



KUBOTA, MU4501 4WD TRACTOR



सत्यमेव जयते

भारत सरकार

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

GOVERNMENT OF INDIA

MINISTRY OF AGRICULTURE AND FARMERS WELFARE

(DEPARTMENT OF AGRICULTURE, CO-OPERATION AND FARMERS WELFARE)

केन्द्रीय कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान

ट्रैक्टर नगर, बुदनी (म.प्र.) ४६६ ४४५

CENTRAL FARM MACHINERY TRAINING & TESTING 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	SAE 10 W 30	As recommended
2.	Gearbox, differential, rear axle, rear final drive brake, steering and hydraulic system oil	Kubota UDT or SUPER UDT fluid	Oil originally filled in the systems were not changed
3.	Front axle and front final drive	Kubota UDT or SUPER UDT fluid or SAE 80-90	--do--
4.	Grease	NLGI-2 or NLGI-1	MP Grease

3. ESSENTIAL TESTS

3.1. SPECIFICATIONS

	<u>Base Model</u>	<u>Variant Model</u>
3.1.1 Tractor:		
Make	: Kubota	Kubota
Model	: MU 4501	MU 4501 4WD
Brand name, if any	: None	None
Type	: Four wheeled, Rear wheel driven (2WD), General Purpose, Agricultural Tractor.	Four wheel, Four wheel drive (4WD), General Purpose, Agricultural Tractor
Year of manufacture	: 2015	2015
Chassis number	: KBTM30SAHHTKPA005	KBTM30TNTHTKPA006
Country of Origin	: Thailand	Thailand
3.1.2 Engine:		
Make	: Kubota Engine (Thailand) co., Ltd.(apa)	Kubota Engine (Thailand) co., Ltd.(apa)
Model	: V2403-M-DI	V2403-M-DI (a sticker is pasted on LHS of cylinder head cover)
Type	: Four stroke, Liquid cooled, aspirated, Diesel engine.	Direct injection, Naturally
Serial number	: BFC5140	BFC5136
Year of manufacture	: 2015	2015
Engine speed (Manufacturer's recommended production setting)(rpm) :		
- Maximum speed at no load	: 2700 to 2800	2700 to 2800
- Low idle speed	: 875 to 1075	875 to 1075
- Speed at maximum torque	: 1300 to 1700	1300 to 1700
Rated speed, (rpm):		
- For PTO use	: 2500	2500
- For drawbar use	: 2500	2500



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1	2	3	4	5	6
17.	Other changes				
a)	Unballasted mass of tractor, (kg) (Front/Rear/Total)	605/1260/1865	730/1250/1980	Changed	
b)	-Decals (Sticker)	KUBOTA MU 4501	KUBOTA MU 4501 4WD	Changed	

6. 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.

6.1 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	30.7 (D)	30.7 (D)	30.5	30.1	Yes
b)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Non Evaluative	+ 5%	249	249	261	267	No
6.1.2 Drawbar performance :								
a)	Maximum drawbar pull with ballast corresponding to 15 percent wheel slip, (kN)	Non Evaluative	Minimum 65% of static mass with ballast	16.1 (R) Minimum 21.31(D)	16.8 (R) Minimum 24.24(D)	19.25	23.21	Yes
b)	Max. drawbar pull without ballast corresponding to 15 percent wheel slip, (kN)	Evaluative	Minimum 65% of static mass of tractor without ballast or with standard ballast as the case may be.	11.89 (R) Minimum 16.48 (D)	12.62 (R) Minimum 18.84 (D)	16.48	17.93	Yes
c)	Maximum drawbar power without 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.	24.4 (R) Minimum 26.56 (D)	24.1 (R) Minimum 25.1 (D)	25.8	27.2	Yes



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1	2	3	4	5 a	5 b	6 a	6 b	7
d)	Maximum transmission oil temperature (°C)	Non Evaluative	The declared value should not exceed the maximum value specified by oil company	120	120	89	83	Yes
6.1.3 Noise measurement:								
a)	Maximum ambient noise emitted by the tractor, dB(A)	Evaluative	As per CMVR	88 (R)	88 (R)	80	81	Yes
b)	Maximum noise at operator's ear level, dB(A)	Evaluative	As per CMVR	96(R)	96(R)	95	95	Yes
6.1.4 Labelling of tractors (Provision of labeling plate):								
1)	Make	Evaluative	Should conform to the requirements of CMVR along-with declared value of PTO HP	--	Kubota			Yes
2)	Model	Evaluative		--	MU 4501 4WD			Yes
3)	Year of manufacture	Evaluative		--	2015			Yes
4)	Engine number	Evaluative		--	BFC5136			Yes
5)	Chassis number	Evaluative		--	KBTM30TNTHTKPA006			Yes
6)	Declaration of PTO power, kW	Evaluative		--	30.7kW @2500rpm			Yes
6.1.5 Literature (Submission to test agency), As per relevant IS Code (IS 8132):								
(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

6.2 Salient Observations:

6.2.1 Laboratory tests:

6.2.1.1 PTO Performance:

- i) The maximum PTO power in case of base and variant model was observed as **30.5 & 30.1 kW** against the declaration of **30.7 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 **261 & 267 g/kWh** against the declaration of **249 g/kWh** respectively, which doesn't meet the requirement of **IS:12207-2014** in case of variant model. This should be looked into for corrective action.

