व्यावसायिक परीक्षण रिपोर्ट (प्रारंभिक) INITIAL COMMERCIAL TEST REPORT ( CONVERTED FROM 1<sup>st</sup> Batch of Variant report) संख्या/No. : T-1671/2202/2022 माह/Month : July, 2022

(यहपरीक्षण रिपोर्ट 31/07/2025 तक वैध है/ THIS TEST REPORT IS VALID UPTO 31/07/2025)



# **MAHINDRA, YUVO 275 DI TRACTOR**



भारत सरकार कृषि एवं किसान कल्याण मंत्रालय (कृषि, एवं किसान कल्याण विभाग)

GOVERNMENT OF INDIA MINISTRY OF AGRICULTURE AND FARMERS WELFARE (DEPARTMENT OF AGRICULTURE & FARMERS WELFARE) केन्द्रीय कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान ट्रैक्टर नगर, बुदनी (म.प्र.) 466 445 CENTRAL FARM MACHINERY TRAINING & TESTING INSTITUTE

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## 3. SPECIFICATIONS

		_011	ICATIONS
3.1	Tractor:		
	Make	:	Mahindra
	Model	:	YUVO 275 DI
	Туре	:	Rear wheel driven, Standard Agricultural
			Tractor
	Month & year of manufacture	:	10/21
	Chassis number	:	MBNSFAE1EMNG00011
	Country of origin	:	India
3.2	Engine:		
	Manufacturer's address	:	M/s. Mahindra & Mahindra Limited
			(Farm Equipment Sector)
			Hingna Road, Hingna MIDC,
			Nagpur– 440016
	Make	:	Mahindra
	Model	:	DHE2235NA3A
	Туре	:	Four stroke, naturally aspirated, liquid
			cooled, direct injection, diesel engine
	Serial number	:	NMG5HAE0012
	Country of origin	:	India
3.2.1	Engine speed (rpm), (Manufacturer	's re	commended production settings):
	<ul> <li>Maximum speed at no load</li> </ul>	:	2150 to 2350
	<ul> <li>Low idle speed</li> </ul>	:	750 to 850
	<ul> <li>Speed at maximum torque</li> </ul>	:	1100 to 1300
	Rated speed, (rpm):		
	- For PTO use	:	2000
	- For drawbar use	:	2000
3.3	Cylinder & Cylinder Head:		
	Number	:	Three
	Disposition		Vertical, Inline
	•	•	
	Boro/stroko (mm)		88 0/120
	Bore/stroke, (mm)	:	88.9/120
	Capacity as specified by the	:	88.9/120 2235
	Capacity as specified by the applicant, (cc)	:	2235
	Capacity as specified by the applicant, (cc) Compression ratio	:	2235 20 (± 1): 1
	Capacity as specified by the applicant, (cc) Compression ratio Type of cylinder head	:	2235
	Capacity as specified by the applicant, (cc) Compression ratio	:	2235 20 (± 1): 1
	Capacity as specified by the applicant, (cc) Compression ratio Type of cylinder head Type of cylinder liners	::	2235 20 (± 1): 1 Monoblock Wet, replaceable
	Capacity as specified by the applicant, (cc) Compression ratio Type of cylinder head Type of cylinder liners Type of combustion chamber	: : : : : : : : : : : : : : : : : : : :	2235 20 (± 1): 1 Monoblock Wet, replaceable Re-entrant cavity on piston head
	Capacity as specified by the applicant, (cc) Compression ratio Type of cylinder head Type of cylinder liners Type of combustion chamber Arrangement of valves		2235 20 (± 1): 1 Monoblock Wet, replaceable Re-entrant cavity on piston head Overhead, inline
	Capacity as specified by the applicant, (cc) Compression ratio Type of cylinder head Type of cylinder liners Type of combustion chamber Arrangement of valves <b>Valve clearance (cold/hot):</b>		2235 20 (± 1): 1 Monoblock Wet, replaceable Re-entrant cavity on piston head Overhead, inline Cold Hot
	Capacity as specified by the applicant, (cc) Compression ratio Type of cylinder head Type of cylinder liners Type of combustion chamber Arrangement of valves <b>Valve clearance (cold/hot):</b> - Inlet valve, (mm)		2235 20 (± 1): 1 Monoblock Wet, replaceable Re-entrant cavity on piston head Overhead, inline Cold 0.4 Hot 0.3
	Capacity as specified by the applicant, (cc) Compression ratio Type of cylinder head Type of cylinder liners Type of combustion chamber Arrangement of valves <b>Valve clearance (cold/hot):</b>		2235 20 (± 1): 1 Monoblock Wet, replaceable Re-entrant cavity on piston head Overhead, inline Cold Hot
