

Common Causes of Centrifugal Pump Leaks

Hygienic centrifugal pumps are universal in food & beverage and they vary widely depending on the application and the product characteristics. One thing they have in common is that over time they may leak. There are numerous causes of pump leaks but with the right tools and spare parts most leaks can be repaired by onsite personnel.

When dismantling a pump, do not assume that the first worn or damaged part is the only cause of the pump leak. We recommend taking the time to perform simple maintenance by inspecting and replacing all of the parts which are worn or damaged.

Some manufactures sell service kits, while others sell only individual parts. The parts contained in the service kit may vary from one manufacturer to another. In any case, for simple pump repairs we recommend stocking common spare parts which can cause or contribute to pump leaks.

Common Spare Parts

Note: Some of the parts below may not apply to your pump type.

1. Rotating seal o-ring(s)
2. Rotating seal
3. Stationary seal
4. Spring
5. Casing gasket

1

ROTATING SEAL O-RING (S) – The o-ring(s) should maintain a round shape and be flexible (not brittle or stiff). The o-ring typically fails due to allowing the pump to run dry, or improper flushing after batch transfers. It is important to use a sanitary food-grade lubricant on the o-ring when replacing.

2

ROTATING SEAL – Check the seal for cracks, breaks or chips, and ensure that the seal is a consistent thickness. The rotating seal typically fails due to allowing the pump to run dry, improper flushing after batch transfers, wear, thermal shock, or physical abuse.

3

STATIONARY SEAL – The stationary seal may wear out over time. Check to ensure it aligns smoothly with the engagement pin on the drive collar.

4

SPRING – The spring tension can be damaged by the product or chemicals and even impacted by weather. Ensure that the spring is stiff enough to hold tension.

5

CASING GASKET – Check the gasket for wear, breaks or tears. Ensure that the gasket is a consistent thickness.

There are other parts failures which occur less often. Nevertheless, experienced maintenance personnel can replace or adjust these parts too. Some repairs (such as shaft alignments) may require specialized tools.

Note: Some of the parts below may not apply to your pump type.

1. Backplate and alignment pins
2. Impeller
3. Impeller pin hole
4. Shaft
5. Cup engagement pin
6. Volute
7. Volute clamp

1

BACKPLATE – For many pumps the backplate acts as the sealing surface for the rotating seal. Check to ensure the backplate is smooth. It should not be scared, pitted, or excessively worn.

2

IMPELLER – Check the impeller to ensure the blades are smooth and in alignment. Use a feeler gauge to measure the clearance gap between the impeller and the backplate when inspecting or replacing. (Check the pump specs for the specific gap recommendation.)

3

IMPELLER PIN HOLE – The pin hole can sometimes get lopsided. Ensure the pin fits into the hole, engages the impeller, and does not fall out. If the hole is lopsided, the shaft must be replaced.

4

SHAFT(S) – Check the pump and motor shafts to ensure they are undamaged and straight. As they are coupled, it is important to check them both to ensure they are in parallel and in angular alignment. Check the alignment when the equipment is at normal operating temperature as thermal expansion can skew the measurements.

5

CUP ENGAGEMENT PIN – The cup engagement pin may wear out. Ensure the pin is undamaged and the drive collar aligns completely with the cup.

6

VOLUTE – Volutes sometimes fail because of piping bind. This can occur if process piping is not precisely aligned and causes pressure on the volute.

7

VOLUTE CLAMP – Ensure that the clamp holds the casing tightly together.

Barnum Equipment Sales (BES) sells all major brand pumps and replacement parts, including but not limited to ALFA LAVAL, AMPCO, FRISTAM, and WAUKESHA. BES also provides expert service assistance and pump sizing.

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