

"M" SERIES

Instrument Manifolds Instruction Manual

◇ *Installation*

Installation Preparation

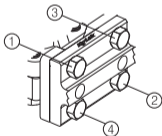
1. Remove protective cap and packing material
2. Before installing the valve, assure the specified pressure and temperature range is sufficient and piping line is installed properly.
3. The environment of installing valve should be suitable to the operator.

Connection of Taper Thread

1. Before assembly, make sure male and female threads are free of dirt and debris.
2. Teflon tape should be applied to male thread with 5 or 6 turns
3. After wrapping the threads, make sure that the tape is properly fixed by pressing the tape with hands.
4. During installation, dirt and debris should not contaminate the threads.

Connection of Transmitter and Direct Mounting Valve

1. Insert the Gasket(13) I to groove of Valve flange gasket. Material of the Gasket(13) must be selected compliance to operating temperature of Valve.
2. Align the position of flange bolt groove and Mounting thread of transmitter.
3. Hand tighten the Hex Head Bolt(14) for transmitter connection and tighten ①,②,③,④ in order with increasing torque of 15N·m, 30N·m, 50N·m



Checklists after Installation

1. Head units and Locking Pins(12) must not be removed once installed.
2. Be sure that Packing Bolt(8) is tighten.
3. Check that the valve is full open or close.
4. Check if there is gap between transmitter and flange, if there is, tighten the Hex Head Bolt(14) more.

Hy-Lok

◆ *Operating*

⚠ **CAUTION**

1. System design should ensure adequate space for proper valve actuation without obstruction.
2. The Valve should be operated manually by an authorized person or trained personnel to ensure proper valve operation.
3. Operate the Valve after complete installation in system.
4. Operate the Valve in accordance with the specified user's procedure.
5. Operate the Valve with the Handle. Actuating the valve with a spanner, pipe wrench, etc. is not recommended.

Open and Close the Valve

Turn the **Handle(9)** clockwise to close or counterclockwise to open.

NOTE : It is important to refer to the **General Arrangement Drawings** while following the maintenance instruction.

◆ *Maintenance*

⚠ **CAUTION**

1. Check to ensure operation is within a safe temperature range and is free from any power source. To properly check the valve the line should be fully depressurized and any fluids should be drained before attempting any maintenance.
2. The valve being removed should be operated at least once and left in the open position before removal.
3. The Valve should be operated manually by an authorized person or trained personnel to ensure proper valve operation.

Disassembly of Bonnet

1. Loosen the **Set Screw(10)** by hex wrench and then remove the **Handle(8)**.
2. Loosen the **Lock Nut(7)** and **Packing Bolt(8)** by spanner from the **Bonnet(3)**.
3. Remove the **Locking Pin(12)** from the **Body(1)**.
4. Remove the **Bonnet(4)** by spanner from the **Body(1)**.
5. Remove the **Stem(3)** from the **Bonnet(4)**.
6. Remove the **Packing Washer(6)** and **Stem Packing(5)** from the **Bonnet(4)**.

Stem Packing Maintenance

In case of leakage occurred from stem, loosen the **Lock Nut(7)** and tighten the **Packing Bolt(8)** until no visible leakage. And then retightening the **Lock Nut(7)**.

CAUTION

1. Do not excessively tighten the **Packing Bolt(8)**. The excessive tightening causes high torque when the valve operates. The **Packing Bolt(8)** should be tightened by additional 1/4 turn no visible stem leakage.
2. When operate the valve initially or during operating the valve, tightening the **Packing Bolt(8)** is required. And you re-operate the valve initially after quite a long time, you may feel quite a high operating torque.

Body-Bonnet Seal & Body-Seat Maintenance

1. If the leakage happens at Bonnet Seal, ensure whether the **Bonnet(4)** is loosed and the valve is in fully closed position. (If the leakage remains, remove the **Bonnet(4)** from the **Body(1)** and ensure the damage of the surface by examination with the naked eye. If damaged found, replace the damaged part components)
2. In-Line leakage
 - 2.1. Leave in the open position by turn the **Handle(9)**.
 - 2.2. Remove the **Locking Pin(12)** from the **Body(1)**.
 - 2.3. Remove the **Bonnet(4)** by spanner from the **Body(1)**.
 - 2.4. Check if any parts are damaged and dirt contained inside Valve.
 - 2.5. If **Disc(2)** is damaged, replace the **Stem(3)** and **Disc(2)** Assembly.

Reassembly

1. Before valve assembly, check if any damage and corrosion in all part components of the valve.
2. If the damage is minor, polish the part by sandpaper.
If the damage is considerable, replace the part component.
3. Insert packing set into female port of **the Bonnet(4)**.
4. Install **the Packing Bolt(8)** pre-assembled with **the Lock Nut(7)** into female port of **the Bonnet(4)**. Male thread of **the Packing Bolt(8)** shall be lubricated.
5. Fully screw **the Stem(3)** into male thread of **the Bonnet(4)**.
6. Screw tightly **the Packing Bolt(8)** for proper stem sealing by hand.
7. Lubricated male thread of **the Bonnet(4)** shall be assembled by hand into bonnet housing of **the Body(1)**.
8. Assemble **the Bonnet(4)** according to Torque Table.
9. Assemble **the Handle(9)** onto **the Stem(3)**.
Be careful not to distort or deform **the Stem(3)**.
10. Assemble **the Packing Bolt(8)** by spanner properly.
Check the assembly status of **the Packing Bolt(8)** by operating **the Handle(9)**.
11. After check once again the **Packing Bolt(8)** assembly status or readjust, lock **the Lock Nut(7)**.

