

Application Reference No.28/2023-24/20

(यह परीक्षण रिपोर्ट 31/12/2028 तक वैध है/ THIS TEST REPORT IS VALID UPTO 31/12/2028)



Make of Agricultural Tractor : EICHER
Model : EICHER 241 XTRAC V1
Manufactured by : Eicher Tractors
(A unit of TAFE Motors & Tractors Limited, a wholly owned subsidiary of TAFE) Plot No. 1, Sector - D, Industrial Area, Mandideep - 462 046, Distt. Raisen (M.P.)



भारत सरकार

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

GOVERNMENT OF INDIA

MINISTRY OF AGRICULTURE AND FARMERS' WELFARE

(DEPARTMENT OF AGRICULTURE & FARMERS' WELFARE)

केन्द्रीय कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान

ट्रैक्टर नगर, बुदनी (म.प्र.) 466 445

CENTRAL FARM MACHINERY TRAINING & TESTING INSTITUTE

TRACTOR NAGAR, BUDNI (M.P.) 466 445

(An ISO 9001:2015 Certified Institute)

T-1803/2334/2023	EICHER, EICHER 241 XTRAC V1 - INITIAL COMMERCIAL TEST
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IMPORTANT INFORMATION

The Government of India, Ministry of Agriculture and Farmers' Welfare has directed, vide a OM No. 13-17/2021-M&T (I&P) dated 28.07.2022, that since 15th August, 2022, only mandatory tests will be carried out on a tractor unless applicant has expressly requested for optional tests as well, mentioned in the above captioned OM.

In the instant case, there is no request from the applicant to carry out the optional tests hence only Mandatory Tests, as given below, have been conducted and reported in this report:-

1. PTO performance
2. Hydraulic performance
3. Drawbar performance
4. Brake performance

Month: December	Test Report No.: T-1803/2334/2023	Year: 2023
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GOVERNMENT OF INDIA
CENTRAL FARM MACHINERY TRAINING & TESTING INSTITUTE
TRACTOR NAGAR, BUDNI (MADHYA PRADESH) 466445, INDIA

E-mail: fmti-mp@nic.in

Web site: <http://www.fmttibudni.gov.in>

Telephone: 07564-299003

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[C]	Tractor manufacturer's name and address	:	Eicher Tractors (A unit of TAFE Motors & Tractors Limited, a wholly owned subsidiary of TAFE) Plot No. 1, Sector - D, Industrial Area, Mandideep - 462 046, Distt. Raisen (M.P.)
[C]	Submitted for test by (Applicant)	:	The Manufacturer
[C]	Selected for test by	:	The Ministry vide OM No. 13-17/2021 - M&T (I&P) dated 28.07.2022, has allowed the applicant to submit the test sample directly to the Institute without requiring any random selection for Initial Commercial Testing. Thus, the applicant directly submitted the test sample to the Institute for test.
[D]	Place of running-in	:	At manufacturer's works
[D]	Duration of running-in:		
	-Engine	:	21
	-Transmission	:	30
[C]	Location of test	:	Government of India, Central Farm Machinery Training and Testing Institute, P.O. - Tractor Nagar, BUDNI - 466445 (M.P.), INDIA

1. SPECIFICATIONS OF TRACTOR

1.1 Identification:

1.1.1 Denomination

[C]	Make of tractor	:	EICHER
[C]	Model	:	EICHER 241 XTRAC V1
[C]	Type	:	Rear Wheel Drive, Standard Agricultural Tractor.
[C]	Month & year of manufacture	:	01/23
[D]	Country of origin	:	India

1.1.2 Numbers:

[D]	1 st Serial No. or prototype	:	932511169774
[C]	Serial No.	:	932511169774

1.2 Engine:

[D]	Manufacturer's address	:	Eicher Tractors, Engine Division (A unit of TAFE Motors & Tractors Ltd.) Itrana Road, ALWAR – 301 001, Rajasthan.
[C]	Make	:	EICHER
[C]	Model	:	115NCE
[C]	Type	:	Four stroke, air cooled, naturally aspirated, direct injection, diesel engine.
[C]	Serial No.	:	532429115891

1.2.1 Cylinders:

[C]	Number/disposition	:	One, vertical
[D]	Bore / Stroke, (mm)	:	115/150
[D]	Capacity, cm ³	:	1557
[D]	Compression ratio	:	17.8 (±0.5): 1
[D]	Arrangement of valves	:	Overhead, inline
[D]	Cylinder liners	:	Dry, replaceable
[D]	Type of combustion chamber	:	Re-entrant cavity on piston crown