3.4	Capacity as specified by the applicant, (cc) Compression ratio Type of cylinder head Type of cylinder liners Type of combustion chamber Arrangement of valves <b>Valve clearance (cold/hot):</b> - Inlet valve, (mm) - Exhaust valve, (mm)		2235 20 (± 1): 1 Monoblock Wet, replaceable Re-entrant cavity on piston head Overhead, inline Cold 0.4 Hot 0.3
3.4	Capacity as specified by the applicant, (cc) Compression ratio Type of cylinder head Type of cylinder liners Type of combustion chamber Arrangement of valves <b>Valve clearance (cold/hot):</b> - Inlet valve, (mm)		2235 20 (± 1): 1 Monoblock Wet, replaceable Re-entrant cavity on piston head Overhead, inline Cold 0.4 Hot 0.3
	Capacity as specified by the applicant, (cc) Compression ratio Type of cylinder head Type of cylinder liners Type of combustion chamber Arrangement of valves <b>Valve clearance (cold/hot):</b> - Inlet valve, (mm) - Exhaust valve, (mm) <b>Fuel System:</b> Type of fuel feed system	::	2235 20 (± 1): 1 Monoblock Wet, replaceable Re-entrant cavity on piston head Overhead, inline Cold 0.4 0.3 0.5 0.4
3.4 3.4.1	Capacity as specified by the applicant, (cc) Compression ratio Type of cylinder head Type of cylinder liners Type of combustion chamber Arrangement of valves <b>Valve clearance (cold/hot):</b> - Inlet valve, (mm) - Exhaust valve, (mm) <b>Fuel System:</b> Type of fuel feed system <b>Fuel tank:</b>	::	2235 20 (± 1): 1 Monoblock Wet, replaceable Re-entrant cavity on piston head Overhead, inline Cold 0.4 0.3 0.5 0.4 Gravity and force feed
	Capacity as specified by the applicant, (cc) Compression ratio Type of cylinder head Type of cylinder liners Type of combustion chamber Arrangement of valves <b>Valve clearance (cold/hot):</b> - Inlet valve, (mm) - Exhaust valve, (mm) <b>Fuel System:</b> Type of fuel feed system <b>Fuel tank:</b> Capacity, (I)	::	2235 20 (± 1): 1 Monoblock Wet, replaceable Re-entrant cavity on piston head Overhead, inline Cold 0.4 0.3 0.5 0.4 Gravity and force feed 63.3
	Capacity as specified by the applicant, (cc) Compression ratio Type of cylinder head Type of cylinder liners Type of combustion chamber Arrangement of valves <b>Valve clearance (cold/hot):</b> - Inlet valve, (mm) - Exhaust valve, (mm) <b>Fuel System:</b> Type of fuel feed system <b>Fuel tank:</b> Capacity, (I) Location		2235 20 (± 1): 1 Monoblock Wet, replaceable Re-entrant cavity on piston head Overhead, inline Cold 0.4 0.3 0.5 0.4 Gravity and force feed 63.3 Above clutch housing
	Capacity as specified by the applicant, (cc) Compression ratio Type of cylinder head Type of cylinder liners Type of combustion chamber Arrangement of valves <b>Valve clearance (cold/hot):</b> - Inlet valve, (mm) - Exhaust valve, (mm) <b>Fuel System:</b> Type of fuel feed system <b>Fuel tank:</b> Capacity, (I) Location Provision for draining of sediments/		2235 20 (± 1): 1 Monoblock Wet, replaceable Re-entrant cavity on piston head Overhead, inline Cold 0.4 0.3 0.5 0.4 Gravity and force feed 63.3
	Capacity as specified by the applicant, (cc) Compression ratio Type of cylinder head Type of cylinder liners Type of combustion chamber Arrangement of valves <b>Valve clearance (cold/hot):</b> - Inlet valve, (mm) - Exhaust valve, (mm) <b>Fuel System:</b> Type of fuel feed system <b>Fuel tank:</b> Capacity, (I) Location		2235 20 (± 1): 1 Monoblock Wet, replaceable Re-entrant cavity on piston head Overhead, inline Cold 0.4 0.3 0.5 0.4 Gravity and force feed 63.3 Above clutch housing

