

व्यावसायिक परीक्षण रिपोर्ट (प्रथम बैच द्वितीय नमूना)
COMMERCIAL TEST REPORT (1st Batch Second Sample)

संख्या / No. : T-1501/2028/2020
माह / Month : December, 2020

(यह परीक्षण रिपोर्ट 31/12/2025 तक वैध है। / THIS TEST REPORT IS VALID UP TO : 31/12/2025)



DEUTZ FAHR, AGROLUX 70 E TRACTOR



सत्यमेव जयते

भारत सरकार

कृषि एवं किसान कल्याण मंत्रालय
कृषि, सहकारिता एवं किसान कल्याण विभाग
मशीनीकरण एवं प्रौद्योगिकी प्रभाग

GOVERNMENT OF INDIA

MINISTRY OF AGRICULTURE AND FARMERS WELFARE

(Department of Agriculture, Cooperation & Farmers Welfare, Mechanization & Technology Division)

केन्द्रीय कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान

ट्रैक्टर नगर, बुदनी (म.प्र.) ४६६ ४४५

CENTRAL FARM MACHINERY TRAINING & TESTING INSTITUTE

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evaluative requirement as per IS: 12207-2014.

Now, the applicant had re-submitted an application vide letter No. Batch/Agrolux 70E/193, dated 28.08.2019 and offered second sample for 1st Batch Testing of “Deutz – Fahr, Agrolux 70 E” Tractor and tractor was subjected to different tests as per clause 6.0 table-1 of IS: 5994 – 1998.

Manufacturer : M/s. SAME DEUTZ-FAHR INDIA (P) LTD
72/72M, SIPCOT, Industrial Complex,
Ranipet – 632 403 , Tamil Nadu, India

Location of manufacturing plant : M/s. SAME DEUTZ-FAHR INDIA (P) LTD
72/72M, SIPCOT, Industrial Complex,
Ranipet – 632 403 , Tamil Nadu, India

Test requested by : The manufacturer
Selected for test by : The manufacturer
Place of running-in : At manufacturer’s works
Duration of said running-in, (h):
- Engine : Nil
- Transmission : 25

Method of Selection : The test sample was directly submitted by applicant for test as the Ministry has exempted the random selection of tractors upto 31.12.2020.

1. SPECIFICATIONS

1.1 Tractor:
Make : Deutz-Fahr
Model : Agrolux 70 E
Variants, if any : Yes

Sr. No.	Variant model*	Variant features
i)	AGROLUX 70 E 2WD	Constant mesh gearbox with 8+2 travel speeds

Remark (*): The variant model has not been submitted for batch testing at this institute.

Type : Four wheeled, four wheel driven (4WD), unit construction, standard agricultural tractor

Month & Year of manufacture : 12 | 19

Chassis number : M1TAF72RDME000151

Country of origin : India

1.2 Engine:
Make : Same Deutz-Fahr India (P) Ltd
Model : 1000.3WT-65CV (apa)
Type : Four stroke, liquid cooled, turbo charged, direct injection, diesel engine.
Serial number : 3F53055M19
Year of manufacture : 2019
Country of origin : India

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14. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS

14.1 On the basis of tests conducted the performance results have been summarized as evaluative (mandatory) and non-evaluation (not-mandatory) parameter applicable for qualifying Minimum Performance Criteria as per Clause-4 (Table-1) of IS: 12207-2019 for acceptance of the tractor for the purpose of subsidies/NABARD financing are summarized as under:-

S. No.	Characteristic	Category (Evaluative / Non Evaluative)	Requirements as per IS: 12207-2019	Values declared by the applicant (D) / Requirement (R)	As observed	Whether meets the requirements (Yes/No)
1	2	3	4	5	6	7
14.1.1	PTO Performance :					
a)	Max. power under 2 h test, (kW) (Natural ambient condition)	Evaluative	Declared value to be achieved with a tolerance of: $\pm 5\%$ for PTO power or engine power >26 kW, $\pm 10\%$ for PTO power or Engine power ≤ 26 kW.	42.66 (D)	43.1	Yes
b)	Power at rated engine speed, (kW)	Non Evaluative	-do-	42.66 (D)	42.8	Yes
c)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Evaluative	$+ 10\%$ Max.	272 (D)	262	Yes
d)	Maximum equivalent crankshaft torque, (Nm)	Non Evaluative	$\pm 8\%$	225 (D)	258.8	No
e)	Back-up torque, percent	Evaluative	12 percent, min.	12 (D) 12 (R)	39.1	Yes
f)	Maximum operating temperature($^{\circ}$ C)					
	1) Engine oil	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.	150 (D)	117	Yes
	2) Coolant (liquid)	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.	110 (D)	106	Yes
g)	Engine oil consumption,(g/kWh)	Evaluative	Not exceeding 1% of SFC at max. power under High ambient conditions	2.66 (R)	0.29	Yes
h)	Smoke level, (m^{-1})	Evaluative	Maximum light absorption coefficient of 3.25 per metre or equivalent BOSCH No. 5.2 or 75 Hatridge value (As per CMVR)	3.25 (R)	0.46	Yes

