

Centrifugal-pump mechanical seal replacement - JSA - B

en-SG · Technical failure review · v1.0 · 2026-10-14 · Sources: article section 9

Site: | Item ID: | Work area:

| Approval | Work supervisor | Technical reviewer | Release / handover authority |
|----------|-----------------|--------------------|------------------------------|
|          |                 |                    |                              |

1. Job details and team signatures

|                 |                 |  |  |          |  |            |  |
|-----------------|-----------------|--|--|----------|--|------------|--|
| Date / time     | Location / area |  |  | Assessor |  | Supervisor |  |
| Team signatures |                 |  |  |          |  |            |  |

2. Conditions and hold points

| Stage                          | Time | Location / area | Environment / readings | Item / condition | Controls | Plant / tools | Approval / signature |
|--------------------------------|------|-----------------|------------------------|------------------|----------|---------------|----------------------|
| HP-0 Start                     |      |                 |                        |                  |          |               |                      |
| HP-1 Isolate drain and cool    |      |                 |                        |                  |          |               |                      |
| HP-2 Prepare opening support   |      |                 |                        |                  |          |               |                      |
| HP-3 Inspect and assemble seal |      |                 |                        |                  |          |               |                      |
| HP-4 Dispose and hand over     |      |                 |                        |                  |          |               |                      |

Complete after actual checks. Recheck after changes, defects or shift handover.

3. JSA risk assessment

| Job stage                     | Hazards and effects                                                           | Failure factors                                                                             | Technical and procedural controls                                                               | Site verification                                                                         | P | S | R | A |
|-------------------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|---|---|---|---|
| 1. Isolate drain and cool     | 1. Pressure returns<br>2. Chemical contact<br>3. Backflow rotation            | 1. Gauge zero overextended<br>2. Drain/cleaning unverified<br>3. Discharge backflow remains | 1. Verify safe pressure release<br>2. Drain/decontaminate/cool<br>3. Prevent startup/backflow   | 1. Trapped sections/drains<br>2. Fluid removal/temperature<br>3. Rotation prevention      |   |   |   |   |
| 2. Prepare opening support    | 1. Component falls<br>2. Tool slips<br>3. Flammable vapour                    | 1. Part weight unknown<br>2. Wrong puller/tool<br>3. Atmosphere unassessed                  | 1. Support parts before release<br>2. Use specified tools<br>3. Assess ventilation/fire hazards | 1. Part/support rating<br>2. Access/tool condition<br>3. Vapour/collection controls       |   |   |   |   |
| 3. Dismantle and withdraw     | 1. Finger crush<br>2. Sharp fragments<br>3. Residual liquid spills            | 1. Parts pulled by hand<br>2. Broken faces unsecured<br>3. Drain assumed complete           | 1. Use appropriate extraction<br>2. Contain broken parts<br>3. Collect remaining fluid          | 1. Hand/body position<br>2. Fragment/part count<br>3. Residual-fluid state                |   |   |   |   |
| 4. Inspect and assemble seal  | 1. Elastomer degradation<br>2. Wrong operating length<br>3. Shaft/bolt damage | 1. Material/lube mismatch<br>2. Old marks trusted<br>3. Torque improvised                   | 1. Match fluid/materials<br>2. Use exact setting method<br>3. Follow fastening sequence         | 1. Material/lubricant match<br>2. Datum/settings/direction<br>3. Shaft/fastening evidence |   |   |   |   |
| 5. Restore auxiliaries/guards | 1. Piping leak<br>2. Dry-running damage<br>3. Rotating-part contact           | 1. Pipe support absent<br>2. Fill/vent omitted<br>3. Guard not restored                     | 1. Verify support/connections<br>2. Establish startup fluid<br>3. Restore coupling guard        | 1. Pipe strain/connections<br>2. Filled/vented condition<br>3. Guard/tools clear          |   |   |   |   |
| 6. Control test and faults    | 1. Rotating contact<br>2. Repressurised opening<br>3. Repeated seal failure   | 1. Live adjustment<br>2. Re-isolation omitted<br>3. Cause ignored                           | 1. Keep hands from running parts<br>2. Re-isolate before rework<br>3. Resolve cause and retest  | 1. Guarded boundary<br>2. Pressure/cooling recheck<br>3. Cause/correction record          |   |   |   |   |

P/S/R/A: Complete only after actual site assessment using the site risk method.

4. Pre-work checklist

|                                                   |                                                   |                                                  |
|---------------------------------------------------|---------------------------------------------------|--------------------------------------------------|
| <input type="checkbox"/> Trapped sections/drains  | <input type="checkbox"/> Part/support rating      | <input type="checkbox"/> Hand/body position      |
| <input type="checkbox"/> Material/lubricant match | <input type="checkbox"/> Pipe strain/connections  | <input type="checkbox"/> Guarded boundary        |
| <input type="checkbox"/> Rotation prevention      | <input type="checkbox"/> Shaft/fastening evidence | <input type="checkbox"/> Cause/correction record |