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## **18. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS**

**18.1** On the basis of test conducted the performance results have been summarized as evaluative (mandatory) / Non-evaluative (Non-mandatory) parameters 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:

SI.		anzeu as unuer.		Requirements	Values		Whether
No.	Cn	aracteristic	Category (Evaluative / Non Evaluative)	as per IS: 12207-2019	declared by the applicant/ (D) Requirement (R)	As observed	meets the require- ments (Yes/No)
1		2	3	4	5	6	7
18.1.1		Performance :					
a)	Maximum power under 2 h test, (kW) (Natural ambient condition)		Evaluative	Declared value to be achieved with a tolerance of: $\pm 5\%$ for PTO power and or engine power >26 kW. $\pm 10\%$ for PTO power and or engine $\leq 26$ kW.	23.17 (D)	22.5	Yes
b)		<sup>-</sup> at rated e speed, (kW)	Non Evaluative	-do-	23.17(D)	22.4	Yes
c)	Specific fuel consumption corresponding to maximum power, (g/kWh)		Evaluative	+ 10% max.	249 (D)	246	Yes
d)	Maximum equivalent crankshaft torque, (Nm)		Non Evaluative	± 8%	146 (D)	131.9	No
e)	percer		Evaluative	12 percent	18 (D) 12 (R)	23.2	Yes
f)	Maximum operating to					1	
	1)	Engine oil	Evaluative	The declared value should not exceed the max. value specified by the oil company and the observed value under high ambient condition should not exceed the declaration.	130 (D)	118	Yes
	2)	Coolant	Evaluative	The declared value should not exceed the boiling temperature of coolant under the pressurized or otherwise and the observed value under high ambient condition should not exceed the declaration.	119 (D)	94	Yes
g)	Engine oil consumption, (g/kWh)		Evaluative	Not exceeding 1% of SFC at max. Power under High ambient conditions.	2.39 Maximum (R)	0.18	Yes
h)	(g/kwn) Smoke level, m <sup>-1</sup>		Evaluative	Maximum light absorption coefficient of 3.25 per meter or equivalent BOSCH No. 5.2 or 75 Hatridge value (As per CMVR).	3.25 Maximum (R)	0.20	Yes

