



MAHINDRA, B-275 DI MKM (Brand Name : Bhoomiputra) 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

(Deptt. of Agricultural, Cooperation & Farmer's 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)

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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:

Sl. No.	Particulars	As recommended by the manufacturer	As used during the test
1.	Engine & Air cleaner oil	15W40	As recommended
2.	Gear box, differential & rear axle	MTRAC 30	Oil originally filled in the tractor was not changed
	Hydraulic system	MTRAC 30	-do-
4.	Steering system	SAE 140	--do--
4.	Grease	MP3 Lithium base	As recommended

3. ESSENTIAL TESTS

3.1. SPECIFICATIONS

Previous sample

Present sample

3.1.1 Tractor:

Make	: Mahindra	Mahindra
Model	: B-275 DI MKM	B275 DI MKM
Variants, if any	: None	None
Brand name	: Bhoomiputra	Bhoomiputra
Type	: Four-wheel, Rear-wheel driven, standard agricultural tractor	
Year of manufacture	: 2009	HH (November, 2017)
Chassis number	: RMLW00026	MBNAAAADGLHRH00024
Country of Origin	: INDIA	INDIA

3.1.2 Engine:

Make	: Mahindra	MDI 1895 3A
Model	: MDI 1895 3A	MDI 1895 3A
Type	: Four stroke, natural aspirated, water cooled, direct injection, diesel engine	
Serial number	: RMLW00026	RHH2DBN8574
Engine speed (Manufacturer's recommended production setting)(rpm) :		
- Maximum speed at no load	: 2075 to 2175	2075 to 2175
- Low idle speed	: 750 to 850	750 to 850
- Speed at maximum torque	: 1300 to 1500	1300 to 1500
Rated speed, (rpm):		
- For PTO use	: 1900	1900
- For drawbar use	: 1900	1900

3.1.3 Cylinder & Cylinder Head:

Number	:	Three
Disposition	:	Vertical, Inline
Bore/stroke, (mm)	:	88.9/110 (apa)
Capacity as specified by the applicant, (cc)	:	2048
Compression ratio, (apa)	:	20.2 : 1
Type of cylinder head	:	Mono block
Type of cylinder liners	:	Wet, replaceable
Type of combustion chamber	:	Re-entrant bowl
Arrangement of valves	:	Overhead, Inline



5. ADJUSTMENTS, DEFECTS, BREAKDOWNS AND REPAIRS

S. No.	Adjustment/Defect/Breakdown and Repairs	Tractor run hours
	-----None-----	

6. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS

6.1 Evaluative (mandatory) / Non-evaluation (Non-mandatory) parameter applicable for qualifying Minimum Performance criteria as per Clause-4 (Table-1) of IS: 12207-2014 for acceptance of the tractor for the purpose of subsidies/NABARD financing for the applicable features for this tractor model.

Sl. No.	Characteristic	Category (Evaluative / Non Evaluative)	Requirements as per IS: 12207- 2014	Values declared by the applicant/ requirement		As observed		Whether present model meets the requirem ents (Yes/No.)
				Previous sample	Present sample	Previous sample	Present sample	
1	2	3	4	5 a	5 b	6 a	6 b	7
6.1.1 PTO Performance :								
a)	Maximum power under 2 hours test, (kW) (Natural ambient condition)	Evaluative	Declared value to be achieved with a tolerance of: -5 / +10% for PTO power >26 kW. - 7.5/+10% for PTO power ≤ 26 Kw or -5 / +10% for Engine power >26 kW. - 7.5/+10% for Engine power ≤ 26 kW	24.27 (D)	24.27 (D)	24.2	23.9	Yes
b)	Power at rated engine speed, (kW)	Non-Evaluative	-do-	24.27 (D)	24.27 (D)	24.1	23.9	Yes
c)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Non-Evaluative	+ 5%	238 (D)	238 (D)	234	252	No
6.1.2 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 (R)	10 (R)		7.20	7.68	Yes
	2) Hot brake	Evaluative	10 (R)	10 (R)		7.90	7.74	Yes
b)	Maximum force exerted on the brake pedal to achieve a deceleration of 2.5 m/s ² (N)	Evaluative	600 (R)	600 (R)		305 to 350	194 to 206	Yes
c)	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	Yes



1	2	3	4	5 a	5 b	6 a	6 b	7
6.1.3	Labelling of tractors (Provision of labeling plate):							
	1)	Make	Evaluative	Should conform to the requirements of CMVR along-with declared value of PTO HP	-	-	Mahindra	Yes
	2)	Model	Evaluative		-	-	B 275 DI MKM	Yes
	3)	Year of manufacture	Evaluative		-	-	HH (November, 2017)	Yes
	4)	Engine number	Evaluative		-	-	RHH2DBN8574	Yes
	5)	Chassis number	Evaluative		-	-	MBNAAADGLH RH00024	Yes
	6)	Declaration of PTO power, (kW)	Evaluative		-	-	24.3 (32.5)	Yes
	7)	Specific fuel consumption, g/kWh	Evaluative		-	-	238	Yes
6.1.4	Literature (Submission to test agency):							
	(a)	Operator manual	Evaluative	Provided/Not Provided		Provided	Yes	
	(b)	Parts Catalogue	Evaluative	Provided/Not Provided		Provided	Yes	
	(c)	Workshop/ Service manual	Evaluative	Provided/Not Provided		Provided	Yes	

