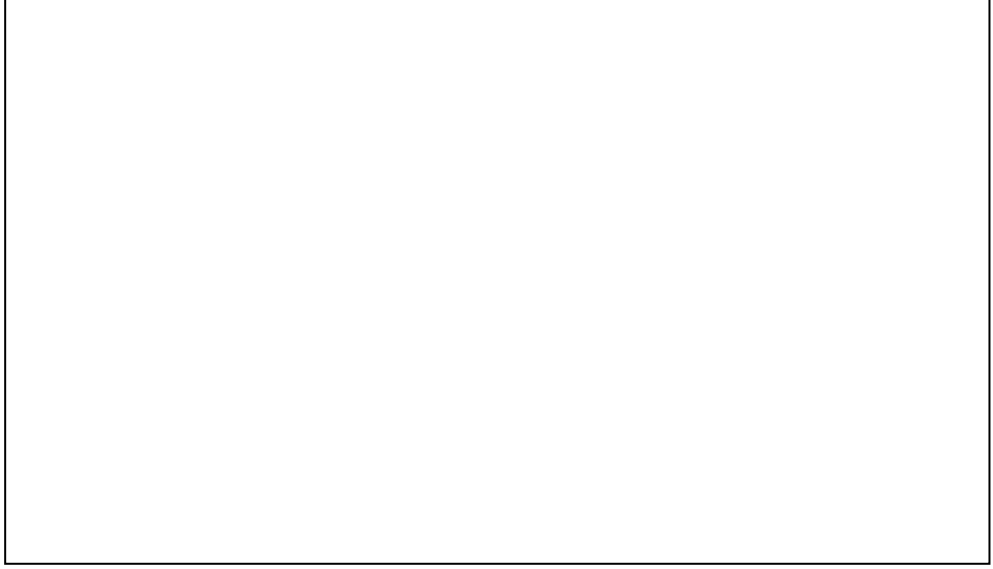


व्यावसायिक परीक्षण रिपोर्ट (प्रथम बैच) संख्या/No. : T-1560/2088/2021  
COMMERCIAL TEST REPORT (1<sup>st</sup> Batch) माह/Month : July, 2021  
(यह परीक्षण रिपोर्ट 31/07/2026 तक वैध है | THIS TEST REPORT IS VALID UPTO: 31/07/2026)



## TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR



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.) 466 445  
**CENTRAL FARM MACHINERY TRAINING & TESTING INSTITUTE**  
(An ISO 9001: 2015 Certified Institute)  
TRACTOR NAGAR, BUDNI (M.P.) 466 445  
E-mail: [fmti-mp@nic.in](mailto:fmti-mp@nic.in) Web site: [fmttibudni.gov.in](http://fmttibudni.gov.in)  
Telephone: 07564-234729, 234743

Page 1 of 50

**Manufacturer** : **M/s. Tractors and Farm Equipment Limited, P.O. Box No.3302, Old 35, New 77, Mahatma Gandhi Road,**

T-1560/2088/2021	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

**Nungambakkam, Chennai- 600 034**

<b>Month: July</b>	<b>Test Report No. T-1560/2088/2021</b>	<b>Year: 2021</b>
--------------------	---	-------------------

**GOVERNMENT OF INDIA  
CENTRAL FARM MACHINERY TRAINING & TESTING INSTITUTE  
TRACTOR NAGAR, BUDNI (MADHYA PRADESH) 466445, INDIA  
E-mail: [fmti-mp@nic.in](mailto:fmti-mp@nic.in)  
Web site: [fmttibudni.gov.in](http://fmttibudni.gov.in)**

Telephone: 07564-234729, 234743

Type of Test : **COMMERCIAL (1<sup>st</sup> Batch)**  
Test code/Procedure : IS: 5994-1998 and IS: 12207-2019

<b>CENTRAL FARM MACHINERY TRAINING &amp; TESTING INSTITUTE– BUDNI</b>	<b>Page 2 of 50</b>
---	---------------------

<b>T-1560/2088/2021</b>	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

Period of Test : January, 2021 to July, 2021  
 Test Report No. : **T-1560/2088/2021**  
 Month/Year : **July, 2021**

- i) The results reported in this report are observed values and no corrections have been applied for atmospheric and site conditions.
- ii) The data given in this report pertain to the particular machine selected by the representative of testing authority, for tests.
- iii) The results presented in this report do not in any way attribute to the durability of the machine.
- iv) This report should not be reproduced in part or full without prior permission of the Director, Central Farm Machinery Training and Testing Institute, Budni (M.P.)
- v) This is the 1<sup>st</sup> batch test report and therefore, should be read in conjunction with the Initial Commercial Test Report of “**TAFE, MF 5245 DI PLANETARY PLUS V1**” Tractor bearing report no. **T- 998/1522/2015** released in **December, 2015**, and it’s Technical Extension Test report no. **T- 1357/1884/2020 (March, 2020)**.

**SELECTED CONVERSIONS**

<b>SELECTED CONVERSIONS</b>		
<b>S. No</b>	<b>Units</b>	<b>Conversion Factor</b>
<b>1</b>	<b>Force:</b>	
	1 kgf	9.80665 N 2.20462 lbf
	<b>Power:</b>	
<b>2</b>	1 hp	1.01387 metric hp (Ps) 745.7 W
	1 Ps	735.5 W
	1 kW	1.35962 Ps
	<b>Pressure:</b>	
<b>3</b>	1 psi	6.895 kPa
	1 kgf/cm <sup>2</sup>	98.067 kPa = 735.56 mm of Hg
	1 bar	100 kPa = 10 N/cm <sup>2</sup>
	1 mm of Hg	1.3332 m-bar

<b>ABBREVIATIONS</b>	
As per applicant	apa
Top Dead Centre	TDC
Indian Standard	IS
Left Hand Side/ Right Hand Side	LHS/RHS
Mercury	Hg.
Temperature	Temp.
Not recorded	N.R.
Revolutions per minute	rpm
Outer diameter/ Inner diameter	O.D/I.D
Not available/ Not applicable	N.A.
Power take-off	PTO
Relative Humidity	R.H.

<b>T-1560/2088/2021</b>	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

## **C O N T E N T S**

	<u><b>PAGE NO.</b></u>
1. Specification	05
2. Fuel and Lubricants	19
3. PTO Performance test	20
4. Drawbar Performance Test	24
5. Power Lift and hydraulic pump performance test	29
6. Brake Test	29
7. Noise Measurement	30
8. Air Cleaner Oil Pull-Over test	32
9. Mechanical vibration measurement	32
10. Field Test	32
11. Haulage test	33
12. Components/Assembly Inspection	33
13. Adjustments, defects, breakdowns & repairs	36
14. Comparison of Specification and Performance Characteristics of Previous sample (Test Report No. T- 998/1522/2015, T- 1357/1884/2020) and present sample.	36
15. Summary of observations, comments & recommendations	42
16. Applicant's comments	50
<b>ANNEXURE – I</b>	<b>50</b>

<b>T-1560/2088/2021</b>	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

“TAFE, MF 5245 DI PLANETARY PLUS V1” tractor had undergone initial commercial test at this institute and report number T-998/1522/2015 was released in December, 2015. Now the applicant has submitted an application no. nil dated 07.07.2020 for 1<sup>st</sup> batch testing of “TAFE, MF 5245 DI PLANETARY PLUS V1” tractor. The performance results of the test sample submitted for the batch testing were evaluated as per IS: 12207-2019 and test report is released as under.

<b>Manufacturer</b>	: M/s. Tractors and Farm Equipment Limited, P.O. Box No.3302, Old 35, New 77, Mahatma Gandhi Road, Nungambakkam, Chennai- 600 034
<b>Location of manufacturing plants</b>	: i) M/s Tractors and Farm Equipment Limited, Kalladipatti plant, 10/205, Kalladipatti (P.O.), Pin code – 624 201, Dindigul District, Tamil Nadu ii) M/s Tractors and Farm Equipment Limited, Doddaballapur plant, Plot no. 1, Kiadb Industrial area, Doddaballapur, Bangalore – 561 203
Test requested by	: The manufacturer
Place of running-in	: At applicant’s works.
Duration of said running-in, (h):	
- Engine	: 12
- Transmission	: 24
Method of Selection	: Due to Covid-19 Pandemic, it was not possible to conduct the random selection. Nor was possible for applicant to facilitate the random selection. As a last resort applicant requested to allow the direct submission of Test Sample, which was allowed.

