

Application Reference No. 28/2022-23/71

(यह परीक्षण रिपोर्ट 31/05/2028 तक वैध है / THIS TEST REPORT IS VALID UPTO 31/05/2028)



**Make of Agricultural Tractor : KARTAR**  
**Model : KARTAR 4536**  
**Manufactured by : Kartar Tractors Private Limited, Shop no.22, Grain Market, Amloh Road, Bhadson, Patiala-147 202 (Punjab), India.**



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  
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**CENTRAL FARM MACHINERY TRAINING & TESTING INSTITUTE**  
**TRACTOR NAGAR, BUDNI (M.P.) 466 445**  
**(An ISO 9001:2015 Certified Institute)**

T-1734/2265/2023	KARTAR 4536 TRACTOR - INITIAL COMMERCIAL TEST
	THIS TEST REPORT IS VALID UPTO: 31/05/2028

## 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 15<sup>th</sup> 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: May	Test Report No.: T-1734/2265/2023	Year: 2023
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[C]	Tractor manufacturer's name and address	:	<b>Kartar Tractors Private Limited, Shop no.22, Grain Market, Amloh Road, Bhadson, Patiala 147 202.</b>
[D]	Location of tractor assembly	:	<b>Kartar Tractors Private Limited, Shop no.22, Grain Market, Amloh Road, Bhadson, Patiala 147 202.</b>
[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 (h):	:	
	-Engine	:	25
	-Transmission	:	25
[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	:	Kartar
[C]	Model (trade name)	:	Kartar 4536
[C]	Type	:	Rear Wheel Drive, Standard Agricultural Tractor.
[C]	Month & year of manufacture	:	04 & 22
[D]	Country of origin	:	India

#### 1.1.2 Numbers:

[D]	1 <sup>st</sup> Serial No. or prototype	:	HBM 45K000001
[C]	Serial No.	:	DBB 45K000033

### 1.2 Engine:

[D]	Manufacturer's address	:	Kirloskar Oil Engines Ltd., Pune, Khadki, Maharashtra, India
[C]	Make	:	Kirloskar Oil Engine Ltd.
[C]	Model	:	3R1040NA1
[C]	Type	:	Four stroke, naturally aspirated, liquid cooled, direct injection, diesel engine.
[C]	Serial No.	:	3H.2125/2220201

#### 1.2.1 Cylinders:

[C]	Number/disposition	:	Three, vertical, in-line
[D]	Bore / Stroke, (mm)	:	105 / 120
[D]	Capacity, cm <sup>3</sup>	:	3120
[D]	Compression ratio	:	18 (±0.5): 1
[D]	Arrangement of valves	:	Overhead, inline
[D]	Cylinder liners	:	Wet, replaceable
[D]	Type of combustion chamber	:	Re-entrant cavity on piston crown

## 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:

S. 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
<b>MANDATORY TESTS: (As per Ministry's Office Memorandum No. 13-17/2021-M&amp;T (I&amp;P) dated 28<sup>th</sup> of July, 2022).</b>						
<b>6.1.1</b>	<b>PTO Performance:</b>					
<b>a)</b>	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 $\leq 26$ kW.	29.3 (D)	29.2	Yes
<b>b)</b>	Power at rated engine speed, (kW)	Non Evaluative	-do-	29.3 (D)	29.2	Yes
<b>c)</b>	Specific fuel consumption corresponding to maximum power, (g/kWh)	Evaluative	Should not be more than 10% of declared value	256.5 (D)	254	Yes
<b>d)</b>	Maximum equivalent crankshaft torque, (Nm)	Non-Evaluative	$\pm 8\%$	188 (D)	178.4	Yes
<b>e)</b>	Back-up torque, percent	Evaluative	Should be minimum 12 percent	18.9 (D) 12 (R)	27.7	Yes
<b>f)</b>	Maximum operating temperature, ( $^{\circ}$ C):					
	1) Engine oil	Evaluative	The declared value should not exceed the <i>Max</i> value specified by the oil company and the observed value under natural ambient/high ambient condition should not exceed the declaration	130 (D)	107	Yes
	2) Coolant	Evaluative	Observed value should not exceed the declared value or boiling point of coolant at radiator cap pressure whichever is lower. The boiling point of the coolant at radiator pressure shall be provided by the applicant.	110 (D)	94	Yes
<b>g)</b>	Engine oil consumption, (g/kWh)	Evaluative	The value would be based on the test conducted under natural ambient condition	2.54 Maximum (R)	0.14	Yes
<b>h)</b>	Smoke level, $m^{-1}$	Evaluative	Max Smoke level shall be reported out of 6 readings tested as per IS 12062 and observed value should be well within the required limits.	3.25 per meter Maximum (R)	0.17	Yes

