

Application Reference No. 28/2022-23/68

(यह परीक्षण रिपोर्ट 31/05/2028 तक वैध है / THIS TEST REPORT IS VALID UPTO 31/05/2028)



**Make of Agricultural Tractor : Mahindra**  
**Model : YUVO TECH+ 415 DI 4WD**  
**Manufactured by : Mahindra & Mahindra Limited,**  
**(Farm Equipment Sector) Mahindra Research**  
**Valley, Mahindra World City, Plot no. 41/1, Anjur**  
**P.O., District Chengalpattu – 603 004.**



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**  
**TRACTOR NAGAR, BUDNI (M.P.) 466 445**  
**(An ISO 9001:2015 Certified Institute)**

T-1732/2263/2023	MAHINDRA, YUVO TECH+ 415 DI 4WD - INITIAL COMMERCIAL TEST
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## IMPORTANT INFORMATION

The Government of India, Ministry of Agriculture and Farmers' Welfare has directed, vide a OM No. 13-17/2021-M&T(I&P) dated 28.07.2022, that since 15<sup>th</sup> August, 2022, only mandatory tests will be carried out on a tractor unless applicant has expressly requested for optional tests as well, mentioned in the above captioned OM.

In the instant case, there is no request from the applicant to carry out the optional tests hence only Mandatory Tests, as given below, have been conducted and reported in this report: -

1. PTO performance
2. Hydraulic performance
3. Drawbar performance
4. Brake performance

Month: May	Test Report No.: T-1732/2263/2023	Year: 2023
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[C]	Tractor manufacturer's name and address	:	<b>M/s. Mahindra &amp; Mahindra Limited (Farm Equipment Sector)</b> Mahindra Research Valley, Mahindra World City, Plot no. 41/1, Anjur P.O., District Chengalpattu – 603004.
[D]	Location of tractor assembly	:	Mahindra & Mahindra Limited (Farm Equipment Sector) (i) Akurli Road, Kandivali (E), Mumbai – 400 101 (ii) MIDC Hingna Road, Nagpur– 440 028 (iii) Khatima Panipat Highway, Rudrapur, Udhamasingh Nagar – 263 153. (iv) Jaipur Ajmer Road, Jaipur– 303 007 (v) Near Bidar "T" Junction, Mahindra Nagar, Zaheerabad- 502 220 (vi) Mahindra Research Valley, Mahindra World City, Plot no. 41/1, Anjur P.O., District Chengalpattu – 603 004
[C]	Submitted for test by (Applicant)	:	The Manufacturer
[C]	Selected for test by	:	The Ministry vide OM No. 13-17/2021 - M&T (I&P) dated 28.07.2022, has allowed the applicant to submit the test sample directly to the Institute without requiring any random selection for Initial Commercial Testing. Thus, the applicant directly submitted the test sample to the Institute for test.
[D]	Place of running-in	:	At manufacturer's works
[D]	Duration of running-in (h):	:	
	-Engine	:	30.08
	-Transmission	:	36
[C]	Location of test	:	Government of India, Central Farm Machinery Training and Testing Institute, P.O. - Tractor Nagar, BUDNI – 466445 (M.P.), INDIA

## 1. SPECIFICATIONS OF TRACTOR

### 1.1 Identification:

#### 1.1.1 Denomination

[C]	Make of tractor	:	Mahindra
[C]	Model (trade name)	:	YUVO TECH+ 415 DI 4WD
[C]	Type	:	Rear Wheel Drive, Standard Agricultural Tractor.
[C]	Month & year of manufacture	:	08/22
[D]	Country of origin	:	India

#### 1.1.2 Numbers:

[D]	1 <sup>st</sup> Serial No. of prototype	:	MBNPFVVF MNJ00001
[C]	Serial No.	:	MBNPFVVF NNE00055