## 1. SPECIFICATIONS

<b>1.1 Tractor:</b>	
Make	: TAFE LTD.
Model	: MF 5245 DI Planetary Plus V1
Type	: Four wheeled, rear-wheel driven, Standard Agricultural Tractor.
Month & Year of manufacture	: 11/2020
Chassis number	: MEA4A6D7LL2324802
Country of origin	: India
<b>1.2 Engine:</b>	
Make	: SIMPSON & Co. Limited
Model	: T III A SJ 327 –F3
Type	: Four stroke, naturally aspirated, water cooled, direct injection, diesel engine.
Serial number	: SJ327A94353

T-1560/2088/2021	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

**1.2.1 Engine speed (Manufacturer’s recommended production setting), (rpm):**

- Maximum speed at no load : 2300 to 2475
- Low idle speed : 600 to 800
- Speed at maximum torque : 1200 to 1500

**Rated speed, (rpm):**

- For PTO use : 2250
- For drawbar use : 2250

**1.3 Cylinder & Cylinder Head:**

- Number : Three
- Disposition : Vertical, Inline
- Bore/stroke, (mm) : 95/127 (apa)
- Capacity as specified by the applicant, (cc) : 2700
- Compression ratio : 18.3 : 1
- Type of cylinder head : Monoblock
- Type of cylinder liners : Dry, replaceable
- Type of combustion chamber : Re-entrant cavity on piston crown
- Arrangement of valves : Overhead, inline

**Valve clearance (cold/hot):**

- Inlet valve, (mm) : 0.30 / 0.30
- Exhaust valve, (mm) : 0.30 / 0.30

**1.4 Fuel System:**

- Type of fuel feed system : Gravity and force feed

**1.4.1 Fuel tank:**

- Capacity, (l) : 45.0
- Location : Above the engine, under the bonnet
- Provision for draining of sediments/water : Not provided, however a water separator is provided
- Material of fuel tank : Metallic

**1.4.2 Water Separator:**

- Make : Engine Tech (apa)
- Type : Inverted funnel, gravity separation.
- Location : In LHS, between fuel tank & fuel feed pump
- Capacity (l) : 0.45

**1.4.3 Fuel feed pump:**

- Make : Bosch, India
- Type : Plunger with hand primer
- Model/Group combination No. : FP/KEG22AD317, F002 A50045
- Provision of sediment bowl : Provided
- Method of drive : Through cam shaft of fuel injection pump

**1.4.4 Fuel filters:**

- Make : Bosch, made in India
- Model/Group combination No. : F 002 H20 151
- Number : Two

**Type of elements:**

- Primary : Cloth
- Secondary : Paper
- Capacity of final stage filter, (l) : 0.40

CENTRAL FARM MACHINERY TRAINING & TESTING INSTITUTE– BUDNI	Page 6 of 50
--	--------------

<b>T-1560/2088/2021</b>	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

**1.4.5 Fuel Injection pump:**

Make : Bosch, made in India  
 Model/Group combination No. : F 002 A0Z 787  
 Type : Inline, plunger  
 Serial number : 078124149  
 Method of drive : Through timing gears

**1.4.6 Fuel injectors:**

Make : Bosch, made in India  
 Holder No. : F 002 C80 018  
 Nozzle No. : DSLA 145 P 1150  
 Type : Multi holes (Six holes)  
 Manufacturer's production pressure setting, (MPa) : 25.0 to 25.8  
 Injection timing : 12 +0/-2 degree before TDC  
 Firing order : 1-2-3

**1.4.7 Governor:**

Make : Bosch, made in India  
 Model/Group combination No. : RSV375...1125 A1C 1822R  
 Type : Mechanical, centrifugal, variable speed  
 Governed range of engine speed, (rpm) : 600 to 2475  
 Rated engine speed, (rpm) : 2250

**1.5 Air intake system:**

**1.5.1 Pre-cleaner:**

Make : TAFE (apa)  
 Type : Centrifugal with transparent dust collector.  
 Location : Above main air cleaner inlet tube, outside the bonnet.

**1.5.2 Air cleaner:**

Make : TAFE (apa)  
 Type : Oil Bath  
 Location : On RHS of engine, under the bonnet  
 Range of suction pressure at maximum power, (kPa) : 1.9 to 2.1  
 Oil capacity, (l) : 0.25  
 Oil change period : After every 50 hours of operation in normal condition and after 10 hours in dusty condition.

**1.6 Exhaust System:**

Type of silencer : Updraft, (Cylindrical)  
 Position of silencer outlet with respect to SIP, (mm):  
 - Vertical : 945  
 - Longitudinal : 1370  
 - Lateral : 400 (on RHS)  
 Range of exhaust gas pressure at maximum power, (kPa) : 8.7 to 9.0  
 Provision of spark arresting device : None  
 Provision against entry of rain water : A bend is provided at the top of silencer

T-1560/2088/2021	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

- 1.7 Lubricating system:**
- Type : Forced feed-cum-splash
  - Oil sump capacity,(l) : 6.0
  - Total lub oil capacity, (l) : 6.8
  - Oil change period : First change after 100 hours and subsequently after every 300 hours of operation.
  - Cooling device, if any : None
- Lubrication oil Filters:**
- Make : TAFE (apa)
  - Type : Full flow, throw away canister type
  - Number : One
- Pump:**
- Type : Gear
  - Method of drive : Through timing gear
  - Pressure release setting, ( kPa) : 352 to 457
  - Minimum permissible pressure, (kPa) : 88
- 1.8 Cooling system:**
- Type : Forced circulation of water
- 1.8.1 Details of Pump** : Centrifugal, semi open impeller having 6 vanes of 75 mm diameter and driven through crankshaft pulley by a “V” belt common to alternator.
- 1.8.2 Details of fan** : Suction type having seven polypropylene blades of 395 mm diameter and mounted on water pump shaft.
- Means of temperature control : Thermostat
  - Bare radiator capacity, ( l ) : 3.0
  - Coolant expansion tank capacity,( l ) : 1.25
  - Total coolant capacity, ( l ) : 11.00
  - Radiator cap pressure, (kPa) : 88
- 1.9 Starting System:**
- Type : 12V, DC, electrical
  - Aid for cold starting : None
  - Any other device provided for easy starting : None
- 1.10 Electrical System:**
- 1.10.1 Battery:**
- Make and model : AMCO & 95 D 31 RMF
  - Number : One
  - Type : Lead Acid
  - Capacity and rating : 12V, 80 Ah at 20 hour discharge rating
  - Location : On clutch housing, under the bonnet.



T-1560/2088/2021	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

**1.10.2 Starter:**

Make : Lucas TVS  
 Model : M14  
 Type : Pre-engaging, solenoid operated  
 Power rating : 12V, 2.2 kW  
 Serial number : NA

**1.10.3 Generator:**

Make : Lukas TVS  
 Model : NA  
 Type : Alternator  
 Serial number : NA  
 Output rating : 12V / 35 Amp  
 Method of drive : Through crankshaft pulley by a cogged “V” belt common to water pump.

**1.10.4 Voltage regulator**

: In-built in alternator

**1.10.5 Details of lights:**

Description	No. & capacity of bulb	Height of the centre of beam above ground level, (mm)	Size, (mm)	Distance between centre of the beam and outside edge of tractor at standard rear track setting, (mm)
<b>Front Lights:</b>				
- Head lights	2, 12V, 60/55W	1100	155 x 95	745
- Parking lights	2, 12V, 5W	1380	50 x 55	190
- Turn-cum-hazard Indicator light	2, 12V, 21W	1380	50 x 112	110
<b>Rear lights:</b>				
- Tail-cum-brake light	2, 12V, 21/5W	1370	90 x 70	180
- Turn-cum-hazard Indicator light	2, 12V, 21W	1370	90 x 70	80
- Plough light (on RHS mudguard)	1, 12V, 55W	1500	120 x 70	400
- Reflectors (Red)	2	1370	45 x 55	130
- Registration plate light	1, 12V, 5W	1040	80 x 20	900

**1.10.6 Main switch**

: Key turn type, having three position viz: OFF, Circuit ON & START

**1.10.7 Light switch**

Rotary type having four positions on LHS viz.

- : i) OFF
- ii) Parking lights + Dash board light
- iii) Head lights (short beam) + (ii)
- iv) Head lights (long beam) + (ii)

**1.10.8 Horn:**

Make : Addon  
 Type : 12V, 2B, Electromagnetically vibrated diaphragm  
 Location : In front of radiator, under the bonnet

<b>T-1560/2088/2021</b>	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

**1.10.9 Fuse box** : Contains 05 number of fuses having following capacities

Capacity	20 A	15 A	10 A
Number	01	03	01

**1.10.10 Details of other electrical accessories:**

**1.10.10.1 Flasher Unit:**

Make : BGLI  
Capacity:  
- Turn signal : 12V, 21W x 2 + 2W x 1  
- Hazard signal : 12V, 21W x 4 + 2W x 2  
Flashes/min. : 85

**1.10.10.2 Seven pin trailer socket** : Provided

**1.10.10.3 Safety against accidental start of tractor** : Starter will not operate unless the High/Low range selection lever is in neutral position.

**1.11 Instrument panel details:**

- i) Engine speed cum analog cumulative run hour meter (0 to 30 x 100 rpm)
- ii) Lubricant oil pressure gauge (with colour zones)
- iii) Water temperature gauge (with colour zones)
- iv) Fuel level gauge (with colour zones)
- v) Battery volt meter gauge with colored zones
- vi) Battery charging warn indicator
- vii) Main switch (key-turn type)
- viii) Light switch (Rotary type)
- ix) Side indicator switch
- x) Hazard indicator switch
- xi) Head lamp (Long beam) indicator lamp (red)
- xii) Mobile charging socket
- xiii) Fuel shut-off knob
- xiv) Horn push button
- xv) Hand accelerator lever
- xvi) Steering control wheel
- xvii) Rear view mirror.

**1.12 Transmission System:**

**1.12.1 Clutch:**

Make : Amrep  
Type : Dual, dry friction plates  
No. of friction plate(s) : Two

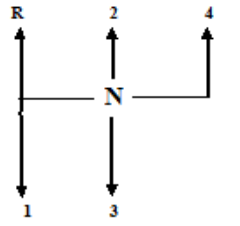
**Size (OD/ID), (mm):**

- Transmission : 302.1 / 196.7  $\phi$   
- PTO : 253.9 / 172.1  $\phi$


**Method of operation:**

- Transmission : By pressing the clutch pedal, half way.  
- PTO : By pressing the same pedal fully.

<b>T-1560/2088/2021</b>	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

- 1.12.2 Gear box:**  
 Make : TAFE  
 Type : Mechanical, combination of constant and sliding mesh gears with epicyclic gear reduction unit for Hi-low gear selection.
- No. of speeds:**  
 - Forward : 08  
 - Reverse : 02  
 Gear shifting pattern :
- 

**Main gear shifting lever**



**Range shifting lever**
- Location of gear shifting levers : In-front of operator's seat  
 Oil capacity (l) : 37.5 (common with differential, rear final drive, hydraulic system & brake system)  
 Oil changing period : First change after 300 hours of operation subsequently changes after every 900 hours of operation.

