YORK®

Service Information

File In/With: –

SI0421

New | 120

Equipment Affected: YK, YD, YR, YB & YG Chillers

Field Repair of Variable Orifice and Hot Gas Bypass Valve "O" Rings - 035-21191-000

GENERAL

This instruction details the procedure YORK/Johnson Controls Service Technicians should follow when replacing leaking O-rings in variable orifice and hot gas bypass valves used on YK, YD, YR, YB and YG chillers. This instruction includes all steps to successfully rebuild leaking butterfly valves O-rings.

PARTS/KIT NUMBERS

Valve O-ring replacement repair kits are available from the Baltimore Parts Center. The kits include all parts required to rebuild the variable orifice and hot gas bypass valves. The valves and kit part numbers for various valve sizes are listed below.

VARIABLE ORIFICE VALVE			
SIZE	FACTORY EQUIPPED VALVE P/N	O-RING REPLACEMENT KIT P/N	REPLACEMENT VALVE P//N
2"	022 10642 002	375 65117 002	022 10642 002
3"	022 10642 003	375 65117 003	022 10642 003
4"	022 10642 004	375 65117 004	022 10642 004
5"	022 10642 005	375 65117 005	022 10642 005
6"	022 10642 006	375 65117 006	022 10642 006

HOT GAS BYPASS VALVE				
SIZE	FACTORY EQUIPPED VALVE P/N		O-RING REPLACEMENT KIT P/N	REPLACEMENT VALVE P//N
2"	022 10026 000	022 10643 002	375 65117 102	022 10643 002
3"	022 10016 000	022 10643 003	375 65117 103	022 10643 003
4"	022 10017 000	022 10643 004	375 65117 104	022 10643 004
5"	—	022 10643 005	375 65117 105	022 10643 005
6"	—	022 10643 006	375 65117 106	022 10643 006

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.

Product Technical Support

REPAIR

Perform the following steps to prepare the chiller for servicing and refer to butterfly valve components illustration below for configuration of the variable orifice and hot gas bypass valve parts/assembly.

1. Lock out, tag out the chiller.
2. If the chiller has refrigerant isolation valves, use the valves to isolate and recover refrigerant into the condenser.
3. If the chiller does not have isolation valves, the refrigerant will have to be recovered and stored in an appropriate receiver or approved refrigerant cylinders.

