



VB series  
5-Valve Manifold



V series  
2-Valve Manifold



VL series  
2-Valve Manifold



VC series  
5-Valve Manifold



V series  
3-Valve Manifold

### Kit Contents

- Packing
- Lubricant (MS-LT-WL7)
- Instructions
- Stop pin
- Material safety data sheet

### Tool Requirements

#### For Large Bonnet Valves

- 1/8 in. hex wrench
- 1/8 in. hex bit socket
- 5/8 in. open-end wrench
- 5/8 in. crowfoot wrench
- 13/16 in. open-end wrench
- 13/16 in. crowfoot wrench
- Diagonal pliers
- Torque wrench, capable of applying up to 900 in.·lb (101 N·m) of torque
- Flat punch
- Small hammer



#### For Small Bonnet Valves

- 1/8 in. hex wrench
- 1/8 in. hex bit socket
- 5/8 in. open-end wrench
- 5/8 in. crowfoot wrench
- Diagonal pliers
- Torque wrench, capable of applying up to 300 in.·lb (33.9 N·m) of torque
- Flat punch
- Small hammer



## ⚠ Warning

Before servicing any installed manifold, you must

- depressurize system
- cycle valves

## ⚠ Warning

Residual material may be left in the valves and the system.

Note: It is not necessary to remove the manifold from the system for packing adjustment.

## Packing Replacement for Large Bonnet Valves

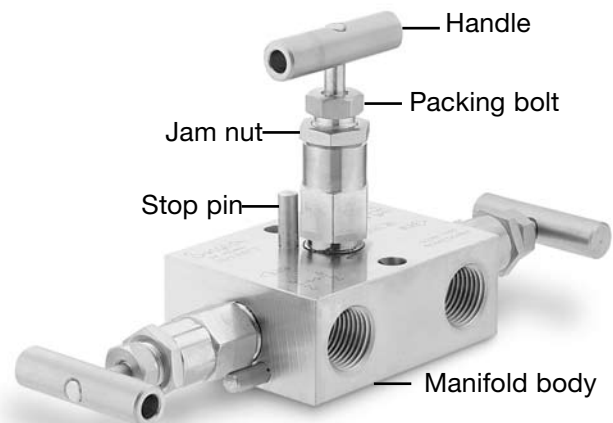
Refer to the Assembled View and the Exploded View to the right while following the instructions.