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<b>1.2</b>	<b>Engine:</b>	
[D]	Manufacturer's address	: Mahindra & Mahindra Limited (Farm Equipment Sector), i) Akurli Road, Kandivali (E), Mumbai – 400 101 ii) MIDC, Hingna Road, Nagpur – 440 028 iii) Jaipur Ajmer Road, Jaipur – 303 007 iv) Khatima Panipat Highway, Rudrapur, Udhamsinghnagar, 263 153 v) Near Bidar "T" junction, Mahindra Nagar, Zaheerabad – 502 220 vi) Mahindra Research Valley, Mahindra World City, Plot No.41/1, Anjur P.O., District, Chengalpattu – 603 004
[C]	Make	: Mahindra
[C]	Model	: MTHCI30NA042B3A
[C]	Type	: Four stroke, naturally aspirated, liquid cooled, direct injection, diesel engine.
[C]	Serial No.	: NNE4ZEE0089
<b>1.2.1</b>	<b>Cylinders:</b>	
[C]	Number/disposition	: Three, vertical, in-line
[D]	Bore / Stroke, (mm)	: 98 / 132
[D]	Capacity, cm <sup>3</sup>	: 2987
[D]	Compression ratio	: 19.7 (±1): 1
[D]	Arrangement of valves	: Overhead, inline
[D]	Cylinder liners	: Wet, replaceable
[D]	Type of combustion chamber	: Re-entrant bowl
<b>1.2.2</b>	<b>Supercharging</b>	: <b>Not available</b>
<b>1.2.3</b>	<b>Fuel system:</b>	
[C]	Fuel feed system	: Gravity and force feed
	<b>Filter(s):</b>	
[C]	Make	: Bosch
[C]	Model	: F 002 H25 037
[C]	Type	: Paper element
[C]	Number(s)	: One
[D]	Capacity of fuel tank, (l)	: 53.4
	<b>Injection pump:</b>	
[C]	Make	: Bosch
[C]	Model	: F 002 A2Z A80, PES3A85D320RS2000
[C]	Type	: Inline, plunger
[C]	Serial Number	: 27645277
	<b>Manufacturer's production setting of injection pump:</b>	
[C]	Flow rate (rated engine speed & full load), (kg/h)	: 7.04
[D]	Timing	: 5 ± 1 degree before TDC
	<b>Injectors:</b>	
[D]	Make	: Bosch, India

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## 6. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS

6.1 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: 12207-2022 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: 12207-2022	Values declared by the applicant/ (D) Requirement (R)	As observed	Whether meets the requirements (Yes/No)
1	2	3	4	5	6	7
<b>MANDATORY TESTS: (As per Ministry's Office Memorandum No. 13-17/2021-M&amp;T (I&amp;P) dated 28<sup>th</sup> of July, 2022).</b>						
<b>6.1.1 PTO Performance:</b>						
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.	28.7 (D)	28.9	Yes
b)	Power at rated engine speed, (kW)	Non Evaluative	-do-	28.7 (D)	28.8	Yes
c)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Evaluative	Should not be more than 10% of declared value.	246 (D)	253	Yes
d)	Maximum equivalent crankshaft torque, (Nm)	Non Evaluative	$\pm 8\%$	183 (D)	177.4	Yes
e)	Back-up torque, percent	Evaluative	Should be min. 12%	25 (D) 12 (R)	29.1	Yes
f)	Maximum operating temperature, ( $^{\circ}$ C):					
	1) Engine oil	Evaluative	The declared value should not exceed the Max value specified by the oil company and the observed value under natural ambient/high ambient condition should not exceed the declaration.	130 (D)	107	Yes
	2) Coolant	Evaluative	Observed value should not exceed the declared value or boiling point of coolant at radiator cap pressure whichever is lower. The boiling point of the coolant at radiator pressure shall be provided by the applicant.	119 (D)	93	Yes
g)	Engine oil consumption, (g/kWh)	Evaluative	Not exceeding 1% of SFC at Max power under natural ambient condition. The value would be based on the test conducted under natural ambient condition	2.53 Maximum (R)	0.37	Yes
h)	Smoke level, $m^{-1}$	Evaluative	Maximum light absorption coefficient of 3.25 per meter or equivalent BOSCH No. 5.2 or 75 Hatridge value (As per CMVR). Max Smoke level shall be reported out of 6 readings tested as per IS 12062 and observed value should be well within the required limits.	3.25 per meter Maximum (R)	0.16	Yes