**1.12.3 Nominal Speed:**

Movement	Gear No.	No. of engine revolutions for one revolution of driving wheel	Nominal speed at rated engine speed when fitted with <b>14.9-28</b> size tyres of <b>640 mm</b> radius index, (kmph)
Forward	L1	205.55	2.64
	L2	140.45	3.88
	L3	76.54	7.09
	L4	62.40	8.68
	H1	51.44	10.56
	H2	35.06	15.48
	H3	19.12	28.40
	H4	15.58	34.86
Reverse	LR	151.60	3.58
	HR	37.82	14.38

- 1.12.4 Differential:**  
 Type : Crown wheel & pinion with differential unit accommodated inside the differential housing.  
 Reduction through crown wheel & bevel pinion : 3.455:1 (38/11 T)  
 Oil capacity (l) : 37.5 (common with gear box, rear final drive, hydraulic system & brake system)  
 Oil changing period : First change after 300 hours of operation subsequently changes after every 900 hours of operation.
- Differential lock** : **Not provided**

<b>T-1560/2088/2021</b>	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

**1.12.5 Rear axle & final drive:**

- Type : Planetary reduction at the end on both sides after brake.
- Reduction through final drive : 3.143:1 (Sun gear -12T, planet -21T & ring gear -45T)
- Oil capacity of final drive, (l) : 37.5 (common with gear box, differential, hydraulic system & brake system)
- Oil changing period : First change after 300 hours of operation subsequently changes after every 900 hours of operation.

**1.13 Power lift (Hydraulic System):**

- Make : TAFE
- Model : Not specified
- Type : Open center, Live, ADDC
- No. and type of cylinder : One, single acting
- Type of linkage lock for transport : Hydraulic, transport lock valve in fully closed position act as a transport lock.

**1.13.1 Hydraulic pump:**

- Make : TAFE (apa)
- Type : Scotch Yoke (Radial piston pump)
- Location : Inside the transmission housing
- Drive : Through PTO drive shaft
- No. & Type of filter : One wire mesh strainer inside transmission housing.
- Cooling device for hydraulic oil, if any : None
- Hydraulic oil capacity, ( l ) : 37.5 (common with gear box, differential, rear final drive & brake system)
- Oil change period : First change after 300 hours of operation subsequently changes after every 900 hours of operation.
- Provision for external tapping : Provided
- Details of control levers : **i)** Position control lever  
**ii)** Draft control lever  
**iii)** Transport lock valve
- Method of draft sensing : Through top link

**1.13.2 Three point linkage:**

S. No.	Observations	As per IS:4468 (Part-I)-1997 (Cat.I / Cat.II), (mm)	As measured (mm)	Remarks
1	2	3	4	5
<b>I.</b>	<b>Upper hitch points:</b>			
<b>a)</b>	Dia of hitch pin hole	19.30 to 19.50 / 25.70 to 25.90	25.90	Conforms to cat-II
<b>b)</b>	Width of ball	44.0 (max.) / 51.0 (max)	43.72	Conforms to Cat. I & II

<b>T-1560/2088/2021</b>	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

1	2	3	4	5
<b>II.</b>	<b>Lower hitch points:</b>			
	<b>a)</b> Dia of hitch pin hole	22.40 to 22.65 / 28.70 to 29.00	22.50/ 28.85	Conforms to Cat. I & II
	<b>b)</b> Width of ball	34.8 to 35.0 / 44.8 to 45.0	44.22/ 44.68	Conforms to cat-II
<b>III.</b>	Lateral distance from lower hitch point to centre line of tractor	359 / 435	364	<b>Does not conform</b>
<b>IV.</b>	Lateral movement of lower hitch points	100 (min) / 125 (min)	182	Conforms to Cat. I & II
<b>V.</b>	Distance from end of power take-off to centre of lower hitch point (lower links in horizontal position)	450 to 575 / 550 to 625	550	Conforms to Cat. I & II
<b>VI.</b>	Transport height	820 (min)/950 (min)	1065	Conforms to Cat. I & II
<b>VII.</b>	Power range (Without force)	560 (min)/650 (min)	630	Conforms to cat-I
<b>VIII.</b>	Leveling adjustment	100 (min)/100 (min)	475	Conforms to cat-I & II
<b>IX.</b>	Lower hitch point tyre clearance	100 (min)/100 (min)	150	Conforms to cat-I & II
<b>X.</b>	Lower hitch point height	200 (max) /200 max)	235	<b>Does not conform</b>

### 1.13.3 Linkage geometry dimensions [Refer Fig.-1(a)]:

The following are dimensions observed, corresponding to **640** mm as tyre dynamic radius index:

S. No.	Parameter	Notation	Dimension or range, (mm)	Setting used during test,(mm)
1.	Length of lower link	A	880	880
2.	Length of lift arm	B	285	285
3.	Length of lift rods	C	500 to 620	620
4.	Length of top link	D	590 to 810	690
5.	Distance of lift rod connection point from pivot point of lower link.	E	445 & 495	445
6.	Distance of lower link pivot point from rear wheel axis:			
	-Horizontally	F	25, forward	25, forward
	-Vertically	G	210, below	210, below
7.	Distance of upper link pivot point from rear wheel axis:			
	-Horizontally	H	185, 195 & 215	195, behind
	-Vertically	J	135, 170 & 205	170, above
8.	Distance of lift arm pivot point from rear wheel axis:			
	-Horizontally	K	200, forward	200, forward
	-Vertically	L	230, above	230, above
9.	Height of lower hitch points relative to the rear wheel axis:			
	- In high position	M	225 to 425 above	225, above
	- In low position	N	- 405 to 0 below	405, below
10.	Height of lower link hitch points when locked in transport position	--	Any height within the lift range	

T-1560/2088/2021	TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1 <sup>st</sup> Batch)
	THIS TEST REPORT IS VALID UPTO: 31/07/2026)

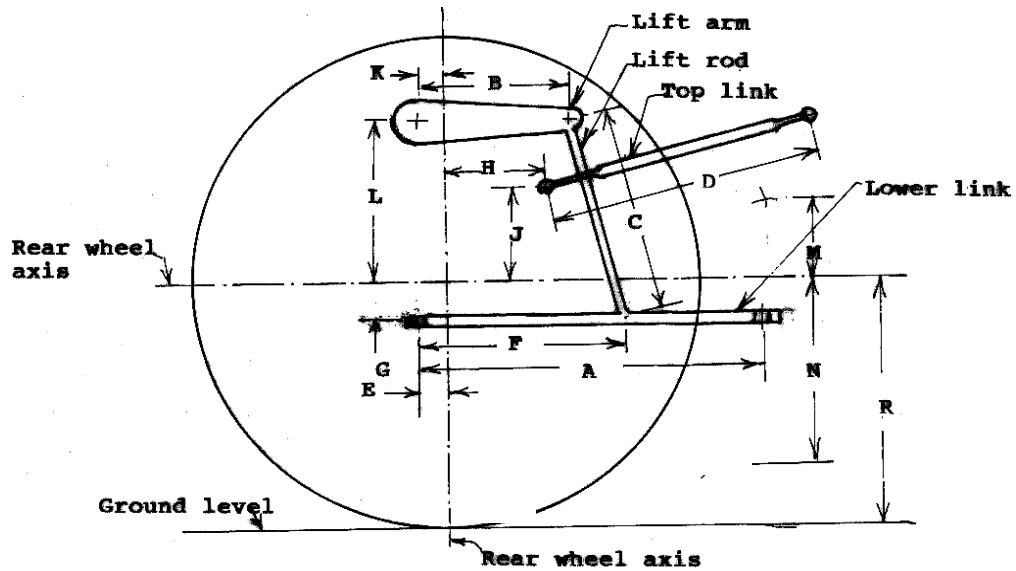


Fig. 1 (a): DIMENSIONAL NOTATIONS FOR TABLE OF LINKAGE GEOMETRY

1.13.4 Drawbar:

1.13.4.1 Linkage Drawbar [Refer Fig. 1 (b)]:

Notation	As per IS: 12953-1995 (Cat. I)/(Cat.II), (mm)	As measured, (mm)	Remarks
A	683 ± 1.5 / 825 ± 1.5	683	Conforms to cat-I
B	75 (min) / 75 (min)	80.68	Conforms to cat-I & II
C	30 (min) / 30 (min)	38.90	Conforms to cat-I & II
D $\varnothing$	21.79 to 22.00 / 27.79 to 28.00	21.90	Conforms to cat-II
E	39.0 (min) / 49.0 (min)	51.35	Conforms to cat-I & II
F $\varnothing$	12.0 (min) / 12.0 (min)	12.70	Conforms to cat-I & II
G	15.0 (min) / 15.0 (min)	15.35	Conforms to cat-I & II
H $\varnothing$	25 ± 1 / 25 ± 1	24.80	Conforms to cat-I & II
J	80 ± 1.5 / 80 ± 1.5	80.0	Conforms to cat-I & II
No. of holes	7 / 9	07	Conforms to cat-I

