

व्यावसायिक परीक्षण रिपोर्ट (प्रथम बैच)  
COMMERCIAL TEST REPORT (1st Batch Test)

संख्या / No. : T-1497/2024/2020

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 3042 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**

(An ISO : 9001 - 2015 Certified Institute)

**Tractor Nagar, Budni (M.P.) 466 445**

E-mail [fmti-mp@nic.in](mailto:fmti-mp@nic.in)

Website : <http://www.fmttibudni.gov.in>

Telephone : 07564 - 234729, 234743

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Selected for test by : Applicant  
 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 the applicant for test

## 1. SPECIFICATIONS

### 1.1 Tractor:

Make : DEUTZ- FAHR  
 Model : 3042 E  
 Brand name : None  
 Variant, if any : 3040 E

S. No.	Variants Model	Variant Feature
1.	Duetz Fahr 3040 E	Nominal speed

Type : Four wheeled, rear-wheel driven, General purpose, Unit construction, Agricultural Tractor.  
 Month and year of manufacture : 12 | 19  
 Chassis number : M1TT161RDME000929  
 Country of origin : India

### 1.2 Engine:

Make : SIMPSON  
 Model : T III A S325.1-F2  
 Type : Four stroke, naturally aspirated, water cooled, direct injection, diesel engine.  
 Serial number : S325.1K56328  
 Year of manufacture : 2019  
 Country of origin : India

#### 1.2.1 Engine speed (rpm), (Manufacturer's recommended production settings):

- Maximum speed at no load : 2170 to 2230  
 - Low idle speed : 600 to 750  
 - Speed at maximum torque : 1100 to 1400

#### Rated speed, (rpm):

- For PTO use : 2000  
 - For drawbar use : 2000

### 1.3 Cylinder & Cylinder Head:

Number : Three  
 Disposition : Vertical, Inline  
 Bore/stroke, (mm) : 91.4 / 127  
 Capacity as specified by the applicant, (cc) : 2500  
 Compression ratio : 18.5 ± 0.3: 1  
 Type of cylinder head : Monoblock  
 Type of cylinder liners : Dry, replaceable  
 Type of combustion chamber : Re-entrant cavity on piston crown  
 Arrangement of valves : Overhead, inline  
**Valve clearance (cold/hot):** **Cold**

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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-evaluative (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:

Sl. 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 require- ments (Yes/No)
1	2	3	4	5	6	7
<b>14.1.1</b>	<b>PTO Performance:</b>					
a)	Maximum power under 2 hours 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 $\leq 26$ kW	26.0 (D)	26.3	Yes
b)	Power at rated engine speed, (Kw)	Non-Evaluative	-do-	26.0 (D)	26.3	Yes
c)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Evaluative	+ 10%	255 (D)	269	Yes
d)	Maximum equivalent crankshaft torque, (Nm)	Non-Evaluative	$\pm 8\%$	145.0 (D)	149.9	Yes
e)	Back-up torque, percent	Evaluative	12 percent, min.	12 (R) 12 (D)	19.5	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)	123	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.	115 (D)	100	Yes
g)	Engine oil consumption, (g/kWh)	Evaluative	Not exceeding 1% of SFC at max. power under High ambient conditions	2.71 (R)	0.59	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)	3.25 per metre (R) (Max)	0.21	Yes
1	2	3	4	5	6	7