1.2.2 Supercharging : Not Available

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6. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS

6.1 On the basis of test conducted the performance results have been summarized as evaluative (mandatory) / Non-evaluative (Non-mandatory) parameters applicable for Qualifying Minimum Performance criteria as per Clause-4 (Table-1) of **IS: 12207-2022** 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: 12207-2022	Values declared by the applicant/ (D) Requirement (R)	As observed	Whether meets the requirements (Yes/No)
1	2	3	4	5	6	7
MANDATORY TESTS: (As per Ministry's Office Memorandum No. 13-17/2021-M&T (I&P) dated 28th of July, 2022).						
6.1.1	PTO Performance:					
a)	Maximum power under 2 h test, (kW) (Natural ambient condition)	Evaluative	Declared value to be achieved with a tolerance of: $\pm 5\%$ for PTO power and or engine power > 26 kW. $\pm 10\%$ for PTO power and or engine ≤ 26 kW.	14.7 (D)	14.1	Yes
b)	Power at rated engine speed, (kW)	Non Evaluative	-do-	14.7 (D)	13.9	Yes
c)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Evaluative	+ 10% max.	265 (D)	260	Yes
d)	Maximum equivalent crankshaft torque, (Nm)	Non Evaluative	$\pm 8\%$	105 (D)	101.8	Yes
e)	Back-up torque, percent	Evaluative	12 percent	12 (D) 12 (R) Minimum	26.8	Yes
f)	Maximum operating temperature, ($^{\circ}\text{C}$):					
	1) Engine oil	Evaluative	The declared value should not exceed the max. value specified by the oil company and the observed value under natural ambient/high ambient condition should not exceed the declaration.	130 (D)	93	Yes
	2) Cylinder liner wall	Evaluative	The observed value should not exceed the declaration.	225 (D)	139	Yes
g)	Engine oil consumption, (g/kWh)	Evaluative	Not exceeding 1% of SFC at max. power under natural ambient conditions.	2.60 Maximum (R)	1.02	Yes
h)	Smoke level, m^{-1}	Evaluative	Maximum light absorption coefficient of 3.25 per meter or equivalent BOSCH No. 5.2 or 75 Hatridge value (As per CMVR).	3.25 per meter Maximum (R)	0.05	Yes

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1	2	3	4	5	6	7	
6.1.2	Drawbar performance:						
a)	Max. drawbar pull with ballast corresponding to 15 percent wheel slip, (kN)	Non Evaluative	Minimum 70% of static mass of tractor with ballast.	*	*	*	
b)	Max. 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.	11.37 (D) 11.26 (R) Minimum	12.82 @ 9.9 % wheel slip	Yes	
c)	Maximum drawbar power without ballast/ with standard 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.	11.76 (D) 11.3 (R) Minimum	12.2	Yes	
d)	Maximum transmission oil temperature, (°C)	Evaluative	The declared value should not exceed the maximum value specified by oil company	110 (D)	63	Yes	
*Applicant vide letter no. TMTL/ICT/E241XTRACV1/2023-24/03 dated 20.11.2023 has requested not to conduct the ballasted drawbar performance & ten-hour drawbar test which was allowed as per the additional guidelines for testing of tractors as per new regime of testing of tractors vide a OM No. 13-32/2023-M&T(I&P) (FTS-125476) dated 16.05.2023. Accordingly, drawbar performance test under unballasted condition was conducted only.							
6.1.3	Power lift and hydraulic pump performance:						
a)	Maximum lifting capacity throughout the range of lift, (kN):						
	1)	At hitch points	Evaluative	Should not be less than 90% of declared value.	7.35 (D) 6.62 (R) Minimum	9.19	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.	6.13 (D) 3.32 (R) Minimum	7.42	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 Minutes, (mm)		Non Evaluative	The observed value should not exceed 50 mm	50 (D) Maximum	30	Yes
6.1.4	Brake performance at 25 kmph:						
a)	Maximum stopping distance at a force, equal to or less than 600 N on brake pedal with road ballast, (m):						
	1)	Cold brake	Evaluative	10	10 (R)	7.90	Yes
	2)	Hot brake	Evaluative	10	10 (R)	8.12	Yes
b)	Whether parking brake is effective at a force of 600 N at foot pedal (s) or 400 N at hand lever		Evaluative	Yes / No	Yes	Yes	Yes