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1	2	3	4	5	6	7
14.1.2	Drawbar performance:					
a)	Maximum drawbar pull with ballast corresponding to 15 percent wheel slip, (kN)	Non Evaluative	Minimum 70% of static mass with ballast	26.6 (D) 25.72 Minimum (R)	36.45	Yes
b)	Maximum drawbar pull with unballast corresponding to 15 percent wheel slip, (kN)	Evaluative	Minimum 70% of static mass of tractor without / standard ballast	17.02(D) 17.17 Minimum (R)	24.17	Yes
c)	Maximum drawbar power without ballast, or with standard ballast as the case may be, 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.	34.1 (D) 34.5 Minimum (R)	36.9	Yes
d)	Maximum transmission oil temperature (°C)	Evaluative	The declared value should not exceed the maximum value specified by oil company	120 (D)	109	Yes
14.1.3	Power lift and hydraulic pump performance :					
a)	Maximum lifting capacity throughout the range of lift, (kN):					
	1) At hitch points	Evaluative	±10 percent	17.0 (D)	18.02	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	10.15 (D) 10.15 Minimum (R)	16.72	Yes
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 minute, (mm)	Non Evaluative	The observed value should not exceed 50 mm	50 (D) 50 (R) Maximum	00	Yes
14.1.4	Brake performance at 25 kmph:					
a)	Maximum stopping distance at a force, equal to or less than 600 N on brake pedal with unballast, (m):					
	1) Cold brake	Evaluative	10	10 (R)	8.46	Yes
	2) Hot brake	Evaluative	10	10 (R)	8.54	Yes
b)	Maximum force exerted on the brake pedal to achieve a deceleration of 2.5 m/s ² (N)	Evaluative	600	600 (R)	394 to 425	Yes

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1	2	3	4	5	6	7
c)	Whether parking brake is effective at a force of 600 N at foot pedal(s) or 400 N at hand lever, N	Evaluative	Yes / No	Yes (R)	240	Yes
14.1.5	Noise measurement :					
a)	Maximum ambient noise emitted by the tractor dB(A)	Evaluative	As per CMVR	88 (R)	81	Yes
b)	Maximum noise at operator's ear level dB(A)	Evaluative	As per CMVR	96 (R)	94	Yes
14.1.6	Amplitude of mechanical vibrations at :					
1)	Left foot rest	Non Evaluative	100 microns (max)	100(R)	121	No
2)	Right foot rest		-do-		149	No
3)	Seat (with driver seated)		-do-		95	Yes
4)	Steering wheel		do-		129	No
14.1.7	Air cleaner oil pull over:	Evaluative	0.25 % (max.)	Dry type air cleaner is fitted	Not applicable	Not applicable
14.1.8	Haulage requirements:					
a)	Gross mass of the trailers, (tones):					
1)	Two wheel	Non	--	5.5 (D)	5.5	Yes
2)	Four wheel	Evaluative	--	7.0(D)	7.0	Yes
b)	Distance travelled / litre of fuel consumption, (km/l):					
1)	Two wheel	Non Evaluative	--	4.35 (D)	4.26 to 4.33	No
2)	Four wheel		--	4.19 to 4.27 (D)	4.05 to 4.10	No
c)	Fuel consumption (ml/km/tonne):					
1)	Two wheel	Non Evaluative	--	41.8 (D)	42.0 to 42.6	No
2)	Four wheel		--	33.5 to 34.1 (D)	34.9 to 35.2	No
14.1.9	Wetland cultivation :					
	Sealing for the following assemblies:	Evaluative	The identified assemblies should essentially meet the requirement of IS: 11082. No water ingress in the identified assembly given in column-2. If tractor does not meet the requirements of wetland cultivation, it may be recommended for dry land operation only.	The manufacturer has recommended that the tractor is not suitable for wet land cultivation	Not Recommended	Not Applicable
1)	Clutch assembly	-do-				
2)	Brake housings	-do-				
3)	Front axle hubs	-do-				
4)	Engine Oil	-do-				
5)	Transmission Oil	-do-				

