



**MAHINDRA, SHAKTIMAAN 35 MX TRACTOR**  
**(Brand Name : Shaktimaan)**



भारत सरकार  
कृषि मंत्रालय  
(कृषि एवं सहकारिता विभाग)

GOVERNMENT OF INDIA  
MINISTRY OF AGRICULTURE  
(DEPARTMENT OF AGRICULTURE & CO-OPERATION)

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T-850/1360/2012

**MAHINDRA,SHAKTIMAAN 35 MX TRACTOR**  
**(Brand name: Shaktimaan) Commercial (Variant)****3. ESSENTIAL TESTS****3.1. SPECIFICATIONS**

	<u>Base Model</u>	<u>Variant Model</u>
<b>3.1.1 Tractor:</b>		
Make	: Mahindra	Mahindra
Model	: B-275 DI TU	Shaktimaan -35 MX
Brand name	: Bhoomiputra	Shaktimaan
Type	: Four wheel, Rear-wheel drive, General Purpose, Agricultural Tractor	
Year of manufacture	: 2009 G9	2011 (B)
Serial number	: <b>Not specified</b>	<b>Not specified</b>
Chassis serial number	: RCKW00870	M 35 LB 0001
Country of Origin	: INDIA	INDIA
<b>3.1.2 Engine:</b>		
Make	: Mahindra	Mahindra
Model	: MDI 1895 B 3A	MDI 1895 B 3A
Type	: Four stroke, naturally aspirated, water cooled, direct injection, diesel engine.	
Serial number	: RCKW00870	M35LB0001
<b>Engine speed (Manufacturer's recommended production setting)(rpm) :</b>		
- Maximum speed at no load	: 2275 to 2375	2275 to 2375
- Low idle speed	: 750 to 850	750 to 850
- Speed at maximum torque	: 1300 to 1500	1300 to 1500
<b>Rated speed, (rpm):</b>		
- For PTO use	: 2100	2100
- For drawbar use	: 2100	2100
<b>3.1.3 Cylinder &amp; Cylinder Head:</b>		
Number	: Three	Three
Disposition	: Vertical inline	Vertical inline
Bore/stroke, (mm)	: 88.9 / 110	88.9 / 110
Capacity as specified by the applicant, (cc)	: 2048	2048
Compression ratio, (apa)	: 20.2 : 1	20.2 : 1
Type of cylinder head	: Monoblock	Monoblock
Type of cylinder liners	: Wet, replaceable	Wet, replaceable
Type of combustion chamber	: Re-entrant bowl	Re-entrant bowl
Arrangement of valves	: Overhead	Overhead
<b>Valve clearance (cold/hot):</b>		
- Inlet valve, (mm)	: 0.40 / 0.30	0.40 / 0.30
- Exhaust valve, (mm)	: 0.50 / 0.40	0.50 / 0.40
<b>3.1.4 Fuel System:</b>		
Type of fuel feed system	: Gravity and force feed	Gravity and forced feed



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**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: 2008 for acceptance of 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: 12207-2008	Values declared by the applicant/ requirement		As observed		Whether Variant model meets the requirements (Yes/No.)
				Base model	Variant Model	Base model	Variant model	
1	2	3	4	5 a	5 b	6 a	6 b	7
<b>7.1.1 PTO Performance :</b>								
a)	- Max. power under 2 h test, (kW ) (Natural ambient condition)	Evaluative	Declared value to be achieved with a tolerance of: -5 / +10% for PTO power >35hp. -7.5/+10% for PTO power ≤ 35 hp	25.0	25.0	25.2	25.0	Yes
b)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Non Evaluative	± 5%	238	238	235	235	Yes
<b>7.1.2 Labelling of tractors (Provision of labelling plate):</b>								
1)	Make	Evaluative	Should conform to the requirements of CMVR along-with declared value of PTO HP	Mahindra	Mahindra	Yes		
2)	Model	Evaluative		B-275 DI TU	Shaktimaan - 35 MX	Yes		
3)	Year of manufacture	Evaluative		2009 (G9)	2011 (B)	Yes		
4)	Engine serial number	Evaluative		RCKW 00870	M 35 LB 0001	Yes		
5)	Chassis serial number	Evaluative		RCKW 00870	M 35 LB 0001	Yes		
6)	Declaration of PTO power, kW	Evaluative		25.0	25.0	Yes		

