



DEUTZ-FAHR, AGROMAXX 60 TRACTOR



भारत सरकार

GOVERNMENT OF INDIA

कृषि मंत्रालय (कृषि एवं सहकारिता विभाग, मशीनीकरण एवं प्रौद्योगिकी प्रभाग)
Ministry of Agriculture (Deptt. of Agri. & Co-op, Mechanization & Technology Division)

केन्द्रीय कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान

CENTRAL FARM MACHINERY TRAINING & TESTING INSTITUTE

(An ISO : 9001-2008 Certified Institute)

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**DEUTZ-FAHR, AGROMAXX 60 TRACTOR-
Commercial (Variant)**

The applicant opted to change the base model as variant model by replacing the front wheel drive axle with rigid type axle changing the front wheel tyre size 11.2 R 20 pneumatic traction with the tyre size 6.5-20, 8PR pneumatic ribbed tyre and the range selector lever (L/H/SR) with (L/H) Lever at the institute which was allowed by the competent authority.

Subsequent to the examination of the case in light of Indian Standard IS 12207-2008, the following tests were considered to be carried out:

- Specification checking in full
- Nominal speed test
- Turning ability test
- Center of gravity test
- Visibility test
- Puddling test

2. FUEL AND LUBRICANTS

2.1 Fuel : The High-speed diesel oil supplied by M/s Indian Oil Corporation Limited having density of 0.834 g/cc at 15°C was used.

2.2 Lubricants:

S. No.	Particulars	As recommended by the manufacturer	As used during the test
1.	Engine	SDF Super motor oil, 15W40	As recommended
2.	Transmission, Final drive(front and rear), Steering housing and Hydraulic system	SDF UTTO Titan Hydra J20 C, AKROS 20W/30	Oil originally filled in the tractor was not changed
3.	Brake Oil	Servo Transdex-II	- do -
4.	Grease	Servo Gem EP-1	Servo Grease MP

3. ESSENTIAL TESTS**3.1 SPECIFICATION****3.1.0 Tractor:**

	<u>Base Model</u>	<u>Variant Model</u>
Make	: DEUTZ-FAHR	DEUTZ-FAHR
Model	: Agromaxx 60 (4WD)	Agromaxx 60
Type	: Four wheeled, four wheel driven, standard agricultural tractor.	Four wheeled, two wheel driven, agricultural tractor.
Year of manufacture	: 2011	2011
Chassis number	: DG10055J11	DG10055J11
Country of Origin	: India	India



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		Base Model	Variant Model	Remark
	Model/Group combination No.	None	None	No change
	Rated engine speed, (rpm)	2350	2350	No change
	Governed range of engine speed (rpm)	600 to 2570	600 to 2570	No change
f)	Location of gear shifting levers	Sidé shifting, RHS of operator's Seat	Sidé shifting, RHS of operator's Seat	No change
g)	Overall length (mm)	3630	3630	No change
h)	Mass of tractor (unballasted) (kg),(front/rear/total)	1040/1190/2230	830/1210/2040	Changed

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: 2008 for acceptance of tractor for the purpose of subsidies/NABARD financing for the applicable features for this tractor model.

S. No.	Characteristic	Category (Evaluative / Non Evaluative)	Requirements as per IS: 12207-2008	Values declared by the applicant (D)/ Requirement (R)	As observed	Whether Variant model meets the requirements (Yes/ No.)
				Base & Variant	Base & Variant	
1	2	3	4	5	6	7
7.1.1	PTO Performance :					
a)	- Max. power under 2 h test, (kW) (Natural ambient condition)	Evaluative	Declared value to be achieved with a tolerance of: -5 / +10% for PTO power >35hp. -7.5/+10% for PTO power ≤ 35 hp	37.5 (D)	39.7	Yes
b)	Power at rated engine speed, (kW)	Non Evaluative	-do-	37.5 (D)	30.5	No
c)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Non Evaluative	± 5%	265 (D)	295	Yes
d)	Maximum equivalent crankshaft torque, (Nm)	Non Evaluative	± 8%	175 (D)	220.9	No
e)	Back-up torque, percent	Non Evaluative	7 percent, min.	7% (Min)	29.6	Yes



