

व्यावसायिक परीक्षण रिपोर्ट (वैरिंट)  
COMMERCIAL TEST REPORT (Variant)

संख्या/No. : T-1641/2172/2022  
माह/Month : April, 2022

[ONLINE TESTING]

(यह परीक्षण रिपोर्ट 30/04/2025 तक वैध है / THIS TEST REPORT IS VALID UPTO 30/04/2025)



**KUBOTA, MU5502 - 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

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T-1641/2172/2022	<b>KUBOTA, MU5502 - 4WD TRACTOR - Commercial (Variant)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 30/04/2025</b>

During the examination, it was observed:

- that proposed tractor is four wheel drive (4WD) whereas the base model is two wheel drive (2WD);
- and that the number of PTO speeds corresponding to rated engine speed in clockwise direction for proposed tractor is two (i.e. 550 and 751 rpm) whereas only single PTO speed in clockwise direction (i.e. 550 rpm) was provided in base model tractor.

and thus, meeting the requirement of IS: 12207-2019. Therefore, in pursuance of clause 8.4 and S.No. (ix) & (x) of Table 2 of IS: 12207-2019, the following tests were carried out :

- Specification checking
- Nominal speed test
- Two hours maximum PTO performance test under natural ambient condition
- Drawbar performance test
- Noise Measurement

## 2. FUEL AND LUBRICANTS

**2.1 Fuel** : The High-speed diesel oil supplied by M/s Indian Oil Corporation Limited having density of 0.828 g/cc at 15°C was used.

### 2.2 Lubricants:

	Particulars	As recommended by the manufacturer	As used during the test
1.	Engine oil	SAE 10W30 or 15W40	SAE 15W40
2.	Gearbox, differential, rear axle, final drive, hydraulic, steering & brake system	Kubota UDT or Super UDT fluid	Oil originally filled in the tractor systems were not changed
3.	Front differential & front axle housing	Kubota UDT or Super UDT fluid or SAE 80/SAE90 Gear Oil	
4.	Grease	MP Grease NLGI-2 or NLGI-1	MP Grease

## 3. ESSENTIAL TESTS

### 3.1. SPECIFICATIONS

<b>3.1.1 Tractor:</b>	<b>Base Model</b>		<b>Variant Model</b>
Make :	Kubota		Kubota
Model :	MU5502		MU5502 - 4WD
Type :	Four wheeled, rear wheel driven, construction, Agricultural Tractor		Four Wheel Drive, Standard Agricultural Tractor.
Month & Year of manufacture :	03 / 20		03 / 20
Chassis number :	KBTM60SFKLECPC006		KBTM60TPHLECPC007
Country of origin :	India		India
<b>3.1.2 Engine:</b>			
Manufacturer's address :	KUBOTA ENGINE (Thailand) Co., Ltd. 360, Moo3, Khao Hin Son, Phanom Sarakham, Chachoengsao 24120, Thailand		
Make :	Kubota Engine (Thailand) Co., Ltd.		
Model :	V2403-M-DI-TE3		
Type :	Four strokes, liquid cooled, turbo charged, direct injection, diesel engine.		
Serial number :	BLA3556		BLA3756

T-1641/2172/2022	KUBOTA, MU5502 - 4WD TRACTOR - Commercial (Variant)
	THIS TEST REPORT IS VALID UPTO: 30/04/2025

1	2	3	4	5	6
17.	<b>Other changes:</b>				
(a)	Tractor Model	MU5502	MU5502 - 4WD	<b>Changed</b>	
(b)	<b>Wheel equipments:</b>				
	<b>Steered Wheel(s):</b>				
	Size	7.50-16	9.50-24	<b>Changed</b>	
	Ply rating	8	12	<b>Changed</b>	
	Track width, (mm)	1420 (std.) & 1520	1330, 1370, 1450, 1490, 1530, 1550 (std.), 1650 & 1690.	<b>Changed</b>	
	Method of changing track width	By extending telescopic front axle	By changing and reversing the position of wheel disc on off-set rim lugs	<b>Changed</b>	
	Make & size of rim	WILP & 5.50F x 16	WILP, W8 x 24	<b>Changed</b>	
(c)	Mass without ballast tractor, [Front/Rear/Total], (kg)	800/1520/2320	1040/1500/2540	<b>Changed</b>	
(d)	Overall dimensions [length / width / height], (mm)	3720/1965/2220	3720/1965/2235	<b>Changed</b>	
(e)	Wheel base, (mm)	2100	2060	<b>Changed</b>	

## 7. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS

7.1 On the basis of tests conducted the performance results have been summarized as evaluative (mandatory) and non-evaluation (not-mandatory) parameter applicable for qualifying Minimum Performance Criteria as per Clause-4 (Table-1) of IS: 12207-2019 for acceptance of the tractor for the purpose of subsidies/NABARD financing are summarized as under:-