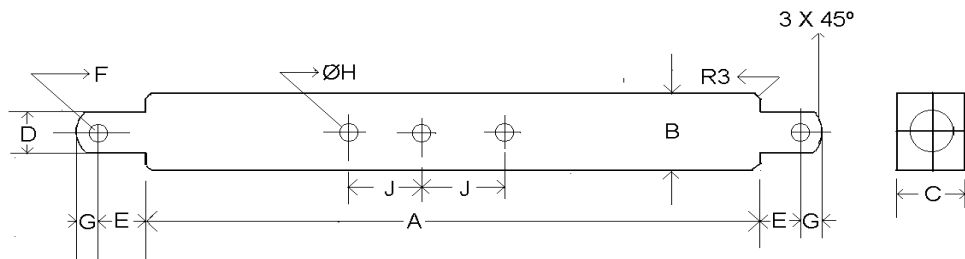


Fig. 1(b): DIMENSIONAL NOTATIONS FOR LINKAGE DRAWBAR

1.13.4.2 Swinging drawbar : Not provided

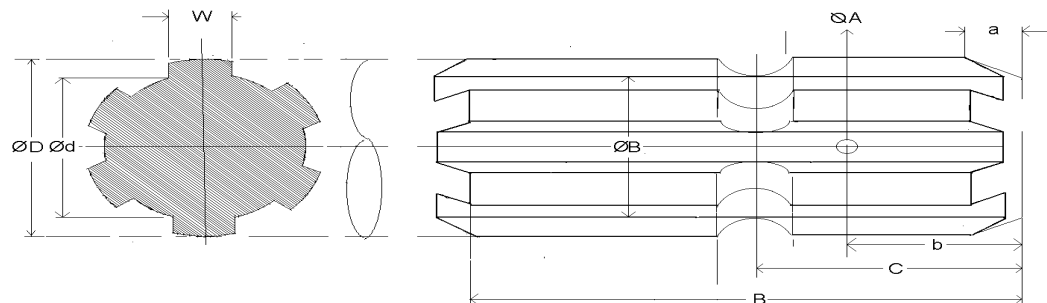
T-1560/2088/2021	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

**1.14 Power take-off shaft:**

Type : Type-I, Semi Independent  
Method of engaging : By a hand lever provided on LHS of operator's seat.  
No. of shaft(s) : One  
PTO speed corresponding to rated engine speed (rpm) : 679  
Distance behind rear axle, (mm) : 305  
Engine to PTO speed ratio : 3.313 : 1  
Whether the PTO shaft is capable of transmitting the full power of engine : Yes

**1.14.1 Specifications of Power Take-Off Shaft:**

Specification	As per IS:4931-1995 (Type-I)	As observed	Remarks
Nominal speed (rpm)	540 ± 10	540 rpm of PTO shaft corresponds to 1789 rpm of engine.	Conforms
No. of splines	6	6	Conforms
Direction of rotation	Clockwise	Clockwise	Conforms
Location	The position of the centre of the end of PTO shaft shall be within 50 mm to right or left of the centre line of the tractor	Centrally located	Conforms
<b>Dimensions, (mm) [See Fig. 2]:</b>			
D∅	34.79 ± 0.06	34.81	Conforms
d∅	28.91±0.05	28.88	Conforms
B∅	29.4 ± 0.1	29.4	Conforms
A∅ (Optional)	8.3±0.1	Not provided	Not applicable
W	8.69 – 0.09 – 0.16	8.54	Conforms
a	7	7	Conforms
b (Optional)	25 ± 0.5	Not provided	Not applicable
c	38	38	Conforms
X	30°	30°	Conforms
B	76 (min)	78.46	Conforms
h	450 to 675	520	Conforms



**Fig. 2: DIMENSIONAL NOTATIONS FOR TYPE-I POWER TAKE-OFF SHAFT**

<b>T-1560/2088/2021</b>	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

- 1.14.2 Power Take-off Master Shield : Not provided**
- 1.15 Towing hitch:**
- 1.15.1 Front:**
- Type : Clevis
  - Location : At front of tractor in bumper
  - Height above ground level,(mm) : 550
  - Type of adjustment : Fixed
  - Width of clevis, (mm) : 53.7
  - Dia of pin hole, (mm) : 33.0
- 1.15.2 Rear:**
- Type : Clevis
  - Location : At rear of transmission housing
  - Height above ground level, (mm):**
    - Maximum : 530
    - Minimum : 740
  - No. of position : 6
  - Type of adjustment : By changing the position of hitch on its mounting bracket.
  - Distance of hitch point,(mm):**
    - From rear axle centre : 420
    - From power take-off shaft end : 115
  - Dia of pin hole, (mm) : 30.5
  - Width of clevis, (mm) : 69.7
- 1.16 Steering:**
- Make : Rane
  - Type : Mechanical, worm and screw having double drop arm.
  - Location : Mounted between clutch and gear box housing.
  - Method of operation : Manual, by steering control wheel
  - Diameter of steering control wheel, (mm) : 450
  - Lubricant capacity of system (l) : 0.84
  - Lubricant change period : After every 1200 hours of operation.
- 1.17 Brakes:**
- 1.17.1 Service Brake:**
- Make : JMI
  - Type : Mechanical, oil immersed Multi discs
  - Location : On rear axle shaft accommodated inside the rear axle housing before final reduction.
  - No. of disc (s) : Four (on each wheel side)
  - Area of liners, (cm<sup>2</sup>) : 1694.5 (on each wheel side)
  - Material of liners : Paper base (apa)
  - Method of operation : Individual or combined pedal operation by right foot.
  - Oil capacity, (l) : 37.5 (Common with differential, rear axle, final drive & hydraulic system )
  - Oil change period : First change after 300 hours of operation subsequently changes after every 900 hours of operation.



T-1560/2088/2021	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

- 1.17.2 Parking Brake:**  
Type : Pawl and ratchet arrangement for locking service brakes in position.  
Method of operation : Service brake when locked in position by a hand lever provided on LHS of operator's seat acts as a parking brake.
- 1.18 Wheel Equipment:**
- 1.18.1 Steering Wheel(s):**  
Make : MRF  
Number : Two  
Type of tyre : Pneumatic, ribbed  
Size : 6.00 -16  
Ply rating : 8  
Maximum permissible loading capacity of each tyre at 230 kPa pressure, (kgf) : 450 (As per ITTAC Manual)  
**Recommended inflation pressure, kPa :**  
- for field work : 200  
- for transport : 230  
Track width, (mm) : 1320 (Std.) & 1520  
Method of changing track width : By reversing the wheels  
Make & size of rim : Wheels India Ltd. & 4.50 x 16
- 1.18.2 Driving wheel:**  
Make : MRF  
Number : Two  
Type of tyre : Pneumatic, traction  
Size : 14.9-28  
Ply rating : 12  
Maximum permissible loading capacity of each tyre at 110 kPa pressure, (kgf) : 1410 (As per ITTAC Manual)  
**Recommended inflation pressure, (kPa )**  
- for field work : 98  
- for transport : 110  
Track width, (mm) : 1330 (Std.), 1490, 1580, 1610,1630, 1770 & 1890  
Method of changing track width : By changing the position of wheel disc on offset rim lugs and by reversing wheel disc.  
Make & size of rim : Wheels India Ltd. & W13 x 28
- 1.18.3 Wheel base (mm)** : 1770  
Method of changing wheel base, if any : None
- 1.19 Operator's seat:**  
Make : TAFE (apa)  
Type : Cushioned seat with back rest  
Type of suspension : Two helical coil springs  
Type of dampening : Hydraulic shock absorber  
**Range of adjustment,(mm):**  
- Vertical : Nil  
- Lateral : Nil  
- Longitudinal : ± 75

T-1560/2088/2021	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

**1.20 Provision for safety and comfort of operator:**

**1.20.1 Conformity with IS: 12343-1998:**

Operator's seat meets the minimum requirements of IS: 12343-1998, **except the following**

- i) The distance of clutch pedal and outer brake pedal from the Seat Index Point.

**1.20.2 Conformity with IS: 6283 (Part-1) – 2006:**

Controls are identifiable with symbols as per IS: 6283 (Part-1 & 2).

**1.20.3 Conformity with IS:8133-1983:**

Location and movement of various controls meets the requirement of IS: 8133-1983.

**1.20.4 Conformity with IS: 12239 (Part-1)-1996:**

Meets the requirements of IS:12239(Part-1)-1996, **except the following:**

- i) Provision of spark arresting device in the exhaust system.

**1.20.5 Conformity with IS:12239 (Part-2)-1999:**

Meets the requirements of IS:12239 (Part-2)-1999, **except the following:**

- i) The working clearance between the LHS fender and hand brake lever has been not provided as per the requirement.

**1.20.6 Conformity with IS: 14683 – 1999:**

Lighting requirements conform to IS: 14683-1999.

**1.20.7 Rear view mirror:**

Rear view mirror has been provided

**1.21 Labelling of tractor as per IS: 10273-1987:**

The Labelling plate riveted on RHS of dash board cover, provides the following information:

<b>Name of Manufacturer</b>	<b>M/s. Tractors and Farm Equipment Ltd, Chennai, Tamil Nadu, India</b>
Make	TAFE
Model	MF 5245 DI PLANETARY PLUS V1
Year of manufacture	11/20
Engine serial number	SJ327A94353
Chassis serial number	MEA4A6D7LL2324802
Maximum P.T.O Power, kW	32.8
Specific fuel consumption, g/kWh	265

**1.22 Ballast Mass (kg):**

Particulars		As used during drawbar test	As used during Haulage test
<b>Front</b>	C.I. weight	100	50
	Water	Nil	Nil
<b>Rear</b>	C.I. weight	590	490
	Water	300	300

<b>1.22.1</b>	<b>Standard ballast</b>		
	Particulars	<b>Front</b>	<b>Rear</b>
	C.I. weight, (kg)	60	42 (each side)
	Location	As front bumper	Mounted on wheel rim in each side

<b>T-1560/2088/2021</b>	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

**1.23 Masses:**

Particulars		Mass of the tractor without operator but with all the liquid reservoirs full, (kg)		
		Front	Rear	Total
i)	With standard ballast	750	1250	2000
ii)	With ballast as used during drawbar performance test.	980	2010	2990
iii)	As used during haulage test with trailer hitch, canopy and drawbar.	840	2020	2860

**1.24 Overall dimensions:**

Condition	Length, (mm)	Width, (mm)	Height, (mm)		Ground Clearance, (mm)
			With exhaust Pipe	Without exhaust pipe	
With standard ballast	3380	1800	2205	1690	365 (Below clutch housing)

