

**DAP**

**WATER PRESSURE TESTING MACHINE**

Date: APRIL, 2021

**CUSTOMER**

**ORDNANCE FACTORY AMBAJHARI**

**NAGPUR- 440021 (INDIA)**

**††† NEOMETRIX**

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## **INDEX**

- **DAP SUBMISSION STATUS**
  
- **OBJECTIVE**
  
- **SCOPE OF ORDNANCE FACTORY**
  
- **NEOMETRIX SCOPE & SUPPLY**
  
- **DAP GENERAL POINTS**
  
- **MACHINE SPECIFICATION**
  
- **LIST OF BOUGHTOUT ITEM**
  
- **LAYOUT OF MACHINE**
  
- **CONTROLS**

**SUBMISSION STATUS**

<b>S. NO.</b>	<b>DATE</b>	<b>REMARK</b>	<b>REV.</b>
<b>01</b>	<b>10/03/21</b>	<b>DAP Submission Initial</b>	<b>00</b>

## **OBJECTIVE**

- ❖ To provide the Water Pressure Testing Machine with Loading/Unloading for component in tooled- up condition for the components as per drawing no. SM-377A SM-848B & SM-770

## **SCOPE OF ORDNANCE FACTORY**

- ❖ Site cleaning where supplied item will be installed.
- ❖ Trial components
- ❖ Supply:  $415 \pm 10\%$ , V AC, with neutral & ground, 3 phase 50 Hz 30 m copper wire.
- ❖ Earthing connected to main panel.
- ❖ Main incoming supply cable for control panel.
- ❖ Pneumatic Air Supply at 5 bar
- ❖ Material handling 10 ton
- ❖ Other Utilities & consumables.

## **NEOMETRIX SCOPE AND SUPPLY**

### **WATER PRESSURE TESTING MACHINE (1 NO.)**

<b><u>S.R No</u></b>	<b><u>Description</u></b>	<b><u>Qty.</u></b>
<b>1.</b>	<b><u>Jib Boom Type Wire Rope Hoist Crane for Loading &amp; Unloading</u></b>	<b>02</b>
<b>2.</b>	In feed Conveyor	<b>01</b>
<b>3.</b>	Output Conveyor	<b>01</b>
<b>4.</b>	Handling ROBOT with Hydraulic Gripper	<b>01</b>
<b>5.</b>	Robot pedestal	<b>01</b>
<b>6.</b>	Robot dress pack	<b>01</b>
<b>7.</b>	Robot fencing	<b>01</b>
<b>8.</b>	Robot teach pendent	<b>01</b>
<b>9.</b>	Rotary Index Table (Four Station)	<b>01</b>
<b>10.</b>	Pressing Station	<b>01</b>
<b>11.</b>	Sealing Cum Pressure Testing Cylinder	<b>01</b>
<b>12.</b>	Measuring Device during Pressure Testing	<b>01</b>
<b>13.</b>	Recording Device with Kiosk for storing the Measured Data	<b>01</b>
<b>14.</b>	Hydraulic Intensifier	<b>02</b>

<b>15.</b>	Hydraulic Power Unit	<b>01</b>
<b>16.</b>	Plate type heat exchanger	<b>01</b>
<b>17.</b>	Water Filtration Tank (Bottom)	<b>01</b>
<b>18.</b>	Water Filling Tank (Top)	<b>01</b>
<b>19.</b>	Water Filling & Pumping system	<b>01</b>
<b>20.</b>	Centralized Lubrication System	<b>01</b>
<b>21.</b>	PLC Program Loader with original software with cable	<b>01</b>
<b>22.</b>	PLC Program loaded	<b>01</b>
<b>23.</b>	Operator Panel with HMI	<b>01</b>
<b>24.</b>	Main PLC Control Panel	<b>01</b>
<b>25.</b>	Industrial laptop	<b>01</b>
<b>26.</b>	Foundation at Site	
<b>27.</b>	Programming & interfacing	
<b>28.</b>	Installation & Commissioning	
<b>29.</b>	Training (3 – 4days)	

## SPARES SUPPLY

<u>S.R No</u>	<u>Description</u>	<u>Make</u>
	<b><u>Mechanical spares</u></b>	
1.	<b>Direction valve seal kit</b>	<b>Standard</b>
2.	<b><u>Relief valve seal kit</u></b>	<b>Standard</b>
3.	<b><u>Service tool includes 150 ratchet attach tool box incliding allenkey,spanners &amp;box spanners</u></b>	<b>Stanley/beta</b>
4.	<b><u>Digital multimeter</u></b>	<b>Fluke/Megger</b>
	<b><u>Hydrualic spares</u></b>	
5.	<b><u>One pump &amp; valve of each type</u></b>	<b>Standard</b>
6.	High pressure hoses	<b>Standard</b>
7.	Piston	<b>neometrix</b>
8.	Coupling for pump & motor	<b>Standard</b>
9.	Pressure gauge	<b>Polyhydron/orion/wika/ atos/scoda/hydac/telemechanique</b>
	Electrical & Electronics spares	
10.	Pressure switch	<b>Wika/polyhydraon/telemechanique</b>