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1		2	3	4		5	6	7
18.1.2	Dra	awbar Performan						
a)		x. drawbar pull	Non	Minimum 70% of st	-	17.51 (D)	19.22	Yes
	wit		Evaluative		with	17.10		
		responding to 15		ballast.		Minimum		
	(kN	rcent wheel slip,				(R)		
b)			Evaluative	Minimum 70% of st	tatic	12.50	14.83	Yes
~,	wit			mass of tractor with		(D)		
		last		ballast or with stand	dard	13.32		
		responding to 15		ballast, as the case r	may	(R)		
		rcent wheel slip,		be.		Minimum		
c)	(kN Ma	,	Evaluative	Minimum 80 % of PTO p	ower	18.54	19.9	Yes
c)		wer with standard		as referred in SI No. i) a	a) of	(D)	19.9	165
	•	last, (kW).		PTO performance in cas tractors having total s				
				mass > 1500 kg Minimun		18.0 (R)		
				% of PTO power as referre	ed in	Minimum		
				SI No. i) a) of performance in case of				
				weight tractors having ≤	1500			
				kg total static mass of tra Minimum 75 % of the en				
				power as referred in SI N	lo. i)			
				a) of engine performanc case of tractors which do				
				have a PTO shaft.				
d)	Ма	iximum	Evaluative	The declared value she		120 (D)	80	Yes
		nsmission oil		not exceed the maxin value specified by	num oil			
	ten	nperature, (°C)		company	011			
18.1.3	Ро	wer lift and hydra	ulic pump					
a)	Ма	ximum lifting capa		out the range of lift, (ki	N):			
	1)	At hitch points	Evaluative	Tolerance of ± 10%	6	14.7 (D)	14.65	Yes
	2)	With the	Evaluative					
		standard frame		least be 24 kg/PTO l and it should be 2		11.70 (D)	10.01	Yes
				kg/engine kW where		5.30 (R)		
				tractor is not provided v		Minimum		
	Ma	vinum dran in the	Niere	a PTO shaft.			0.4	Ver
b)	hei	ximum drop in the ght of the point of	Non Evaluative	The observed value should not exceed \$	-	50 (D) Maximum	04	Yes
	app	plication of the force		mm				
		er each 5 minutes						
		erval for a total ation of 30						
		nutes, (mm)						
18.1.4	Bra	ake performance						
a)			stance at a	force, equal to or less	than	600 N on br	ake peda	l with
	1)	d ballast, (m): Cold brake	Evaluative	10		10 (R)	7.44	Yes
	2)	Hot brake	Evaluative			10 (R)	7.66	Yes
b)	/	ximum force	Evaluative		600 (	R) Maximum	222 to	Yes
	exe	erted on the brake			(	,	265	
		dal to achieve a						
		celeration of 2.5 $s^2$ , (N)						
L	11/3	, (IN/	L					

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1		2	3	4	5	6	7
C)	W	nether parking	Evaluative	Yes / No	Yes	Yes	Yes
	bra	ake is effective at					
	a f	force of 600 N at					
		ot pedal (s) or 400					
		at hand lever					
18.1.5		ise measurement					
a)	-	iximum ambient	Evaluative	As per CMVR	88 (R)	80	Yes
		ise emitted by the					
h.)		ctor, dB(A)	Evaluative		0C (D)	00	Yes
b)		erator's ear level,	Evaluative	As per CMVR	96 (R)	90	res
		(A)					
18.1.6		nplitude of mecha	l nical vibratio	ns at:			
10.1.0	1)					89	Yes
	2)		Non			78	Yes
	3)	0	Evaluative	100 microns	100(R)	69	Yes
	-,	seated)		(max.)			
	4)	Steering wheel	1			178	No
18.1.7	Air	cleaner oil pull ov	ver :		•	-	
		ximum air cleaner	Evaluative	0.25	Dry type air c	leaner fitted	Not
	oil	pull over, (%)		(Max.)			appli-
							cable
18.1.8		ulage requirement					
a)		oss mass of the trai			(-)		
	1)	Two wheel	Non	As specified by	5.0 (D)	5.0	Yes
	2)	Four wheel	Evaluative	the	6.0 (D)	6.0	Yes
b)	Die	tance travelled / li	tor of fuel or	manufacturer	<b>\.</b>		
b)	1)	Two wheel	Non	As specified by		6.46 to	No
	''		Evaluative	the manufacturer	4.0 to 5.0 (D)	6.78	NO
	2)	Four wheel				5 00 to	No
	_,				4.0 to 5.0 (D)	6.27	
c)	Fu	el consumption, (r	nl/km/tonne)	:	1		
,	1)	Two wheel	Non	As specified by	25 to 30 (D)	29.50 to	No
			Evaluative	the manufacturer	. ,	30.95	
	2)	Four wheel			25 to 30 (D)	26.60 to	Yes
						27.80	
18.1.9		tland cultivation :					
		aling for the	Evaluative	The identified assemblies should	There should	No ingress	Yes
		owing assemblies:	da	essentially meet	be no ingress of water	of water and/or mud	
	1) 2)	Clutch assembly Brake housings	-do- -do-	the requirement of	and/or mud	was	
	<u>2)</u> 3)	Front axle hubs	-do- -do-	IS: 11082. No water ingress in	(R)	observed	
	4)	Engine Oil	-do-	the identified		0.001100	
	5)	Transmission Oil	-do-	assembly given in column-2. If tractor			
	3)			does not meet the			
				requirements of			
				wetland cultivation, it may be			
				recommended for			
				dry land operation			
				only.			

