

**Annexure of Tender No. 65.11.8029**

**Specification for PGEV Wood Ward Governor Test Stand with standard accessories. Operates at- 220 VAC-3 Phase, 50 - 60 Hz**

(i)	<b>Major Parameter</b>	<ol style="list-style-type: none"><li>1. The test stand shall be capable of thoroughly testing and calibrating Woodward Governors used in ALCO and EMD Locomotives.</li><li>2. The stand has to be constructed of heavy-gauge sheet steel, painted with beige epoxy and table shall be made of cast iron.</li><li>3. The design of the stand shall ensure greater operator efficiency with all controls easily accessed by the operator.</li><li>4. Five (5.0) HP Test Stand 220 VAC, 3 Phase, 9.0 KVA, 40 Amps supply, 50 or 60 Hz.</li><li>5. The electrical drive shall have a speed control from 0 to 1800 RPM both clock and anti clock wise.</li><li>6. Variable speed DC motor shall be powered through solid-state drive board and drive motor shall be enclosed and fan cooled.</li><li>7. The electric heater of 1000 watt capacity shall maintain oil temperature through thermostatic control. The oil temperature shall rise to 130 deg. F at an operating temperature 200 deg. F within 30 minutes. The thermostat shall be calibrated traceable to NABL.</li><li>8. The following data's should be displayed on digital meter or on LCD display.<ol style="list-style-type: none"><li>a. The voltage applied to the LCR (0-75 VDC).</li><li>b. The voltage across the brush arm (0-75 VDC).</li><li>c. The percentage of voltage at brush arm (0-100). The brush arm at max position should show 100% and minimum position accordingly</li><li>d. The resistance of the LCR when there is no voltage applied to LCR (0-5000 ohms)</li></ol></li><li>9. There should be provision in the test stand to measure the brush arm voltage externally</li><li>10. Two Nos. of variable hydraulic pressure supply points to be available on the side of basic stand and one on the back panel.</li><li>11. The hydraulic system shall provide heated oil to supply the test governor and to maintain operating temperature.</li><li>12. Hydraulic drain through a hose to the side of the stand through the table or through the drive housing and the desin shall allow most convenient and efficient operation.</li><li>13. Digital tachometer driven by magnetic pickup on the motor shaft. Frequency to be converted through solid state drive board.</li><li>14. Large dial shall show 0 to 600 PSI of governor oil pressure and 0 to 100 PSI of test stand oil pressure. The test stand shall heat the oil to 200 deg. F with a replaceable, thermostatically controlled heating element. A surface thermometer is to be supplied to check actual governor operating temperature. Actual drive speed of the test stand has to be shown in the digital tachometer.</li><li>15. Governor feed back to be provided through a universal feedback potentiometer that shall conveniently attach to any governor output. Feedback to allow accurate testing of governor reaction to simulated engine speed or load changes.</li><li>16. Control panel: A convenient and user friendly control panel is to be provided for the stand operator to set simulated load, direction of drive rotation, feedback sensitivity and speed range.</li></ol>
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		17. A chart to be provided on the front of the stand to convert between metric measurements and PSI or inches-of-mercury readings. The other chart shall indicate the adapters used to test the various Woodward Governors. The proposal WW governor test stand should facilitate to test the LCR potentiometer.																																																																																				
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<b>(iii)</b>	<b>Concomitant accessories</b>	<p>The test Stand shall include the following accessories:-</p> <table border="1"> <thead> <tr> <th>S. No.</th> <th>Description / WW Part No.</th> <th>Qty.</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Gauge assembly (0-120 Hg), 8.5" Part No. 6995-075</td> <td>01 No.</td> </tr> <tr> <td>2.</td> <td>Gauge assembly (0-100 PSI), Part No. 6995-071</td> <td>01 No.</td> </tr> <tr> <td>3.</td> <td>Timer</td> <td>01 No.</td> </tr> <tr> <td>4.</td> <td>Selector Switch (5 HP) Part No. 6995-741</td> <td>01 No.</td> </tr> <tr> <td>5.</td> <td>Oil level control, Part No. 6995-727</td> <td>01 No.</td> </tr> <tr> <td>6.</td> <td>Cable Adaptor, GE Part No. 5400-548</td> <td>01 No.</td> </tr> <tr> <td>7.</td> <td>Cable Adaptor, EMD Part No. 5400-533</td> <td>01 No.</td> </tr> <tr> <td>8.</td> <td>Hose Part No. 1292-101</td> <td>01 No.</td> </tr> <tr> <td>9.</td> <td>Hose Part No. 1292-103</td> <td>01 No.</td> </tr> <tr> <td>10.</td> <td>Hose Part No. 1292-107</td> <td>01 No.</td> </tr> <tr> <td>11.</td> <td>Hose Part No. 1292-105</td> <td>01 No.</td> </tr> <tr> <td>12.</td> <td>Hose Part No. 1327-131</td> <td>01 No.</td> </tr> <tr> <td>13.</td> <td>Filter, Part No. 1640-601</td> <td>01 No.</td> </tr> <tr> <td>14.</td> <td>Fuse Part No. 1640-607</td> <td>01 No.</td> </tr> <tr> <td>15.</td> <td>Fuse Part No. 1640-609</td> <td>01 No.</td> </tr> <tr> <td>16.</td> <td>Heater Part No. 1747-105</td> <td>01 No.