



Service Information

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SI0404

REV

1019

Equipment Affected: Air-cooled and Water-cooled Chillers

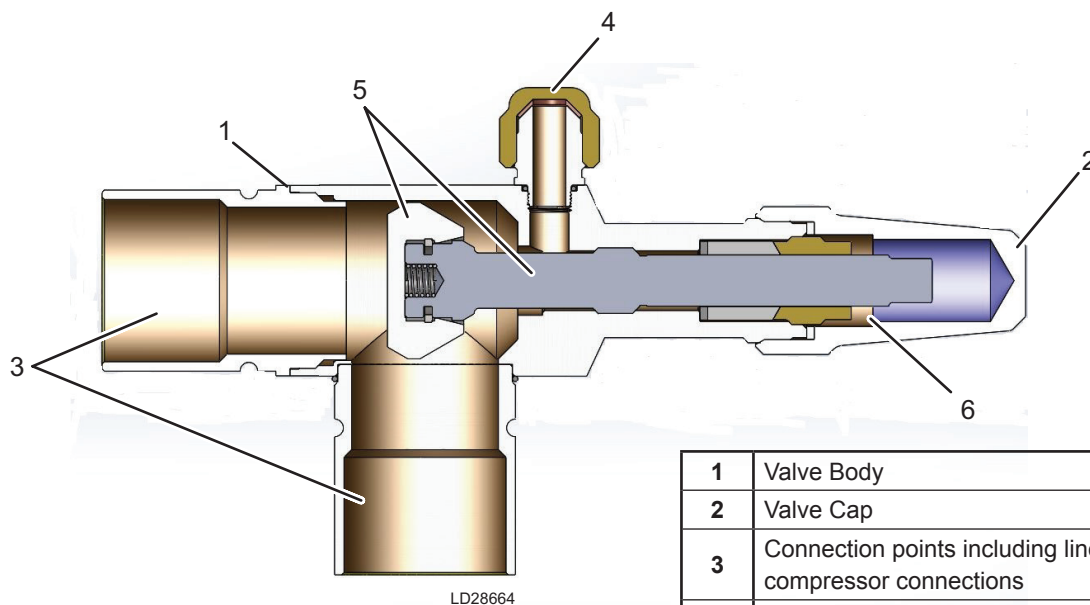
Torque Instructions for Mueller Seal Cap Service Valves

GENERAL

This service information letter provides torque specifications and usage instructions for the Mueller service valves used on Johnson Controls chiller products. It is important that these service valves be used in the manner described in this document to ensure proper sealing of the refrigerant circuits within the chiller. Failure to do so can ultimately result in refrigerant leaks, down time for our customers, and/or unnecessary warranty claims.

The advantage of using these valves is that the tightness of the packing gland is not the sole sealing mechanism for the valves. The seal cap acts as a secondary barrier. Therefore, seal caps are to be used in all installations and are not considered optional. Tightening the packing glands and the seal cap to the specified torque creates a dual seal.

Basic Components of a Mueller Service Valve



1	Valve Body
2	Valve Cap
3	Connection points including line connections and/or compressor connections
4	Gauge and Service Ports
5	Valve Stems and Seats
6	Packing Gland Nut

Work on this equipment should only be done by properly trained personnel who are qualified to work on this type of equipment. Failure to comply with this requirement could expose the worker, the equipment and the building and its inhabitants to the risk of injury or property damage.

The instructions on this service information letter are written assuming the individual who will perform this work is a fully trained HVAC & R journeyman or equivalent, certified in refrigerant handling and recovery techniques, and knowledgeable with regard to electrical lock out/tag out procedures. The individual performing this work should be aware of and comply with all Johnson Controls, national, state and local safety and environmental regulations while carrying out this work. Before attempting to work on any equipment, the individual should be thoroughly familiar with the equipment by reading and understanding the associated service literature applicable to the equipment. If you do not have this literature, you may obtain it by contacting a Johnson Controls Service Office.