**7.2 Salient Observations:****7.2.1 Laboratory tests:****7.2.1.1 PTO Performance:**

- i) The specific fuel consumption in case of base and variant models corresponding to maximum power were observed as **235 & 235 g/kWh** respectively against the declaration of **238 g/kWh**, which is within the tolerance limit.



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- ii) The maximum PTO power in case of base and variant models were observed as **25.2 & 25.0 kW** respectively against the declaration of **25.0 kW** which is within the specified limit.

**7.2.1.2 Specifications of Power Take Off Shaft:**

Dimension "Bφ" & "c" of PTO shaft does not meet to requirement of IS 4931:1995. This should be looked into for compliance.

**7.2.1.3 Operator's seat (Conformity with IS: 12343-1998):**

The operator's seat provided on the tractor does not meet the following requirements and calls for necessary improvement.

- Length of seat
- Longitudinal distance from seat index point to the center of differential lock pedal.
- Longitudinal distance from seat index point to the center of steering control wheel.

**7.2.1.4 Operator's work place: IS :12239 (Part-I& II)**

The operator's work place provided on the tractor does not meet the following requirements and calls for necessary improvement.

- Vertical retainers have not been provided on both sides of clutch & brake pedals.
- Width of foot step & subsequent step does not meet to requirement.
- Hydraulic pipe lines are not insulated properly.
- The drive wheels are not guarded fully.
- Power take-off shield has not been provided for the PTO shaft

**7.2.1.5 Location and operation of operator's control:**

Operations of some of the operator's control do not meet the requirements of IS: 8133-1983 like the safety starting switch. This may be looked into for necessary corrective action.

**7.2.1.6 Labelling of tractor: -**

The engine and chassis serial number of the tractor were embossed/ punched same (**M 35 LB 0001**) at engine housing & labelling plate.

**The engine and chassis serial number of the tractor should be given separately for its noteworthy identification.**

**7.3 Maintenance / Service Problems:**

No noticeable maintenance or service problem was observed during the test. However, suitable provision for draining the water may be provided at the fuel tank.

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

The following requirements, inter alia, may be considered for incorporation on the tractor:

- Safety provision against accidental start of engine.
- Provision for spark arresting devise in exhaust system
- Proper insulation at hydraulic pipes may be provided
- The drive wheels should be fully guarded.
- The working clearance around PTO engaging lever may be provided as per the requirements of Indian Standard: 12239 (Part-2) – 1999.

vi) Fuel shut – off lever does not remain in “Stop” position without application sustains manual effort.

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

7.5.1 The following literature was supplied with the test sample for reference during the test

- a) Operator’s manual
- b) Part’s catalogue for Shaktimaan 31/30/35 MX/40 MX/40/45/55/60/614 series tractor
- c) Service manual for Shaktimaan 35 MX tractor