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1	2	3	4	5	6	7
<b>6.1.2</b>	<b>Drawbar performance:</b>					
<b>a)</b>	Max. drawbar pull with ballast corresponding to 15 percent wheel slip, (kN)	Non Evaluative	Minimum 70% of static mass of tractor with ballast.	18.00 (D) 18.68 (R)	23.82	Yes
<b>b)</b>	Max. drawbar pull without ballast corresponding to 15 percent wheel slip, (kN)	Evaluative	In case of tractors having total static mass $\geq$ 1500 kg, Min 70% of static mass of tractor without ballast or with standard ballast, as the case may be. In case of light weight tractors having $\leq$ 1500 kg total static mass of tractor, Min. 65% of static mass of tractor without ballast or with standard ballast, as the case may be.	15.00 (D) 14.42 (R) Minimum	19.35	Yes
<b>c)</b>	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 Minimum 75% of PTO power as referred in SI No. i) a) of PTO performance in case of light weight tractors having $\leq$ 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.	22.96 (D) 23.1 (R) Minimum	25.3	Yes
<b>d)</b>	Maximum transmission oil temperature, ( $^{\circ}$ C)	Evaluative	The declared value should not exceed the recommendation by the oil manufacturer. The observed value should not exceed the declared value throughout the drawbar test.	120 (D)	88	Yes
<b>6.1.3</b>	<b>Power lift and hydraulic pump performance:</b>					
<b>a)</b>	Maximum lifting capacity throughout the range of lift, (kN):					
	1) At hitch points	Evaluative	Should not be less than 90% of declared value.	16.67 (D) 15.00 (R) Minimum	15.99	Yes
	2) With the standard frame	Evaluative	The lift capacity should at least be 24 kg/PTO kW and it should be 21.5 kg/engine kW where the tractor is not provided with a PTO shaft.	13.24 (D) 6.80 (R) Minimum	12.32	Yes
<b>b)</b>	Maximum drop in the height of the point of application of the force after each 5 minutes interval for a total duration of 30 Minutes, (mm)	Non Evaluative	The observed value should not exceed 50 mm.	50 (D) Maximum	00	Yes

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1	2	3	4	5	6	7	
<b>6.1.4</b>	<b>Brake performance at 25 kmph:</b>						
<b>a)</b>	Maximum stopping distance at a force, equal to or less than 600 N on brake pedal with road ballast, (m):						
	1)	Cold brake	Evaluative	10	10 (R)	6.81	Yes
	2)	Hot brake	Evaluative	10	10 (R)	7.07	Yes
<b>b)</b>	Whether parking brake is effective at a force of 600 N at foot pedal (s) or 400 N at hand lever	Evaluative	Yes / No	Yes	Yes	Yes	
<b>6.1.5</b>	<b>OPTIONAL TESTS: As the applicant has not applied for any optional tests, therefore no optional tests was conducted.</b>						
<b>6.1.6</b>	<b>Safety features :</b>						
<b>a)</b>	Guards against moving and hot parts	Evaluative	Belt drives, pulleys, silencer, hydraulic pipes [As per IS 12239 (Part2)]	Meets the requirement	Yes		
<b>b)</b>	Lighting arrangement	Evaluative	As per CMVR	Conforms	Yes		
<b>c)</b>	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 meet the requirement</b>	<b>No</b>		
<b>d)</b>	Technical requirements for PTO shaft	Non Evaluative	Should meet the requirements of IS: 4931 (As amended from time to time)	Meets the requirement	Yes		
<b>e)</b>	Dimensions of three point linkage	Non Evaluative	Should meet the requirements of IS: 4468 (Part-I) (As amended from time to time)	<b>Does not meet the requirement</b>	<b>No</b>		
<b>f)</b>	Specifications of linkage drawbar	Non Evaluative	Should meet the requirements of IS: 12953 (As amended from time to time)	Meets the requirement	Yes		
<b>g)</b>	Swinging drawbar (wherever fitted)	Non Evaluative	Should meet the requirement of IS: 12362 (Part 3) (As amended from time to time)	Not provided	Not applicable		
<b>h)</b>	Audible warning signal on tractor	Evaluative	If tractor travel speed in reverse gear exceeds 20 kmph, an audible warning signal on tractor shall get activated. A sticker to the effect that "operating the tractor beyond 20 kmph speed in reverse gear is not safe" should be prominently displayed.	Not fitted	Not applicable		

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1	2	3	4	5	6	7		
6.1.7	<b>Labelling of tractors (Provision of labelling plate):</b>							
	1)	Make	Evaluative	Should conform to the requirements of CMVR along-with declared value of PTO in kW, Specific fuel consumption (SFC) corresponding to maximum power in g/kWh and year of manufacture in numerical form <table border="1" style="margin-left: 20px;"><tr><td>MM</td><td>YY</td></tr></table> Digit 01-12 in box No. 1 for MM will represent the month and next two digit in the box No. 2 for YY will represent the year of manufacturing.	MM	YY	Mahindra	Yes
	MM	YY						
	2)	Model	Evaluative		YUVO TECH+ 415 DI 4WD	Yes		
	3)	Month & Year of manufacture	Evaluative		08 / 22	Yes		
	4)	Engine number	Evaluative		NNE4ZEE0089	Yes		
	5)	Chassis number	Evaluative		MBNPFVVF NNE00055	Yes		
	6)	Maximum PTO power, (kW)	Evaluative		28.7	Yes		
7)	Specific fuel consumption, (g/kWh)	Evaluative	246		Yes			
6.1.8	<b>Literature (Submission to test agency):</b>							
(a)	Operator manual	Evaluative	The printed literature in booklet form should be provided as per IS 8132 and should submit along with the test sample.	Provided	Yes			
(b)	Parts Catalogue	Evaluative		Provided	Yes			
(c)	Workshop/ Service manual	Evaluative		Provided	Yes			
6.1.9	<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:11821 or OECD code or equivalent International Standard.	Not fitted	Not applicable			
6.1.10	Standard Accessories	Evaluative	Trailer hitch, front tow hook, linkage drawbar should be provided with tractor	Provided	Yes			
6.1.11	Accessories (optional)	Non Evaluative	Ballast weight, if fitted, should meet the requirement of CMVR	Not fitted	Not applicable			