**1.25 Number of external lubricating points:**

- Oiling : Nil
- Grease nipples : 19
- Grease cups : 02

**1.26 Colour of tractor:**

- Chassis & Engine : Gray
- Sheet metal:**
- Bonnet & Mudguard : Red
- Rim : Silver

**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 20W40	As recommended
2.	Transmission, brakes and hydraulic system oil	SAE 20W40	Oil originally filled in the tractor was not changed
3.	Steering gear box oil	Servo Transmission T-20	
4.	Air Cleaner Oil	SAE 20W40	As recommended
5.	Grease	Servo grease MP3	Servo Grease MP

T-1560/2088/2021	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

### 3. PTO PERFORMANCE TEST

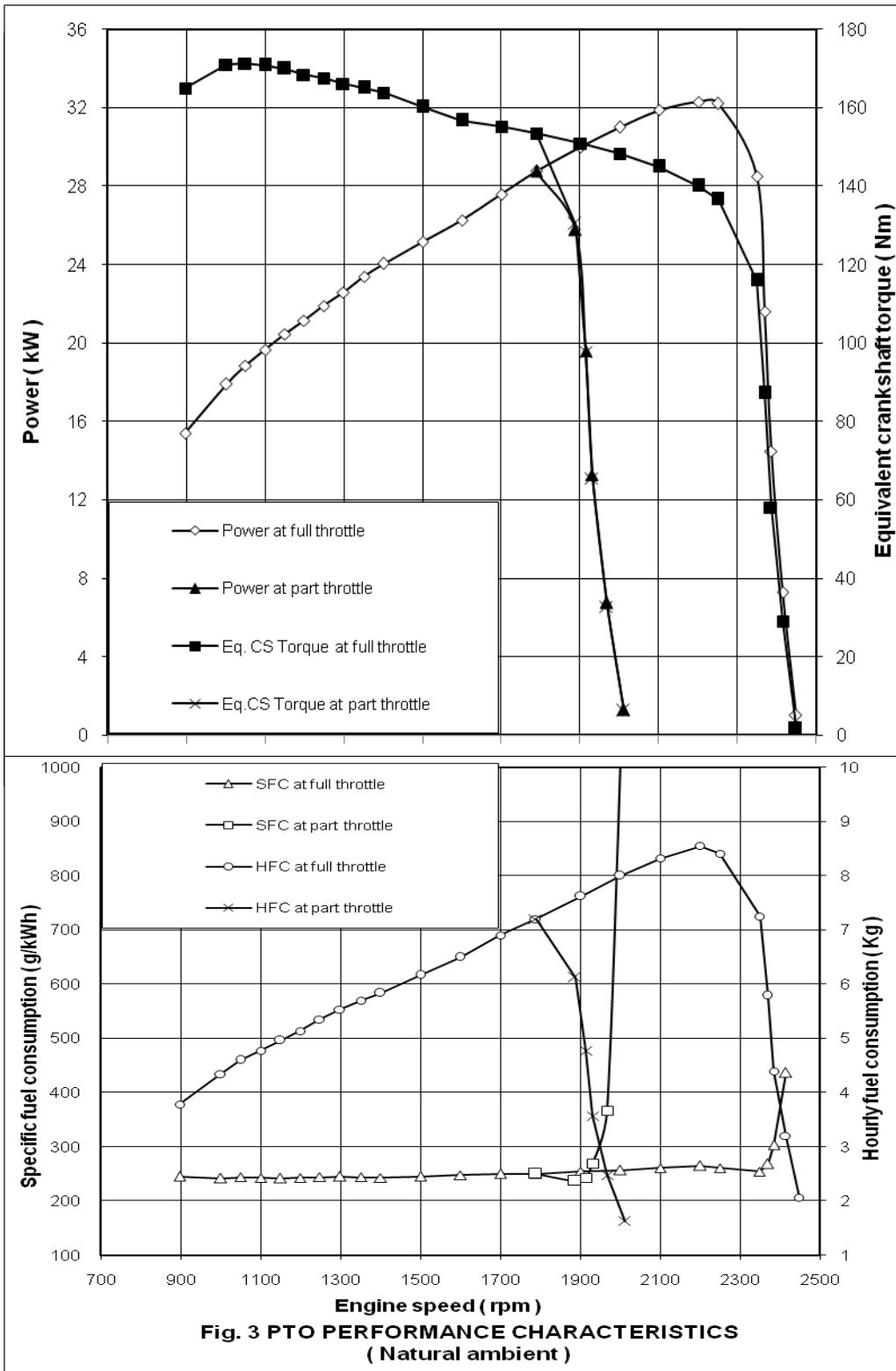
Date(s) of test : 08.03.2021 & 09.03.2021  
 Tractor run at the Institute prior to start of : 6.9  
 PTO test (h)  
 Type of dynamometer bench used : SAJ AG 720 - Eddy Current

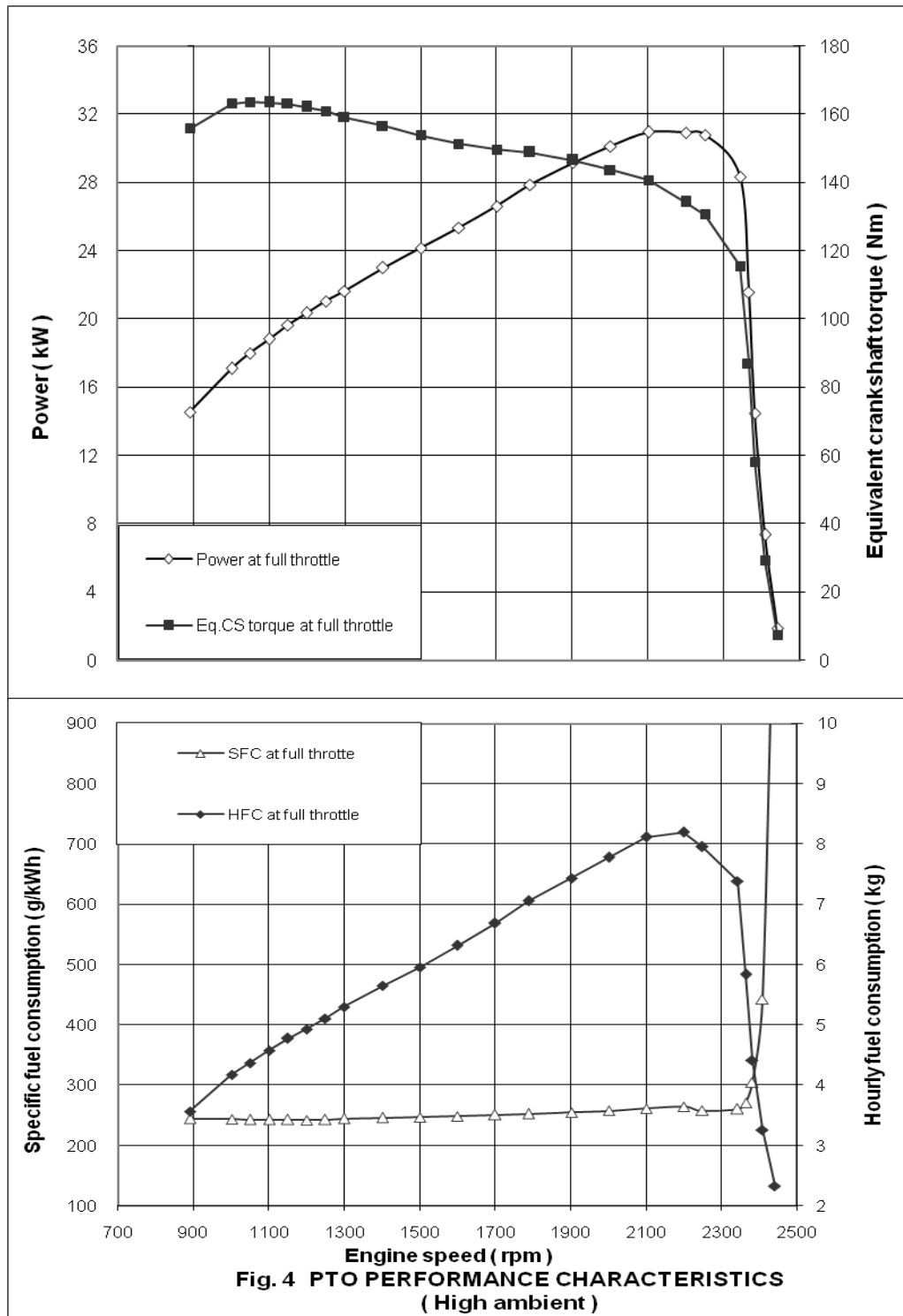
3.1 The results of power take-off performance are tabulated in Table-1 and graphically represented in Fig. 3, 4 and 5.