Should there be any question concerning any aspect of the tasks outlined in this bulletin, please consult a Johnson Controls Service Office prior to attempting the work. Please be aware that this information may be time sensitive and that Johnson Controls reserves the right to revise this information at any time. Be certain you are working with the latest information.

Overview of Mueller Valve

There are two basic styles of service valves. The first is a single seat valve that only has primary ports for the inlet and outlet of the valve body. During normal system operation, the stem is all the way out and located in the back-seated position. This allows complete flow throughout the valve and ensures a positive seal with the body of the valve, thereby fully isolating the packing gland.

The second type is a dual seat valve that has a secondary port (usually smaller and located on the top portion of the valve body) separated from the main flow stream of the valve. This style has two internal seats that provide complete isolation of the system or the gauge port, depending on the stem position.

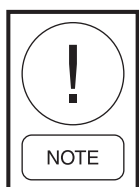
In the front-seated position where the stem is all the way in, the internal stem seat establishes a positive seal against the line connection or main flow stream. In this position, the valve is closed and the gauge port/secondary port, where applicable, is open to the outlet port of the valve. By allowing the valve stem to be located in mid stroke, the full system pressure is available to both sets of ports.

During normal system operation, the stem is all the way out in the back-seated position allowing complete flow throughout the valve. This back-seated position also ensures a positive seal with the body of the valve, thereby fully isolating the packing gland and 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.

Special Installation Details

Operation of valve stems in service and packed valves requires the packing nut be loosened to prevent excessive wear to the packing. Loosen the brass or steel nut between $\frac{1}{4}$ and $\frac{3}{4}$ of a turn, being careful not to fully disengage the nut from the valve neck. Apply a light coating of oil to the stem before installing the valve cap. This coating of oil will prevent rust and provide lubrication of the packing gland during cycling of the valve stem. Once the stem is in the desired location, tighten the nut to the proper torque requirement.

When installing service and packed valves, the valve should be disassembled and the valve stem 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 brazing 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.

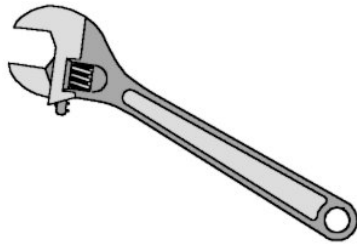


NOTE: Use proper tools when working with valves. Adjustable wrenches may be used **ONLY** to hold the valve body. They should not be used to torque the valve as they have the potential to round stems and damage nut edges.

Tools Required

(Will vary based on the valve part number/size)

- Adjustable Wrench



- Calibrated In/Lb Torque Wrench or Ft/Lb Torque Wrench



- Appropriate oil for chiller model
- Refrigeration wrench for the valve stem. A 1/4" or 3/8" 4 point or 8 point socket can be used.
- 3/8" Combination Wrench or 9/16" Combination Wrench



- 3/8" crows foot socket for packing gland or 9/16" crows foot socket for packing gland



- 13/16" deep well socket for seal cap or 1 1/8" deep well socket for seal cap



HOW TO IDENTIFY THE VALVE MODEL OR PART NUMBER

The first step in the proper use of the Mueller seal cap style valves is to identify which valve is being used since that will govern the torque specifications to be used. All instructions will be based on the Mueller Packing Gland part number (PN) and are grouped into two families. Find the valve part number and the corresponding Mueller Gland part number. You can also determine this by measuring the packing gland flats dimension. The tables below will help provide the vendor part number for lost or missing caps and seals. Mueller packing gland dimension tables follow on the next page.