6.2	<b>CATEGORY OF BREAKDOWNS / DEFECTS ( As per clause 5.0 of IS:12207-2022):</b>				
S. No.	Category of break-downs	Category (Evaluative / Non Evaluative)	Requirements as per IS: 12207-2022	As observed	Whether meets the Requirement (Yes/No)
1.	Critical	Evaluative	There is no 'critical breakdown' during the course of testing.	None	Yes
2.	Major	Evaluative	There are not more than 2 major breakdowns and neither of them should be of repetitive nature.	None	Yes
3.	Minor	Evaluative	There are not more than 5 minor defects during the test and neither of them should of repetitive nature.	Two nos. (Minor, Mn-18)	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.	Two nos. (Minor, Mn-18)	Yes



**6.3 Conformity with following IS:**

- i) Guidelines for declaration of power and specific fuel consumption and labeling of agricultural tractors (First revision) [IS:10273 -1987 (Reaffirmed Year 2019)] : **Conforms**
- ii) Agricultural tractors - Rear mounted power take-off - Types 1, 2 and 3 (third revision) [IS:4931-1995 (Reaffirmed Year 2019)] : **Conforms**
- iii) Agricultural wheeled tractors – Rear mounted three-point linkage: Part 1 Categories 1, 2, 3 & 4 (fourth revision) [IS:4468(Part-I) – 1997 (Reaffirmed in 2022)] : **Does not conform**
- iv) Drawbar for agricultural tractors – Link type [IS 12953:1990 (Reaffirmed Year 2022)] : **Conforms**
- v) Agricultural tractors- Operator’s seat technical requirement [IS12343 - 2021] : **Does not conform**
- vi) Guide for safety & comfort of operator of agricultural tractors:Part 1 General requirements (first revision):[IS 12239 (Part 1) - 2018] : **Does not conform**
- vii) Tractors and machinery for agriculture and forestry – Technical means for ensuring safety Part 2: Tractors (first revision) (IS 12239 (Part 2) 1999) (Reaffirmed Year 2019)] : **Does not conform**
- viii) Guide lines for location and operation of operator controls on agricultural tractors and machinery [IS: 8133 - 2021] : **Does not conform**
- ix) Tractors and machinery for agriculture and forestry, powered lawn and garden equipment - Symbols for operator controls and other displays Part2 Symbols for agricultural tractors and machinery [IS: 6283(Part-1) - 2006 (Reaffirmed Year 2019) and IS: 6283 (Part-2) – 2007 (Reaffirmed Year 2019)] : **Does not conform**
- x) Agricultural Tractors and Machinery-Lighting device for travel on public roads (IS:14683-1999) (Reaffirmed Year 2019)] : **Conforms**

**6.4 Salient Observations:**

**6.4.1 Laboratory tests:**

**6.4.1.1 Power lift & hydraulic pump performance test:**

- i) During hydraulic lifting capacity test at lower hitch point, Cable hand accelerator (dhruv) (Part no. 007610467V91) got broken. Upon this, the applicant vide letter no. FD/BVH/ICT/YUVOTECH+4154wd/22-23/06 dated 01.03.2023 has requested for replacement of the cable, which was allowed and accordingly, Cable hand accelerator (dhruv) was replaced with new one of same specification. This should be looked into for necessary corrective action.
- ii) During Maintenance of lift load test, the hydraulic lift was unable to hold the lift load and it dropped to 665 mm (touched the ground level) within 3 minutes from its initial height of 915 mm. The drop in hydraulic lift was 250 mm within three minutes against the non-evaluative requirement of maximum 50 mm cumulative drop for a duration of 30 minutes as per IS: 12207-2022. Upon this, the manufacturer vide letter no. FD/BVH/ICT/YUVOTECH+4154wd/22-23/07 dated 10.03.2023, requested for inspection of the Hydraulic piston assembly, SLRV (Shock Load Relief Valve) & NRV (Non Return Valve) for O-ring cut and seal damage, which was allowed. On inspection, two O-rings on spool lowering control valve were found damage. Upon this, the applicant has requested to replace the following parts vide letter no. FD/BVH/ICT/YUVOTECH+4154wd/22-23/08 dated 20.03.2023, which was allowed:

S. No.	Part Number	Part Name	Qty.	Category of breakdown as per IS: 12207-2022.
1	007204998C1	O-RING 6.86 x 1.78	01	Minor (Mn-18)
2	007205265C1	BACKUP RING FOR 007204998C1	01	Minor (Mn-18)

Accordingly, both the O-rings were replaced with new ones of same specifications. After the above said repair, the maintenance of lift load test was conducted.

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**6.4.1.2 Drawbar power test:**

During drawbar performance test (five hours test at pull corresponding to 15 percent wheel slip), the air valve of tube of RHS rear tyre got broken. Upon this, the applicant vide letter no. FD/BVH/ICT/YUVOTECH+4154wd/23-24/09 dated 26.04.2023 requested to replace rear tube (RHS) with new one of same specification, which was allowed and same was replaced with new one of same specification.

**6.4.1.3 Three-point linkage:**

The following parameters does not meet the requirements of IS: 4468 (Part-I) – 1997 and needs to be looked into for necessary corrective actions:

- i) Lateral movement of lower hitch points has been measured as 100 mm against the minimum requirement of 125 mm.
- ii) The distance from end of power take-off to centre of lower hitch point has been measured as 485 mm against the requirement of 550 to 625 mm.

**6.4.1.4 Operator's seat:**

The following parameters do not meet the requirement of IS: 12343-2021.

- i) Provision for adjustment of driver's mass has been specified as 50 to 120 kg against the requirement of 40 to 100 kg.
- ii) Longitudinal distance from SIP centre of steering control wheel has been measured as 550 mm against the requirement of 425 to 525 mm.
- iii) Vertical distance from SIP to centre of steering control wheel has been measured as 235 mm against the requirement of 265 to 385 mm.

Therefore, all of the above should be looked into for necessary corrective action.

**6.4.1.5 Operator's work place:**

The following parameters does not meet the requirement of IS: 12239 (Part-I) -2018.

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

Therefore, all of the above should be looked into for necessary corrective action.

**6.4.1.6 PTO master shield:**

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

**6.5 Maintenance / Service Problems:**

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

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

- i) Identification of hand controls by colour has not been provided as per the requirement as laid down in Table – 5 of IS: 8133-2021.
- ii) 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.
- iv) The working clearance between draft control lever & RHS mudguard and between PTO engaging lever & LHS mudguard have been measured as 25 mm and 450 mm respectively against the minimum requirement of 70 mm as per the requirement of IS: 12239 (Part II) - 2019.

Above parameters should be looked into for necessary corrective action.

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

**6.7.1** The following literatures were supplied with the test tractor for reference during the test: -

- a) Operator Manual for "Mahindra YUVO TECH+ " tractor models.
- b) Parts catalogue for "Mahindra YUVO TECH+ 415 DI 4WD" tractor model.
- c) Service manual for "Mahindra YUVO TECH+ 415 DI 4WD" tractor model.

**6.7.2** 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:

- i) Recommended ballast masses for different operations.

**TEST CARRIED OUT AT C.F.M.T. & T.I., BUDNI (M.P.), INDIA**

**TESTING AUTHORITY**

C. V. CHIMOTE TEST ENGINEER	
A. K. UPADHYAY DIRECTOR (I/C)	

Draft Test Report compiled by **Partha Lodh**, Senior Technical Assistant.

**7. APPLICANT'S COMMENTS**

Para no.	Our reference	Applicant comments
7.1	6.7.2	Parameters in product literature will be studied & necessary action will be initiated.

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**ANNEXURE-I**

**TRACTOR RUN HOURS DURING TEST**

<b>A.</b>	<b>LABORATORY AND TRACK TESTS:</b>	<b>HOURS</b>
1.	Running-in	Applicant has declared it to be conducted on their work place.
2.	PTO performance test	17.6
3.	Power lift and hydraulic pump performance test	4.8
4.	Drawbar performance test	24.9
5.	Brake performance test	1.8
6.	Nominal speed test	2.5
<b>B.</b>	Miscellaneous test and other run hours including idle run, transportation, trials and preparation for test	3.6
<b>TOTAL:</b>		55.2