TAFE, MF 7250 DI POWER DRIVE POWER STEERING TRACTOR

GOVERNMENT OF INDIA
MINISTRY OF AGRICULTURE
(DEPARTMENT OF AGRICULTURE & CO-OPERATION)

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### 7. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS

7.1 On the basis of tests conducted, the performance results have been summarized as evaluative (mandatory) and non-evaluative (not mandatory) parameters applicable for qualifying Minimum Performance Criteria as per clause-4 table-1 of Indian Standard 12207: 2008 for acceptance of tractor for the purpose of subsidies/NABARD financing for the applicable features for this tractor model.

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Characteristic</th>
<th>Category (Evaluative / Non Evaluative)</th>
<th>Requirements as per IS: 12207-2008</th>
<th>Values declared by the applicant (D)/ Requirement (R)</th>
<th>As observed</th>
<th>Whether Variant model meets the requirements (Yes/No.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Base</td>
<td>Variant</td>
<td>Base</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5a</td>
<td>5b</td>
<td>6a</td>
</tr>
<tr>
<td>1</td>
<td>PTO Performance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) Max. power under 2 h test, (kW) (Natural ambient condition)</td>
<td>Evaluative</td>
<td>Declared value to be achieved with a tolerance of: 6% +10% for PTO power &gt;35 hp. -7.5%+10% for PTO power ≤ 35 hp</td>
<td>30.5 (D)</td>
<td>30.5 (D)</td>
<td>30.8</td>
</tr>
<tr>
<td></td>
<td>b) Specific fuel consumption corresponding to maximum power, (g/kWh)</td>
<td>Non Evaluative</td>
<td>± 5%</td>
<td>265 (D)</td>
<td>265 (D)</td>
<td>255</td>
</tr>
<tr>
<td>7.1.3</td>
<td>Brake performance at 25 kmph</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>a) Maximum stopping distance at a force, equal to or less than 600 N on brake pedal with road ballast, (m)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1) Cold brake</td>
<td>Evaluative</td>
<td>10</td>
<td>10 (R)</td>
<td>10 (R)</td>
<td>6.21</td>
</tr>
<tr>
<td></td>
<td>2) Hot brake</td>
<td>Evaluative</td>
<td>10</td>
<td>10 (R)</td>
<td>10 (R)</td>
<td>6.33</td>
</tr>
</tbody>
</table>
b) Maximum force exerted on the brake pedal to achieve a deceleration of 2.5 m/s² (N)

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</thead>
<tbody>
<tr>
<td>b)</td>
<td></td>
<td>Evaluative</td>
<td>600</td>
<td>600 (N)</td>
<td>123</td>
<td>172</td>
<td>Yes</td>
</tr>
<tr>
<td>c)</td>
<td></td>
<td>Yes / No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

7.1.4 Labelling of tractors (Provision of labelling plate):

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</thead>
<tbody>
<tr>
<td>1)</td>
<td>Make</td>
<td>Evaluative</td>
<td>TAFE</td>
<td></td>
<td></td>
<td></td>
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<td>2)</td>
<td>Model</td>
<td>Evaluative</td>
<td>MF 7250 DI Power Drive Power Steering</td>
<td></td>
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<tr>
<td>3)</td>
<td>Year of manufacture</td>
<td>Evaluative</td>
<td>KFAA (September 2011)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>4)</td>
<td>Engine serial number</td>
<td></td>
<td>S325 D42339</td>
<td></td>
<td></td>
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<tr>
<td>5)</td>
<td>Chassis serial number</td>
<td>Evaluative</td>
<td>665547</td>
<td></td>
<td></td>
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<tr>
<td>6)</td>
<td>Declaration of PTO power, kW</td>
<td>Evaluative</td>
<td>30.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7)</td>
<td>Specific Fuel Consumption (gm/kWh)</td>
<td>Evaluative</td>
<td>265</td>
<td></td>
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<td></td>
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</tbody>
</table>

7.2 Salient Observations:

7.2.1 Laboratory tests:

7.2.1.1 PTO Performance:

i) The specific fuel consumption in case of base and variant models corresponding to maximum power was observed as 255 & 263 g/kWh respectively against the declaration of 265 g/kWh. Which is within the tolerance limit of IS: 12207:2008.

ii) The maximum PTO power in case of base and variant models was observed as 30.8 & 31.6 kW respectively against the declaration of 30.5 kW which is within the specified limit.

