

Application Reference No. 28/2023-24/110

(यह परीक्षण रिपोर्ट 31/07/2029 तक वैध है / THIS TEST REPORT IS VALID UPTO 31/07/2029)



Make of Agricultural Tractor : TAFE
Model : MF 244 DI
Manufactured by : Tractor and Farm Equipment Ltd.
Box No. 3302, Old -35 (New-77) Mahatma
Gandhi Road, Nungambakkam, Chennai-
600034



भारत सरकार

कृषि एवं किसान कल्याण मंत्रालय
(कृषि एवं किसान कल्याण विभाग)

GOVERNMENT OF INDIA

MINISTRY OF AGRICULTURE AND FARMERS WELFARE
(DEPARTMENT OF AGRICULTURE & FARMERS WELFARE)

केन्द्रीय कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान

ट्रैक्टर नगर, बुदनी (म.प्र.) 466 445

CENTRAL FARM MACHINERY TRAINING & TESTING INSTITUTE

TRACTOR NAGAR, BUDNI (M.P.) 466 445

(An ISO 9001:2015 Certified Institute)

| | |
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| T-1868/2399/2024 | TAFE, MF 244 DI - INITIAL COMMERCIAL TEST |
| | THIS TEST REPORT IS VALID UPTO 31/07/2029 |

IMPORTANT INFORMATION

The Government of India, Ministry of Agriculture and Farmers' Welfare has directed, vide an OM No. 13-17/2021-M&T (I&P) dated 28.07.2022, that since 15th August, 2022, only mandatory tests will be carried out on a tractor unless applicant has expressly requested for optional tests as well, mentioned in the above captioned OM.

In the instant case, there is no request from the applicant to carry out the optional tests hence only Mandatory Tests, as given below, have been conducted and reported in this report: -

1. PTO performance
2. Hydraulic performance
3. Drawbar performance
4. Brake performance

| | | |
|-------------|-----------------------------------|------------|
| Month: July | Test Report No.: T-1868/2399/2024 | Year: 2024 |
|-------------|-----------------------------------|------------|



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| [C] | Tractor manufacturer's name and address | : Tractor and Farm Equipment Ltd. Box No. 3302, Old -35 (New-77) Mahatma Gandhi Road, Nungambakkam, Chennai- 600034 |
| [D] | Location of other manufacturing plants | : 1) M/s. Tractors and Farm Equipment Limited, kalladipatti plant, 10/205, kalladipatti (PO), Pin-624201, Dindigul Dist., (T.N.) 2) M/s. Tractors and Farm Equipment Limited, Doddaballapur plant plot No. – 1, KIADB Industrial area, Doddaballapur, Bengaluru- 561203 (KA) |
| [C] | Submitted for test by (Applicant) | : The Manufacturer |
| [C] | Selected for test by | : The Ministry vide OM No. 13-17/2021 - M&T (I&P) dated 28.07.2022, has allowed the applicant to submit the test sample directly to the Institute without requiring any random selection for Initial Commercial Testing. Thus, the applicant directly submitted the test sample to the Institute for test. |
| [D] | Place of running-in | : At manufacturer's works |
| [D] | Duration of running-in (h): | |
| | -Engine | : 12 |
| | -Transmission | : 24 |
| [C] | Location of test | : Government of India, Central Farm Machinery Training and Testing Institute, P.O. - Tractor Nagar, BUDNI – 466445 (M.P.), INDIA |

1. SPECIFICATIONS OF TRACTOR

1.1 Identification:

1.1.1 Denomination

| | | |
|-----|-----------------------------|---|
| [C] | Make of tractor | : TAFE |
| [C] | Model | : MF 244 DI |
| [C] | Type | : Four wheeled, Rear Wheel Driven, Standard Agricultural Tractor. |
| [C] | Month & year of manufacture | : 01/24 |
| [D] | Country of origin | : India |

1.1.2 Numbers:

| | | |
|-----|---|---------------------|
| [D] | 1 st Serial No. of prototype | : MEA9B191AM2335690 |
| [C] | Serial No. | : MEA9B191AR2521201 |

