

व्यावसायिक परीक्षण रिपोर्ट (वैरिएंट)
COMMERCIAL TEST REPORT (Variant)

संख्या/ No. : T- 1602/2133/2021
माह/Month : November, 2021

(यह परीक्षण रिपोर्ट 30/11/2024 तक वैध है। / THIS TEST REPORT IS VALID UPTO:



EICHER 188 4WD TRACTOR



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

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1	2	3	4
3.	Range of speed,(kmph):		
	- Forward	*1.15 to 21.65	1.15 to 21.65 (Variation of 0.0 to 0.2%)
	-Reverse	*1.47 to 6.48	1.47 to 6.49 (Variation of 0.0 to 0.2%)
4.	Wheel Equipment:		
	Steered wheel (s):		
	Type of tyre(s)	Pneumatic, ribbed	Pneumatic, traction
5.	Over all dimensions,(mm):		
	-Length/Width/Height	2570/1065/1275	2585/980/1305
	-Ground clearance, (mm)	235	215
6.	Decals (stickers)	Eicher 188	Eicher 188, 4WD

Subsequent to the examination of the case in light of Clause 8.4 & SI.No. (v) & (x) of Table-2 of Indian Standard IS 12207-2019, the following tests were considered to be carried out :

- Specification checking in full
- Nominal speed test
- Two hours maximum PTO performance test, under natural ambient condition
- Drawbar performance test
- Noise level test

2. FUEL AND LUBRICANTS

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

2.2 Lubricants:

S. No.	Particulars	As recommended by the manufacturer	As used during the test
1.	Air cleaner	SAE 15W40	As recommended
2.	Engine oil	SAE 15W40	As recommended
3.	Gearbox, Rear differential, Rear axle, Rear final drive, hydraulic, and brake system	Elf 3I SF	Oil originally filled in the tractor system was not changed
4.	Front differential, Front axle & Front final drive	Elf 3I SF	-do-
5.	Steering housing	EP80	As recommended
6.	Grease	Multi-purpose grease	Multi-purpose grease

3. ESSENTIAL TEST

3.1. SPECIFICATIONS

3.1.1	Tractor:	<u>Base Model</u>	<u>Variant Model</u>
	Make	:	Eicher
	Model	:	Eicher 188
	Type	:	Four wheeled, Rear wheel driven, General purpose, Agricultural tractor.
	Month & Year of manufacture	:	2017
	Chassis number	:	925611419349
			Eicher 188 4WD
			Four wheeled, four wheel driven (4WD), unit constriction standard agricultural tractor.
			05/20
			929311467195

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1	2	3	4	5	6
	e)	Wheel equipments	Various configuration in base models (refer para 3.1.18)		Changed
	f)	Wheel Equipment:			
		Steered wheel (s):			
		Type of tyre(s)	Pneumatic, ribbed	Pneumatic, traction	Changed
		Size & Ply rating	*5.25 – 12 & 08	5.00 – 12 & 04	Changed
	g)	Over all dimensions,(mm):			
		-Length/Width/Height	2570/1065/1275	2585/980/1305	Changed
	h)	-Ground clearance, (mm)	235	215	Changed
	i)	Make of steering system	SAM & SAM (apa)	Rane	Changed
	j)	Decals (stickers)	Eicher 188	Eicher 188, 4WD	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: 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.	8.83 (D)	8.83 (D)	*8.9	9.0	Yes
b)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Evaluative	+10 %	295 (D)	295 (D)	*283	275	Yes
7.1.2	Drawbar performance :							
a)	Max. drawbar pull with ballast corresponding to 15 percent wheel slip or 7 percent slip, kN	Non Evaluative	Minimum 70 percent of static mass with ballast	Ballasting not recommended by the manufacturer		Not applicable		Not applicable
b)	Max. drawbar pull without ballast or with standard ballast , as the case may be corresponding to 15 percent wheel slip or 7 percent track slip, kN	Evaluative	Minimum 70 percent of static mass of tractor without ballast or with standard ballast, as the case may be	*5.46 (D)	5.80 (D)	*6.32	7.20	Yes
				5.42 (R) Minimum	5.84 (R) Minimum			