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1		2	3	4	5	6	7
18.1.10	Sat	fety features :					
a)	mo par		Evaluative	Belt drives, silencer, hydrau (As per IS 12239	Meets the requirement	Yes	
b)		hting angement	Evaluative	As per CN	<i>I</i> /VR	Meets the requirement	Yes
с)	req (Tra mo	ating juirements actors having re than 1150 mm ir track width)	Non Evaluative	Should mee requirements of (As amended fro time)	Does not meet the requirement	Νο	
d)	req PT	chnical juirements for O shaft	Evaluative	Should mee requirements of (As amended fro time)	IS: 4931 om time to	Meets the requirement	Yes
e)	poi	nensions of three nt linkage	Non Evaluative	Should mee requirements of (Part-I) (As ame time to time)	IS: 4468 ended from	Meets the requirement	Yes
f)	link	ecifications of age drawbar	Evaluative	Should mee requirements of (As amended fro time)	IS: 12953 om time to	Meets the requirement	Yes
g)	Swinging drawbar (wherever fitted)		Evaluative	Should me requirement of (Part 3) (As ame time to time)	IS: 12362 ended from	Not provided	Not appli- cable
h)	1)	Maximum travelling speed at rated engine speed in reverse gears, kmph	Evaluative	tive Should not exceed 20 kmph		11.18 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 fitted	Not appli- cable
18.1.11	-	belling of tractors		• • •	4. 11		
	1)	Make	Evaluative	Should conform requirements of C		Mahindra	Yes
	2)	Model	Evaluative	with maximum PT	O Power in	Yuvo 275 DI	Yes
	3)	Month & Year of manufacture	Evaluative	kW and year of ma numerical form.	anufacture in	10/21	Yes
	4)	Engine number	Evaluative	Digit 01 – 12 in box		NMG5HAE00 12	Yes
	5)	Chassis number	Evaluative	for MM will rep months and next box No.2 for YY		NG00011	Yes
	6)	Maximum PTO power, (kW)	Evaluative	will represent the y Manufacturing.	ear of	23.17	Yes

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1	2	3	4	5	6	7
18.1.12	Discard limit for:					
(a)	Cylinder bore diameter, (mm)	Evaluative	To be specified by the	89.13	88.895 to 88.911	Yes
(b)	Clearance between piston & cylinder liner at skirt, (mm)	Non Evaluative	manufacturer and supported by the printed literature	0.20	0.095 to 0.010	Yes
(c)	Piston diameter at skirt, (mm)	Non Evaluative		88.15	88.810 to 88.815	Yes
d)	Ring end gap (mm):					
	- Top comp. ring.	Evaluative	To be specified	2.5	0.25 to 0.30	Yes
	- 2 <sup>nd</sup> comp. ring.		by the manufacturer and	2.5	0.45 to 0.55	Yes
	- Oil ring.		supported by the printed literature	2.0	0.20 to 0.25	Yes
(e)	Ring groove clearan	ce (mm):				
	- Top comp. ring.	Evaluative	To be specified by the manufacturer	Tapere	ed rings	Not Appli- cable
	- 2 <sup>nd</sup> comp. ring.		and supported	0.30	0.070 to 0.072	Yes
	- Oil ring.		by the printed literature	0.20	0.048 to 0.050	Yes
(f)	Clearance of main b	earings (mm				
	- Diametrical clearance	Evaluative	To be specified by the manufacturer	0.20	0.062 to 0.070	Yes
	<ul> <li>Crankshaft end float</li> </ul>	Evaluative	and supported by the printed literature	0.60	0.20	Yes
(g)	Clearance of big end	l bearings, (				
(0)	- Diametrical	Evaluative	, -do-	0.20	0.046 to 0.054	Yes
	- Axial	Evaluative	-do-	0.75	0.20	Yes
(h)	Clearance between king pin and bush, (mm)	Non Evaluative	-do-	0.30	0.081 to 0.089	Not Appli- cable
(i)	Clearance between centre pin and bush, (mm)	Non Evaluative	-do-	0.30	0.031 to 0.036	Yes
18.1.13	Literature (Submissi	on to test ag	gency):			
(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
18.1.14	Fitment of Roll Over		Structures (ROP	PS):		
	For tractor having more than 1150 mm rear track widthEvaluative EvaluativeROPS ROPS requirement OECD Not fittedNot fittedNot fitted requirement of IS:1182 or OECD International StandardNot fitted			Not appli- cable		
18.1.15	Standard Accessories	Evaluative	Trailer hitch, fr linkage drawb provided with ti	ar should be	Provided	Yes
18.1.16	Accessories (optional)	Non Evaluative	Ballast weigh	nt, if fitted, neet the	Not Provided	No