1.2 Engine:

| | | |
|-----|------------------------|---|
| [D] | Manufacturer's address | : I) Simpson & Co. Ltd., No. 861, 862, Anna salai, Chennai. Tamil Nadu- 600002 II) Simpson & Co. Ltd., No.41, Thiruvaidaimarudur road, Rajan thottam town extension, kumakkonam, Tamil Nadu- 612001 III) Simpson & Co.Ltd., Huzur garden, sembiam Estate, Chennai, Tamil Nadu- 600011 |
| [C] | Make | : Simpson |
| [C] | Model | : T III A S325.1-F2.6 |
| [C] | Type | : Four stroke, naturally aspirated, water cooled, direct injection, diesel engine |
| [C] | Serial No. | : S325.1N84946 |
| [C] | 1.2.1 Cylinders: | |
| [C] | Number/disposition | : Three / vertical Inline |

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6. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS

6.1 On the basis of test conducted the performance results have been summarized as evaluative (mandatory) / non-evaluative (non-mandatory) parameters applicable for Qualifying Minimum Performance criteria as per Clause-4 (Table-1) of IS: 12207-2022 for acceptance of the tractor for the purpose of subsidies/NABARD financing are summarized as under:

| Sl. No. | Characteristic | Category (Evaluative / Non-Evaluative) | Requirements as per IS: 12207-2022 | Values declared by the applicant/ (D) Requirement (R) | As observed | Whether meets the requirements (Yes/No) |
|---|---|--|---|---|-------------|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| MANDATORY TESTS: (As per Ministry's Office Memorandum No. 13-17/2021-M&T (I&P) dated 28th of July, 2022). | | | | | | |
| 6.1.1 PTO Performance: | | | | | | |
| a) | Maximum power under 2 h test, (kW) (Natural ambient condition) | Evaluative | Declared value to be achieved with a tolerance of: $\pm 5\%$ for PTO power and or engine power > 26 kW. $\pm 10\%$ for PTO power and or engine ≤ 26 kW. | 27.2 (D) | 27.4 | Yes |
| b) | Power at rated engine speed, (kW) | Non - Evaluative | -do- | 27.2 (D) | 27.0 | Yes |
| c) | Specific fuel consumption corresponding to maximum power, (g/kWh) | Evaluative | Should not be more than 10% of declared value. | 265 (D) | 247 | Yes |
| d) | Maximum equivalent crankshaft torque, (Nm) | Non-Evaluative | $\pm 8\%$ | 155 (D) | 148.1 | Yes |
| e) | Back-up torque, percent | Evaluative | Should be min. 12% | 12 (D) 12 (R) | 14.9 | Yes |
| f) | Maximum operating temperature, ($^{\circ}\text{C}$): | | | | | |
| | 1) Engine oil | Evaluative | The declared value should not exceed the Max value specified by the oil company and the observed value under natural ambient/high ambient condition should not exceed the declaration. | 132 (D) | 116 | Yes |
| | 2) Coolant | Evaluative | Observed value should not exceed the declared value or boiling point of coolant at radiator cap pressure whichever is lower. The boiling point of the coolant at radiator pressure shall be provided by the applicant. | 112 (D) | 93 | Yes |
| g) | Engine oil consumption, (g/kWh) | Evaluative | Not exceeding 1% of SFC at Max power under natural ambient condition. The value would be based on the test conducted under natural ambient condition | 2.47 (R) Maximum | 0.4 | Yes |
| h) | Smoke level, m^{-1} | Evaluative | Maximum light absorption coefficient of 3.25 per meter or equivalent BOSCH No. 5.2 or 75 Hatridge value (As per CMVR). Max Smoke level shall be reported out of 6 readings tested as per IS 12062 and observed value should be well within the required limits. | 3.25 per meter Maximum | 0.09 | Yes |