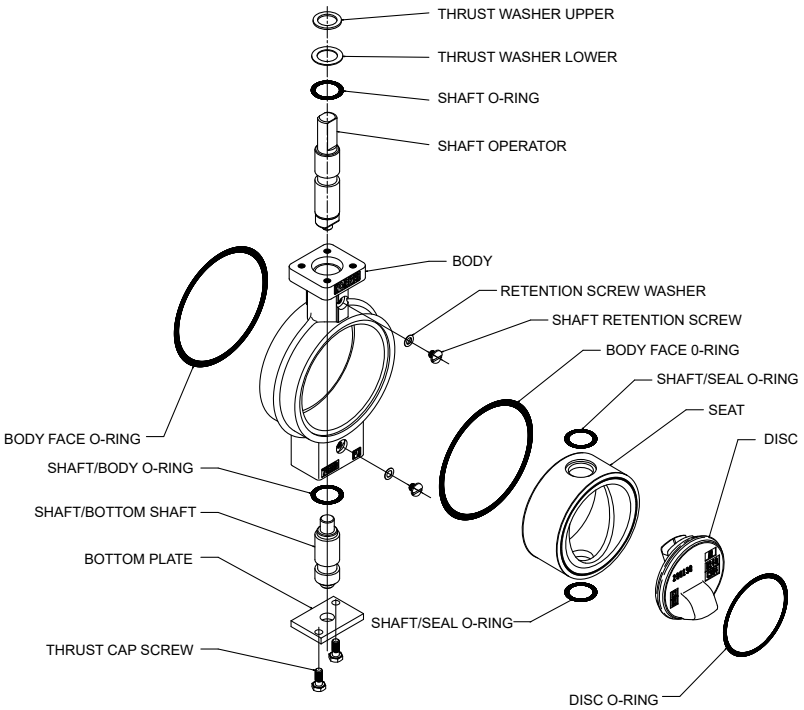
CAUTION

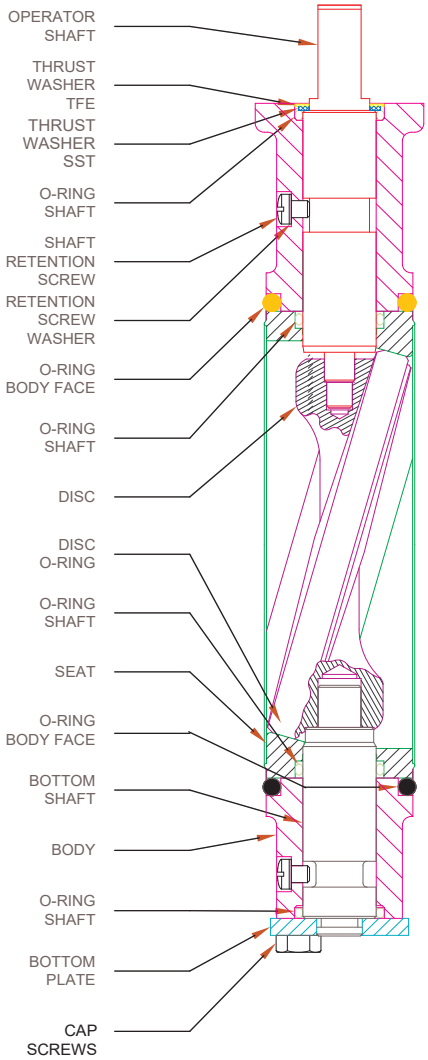
When recovering and recharging refrigerant from/to the chiller take precautions to remove refrigerant safely and to avoid any risk of freezing water in the evaporator or condenser tubes.

Follow all EPA and industry standards, guidelilnes and safety practices when handling refrigerants.

Also reference company Safe Job Procedure SJP#YIC-1 General Handling of Refrigerants.