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1	2	3	4	5a	5b	6a	6b	7
c)	Maximum drawbar power without 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.	*7.1 (D) 6.7 (R) Minimum	7.1 (D) 6.8 (R) Minimum	*7.5	8.5	Yes
d)	Max. transmission oil temperature (°C)	Evaluative	The declared value should not exceed the maximum value specified by oil company.	130 (D)	130 (D)	*58	59	Yes
7.1.3 Noise measurement :								
a)	Maximum ambient noise emitted by the tractor at bystanders position, dB(A)	Evaluative	88 dB (A) for > 1.5 tonne GVW & 85 dB (A) for < 1.5 tonne GVW (as per CMVR)	85 (R)	85 (R)	81	81	Yes
b)	Maximum noise at operator's ear level dB(A)	Evaluative	96 (as per CMVR)	96 (R)	96 (R)	94	92	Yes
7.1.4 Safety features :								
a)	Guards against moving and hot parts	Evaluative	Belt drives, pullies, 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 requirements (Tractors having more than 1150 mm rear track width)	Non Evaluative	Should meet the requirements of IS: 12343-1998			Not applicable as the rear track width of tractor less than 1150 mm.		Not applicable
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)	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 requirements		No
f)	Specifications of linkage drawbar	Evaluative	Should meet the requirements of IS:12953-1990			Meets the requirement		Yes
g)	Swinging drawbar (wherever fitted)	Evaluative	Should meet the requirement of IS: 12362 (Part 3) (As amended from time to time)			Not fitted		Not applicable
h)	1) Maximum travelling speed at rated engine speed in reverse gear, (kmph)	Evaluative	Should not exceed 20 kmph			6.49 kmph (Meets the requirement)		Yes

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1	2	3	4	5a	5b	6a		
	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		
7.1.5	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. Digit 01 <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>MM</td><td>YY</td></tr></table> - 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.	MM	YY	Eicher		Yes
MM	YY							
	2) Model	Evaluative		Eicher 188 4WD		Yes		
	3) Month & Year of manufacture	Evaluative		05 / 20		Yes		
	4) Engine number	Evaluative		529125607350		Yes		
	5) Chassis number	Evaluative		929311467195		Yes		
	6) Declaration of PTO power, kW	Evaluative	8.83		Yes			
7.1.6	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		
7.1.7	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	ROPS not fitted		Not applicable		
7.1.8	Standard Accessories	Evaluative	Trailer hitch, front tow hook, linkage drawbar should be provided with the tractor.	Provided		Yes		
7.1.9	Accessories (optional)	Non Evaluative	Ballast weights, if fitted, should meet the requirement of CMVR	Not Provided		Not applicable		

(*) Data taken from commercial technical extension test report No. T-1428/1955/2020 released in March, 2020.

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 five 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

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7.3 Salient Observations:

7.3.1 Laboratory tests:

7.3.1.1 PTO Performance:

- i) The maximum power in case of base & variant model are observed as **8.9 & 9.0 kW** respectively against the declaration of **8.83 kW** respectively, which meets the requirement of IS: 12207-2019 with regard to tolerance limit..
- ii) The specific fuel consumption in case of base and variant models corresponding to maximum power are observed as **283 & 275 g/kWh** against the declaration of **295 g/kWh** respectively, which meets the requirement of IS: 12207-2019 with regard to tolerance limit.

7.3.1.2 Drawbar performance:

- i) The maximum drawbar power in case of base and variant model was observed as **7.5 & 8.5 kW** under unballasted condition against the declaration of **7.1 kW** respectively, which is within the specified limit.
- ii) The maximum drawbar pull corresponding to 15% wheel slip in case of base and variant model was observed as **6.32 & 7.20 kN** under unballasted condition against the declaration of **5.46 kN & 5.80 kN** respectively, which is within the specified limit.