Torque Table

unit : N·m(lbf·in)

	Bonnet	Packing Bolt
MAV	39~49.5 (345~438)	3.9~5.9 (34.5~52.2)
MBV	79~99 (699~876)	4.9~6.9 (43.3~61)
MCV		

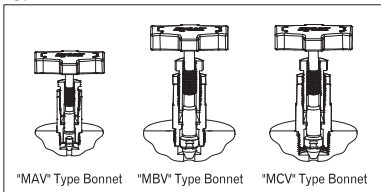
◆ Removal

CAUTION

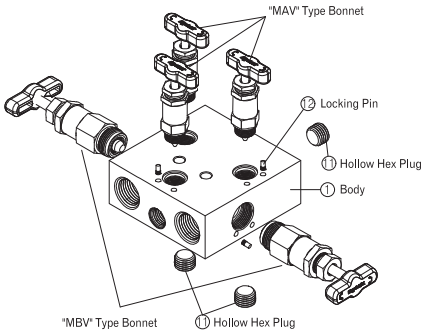
The valve must be depressurized in the open position before removal. Close the valve after fluids are fully drained.

1. Get permission to remove the valve.
2. To prevent damage to the seat, careful attention is needed when removing the valve.
3. After removal, clean the valve and cap the ends with plastic covers.

Type of Bonnet



Remote Mounting Type

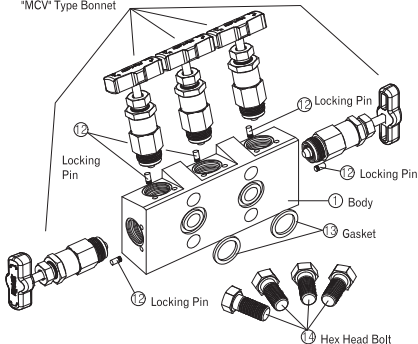


Tool Size

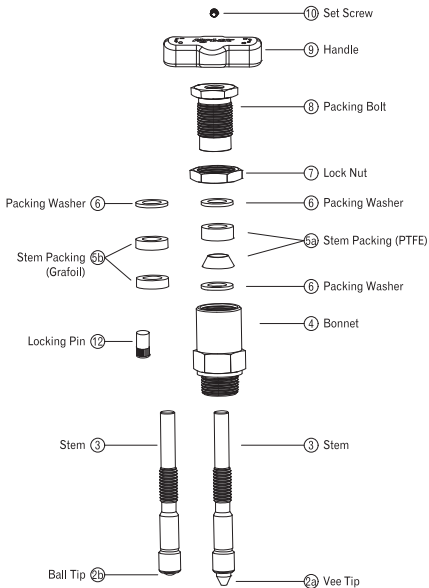
Type of Bonnet	Spanner			Wrench
	Bonnet(4)	Packing Bolt(8)	Lock Nut(7)	Set Screw(10)
MAV	15.8mm (5/8")	14.2mm (9/16")	15.8mm (5/8")	2mm
MBV	20.6mm (13/16")	15.8mm (5/8")	20.6mm (13/16")	2.5mm
MCV	22.2mm (7/8")			

Direct Mounting Type

"MCV" Type Bonnet



General Arrangement Drawings



Packing & Body Material vs Temperature & Pressure Rating

Packing Material	Body Material	Temperature Range	Pressure Rating @ 100°F (38°C)	Pressure Rating @ Max. Temperature
PTFE	Stainless Steel	-65°F ~ 450°F (-54°C ~ 232°C)	6000 psig (413 barg)	4130 psig @ 450°F (285 barg @ 232°C)
	Carbon Steel	-20°F ~ 350°F (-29°C ~ 176°C)	6000 psig (413 barg)	5230 psig @ 350°F (360 barg @ 176°C)
	Alloy 400	-65°F ~ 450°F (-54°C ~ 232°C)	5000 psig (344 barg)	3970 psig @ 450°F (274 barg @ 232°C)
Grafoil	Stainless Steel	-65°F ~ 1200°F (-54°C ~ 648°C)	6000 psig (413 barg)	1715 psig @ 1200°F (118 barg @ 648°C)
	Carbon Steel	-20°F ~ 350°F (-29°C ~ 176°C)	6000 psig (413 barg)	5230 psig @ 350°F (360 barg @ 176°C)
	Alloy 400	-65°F ~ 500°F (-54°C ~ 260°C)	5000 psig (344 barg)	3960 psig @ 500°F (273 barg @ 260°C)