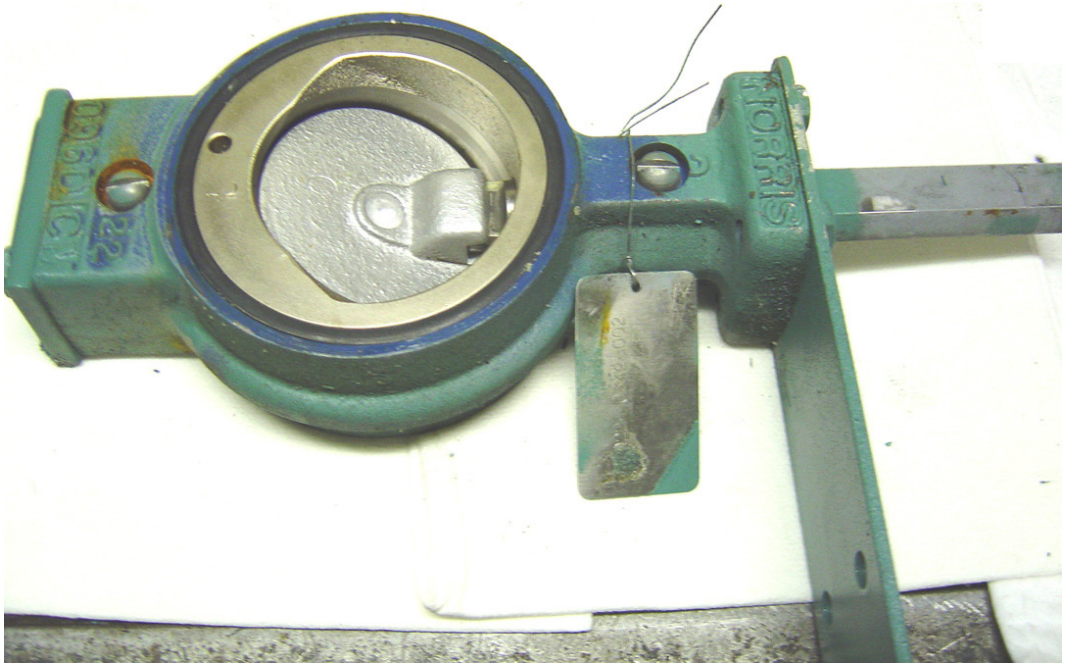
BUTTERFLY VALVE COMPONENTS



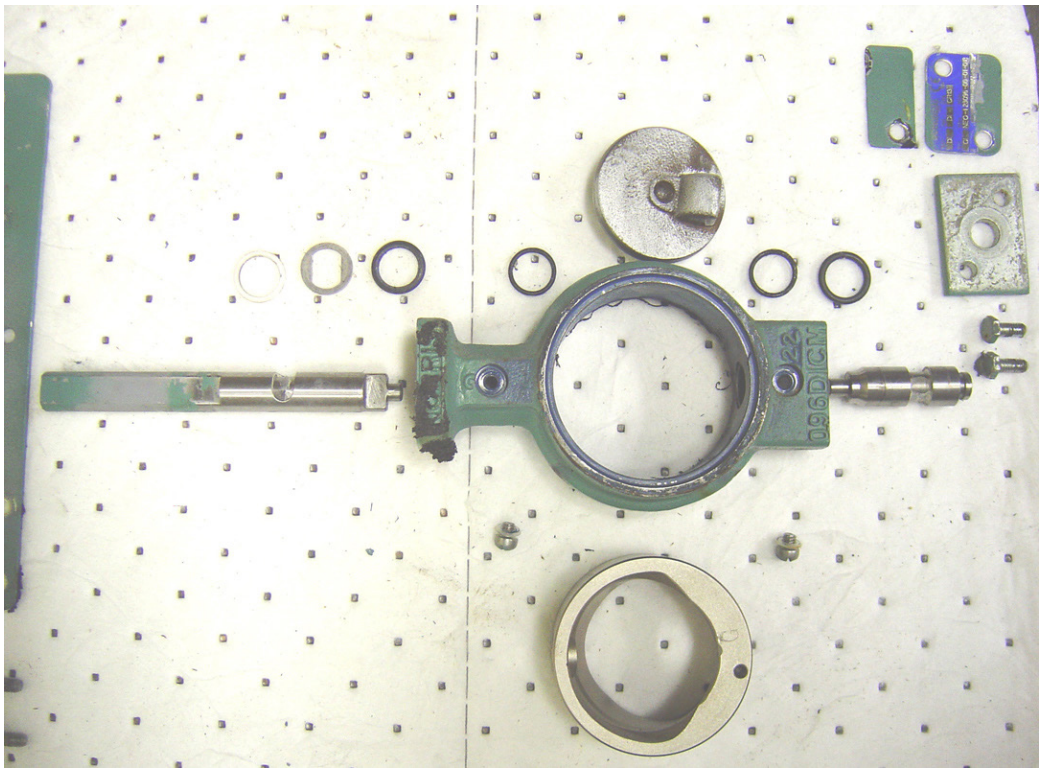


NOTE: Disc O-ring is used for hot gas bypass valve only

4. Remove hot gas bypass valve and/or variable orifice valve from chiller.
5. Disassemble valve(s) completely and discard old O-rings and actuator shaft Teflon washer.
6. Thoroughly clean all pieces and inspect for damage. If valve appears to have any damage, replace the valve.
7. Record from valve(s) data plate the part number, model number and serial number for warranty claim.