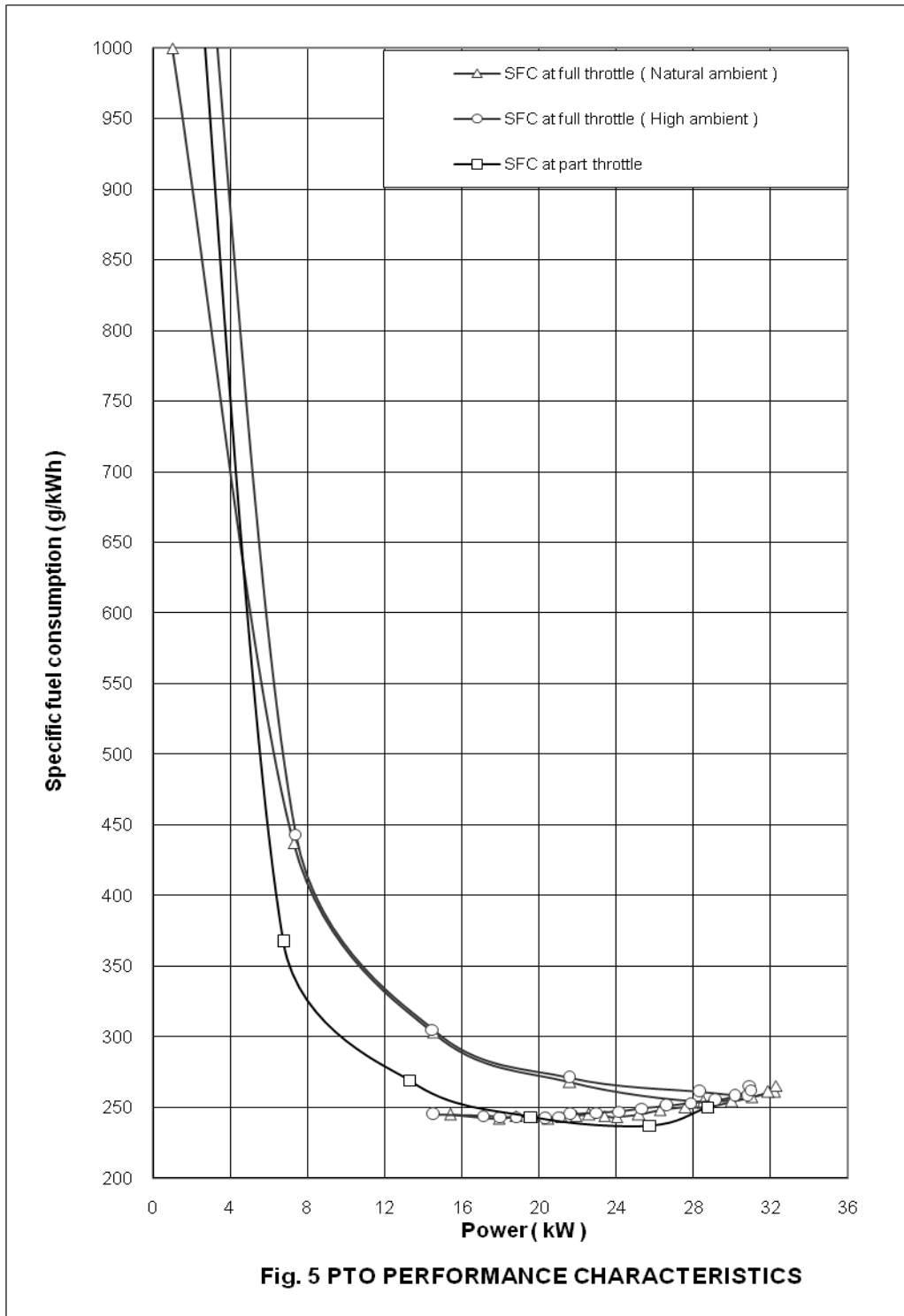
**Table – 1**

Power, (kW)	Speed (rpm)		Fuel consumption			Specific energy (kWh/l)
	PTO	Engine	(l/h)	(kg/h)	Specific, (kg/ kWh)	
<b>a) Maximum power – 2 hours test:</b>						
32.2	679	2250	10.06	8.41	0.261	3.20
30.8	679	2250	9.52	7.96	0.258	3.24*
<b>b) Power at rated engine speed (2250 rpm):</b>						
32.2	679	2250	10.06	8.41	0.261	3.20
30.8	679	2250	9.52	7.96	0.258	3.24*
<b>c) Power at standard power take-off speed (540 ± 10 rpm):</b>						
28.8	540	1789	8.61	7.20	0.250	3.34
27.9	540	1789	8.44	7.06	0.253	3.30*
<b>d) Varying loads at rated engine speed:</b>						
<b>i) Torque corresponding to maximum power available at rated engine speed:</b>						
32.2	679	2250	10.06	8.41	0.261	3.20
<b>ii) 85% of the torque obtained in (i):</b>						
28.5	709	2349	8.67	7.25	0.254	3.29
<b>iii) 75% of the torque obtained in (ii) :</b>						
21.6	715	2369	6.93	5.79	0.268	3.12
<b>iv) 50% of the torque obtained in (ii) :</b>						
14.5	720	2385	5.25	4.39	0.303	2.76
<b>v) 25% of the torque obtained in (ii) :</b>						
7.3	729	2415	3.83	3.20	0.437	1.91
<b>vi) Unloaded:</b>						
0.00	739	2448	2.46	2.06	00	00
<b>e) Varying loads at part throttle:</b>						
<b>i) Torque corresponding to maximum power available at standard PTO speed (540 ± 10 rpm):</b>						
28.8	540	1789	8.61	7.20	0.250	3.34
<b>ii) 85% of the torque obtained in ( i ):</b>						
25.8	570	1888	7.32	6.12	0.238	3.52
<b>iii) 75% of the torque defined in (ii):</b>						
19.6	578	1915	5.71	4.77	0.243	3.43
<b>iv) 50% of the torque defined in (ii):</b>						
13.3	583	1931	4.27	3.57	0.269	3.11
<b>v) 25% of the torque defined in (ii):</b>						
6.8	594	1968	2.97	2.48	0.367	2.28
<b>vi) Unloaded:</b>						
1.3	607	2011	1.95	1.63	1.254	0.67

\* Under high ambient conditions







<b>T-1560/2088/2021</b>	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

	<u>Natural ambient</u>	<u>High ambient</u>
-No load maximum engine speed (rpm) :	2448	2442
-Equivalent crankshaft torque at maximum power, (Nm) :	136.6	130.7
-Maximum equivalent crankshaft torque (Nm) :	171.3	163.7
-Engine speed at maximum equivalent crankshaft torque (rpm) :	1050	1001
- Backup torque, (%) :	25.4	--
<b>Smoke level</b> , maximum light absorption coefficient, per meter :	0.20	--
<b>- Range of atmospheric conditions:</b>		
Temperature (°C) :	25 to 27	43 to 44
Pressure, (kPa) :	98.8 to 99.4	98.8 to 99.4
Relative humidity (%) :	21 to 27	11 to 14
<b>-Maximum temperatures, (°C):</b>		
Engine oil :	103	112
Coolant :	86	100
Fuel :	55	67
Air intake :	33	51
Exhaust gas :	696	713
<b>-Pressure at maximum power:</b>		
Intake air, (kPa) :	1.9 to 2.1	2.1 to 2.2
Exhaust gas, (kPa) :	8.7 to 9.0	8.0 to 8.2
<b>-Consumptions :</b>		
Lub oil, (g/kWh) :	--	0.74
Coolant (water) (% of total coolant capacity) :	--	1.1

#### 4. DRAWBAR PERFORMANCE TEST

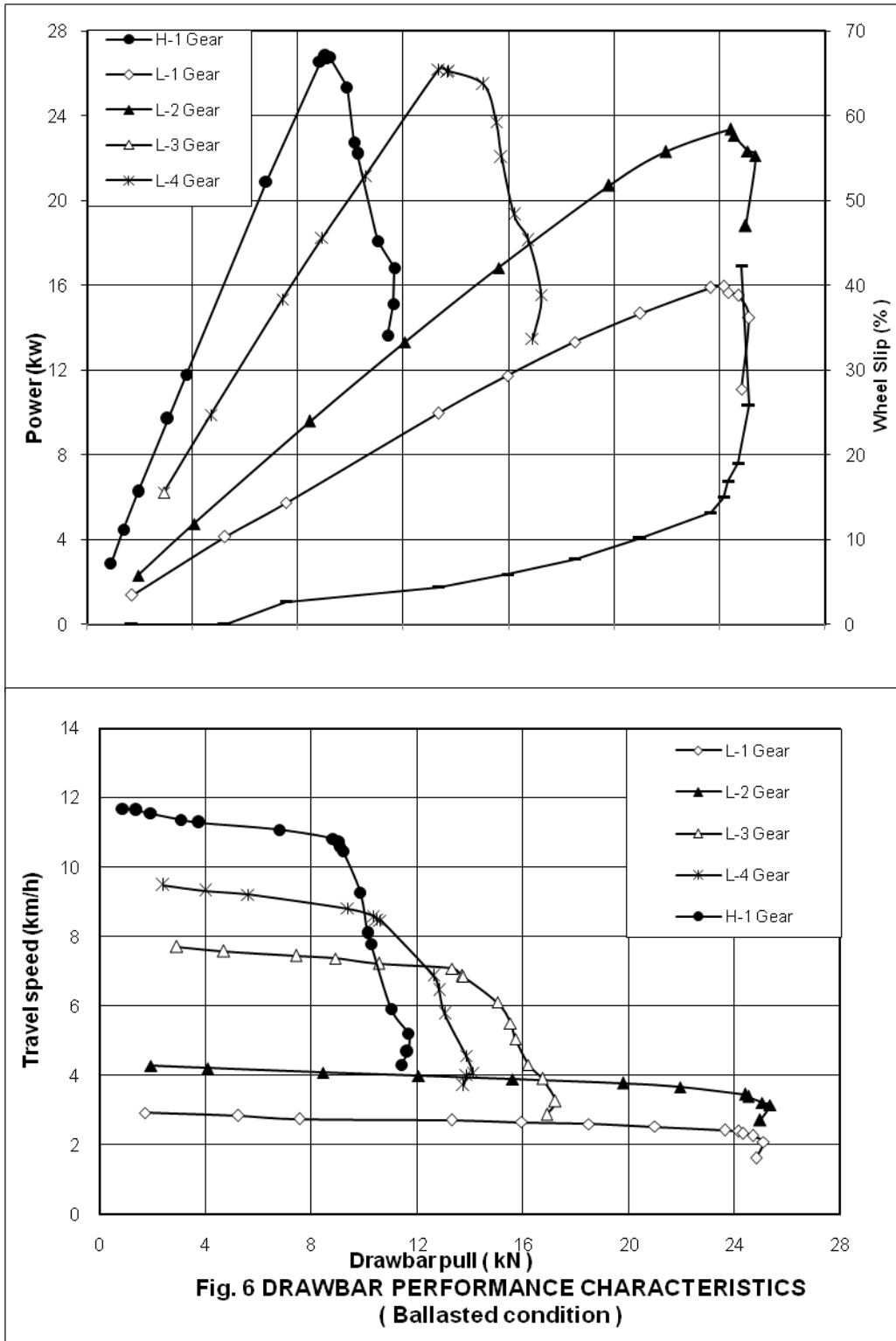
Date(s) of test :	11.06.2021, 14.06.2021, 15.06.2021 & 16.06.2021
Tractor run at the Institute prior to start of drawbar test, (h) :	30.2
Type of track :	Concrete
<b>Height of drawbar, (mm):</b>	
- Without ballast :	600
- With ballast :	570