6.2 Conformity with following IS:

		<u>Previous sample</u>	<u>Present sample</u>
i)	Guide lines for declaration of power and specific fuel consumption and labelling of agricultural tractors [IS10273: 1987 (Reaffirmed 2014)] :	Conformed	Conforms
ii)	Agricultural tractors - Rear mounted power take-off - Types 1, 2 and 3 [IS:4931-1995 (Reaffirmed 2014)] :	Did not conform	Does not conform
iii)	Agricultural wheeled tractors - Three-point linkage: Part 2 Category 1N (Narrow Hitch) [IS 4468 (Part-2):1993/ ISO 730-2:1979 (Reaffirmed 2014)] :	Conformed	Does not conform
iv)	Drawbar for agricultural tractors - Link type [IS 12953:1990 (Reaffirmed 2007)] :	Conformed	Conforms
v)	Agricultural tractors - Operator's seat technical requirement [IS 12343 -1998 (Reaffirmed 2014)] :	Did not Conform	Does not conform
vi)	Guide for safety & comfort of operator of agricultural tractors: Part 1 General requirements: [IS 12239 (PT-1) 1996/ISO 4254-1:1989 (Reaffirmed Oct., 2017)] :	Did not Conform	Does not conform
vii)	Tractors and machinery for agriculture and forestry - Technical means for ensuring safety Part 2: Tractors (IS 12239 (PT-2) 1999) (Reaffirmed 2014)] :	Did not conform	Does not conform



	<u>Previous sample</u>	<u>Present sample</u>
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 and IS: 6283 (Part-2)-2007 (Reaffirmed 2014)]	: Did not conform	Does not conform
x) Agricultural Tractors and Machinery - Lighting device for travel on public roads (IS: 14683-1999) (Reaffirmed 2014)]	: Conformed	Conforms

6.3 Salient Observations:

6.3.1 Laboratory tests:

6.3.1.1 PTO Performance:

- i) The maximum power was recorded as **24.2 & 23.9 kW** in case of previous & present sample respectively against the declaration of **24.3 kW**, which meets the requirement of IS: 12207-2014 with regard to tolerance.
- ii) The specific fuel consumption corresponding to maximum power in case of previous and present sample was measured as **234 & 252 g/kWh** respectively against the declaration of **238 g/kWh**, which does not meet the requirement of IS: 12207-2014 with regard to tolerance. This should be looked into.

6.3.1.2 Three point linkage:

- i) The lateral distance from lower hitch point to centre line of tractor does not meet the requirement of IS: 4468 (Part-1)-1997. This should be looked into for necessary corrective action.
- ii) Some of the parameters conform to Cat. I and some of them conform to Cat. II. Keeping in view the spirit of standardization, necessary improvement may be incorporated.

6.3.1.3 Power take off Shaft:

The dimension "d ϕ " of Power Take-Off Shaft does not meet the requirements of IS: 4931-1995. This should be looked into for necessary corrective action.

6.3.1.4 PTO Master shield:

PTO master shield has not provided on tractor as per the requirements of IS: 4931-1995. This should be looked into.

6.3.1.5 Operator's work place:

Operator's work place meets the requirements of IS: 12239 (part-I) 1996 (Reaffirmed in 2014), except the, width of step, working clearance around the draft control lever & mudguard and provision of spark arresting device in the exhaust system.

6.3.1.6 Location and operation of Controls:

Location and movement of various controls meets the requirement of IS: 8133-1983 (Re-affirmed in 2014), except the following:

- i) Safety switch while starting the engine is not provided.
- ii) Control for stop the engine is provided but it does not remain in the stop position without application of sustained manual effort.
- iii) *Differential lock is not provided.*

6.4 Maintenance / Service problems:

No noticeable maintenance or service problems observed during the test.



6.5 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) There should be provision for spark arresting device in exhaust system.
- ii) The fuel shut-off knob should remain in stop position.
- iii) The working clearance between the draft control lever and mudguard should be provided as per IS: 12239 (Part-2) – 1999.
- iv) PTO shaft master shield should be provided to avoid the accident.
- v) The lateral distance from lower hitch point to center line of tractor should be provided as per the requirement of relevant Indian Standard.
- vi) Provision of differential lock in tractor.
- vii) The drive wheels should be fully guarded.

6.6 Adequacy of Literature supplied with machine:

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

- a) Operator's manual for Mahindra B275 DI MKM (Bhoomiputra) tractor.
- b) Parts catalogue for Mahindra B275 DI MKM (Bhoomiputra) tractor.
- c) Service manual for Mahindra B275 DI MKM (Bhoomiputra) tractor.

6.6.2 The supplied literature was found adequate; however, these literatures should be brought out in national as well as other regional languages of India for guidance of users.

7. CITIZEN CHARTER

Time frame for Testing & Evaluation as per Citizen Charter	Duration of Test	Whether the Test Report is released within the time frame given in Citizen Charter.	Remarks
10 Months	10 Months (March, 2018 to January, 2019)	Yes	--

TESTING AUTHORITY:

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