		<b>/vogel/hydac/parker/ifm/scoda/atos</b>
<b>11.</b>	Limit switch	<b>Balluff/IFM/P&amp;F/Omron/Festo</b>
<b>12.</b>	Proximity sensor	<b>Balluff/IFM/P&amp;F/Omron/Festo</b>
<b>13.</b>	Reed switch	<b>Balluff/IFM/P&amp;F/Omron/Festo</b>
<b>14.</b>	Solenoid valves with coil	<b><u>Rexroth/Vickers/Eaton/Parker</u></b>
<b>15.</b>	Relays PCB	<b><u>Finder/omron/Oen/GE/L&amp;T/Pilz</u></b>  <b><u>/phoenix/allen bradley</u></b>
<b>16.</b>	SMPS	<b>Phoenix/ifm/siemens</b>
<b>17.</b>	Pressure indicator	<b>Polyhydron/orion/wika/</b>  <b>atos/scoda/hydac/telemecanique</b>
<b>18.</b>	Deformation measurement probe with indicator	<b>Marposs/renishaw/sony</b>
<b>19.</b>	PLC power supply	<b>Siemens</b>
<b>20.</b>	PLC CPU	<b>Siemens</b>
<b>21.</b>	Input and output Module	<b>Pilz/phoenix/elobau/schmersal</b>
<b>22.</b>	HMI	<b>Siemens</b>
<b>23.</b>	VFD	<b>Siemens/abb/ Schneider</b>
<b>24.</b>	Gear motors	<b>Siemens/abb/schiender</b>
<b>25.</b>	Induction motor	<b>Siemens/abb/cg/weg/kirloskar</b>



<b>26.</b>	LED indicating lamp	<b>Siemens/abb/l&amp;t</b>
	Special spares	
<b><u>1</u></b>	Special sealing –cum testing head with complete sealing arrangement for hollow body Dr No SM-377A	
<b><u>2</u></b>	Special sealing –cum testing head with complete sealing arrangement for hollow body Dr No SM-848B	
<b><u>3</u></b>	Special sealing –cum testing head with complete sealing arrangement for hollow body Dr No SM-770	
<b><u>4</u></b>	Location cups	<b>Neometrix</b>
<b><u>5</u></b>	Accessories of handling automation & handling robot, expansion & deformation measurement system, suitable work holding fixtures	<b>Neometrix</b>

## STANDARD MAKE OF SUPPLY

<u>S.R No</u>	<u>Description</u>	<u>Make</u>
<b>1</b>	<u>Jib Boom Type Wire Rope Hoist Crane for Loading &amp; Unloading</u>	<b>NEOMETRIX</b>
<b>2</b>	In feed Conveyor	<b>NEOMETRIX</b>
<b>3</b>	Output Conveyor	<b>NEOMETRIX</b>
<b>4</b>	Rotary Index Table (Four Station)	<b>NEOMETRIX</b>
<b>5</b>	Top & Bottom Beam Type Structure	<b>NEOMETRIX</b>
<b>6</b>	Sealing Cum Pressure Testing Cylinder	<b>NEOMETRIX</b>
<b>7</b>	Pressure Cylinder	<b>NEOMETRIX</b>
<b>8</b>	Expansion & permanent deformation Measuring Device during Pressure Testing	<b>Marposs/renishaw/sony</b>
<b>9</b>	Recording Device for storing	<b>Marposs/renishaw/sony</b>

	the Measured Data	
<b><u>10</u></b>	Hydraulic Intensifier	<b>NEOMETRIX</b>
<b><u>11</u></b>	Power Pack	<b>NEOMETRIX</b>
<b><u>12</u></b>	Water tank	<b>NEOMETRIX</b>
<b><u>13</u></b>	Coolant tank	<b>NEOMETRIX</b>
<b><u>14</u></b>	Water Filtration & Pumping system	<b>NEOMETRIX</b>
<b><u>15</u></b>	Centralized Lubrication System	<b>NEOMETRIX</b>
<b><u>16</u></b>	Spare Filter	<b>NEOMETRIX</b>
<b><u>17</u></b>	<u>Spare Hydraulic Seal for all the Cylinders</u>	<b>NEOMETRIX</b>
<b><u>18</u></b>	Spare Set of grippers for the Hoist for each type of component	<b>NEOMETRIX</b>
<b><u>19</u></b>	Spare Location Cups for Placing of Hollow Body	<b>NEOMETRIX</b>
<b><u>20</u></b>	Service Tool & Maintenance Kit 150 pcs ratchet attachment tool box	<b>STANELY/BETA</b>
<b><u>21</u></b>	PLC Program Loader with	<b>Siemens</b>

