



NICAS PLANT

SAFE WORK PROCEDURES

WASTE WATER SYSTEM

WASTE WATER SUMP PUMP REMOVE & REPLACE PUMP & MOTOR PMP6101 & PMP6102

MAINTENANCE PROCEDURE

DOCUMENTATION & DOCUMENT CHECKING

Revision	Description	Written By	Checked By	Approved By	Date
00	Issued for Use	Nigel Cass			7/12/04

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1. PURPOSE

The purpose of this procedure is to provide a step-by-step process for – Waste Water Sump Pump, Remove and Replace Pump & Motor PMP6101 and PMP6102.

2. SCOPE

The requirement of this procedure applies to all Personnel at Nicas Plant.

3. ACCOUNTABILITIES

3.1 Shift Manager (or Deputy)

Responsible for the safe shutdown and isolation of the equipment defined in this procedure and the overall safety and communication of all site personnel.

3.2 Maintenance Manager (or Planner)

Responsible for the scheduling and overseeing of the task to be performed as well as availability of parts, tooling etc.

3.3 Nicas Operations Technician or Contractor

Responsible for all maintenance personnel carrying out the tasks defined in this procedure in a safe and productive manner.

4. KEY HEALTH SAFETY & ENVIRONMENT POINTS

- Permit and Job Hazard Analysis required for task
- Certified and competently trained Crane Driver and Rigger SHALL be used.

5. RESOURCES REQUIRED

5.1 People

- 1 x Maintainer
- 1 x Crane Driver
- 1 x Rigger.

5.2 PPE

- Correct Personal Protective Equipment as per site policy must be worn at all times while working on this piece of equipment.

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5.3 Equipment

- 1 x Mobile Crane and assorted rigging Equipment
- 1 x Welding Blanket
- 1 x ½" Drive Torque Wrench
- 1 x 30mm Socket
- 1 x 32mm Socket
- 1 x 32mm Combination Spanner
- 1 x 37mm Socket
- 1 x 37mm Combination Spanner.

6. RELATED DOCUMENTS

Description	Document #
Stud Bolt and Nut Identification and Tensioning Engineering Specification	KWIN1-00GH-04-707 (*)
FJ Sweetman & Co Industrial Fastener Reference Manual	ISBN 0 64625 895 8 (**)
Relevant MSD's	

**Do You Know The Location of
Your Nearest Safety Shower ?
Does It Work ?**

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7. PROCEDURE

7.1	Permit & JHA	Review Work Permit & Develop JHA All to sign & understand job requirements, as per: - KWIN1-00-KH-02-218.
7.2	Isolation of Equipment	Ensure equipment is isolated in accordance with Isolation Procedure. Sign onto Work Permit and attach Personal locks.
7.3	Preliminary Safety Precautions	<ul style="list-style-type: none"> Ensure pump is cooled to ambient temperature before commencing task Lay welding blanket over grid mesh to prevent small objects from falling into waste water tank.
7.4	Electrical Disconnection	<p>Electrician to disconnect wiring to electrical motor.</p> <hr/> <div style="display: flex; align-items: center;">  <div style="margin-left: 10px;"> <p>Caution</p> <ul style="list-style-type: none"> All Instrumentation Pipe work SHALL be Sealed All Electrical Terminations SHALL be Protected Sufficiently. </div> </div> <hr/>
7.5	Waste Water Sump Pump	 <p style="text-align: center;">Figure 1: Showing Drive Motor & Pump Assembly</p>