Sl. No.	Characteristic	Category (Evaluative /Non-Evaluative)	Requirements as per IS: 12207-2019	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
7.1.1	<b>PTO Performance:</b>							
a)	Max. power under 2 h test, (kW ) (Natural ambient condition)	Evaluative	Declared value to be achieved with a tolerance of: $\pm 5\%$ for PTO power or engine power $>26$ kW, $\pm 10\%$ for PTO power or Engine power $\leq 26$ kW.	31.7 (D)	31.7 (D)	31.3	31.1	Yes
b)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Evaluative	+ 10% Max.	235 (D)	235 (D)	243	243	Yes

T-1641/2172/2022	KUBOTA, MU5502 - 4WD TRACTOR - Commercial (Variant)
	THIS TEST REPORT IS VALID UPTO: 30/04/2025

1	2	3	4	5 a	5 b	6 a	6 b	7
<b>7.1.2 Drawbar performance:</b>								
a)	Maximum drawbar pull with ballast corresponding to 15 percent wheel slip, (kN)	Evaluative	Minimum 70% of static mass with ballast	25.5 (D) 21.97 minimum (R)	33.3 (D) 22.71 minimum (R)	25.58	30.13	Yes
b)	Maximum drawbar pull with unballast corresponding to 15 percent wheel slip, (kN)	Evaluative	Minimum 70% of static mass of tractor without / standard ballast	20.8 (D) 18.21 minimum (R)	24.4 (D) 17.44 minimum (R)	22.29	23.49	Yes
c)	Maximum drawbar power without ballast, or with standard ballast as the case may be, 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 Minimum 75 % of PTO power as referred in SI No. i) a) of PTO performance in case of light weight tractors having 1500 kg total static mass of tractor Minimum 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.	27.6 (D) 25.0 (R) minimum (R)	27.0 (D) 24.9 minimum (R)	29.5	26.0	Yes
d)	Maximum transmission oil temperature (°C)	Evaluative	The declared value should not exceed the maximum value specified by oil company.	120 (D)	120 (D)	86	89	Yes
<b>7.1.3 Noise measurement :</b>								
a)	Maximum ambient noise emitted by the tractor dB(A)	Evaluative	88 dB (A) for >1.5 tonne GVW and 85 db (A) for <1.5 tonne GVW (as per CMVR)			79	77	Yes
b)	Maximum noise at operator's ear level dB(A)	Evaluative	96 (as per CMVR)			93	88	Yes
<b>7.1.4 Safety features:</b>								
a)	Guards against moving and hot parts	Evaluative	Belt drives, pulleys, silencer, hydraulic pipes (As per IS 12239 (Part2).			Meets the requirement		Yes
b)	Lighting arrangement	Evaluative	As per CMVR			Meets the requirement		Yes
c)	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 meets the requirement</b>		<b>No</b>
d)	Technical requirements for PTO shaft	Evaluative	Should meet the requirements of IS: 4931 (As amended from time to time).			Meets the requirement		Yes
e)	Dimensions of three point linkage	Non Evaluative	Should meet the requirements of IS: 4468 (Part-I) (As amended from time to time).			Meets the requirement		Yes

T-1641/2172/2022	<b>KUBOTA, MU5502 - 4WD TRACTOR - Commercial (Variant)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 30/04/2025</b>

1	2	3	4	5 a	5 b	6 a	6 b	7	
f)	Specifications of linkage drawbar	Evaluative	Should meet the requirements of IS: 12953 (As amended from time to time).			Meets the requirement		Yes	
g)	Swinging drawbar (wherever fitted)	Evaluative	Should meet the requirement of IS: 12362 (Part 3) (As amended from time to time).			Not fitted		Not applicable	
h)	1) Maximum travelling speed at rated engine speed in reverse gears, Kmph	Evaluative	Should not exceed 20 Kmph			13.81 kmph (Meets the requirement)		Yes	
	2) Audible warning signal on tractor	Evaluative	As soon as the travelling speed in reverse gear reaches to 20 kmph, an audible warning signal on tractor shall be activated. The safety aspects about the operation of shuttle technology shall be brought in operation and manufacturer/dealer shall ensure the training on this aspect to operator before the delivery of tractor.			Not applicable		Not applicable	
<b>7.1.5</b>	<b>Labelling of tractors (Provision of labelling plate):</b>								
	1) Make	Evaluative	Should conform to the requirements of CMVR along with maximum PTO Power in kW and year of manufacture in numerical form. <table border="1" style="margin: 5px auto;"><tr><td>MM</td><td>YY</td></tr></table> Digit 01 – 12 in box No.1 for MM will represent the months and next two digits in box No.2 for YY will represent the year of Manufacturing.	MM	YY			KUBOTA	Yes
MM	YY								
	2) Model	Evaluative				MU5502 - 4 WD	Yes		
	3) Month & Year of manufacture	Evaluative				03 / 21	Yes		
	4) Engine number	Evaluative				BLA3756	Yes		
	5) Chassis number	Evaluative				KBTM60TPH LECPC007	Yes		
	6) Declaration of PTO power, (kW)	Evaluative				31.7	Yes		
	7) Specific fuel consumption, (g/kWh)	Evaluative			235	Yes			
<b>7.1.6</b>	<b>Literature (Submission to test agency):</b>								
(a)	Operator manual	Evaluative	Provided/ Not Provided	Provided	Provided	Provided	Yes		
(b)	Parts Catalogue	Evaluative	Provided/Not Provided	Provided	Provided	Provided	Yes		
(c)	Workshop/Service manual	Evaluative	Provided/Not Provided	Provided	Provided	Provided	Yes		
<b>7.1.7</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 Provided		Not fitted	Not applicable		