	original software with cable	
<b><u>22</u></b>	PLC Program loaded	<b>Siemens</b>
<b><u>23</u></b>	Operator Panel with HMI	<b>Siemens</b>
<b><u>24</u></b>	Main PLC Control Panel	<b>Siemens</b>
<b><u>25</u></b>	Robot	<b>ABB/KUKA/FANUC</b>
<b><u>26</u></b>	Robot pedestal	<b>ABB/KUKA/FANUC</b>
<b><u>27</u></b>	Robot dress pack	<b>ABB/KUKA/FANUC</b>
<b><u>28</u></b>	Robot fencing	<b>NEOMETRIX</b>
<b><u>29</u></b>	Robot teach pendent	<b>ABB/KUKA/FANUC</b>
<b><u>30</u></b>	Industrial laptop	<b>Dell/Ibm/Hp</b>
<b><u>31</u></b>	Electric motor	<b>Siemens/abb/cg/weg/kirloskar/flender/Eecon Incase of gear motor</b>
<b><u>32</u></b>	COUPLING FOR PUMP AND MOTOR	<b>Standard</b>
<b><u>33</u></b>	Different type electronic sensor	<b>Standard</b>
<b><u>34</u></b>	Pressure gauge(digital & analog)	<b>Polyhydron/orion/wika/atos/scoda/hydac/telemecanique</b>
<b><u>35</u></b>	LED lamp	<b>Siemens/abb/l&amp;t</b>
<b><u>36</u></b>	Programming & interfacing	<b>ABB/KUKA/FANUC</b>

<b><u>37</u></b>	Digital multi meter	<b>Fluke/Megger</b>
<b><u>38</u></b>	Plate type heat exchanger	<b>Tranter/Alfalevel</b>
<b><u>39</u></b>	VFD motor (conveyor)	<b>Siemens/Schneider/abb</b>
<b><u>40</u></b>	<b><u>Limit switches, Proximity switches, Reid switches,limit ,magenetic switches</u></b>	<b>Balluff/IFM/P&amp;F/Omoron/Festo</b>
<b><u>41</u></b>	<b><u>Linear scale</u></b>	<b>Balluff/Heidenhain</b>
<b><u>42</u></b>	<b><u>Pressure switches &amp; pressure transducer</u></b>	<b>Wika/polyhydraon/telemechanique /vogel/hydac/parker/ifm/scoda/atos</b>
<b><u>43</u></b>	<b><u>Safety modules /Relay modules</u></b>	<b>Pilz/Elobau/phoenix/schmersal</b>
<b><u>44</u></b>	<b><u>Solenoids &amp; proportional control valve</u></b>	<b><u>Rexroth/Vickers/Eaton/Parker</u></b>
<b><u>45</u></b>	<b><u>Photo/optical/sensors and laser sensor</u></b>	<b><u>Hydac/p&amp;f/Balluff/Sick/carlZeiss /Leuze</u></b>
<b><u>46</u></b>	<b><u>Relays</u></b>	<b><u>Finder/omron/Oen/GE/L&amp;T/Pilz /phoenix/allen bradley</u></b>
<b><u>47</u></b>	<b><u>All switchgear, electric contractors ,overload,mcb,mccb,mpcb,</u></b>	<b><u>Siemens/havells/L&amp;T/abb/ GE/schiender telemchanique</u></b>

	<b><u>&amp;acb</u></b>	
<b><u>48</u></b>	<b><u>Control/Multicore cables</u></b>	<b><u>Lapp/Helu/Igus/Siemens</u></b>
<b><u>49</u></b>	<b><u>Electric hoist</u></b>	<b><u>Indef/switch/ingersolrand/demag</u></b>  <b><u>/eurolift</u></b>
<b><u>50</u></b>	<b><u>Level sensors &amp; controller</u></b>	<b><u>E&amp;H/siemens/abb/cg/honeywell</u></b>
<b><u>51</u></b>	<b><u>Power panel</u></b>	<b>Siemens/abb/l&amp;t</b>
<b><u>52</u></b>	<b><u>Control panel</u></b>	<b>Siemens/abb/l&amp;t</b>
<b><u>53</u></b>	<b><u>Operator panel</u></b>	<b>Siemens/abb/l&amp;t</b>
<b><u>54</u></b>	SMPS POER SUPPLY	<b>IFM/PHOENIX/SIEMENS</b>