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18.2	CATEGORY	OF BREAKD	OWNS / DEFECTS ( As per clau	use 5.0 of IS	:12207-2019):
SI. No.	Category of break-downs	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 five 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 (1 major + 4 minor) or 5 minor breakdowns.	None	Yes
18.3 i)	Conformity with following IS:Guide lines for declaration of power and specific :Conformsfuel consumption and labelling of agriculturaltractors (First revision) [IS10273: 1987(Reaffirmed in January, 2019)]			ms	
ii)	Agricultural tractors - Rear mounted power take- : Conforms off - Types 1, 2 and 3 (third revision) [IS:4931- 1995 (Reaffirmed in January, 2019)]				
iii)	Agricultural wheeled tractors - Rear mounted : Conforms three-point linkage: Part 1 Categories 1, 2, 3 & 4 (fourth revision) [IS 4468(Part-I):1997/ISO 730-1:1994]			ms	
iv)	Drawbar for agricultural tractors – Link type : Conforms [IS 12953:1990 (Reaffirmed October, 2017)].			ms	
V)	Agricultural tractors - Operator's seat technical : <b>Does not conform</b> requirement [IS 12343 –2021].			onform	
vi)	Guide for safety & comfort of operator of : <b>Does not conform</b> agricultural tractors: Part 1 General requirements: [IS 12239 (PT-1) 1996/ISO 4254-1:1989, 2019]				conform
vii)	Tractors and machinery for agriculture and : <b>Does not conform</b> forestry – Technical means for ensuring safety Part 2: Tractors (first revision) (IS 12239 (PT-2) 1999) (Reaffirmed in 2019)]				
viii)	Guide lines for location and operation of operator Conforms controls on agricultural tractors and machinery [IS: 8133-2021]				
ix) x)	Tractors and machinery for agriculture and : Does not conform 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 in January, 2019)] Agricultural Tractors and Machinery - Lighting : Conforms device for travel on public roads (IS: 14683-1999) (Reaffirmed in January, 2019)				

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#### 18.4 Salient Observations:

## 18.4.1 Laboratory tests:

#### 18.4.1.1 PTO Performance:

The maximum equivalent crankshaft torque has been recorded as **131.9 N-m** against the declaration of **146 N-m**, which does not meet the requirement of IS: 12207-2019 with regard to tolerance limit. This should be looked into for necessary corrective action.

#### 18.4.1.2 Hydraulic Performance:

During hydraulic performance test, the height of lower hitch point was observed as 220 mm & 205 mm on LHS & RHS respectively. Upon this the applicant vide letter No. FD/BVH/BT/YUV0275/21-22/09 dated 01.03.2022 has requested to adjust lift rod length to maintain equal height of lower hitch point i.e. 220 mm on LHS & RHS, which was allowed. This should be looked into for necessary corrective action at production level.

#### 18.4.1.3 Mechanical Vibration:

The amplitude of mechanical vibration on various assemblies marked as (\*) in Chapter – 10 of this test report is on higher side. This calls for dampening down of vibrations especially on steering wheel to improve the operational comfort and service life of components.

#### 18.4.1.4 Operator's seat:

- i) Adjustment of driver's mass should be provided as per the above referred standard.
- ii) Vertical distance from Seat Index Point to the centre accelerator pedal has been measured 480 mm against the requirement of 230 to 460 mm.
- iii) Longitudinal distance from Seat Index Point to centre of differential lock pedal was measured 275 mm against the requirement of 410 to 720 mm.
- iv) Vertical distance from Seat Index Point to centre of steering control wheel was measured 190 mm against the requirement of 265 to 385 mm.
- v) Vertical distance from Seat Index Point to foot rest was measured 560 mm against the requirement of 450 to 520 mm.