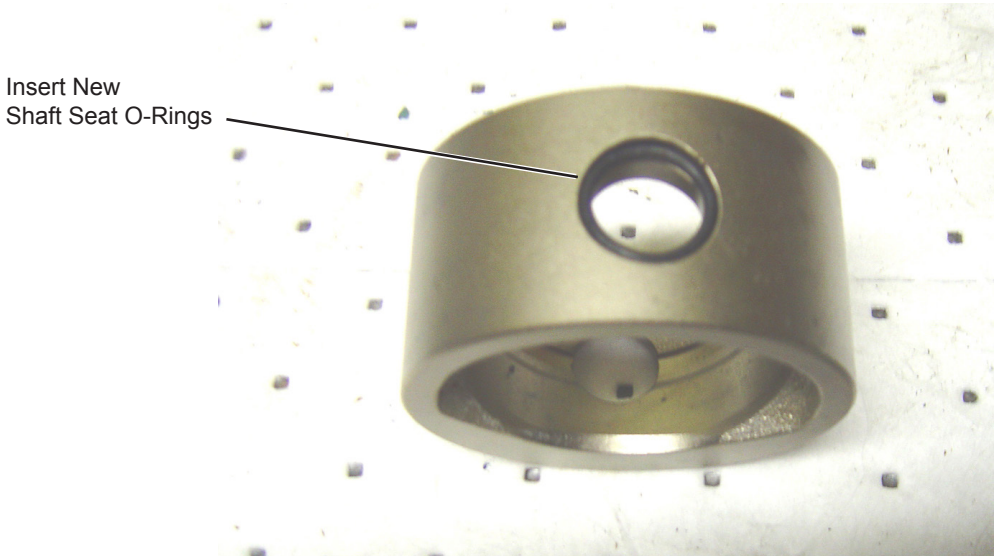


Variable Orifice Valve Assembly As Removed from Chiller

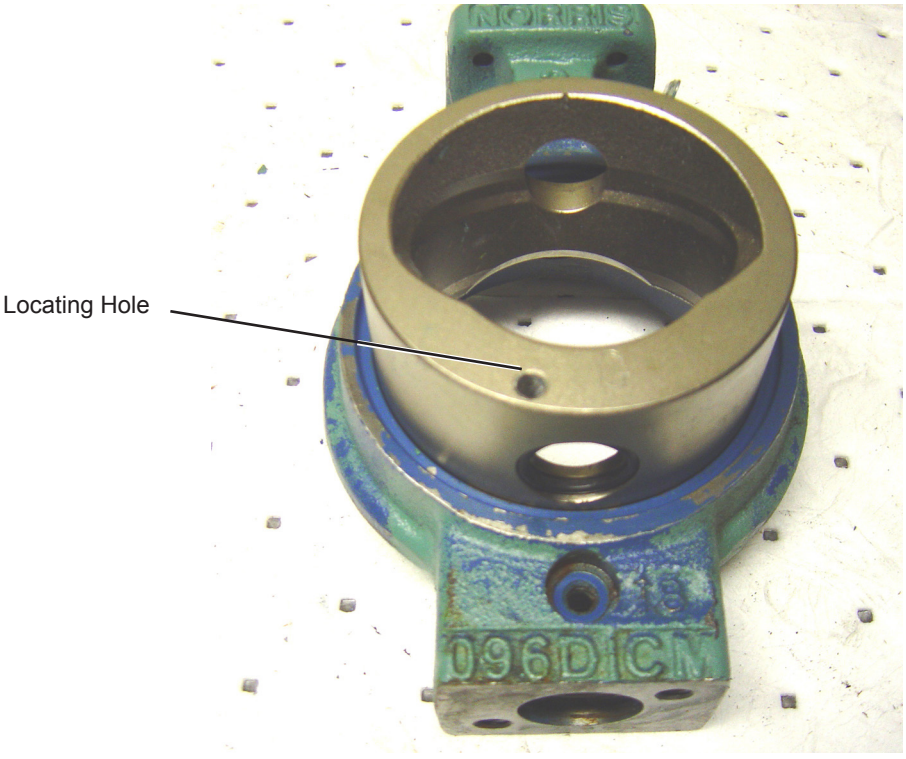


Variable Orifice Valve After Disassembly

8. Insert shaft/seat O-rings (on 2" valves these are the smaller O-rings in the repair kit) into the butterfly valve seat and install into valve housing.
9. The valve seat has a locating hole that is assembled on the stationary bottom shaft end of the valve.
10. If repairing a hot gas bypass valve, see Special Instructions for Metal Lined Hot Gas Bypass Valves Only on *page 8*. If repairing a variable orifice valve, proceed to Step 11.
11. Assemble butterfly disc into butterfly valve seat.
12. Install the stationary shaft into the valve housing. (Lubricate shaft and O-rings with compressor oil prior to assembly).

