YORK®
BY JOHNSON CONTROLS

# Service Information

| File In/With: | SI0305 New 815 |
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| **Equipment Affected:** | YK, YT, YD, YS, CYK, YKEP with Electric Drive Motors |

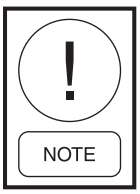
York Chiller Motor Re-lubrication Instruction with Grease Lubricated Bearings

## GREASE AMOUNT AND RE-LUBRICATION INTERVAL

All electric drive motor manufacturers have requirements for the amount of grease to be added, and the exact interval for re-greasing. However, there is a middle of the road compromise that should be adequate for any of the motors used on York chillers. We suggest this amount should be 1.5 cubic inches of grease, and the interval should be 1000 hours to 1400 hours between re-lubrications. Present York Optiview Control Panels provide a warning message to re-lubricate beginning at 1000 hours; and at 1400 hours this feature will shut down the chiller if re-lubrication is not addressed. In plants where chillers run 24/7, this is more than 16 days of advance warning prior to shutting down the chiller.

## GREASE GUN CALIBRATION

Grease guns should be calibrated to determine the number of pumps required to get 1.5 cubic inches of grease. This is done by forming an open-top cardboard cube, one inch by one inch by one inch. Pump grease into this container until grease is level with the top, counting the number of pumps. When the grease is level with the top, this is the amount for one cubic inch of grease. Multiply the number of pumps by 1.5 to get the number of pumps for York chiller motor bearings.




***That over-greasing can be as detrimental as under-greasing, or total lack of greasing. A bearing housing over-filled with grease can run 20° centigrade higher temperature than one with the proper amount of grease.***

## TYPE OF GREASE

All standard York chiller motors utilize a polyurea grease, formulated for high-speed rolling element bearings. Only two greases are approved by all our motor manufacturers and these are:

1st Choice: Exxon / Mobil Polyrex EM - Grainger Part Number 5XB54

2nd Choice: Texaco / Chevron SRI #2

**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 bulletin 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**

There are a few exceptions, such as Reliance Q-frame motors built from 1997 to 2003, and some special order motors such as high-voltage motors from ABB. In these cases, use only the grease called for by the motor manufacturer. For Reliance motors, there is a metal tag affixed to the motor calling for Texaco Premium RB grease. This is a lithium based lubricant and absolutely should **never** be mixed with polyurea grease. When the two products come together, the thickeners release their oil molecules and oil settles in the bottom of the bearing housing, or exits at the relief plug or around the shaft. Bearings can fail within 1000 hours when non-compatible greases become mixed. If you are unable to locate this specific Texaco product, another approved lithium based grease is Shell Alvania RL in NLGI #3 or Mobilith SHC100 NLGI#2, Granger P/N 4ZF49.

We cannot approve use of any general purpose greases; first because they are unlikely to contain all the properties required for the very demanding application of rolling element bearings at 3600 RPM, and secondly because none of these has been approved by any major motor manufacturer of electric motors up to 2000 HP.

We also sometimes receive requests to use synthetic grease products, often from very well-recognized major grease manufacturers. Unfortunately, no synthetic greases have been approved. Also, it is not recommended to mix synthetic greases with mineral oil based grease, which is the type of grease that is inside the motor bearings as shipped from the YORK factory.

## PROCEDURE

Re-lubrication should be done with the motor shut down and at rest. This will ensure grease gets between the balls of the bearing. If the bearings were still spinning at operating speed, the spinning balls and cage would be like a wall to the entering grease. On a flow-through bearing housing design, this could force the grease to escape around the clearance hole where the rotor shaft passes through the housing cap. This will cause grease to collect inside the motor. On a NON flow-through design the bearing may never receive any lubrication.

Absolutely NEVER pump grease until you see old grease exiting at the relief port. Only pump the required number of pumps as previously calibrated.

After the proper amount of grease has been added, open the relief port plug below the bearing, and run the motor for 30-45 minutes before re-installing the plug. It is not necessary to see old grease coming out from the relief port.

## OPERATING TEMPERATURE

Normal operating temperature for grease lubricated bearings on York chillers is 40-65° C, or 100-150° F. It is normal to see the temperature run higher immediately after re-lubrication, and then come down as much as 20° F after a few hours of operation. Bearing RTDs should be set to shutdown the motor at 90° C (194° F), although once this temperature is reached, the bearings are most likely already ruined. A warning programmed at 65° C can be an indication that something is not right and operation should be checked. It might only be that the bearings are in need of lubrication, but above 65° C generally indicates some type of problem.