

RBC SERVICES UPDATE

RBC Services
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RBC SHAFT SHIFTING

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On occasion, a call has come in with a report of an RBC shaft which shifted to one end or the other.

QUESTION: My RBC shifted to the idle end (or the drive end). What made that happen and how do I get it back into position?

ANSWER: Good question. Although this does not happen often, it does happen. There are a few situations which may cause this situation. Getting it back into place is time consuming, but rather simple.

POSSIBLE CAUSES:

- 1.) On a chain and sprocket drive, if the sprockets are badly out of alignment, the lateral pull may cause the shaft to slide.
- 2.) For any model RBC, if the bearing base plates across the tank are badly out of level, this may allow the shaft to slide.
- 3.) For any model RBC, if the bearing journal is worn and out of round and/or the lock collar is not secure or cracked, this may allow the shaft to slide.

THE FIRST POSSIBLE CAUSE

If badly out of alignment, the uneven pull on the chain can pull the shaft to one end or the other. The chain tracking should be checked on a monthly basis. Proper alignment also extends the life of the chain and sprockets.

THE SECOND POSSIBLE CAUSE

When the RBCs were originally installed, the bearing base plates across the tanks were installed to a level within a specified tolerance.

Under operation over time, the RBCs may reach weights greater than 50,000 lbs. Add to that, the weight of the concrete tanks, plus approximately 15,000 gallons of wastewater per RBC, and you end up with a tremendous amount of weight.

As with many structures, things tend to settle and move. At a particular installation where a shifted shaft was reported, a level check across the tanks revealed a difference of 2". At another installation, the difference was up to 1-1/2". The shaft will tend to slide uphill. Base plate level should be checked every few years.

THE THIRD POSSIBLE CAUSE

This is most likely the real reason for a shaft to shift. Due to age and/or a problem with the main shaft bearings, the bearing journal may become worn and out of round. The surface on the journal is uneven which will allow the lock collar to work loose or snap. Once the bearing is no longer secured to the journal, the shaft may slide. (If the bearing journal is worn and in need of repair, refer to RBC Service UPDATE Issue 2, 1989, WORN RBC BEARING JOURNAL.)

Lock collars and set screws should be checked every 3 months. This too, will minimize the potential for the RBC to shift.

REPOSITIONING THE RBC

If either of the main shaft bearings is jammed onto the radius, bearing removal procedures should be followed first. And, if the bearing is jammed, it will possibly need to be cut off and replaced.

CAUTION: Do not attempt to reposition the shaft while either end is suspended in a shaft lifting device. If a bearing is removed, place hardwood blocking in the housing and lower the shaft. The shaft will slide on the hardwood.

For a chain and sprocket drive RBC, positioning of the drive end bearing is related to the drive sprocket alignment. Check with RBC Services for the proper dimension. If lifting the drive end, be sure to release tension on the chain prior to the lift.

RECOMMENDED PROCEDURES

For any bearings with set screwed lock collars, back out the set screws and remove the collars. For double lock collars, back out the collar set screws.

Position a brace at the end of the shaft from which power will push. If nothing is available, a ½” steel “L” bracket with support gussets can be used and anchored into the concrete.

To guarantee success with moving the shaft on the first try, both main shaft bearings should be removed and replaced with hardwood blocks in the housing bottoms.

Place a port-o-power or other type jack between the end of the shaft and the brace. You may wish to place a piece of mild steel between the shaft and the jack as a cushion.

Jack the shaft back into position. Reinstall the bearings, if necessary, apply the lock collar(s) and secure into place. **If the bearing has a single eccentric collar, do not try to use existing holes in the journal. Reposition and drill new holes for the set screws.**

NOTE: If the RBC has been out of service for more than 6 hours, refer to the RBC Services UPDATE Issue 1, 1988, RBC RESTART PROCEDURES.

Replace the housing caps and tighten to snug. Once the RBC is back on line, torque the cap nuts to 140 ft.lbs.

If you ever have any questions regarding this or any other repair procedure or about your RBC operations in general, please do not hesitate to give me a call. We'll do what we can to help.