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<b>14.1.2 Drawbar performance :</b>							
a)	Maximum drawbar pull with ballast corresponding to 15 percent wheel slip, (kN)	Non-Evaluative	Minimum 70% of static mass with ballast	17.26 (D)	18.79	Yes	
				17.23 (R)			
b)	Maximum drawbar pull without ballast corresponding to 15 percent wheel slip, (kN)	Evaluative	Minimum 70% of static mass of tractor without ballast or with standard ballast, as the case may be	11.46 (D)	14.71	Yes	
				11.46 (R)			
c)	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.	20.8 (D)	23.0	Yes	
				21.0 (R)			
d)	Tractor fitted with air conditioned/heated cabin Maximum drawbar power with standard ballast, (kW).	Evaluative	Minimum 70 % of PTO power as referred in SI No. i) a) of PTO performance in case of tractors having total static mass > 1500 kg	Not fitted	Not applicable	Not applicable	
e)	Maximum transmission oil temperature (°C)	Evaluative	The declared value should not exceed the maximum value specified by oil company	120 (D)	80	Yes	
<b>14.1.3 Power lift and hydraulic pump performance:</b>							
a) Maximum lifting capacity throughout the range of lift, (kN):							
	1)	At hitch points	Evaluative	Tolerance of ± 10%	12.60 (D)	11.77	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	6.20 (D)	10.00	Yes
				6.19 (R)			
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)	00	Yes	
<b>14.1.4 Brake performance at 25 kmph:</b>							
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 (R)	8.77	Yes
	2)	Hot brake	Evaluative	10	10 (R)	8.82	Yes
b)	Maximum force exerted on the brake pedal to achieve a deceleration of 2.5 m/s <sup>2</sup> (N)	Evaluative	600	600 (R) Maximum	284 to 316	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	Yes	Yes

**14.1.5 Noise measurement :**

a)	Maximum ambient noise emitted by the tractor dB(A)	Evaluative	As per CMVR	88 (R)	83	Yes
b)	Maximum noise at operator's ear level dB(A)	Evaluative	As per CMVR	96 (R)	96	Yes

c)	<b>Amplitude of mechanical vibrations at:</b>						
	1)	Left foot rest	Non-Evaluative	100 microns (max)	100(R)	106	No
	2)	Right foot rest				170	No
	3)	Seat (with driver seated)				90	Yes
	4)	Steering wheel				125	No

**14.1.6 Air cleaner:**

	Air cleaner oil pull over, (%)	Evaluative	0.25 % (maximum)	Dry type air cleaner fitted	Not applicable
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**14.1.7 Haulage requirements:**

a)	Gross mass of the trailers, (tones):						
	1)	Two wheel	Non-Evaluative	--	4.0 (D)	4.0	Yes
	2)	Four wheel		--	5.5 (D)	5.5	Yes
b)	Distance travelled / liter of fuel consumption, (km/l):						
	1)	Two wheel	Non-Evaluative	--	4.0 to 7.5 (D)	5.37 to 5.51	Yes
	2)	Four wheel		--	4.0 to 7.5 (D)	5.17 to 5.24	Yes
c)	Fuel consumption (ml/km/tonne) :						
	1)	Two wheel	Non-Evaluative	--	25.0 to 50.0 (D)	45.33 to 46.54	Yes
	2)	Four wheel		--	25.0 to 60.0 (D)	34.73 to 35.17	Yes

**14.1.8 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.	There should be no ingress of water and/or mud (R)	The major breakdowns were not observed in the field test during initial commercial testing of the tractor model having test report No. T- 1027/1552/2016. So, as per the provisions as laid down in clause 7.2 of 12207-2019 the field test during the batch testing of this tractor model was not conducted.	Yes
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	
14.1.9	<b>Safety features:</b>						
a)	Guards against moving and hot parts	Evaluative	Belt drives, pulley, silencer, hydraulic pipes (As per IS 12239 (part 2))		Meets the requirement	Yes	
b)	Lighting arrangement	Evaluative	As per CMVR		Meets the requirement	Yes	
c)	Seating requirement (Tractors having more than 1150 mm rear track width)	Non-Evaluative	Should meet the requirements of IS 12343 (as amended from time to time)		<b>Does not meet the requirement</b>	<b>No</b>	
d)	Technical requirements for PTO shaft	Evaluative	Should meet the requirements of IS 4931 (as amended from time to time)		Meets the requirement	Yes	
e)	Dimension of three point linkage	Non-Evaluative	Should meet the requirements of IS 4468 (part 1) (as amended from time to time)		<b>Does not meet the requirement</b>	<b>No</b>	
f)	Specifications of linkage drawbar	Evaluative	Should meet the requirements of IS 12953		Meet the requirements	Yes	
g)	Swinging drawbar (wherever fitted)	Evaluative	Should meet the requirements of IS 12362 (Part 3) (As amended from time to time)		Not fitted	--	
h)	1)	Maximum traveling speed at rated engine speed in reverse gear, kmph	Evaluative	Should not exceed 20 kmph		11.89 kmph Meets the requirement	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 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
1	2	3	4	5	6	7	
14.1.10	<b>Labelling of tractors (Provision of labelling plate):</b>						
	1)	Make	Evaluative	Should conform to the requirements of CMVR along-with maximum PTO power in kW and	DEUTZ-FAHR		Yes
	2)	Model	Evaluative		3042 E		Yes
	3)	Month & Year of manufacture	Evaluative		12	19	Yes