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| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|--------------|--|----------------|--|----------------------------------|-------|-----|
| 6.1.2 | Drawbar performance: | | | | | |
| a) | Max. drawbar pull with ballast corresponding to 15 percent wheel slip, (kN) | Non-Evaluative | Minimum 70% of static mass of tractor with ballast. | * | * | * |
| b) | Max. drawbar pull with standard ballast corresponding to 15 percent wheel slip, (kN) | Evaluative | In case of tractors having total static mass \geq 1500 kg, Min 70% of static mass of tractor without ballast or with standard ballast, as the case may be. In case of light weight tractors having \leq 1500 kg total static mass of tractor, Min. 65% of static mass of tractor without ballast or with standard ballast, as the case may be. | 13.0 (D) 13.39 (R) Minimum | 15.18 | Yes |
| c) | Maximum drawbar power with standard ballast, (kW). | Evaluative | Minimum 80 % of PTO power as referred in SI No. i) a) of PTO performance in case of tractors having total static mass > 1500 kg Minimum 75% of PTO power as referred in SI No. i) a) of PTO performance in case of light weight tractors having \leq 1500 kg total static mass of tractor. Minimum 75 % of the engine power as referred in SI No. i) a) of engine performance in case of tractors which do not have a PTO shaft. | 22.0 (D) 21.9 (R) Minimum | 22.8 | Yes |
| d) | Maximum transmission oil temperature, (°C) | Evaluative | The declared value should not exceed the recommendation by the oil manufacturer. The observed value should not exceed the declared value throughout the drawbar test. | 132 (D) | 81 | Yes |

Remark: -1 The applicant vide letter no. Nil dated 30.04.2024 has requested not to conduct the ballasted drawbar performance & ten-hour drawbar test, which was allowed as per the additional guidelines for testing of tractors as per new regime of testing of tractors vide a OM No. 13-32/2023-M&T (I&P) (FTS-125476) dated 16.05.2023. Accordingly, drawbar performance test under standard ballasted condition was conducted only.

| 6.1.3 | Power lift and hydraulic pump performance: | | | | | |
|-----------|--|------------|--|--------------------------------|-------|-----|
| a) | Maximum lifting capacity throughout the range of lift, (kN): | | | | | |
| 1) | At hitch points | Evaluative | Should not be less than 90% of declared value. | 13.7 (D) 12.33 Minimum | 13.57 | Yes |
| 2) | With the standard frame | Evaluative | The lift capacity should at least be 24 kg/PTO kW and it should be 21.5 kg/engine kW where the tractor is not provided with a PTO shaft. | 8.0 (D) 6.45 (R) Minimum | 12.98 | Yes |

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| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|--------------|--|------------------------|--|--------------------------------------|----------------|-----------|
| b) | Maximum drop in the height of the point of application of the force after each 5 minutes interval for a total duration of 30 Minutes, (mm) | Non-Evaluative | The observed value should not exceed 50 mm. | 50 (D) Maximum | 110 | NO |
| 6.1.4 | Brake performance at 25 kmph: | | | | | |
| a) | Maximum stopping distance at a force, equal to or less than 600 N on brake pedal with road ballast, (m): | | | | | |
| | 1) Cold brake | Evaluative | 10 | 10 | 7.49 | Yes |
| | 2) Hot brake | Evaluative | 10 | 10 | 7.66 | Yes |
| b) | Whether parking brake is effective at a force of 600 N at foot pedal (s) or 400 N at hand lever | Evaluative | Yes / No | Yes | Yes | Yes |
| 6.1.5 | OPTIONAL TESTS: As the applicant has not applied for any optional tests, therefore no optional tests were conducted. | | | | | |
| 6.1.6 | Safety features: | | | | | |
| a) | Guards against moving and hot parts | Evaluative | Belt drives, pulleys, silencer, hydraulic pipes [As per IS 12239 (Part2)] | Meets the requirement | Yes | |
| b) | Lighting arrangement | Evaluative | As per CMVR | Conforms | Yes | |
| c) | Seating requirements (Tractors having more than 1150 mm rear track width) | Non-Evaluative | Should meet the requirements of IS: 12343 (As amended from time to time) | Does not meet the requirement | No | |
| d) | Technical requirements for PTO shaft | Non-Evaluative | Should meet the requirements of IS: 4931 (As amended from time to time) | Does not meet the requirement | No | |
| e) | Dimensions of three-point linkage | Non-Evaluative | Should meet the requirements of IS 17231: 2019 (As amended from time to time) | Does not meet the requirement | No | |
| f) | Specifications of linkage drawbar | Non-Evaluative | Should meet the requirements of IS: 12953 (As amended from time to time) | Meets the requirement | Yes | |
| g) | Swinging drawbar (wherever fitted) | Non-Evaluative | Should meet the requirement of IS: 12362 (Part 3) (As amended from time to time) | Not provided | Not applicable | |
| h) | Audible warning signal on tractor | Evaluative (if fitted) | If tractor travel speed in reverse gear exceeds 20 kmph, an audible warning signal on tractor shall get activated. A sticker to the effect that "operating the tractor beyond 20 kmph speed in reverse gear is not safe" should be prominently displayed. | Not fitted | Not applicable | |