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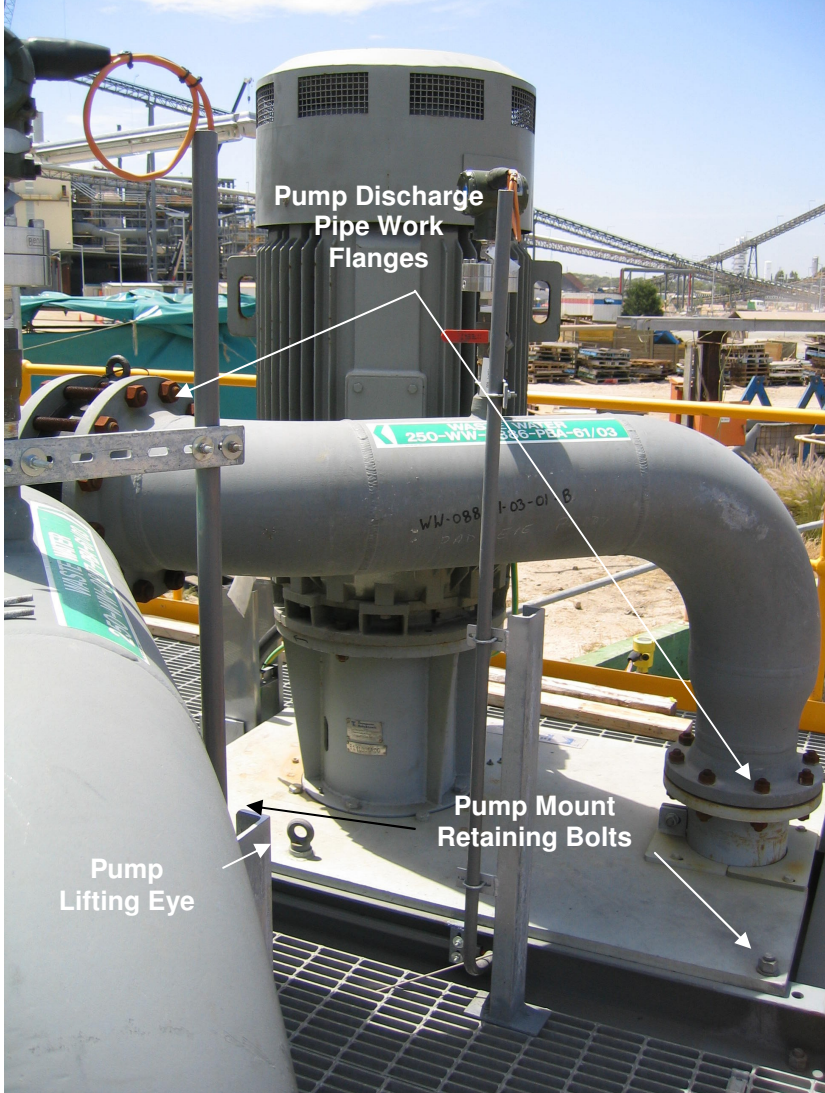
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7.6	Pump Discharge Joint	<ul style="list-style-type: none"> Loosen pump discharge pipe work flange joints, Ref Fig 2 and leave pipe work soft bolted and supported by the mobile crane until ready to remove Using the mobile crane, remove discharge pipe work and lower to ground. <hr/> <div data-bbox="491 492 657 645">  </div> <div data-bbox="683 492 801 524"> <p>Caution</p> </div> <ul style="list-style-type: none"> Pipe Work May Contain Residual Product Ensure all Flange Faces are Covered and Protected Sufficiently Ensure all Openings are Sealed Sufficiently. <hr/> <p>Note: Containment of residual product may be required.</p>
7.7	Pump Mount Retaining Bolts & Discharge Flanges	 <p>Figure 2: Showing Pump Mount Retaining Bolts & Discharge Flange</p>