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1	2	3	4	5	6	7
<b>6.1.2</b>	<b>Drawbar performance:</b>					
<b>a)</b>	Maximum drawbar pull with ballast corresponding to 15% wheel slip or 7% track slip, kN	Non-Evaluative	Minimum 70% of static mass with ballast.	21.0 (D) 18.84 (R) Minimum	20.63	Yes
<b>b)</b>	Maximum drawbar pull without ballast or with standard ballast corresponding to 15% wheel slip or 7% track slip, (kN)	Evaluative	In case of tractors having total static mass $\geq 1\ 500$ kg, Min 70% of static mass of tractor without ballast or with standard ballast, as the case may be. In case of light weight tractors having $\leq 1\ 500$ kg total static mass of tractor, Min. 65% of static mass of tractor without ballast or with standard ballast, as the case may be.	15.53.0 (D) 13.87 (R) Minimum	15.68	Yes
<b>c)</b>	Maximum drawbar power without ballast or with standard ballast as the case may be, kW	Evaluative	Min 80% of PTO power as referred in SI No. i) a) of PTO performance in case of tractors having total static mass $> 1\ 500$ kg. Min 75% of PTO power as referred in SI No. i) a) of PTO performance in case of light weight tractors having $\leq 1\ 500$ kg total static mass of tractor. Min 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.	25.4 (D) 23.4 (R) Minimum	25.3	Yes
<b>d)</b>	For tractors fitted with airconditioned /heated cabin: Maximum drawbar power without ballast, or with standard ballast as the case may be, kW	Evaluative	Min 70% of PTO power as referred in SI No. i) a) of PTO performance in case of tractors having total static mass $> 1\ 500$ Kg.	Not fitted	Not fitted	Not applicable
<b>e)</b>	Maximum transmission oil temperature, ( $^{\circ}$ C)	Evaluative	The declared value should not exceed the maximum value specified by oil company	105 (D)	83	Yes
<b>6.1.3</b>	<b>Power lift and hydraulic pump performance:</b>					
<b>a)</b>	Maximum lifting capacity throughout the range of lift, (kN):					
	1) At hitch points	Evaluative	Should not be less than 90% of declared value.	15.4 (D)	16.00	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.	10.23 (D) 6.87 (R) Minimum	13.15	Yes
<b>b)</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	00	Yes

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1	2	3	4	5	6	7	
<b>6.1.4</b>	<b>Brake performance at 25 kmph:</b>						
<b>a)</b>	Maximum stopping distance at a force, equal to or less than 600 N on brake pedal without ballast, (m):						
	1)	Cold brake	Evaluative	10	10 (R)	6.63	Yes
	2)	Hot brake	Evaluative	10	10 (R)	6.87	Yes
<b>b)</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
<b>6.1.5</b>	<b>OPTIONAL TESTS: As the applicant has not applied for any optional tests, therefore no optional tests was conducted.</b>						
<b>6.1.6</b>	<b>Safety features:</b>						
<b>a)</b>	Guards against moving and hot parts	Evaluative	Belt drives, pulleys, silencer, hydraulic pipes [As per IS 12239 (Part2)]		Meets the requirement		Yes
<b>b)</b>	Lighting arrangement	Evaluative	As per CMVR		Meets the requirement		Yes
<b>c)</b>	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)		<b>Does not meet the requirement</b>		<b>No</b>
<b>d)</b>	Technical requirements for PTO shaft	Non-Evaluative	Should meet the requirements of IS: 4931 (As amended from time to time)		Meets the requirement		Yes
<b>e)</b>	Dimensions 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>
<b>f)</b>	Specifications of linkage drawbar	Non-Evaluative	Should meet the requirements of IS: 12953 (As amended from time to time)		Meets the requirement		Yes
<b>g)</b>	Specifications of Swinging drawbar (wherever fitted)	Non-Evaluative	Should meet the requirement of IS: 12362 (Part-3) (As amended from time to time)		Not provided		Not applicable
<b>h)</b>	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

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1	2	3	4	5	6	7		
<b>6.1.7</b>	<b>Labelling of tractors (Provision of labelling plate):</b>							
1)	Make	Evaluative	Should conform to the requirements of CMVR along-with declared value of PTO 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 0;"><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		Kartar	Yes
MM	YY							
2)	Model	Evaluative		Kartar 4536	Yes			
3)	Month & Year of manufacture	Evaluative		04 & 22	Yes			
4)	Engine number	Evaluative		3H.2125/2220201	Yes			
5)	Chassis number	Evaluative		DBB45K000033	Yes			
6)	Maximum PTO power, (kW)	Evaluative		29.3	Yes			
7)	Specific fuel consumption, g/kWh	Evaluative	256.5	Yes				
<b>6.1.8</b>	<b>Literature (Submission to test agency):</b>							
<b>(a)</b>	Operator manual	Evaluative	The printed literature in booklet form should be provided as per IS 8132 and should submit along with the test sample.		Provided	Yes		
<b>(b)</b>	Parts Catalogue	Evaluative			Provided	Yes		
<b>(c)</b>	Workshop/ Service manual	Evaluative			Provided	Yes		
<b>6.1.9</b>	<b>Fitment of Roll Over Protective Structures (ROPS):</b>							
	For tractor having more than 1150 mm rear track width	Evaluative	ROPS should meet the requirement of IS:1182 or OECD code or equivalent International Standard		Not fitted	Not applicable		
<b>6.1.10</b>	Standard Accessories	Evaluative	Trailer hitch, front tow hook, linkage drawbar should be provided with tractor		Provided	Yes		
<b>6.1.11</b>	Accessories (optional)	Non Evaluative	Ballast weight, if fitted, should meet the requirement of CMVR		Not fitted	Not applicable		

