



DEUTZ-FAHR, AGROMAXX 50 TRACTOR



सत्यमेव जयते

भारत सरकार

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

GOVERNMENT OF INDIA

MINISTRY OF AGRICULTURE AND FARMERS WELFARE

(DEPARTMENT OF AGRICULTURE, CO-OPERATION AND FARMERS WELFARE)

केन्द्रीय कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान

ट्रैक्टर नगर, बुदनी (म.प्र.) ४६६ ४४५

CENTRAL FARM MACHINERY TRAINING & TESTING INSTITUTE

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| | |
|-------------------|---|
| T- 1485/2012/2020 | DEUTZ-FAHR, AGROMAXX 50 TRACTOR – Commercial (1 st Batch Variant) |
| | THIS TEST REPORT IS VALID UPTO : 31/10/2025 |

2. FUEL AND LUBRICANTS

2.1 Fuel : The High-speed diesel oil supplied by M/s Indian Oil Corporation Limited having density of 0.836 g/cc at 15°C was used.

2.2 Lubricants:

| Sl. No. | Particulars | As recommended by the manufacturer | As used during the test |
|---------|--|------------------------------------|--|
| 1. | Engine oil | DEUTZ – FAHR Super | As recommended |
| 2. | Transmission, rear axle, final drive rear differential, and hydraulic system | DEUTZ – FAHR Utto | Oil originally filled in the tractor was not changed |
| 3. | Steering system | Servo gear HP 140 | |
| 4. | Brake system | Servo transdex-II | |
| 5. | Grease | Servo gem, EP-1 | Servo grease MP |

3. ESSENTIAL TEST

3.1. SPECIFICATIONS

| 3.1.1 Tractor: | Base Model | Variant Model |
|--|--|--|
| Make | DEUTZ-FAHR | |
| Model | AGROLUX 50 E | AGROMAXX 50 |
| Type | Four wheeled, four wheels driven (4WD), general purpose, agricultural tractor. | Four wheeled, rear wheel drive (2WD), unit construction, standard agricultural tractor |
| Month & Year of manufacture | 2017 | 08/19 |
| Chassis number | M1TAF42RDCC000368 | M1TAF01RDHE001348 |
| Country of Origin | India | |
| 3.1.2 Engine: | SAME DEUTZ-FAHR, INDIA (P), LTD. | |
| Make | 1000.3W-45 CV (apa) | |
| Model | Four stroke, naturally aspirated, liquid cooled, direct injection, diesel engine | |
| Type | Serial number : 3C42155B17 3C51567H19 | |
| Serial number | Engine speed (Manufacturer's recommended production setting), (rpm): | |
| | - Maximum speed at no load | 2330 to 2430 |
| | - Low idle speed | 600 to 900 |
| | - Speed at maximum torque | 1150 to 1400 |
| | Rated speed, (rpm): | |
| | - For PTO use | 2200 |
| | - For drawbar use | 2200 |
| 3.1.3 Cylinder & Cylinder Head: | Number : Three | |
| Disposition | Vertical, inline | |
| Bore/stroke, (mm) | 105 / 115.5 (apa) | |
| Capacity as specified by the applicant, (cc) | 3000 (apa) | |
| Compression ratio | 17.0 ± 0.3 : 1 | |
| Type of cylinder head | Individual | |
| Type of cylinder liners | Wct, replaceable | |
| Type of combustion chamber | Direct injection, Re-entrant cavity on piston crown | |
| Arrangement of valves | Inline, Overhead | |



7. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS

7.1 On the basis of test 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: 2019** 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: 12207-2019 | Values declared by the applicant (D)/ Requirement (R) | | As observed | | Whether Variant model meets the requirements (Yes/No) |
|------------------------------------|--|--|---|---|------------------------|-------------|---------------|---|
| | | | | Base model | Variant Model | Base model | Variant model | |
| 1 | 2 | 3 | 4 | 5a | 5b | 6a | 6b | 7 |
| 7.1.1 PTO Performance: | | | | | | | | |
| a) | Maximum power under 2 h test, (kW) (Natural ambient condition) | Evaluative | Declared value to be achieved with a tolerance of: ±5 percent for PTO power and engine power > 26kW. ±10 percent for PTO power and or engine ≤ 26 kW. | 31.3 (D) | 31.3 (D) | 32.8 | 31.7 | Yes |
| b) | Power at rated engine speed, (kW) | Non Evaluative | -do- | 31.3 (D) | 31.3 | 32.8 | 31.7 | Yes |
| c) | Specific fuel consumption corresponding to maximum power, (g/kWh) | Non Evaluative | +10 % | 280 (D) | 280 (D) | 266 | 264 | Yes |
| d) | Maximum equivalent crankshaft torque, (Nm) | Non Evaluative | ± 8% | 173 (D) | 183 (D) | 184.0 | 179 | Yes |
| e) | Back-up torque, percent | Non Evaluative | 12 percent, min. | 10 %, min (R) | 12 %, min (R) | 29.1 | 30.2 | Yes |
| 7.1.2 Drawbar performance : | | | | | | | | |
| a) | Max. drawbar pull without ballast corresponding to 15 percent wheel slip | Evaluative | Minimum 70 percent of static mass of tractor without ballast or with standard ballast, as the case may be. | 13.70 (D) 14.80 (R) | 13.18 (D) 13.18 (R) | 19.48 | 15.56 | Yes |