6.2.1.2 Operator's Seat:

Vertical distance from Seat Index point to centre of brake & clutch pedal from seat index point to centre of steering control wheel does not meet the requirement of IS: 12343:1998 (re-affirmed in March, 2009). This should be looked into for necessary corrective action.

6.3 Maintenance / Service Problems:

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



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6.4 **Recommendation with regard to safety on tractor:**
 The following requirements, inter alia, may be considered for incorporation on the tractor:
 i) The spark arrester has not been provided in the exhaust system.
 ii) Provision of master shield for PTO shaft.
 iii) Front tow hook has not been provided.
 iv "Minimum cautionary notice" as per clause 11.2 of IS:12239 (part-2)-1999

6.5 **General:**
 i) Rear working light (plough light) is not provided on the tractor, for operation in the field during night. As per clause 4.1.7 of IS: 14683-1999, at least one lamp projection a general flood pattern of light should be provided at rear.

6.5 **Adequacy of Literature supplied with machine:**
 6.5.1 The following literature has been supplied with the tractor
 a) Service Manual of KUBOTA MU 4501 tractor.
 b) Parts Catalogue of KUBOTA MU 4501 tractor.
 c) Operator's manual of KUBOTA MU 4501 tractor.

6.5.2 The literature should also 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 "KUBOTA MU 4501 4WD Tractor" have been compared with those on base model "KUBOTA MU 4501 Tractor" and found within the limit, as specified in **Indian Standard: 12207-2014.**

7. CITIZEN CHARTER

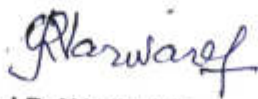
Time frame for Testing & Evaluation as per Citizen Charter	Duration of Test	Whether the Test Report is released within the time frame given in Citizen Charter	Remarks
10 Months	6 Month (August , 2016 to January, 2017)	Yes	None

TESTING AUTHORITY:


C.S.RAGHUWANSHI
 AGRICULTURAL ENGINEER


C.V CHIMOTE
 TEST ENGINEER


Y.K RAO
 SENIOR AGRICULTURAL ENGINEER


J.J.R. NARWARE
 DIRECTOR

8. APPLICANT'S COMMENTS

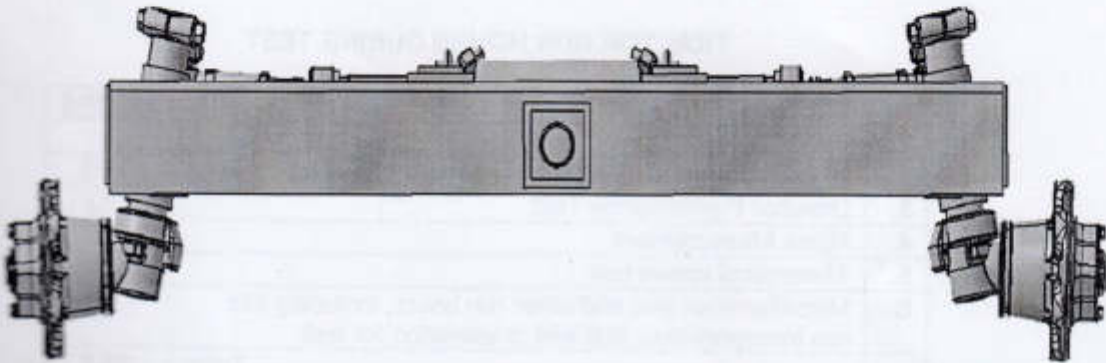
Applicant's comments
 -None-



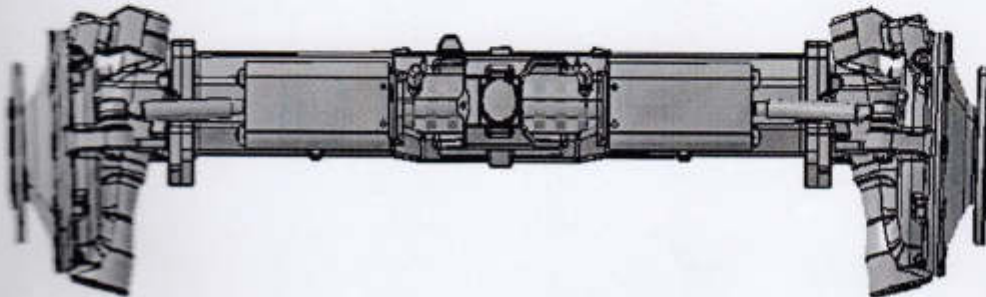
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ANNEXURE-I



FRONT AXLE DESIGN ON BASE MODEL KUBOTA MU 4501



FRONT AXLE DESIGN ON VARIANT MODEL KUBOTA MU 4501 4WD

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ANNEXURE-II**TRACTOR RUN HOURS DURING TEST**

A.	LABORATORY AND TRACK TESTS	HOURS
1.	Running -in	--
2.	PTO Performance Test	3.30
3.	Drawbar Performance Test	17.6
4.	Noise Measurement	1.8
5.	Theoretical speed test	2.0
B.	Miscellaneous test and other run hours, including idle run transportation, trial and preparation for test.	1.0
	Total	25.7