

SAE/RR

व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT (Variant)

संख्या: 36/1561/2016
माह / Month: November, 2016



MAHINDRA YUVO 575 DI TRACTOR



सत्यमेव जयते

भारत सरकार

GOVERNMENT OF INDIA

कृषि एवं किसान कल्याण मंत्रालय

(कृषि, सहकारिता एवं किसान कल्याण विभाग, मशीनीकरण एवं प्रौद्योगिकी प्रभाग)

MINISTRY OF AGRICULTURE AND FARMERS WELFARE

(Deptt. of Agriculture, Co-operation & Farmers Welfare, Mechanization & Technology Division)

केन्द्रीय कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान

CENTRAL FARM MACHINERY TRAINING & TESTING INSTITUTE

(An ISO : 9001 - 2008 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:		
S. No.	Particulars	As recommended by the manufacturer	As used during the test
1.	Engine oil	“Mahindra M-star Premium Genuine Oil” /Oil confirming to API CH-4,SAE 15 W 40	As recommended
2.	Transmission, differential, rear axle, brake, steering and hydraulic system oil	Servo M Trac 30/ Total DYNATRANS MM	Oil originally filled in the tractor was not changed
3.	Grease	MP3 Lithium base or NLGI No.2 Grease	MP3 Lithium base

3. ESSENTIAL TESTS

3.1. SPECIFICATIONS

	<u>Base Model</u>	<u>Variant Model</u>
3.1.1 Tractor:		
Make	: Mahindra	Mahindra
Model	: Yuvo 415 DI	Yuvo 575 DI
Brand name	: None	None
Type	: Four wheel, Rear-wheel Agricultural Tractor	drive, General Purpose,
Year of manufacture	: 2014	DF(i.e. July,2015)
Chassis number	: ZJDA00019	CJDB00032
Country of Origin	: INDIA	INDIA
3.1.2 Engine:		
Make	: Mahindra	Mahindra
Model	: MM2730N3AD	DHE3045NA3A
Serial number	: ZJDA00019	CJDB00032
Engine speed (Manufacturer's recommended production setting)(rpm) :		
- Maximum speed at no load	: 2200 to 2400	2150 to 2350
- Low idle speed	: 750 to 850	750 to 850
- Speed at maximum torque	: 1300 to 1500	1100 to 1300
Rated speed, (rpm):		
- For PTO use	: 2000	2000
- For drawbar use	: 2000	2000
3.1.3 Cylinder & Cylinder Head:		
Number	: Four	Four
Disposition	: Vertical, inline	Vertical, inline
Bore/stroke, (mm)	: 88.9/110	88.9/120
Capacity as specified by the applicant, (cc)	: 2730	2979
Compression ratio, (apa)	: 19.8(±1):1	20(±1):1
Type of cylinder head	: Monoblock	Monoblock
Type of cylinder liners	: Wet, replaceable	Wet, replaceable
Type of combustion chamber	: Open Re-entrant	Open Re-entrant
Arrangement of valves	: Overhead, inline	Overhead, inline

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5. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS

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: 2014** for acceptance of tractor for the purpose of subsidies/NABARD financing for the applicable features for this tractor model.

5.1 Evaluative & Non Evaluative Parameters:

Sl. No.	Characteristic	Category (Evaluative / Non Evaluative)	Requirements as per IS: 12207-2014	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
5.1.1	PTO Performance :							
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 >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	26.10	30.2	26.2	29.5	Yes
b)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Non Evaluative	± 5%	239	238	238.4	237	Yes
5.1.2	Labelling of tractors (Provision of labelling plate):							
	1) Make	Evaluative	Should conform to the requirements of CMVR along-with declared value of PTO HP	--		Mahindra		Yes
	2) Model	Evaluative		--		Yuvo 575 DI		Yes
	3) Year of manufacture	Evaluative		--		DF (i.e.July, 2015)		Yes
	4) Engine number	Evaluative		--		CJDB00032		Yes
	5) Chassis number	Evaluative		--		CJDB00032		Yes
	6) Declaration of PTO power, kW	Evaluative		--		30.2		Yes
5.1.3	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

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5.2 Salient Observations:

5.2.1 Laboratory tests:

5.2.1.1 PTO Performance:

- i) The maximum PTO power in case of base and variant models was observed as **26.2 & 29.5 kW** against the declaration of **26.1 & 30.2 kW** respectively, which is within the specified limit.
- ii) The specific fuel consumption in case of base and variant models corresponding to maximum power was observed as **238 & 237g/kWh** against the declaration of **239 & 238 g/kWh** respectively, which is within the tolerance limit.