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	4)	Engine number	Evaluative	year of manufacture in numerical Form MM YY Digit 01-12 in box No..1 for MM will represent the months & next two digits in box No.2 for YY will represent the year of manufacturing.	S325.1K56328	Yes
	5)	Chassis number	Evaluative		M1TT161RDME000929	Yes
	6)	Declaration of PTO power, (kW)	Evaluative		26	Yes
	7)	Specific fuel consumption, g/kWh	Evaluative		255	Yes

<b>14.1.11 Discard limit for:</b>						
(a)	Cylinder bore diameter, (mm)	Evaluative	To be specified by Manufacturer	91.68 (D)	91.482 to 91.493	Yes
(b)	Clearance between piston & cylinder liner at skirt, (mm)	Non-Evaluative		0.50 (D)	0.137 to 0.148	Yes
(c)	Piston diameter	Non-Evaluative		Piston discarded when the new ring groove clearance exceeds 0.25 with new ring	91.339 to 91.347	Yes
(d)	<b>Ring end gap (mm):</b>					
	- Top comp. ring.	Evaluative	-do-	1.50(D)	0.40	Yes
	- 2 <sup>nd</sup> comp. ring.		-do-	1.50(D)	1.00 to 1.15	Yes
	- Oil ring.		-do-	1.80(D)	0.40 to 0.45	Yes
(e)	<b>Ring groove clearance (mm):</b>					
	- Top comp. ring.	Evaluative	-do-	0.25 (D)	0.070 to 0.73	Yes
	- 2 <sup>nd</sup> comp. ring.		-do-	0.25 (D)	0.061 to 0.072	Yes
	- Oil ring.		-do-	0.25 (D)	0.041 to 0.046	Yes
(f)	<b>Clearance of main bearings (mm):</b>					
	Diametrical clearance	Evaluative	-do-	0.50 (D)	0.098 to 0.127	Yes
(g)	<b>Clearance of big end bearings, (mm):</b>					
	- Diametrical	Evaluative	-do-	0.50 (D)	0.079 to 0.181	Yes
	- Axial	Evaluative	-do-	0.75 (D)	0.065 to 0.70	Yes
(h)	Crankshaft end float	Evaluative	-do-	0.75 (D)	0.25	Yes
(i)	Clearance between king pin and bush, (mm)	Non-Evaluative	-do-	0.85 (D)	0.040 to 0.051	Yes
(j)	Clearance between centre pin and bush, (mm)	Non-Evaluative	-do-	0.85 (D)	0.211 to 0.433	Yes

1	2	3	4	5	6	7
<b>14.1.12 Literature (Submission to test agency)</b>						
(a)	Operator manual	Evaluative	The printed literature in booklet form should be provided as per IS 8132 & should	Provided	Provided	Yes
(b)	Parts Catalogue	Evaluative		Provided	Provided	Yes
(c)	Workshop/ Service manual	Evaluative		Provided	Provided	Yes

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			submit along with the test sample			
14.1.13	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
14.1.14	Standard Accessories	Evaluative	Trailer hitch, front tow hook, linkage drawbar should be provided with the tractor.	--	Provided	Yes
14.1.15	Accessories (optional)	Non-Evaluative	Ballast weights, if fitted, should meet the requirement of CMVR	--	Provided	Yes

14.2 CATEGORY OF BREAKDOWNS / DEFECTS:					
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	There is no 'critical breakdown' during the course of testing	None	Yes
2.	Major	Evaluative	There are not more than 1 major breakdowns	None	Yes
3.	Minor	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 power was recorded as **26.9 & 26.3 kW** in case of previous & present sample respectively against the declaration of **26.0 kW** which meets the requirement of **IS: 12207-2019**.
- ii) The specific fuel consumption corresponding to maximum power was recorded as **263 & 269 g/kWh** in case of previous & present sample respectively against the declaration of **255 g/kWh** which meets the requirement of **IS: 12207-2019**.
- iii) The maximum equivalent crankshaft torque was recorded as **152.6 N-m & 149.9 Nm** in case of previous & present sample respectively against the declaration of **145 N-m**, which is within the permissible limit as specified in **IS: 12207-2019**.
- iv) The backup torque is **19.4 %** & meets the evaluative requirement of **IS: 12207-2019...**



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- v) During the PTO performance test the no load engine rpm was recorded as 2160 rpm against the declaration of 2170 -2230 engine rpm. So as per applicant request PTO test was conducted as on 2160 engine no load rpm.