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7.8	Mobile Crane Positioning and Pump Rigging Instructions	<ul style="list-style-type: none">• Discuss lift procedure with Crane Driver and prepare for pump and motor removal• Sling pump and motor in readiness for lift. <p>Note: Approx weight of pump and motor 2500 kg.</p> <div><div></div><div><p>Caution</p><ul style="list-style-type: none">• Erect barricade below the proposed work and lift area's• Erect sign to advise of Danger.</div></div> <hr/> <ul style="list-style-type: none">• Loosen and remove the pump mount retaining bolts, Ref Fig 2• Using the mobile crane, raise the pump/motor assembly and lower to ground• Place pump and motor assembly on pallet and secure in preparation for transportation• Fit protective covers to pump ports. <p>Note: It may be necessary to install barricade and fall protection platform to open hole if delay in reinstatement of replacement pump unit occurs.</p>																									
7.9	Reinstatement of Pump & Motor Assembly	<ul style="list-style-type: none">• Sling replacement pump and motor assembly• Raise and install into normal operating position• Fit and tighten pump retaining bolts to the final figure shown in 7.13, Bolt Torque Table.																									
7.10	Reinstatement of Pump Discharge Joint	<ul style="list-style-type: none">• Clean discharge joint flange faces• Re-instate discharge pipe work using new gaskets• Using the Bolt Hole Numbering Sequence Ref Fig 3, torque discharge pipe work to the final figures shown in 7.13, Bolt Torque Table.																									
7.11	Electrical Reconnection	Electrician to reconnect electrical wiring and confirm correct direction of rotation.																									
7.12	Transportation	Transport pump and motor to workshop for refurbishment.																									
7.13	Bolt Torque Table	<table><tr><td></td><td>Bolt Size</td><td>Torque</td><td>Socket Req'd</td></tr><tr><td rowspan="2">Pump Mount Retaining Bolts</td><td>M20</td><td>242 Nm or</td><td>30mm or</td></tr><tr><td>GR 8.8</td><td>178 Ft/lbs (**)</td><td>1.3/16"</td></tr><tr><td rowspan="2">Discharge Pipe Work Stud Bolts</td><td>3/4"</td><td>179 Nm or</td><td>32mm or</td></tr><tr><td>Gr B7</td><td>132 Ft/lbs (*)</td><td>1.1/4"</td></tr><tr><td rowspan="2">Discharge Pipe Work Stud Bolts</td><td>7/8"</td><td>287 Nm or</td><td>37mm or</td></tr><tr><td>Gr B7</td><td>212 Ft/lbs (*)</td><td>1.7/16"</td></tr></table>		Bolt Size	Torque	Socket Req'd	Pump Mount Retaining Bolts	M20	242 Nm or	30mm or	GR 8.8	178 Ft/lbs (**)	1.3/16"	Discharge Pipe Work Stud Bolts	3/4"	179 Nm or	32mm or	Gr B7	132 Ft/lbs (*)	1.1/4"	Discharge Pipe Work Stud Bolts	7/8"	287 Nm or	37mm or	Gr B7	212 Ft/lbs (*)	1.7/16"
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7.14	Bolt Hole Numbering & Tensioning Sequence	<table><tr><th>BOLT HOLE</th><th>4</th><th>8</th><th>12</th></tr><tr><td>1</td><td>1</td><td>1</td><td>1</td></tr><tr><td>2</td><td>4</td><td>8</td><td>12</td></tr><tr><td>3</td><td>2</td><td>4</td><td>8</td></tr><tr><td>4</td><td>3</td><td>6</td><td>4</td></tr><tr><td>5</td><td></td><td>2</td><td>10</td></tr><tr><td>6</td><td></td><td>7</td><td>6</td></tr><tr><td>7</td><td></td><td>3</td><td>2</td></tr><tr><td>8</td><td></td><td>5</td><td>11</td></tr><tr><td>9</td><td></td><td></td><td>7</td></tr><tr><td>10</td><td></td><td></td><td>3</td></tr><tr><td>11</td><td></td><td></td><td>9</td></tr><tr><td>12</td><td></td><td></td><td>5</td></tr></table> <div><p>BOLT HOLE NUMBERING AND TENSIONING SEQUENCE</p></div>	BOLT HOLE	4	8	12	1	1	1	1	2	4	8	12	3	2	4	8	4	3	6	4	5		2	10	6		7	6	7		3	2	8		5	11	9			7	10			3	11			9	12			5
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<p>Figure 3: Bolt Hole Numbering & Tensioning Sequence</p>																																																						
7.15	Signing Off	Remove all tools and equipment; leave area in a clean and tidy state. Remove all Personal locks and sign off Work Permit.																																																				
7.16	Complete Paperwork & Close Out Maintenance Order	Report all findings and work done to Maintenance Department for future planning. Complete maintenance order. Raise new Notifications (if required).																																																				

**HOUSEKEEPING IS
 EVERYBODY'S RESPONSIBILITY**

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