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

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

- i) Vertical distance of from Seat Index Point to the centre of clutch pedal

5.2.1.3 Three point linkage:

Some of the parameters of three point linkage conforms to Cat.I and some of them conforms to Cat.II. Keeping in view the spirit of standardization, necessary improvement may be incorporated.

5.2.1.4 Labeling of tractor: -

The engine and chassis serial number of the tractor were embossed/ punched same (CJDB00032) at engine housing & labeling plate. For noteworthy identification of engine and chassis (Transmission) the serial number of these assemblies should be different. It is therefore, the labeling of tractor considered as **"Does not conform"**.

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

5.3 Maintenance / Service Problems:

- i) Suitable provision for draining the sediments/water may be provided at the fuel tank.
- ii) Engine oil dip stick has not been provided with minimum & maximum level of oil mark. This should be looked into for necessary corrective action

5.4 Recommendation with regard to safety on tractor:

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

- i) Vertical distance of from SIP to the centre of clutch pedal
- ii) The fuel shut-off lever does not remain in stop position
- iii) The spark arrester has not been provided in the exhaust system.
- iv) "Minimum cautionary notice" as per clause 11.2 of above referred standard has not been provided.
- v) The working clearance around the draft control lever & parking brake lever is less than 70 mm.

5.5 Adequacy of Literature supplied with machine:

5.5.1 The following literature has been supplied with the tractor

- a) Service Manual for Mahindra, Yuvo 575 DI tractor.
- b) Parts Catalogue for Mahindra, Yuvo 575 DI tractor.
- c) Operator's manual Mahindra, Yuvo 575 DI tractor.

5.5.2 It is therefore, recommended that following literature may be brought out as per IS: 8132-1999 (Reaffirmed in March, 2009) for the guidance of users and service personnel in national as well as regional languages for this model of tractor.

The results of the tests carried out on variant model **"Mahindra, Yuvo 575 DI Tractor"** have been compared with those on base model **"Mahindra, Yuvo 415 DI Tractor"** and found within the limit, as specified in Indian Standard: 12207-2014.

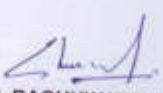

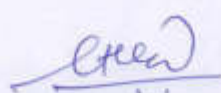
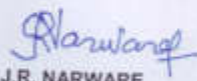
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6. CITIZEN CHARTER

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	4 Month (May to August, 2016)	Yes	None

TESTING AUTHORITY:

 C.S. RAGHUWANSHI AGRICULTURAL ENGINEER	 C.V. CHIMOTE TEST ENGINEER	 Y.K. RAO SENIOR AGRICULTURAL ENGINEER
 J.J.R. NARWARE DIRECTOR		

7. Applicant's Comment

Para No.	Our Reference	Applicant's Comment
7.1	5.2.1.2, 5.2.1.3, 5.3 & 5.4 (i, ii, iii & v)	Observation will be studied & necessary action will be incorporated.
7.2	5.2.1.4	We have studied your valuable suggestion & initiated the process for implementation of different engine & chassis numbering system on Mahindra tractors models.

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ANNEXURE-I

TRACTOR RUN HOURS DURING TEST

A.	LABORATORY AND TRACK TESTS	HOURS
1.	Running –in	--
2.	PTO Performance Test	3.0
3.	Theoretical speed test	1.4
B.	Miscellaneous test and other run hours, including idle run transportation, trial and preparation for test.	0.5
	Total	4.9