**TESTING AUTHORITY:**

*P.K. Verma*  
**P. K. VERMA**  
SENIOR AGRICULTURAL  
ENGINEER

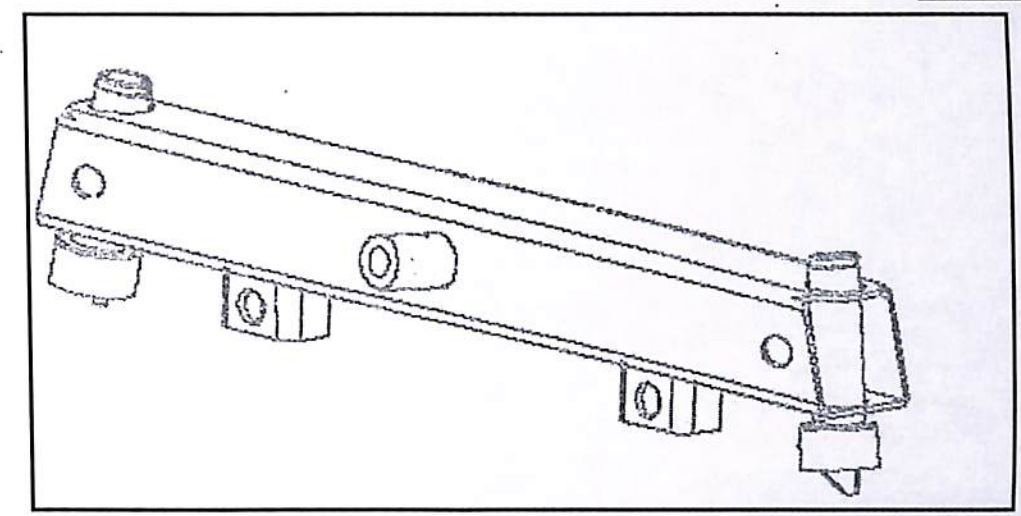
*C.R. Lohi*  
**C.R LOHI**  
DIRECTOR

Test report compiled by **Shri Chanchlesh Singh Raghuwanshi**, Senior Technical Assistant

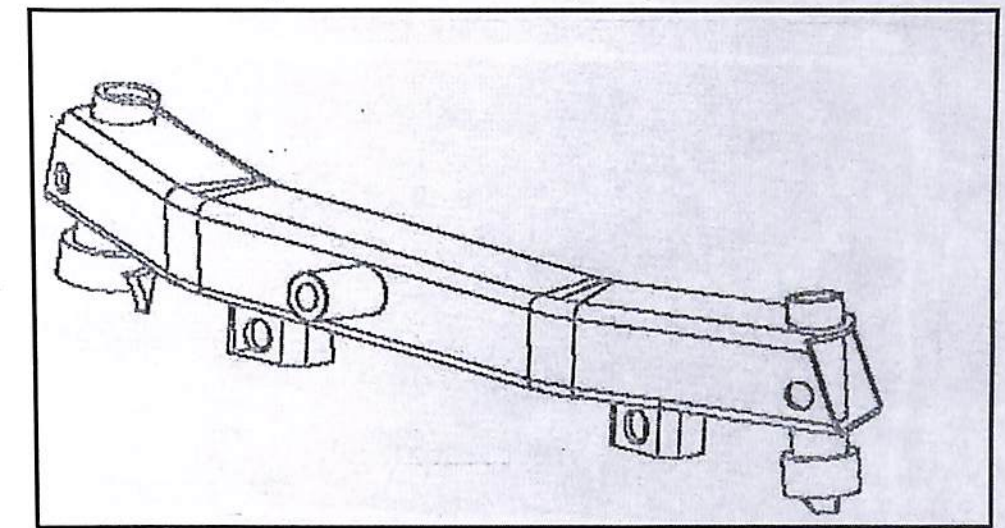
**8. APPLICANT’S COMMENTS**

Para No.	Our Reference	Applicant’s comments
17.1	7.2.1.2,7.2.1.3(i ,ii & iii),7.2.1.4(i,ii,iii & iv),7.2.1.5,7.4(i,ii,v&vi)	Observations will be studied and necessary action will be incorporated.
17.2	7.2.1.6	Suggestion will be studied and necessary action will be initiated.

**ANNEXURE – I**



**FRONT AXLE OF BASE MODEL MAHINDRA B-275 DI TU,**  
(Brand Name: Bhoomiputra) Tractor



**FRONT AXLE OF VARIANT MODEL MAHINDRA SHAKTIMAAN-35 MX**  
(Brand Name: Shaktimaan) Tractor

**ANNEXURE – II**

A.	LABORATORY AND TRACK TESTS	HOURS
1.	Running –in	--
2.	PTO Performance Test	2.8
3.	Nominal speed test	0.5
B.	Miscellaneous test and other run hours, including idle run transportation, trial and preparation for test.	0.5
	Total	3.8