve (DSG-005)	Modular Valve (MDC-005)	Modular Valve (M**-005)	
MBK-005-01-20*	1	0	1	30(.07)
	0	1		
MBK-005-02-20*	1	0	2	40(.09)
	0	1		
MBK-005-03-20*	1	0	3	50(.11)
	0	1		
MBK-005-05-20*	1*	0	0	18(.04)
	0	1		

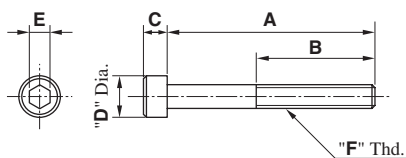
★ The solenoid operated directional valve comes with mounting bolts.

- **Bolts Kit Composition:**  
Soc. Hd. Cap Screw.....4 Pcs.
- **Tightening Torque:**  
2.5 - 3.5 Nm (22-31 in. lbs.)



Stacking Example

### MBK-005-\*-20/2090



Model Numbers	Dimensions mm (Inches)					"F" Thd.
	A	B	C	D	E	
MBK-005-01-20	65 (2.56)	20 (.79)	4 (.16)	7 (.28)	3 (.12)	M4
MBK-005-02-20	95 (3.74)					
MBK-005-03-20	125 (4.92)					
MBK-005-05-20	35 (1.38)					
MBK-005-01-2090	65.1 (2-9/16)	22.4 (.88)	4.17 (.164)	6.86 (.27)	3.6 (9/64)	No. 8-32 UNC
MBK-005-02-2090	95.2 (3-3/4)					
MBK-005-03-2090	125.4 (4-15/16)					
MBK-005-05-2090	34.9 (1-3/8)					