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f)		Maximum operating temperature (°C)			155 (D)	129	Yes	
1)	Engine oil	Non Evaluative	The declared value should not exceed the max. value specified by the oil company and the observed value under high ambient condition should not exceed the declaration.					
2)	Coolant (water)	Evaluative	The declared value should not exceed the boiling temperature of coolant under the pressurized or otherwise and the observed value under high ambient condition should not exceed the declaration.	120 (D)	114	Yes		
g)	Engine oil consumption, (g/kWh)	Evaluative	Not exceeding 1% of SFC at max. power under High ambient conditions	2.65 (D)	0.44	Yes		
h)	Smoke level	Evaluative	Maximum light absorption coefficient of 3.25 per metre or equivalent BOSCH No. 5.2 or 75 Hatridge value (As per CMVR)	Max 3.25 per meter (R)	2.75	Yes		
7.1.4 Labelling of tractors (Provision of labelling plate):								
			Should conform to the requirements of CMVR along-with declared value of PTO HP	DEUTZ FAHR AGROMAXX 60 (4 WD)	DEUTZ FAHR AGROMAXX 60	Yes		
1)	Make	Evaluative					Yes	
2)	Model	Evaluative			2011	2011	Yes	
3)	Year of manufacture	Evaluative			3M29321J11	3M29321J11	Yes	
4)	Engine serial number	Evaluative			DG10055J11	DG10055J11	Yes	
5)	Chassis serial number	Evaluative			37.5 (51.0)	37.5 (51.0)	Yes	
6)	Declaration of PTO power, kW (ps)	Evaluative			265	265	Yes	
7)	Specific Fuel Consumption (gm/kWh)	Evaluative						

7.2

7.2.1
7.2.1.1

Salient Observations:

Laboratory tests:

PTO Performance:

- The backup torque is observed as 29.6%.
- The specific fuel consumption corresponding to maximum power was observed as 265 g/kWh against the declaration of 261 g/kWh, which meet the requirement of IS: 12207-2008 with regard to tolerance.
- The power at rated engine speed is observed as 30.5 Kw against the declaration of 37.5 Kw. This calls for improvement in tractor.



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Some of the parameters of linkage drawbar conform to Cat.I and some of them conform to Cat.II. In view of the spirit of standardization, necessary improvement may be incorporated.

7.2.1.3 Location and operation of operator's control:

Working clearance between position control lever and the mudguard does not meet the requirement of the IS: 12239 (Part-2)-1996. This should be looked into for necessary corrective action.

7.3 Adequacy of Literature supplied with machine:

7.3.1 The following literature was supplied with the tractor for reference during the testing.

- Use and Maintenance manual in respect of Agromaxx 40, Agromaxx 45 Agromaxx 50, Agromaxx 55 and Agromaxx 60 tractor models.
- Workshop service manual for Agromaxx series tractors.
- Spare Parts Catalogue for Agromaxx series tractors.

7.3.2 Information related to PTO, Drawbar and hydraulic performance of the tractor such as, maximum engine power, rated engine power, maximum torque, backup torque, specific fuel consumption, maximum drawbar power & pull, hydraulic pump discharge rate, hydraulic power & lifting capacities etc should be included in the technical specification of the tractor for the guidance of the user's.

7.3.3 The literatures should also be brought out in national as well as other regional languages for the guidance of users and service personnel.

8.0 Citizen charter

Duration of Test	Test duration under citizen charter	Whether the report released within time frame given in the citizen charter	Remark
8 Months (July, 2013 to February, 2014)	10 Months	Yes	--

TESTING AUTHORITY:

R. K. Nema
R. K. NEMA

AGRICULTURAL ENGINEER

P. K. Verma
P. K. VERMA

SENIOR AGRICULTURAL ENGINEER

C. R. Lohi
C.R.LOHI
DIRECTOR



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Para No.	Our Reference	Applicant's comments
9.1	7.3.2, 7.3.3	Necessary information will be provided & suggestion is considered

ANNEXURE- I**TRACTOR RUN HOURS DURING TEST**

		HOURS
A.	LABORATORY AND TRACK TESTS	Nil
1.	Running-in	0.2
2.	Turning ability	0.1
3.	Location of centre of gravity	0.1
4.	Operator's field of vision	--
5.	Theoretical speed test	
B.	FIELD TEST:	15.3
1.	Puddling (including five hours water proof test)	3.4
B.	Miscellaneous test and other run hours, including idle run transportation, trial and preparation for test.	
TOTAL		19.1

ANNEXURE- II**BRIEF SPECIFICATION OF FULL CAGE WHEEL**

S. No.	Items	Specifications
1.	Type	full cage wheel
2.	Dia. (mm)	1210
3.	Width, (mm)	900
4.	No. and types of lugs	24, straight lugs made up of MS-angle section welded to angle iron frame.
5.	Size of angle section, (mm)	40 x 40 x 5
6.	Length of lugs, (mm)	444
7.	Spacing of lugs, (mm)	290
8.	Weight of each cage wheels (kg)	120