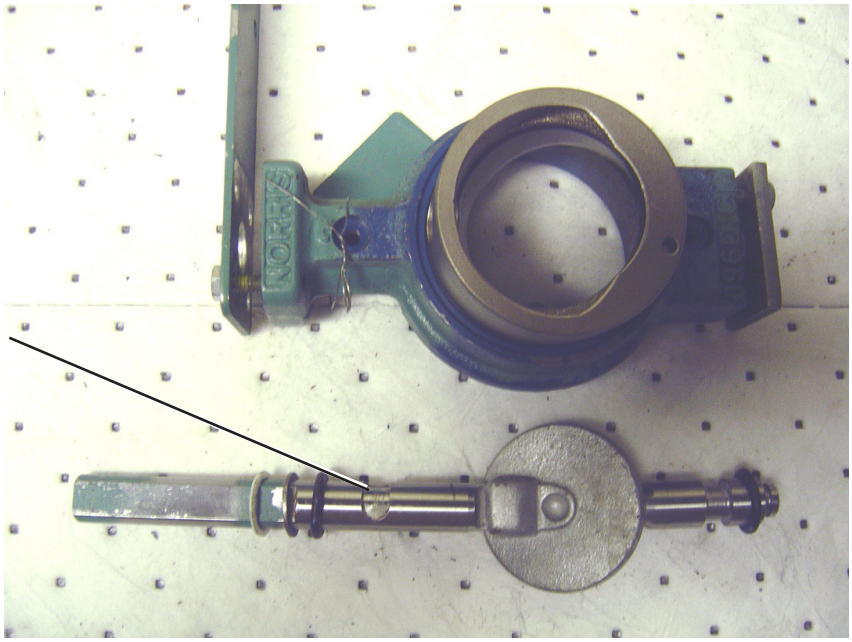


Valve Shaft/Seat O-Ring Location

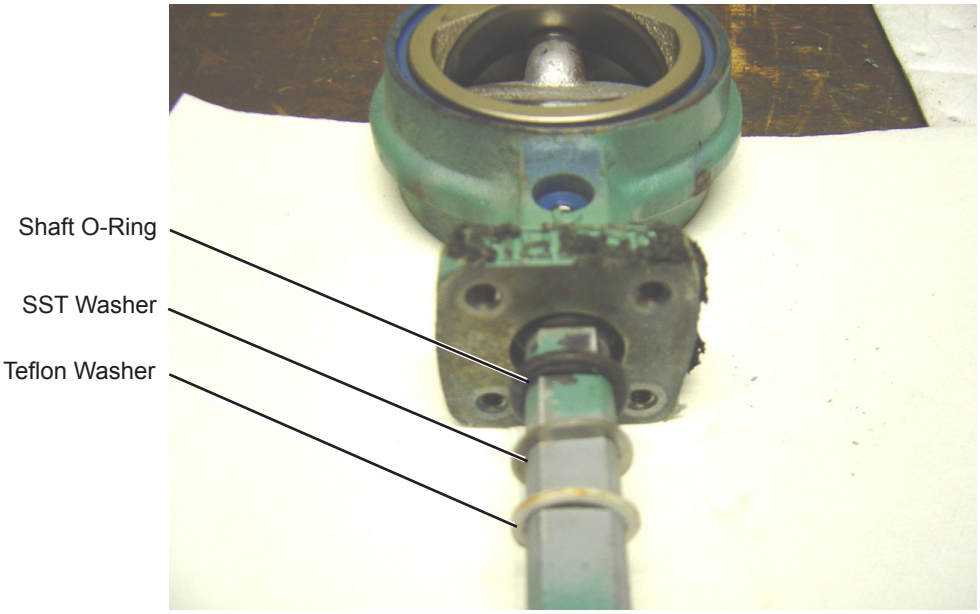


Valve Seat Locating Hole

13. Install new shaft O-ring over the stationary bottom shaft on the closure bottom plate end.
14. Install bottom plate including data and caution plates with two cap screws loose.
15. Tighten bottom plate(s) cap screws.
16. Install operator shaft into the valve assembly. The recessed groove in the shaft must line up with the shaft retention screw hole. (Lubricate shaft and O-rings with compressor oil prior to assembly).
17. Install new shaft O-ring, SST washer and new Teflon washer, in that order, over the operator shaft.

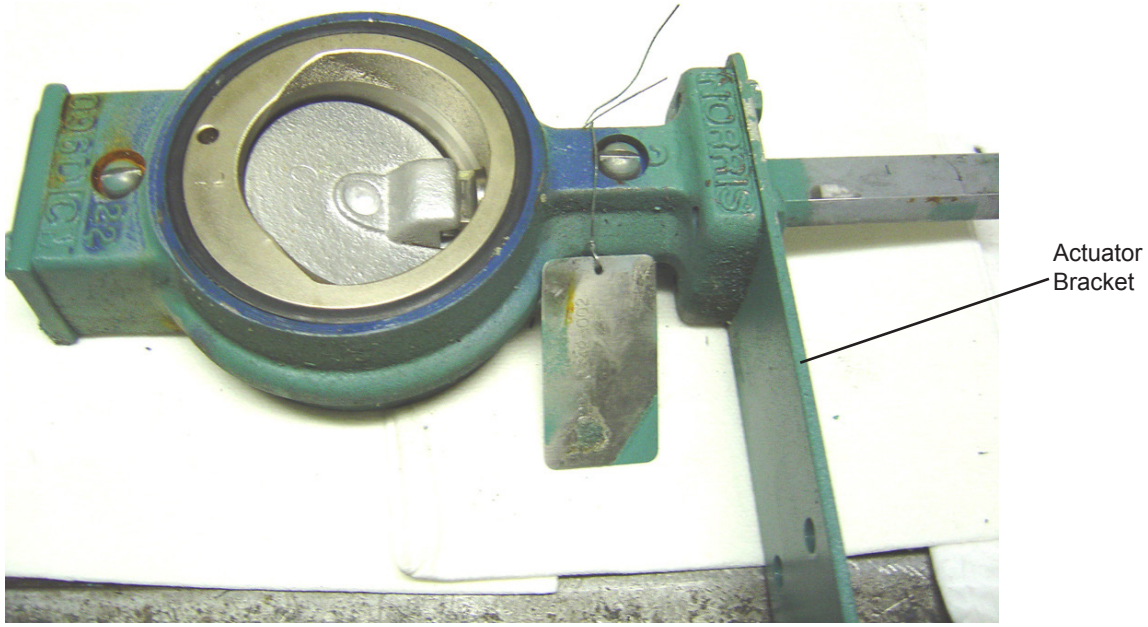


Recessed Groove on Operator Shaft



Assembly Order of New Parts on Operator Shaft

18. Install actuator bracket.
19. Install two shaft retention screws with Teflon gaskets.
20. Install the flange seal O-rings to valve faces. Valve is now ready to re-install in the chiller.
21. Install the variable orifice valve onto the chiller between existing flanges using new O-rings. Make sure the face surfaces are clean and not damaged.



Actuator Bracket ReInstalled on Valve Body

Retention Screws

22. Fill in the requested information on the "rebuilt" label included in the kit and attach one label to the valve bottom plate. Ensure the mounting surface is free of paint, oil or dirt. Attach the second label to the wire tied tag on the valve.