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1	2	3	4	5	6	7	
14.1.10	Safety features :						
a)	Guards against moving and hot parts	Evaluative	Belt drives, pulleys, silencer, hydraulics pipes(as per IS-12239 Part 2)	Meet the requirements		Yes	
b)	Lighting arrangement	Evaluative	As per CMVR	Meet 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 requirement		No	
d)	Technical requirements for PTO shaft	Evaluative	Should meet the requirements of IS: 4931 (As amended from time to time)	Meet 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)	Does not meet the requirement		No	
f)	Specifications of linkage drawbar	Evaluative	Should meet the requirements of IS 12953 (As amended from time to time)	Meet the requirements		Yes	
g)	Specifications of Swinging drawbar (wherever fitted)	Evaluative	Should meet the requirements of IS 12362 (Part 3) (As amended from time to time)	Not provided		Not applicable	
h)	1) Maximum travelling speed at rated engine speed in reverse gears, kmph	Evaluative	Should not exceed 20 kmph	15.09 kmph (Meet 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.	Not fitted		Not applicable	
14.1.11	Labelling of tractors (Provision of labelling plate):						
	1) Make	Evaluative	Should conform to the requirements of CMVR along with maximum declared value of PTO power in kW and for month & year of manufacture in numerical <table border="1" style="margin: 0 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	DEUTZ-FAHR	Yes
	MM	YY					
	2) Model	Evaluative		AGROLUX 70 E	Yes		
	3) Month & Year of manufacture	Evaluative		12/19	Yes		
	4) Engine number	Evaluative		3F53055M19	Yes		
	5) Chassis number	Evaluative		M1TAF72RDME00 0151	Yes		
6) Declaration of PTO power, kW	Evaluative	42.66	Yes				

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1	2	3	4	5	6	7
14.1.12	Discard limit for:					
(a)	Cylinder bore diameter, (mm)	Evaluative	To be specified by Manufacturer	105.10 (D)	104.999 to 105.013	Yes
(b)	Clearance between piston & cylinder liner at skirt, (mm)	Non Evaluative		0.42 (D)	0.116 to 0.122	Yes
(c)	Piston diameter at skirt, mm	Non Evaluative		104.68	104.886 to 104.897	104.897
(d)	Ring end gap (mm):					
	- Top comp. ring.	Evaluative	-do-	1.5 (D)	0.45 to 0.50	Yes
	- 2 nd comp. ring.		-do-	1.5 (D)	0.35 to 0.40	Yes
	- Oil ring.		-do-	1.5 (D)	0.35	Yes
(e)	Ring groove clearance (mm):					
	- Top comp. ring.	Evaluative	-do-	--Tapered--		Not applicable
	- 2 nd comp. ring.		-do-	0.25 (D)	0.047 to 0.056	Yes
	- Oil ring.		-do-	0.15 (D)	0.034 to 0.049	Yes
(f)	Diametrical clearance of main bearings (mm):	Evaluative	-do-	0.40 (D)	0.075 to 0.099	Yes
(g)	Clearance of big end bearings, (mm):					
	- Diametrical	Evaluative	-do-	0.40 (D)	0.055 to 0.077	Yes
	- Axial	Evaluative	-do-	0.50 (D)	0.15	Yes
(h)	Crankshaft end float, mm	Evaluative	-do-	0.50 (D)	0.16	Yes
(j)	Clearance between king pin and bush,(mm)	Non Evaluative	-do-	0.85 (D)	0.020 to 0.028	Yes
(k)	Clearance between center pin and bush,(mm)	Non Evaluative	-do-	0.85 (D)	0.10 to 0.28	Yes
14.1.13	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
14.1.14	Fitment of Roll Over Protective Structure (ROPS): for tractors having more than 1150 mm rear track width	Evaluative	ROPS should meet the requirement of IS:11821 or OECD code or equivalent International Standard	Provided	Not Fitted	Not applicable

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14.1.15	Standard accessories	Evaluative	Trailer hitch, front tow hook, linkage drawbar should be provided with tractor	Provided	Provided	Yes
14.1.16	Accessories (Optional)	Non Evaluative	Ballast weights if fitted should meet the requirement of CMVR.	Provided	Provided	Yes