7.2.1.2 Air cleaner oil pull over:

i) During air cleaner oil pull over test, when the tractor tilted 15 degree laterally on RHS up position, the mass of air cleaner oil was increased by 340.6 g (42.70 percent of air cleaner oil) in half an hours run. The engine was having closed lobe breather wherein the breather of engine is connected to the air cleaner inlet tube. The engine lubricating oil was sucked by the air cleaner from the engine breather in side the air cleaner assembly resulting in increase of mass of air cleaner oil. This behavior of the air intake system is considered abnormal for continuous operation of the engine.

ii) To rectify the above problem, the firm has requested for replacement of the Close Lobe Breather (CLB, Part No. 005911) with new ones having same specification. The same was replaced and air cleaner oil pull over test was repeated but no improvement was recorded.
After the failure of test, the firm has requested to interchange the location of Close Lobe Breather (CLB Unit Part No. 005911) and engine oil filling cap. The existing and modified location of these units are shown in Annexure-I. The request for interchanging the location of Close Lobe Breather (CLB Unit Part No. 005911) and engine oil filling cap was accepted by the competent authority as per the provision of Clause 3.2.4 of IS: 12207 – 2008 and the supplementary air cleaner oil pull over test was conducted and the defect was rectified.

The percentage of air cleaner oil pull over was recorded as 0.09 % against the maximum requirement of 0.25 % as per IS: 12207-2008. The test was conducted satisfactory only after supplementary test by modification in the system. It is therefore recommended that, the modified location of Close Lobe Breather (CLB Unit Part No. 005911) and engine oil filling cap (Refer Annexure-I) should be permanently incorporated in the regular production of this tractor model”.

7.2.1.3 Three point linkage:
   i) The lateral distance from lower hitch point to the centre line of the tractor does not meet the requirement of IS: 4468 (Part-1)-1997. This should be looked into for necessary corrective action
   ii) Some of the parameters of three point linkage conform to Cat.- I and some of the conforms to Cat.-II. In view of the spirit of standardization, necessary improvements may be incorporated.

7.2.1.4 Operator’s seat (Conformity with IS: 12343-1998):
   The width of operator’s seat provided on the tractor does not meet the requirements of relevant Indian Standard and calls necessary improvement.
   i) The width of operator’s seat provided on the tractor does not meet the requirements of relevant Indian Standard and calls necessary improvement.
   ii) Vertical distance from seat index point to the centre of clutch and brake pedals.

7.2.1.5 Symbols of operator’s control and other displays (Conformity with IS: 6283 (Part 1 & 2)-1998):
   A colour zone of engine revolution gauge has not been provided as per requirements of Indian Standard and calls for necessary improvements.

7.2.1.6 Labelling plate:
   The size of letters imposed / punched on labelling plate is observed as 2 mm only, which is not easily readable. This should be improved

7.3 Maintenance / Service Problems:
   No noticeable maintenance or service problem was observed during the test. However, suitable provision for draining the sediments/water may be provided at the fuel tank.

7.4 Recommendation with regard to safety on tractor:
   The following requirements, inter alia, may be considered for incorporation on the tractor:
   i) Provision of vertical retainer at clutch pedal.
   ii) Provision of spark arresting device in exhaust system.
   iii) Provision of power take-off master shield
   iv) Provision of differential lock.
   v) Provision of working clearance around the Parking Brake handl lever as per the requirements of Indian Standards.

7.5 Adequacy of Literature supplied with machine:
7.5.1 The following revised literature was supplied with test sample for reference.
   i) Owner’s service manual Book-1
7.5.2 The supplied literature of this model of tractor was not found adequate. It is therefore recommended that, the literature may be updated for modified specifications and the following technical data should be incorporated:

i) Information related to specific fuel consumption corresponding to the maximum power should be included in the technical specification of the tractor for the guidance of the user.

ii) Fuel saving tips should be included in the operator’s manual.

iii) All variants along with their features may be provided at a glance.

The results of the tests carried out on variant model “TAFE, MF 7250 Di Power Drive Power Steering” have been compared with those on base model “TAFE, MF 7250” and found within the limits as specified in Indian Standard: 12207-2008.

TESTING AUTHORITY:

[Signature]

H.L. YADAV
SENIOR AGRICULTURAL ENGINEER

[Signature]

V.N. KALE
DIRECTOR

Test report compiled by Sh. Chanchlesh Singh Raghuvanshi, Senior Technical Assistant.