# Troubleshooting Vacuum Equipment

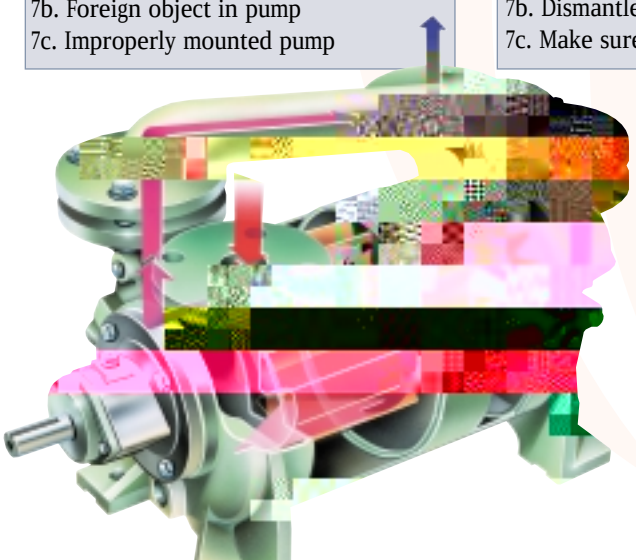
K g he ba c ca ga e e f p ac e p e pe f a ce

***Effective and timely correction of vacuum equipment performance shortcomings is important. Knowing which variables affect performance can reduce iterative problem-solving techniques by directing you right to the cause. Often, a trial-and-error method is used, , to or metus omport***

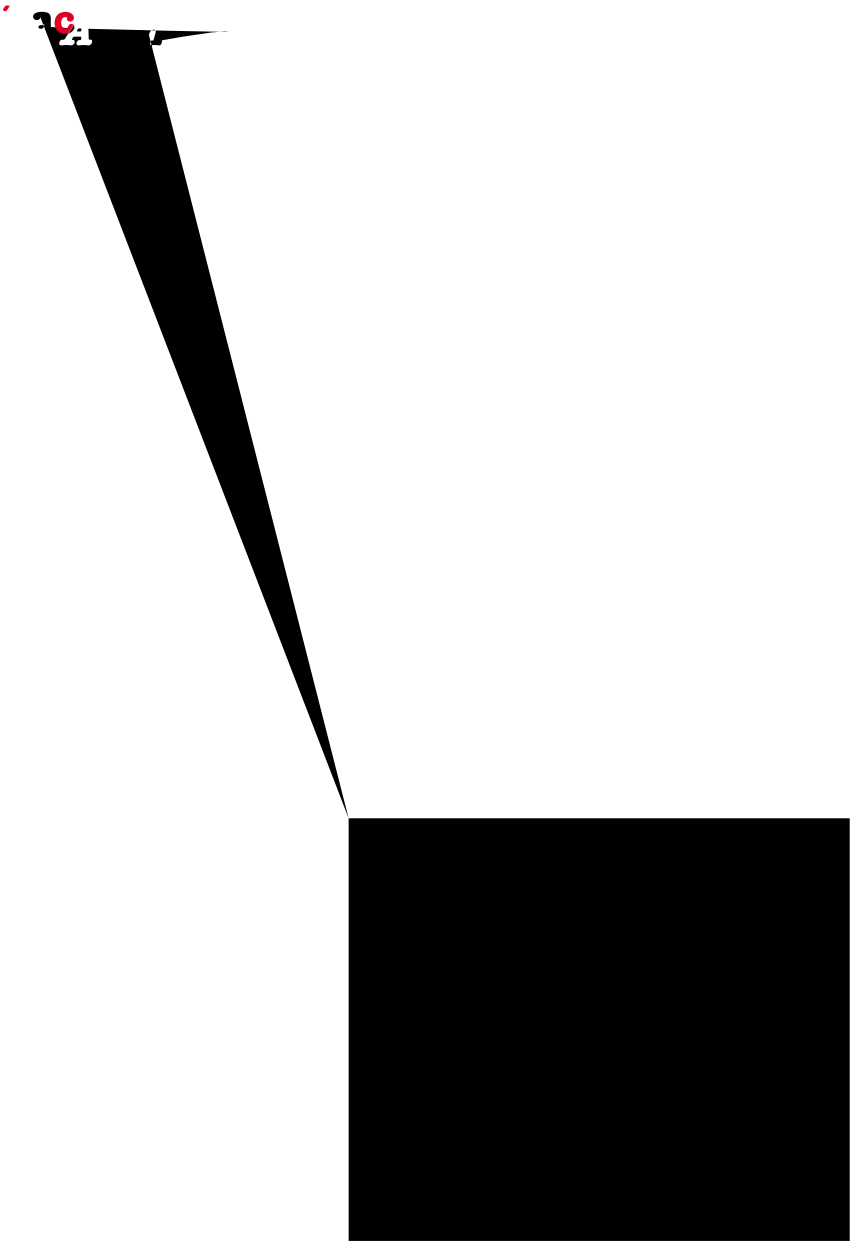
| Observation | Problem | Corrective action |
| --- | --- | --- |
| 1 | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