### **Operation Cycle: -**

- The operator pushes the push button. The infeed conveyor moves one pitch of the pallet & just below the gripper of the Pick & Place device.
- Robot pick the hollow body and place rotary table vertically position at watering station by help of operator command.
- The water mixed with the suitable rust inhibiting compound is automatically filled inside the cavity of input hollow body according to the internal cavity volume of each body.
- The Rotary Table indexes to 90 degrees & brings the component below the Testing station.
- The Pressure Cylinder from bottom pushes the Hollow body component against the top sealing arrangement of Pressure Testing Head & pressuring up to the specified pressure & time duration with display of pressure & time.
- The measuring sensing device measures before and after the expansion of the Hollow Body component. For any deviation it gives the buzzer indicating component is rejected.
- The Rotary Table indexes to 90 degrees & brings the component the dewatering station and dewatering the cavity by help of Robot .
- For emptying the cavity of Hollow Body Component Servo Motor Rotating Mechanism again tilt the component downward at 45 degrees. The water falls into the collecting tray below.
- Before Placing the component on the Outfeed Conveyor, the component is turned to Horizontal Direction.
- The corrected hollow body is picked by robot and place the outfeed conveyor in horizontal position.
- The operator picks the component from the Outfeed Conveyor with the help of Magnetic Gripper of the Unloading Jib Crane & places on the Pallets provided.
- In corrected hollow body next goes to rejection station by servo mechanism .
- In corrected hollow body pick and place the rejection table by robot .
- This Completes the cycle.

## LIST OF BOUGHTOUT ITEMS

<b>1.</b>	PLC Program loaded	<b>Siemens</b>
<b>2.</b>	Operator Panel with HMI	<b>Siemens</b>
<b>3.</b>	Main PLC Control Panel	<b>Siemens</b>
<b>4.</b>	SMPS POWER SUPPLY	<b>IFM/PHOENIX/SIEMENS</b>
<b>5.</b>	Robot	<b>ABB/KUKA/FANUC</b>
<b>6.</b>	Robot pedestal	<b>ABB/KUKA/FANUC</b>
<b>7.</b>	Robot dress pack	<b>ABB/KUKA/FANUC</b>
<b>8.</b>	Robot teach pendent	<b>ABB/KUKA/FANUC</b>
<b>9.</b>	Pump	<b>Standard</b>
<b>10.</b>	Industrial laptop	<b>Dell/Ibm/Hp</b>
<b>11.</b>	Electric motor	<b>Siemens/abb/cg/weg/kirloskar</b>
<b>12.</b>	COUPLING FOR PUMP AND MOTOR	<b>Standard</b>
<b>13.</b>	Pressure gauge(digital & analog)	<b>Siemens/abb/l&amp;t</b>
<b>14.</b>	LED lamp	<b>Siemens/abb/l&amp;t</b>
<b>15.</b>	Programing & interfacing	<b>ABB/KUKA/FANUC</b>
<b>16.</b>	Digital multi meter	<b>Fluke/Megger</b>
<b>17.</b>	Plate type heat exchanger	<b>Tranter/Alfalevel</b>



18.	VFD motor (conveyor)	Siemens/Schneider/abb
19.	<u>Limit switches, Proximity switches, Reid switches, limit ,magenetic switches</u>	Balluff/IFM/P&F/Omron/Festo
20.	<u>Linear scale</u>	Balluff/Heidenhain
21.	<u>Pressure switches &amp; pressure transducer</u>	Wika/polyhydraon/telemchanique /vogel/hydac/parker/ifm/scoda/atos
22.	<u>Safety modules /Relay modules</u>	Pilz/Elobau/phoenix/schmersal
23.	<u>Solenoids &amp; proportional control valve</u>	<u>Rexroth/Vickers/Eaton/Parker</u>
24.	<u>Photo/optical/sensors and laser sensor</u>	<u>Hydac/p&amp;f/Balluff/Sick/carlZeiss</u> <u>/Leuze</u>
25.	<u>Relays</u>	<u>Finder/omron/Oen/GE/L&amp;T/Pilz</u> <u>/phoenix/allen bradley</u>
26.	<u>All switchgear, electric contractors ,overload,mcb,mccb,mpcb,&amp;acb</u>	<u>Siemens/havells/L&amp;T/abb/</u> <u>GE/schiender telemchanique</u>
27.	<u>Control/Multicore cables</u>	<u>Lapp/Helu/Igus/Siemens</u>
28.	<u>Electric hoist</u>	<u>Indef/switch/ingersolrand/demag</u> <u>/eurolift</u>

29.	<u>Level sensors &amp; controller</u>	<u>E&amp;H/siemens/abb/cg/honeywell</u>
30.		
31.		

**CRITICALITY OF MACHINE (If Any)**

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**CUSTOMER ACCEPTANCE CRITERIA**

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**SPECIFICATION AGREED**

**NEOMETRIX REPRESENTATIVE  
REPRESENTATIVE**

**ORDNANCE**

**NAME: - 1.  
2.**

**NAME: - 1.  
2.**

**SIGN: - 1.  
2.**

**SIGN: - 1.  
2.**