</td> </tr> <tr> <td>17.</td> <td>Potentiometer assembly Part No. 5439-611</td> <td>01 No.</td> </tr> <tr> <td>18.</td> <td>DC Power supply kit Part No. 8923-341</td> <td>01 No.</td> </tr> <tr> <td>19.</td> <td>6 or 8.5 inch 0-120 inch Hg gauge kit for locomotive governors with fuel limiters, accuracy 0.1%</td> <td>01 No.</td> </tr> <tr> <td>20.</td> <td>6 or 8.5 inch 0-100 PSI air gauge kit for speed setting air on PGA, PG-PL and other governors, accuracy 0.1% or better.</td> <td>01 No.</td> </tr> <tr> <td>21.</td> <td>Oil level control to maintain oil level in governor while circulating heated test stand oil.</td> <td>01 No.</td> </tr> <tr> <td>22.</td> <td>Variable DC Power supply to operate and test shutdown solenoid and speed setting motors</td> <td>01 No.</td> </tr> <tr> <td>23.</td> <td>Speed switch kit to test rail governors with solenoid speed setting.</td> <td>01 No.</td> </tr> <tr> <td>24.</td> <td>Load servo indicator to set load controls.</td> <td>01 No.</td> </tr> <tr> <td>25.</td> <td>Auxiliary air kit to test speed setting devices and other air pressure items on governors and to provide adjustable pressure of supply air.</td> <td>01 No.</td> </tr> <tr> <td>26.</td> <td>0-100 PSI oil gauge kit i.e. a finer calibration gauge to set and calibrate lube oil trips on rail governors, accuracy 0-25% or better.</td> <td>01 No.</td> </tr> <tr> <td>27.</td> <td>Cabinet mounted stopwatch to accurately test timing of governor ramps and other time sensitive options.</td> <td>01 No.</td> </tr> </tbody> </table>	S. No.	Description / WW Part No.	Qty.	1.	Gauge assembly (0-120 Hg), 8.5" Part No. 6995-075	01 No.	2.	Gauge assembly (0-100 PSI), Part No. 6995-071	01 No.	3.	Timer	01 No.	4.	Selector Switch (5 HP) Part No. 6995-741	01 No.	5.	Oil level control, Part No. 6995-727	01 No.	6.	Cable Adaptor, GE Part No. 5400-548	01 No.	7.	Cable Adaptor, EMD Part No. 5400-533	01 No.	8.	Hose Part No. 1292-101	01 No.	9.	Hose Part No. 1292-103	01 No.	10.	Hose Part No. 1292-107	01 No.	11.	Hose Part No. 1292-105	01 No.	12.	Hose Part No. 1327-131	01 No.	13.	Filter, Part No. 1640-601	01 No.	14.	Fuse Part No. 1640-607	01 No.	15.	Fuse Part No. 1640-609	01 No.	16.	Heater Part No. 1747-105	01 No.	17.	Potentiometer assembly Part No. 5439-611	01 No.	18.	DC Power supply kit Part No. 8923-341	01 No.	19.	6 or 8.5 inch 0-120 inch Hg gauge kit for locomotive governors with fuel limiters, accuracy 0.1%	01 No.	20.	6 or 8.5 inch 0-100 PSI air gauge kit for speed setting air on PGA, PG-PL and other governors, accuracy 0.1% or better.	01 No.	21.	Oil level control to maintain oil level in governor while circulating heated test stand oil.	01 No.	22.	Variable DC Power supply to operate and test shutdown solenoid and speed setting motors	01 No.	23.	Speed switch kit to test rail governors with solenoid speed setting.	01 No.	24.	Load servo indicator to set load controls.	01 No.	25.	Auxiliary air kit to test speed setting devices and other air pressure items on governors and to provide adjustable pressure of supply air.	01 No.	26.	0-100 PSI oil gauge kit i.e. a finer calibration gauge to set and calibrate lube oil trips on rail governors, accuracy 0-25% or better.	01 No.	27.	Cabinet mounted stopwatch to accurately test timing of governor ramps and other time sensitive options.	01 No.
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(iv)	<b>Optional accessories</b>	01 Set of Special tools for PGEV & EMD governor bulletin 36403 S.No. 36403-1 to 39.
(v)	<b>Spares</b>	The supplier should supply two years normal maintenance spares to cover complete range of mechanical hydraulic and electrical equipments.
(vi)	<b>AMC requirement</b>	Not required.
(vii)	<b>Warrantee requirement</b>	24 months from the date of installation of the machine.
(viii)	<b>Special requirement</b>	<ol style="list-style-type: none"> <li>1. The tenderer shall commission the equipment at consignee's site free of cost after demonstrating the full capacity and other aspects specified. The tenderer will be responsible for the efficient functioning of the machine at site during the warranty period.</li> <li>2. Four copies of instruction manual regarding operation, maintenance, trouble shooting and catalogue, giving part list number of various components with assembly drawings and electrical circuit diagrams should be supplied by the tenderer.</li> <li>3. The supplier shall impart training to the staff nominated by the consignee at a free of cost of consignee's site during/ before commissioning of the machine.</li> <li>4. The tenderer shall clearly spell out in the offer, the facilities available with him or his local agent for providing adequate after sales services. The name and address along with phone number of the local supplier should be indicated in the offer.</li> <li>5. Inspection by RITES.</li> <li>6. The offer should be complete in all respects and specifically spell out the details and deviations if any. Clause-wise remarks of the specification should be submitted with the offer. The information furnished in the catalogue/ literature will not be taken into cognizance unless and otherwise a specific reference is made this effect in the quotation.</li> </ol>