### Disassembly

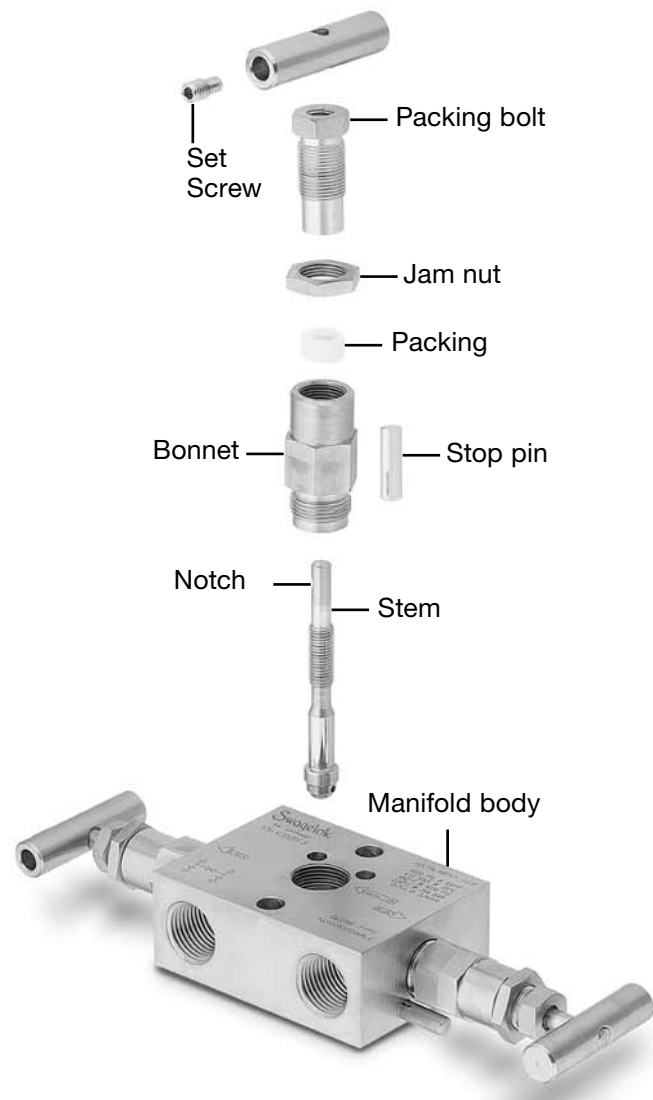
1. Drain excess fluid from the manifold.
2. Actuate the valves to the OPEN position by turning the **handle** one or two turns counterclockwise.
3. Using a 13/16 in. open-end wrench, loosen the **jam nut**.
4. Using the 5/8 in. open-end wrench, loosen the **packing bolt**.
5. Using the 1/8 in. hex wrench, loosen the **set screw** in the handle and remove the **handle** from the valve.
6. Using the diagonal pliers (or similar tool), crimp the **stop pin** down near the body and pry UP to remove it. Discard the pin.
7. Using a 13/16 in. open-end wrench, loosen the **bonnet** and remove the bonnet assembly from the manifold body. **Take note of the manifold bore from which the bonnet assembly is removed so it can be returned to the same location.**
8. Remove the **packing bolt** with the **jam nut** from the bonnet and set aside.
9. Remove the **stem** from the bonnet by pushing it down through the bonnet.
10. Turn the **bonnet** upside down and remove the **packing**. **Be careful not to damage the internal bonnet threads or packing bore.** Discard the packing.
11. Carefully clean all remaining components prior to reassembly.

## Manifold with Large Bonnet Valves

### Assembled View



### Exploded View



## Reassembly

1. Thoroughly lubricate the **stem threads** with MS-LT-WL7. For valves with **Grafoil® packing only**, lubricate the **stem shank** in addition to the stem threads
2. Insert the top of the **stem** into the bottom of the bonnet until it extends out the top of the bonnet.
3. Place the new **packing** around the top of the stem and slide it down into the top of the bonnet.
4. Lubricate the lower 4 to 5 threads of the **packing bolt** with MS-LT-WL7. Thread the **packing bolt** with the **jam nut** onto the top of the **stem** and into the **bonnet**.
5. Position the **handle** onto the **stem** so that the **notch** on the **stem** is aligned with the handle **set screw**. Using the 1/8 in. hex bit socket, tighten the **set screw** using 30 to 35 in.-lb (3.4 to 4.0 N·m) of torque.
6. Actuate the valve to the full OPEN position by turning the **handle** counter-clockwise. Then turn the **handle** clockwise one to two turns.
7. Lubricate the lower 2 to 3 threads and bottom face of the **bonnet** with MS-LT-WL7. Thread the **bonnet** into the same bore on the **manifold body** from which it was removed.
8. Using a torque wrench and a 13/16 in. crowfoot wrench, tighten the **bonnet** using 860 in.-lb (97.2 N·m) of torque.
9. Thread the **jam nut** against the hex of the **packing bolt**. Using a torque wrench and a 5/8 in. crowfoot wrench, tighten the **packing bolt** using 135 in.-lb (15.2 N·m) of torque.
10. Thread the **jam nut** against the **bonnet**. Using a torque wrench and a 13/16 in. crowfoot wrench, tighten the **jam nut** using 135 in.-lb (15.2 N·m) of torque.
11. Insert the new **stop pin**, grooved end first, into one of the two pin holes in the manifold body. Select the pin hole that is fully exposed. Using a punch and hammer, drive the **stop pin** into the hole until the grooves on the side of the pin are no longer visible.
12. Test the manifold for proper operation and leaktight service.
13. Failure to periodically inspect and maintain valve packing may result in leakage. Adjust the packing as necessary, refer to steps 6, 9 and 10.