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| 1 | 2 | 3 | 4 | 5 | 6 | 7 | | |
|---------------|--|---|--|---|---|-----|------|-----|
| 6.1.7 | Labeling of tractors (Provision of Labeling plate): | | | | | | | |
| | 1) | Make | Evaluative | Should conform to the requirements of CMVR along-with declared value of PTO in kW, Specific fuel consumption (SFC) corresponding to maximum power in g/kWh and year of manufacture in numerical form <table border="1" style="margin: 5px auto;"><tr><td>MM</td><td>YY</td></tr></table> Digit 01-12 in box No. 1 for MM will represent the month and next two digit in the box No. 2 for YY will represent the year of manufacturing. | MM | YY | TAFE | Yes |
| | MM | YY | | | | | | |
| | 2) | Model | Evaluative | | MF 244 DI | Yes | | |
| | 3) | Month & Year of manufacture | Evaluative | | 01/24 | Yes | | |
| | 4) | Engine number | Evaluative | | S325.1N84946 | Yes | | |
| | 5) | Chassis number | Evaluative | | MEA9B191AR 2521201 | Yes | | |
| | 6) | Maximum PTO power, (kW) | Evaluative | | 27.2 | Yes | | |
| 7) | Specific fuel consumption, (g/kWh) | Evaluative | 265.0 | | Yes | | | |
| 6.1.8 | Literature (Submission to test agency): | | | | | | | |
| (a) | Operator manual | Evaluative | The printed literature in booklet form should be provided as per IS 8132 and should submit along with the test sample. | Provided | Yes | | | |
| (b) | Parts Catalogue | Evaluative | | Provided | Yes | | | |
| (c) | Workshop/ Service manual | Evaluative | | Provided | Yes | | | |
| 6.1.9 | Fitment of Roll Over Protective Structures (ROPS): | | | | | | | |
| | For tractor having more than 1150 mm rear track width | Evaluative | ROPS should meet the requirement of IS:11821 or OECD code or equivalent International Standard. | Not fitted | Not applicable | | | |
| 6.1.10 | Standard Accessories | Evaluative | Trailer hitch, front tow hook, linkage drawbar should be provided with tractor | Provided | Yes | | | |
| 6.1.11 | Accessories (optional) | Non Evaluative | Ballast weight, if fitted, should meet the requirement of CMVR | Not fitted | Not applicable | | | |
| 6.2 | CATEGORY OF BREAKDOWNS / DEFECTS (As per clause 5.0 of IS:12207-2022): | | | | | | | |
| S. No. | Category of break-downs | Category (Evaluative / Non-Evaluative) | Requirements as per IS: 12207-2022 | As observed | Whether meets the Requirement (Yes/No) | | | |
| 1. | Critical | Evaluative | There is no 'critical breakdown' during the course of testing. | None | Yes | | | |
| 2. | Major | Evaluative | There are not more than 2 major breakdowns and neither of them should be of repetitive nature. | None | Yes | | | |
| 3. | Minor | Evaluative | There are not more than 5 minor defects during the test and neither of them should of repetitive nature. | None | Yes | | | |
| 4. | Total breakdowns | Evaluative | In no case, the total number of breakdowns should exceed five that is, (2 major + 3 minor) or (1 major + 4 minor) or 5 minor breakdowns. | None | Yes | | | |

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6.3 Conformity with following IS:

- | | | | |
|-------|---|---|-------------------------|
| i) | Guidelines for declaration of power and specific fuel consumption and labeling of agricultural tractors (First revision) [IS:10273 -1987 (Reaffirmed Year 2019)] | : | Conforms |
| ii) | Agricultural tractors – Rear mounted power take-off - Types 1, 2 and 3 (third revision) [IS:4931-1995 (Reaffirmed Year 2019)] | : | Does not conform |
| iii) | Agricultural wheeled tractors – Rear mounted three-point linkage: Categories 1N,1, 2N, 2, 3N, 3, 4N & 4 [IS:17231-2019] | : | Does not conform |
| iv) | Drawbar for agricultural tractors – Link type [IS 12953:1990 (Reaffirmed Year 2022)] | : | Conforms |
| v) | Agricultural tractors- Operator’s seat technical requirement [IS12343 – 2021] | : | Does not conform |
| vi) | Guide for safety & comfort of operator of agricultural tractors: Part 1 General requirements (first revision):[IS 12239 (Part 1) – 2018] | : | Does not conform |
| vii) | Tractors and machinery for agriculture and forestry – Technical means for ensuring safety Part 2: Tractors (first revision) (IS 12239 (Part 2) 1999) (Reaffirmed Year 2019)] | : | Does not conform |
| viii) | Guide lines for location and operation of operator controls on agricultural tractors and machinery [IS: 8133 – 2021] | : | Does not conform |
| ix) | Tractors and machinery for agriculture and forestry, powered lawn and garden equipment – Symbols for operator controls and other displays Part 2 Symbols for agricultural tractors and machinery [IS: 6283(Part-1) – 2006 (Reaffirmed Year 2019) and IS: 6283 (Part-2) – 2007 (Reaffirmed Year 2019)] | : | Conforms |
| x) | Agricultural Tractors and Machinery-Lighting device for travel on public roads (IS:14683-1999) (Reaffirmed Year 2019)] | : | Conforms |

6.4 Salient Observations:

6.4.1 Laboratory tests:

6.4.1.1 Hydraulic performance test

During the lifting capacity test at couple frame, the angle of rotation of mast was observed 8.8 degree over the full range of lift against the minimum requirement 10 degree as per IS 12224:1987 (reaffirmed year 2019). This should be looked into for necessary corrective action.

During hydraulic performance test, cumulative drop in the height of lower link was observed as 110 mm against the requirement of 50 mm (max). Even though this parameter is categorized as ‘non-evaluative’, as per IS: 12207-2022, yet for the sake of improvement it would be advisable to look into the matter to make it conforming to the requirement.

6.4.1.2 Three-point linkage:

The dimensions viz. width of ball of lower hitch point and Lateral distance from lower hitch point to centre line of tractor does not meet the requirements of IS: 17231-2019. This should be looked into for corrective action.

6.4.1.3 Linkage geometry

During linkage geometry test, despite having only one hole at lower links, it was observed that lower links were fouling in fully closed position of lift rod. This should be looked into for corrective action.

6.4.1.4 Operator’s seat:

The following parameters do not meet the requirement of IS: 12343-2021.

- | | |
|------|--|
| i) | Provision for adjustment of driver’s mass is observed as 50 to 120 kg against the requirement of 40 to 100 kg |
| ii) | Vertical distance from SIP to centre of steering control wheel has been measured as 210 mm against the requirement of 265 to 385 mm. |
| iii) | Vertical distance of SIP from foot rest was observed as 685 mm against the requirement of 450 to 520 mm. |

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- iv) Lateral distance of center of clutch pedal from SIP was observed as 340 mm against the acceptable limit of 75 to 300 mm.
 - v) Lateral distance of SIP from outer brake pedal was observed as 410 mm against the requirement of 380 mm (max.).
- Therefore, all of the above should be looked into for necessary corrective action.

6.4.1.5 Operator's work place:

The following parameters does not meet the requirement of IS: 12239 (Part-I) -2018.

- i) Vertical retainers on inner side of clutch pedal are not provided.
- ii) Width of the step is observed as 190 mm against the minimum requirement of 200 mm
- iii) Spark arresting device has not been provided in the exhaust system.

Therefore, all of the above should be looked into for necessary corrective action.

6.4.1.6 PTO master shield:

PTO master shield has not been provided on tractor. This should be looked into for necessary corrective action.

6.4.1.7 Identification of hand control by color coding:

- i) The color of machine ground motion controls such as engine speed control, transmission control, parking brake was observed as black. It does not meet the requirement of IS 8133:2021. It should be looked into for corrective action to meet the requirement of relevant IS.
- ii) The function control i.e. PTO engaging lever was observed as black. It does not meet the requirement of IS 8133:2021. It should be looked into for corrective action to meet the requirement of relevant IS.