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1	2	3	4	5	6	7	
6.1.5	OPTIONAL TESTS: As the applicant has not applied for any optional tests, therefore no optional tests was conducted.						
6.1.6	Safety features :						
a)	Guards against moving and hot parts	Evaluative	Belt drives, pulleys, silencer, hydraulic pipes [As per IS 12239 (Part2)]	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 (As amended from time to time)	Does not meet the requirement	No		
d)	Technical requirements for PTO shaft	Non 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: 17231-2019.	Does not meet the requirement	No		
f)	Specifications of linkage drawbar	Non Evaluative	Should meet the requirements of IS: 12953 (As amended from time to time)	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 provided	Not applicable		
h)	Audible warning signal on tractor	Evaluative	If tractor travel speed in reverse gear exceeds 20 kmph, an audible warning signal on tractor shall get activated. A sticker to the effect that "operating the tractor beyond 20 kmph speed in reverse gear is not safe" should be prominently displayed.	Not provided	Not applicable		
6.1.7	Labelling of tractors (Provision of labelling plate):						
	1) Make	Evaluative	Should conform to the requirements of CMVR along with maximum PTO Power in kW, specific fuel consumption (SFC) corresponding to maximum power in g/kWh and year of manufacture in numerical form. <table border="1" style="margin: 5px auto; width: 100px; height: 20px;"> <tr> <td style="width: 50px;">MM</td> <td style="width: 50px;">YY</td> </tr> </table> Digit 01 – 12 in box No.1for 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 241 XTRAC V1	Yes		
	3) Month & Year of manufacture	Evaluative		01/23	Yes		
	4) Engine number	Evaluative		532429115891	Yes		
	5) Chassis number	Evaluative		932511169774	Yes		
	6) Maximum PTO power, (kW)	Evaluative		14.7	Yes		
	7) Specific fuel consumption, (g/kWh)	Evaluative	265	Yes			

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1	2	3	4	5	6	7
6.1.8	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
6.1.9	Fitment of Roll Over Protective Structures (ROPS):					
	For tractor having more than 1150 mm rear track width	Evaluative, if fitted	ROPS should meet the requirement of IS:1182 or OECD code or equivalent International Standard	Not fitted		Not applicable
6.1.10	Standard Accessories	Evaluative	Trailer hitch, front tow hook, linkage drawbar should be provided with tractor	Provided		Yes
6.1.11	Accessories (optional)	Non Evaluative	Ballast weight, if fitted, should meet the requirement of CMVR	Not fitted		Not applicable

6.2 CATEGORY OF BREAKDOWNS / DEFECTS (As per clause 5.0 of IS:12207-2022):					
S. No.	Category of break-downs	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 neither of them should be repetitive in nature.	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

6.3 Conformity with following IS:

- | | | | |
|------|--|---|-------------------------|
| i) | Guidelines for declaration of power and specific fuel consumption and labeling of agricultural tractors (First revision) [IS:10273 -1987 (Reaffirmed Year 2019)] | : | Conforms |
| ii) | Agricultural tractors - Rear mounted power take-off - Types 1, 2 and 3 (third revision) [IS:4931-1995 (Reaffirmed Year 2019)] | : | Conforms |
| iii) | Agricultural wheeled tractors – Rear mounted three-point linkage: Part 1 Categories 1N, 1, 2N, 2, 3N, 3, 4N & 4 IS :17231-2019 | : | Does not conform |
| iv) | Drawbar for agricultural tractors – Link type [IS 12953:1990 (Reaffirmed Year 2022)] | : | Conforms |
| v) | Agricultural tractors- Operator's seat technical requirement [IS12343 - 2021] | : | Does not conform |
| vi) | Guide for safety & comfort of operator of agricultural tractors:Part 1 General requirements (first revision):[IS 12239 (Part 1)-2018] | : | Does not conform |
| vii) | Tractors and machinery for agriculture and forestry – Technical means for ensuring safety Part 2: Tractors (first revision) (IS 12239 (Part 2) 1999) (Reaffirmed Year 2019)] | : | Does not conform |

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- viii) Guide lines for location and operation of operator controls on agricultural tractors and machinery [IS: 8133-2021] : **Does not conform**
- ix) Tractors and machinery for agriculture and forestry, powered lawn and garden equipment - Symbols for operator controls and other displays Part-2 Symbols for agricultural tractors and machinery [IS: 6283(Part-1) - 2006 (Reaffirmed Year 2019) and IS: 6283 (Part-2) – 2007 (Reaffirmed Year 2019)] : **Does not conform**
- x) Agricultural Tractors and Machinery-Lighting device for travel on public roads (IS:14683-1999) (Reaffirmed Year 2019)] : **Conforms**

6.4 Salient Observations:

6.4.1 Drawbar performance:

- (i) The 15%-wheel slip was not achieved in any of the gear during drawbar test under unballasted condition.
- (ii) The maximum drawbar pull and corresponding wheel slip was observed as 12.82 kN & 9.9%, respectively under unballasted condition.
- All of the above shall be looked into for necessary corrective action.

