

# Application Release

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## Service valves and packed valves are made up of six basic components:

- Valve body
- Valve cap
- Connection points including line connections and/or compressor connections
- Gauge and service ports
- Valve stems and seats
- Packing glands and nuts

## Service Valves/Packed Valves Installation and Service

Service valves have two internal seats that provide complete isolation of the system or the gauge port depending on the stem position. In the front-seated position where the stem is all the way in, the internal stem seat establishes a positive seal against the line connection. In this position, the valve is closed and the gauge port is open.

During normal system operation, the stem is all the way out and in the back-seated position allowing complete flow throughout the valve. In this position, the stem back-seat assures a positive seal with the body of the valve, thereby fully isolating the gauge port. If the stem position is slightly cracked just off the back-seat position, the valve can be used with a gauge to determine operating pressures or to charge/reclaim refrigerant in the system.

Note that operation of valve stems in service and packed valves requires the packing nut to be loosened to prevent excessive wear to the packing gland. The brass or steel nut should be loosened between  $\frac{1}{4}$  and  $\frac{3}{4}$  of a turn

being careful not to fully disengage the nut from the valve neck. Once the stem is positioned where necessary, the nut should be tightened to the proper torque requirement, and an oil coating should be applied to the stem to prevent rust. The valve cap should then be replaced on the valve. Make sure that proper tools are used when working with valves as adjustable wrenches should never be used since they have the potential to round stems and nut edges.

When installing service and packed valves, it is important to note that the valve should be in the mid-seat position before brazing. If the valve stem and seat are in either the front-seated or back-seated position, the heat from installation can cause the seats to stick to the internal seating surfaces. All valves should be “wet-wrapped” during the installation process, to minimize the heat transferred to the valve body. Assure that the wrapping completely covers the valve, but does not allow water to enter the valve.



Figure 1



Figure 2



Figure 3



Figure 4



Figure 5



Figure 6A



Figure 6B



Figure 7



Figure 8

With smaller packed valves, it may be advisable to remove the nut and packing prior to valve installation. Packing glands may also be removed for service replacement purposes if it is determined necessary to recondition the valve. The following steps should be taken to remove a pack gland:

- Make sure the valve body is secured. Figure 1
- Open valve stem  $\frac{1}{4}$  turn from front-seat position. Figure 2
- Remove pack nut by opening counterclockwise. Figure 3
- With the nut fully disengaged from the valve (Figure 3), the valve stem should be rotated outward in a counterclockwise direction until it is removed from the valve body. The valve stem will hold the packing gland and a washer. Remove these components from the stem if replacement is required.
- Place a new washer over the stem, seated to the stem thread area. Figure 4.
- Lubricate the packing gland with a suitable o-ring lubricant and place the packing over the stem on top of the washer. Figure 5
- Replace the stem with packing assembly into the valve with a clockwise rotation. Back the stem off the full front-seat position by  $\frac{1}{4}$  turn. Reinstall the packing nut in a clockwise direction. Figure 6A
- Once the valve stem is in the proper location (Figure 6B) for operation, make sure the packing nut is adjusted to the proper torque requirement for the specific valve. Figure 7 Apply oil to the valve stem and replace the valve cap. Figure 8



Suggested tools to service packed line valves



Standard Refrigeration wrench

Suggested packing gland and stem torque values for specific valves are listed in the Technical Information section for each product line.

Only qualified service personnel should attempt any valve repair, and care should be taken that valves are not exposed to any system or trapped pressures that could cause personal harm. Assure that proper tools such as specific sized nut sockets and non-adjustable wrenches are used when working with service valves and packed valves, to prevent valve components from being damaged.

Suggested tools needed to service packed line valves:  
Field service technicians may use other wrenches.

1. 3/8" open end wrench
2. Calibrated torque wrench
3. Standard 1/4" 8-point socket to stem
4. Special Mueller socket wrench for stem

**NOTE: Standard Refrigeration wrench may be used in field service instead of suggested tools listed above.**

**SAFETY: prior to starting this process assure valve has no pressure in it.**

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