Above parameters does not meet the requirement of IS: 12343-2021. This should be looked into for necessary corrective action at production level.

#### 18.4.1.5 Operator's work place:

- i) Vertical retainer has not been provided on inner side of clutch pedal.
- ii) Spark arresting device has not been provided in the exhaust system.

Above parameters does not meet the requirement of IS: 12239 (Part-I) 2018. This should be looked into for necessary corrective action at production level.

#### 18.4.1.6 PTO master shield:

PTO master shield has not been provided on tractor. This should be looked into for necessary corrective action.

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#### 18.4.2 Haulage Test:

- i) Distance travelled per litre fuel consumption with two wheel and four wheel trailers was observed as 6.46 to 6.78 km/l & 5.99 to 6.27 km/l against the declaration of 4.0 to 5.0 km/l. This should be looked into for necessary corrective action.
- ii) Specific fuel consumption with two wheel was observed as 29.50 to 30.95 cc/km/ton against the declaration of 25 to 30 cc/km/ton. This should be looked into for necessary corrective action.

#### 18.4.3 Operator's Manual:

Ballasting is recommended as per the technical specifications submitted by applicant, whereas in Page No. 3-3 of Operator's Manual, ballasting is not recommended. This point should be corrected in the Operator's Manual.

#### 18.4 Maintenance / Service Problems:

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

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

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

- i) Spark arrester should be provided in the exhaust system as per the requirement of IS: 12239 (Part-2)-1999 (Re-affirmed in January, 2019).
- ii) Vertical retainers at both sides of clutch pedal should be provided.
- iii) The working clearance between position and draft control lever of hydraulic system was measured as 50 mm against the minimum requirement 70 mm as per IS: 12239 (Part-2)-1999 (Re-affirmed in 2019).
- iv) Colour code of engine revolution gauge should be provided as per IS: 6283 (Part-1) 2006 (Re-affirmed in January, 2019) &IS: 6283 (Part-2) 2007 (Re-affirmed in January, 2019).
- v) Fuel shut-off knob does not remain in "STOP" position as per requirement of IS: 8133-2021.
- vi) Identification of hand controls by colour has not been provided as per the requirement as laid down in Table -5 of IS: 8133-2021.
- vii) The hand accelerator lever when moved away from the operator (i.e. forward) decreases the engine speed, which does not meet the requirement as laid down in Table -1 of IS: 8133-2021.

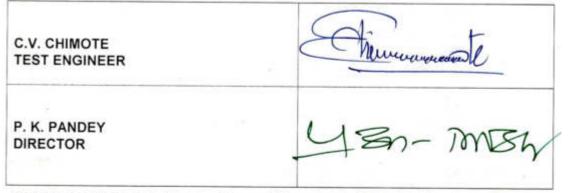
## 18.6 Adequacy of Literature supplied with machine:

- **18.6.1** The following literatures were supplied with the test tractor for reference during the test:
  - a) Service manual for Mahindra, Yuvo 275 DI tractor model.
  - b) Operator's manual for Mahindra, Yuvo 275 DI tractor model.
  - c) Parts catalogue Part-I & II for Mahindra, Yuvo 275 DI tractor model.

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- 18.6.2 The operator manual may be brought out for the guidance of users and service personnel as per IS:8132-1999 incorporating, inter alia, the following:
  - Safe hitch height for four wheel trailer
  - ii) Ballast masses for different operations

#### TESTING AUTHORITY:



Draft test report is compiled by: Mrs. Poonam Khurasia, Senior Technical Assistant.

#### **19. APPLICANT'S COMMENTS**

Para No.	Our reference	Applicant's comments			
19.1	18.4.1.2	Observations will be studied and necessary corrective actions will be initiated.			
19.2	18.4.3, 18.6.2 (i) & (ii)	Observations will be studied and necessary corrective actions for improvement in the manuals will be ensured.			