**DEUTZ-FAHR, AGROMAXX 50 TRACTOR -
Commercial (1st Batch Variant)**

T- 1485/2012/2020

THIS TEST REPORT IS VALID UPTO : 31/10/2025

| 1 | 2 | 3 | 4 | 5a | 5b | 6a | 6b | 7 |
|-------------------------------|---|----------------|--|----------------------------|----------------------------|--------------------------------|------|-----|
| b) | Maximum drawbar power without 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 ≤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. | 25.0 (D) 26.2 (R) | 25.0 (D) 25.4 (R) | 28.4 | 25.8 | Yes |
| c) | Maximum transmission oil temperature (°C) | Evaluative | The declared value should not exceed the maximum value specified by oil company | 120 (D) | 120 (D) | 78 | 81 | Yes |
| 7.1.3 Safety features: | | | | | | | | |
| a) | Guards against moving and hot parts | Evaluative | Belt drives, pulleys, silencer, hydraulic pipes (As per IS 12239 (Part2)) | -- | -- | Meets the requirements | | Yes |
| b) | Lighting arrangement | Evaluative | As per CMVR | -- | -- | Meets the requirements | | 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 requirements | | No |
| d) | Technical requirements for PTO shaft | Evaluative | Should meet the requirements of IS: 4931 (As amended from time to time) | -- | -- | Meets the requirements | | Yes |
| e) | Dimensions of three point linkage | Non Evaluative | Should meet the requirements of IS: 4468 (Part-I) (As amended from time to time) | -- | -- | Meets the requirements | | Yes |
| f) | Specifications of linkage drawbar | Evaluative | Should meet the requirements of IS: 12953 (As amended from time to time) | -- | -- | Meets the requirements | | Yes |



DEUTZ-FAHR, AGROMAXX 50 TRACTOR - Commercial (1st Batch Variant)
THIS TEST REPORT IS VALID UPTO : 31/10/2025

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|-----------------|-----|
| 25 | |
| 5.8 | Yes |
| 81 | Yes |
| the nts | Yes |
| the nts | Yes |
| ot he nts | No |
| the nts | Yes |
| the nts | Yes |
| s the nts | Yes |

| 1 | 2 | 3 | 4 | 5a | 5b | 6a | 6b | 7 |
|--------------|---|------------|---|----------|----|-------------------------------------|----|----------------|
| u) | Swinging drawbar (wherever fitted) | Evaluative | Should meet the requirement of IS: 12362 (Part 3) (As amended from time to time) | -- | | Not Provided | | Not applicable |
| ii) | 1) Maximum travelling speed at rated engine speed in reverse gear. (kmph) | Evaluative | Should not exceed 20 kmph | -- | | 13.23 kmph (Meets the requirements) | | Yes |
| | 2) Audible warning signal on tractor | Evaluative | As soon as the travelling speed in reverse gear reaches to 20 kmph, an audible warning signal on tractor shall be activated. The safety aspects about the operation of shuttle technology shall be brought in operation and manufacturer/dealer shall ensure the training on this aspect to operator before the delivery of tractor. | -- | | Not applicable | | Not applicable |
| 7.1.4 | Labelling of tractors (Provision of labelling plate): | | | | | | | |
| | 1) Make | Evaluative | Should conform to the requirements of CMVR along with maximum PTO Power in kW and year of manufacture in numerical form. MM YY Digit 0* - 12 in box No.1 for MM will represent the months and next two digits in box No.2 for YY will represent the year of manufacturing. | -- | | DEUTZ-FAHR | | Yes |
| | 2) Model | Evaluative | | -- | | AGROMAXX 50 | | Yes |
| | 3) Month & Year of manufacture | Evaluative | | -- | | 08/19 | | Yes |
| | 4) Engine number | Evaluative | | -- | | 3C51567H19 | | Yes |
| | 5) Chassis number | Evaluative | | -- | | M1TAF01RDHE0 01348 | | |
| | 6) Declaration of PTO power, kW | Evaluative | | -- | | 31.3 | | Yes |
| 7.1.5 | Literature (Submission to test agency): | | | | | | | |
| (a) | Operator manual | Evaluative | Provided / Not Provided | Provided | | Provided | | Yes |
| (b) | Parts Catalogue | Evaluative | Provided / Not Provided | Provided | | Provided | | Yes |
| (c) | Workshop/ Service manual | Evaluative | Provided / Not Provided | Provided | | Provided | | Yes |