**14.3.1.2 Drawbar performance test:**

- i) The maximum drawbar power in case of previous & present sample with unballasted condition was recorded as **22.8 kW & 23.0 kW** against the minimum requirement of **21.5 kW and 21.0 kW** respectively which meets the requirement of IS: 12207-2019.
- ii) The maximum drawbar in case of previous & present sample with unballast condition corresponding to 15%-wheel slip was recorded as **13.08 kN and 14.71 kN** respectively against the minimum requirement of **10.58 & 11.46 kN** which meets the requirement of IS: 12207-2019.

**14.3.1.3 Hydraulic performance test:**

- i) The lifting capacity at hitch point in case of previous & present sample was recorded as **11.58 kN & 11.77 kN** against the declaration of **12.60 kN** which meets the evaluative requirement of **IS: 12207-2019...**

**14.3.1.4 Mechanical Vibration:**

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

**14.4 Maintenance / Service Problems:**

No noticeable maintenance or 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) Provision for spark arrester in exhaust system should be provided as per IS-12239 (Part-I)1996 (reaffirmed in Oct. 2017).
- ii) Working clearance in between differential lock lever & low -high range shift lever is only 20.0 mm as per the minimum requirement 70 mm as per IS-12239 (Part-II)1999 (reaffirmed in Oct. 2017).
- iii) Length & width of seat from SIP does not meet the requirement as per IS-12343-1998 (Reaffirmed in 2014).
- iv) Fuel shut off lever does not remain in stop position without the application of sustained manual effort. (As per IS-8133-1983 -Reaffirmed in 2014).

**14.6 Adequacy of Literature supplied with machine:**

**14.6.1** Literature was supplied with the tractor for reference during the test.

- a) Operator's manual
- b) Spare part's catalogue
- c) Service manual


**14.6.2** The supplied literature was found adequate.

**14.6.3** However, these literatures should be brought out in other vernacular languages of India for guidance of users.

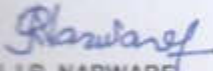
15. Citizen charter

Duration of Test	Time frame for testing & evaluation as per citizen charter	Whether the report released within time frame given in the citizen charter	Remark
06 Months (June, 2020 to November, 2020)	10 Months	Yes	--None--

TESTING AUTHORITY:

  
C.S. RAGHUWANSHI  
AGRICULTURAL ENGINEER

  
C.V. CHIMOTE  
TEST ENGINEER

  
J.J.R. NARWARE  
DIRECTOR

Test Report compiled by: Shri Shivkumar Sharma, Senior Technical Assistant.

16. APPLICANT COMMENT'S

Para No.	Our reference	Applicant's comment
16.1	14.5.5, 14.5.6 (i)	Recommendation would be reviewed.
16.2	14.6.3	Literature available in the following language-Tamil, English, Hindi, Telugu, Kanada, Marathi & Gujrathi.

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**ANNEXURE - I**

**TRACTOR RUN HOURS DURING TEST**

<b>A.</b>	<b>LABORATORY AND TRACK TESTS</b>	<b>HOURS</b>
1.	Running-in	25.0
2.	PTO Performance Test	11.9
3.	Drawbar performance test	16.9
4.	Power lift and hydraulic pump performance test	3.0
5.	Brake test	1.6
6.	Noise measurement	1.5
7.	Mechanical vibration test	1.0
8.	Nominal speed test	1.0
<b>B.</b>	<b>HAULAGE TEST</b>	5.4
<b>C.</b>	Miscellaneous test and other run hours including idle run, transportation, trials and preparation for test	1.56
<b>TOTAL:</b>		<b>68.7</b>