7.4 Maintenance / Service problems:

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

7.5 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) Spark arrester in the exhaust system of tractor's engine has not been provided as per IS: 12239 (Part-2)-1999 (Re-affirmed in January, 2019).
- ii) The working clearance between the 2WD/4WD lever and mudguard has been measured as 40 mm against the minimum requirement of 70 mm as per IS: 12239 (Part-2) – 1999 (Reaffirmed in January, 2019).
- iii) Provision of safety against accidental start switch not provided, which is does not meet the requirement of IS: 8133 -1983 (Re-affirmed in January, 2019).
- iv) Fuel shut of knob does not remain in stop position, which is does not meet the requirement of IS: 8133 -1983 (Re-affirmed in January, 2019).
- v) Hand holds for easy mounting and dismounting of the operator is not provided, which is does not meet the requirement of IS: 12343 -1998 (Re-affirmed in January, 2019).

7.6 Adequacy of Literature:

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



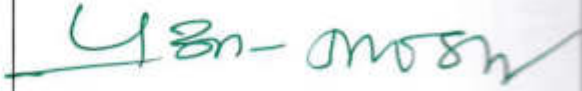
- i) Operator's manual for Eicher 188 & Eicher 188 4WD tractor models.
- ii) Service manual for Eicher 188 & Eicher 188 4WD tractor models.
- iii) Part's Catalogue for Eicher 188 & Eicher 188 4WD tractor models.

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

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The results of the tests carried out on variant model "Eicher 188 4WD" tractor have been compared with those on base model "Eicher 188" tractor tested vide test report No. T-1164/1691/2018 (June, 2018) which was found within the limit, as specified in IS: 12207-2019.

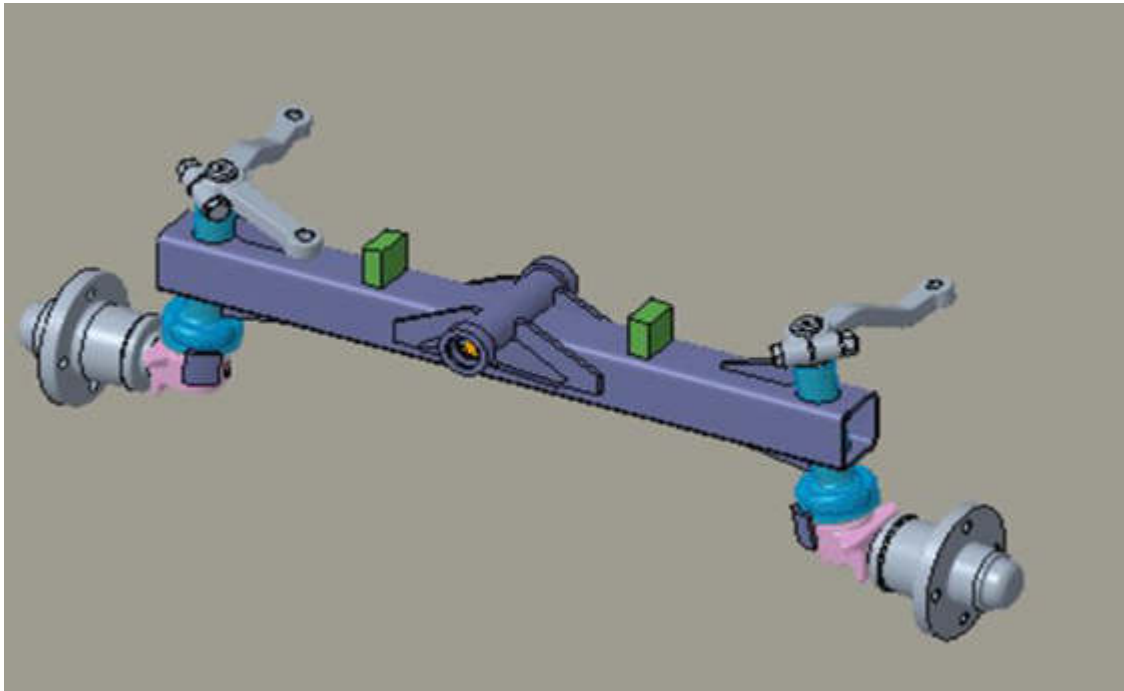
TESTING AUTHORITY:

C.V.CHIMOTE TEST ENGINEER	
Y. K. RAO SENIOR AGRICULTURAL ENGINEER	
P. K. PANDEY DIRECTOR	

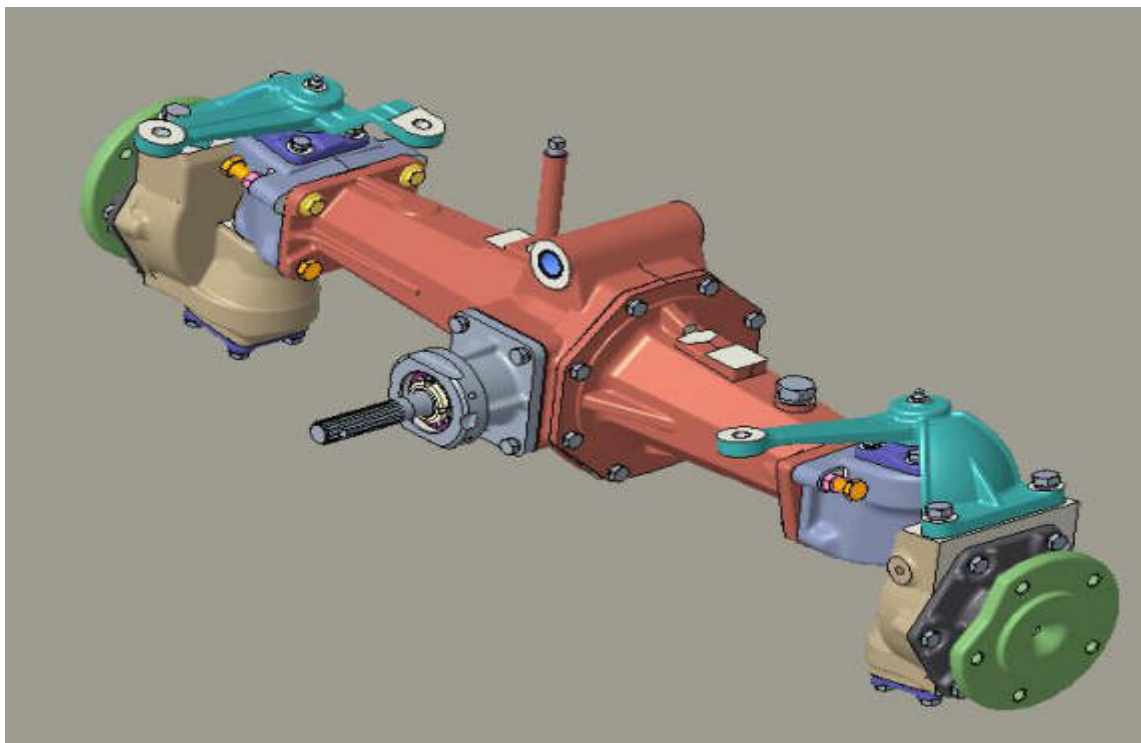
Test report compiled by: **Pramod Yadav**, Agricultural Engineer.

8. APPLICANT COMMENT'S

Para No.	Our Reference	Applicant's comments
8.1	7.1.4 (e)	This will be looked in to w.r.t. design development & implementation.
8.2	7.5 (i), (ii), (iii), (iv) & (v)	Recommendations are being looked into w.r.t. design development & implementation.



Design of front axle for Base Model: EICHER 188



Design of front axle for Variant Model: EICHER 188 4WD

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ANNEXURE- II

TRACTOR RUN HOURS DURING TEST

A.	LABORATORY AND TRACK TESTS:	<u>HOURS</u>
1.	Running-in	--
2.	PTO performance test under natural ambient condition	3.3
3.	Nominal speed test	1.9
4.	Drawbar performance test	14.3
B.	Miscellaneous test and other run hours including idle run, transportation, preparation for test and trial runs.	2.4
TOTAL		21.9