T- 1485/2012/2020

**DEUTZ-FAHR, AGROMAXX 50 TRACTOR –
Commercial (1st Batch Variant)**

THIS TEST REPORT IS VALID UPTO : 31/10/2025

| 1 | 2 | 3 | 4 | 5a | 5b | 6a | 6b | 7 |
|-------|--|----------------|--|-----|-----|-----------------|----|----------------|
| 7.1.6 | Filment 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 | --- | --- | ROPS not fitted | | Not applicable |
| 7.1.7 | Standard Accessories | Evaluative | Trailer hitch, front tow hook, linkage drawbar should be provided with the tractor. | --- | --- | Provided | | Yes |
| 7.1.8 | Accessories (optional) | Non Evaluative | Ballast weights, if fitted, should meet the requirement of CMVR | --- | --- | Not applicable | | Not applicable |

| 7.2 CATEGORY OF BREAKDOWNS / DEFECTS (as per clause 5.0 of IS:12207-2019) : | | | | | |
|---|------------------------|--|---|-------------|---|
| Sl. No. | Category of breakdowns | Category (Evaluative / Non Evaluative) | Requirements as per IS: 12207-2019 | As observed | Whether meets the Requirements (Yes/No) |
| 1. | Critical | Evaluative | No critical breakdown | None | Yes |
| 2. | Major | Evaluative | Not more than two and neither of them should be repetitive in nature | None | Yes |
| 3. | Minor | Evaluative | Not more than three and frequency of each should not be more than two. | 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 |

7.3 Salient Observations:

7.3.1 Laboratory tests:

7.3.1.1 PTO Performance:

- i) The maximum PTO power was recorded as **31.7 kW** against the declaration of **31.3 kW**, which meets the requirement of IS: 12207-2019 with regard to tolerance limit.
- ii) The specific fuel consumption corresponding to maximum power was recorded as **264 g/kWh** against the declaration of **280 g/kWh**, which is within the tolerance limit of IS: 12207-2019.
- iii) The maximum equivalent crankshaft torque was recorded as **179.0 Nm** against the declaration of **183.0 Nm**, which meets the requirement of IS: 12207-2019 with regard to tolerance limit.
- iv) The backup torque was observed as **30.2 %**, which meets the requirement of IS: 12207-2019 with regard to tolerance limit.



T- 1485/2012/2020

**DEUTZ-FAHR, AGROMAXX 50 TRACTOR -
Commercial (1st Batch Variant)****THIS TEST REPORT IS VALID UPTO : 31/10/2025**

| | |
|---|---|
| 025 | |
| b | 7 |
| Not applicable | |
| Yes | |
| Not applicable | |
| Whether meets the Requirements (Yes/No) | |
| Yes | |
| Yes | |
| Yes | |
| Yes | |

7.3.1.2 Drawbar Performance:

- i) The maximum drawbar pull with unballasted condition corresponding to 15 % wheel slip was recorded as **15.56 kN** against the declaration of **13.18 kN**, which is within the tolerance limit as specified in IS:12207-2019.
- ii) The maximum drawbar power without ballast was recorded as **25.8 kW** against the declaration of **25.04 kW**, which is within the tolerance limit as specified in IS: 12207-2019.

7.3.1.3 Engine model

The engine model is not embossed or punched on engine. It is essential thing for identification of engine model. This should be looked into for necessary corrective action for distinct identification of engine model.

7.4 Maintenance / Service problems:

No noticeable maintenance and service problems was observed during the test.

7.6 Recommendation with regard to safety on tractor:

The following requirements, inter alia, may be considered for incorporation on the tractor as per relevant Indian Standards:

- i) Longitudinal distance of from seat index point to the centre of differential lock pedal should be as per relevant Indian Standard for easy maneuverability of tractor.
- ii) Inclination of backrest should be provided as per relevant standard.
- iii) Fuel shut-off knob does not remain in "STOP" position.
- iv) Vertical retainness is not provided on both sides of pedals
- v) There should be provision for spark arresting device in exhaust system.
- vi) The working clearance between position control lever & mudguard should be provided as per relevant standard.
- vii) Oil lubricant type and frequency chart should be provided on the tractor.