T-1641/2172/2022	<b>KUBOTA, MU5502 - 4WD TRACTOR - Commercial (Variant)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 30/04/2025</b>

1	2	3	4	5 a	5 b	6 a	6 b	7
7.1.8	Standard Accessories	Evaluative	Trailer hitch, front tow hook, linkage drawbar should be provided with tractor.		Provided	Provided	Yes	
7.1.9	Accessories (optional)	Non Evaluative	Ballast weight, if fitted, should meet the requirement of CMVR.		Provided	Provided	Yes	

7.2 CATEGORY OF BREAKDOWNS / DEFECTS:					
Sl. No.	Category of breakdowns	Category (Evaluative / Non Evaluative)	Requirements as per IS: 12207-2019	As observed	Whether meets the Requirements (Yes/No.)
1.	Critical	Evaluative	No critical breakdown.	None	Yes
2.	Major	Evaluative	Not more than two and neither of them should be repetitive in nature.	None	Yes
3.	Minor	Evaluative	Not more than three and frequency of each should not be more than two.	None	Yes
4.	Total breakdowns	Evaluative	In no case, the total number of breakdowns should exceed five, that is, (2 major + 3 minor) or 5 minor breakdowns.	None	Yes

### 7.2 Recommendation with regard to safety on tractor:

- i) Vertical distance from Seat Index Point to centre of brake pedal was measured as 345 mm against the required range of 380 to 620 mm as per IS: 12343-1998. This should be looked into.
- ii) Vertical distance from Seat Index Point to centre of clutch pedal was measured as 350 mm against the required range of 380 to 620 mm as per IS: 12343-1998. This should be looked into.
- iii) Longitudinal distance of Seat Index Point to centre of differential lock was measured as 200 mm against the required range of 355 to 770 mm as per IS: 12343-1998. This should be looked into.
- iv) Longitudinal distance of Seat Index Point to centre of steering control wheel was measured as 580 mm against the required range of 425 to 525 mm as per IS: 12343-1998. This should be looked into.
- v) Colour code for engine revolution gauge, fuel gauge and water temperature gauge should be provided as per the requirement of IS: 6283 (Part-1) – 2006 & IS: 6283 (Part-2) – 2007.
- vi) Spark arrester should be provided as per the requirement of IS: 12239 (Part-1) – 2018.
- vii) Vertical retainers needs to be provided on both sides of clutch pedal as per the requirement of IS: 12239 (Part-1) – 2018.
- viii) The working clearance around the position control lever was measured as 55 mm against the minimum requirement of 70 mm, which does not meet the requirement of IS:12239 (Part-2)-1999. This should be looked into.
- ix) PTO master shield should be provided as per the requirement of IS: 12239 (Part-2)-1999.

### 7.3 Maintenance / Service Problems:

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

T-1641/2172/2022	KUBOTA, MU5502 - 4WD TRACTOR - Commercial (Variant)
	THIS TEST REPORT IS VALID UPTO: 30/04/2025



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

**7.4.1** Following literatures were supplied with the test sample for reference during the test.

- a) Operator's manual of Kubota MU5502, MU5502-4WD and MU5502-T tractor models.
- b) Illustrated Parts List for Kubota MU5502, MU5502-4WD and MU5502-T tractor models.
- c) Workshop Manual of Kubota MU5502, MU5502-4WD and MU5502-T tractor models.

The results of the tests carried out on variant model "Kubota, MU5502-4WD" tractor have been compared with those on base model "Kubota, MU5502" tractor tested vide test report No. T-1596/2127/2021 (October, 2021) which was found within the limit, as specified in IS: 12207-2019.