FAMILY 1

TABLE 1 - MUELLER GLAND A 04567

MUELLER	JCI/YORK PART	DESCRIPTION	GLAND	PACKING	WASHER	SEAL CAP
A 11031	022-03836-000	¼ FL x 1/4 MPT Angle Non-Backseating Packed Line Valve	A 4567	A 0399	A 2848	027 04234 000
A 13220	022-00695-000	½ FL x ½ MPT Angle Backseating Packed Line Valve	A 4567	A 0399	A 2848	027 04234 000
B 34254	022-09539-000	¼ NPTF x ¼ ACC x ¼ NPTF Angle Valve Asbly, Brass Cap	A 4567	A 0399	A 2848	027 04234 000
B 34254	588688	¼ NPTF x ¼ ACC x ¼ NPTF Angle Valve Asbly, Brass Cap	A 4567	A 0399	A 2848	027 04234 000
B 34254	022X09539-000	¼ NPTF x ¼ ACC x ¼ NPTF Angle Valve Asbly, Brass Cap	A 4567	A 0399	A 2848	027 04234 000
B 34255	022X09539-001	3/8 Flare x 3/8 ODS Angle Non-Backseating Packed Line Valve, Brass Cap	A 4567	A 0399	A 2848	027 04234 000
B 34287	022-09503-000	ANG-ASSY ¼ NPTF x ACC x ¼ NPTF	A 4567	A 0399	A 2848	027 04235 000
B 34288	022-09754-000	3/8 Flare x 3/8 ODS Angle Non-Backseating Packed Line Valve, Plastic Cap	A 4567	A 0399	A 2848	027 04235 000
B 35162	022-11735-000	Angle Valve (B33837) with MPT branch changed to sweat connection	A 4567	A 0399	A 2848	027 04234 000
B 35334	022-0173-000	ANG-ASSY ¼ NPTF x ACC x ¼ NPTF	A 4567	A 0399	A 2848	027 04235 000
B 35523	022-12370-000	Brass Angle Valve	A 4567	A 0399	A 2848	027 04235 000

FAMILY 2

TABLE 2 - MUELLER GLAND S 27954

MUELLER	JCI/YORK PART	DESCRIPTION	GLAND	PACKING	WASHER	SEAL CAP
B 33790	022-03727C002	YORK INTER Compressor VA	S 27954	O-ring	P 27953	027 04234 000
B 33791	022-03727C003	YORK INTER Compressor VA	S 27954	O-ring	P 27953	027 04234 000
B 34521	022-09798-000	1 3/8 BLT BRASS Compressor VLV	S 27954	O-ring	P 27953	027 04234 000

TABLE 3 - MUELLER GLAND A 4709

MUELLER	JCI/YORK PART	DESCRIPTION	GLAND	PACKING	WASHER	SEAL CAP
A 17847	022-10046-000	1 3/16 ORS X 1 1/16 2	A 4709	A 4703	A 4704	027 04234 000
A 17849	022-10047-000	1 1/16 ORS X 1 1/16 12	A 4709	A 4703	A 4704	027 04234 000
B 34412	6161	7/8 OD Shut Off Valve	A 4709	A 4703	A 4704	027 04234 000
B 34484	6152	1 3/8 Barstock Valve	A 4709	A 4703	A 4704	027 04235 000
B 34594	5288439	1 3/8 Ang. Isolation Valve	A 4709	A 4703	A 4704	027 04236 000
B 34595	6153	1 5/8 Ang. Isolation Valve	A 4709	A 4703	A 4704	027 04236 000
B 35224	820889	1 1/8 ODI Barstock Assy	A 4709	A 4703	A 4704	027 04234 000
B 35225	022-08739-000	1 3/8 ODI Barstock Assy	A 4709	A 4703	A 4704	027 04234 000
B 35226	022-09779-000	1 5/8 ODI Barstock Assy	A 4709	A 4703	A 4704	027 04234 000
B 35505	022-12047-000	1 1/16X 1 3/16 ORS W/ACC	A 4709	A 4703	A 4704	027 04234 000

To determine which valve instruction to follow, use calipers to measure the packing gland flats dimension, as shown in *Figure 1*.

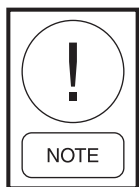


FIGURE 1 - CALIPERS

1. A dimension of .38" (+/- .010") will require using the instructions for packing gland A 04567.
2. A dimension of .56" (+/- .010") will require using the instructions for packing gland A 04709 or S 27954.