## Packing Replacement for Small Bonnet Valves

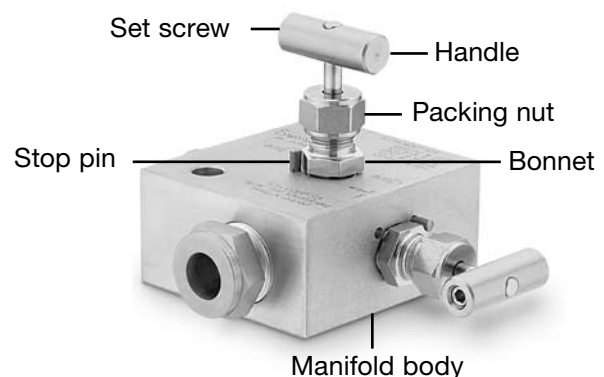
Refer to the Assembled View, below, and the Exploded View on page 4 while following the instructions.

### Disassembly

1. Drain excess fluid from the manifold.
2. Actuate the valve to the OPEN position by turning the **handle** one or two turns counterclockwise.
3. Using a 5/8 in. open-end wrench, loosen the **packing nut**.
4. Using the 1/8 in. hex wrench, loosen the **set screw** in the **handle** and remove the **handle** from the valve.
5. Using the diagonal pliers (or similar tool), crimp the **stop pin** down near the body and pry UP to remove it. Discard the pin.
6. Using a 5/8 in. open-end wrench, loosen the **bonnet** and remove the bonnet assembly from the manifold body. **Take note of the manifold bore from which the bonnet assembly is removed so it can be returned to the same location.**
7. Remove the **packing nut** and **upper gland** from the bonnet assembly and set aside.
8. Remove the **stem** from the **bonnet** by threading it down through the **bonnet**.
9. Turn the **bonnet** upside down and push the **packing** and **lower gland** out of the **bonnet**. **Be careful not to damage the internal bonnet threads or packing bore.** Save the **lower gland** for reuse and discard the **packing**.
10. Carefully clean all remaining components prior to reassembly.

### Manifold with Small Bonnet Valves

#### Assembled View



## Instructions for Small Bonnet Valves

### Reassembly

1. Thoroughly lubricate all **stem threads** with MS-LT-WL7. For valves with **Grafoil packing only**, lubricate the **stem shank** in addition to the stem threads
2. Thread the top of the **stem** into the bottom of the bonnet until it stops. Do not overtighten.
3. Lubricate the lower 2 to 3 threads and bottom face of the **bonnet** with MS-LT-WL7. Thread the **valve** into the same bore on the manifold body from which it was removed.
4. Place the **lower gland**, new **packing**, and **upper gland** into the top of the bonnet in the order shown. (**Lower gland** not used in valves with **Grafoil packing**.)
5. Position the **handle** onto the stem so that the **notch** on the stem is aligned with the handle set screw. Using the 1/8 in. hex bit socket, tighten the **set screw** using 30 to 35 in.·lb (3.4 to 4.0 N·m) of torque.
6. Actuate the valve to the fully OPEN position by turning the **handle** counter-clockwise. Then turn the **handle** clockwise one to two turns.
7. Using a torque wrench and a 5/8 in. crowfoot wrench, tighten the **bonnet nut** using 270 in.·lb (30.5 N·m) of torque.
8. Insert the new **stop pin**, grooved end first, into one of the two pin holes in the body. Select the pin hole that is fully exposed. Using a punch and hammer, drive the **stop pin** into the hole until the grooves on the side of the pin are no longer visible.
9. Using a torque wrench and a 5/8 in. crowfoot wrench, tighten the **packing nut** using 50 in.·lb (5.7 N·m) of torque.
10. Test the manifold for proper operation and leaktight service.
11. Failure to periodically inspect and maintain valve packing may result in leakage. Adjust the packing as necessary, refer to steps 6 and 9.

## Manifold with Small Bonnet Valves

### Exploded View