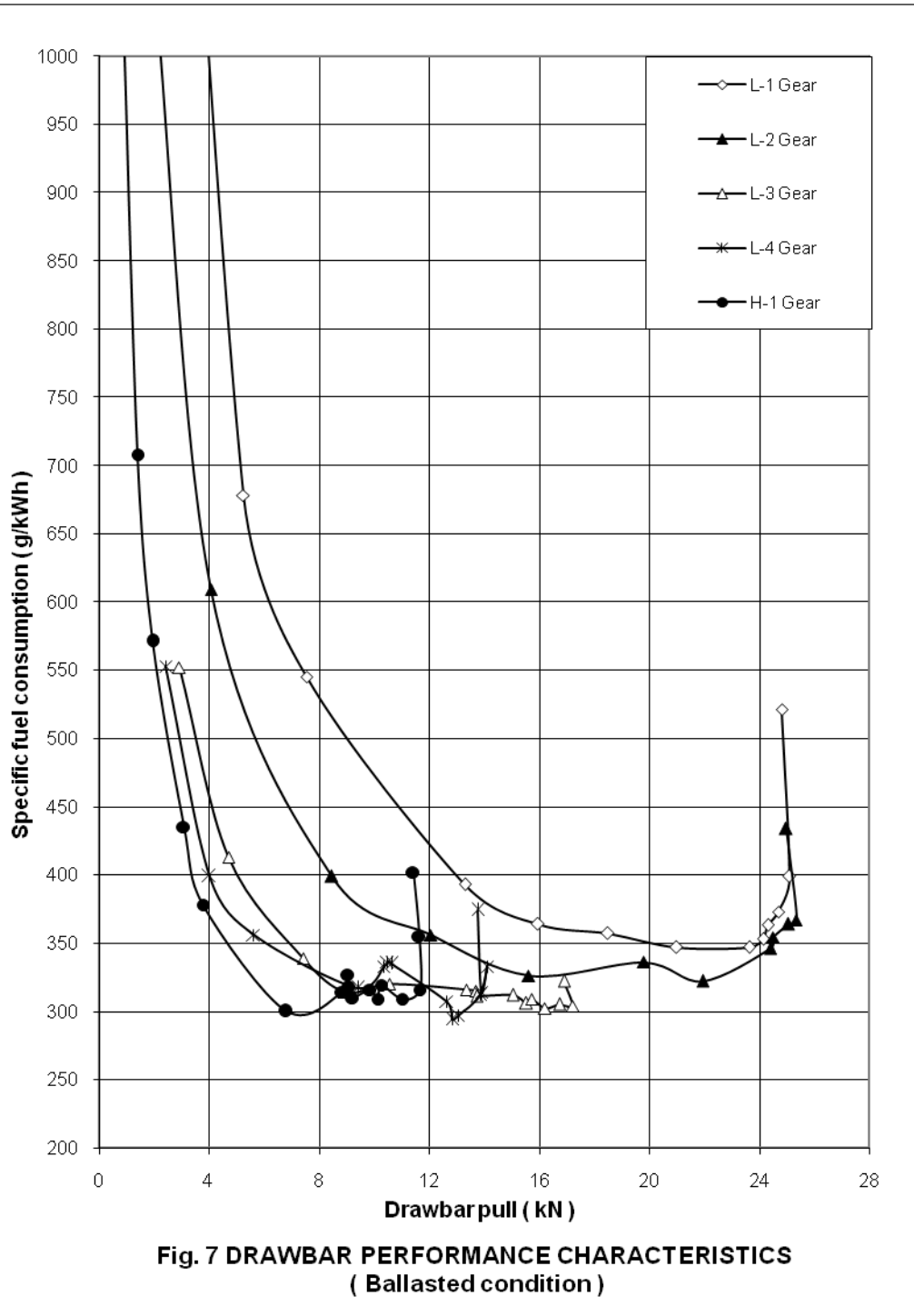
- 4.1** The results of drawbar performance test consisting of maximum power and pull without ballast / with ballast and ten hours test are tabulated in **Table – 2** The results of the tests with ballast, are also represented graphically in **Fig. 6 & 7**.



<b>T-1560/2088/2021</b>	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

<b>T-1560/2088/2021</b>	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>





T-1560/2088/2021	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

### 5. POWER LIFT AND HYDRAULIC PUMP PERFORMANCE TEST

Date(s) of test : 15.03.2021 & 16.03.2021  
 Tractor run at the Institute prior to start of hydraulic test, (h) : 18.3  
 Pump speed at rated engine speed (rpm) : 679

#### 5.1 Hydraulic power test:

Pump delivery rate at minimum pressure and rated engine speed, (l/min) : 18.10  
 Maximum hydraulic power, (kW) : 4.5  
 Pump delivery rate at maximum hydraulic power, (l/min) : 14.93  
 Pressure at maximum hydraulic power, (MPa) : 18.0  
 Sustained pressure of the open relief valve, (MPa) : 19.5

#### Tapping point:

a) Relief valve test : External circuit  
 b) Pump performance test : External circuit  
 Temperature of hydraulic fluid, (°C) : 60 to 62

#### 5.2 Lifting capacity test :

Test	Height of lower hitch point above ground in down position, (mm)	Vertical movement with lifting forces, (mm)	Maximum force exerted through full range, (kN)	Corresponding pressure, (MPa)	Moment about rear axle, (kN-m )	Max. tilt angle of mast from vertical (degrees)
At hitch points	235	555	14.81	17.6	11.18	--
On the standard frame	235	555	12.91	17.6	18.91	18.9

#### 5.3 Maintenance of lift load:

Force applied at the frame, (kN) : 11.62  
 Temperature of hydraulic fluid at the start of test, (°C) : 60

#### Test data:

Elapsed time (minute)	5	10	15	20	25	30
Cumulative drop in height of lift, (mm)	30	50	70	90	100	100

### 6. BRAKE TEST

#### 6.1 Service brake:

##### 6.1.1 Cold brake test:

Date of test: : 04.02.2021 & 02.02.2021  
 Type of track : Concrete  
 Test Speed at maintained (kmph):  
 - Standard ballasted : 35.0  
 - Road Ballasted : 35.0

T-1560/2088/2021	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

		At maximum attainable travel speed			
Standard ballasted Tractor	Braking device control force, (N)	431	344	258	171
	Mean deceleration, (m/sec <sup>2</sup> )	3.67	3.51	3.02	2.50
	Stopping distance, (m)	13.23	13.47	15.66	18.90
Road Ballasted Tractor	Braking device control force, (N)	447	362	278	194
	Mean deceleration, (m/sec <sup>2</sup> )	3.61	3.45	2.91	2.50
	Stopping distance, (m)	13.52	13.68	16.24	18.90
		At 25 kmph travel speed			
Standard ballasted Tractor	Braking device control force, (N)	430	353	276	198
	Mean deceleration, (m/sec <sup>2</sup> )	3.43	3.22	3.09	2.50
	Stopping distance, (m)	7.18	7.49	7.80	9.65
Road Ballasted Tractor	Braking device control force, (N)	522	422	323	223
	Mean deceleration, (m/sec <sup>2</sup> )	3.41	3.23	2.94	2.50
	Stopping distance, (m)	7.24	7.47	8.20	9.65

### 6.1.2 Brake fade test:

		At maximum attainable travel speed			
Road Ballasted Tractor	Braking device control force,(N)	572	462	352	242
	Mean deceleration, (m/sec <sup>2</sup> )	3.64	3.43	3.21	2.50
	Stopping distance, (m)	13.50	13.78	14.72	18.90
		At 25 kmph travel speed			
Road Ballasted Tractor	Braking device control force, (N)	529	435	342	249
	Mean deceleration, (m/sec <sup>2</sup> )	3.35	3.03	2.80	2.50
	Stopping distance, (m)	7.49	7.96	8.62	9.65

Maximum deviation of tractor from its original course, (m) : None  
 Abnormal vibration : None  
 The brakes were heated by : Self braking

### 6.2 Parking brake test:

Particulars	Parked on 18 percent slope		Parked on 12 percent slope with trailer of 2.00 tonnes	
	Facing Up	Facing Down	Facing Up	Facing Down
Braking device control force, (N)	291	314	281	303
Efficacy of parking brake	----- Effective -----			

## 7. NOISE MEASUREMENT

### 7.1 Noise at bystander's position:

Date of test : 19.01.2021  
 Type of track : Concrete  
 Background noise level, dB (A) : 54.1

#### Atmospheric conditions:

Temperature, (°C) : 27  
 Pressure, (kPa) : 99.1  
 Relative humidity,(%) : 57  
 Wind velocity, (m/s) : 1.3

T-1560/2088/2021	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

**TEST DATA:**

S. No.	G e a r	Travelling speed before acceleration, (kmph)	Noise level, dB(A)
1.	L1	2.16	82
2.	L2	3.23	82
3.	L3	5.83	81
4.	L4	7.15	81
5.	H1	8.71	81
6.	H2	12.74	81
7.	H3	23.22	83
8.	H4	28.21	84

**7.2 Noise at operator's ear level:**

Date of test : 11.06.2021  
 Type of track : Concrete  
 Background noise level, dB(A) : 54.1

**Atmospheric conditions:**

Temperature, (°C) : 29  
 Pressure, (kPa) : 97.3  
 Relative humidity, (%) : 67  
 Wind velocity, (m/s) : 1.2

**TEST DATA:**

Gear	Drawbar pull at which the tractor develops the max. noise level, (kN)	Corresponding travelling speed, (kmph)	Noise level dB (A)
L1	1.95 to 17.85	2.96 to 2.42	92
L2	2.35 to 17.66	4.33 to 3.54	93
L3*	11.94 to 13.95	7.18 to 6.78	94
L4	9.94 to 11.25	8.94 to 8.53	94
H1	3.45 to 9.50	11.44 to 10.45	94

\* Gear corresponds to the nominal travelling speed nearest to 7.5 kmph.