6.4.1.8 Location of operation of controls:

- i) Engine stopping mechanical control is located within 380 mm of engine start control which does not meet the requirement of IS 8133:2021. It should be looked into for corrective action.

6.4.1.9 Shape and working clearance for hand control:

- i) The working clearance around controls was measured as 25 mm among PC & DC lever of Hydraulic. It does not meet the requirement of IS 12239:1999 (Part- II). It should be looked into for corrective action.

6.4.1.10 Specifications of tractor:

- i) Cumulative drop in height of hydraulic lift was observed as 110 mm against the requirement of 50 mm (max.)
- ii) Engine oil change period in specification is mentioned as 250 hours of operation whereas, in operator's manual it is mentioned as after every 300 hours of operation. It should look into for necessary corrective action.
- iii) Paper element change period is mentioned as 'NA' in specification provided by applicant. Whereas in operator's instruction book it is mentioned as it should change after 500 hrs of operation. It should be looked into for corrective action.
- iv) Other track width of drive wheel is mentioned as 'NA' in the specification sheet whereas practically it is possible to change the rear trackwidth of tractor. It is recommended to provide minimum and maximum range of trackwidth.

6.5 Maintenance / Service Problems:

No noticeable maintenance or service problem was observed during the test.

6.6 Recommendation with regard to safety on tractor:


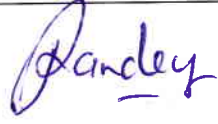

- i) Color codes on illuminated display has not been provided as per the requirement as laid down in IS: 6283 (Part-2):2007.
- ii) The hand accelerator lever, when moved away from the operator (i.e. forward) decreases the engine speed, which does not meet the requirement as laid down in Table – 1 of IS: 8133-2021.

Above parameters should be looked into for necessary corrective action.

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- 6.7 Adequacy of Literature supplied with machine:**
- 6.7.1** The following literatures were supplied with the test tractor for reference during the test: -
- Operator's instruction book for TAFE, MF 244DI tractors model.
 - Parts book for TAFE, MF 244DI tractors model.
 - Workshop service manual for TAFE, MF 244DI tractors model.
- 6.7.2** The operator manual may be brought out for the guidance of users and service personnel as per IS: 8132-1999 incorporating, inter alia, the following:
- Safe hitch height while using trailer.
 - Running – In duration mentioned as 36 hours in English language and 50 hours in Hindi. It should be looked into for necessary corrective action. Moreover, running in hours in the operator's manual which is not matching with the duration given in application. It should be looked into for necessary corrective action.

TEST CARRIED OUT AT C.F.M.T. & T.I., BUDNI (M.P.), INDIA
TESTING AUTHORITY

| | |
|---|---|
| B.N. DIXIT AGRICULTURAL ENGINEER |  |
| R.P. PANDEY SENIOR INSTRUMENTATION ENGINEER (TESTING HEAD) |  |
| Dr. P.P.RAO DIRECTOR |  |

Draft Test Report compiled by **V. S. Shinde**, Senior Technical Assistant.

7. APPLICANT'S COMMENTS

| Para No. | Our reference | Applicants' comments |
|----------|---|--|
| 7.1 | 6.4.1.1, 6.4.1.2, 6.4.1.3, 6.4.1.4, 6.4.1.5, 6.4.1.6, 6.6, 6.7.2. | Parameter will be studied and necessary corrective action will be initiated. |

ANNEXURE - I

TRACTOR RUN HOURS DURING TEST

| A. | LABORATORY AND TRACK TESTS: | HOURS |
|---------------|--|---|
| 1. | Running-in | The applicant has declared that it has already been conducted at their workplace. |
| 2. | PTO performance test | 12.2 |
| 3. | Power lift and hydraulic pump performance test | 2.2 |
| 4. | Drawbar performance test | 3.0 |
| 5. | Brake performance test | 2.2 |
| 6. | Nominal speed test | 0.6 |
| B. | Miscellaneous test and other run hours including idle run, transportation, trials and preparation for test | 6.5 |
| TOTAL: | | 26.7 |