Use Assembly and Torque Instructions for Mueller Gland S 27954 and A 04709

Instructions for Valves with 9/16" Packing Gland Nut



Note: It is extremely important to hold the valve body steady with a properly sized wrench or an adjustable wrench while performing any work on the valve.

Closing Valve to Front Seat

1. The packing gland must be loosened 1/4 turn with 9/16" wrench before the stem is moved in either direction. Do not completely remove the packing gland with refrigerant still in the system.
2. Apply a couple of drops of refrigerant oil between the stem and packing gland after loosening the packing gland but before closing the stem. This will allow oil to reach the packing without fully removing the packing gland.
3. Only oil specified by JCI for the specific chiller and refrigerant must be used.
4. Close the valve using a calibrated torque wrench and 3/8" socket. Torque to 25-45 Ft/Lbs.
5. Once the stem is in position, torque the packing gland back to 20 Ft/Lbs.

Closing Valve to Back Seat

1. The packing gland must be loosened 1/4 turn with 9/16" wrench before the stem is moved in either direction. Do not completely remove the packing gland with refrigerant still in the system.
2. Apply a couple of drops of refrigerant oil between the stem and packing gland after loosening the packing gland but before closing the stem. This will allow oil to reach the packing without fully removing the packing gland.
3. Only oil specified by JCI for the specific chiller and refrigerant must be used.
4. Once the gland is loosened, the stem can be torques to the back seat, using a calibrated torque wrench and 3/8" socket, to 25-45 Ft/Lbs.
5. Once the stem is in position, torque the packing gland, using a calibrated torque wrench and 9/16" crow's foot, back to 20 Ft/Lbs.

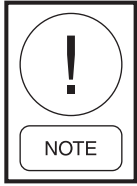
Installing Seal Caps

Seal caps are an important part of the valve. They are considered a secondary seal for the packing gland and should never be left off of the valve.

1. Plastic seal caps should be hand tightened on the valve to seal.
2. Brass seal caps should be torqued to 40-50 Ft/Lbs, using a calibrated torque wrench and a 1-1/8" Deep Well socket, to seal.

Use Assembly and Torque Instructions for Mueller Gland A 04567

Instructions for Valves with 3/8" Packing Gland Nut



Note: It is extremely important to hold the valve body steady with a properly sized wrench or an adjustable wrench while performing any work on the valve.

Opening a Closed Valve

1. The packing gland must be loosened 1/4 turn with 3/8" wrench before the stem is moved in either direction. Do not completely remove the packing gland with refrigerant still in the system.
2. Apply a couple of drops of refrigerant oil between the stem and packing gland after loosening the packing gland but before closing the stem. This will allow oil to reach the packing without fully removing the packing.
3. Once the gland is loosened, the stem can be backed off to the required position.
4. Once the stem is in the desired position, the gland should be torqued to 8-12 Ft/Lbs (96-144 In/Lbs) using a calibrated torque wrench and 3/8" crow's foot.

Closing an Open Valve

1. The packing gland must be loosened 1/4 turn with 3/8" wrench before the stem is moved in either direction. Do not completely remove the packing gland with refrigerant still in the system.
2. Apply a couple of drops of refrigerant oil between the stem and packing gland after loosening the packing gland but before closing the stem. This will allow oil to reach the packing without fully removing the packing gland.
3. Close the valve using a calibrated torque wrench and 1/4" socket. Torque to 16-18 Ft/Lbs (192-216 In/Lbs).
4. Torque the packing gland back to 8-12ft.lbs (96-144 In/Lbs).

Installing Seal Caps

1. The seal cap is a secondary seal to the packing gland. It must be reinstalled after servicing the valve.
2. Brass caps (A16474) will need to be torqued to 20-30 Ft/Lbs.
3. Steel seal caps should be torqued to 6-10 Ft/Lbs.