<b>6.2 CATEGORY OF BREAKDOWNS / DEFECTS (As per clause 5.0 of IS:12207-2022):</b>					
S. No.	Category of breakdowns	Category (Evaluative / Non-Evaluative)	Requirements as per IS: 12207-2022	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 2 major break downs and neither of them should be of repetitive nature.	None	Yes
3.	Minor	Evaluative	There are not more than 5 minor defects during the test and neither of them should be of repetitive nature.	None	Yes
4.	Total breakdowns	Evaluative	In no case, the total number of break downs should exceed five that is, (2major + 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 1, 2, 3 & 4 (fourth revision) [IS:4468(Part-I) – 1997 (Reaffirmed in 2022)]   | : | <b>Does not conform</b> |
| iv)   | Drawbar for agricultural tractors – Link type [IS 12953:1990 (Reaffirmed Year 2022)]  | : | Conforms                |
| v)    | Agricultural tractors- Operator's seat technical requirement [IS12343 - 2021]   | : | <b>Does not conform</b> |
| vi)   | Guide for safety & comfort of operator of agricultural tractors: Part 1 General requirements (first revision): [IS 12239 (Part 1) - 2018]   | : | <b>Does not conform</b> |
| 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)]  | : | <b>Does not conform</b> |
| viii) | Guide lines for location and operation of operator controls on agricultural tractors and machinery [IS: 8133 - 2021]  | : | Conforms                |
| 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)] | : | Conforms                |
| 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 Hydraulic performance test**

The angle through which the mast rotates over the full range of lift was observed as **7.6** degree against the minimum requirements of **10** degrees as per IS 12224 – 1987 (Reaffirmed Year 2019). This should 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)   | Provision for adjustment of driver's mass has been specified as 50 to 120 kg against the requirement of 40 to 100 kg.                |
| ii)  | Width of seat from seat index point has been measured as 430 mm against the requirement of 450(min) mm.                              |
| iii) | Vertical distance from SIP to centre of steering control wheel has been measured as 235 mm against the requirement of 265 to 385 mm. |
| iv)  | Vertical distance of SIP from foot rest has been measured as 615 mm against the requirement of 450 to 520 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)  | Vertical retainers on inner side of clutch pedal has not been provided. |
| ii) | 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 of upper hitch points, diameter of hitch pin hole & width of ball of lower hitch points and lateral distance from lower hitch point to centre line of tractor does not meet the requirements of IS:4468 (Part-I) – 1997. This should be looked into for necessary corrective action.



**6.5 Specification of Tractor:**

Discrepancies in the specification between the Specification sheet and Operator's manual are as under:

S. No.	Description	As per Specification Sheet	As per Operator's manual
a)	Steering oil capacity, (l)	2.5	4.0

**6.7 Maintenance / Service Problems:**

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

**6.8 Recommendation with regard to safety on tractor:**

- i) Colour code for fuel level gauge & water temperature gauge has not been provided as per the requirement of IS: 6283-Part-2-2007.
- ii) Identification of hand control by colour coding of engine speed control & parking brake (orange) has not been provided as per the requirement as laid down in Table – 5 of IS: 8133-2021.
- iii) The working clearance between draft control lever and RHS fender has been measured as 50 mm against the minimum requirement of 70 mm.

Above parameters should be looked into for necessary corrective action.

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

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

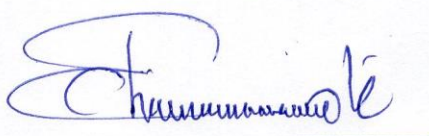

- i) Operator Manual for "Kartar 4536" tractor model.
- ii) Parts catalogue for "Kartar 4536" tractor model.
- iii) Service manual for "Kartar 4536" tractor model.

**6.9.2** 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) The specification details as max. power, specific fuel consumption, drawbar pull and power & hydraulic power

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

**TESTING AUTHORITY**

<p><b>C. V. CHIMOTE</b> TEST ENGINEER</p>	
<p><b>A.K UPADHYAY</b> DIRECTOR (I/C)</p>	

Draft test report compiled by **Chanchlesh Singh Raghuwanshi**, Agricultural Engineer.

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### 7. APPLICANT'S COMMENTS

Para no.	Our reference	Applicant comments
7.1	6.4.1	This will be looked into necessary changes will be done during production.
7.2	6.4.2,6.4.3 & 6.4.4	All these recommendations will be implemented during production.
7.3	6.5	We welcome your observations & changes will be incorporated & synchronized in our literature.
7.4	6.8(v)	The working clearance will be looked into & modified as per standards.

### 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	11.5
3.	Power lift and hydraulic pump performance test	4.1
4.	Drawbar performance test	15.4
5.	Brake performance test	1.0
6.	Nominal speed test	0.6
<b>B.</b>	Miscellaneous test and other run hours including idle run, transportation, trials and preparation for test	1.6
	<b>TOTAL:</b>	<b>34.2</b>