6.4.2 Operator's seat:

The following parameters does not meet the requirement of IS: 12343-2021.

- i) Vertical distance from Seat Index Point to steering control wheel was measured 250 mm against the requirement of 265 to 385 mm.
- ii) Vertical distance from Seat Index Point to foot rest was measured 570 mm against the requirement of 450 to 520 mm.
- iii) Position of silencer outlet with respect to SIP has been measured 735 mm (upward) against the minimum requirement of 800 mm.

Therefore, all of the above should be looked into for necessary corrective action.

6.4.3 Operator's work place:

The following parameters does not meet the requirement of IS: 12239 (Part-I) 2018.

- i) Height of first foot step from ground level was measured 555 mm against the maximum requirement of 550 mm.
- ii) Width of foot step was measured 140 mm against the minimum requirement of 200 mm.
- iii) Spark arresting device has not been provided in the exhaust system.

Therefore, all of the above should be looked into for necessary corrective action.

6.4.4 Three point linkage:

The dimensions viz. diameter of hitch pin hole & width of ball of upper hitch points, diameter of hitch pin hole & width of ball of lower hitch points, distance from end of power take-off to the centre of lower hitch point (lower link in horizontal position) & lateral distance from lower hitch point to centre line of tractor does not meet the requirements of IS 17231: 2019. This should be looked into for corrective action.

6.4.5 PTO master shield:

PTO master shield has not been provided on tractor. This should be looked into for necessary corrective action.

6.5 Maintenance / Service Problems:

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

6.6 Recommendation with regard to safety on tractor:

- i) Identification of control levers by colour has not been provided as per the requirement as laid down in Table - 5 of IS: 8133-2021.
- ii) Fuel shutoff knob does not remain in stop position as per the requirement of IS: 8133-2021.

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- iii) The hand accelerator lever, when moved away from the operator (i.e. forward) decreases the engine speed, which does not meet the requirement as laid down in Table - 1 of IS: 8133-2021.
- iv) Identification with symbol for operator's control has not been provided as per IS: 6283 (part -1)-2006 & IS: 6283 (part-2) – 2007.
- v) Differential lock has not been provided.
- vi) The working clearance between draft control lever and position control lever & draft control lever has been measured 25 mm respectively, against the minimum requirement of 70 mm.

Above parameters should be looked into for necessary corrective action.

6.7 Adequacy of Literature supplied with machine:

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


- a) Operator Manual for "Eicher 241 XTRAC V1, Eicher 242 XTRAC & Eicher 242 V1" tractor models.
- b) Parts catalogue for "Eicher 241 XTRAC V1, Eicher 242 XTRAC & Eicher 242 V1" tractor models.
- c) Service for "Eicher 241 XTRAC V1, Eicher 242 XTRAC & Eicher 242 V1" tractor models.

6.7.2 The operator manual may be brought out for the guidance of users and service personnel as per IS: 8132-1999 incorporating, inter alia, the following:

- i) Engine to PTO speed ratio.

TEST CARRIED OUT AT C.F.M.T. & T.I., BUDNI (M.P.), INDIA

TESTING AUTHORITY

C.K. TIJARE AGRICULTURAL ENGINEER	
R.P. PANDEY SENIOR INSTRUMENTATION ENGINEER	
A. K. UPADHYAY DIRECTOR (I/C)	

Draft Test Report compiled by **Vithato Keyho**, Senior Technical Assistant.

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7. APPLICANT'S COMMENTS

Para No.	Our reference	Applicant's comments
7.1	6.3 (iii, v, vi, vii, viii & ix) 6.4.2 (ii, iii & iv) 6.4.3, 6.4.4, 6.4.5, 6.6 (i to vi) & 6.7.2	Observations will be studied and necessary action will be initiated.

ANNEXURE-I

TRACTOR RUN HOURS DURING TEST

A.	LABORATORY AND TRACK TESTS:	HOURS
1.	Running-in	Applicant has declared it to be conducted on their work place.
2.	PTO performance test	13.3
3.	Power lift and hydraulic pump performance test	1.8
4.	Drawbar performance test	1.6
5.	Brake performance test	1.3
6.	Nominal speed test	0.8
B.	Miscellaneous test and other run hours including idle run, transportation, trials and preparation for test	4.8
TOTAL:		23.6