14.2 CATEGORY OF BREAKDOWNS / DEFECTS (As per clause 5.0 of IS:12207-2019):					
S. No.	Category of Breakdown	Category (Evaluative / Non Evaluative)	Requirements as per IS: 12207-2019	As observed	Whether meets the requirement (Yes/No.)
1.	Critical breakdown	Evaluative	There is no 'critical breakdown' during the course of testing	None	Yes
2.	Major breakdowns	Evaluative	There are not more than 1 major breakdowns and neither of them is of repetitive nature	None	Yes
3.	Minor breakdowns	Evaluative	There are not more than 3 minor defects during the test and the frequency of each is not be more than two	None	Yes
4.	Total breakdowns	Evaluative	In no case, the total number of breakdowns should exceed four that is, (1 major + 3 minor) or 4 minor breakdowns	None	Yes

14.3 Salient Observations:

14.3.1 Laboratory tests:

14.3.1.1 PTO Performance Test:

- i) The maximum PTO power was recorded as **43.1 kW** against the declaration of **42.66 kW**, which meets the requirement of IS: 12207-2019 with regard to tolerance limit.
- ii) The maximum PTO power at rated engine speed was recorded as **42.8 kW** against the declaration of **42.66 kW**, which meets the requirement of IS: 12207-2019 with regard to tolerance limit.
- iii) The specific fuel consumption corresponding to maximum power was recorded as **262 g/kWh** against the declaration of **272 g/kWh** & which meet the requirement of IS: 12207-2019 with regard to tolerance limit.
- iv) The maximum equivalent crankshaft torque was recorded as **258.8 N-m** against the declaration of **225.0 N-m** & which does not meet the requirement of IS: 12207-2019 with regard to tolerance limit. This should be looked into for necessary corrective action.
- v) The backup torque is **39.1 %**.
- vi) The drop in maximum PTO power was observed as **5.1 %** between natural and high ambient condition, which is considered on higher side. This should be looked into for necessary corrective action

14.3.1.2 Hydraulic performance test:

The maximum lifting capacity on standard frame throughout the range of lift was recorded as **16.72 kN**. Whereas moment of inertia with standard frame and front axle w.r.t. rear axle was computed as **25.00 kN-m** and **21.11 kN-m**. The moment of inertia of standard frame compared with front axle is considered on higher side. Therefore, lifting capacity of the hydraulic system may be reviewed to avoid front lifting of the tractor.

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14.3.1.3 Mechanical Vibration:

The amplitude of mechanical vibration on various assemblies / components marked as (*) in Chapter – 8 of this test report is on higher side. This calls for dampening down of vibrations especially on LHS & RHS foot rest & steering control wheel to improve the operational comfort and service life of components.

14.3.1.4 Three point linkage

- i) Dimension of width of ball of lower pin hole
 - ii) Lateral distance from lower hitch point to centre line of tractor
 - iii) Lateral movement of lower hitch points from centre line of tractor.
 - iv) Distance from end of PTO shaft to centre of lower hitch point
- Above said parameters does not meet the requirement of IS: 4468 (Part-1)-1997(Reaffirmed in October 2017). This should be looked into for necessary corrective action.

14.3.1.5 Field performance:

14.3.1.5.1 Dryland Operation

The average area covered in rotavation operation with recommended size of implement was recorded as **0.368 to 0.396 ha/h**, which is too less. It is therefore recommended that size of rotavator should be reviewed and it should match with tractor PTO power.

14.3.1.5.2 Wetland cultivation (Puddling Operation)

The manufacturer has recommended that the tractor is not suitable for wet land cultivation (puddling). Therefore, the fact that **the tractor is not suitable for wet land cultivation (puddling) should be mentioned clearly and boldly in all the marketing literature relevant to the product.**

14.3.1.6 Haulage test:

- i) Distance travelled per litre of fuel consumption with two wheel and four wheel was recorded **4.26 to 4.33 km/l** and **4.05 to 4.10 km/l** against the declaration of **4.35 km/l** and **4.19 to 4.27 km/l** respectively. This should be looked into for necessary corrective action.
- ii) Specific fuel consumption (mm/km/tonne) with two wheel and four wheel was recorded as **42.0 to 42.6 mm/km/tonne** and **34.9 to 35.2 mm/km/tonne** against the declaration of **41.8 mm/km/tonne** and **33.5 to 34.1 mm/km/tonne** respectively. This should be looked into for necessary corrective action.