**TESTING AUTHORITY:**

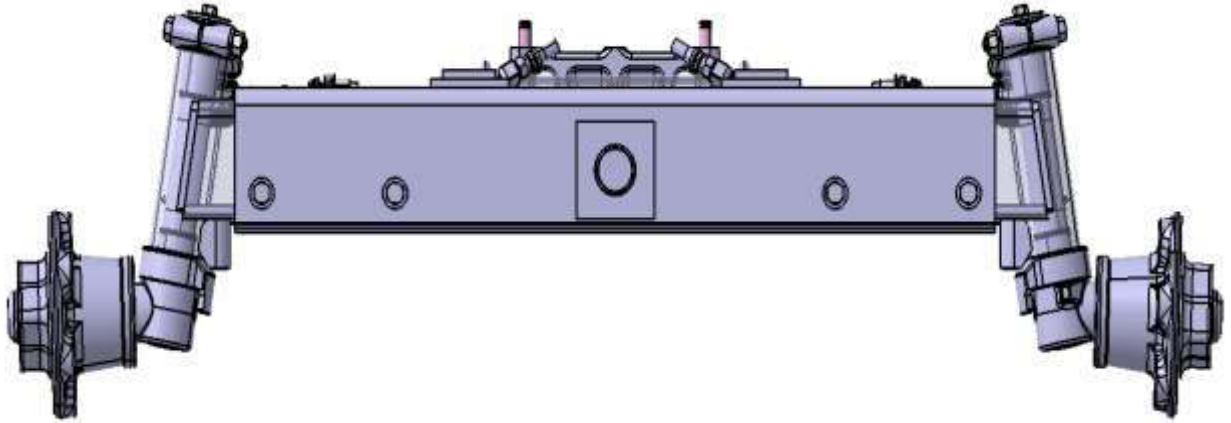
C.V. CHIMOTE TEST ENGINEER	
P.K. PANDEY DIRECTOR	

Draft test report is compiled by: **Partha Lodh**, Senior Technical Assistant

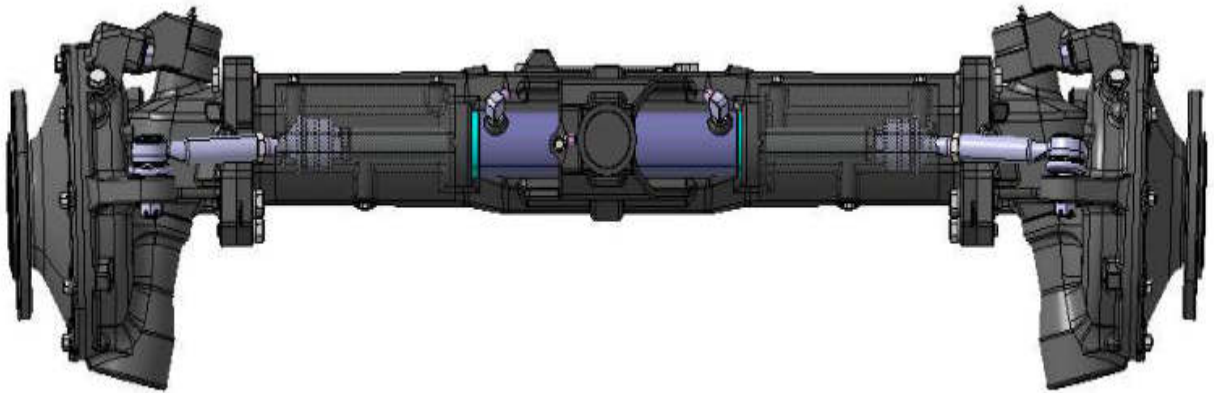
**8. APPLICANT'S COMMENTS**

Para no.	Our reference	Applicant comments
8.1	--	We have no specific comments..

**ANNEXURE-I**



**Fig: Front axle fitted on Base model KUBOTA, MU5502**



**Fig: Front axle fitted on Variant model KUBOTA, MU5502-4WD**



T-1641/2172/2022	KUBOTA, MU5502 - 4WD TRACTOR - Commercial (Variant)
	THIS TEST REPORT IS VALID UPTO: 30/04/2025

**ANNEXURE-II**

**TRACTOR RUN HOURS DURING TEST**

<b>A.</b>	<b>LABORATORY AND TRACK TESTS</b>	<b><u>HOURS</u></b>
1.	Running – in	51.7
2.	PTO performance test	4.0
3.	Nominal speed test	1.9
4.	Drawbar Performance Test	21.0
5.	Noise Measurement	1.5
<b>B.</b>	Miscellaneous test and other run hours, including idle run transportation, trial and preparation for test.	1.8
<b>Total</b>		<b>81.9</b>