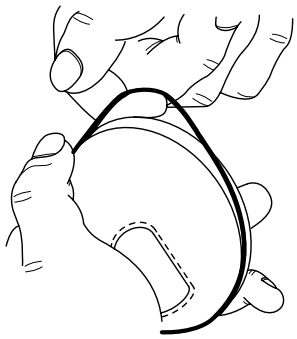
    REBUILT WITH
    C873 O-RINGS
    DATE _____

23. Pressurize with trace R-134a and nitrogen to 110 psi. Leak test the valve(s) and flange connections.
24. Set up vacuum pump and evacuation equipment to operate over night and unattended. Evacuate entire chiller, or evaporator/compressor if chiller has isolation valves and charge was recovered into condenser, to a vacuum level of 29.7 in. Hg., 0.99 psia, 5 mm Hg or 5,000 microns.
25. Re-charge chiller or release refrigerant charge from the condenser (if chiller has isolation valves). Refer to caution note on *page 2*.
26. Return chiller to operation.

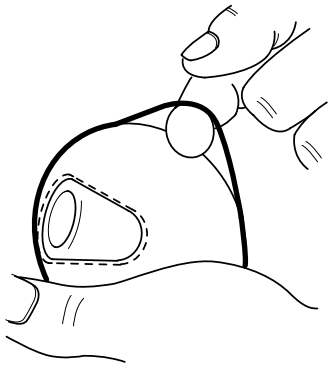
SPECIAL INSTRUCTIONS FOR METAL LINED HOT GAS BYPASS VALVES ONLY

Remove disc O-ring. Carefully cut the O-ring and remove from disc edge groove. Do not pry the O-ring loose with sharp tools which could damage the disc or groove.

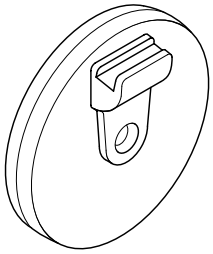
Inspect the disc edge for damage. Thoroughly clean the groove lips of dirt and grit which might damage the new O-ring. Use emery cloth to smooth edges if necessary. Use a generous amount of compressor oil on the O-ring.



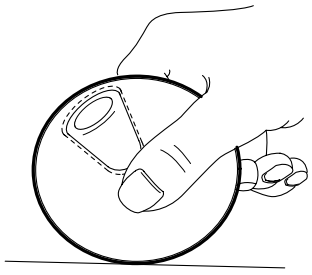
A. Place O-ring about half way around disc groove. Holding it in place with one hand, pull O-ring to position on edge of disc with index finger of other hand.



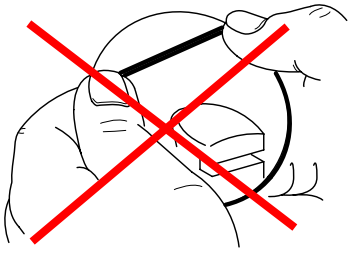
B. With finger still under O-ring, rotate disc completely to equalize rubber tension.



C. To insure equal distribution of the O-ring around the disc, press it into place at four equally spaced points - 12, 3, 6 and 9 o'clock. Six inch valve discs are more easily handled if placed in a vise or laid flat on a clean surface. A smooth bar or hammer handle can be used at the four points.



D. Continue pressing the O-ring into place at points between the original four alternately on one side and then the other until the entire O-ring is smooth and evenly secured. Large disc are more easily handled by putting the edge of the disc against the chest and working the opposite side. Hold the bar at a slight angle and roll a small section of the O-ring into place. Rotate the disc 180° to work the opposite area.



DO NOT install O-ring by rolling it up the side of the disc into groove. This will cause the O-ring to twist and early failure can result.

DO NOT stretch O-ring so cross section is reduced. This will cause it to become larger in diameter and even distribution of the O-ring around the disc edge will be more difficult.

Go to page 4 Step 11 to complete valve assembly.