14.3.1.7 Identification engine model

The engine model is not embossed or punched or etched on engine body and thus, engine model is not identifiable. Therefore, this should be looked into for necessary corrective action for distinct identification of engine model.

14.4 Maintenance / Service Problems:

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

14.5 Recommendation with regard to safety on tractor:

The following requirements, inter alia, may be considered for incorporation on the tractor:

- i) Longitudinal distance from seat index point to the centre of differential lock pedal and steering control wheel should be as per **IS: 12343-1998 (Reaffirmed in 2014)**.
- ii) Inclination of backrest was recorded as 19°. It should be within "5° to 15°" as per **IS: 12343-1998 (Reaffirmed in 2014)**.
- iii) Width of foot step was recorded as 140 mm. It should be 200 mm (min) as per **IS: 12239 (Part-1)-1996 (Reaffirmed in October, 2017)**.

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- iv) Spark arrester should be provided in the exhaust system as per IS: 12239 (Part-2) – 1999 (Reaffirmed in 2014).
- v) Fuel shut-off knob should be remained in stop position as per IS: 8133 -1983 (Reaffirmed in 2014).
- vi) The working clearance between the position control, range selector lever & PTO clutch lever and mudguard are less than the requirement as per IS: 12239 (Part-2) – 1999 (Reaffirmed in 2014).
- vii) Oil lubricant type and frequency chart should be provided on the tractor as per IS: 6283 (Part-1 & 2) – 1998 (Reaffirmed in 2014).

14.6 Adequacy of Literature supplied with machine:

14.6.1 Following literature was supplied with the tractor for reference during the test.

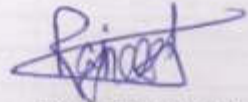
- a) Operator's manual of Agrolux 45e, Agrolux 50e, Agrolux 55e, Agrolux 60e, Agrolux 70e tractor models
- b) Spare Parts catalogue of Agrolux & Agromaxx series tractor models.
- c) Workshop Service Manual of Agrolux 40e, Agrolux 50e, Agrolux 60e & Agrolux 70e.

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

15. Citizen charter

Time frame for testing & evaluation as per citizen charter	Duration of Test	Whether the report released within time frame given in the citizen charter	Remark
10 Months	06 Months (June, 2020 to November, 2020)	Yes	---

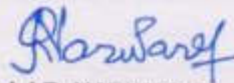
TESTING AUTHORITY:



RAJNEESH PATEL
AGRICULTURAL ENGINEER



C.V. CHIMOTE
TEST ENGINEER



J.J.R. NARWARE
DIRECTOR

Test report compiled by Smt. Poonam Khurasia, Senior Technical Assistant.

16. APPLICANT COMMENT'S

Para No.	Our Reference	Applicant's comments
16.1	14.3 & 14.5	Recommendations would be reviewed.
16.2	14.6.2	Literatures are already printed in all regional language for end user.

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ANNEXURE-I

BRIEF SPECIFICATION OF IMPLEMENTS USED DURING FIELD TEST

S. No.	Parameters	Disc Plough	Rotavator
1	Make	Field king	Sonalika
2	Type	Mounted	Mounted
3	No. of Discs / Blades	Three	36 blade on 6 flange
4	Type of Discs / Blades	General Purpose	Hatchet
5	Size of Discs / Blades (mm)	385	245 x 50 x 4
6	Spacing of Discs /Flanges, (mm)	280	255
7	Lower hitch point span, (mm)	785	720
8	Mast height, (mm)	510	500
9	Overall Dimensions (mm):		
	Length	1920	1770
	Width	1040	930
	Height	1180	1020
10	Gross Mass, (Kg)	345	380

ANNEXURE - II

TRACTOR RUN HOURS DURING TEST

A.	LABORATORY AND TRACK TESTS	HOURS
1.	Running-in	25.00
2.	PTO Performance test	12.02
3.	Power lift and hydraulic pump performance test	1.50
4.	Drawbar performance test	20.47
5.	Brake test	1.75
6.	Noise measurement	1.50
7.	Mechanical vibration test	0.83
8.	Nominal speed test	3.68
B.	FIELD TEST	
1	Disc ploughing	15.24
2	Rotavation	22.44
C.	HAULAGE TEST	4.97
D.	Miscellaneous test and other run hours including idle run, transportation, trials and preparation for test	13.61
TOTAL:		123.01