Training a Crew on Efficient Pump Overhaul

Frontline Industries, Inc.

Problem:

A chemical plant in New Jersey uses several Viking Pumps to handle a very hot and viscous product. The plant’s maintenance manager had been overwhelmed for years by the high cost of keeping these Viking Pumps in service.

Frontline’s Solution:

Frontline was called in to offer some long term, viable, cost saving solutions. Frontline reviewed the most common and most frequently occurring problems and then examined the current maintenance approach being used and proposed the following:

1. Train the existing maintenance crew on the proper and efficient procedure to overhaul these pumps.

2. Produce a written, dimensional, pictorial step by step reference guide that the mechanics could use during the overhaul process.

3. Guide the mechanics on their first hands on overhaul.

See below a section of the overhaul guide booklet that Frontline put together, to help its customer in that specific pump maintenance application.

The Results:

Clean and deburr shaft and rotor

Check bearing journals for proper tolerance (in this case shaft should be 2.1650"/2.1645")

Check shaft with "V" blocks and indicator (Total T.I.R. should be .001)

Check bearing housing for proper fit. Take various readings to make sure that the housing is not ovalized Check for wear marks that would indicate that the outer race of the bearing has been spinning inside the housing. Bore size should be 5.514"/5.512"

Check the head pin for proper tolerance and irregular wear. Diameter should be 2.5625/2.5615"

After pressing carbon busing in idler, check I.D. of bushing for proper tolerance. it should be 2.5700"/2.5720" Place idler over head pin and rotate by hand to insure that there is no interference.

After pressing carbon bushing in bearing bracket, check I.D. of bushing for proper tolerance. It should be 2.4445"/2.4425"

Clean all grease ports by forcing new grease thru. Remove and clean any trace of old grease.

Lightly lubricate the inside of the carbon bushing. (bearing oil or grease is fine) Then install rotor in place and rotate same by hand to make sure that it spins free. Make sure that the packing retainer washer is in place.

Precut the necessary number of packing rings, lubricate each piece of packing with bearing grease and proceed to pack the first ring to the bottom of the stuffing box with the aid of a pipe. It is very important that each piece of packing be snuggly pressed against the previous piece. If a pipe is not available use pack rods. DO NOT USE A SCREWDRIVER.

After all the packing is installed, backup rotor from bearing bracket enough to insert the packing gland and the inside bearing cover with the new grease seal. Then push rotor back in bearing bracket.

Clean and deburr the inside of the volute with the aid of a drill and an emery flapper .

The "hands on" training and the production of the guide booklet were provided by Frontline at no cost to the customer. Keeping true to its mission statement, Frontline helped its customer to considerably reduce its maintenance cost and greatly extend the useful life of its equipment.

Install bearing on the shaft. Pack bearing with grease.

Install volute on bearing bracket and measure clearance from the end of rotor to the face of volute.

Measure clearance between O.D. of rotor and I.D. of volute at the closest point. I.D. of volute (casing) 11.003"/11.006" O.D. of rotor 10.987"/10.984" (.010" extra clearance.

Measure depth of head and allow for gasket thickness (.015").Mount and secure head on volute. Make sure that the safety valveis pointing toward the discharge.

Adjust rotor clearance by moving the two bearing covers. Each notch represents .002" end clearance. Tighten bearing cover set screw. At this point there should be about .015" clearance between the end of the rotor and the front of the head plate.

For more information, please visit www.frontlineindustries.com *[1].*

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[1] http://www.frontlineindustries.com