# Liquid Ring Vacuum Pumps

| Observation | Problem | Corrective action |
|---|---|---|
| 1. Reduced capacity of pump | 1a. Seal water temperature higher than design<br>1b. Low seal water flowrate<br>1c. Excessive air leakage | 1a. Reduce temperature by increasing cooling water flow or check seal cooler for fouling.<br>1b. Adjust seal water flowrate or check centrifugal recirculation pump.<br>1c. Find and repair leak |
| 2. Excessive noise | 2a. Excessive or insufficient seal liquid to pump<br>2b. Coupling misalignment<br>2c. Defective bearing<br>2d. Cavitation | 2a. Adjust seal flowrate.<br>2b. Realign coupling.<br>2c. Replace bearing.<br>2d. Add noncondensable gas load. |
| 3. High power consumption | 3a. Excessive seal liquid<br>3b. Coupling misalignment<br>3c. Excessive discharge pressure<br>3d. Defective bearing<br>3e. Gland ring too tight<br>3f. Improperly mounted pump | 3a. Adjust seal flowrate.<br>3b. Realign coupling.<br>3c. Correct as necessary.<br>3d. Replace bearing.<br>3e. Loosen gland ring.<br>3f. Make sure mounting surface is level. |
| 4. Overheating | 4a. Excessive seal liquid temperature<br>4b. Insufficient seal liquid flowrate<br>4c. Coupling misalignment<br>4d. Defective bearing<br>4e. Gland ring too tight<br>4f. Improperly mounted pump | 4a. Check coolant flowrate and seal cooler fouling.<br>4b. Increase seal liquid flowrate.<br>4c. Realign coupling.<br>4d. Replace bearing.<br>4e. Loosen gland ring.<br>4f. Make sure mounting surface is level. |
| 5. Vibration | 5a. Coupling misalignment<br>5b. Pump or motor not properly anchored<br>5c. Rotor imbalance<br>5d. Improperly mounted pump | 5a. Realign coupling.<br>5b. Anchor pump or motor properly.<br>5c. Balance rotor.<br>5d. Make sure mounting surface is level. |
| 6. Mechanical seals “squeak” | 6. Insufficient lubrication | 6. Check flow of coolant to seals. |
| 7. Pump shaft is seized and will not turn | 7a. Scale from hard water<br>7b. Foreign object in pump<br>7c. Improperly mounted pump | 7a. Remove scale from pump.<br>7b. Dismantle pump and remove object.<br>7c. Make sure mounting surface is level. |



| | | |
|---|---|---|
| 1. Pump will not start | 1a. Motor and/or control wiring faulty<br>1b. Pump seized or damaged due to | |
| 2. Poor level of vacuum | | |
| 3. Excessive amperage/ power consumption | | |
| 4. Loss of oil pressure | | |
| 5. High inlet temperature | | |
| 6. High exhaust temperature | | |
| 7. Low exhaust temperature | | |
| 8. Mechanical seal failure | | |




## Summary

M b . T w ,
. R
b , b . C w -
w b . I
w b , b
- . M -