7.6 Adequacy of Literature:

The following literatures were supplied with the test tractor for reference during the test-

- i) Operator's manual of Agromaxx 40, Agromaxx 45, Agromaxx 50, Agromaxx 55 and Agromaxx 60 tractor models
- ii) Spare Parts catalogue of Agrolux & Agromaxx series tractor models.
- iii) Workshop Service Manual of Agromaxx 45, Agromaxx 50, Agromaxx 55, 4WD, Agromaxx 55, Agromaxx 60 4WD and Agromaxx 60 tractor models

The results of the tests carried out on variant model "**DEUTZ-FAHR, AGROMAXX 50**" Tractor have been compared with those on base model "**DEUTZ-FAHR, AGROLUX 50 E**" Tractor tested vide test report No. T- 1166/1693/2018 (June), T-1412/1939/2020 (March) & found within the limit, as specified in Indian Standard: 12207 2019.

declaration of
with regard to
power was
which is within
as **179.0 Nm**
requirement of IS:
requirement of



| | |
|-------------------|---|
| T- 1485/2012/2020 | DEUTZ-FAHR, AGROMAXX 50 TRACTOR – Commercial (1 st Batch Variant) |
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8. CITIZEN CHARTER

| Time frame for Testing & Evaluation as per Citizen Charter | Duration of Test | Whether the Test Report is released within the time frame given in Citizen Charter | Remarks |
|--|---|--|---------|
| 10 Months | 5 Months (May, 2020 to September, 2020) | Yes | None |

TESTING AUTHORITY:

NITESH KUMAR VERMA
AGRICULTURAL ENGINEER

C.V. CHIMOTE
TEST ENGINEER

J.J.R. NARWARE
DIRECTOR

This test report is compiled by Smt. Poonam Khurasia, Senior Technical Assistant

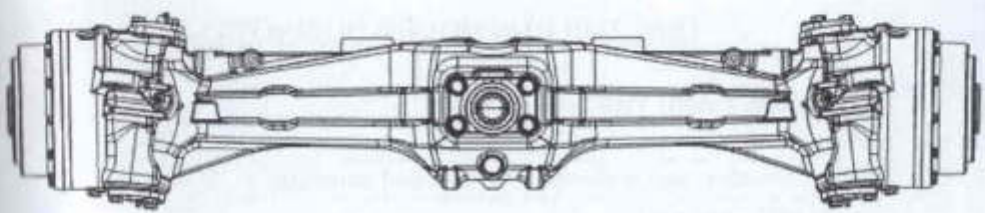
9. APPLICANTS COMMENTS

| Para No. | Our reference | Applicant's comments |
|----------|-----------------------------------|--|
| 9.1 | 7.3.1.4 & 7.5 (i, ii, iii, & vii) | Would be reviewed |
| 9.2 | 7.6.2 | Literatures are available in the following languages: Hindi, Tamil, Telugu, Kannada, Marathi, Gujarati, Nepali and English |

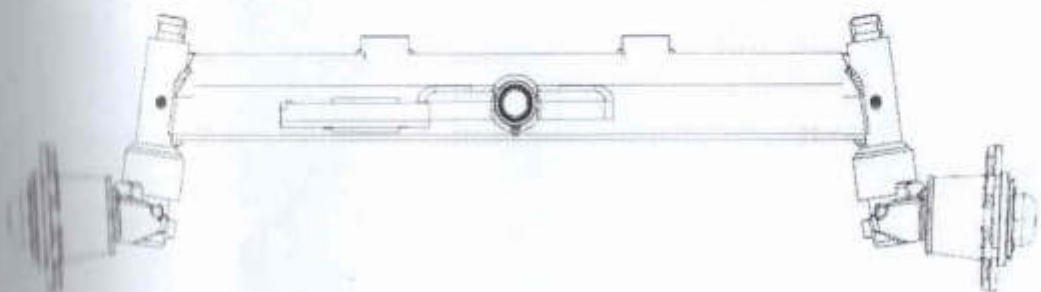
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Remarks
None



ANNEXURE-I



Design of front axle (4WD) for Base Model: DEUTZ-FAHR, AGROLUX 50 E



Design of front axle (2WD) for Variant Model: DEUTZ-FAHR, AGROMAXX 50

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T- 1485/2012/2020

DEUTZ-FAHR, AGROMAXX 50 TRACTOR –
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THIS TEST REPORT IS VALID UPTO : 31/10/2025

ANNEXURE- II

TRACTOR RUN HOURS DURING TEST

| A. LABORATORY AND TRACK TESTS: | | HOURS |
|---------------------------------------|---|--------------|
| 1. | Running-in | 25.00 |
| 2. | PTO performance test under natural ambient condition | 4.27 |
| 3. | Drawbar performance test | 3.00 |
| 4. | Turning ability test | 0.50 |
| 5. | Location of centre of gravity | 0.42 |
| 6. | Nominal speed test | 1.50 |
| B. | Miscellaneous test and other run hours including idle run, transportation, preparation for test and trial runs. | 1.75 |
| TOTAL | | 36.44 |