**8. AIR CLEANER OIL PULL-OVER TEST**

Date(s) of test : 28.01.2021

**Atmospheric conditions:**

- Temperature, (°C) : 18 to 24  
 - Pressure, (kPa) : 100.7 to 100.8  
 - Relative humidity, (%) : 45 to 55  
 Mass of oil before test,(g) : 173.8

S. No.	Position of tractor	Loss of oil (g)	Oil pull-over (%)	Engine oil pressure
i)	Tractor parked on level ground	0.2	0.12	Normal
ii)	Tractor tilted 15° laterally on RHS	0.2	0.12	Normal
iii)	Tractor tilted 15° laterally on LHS	0.1	0.06	Normal
iv)	Tractor tilted 15° longitudinally with front end up 0.3	0.1	0.06	Normal
v)	Tractor tilted 15° longitudinally with front end down	0.2	0.12	Normal

T-1560/2088/2021	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

### 9. MECHANICAL VIBRATION MEASUREMENT

Date of test : 16.03.2021

Type of test surface : Concrete

Sl. No.	Measuring points		Vibration, microns			
			At no load		At load corresponding to 85% of maximum PTO power	
			VD	HD	VD	HD
i)	Foot rest	Left	68	79	88	96
		Right	67	64	151*	108*
ii)	Steering control wheel		65	139*	99	193*
iii)	Seat	Bottom	25	55	41	60
		Back	27	29	36	39
iv)	Mudguard	Left	53	60	64	86
		Right	40	50	52	65
v)	Head light	Left	52	47	74	50
		Right	62	44	67	50
vi)	Battery base, centre		54	95	68	110*
vii)	Tail light	Left	76	99	95	123*
		Right	61	96	78	117*
viii)	Plough light		93	106*	122*	155*
ix)	Gear shifting lever		48	60	56	77
x)	Accelerator lever	Hand	92	51	122*	63
		Foot	43	49	53	76
xi)	Brake pedal	Left	63	42	86	70
		Right	42	52	58	61
xii)	Clutch pedal		41	53	43	57
xiii)	Main hydraulic control lever		46	33	51	49
xiv)	PTO engaging lever		33	55	48	57
xv)	Differential lock pedal		NA	NA	NA	NA

**\*The amplitude of mechanical vibration is on higher side.**

### 10.FIELD TEST

**10.1** The major breakdowns were not observed in the field test during initial commercial testing of this tractor model bearing test report No. **T- 998/1522/2015** released in **December, 2015**. So, as per the provision as laid down in clause 7.2 of IS: 12207- 2019, the field test during the batch testing of this tractor model was not conducted.



<b>T-1560/2088/2021</b>	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

### 11. HAULAGE TEST

Type of trailer	:	<b>Two wheel (Single axle)</b>		<b>Four wheel (Double axle)</b>
Gross mass of trailer (tonne)	:	5.0		6.0
Height of trailer hitch above ground level, (mm)	:	510		605
Gear used during the test for negotiating slopes up to 8%	:	H-4		H-4
Average travel speed, (kmph)	:	31.57 to 31.82		31.57 to 31.82
<b>Average fuel consumption:</b>				
- (l/h)	:	5.85 to 6.11		5.88 to 6.38
- (ml/km/tonne)	:	36.75 to 38.69		31.03 to 33.45
Average distance traveled per litre of fuel consumption, (km)	:	5.17 to 5.44		4.98 to 5.37
<b>General observations:</b>				
Effectiveness of brakes	:	Effective		Effective
Maneuverability of tractor-trailer combination	:	Satisfactory		Satisfactory

### 12. COMPONENTS/ASSEMBLY INSPECTION

The engine and other assemblies were dismantled after **48.8** hours of tractor operation at this Institute.

#### 12.1 Engine:

##### 12.1.1 Cylinder bore:

Cylinder No.	Cylinder bore diameter, (mm)						Maximum permissible wear limit, (mm)
	Top position		Middle position		Bottom position		
	Thrust side	Non-thrust Side	Thrust side	Non-thrust side	Thrust side	Non-thrust Side	
1.	95.010	95.000	95.006	95.000	95.000	95.000	95.180
2.	95.022	95.009	95.009	95.005	95.003	95.001	
3.	95.009	95.008	95.010	95.006	95.000	95.002	

##### 12.1.2 Piston:

Piston No.	Piston diameter, (mm)					Clearance between piston and cylinder liner at the skirt of the piston, (mm)	
	Top (above top compression ring)		At skirt			As observed	Maximum permissible limit
	Thrust side	Non-thrust side	Thrust side	Non-thrust side	Max. permissible wear limit,		
1.	94.438	94.381	94.870	*	Piston to be discarded when the ring groove clearance exceeds 0.25 mm with new rings.	0.140	0.180
2.	94.460	94.386	94.874	*		0.138	
3.	94.458	94.458	94.871	*		0.139	

\* Not measured due to piston design features.

T-1560/2088/2021	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

**12.1.3 Ring end gap:**

Rings	Ring end gap, (mm)									Max. Permissible limit, (mm)
	Cylinder No.1			Cylinder No.2			Cylinder No. 3			
	Top	Middle	Bottom	Top	Middle	Bottom	Top	Middle	Bottom	
1 <sup>st</sup> comp. ring	0.40	0.40	0.40	0.45	0.45	0.45	0.45	0.45	0.45	1.50
2 <sup>nd</sup> comp. ring	0.55	0.65	0.65	0.65	0.65	0.65	0.70	0.70	0.70	1.50
Oil ring	0.55	0.50	0.50	0.50	0.50	0.50	0.45	0.45	0.45	1.50

**12.1.4 Ring side clearance**

Rings	Ring side clearance, (mm)			Max. Permissible clearance limit, (mm)
	Piston-I	Piston-II	Piston-III	
1 <sup>st</sup> Compression ring	-Tapered rings-			0.25
2 <sup>nd</sup> Compression ring	0.080	0.072	0.072	0.25
Oil ring	0.050	0.050	0.049	0.25

**12.1.5 Main bearings:**

Bearing No.	Diametrical Clearance, (mm)	Crankshaft end float, (mm)	Max. permissible clearance limit, (mm)	
			Diametrical clearance	Crankshaft end float
1.	0.102 to 0.112	0.22	0.50	0.50
2.	0.097 to 0.117			
3.	0.090 to 0.121			
4.	0.092 to 0.128			

**12.1.6 Big end bearings:**

Bearing No.	Clearance, (mm)		Max. permissible clearance limit, (mm)	
	Diametrical	Axial	Diametrical	Axial
1.	0.067 to 0.126	0.30	0.50	0.75
2.	0.061 to 0.152	0.25		
3.	0.062 to 0.147	0.25		

**12.1.7 Valve, guides and timing gears:**

Any marked sign of overheating of valves : None  
Pitting of seat/faces of valves : None  
Any visual damage to the teeth of timing gears : None

**Spring Rate, (N/mm):**

-Intake valve : 14.16 to 14.30  
-Exhaust valve : 14.21 to 14.44

Appropriate discard limit was not specified.

**Clearance between valve guide and valve stem, (mm):**

Intake valve : 0.084 to 0.090  
Exhaust valve : 0.088 to 0.095

Against the discard limit of 0.152 mm

T-1560/2088/2021	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

- 12.2 Clutch:** Observation
- Any marked wear on clutch friction plates : None
- Condition of clutch release bearing : Normal
- Condition of release levers & springs : Normal
- Condition of pilot bearing : Normal
- Presence of oil in clutch housing : Normal
- Any marks on fly wheel/ pressure plate : None
- Overall thickness of clutch plate, (mm):**
- Transmission : 9.54 to 9.65
- PTO : 8.01 to 8.10
- Height of lining over rivet head, (mm):**
- Transmission : 1.55 to 1.70 | Against discard limit of wear up to rivet head
- PTO : 1.54 to 1.70
- 12.3 Transmission gears:**
- Any visual damage, pitting & chipping of any transmission gear teeth. : None
- Backlash between crown wheel and pinion, (mm) : 0.42 | Against discard limit of 0.50 mm

**12.4 Brakes:**

Description	Initial specified thickness of brake disc, (mm)	Measured thickness of brake disc after test, (mm)	Measured depth of oil groove of brake lining, (mm)	Minimum permissible depth of oil groove of brake lining, (mm)
Left	6.30	4.83 to 5.01	0.43 to 0.49	Appropriate discard limit was not specified.
Right	6.30	4.85 to 5.00	0.43 to 0.49	

- 12.5 Front axle:**
- Any marked wear of king pins : None
- Any marked wear of king pin bushes : None
- Clearance between king pin and bushes, (mm) : 0.125 to 0.195 | Against the discard limit of 0.35 mm
- Condition of bearings for stub axles : Normal
- Condition of king pin bearings : Normal
- Condition of seals for stub axles and king pins : Normal
- Clearance between centre pin and bushes, (mm) : 0.058 to 0.097 | Against the discard limit of 1.25 mm

- 12.6 Steering system:**
- Visual condition of the components of complete steering assembly : Normal

- 12.7 Starter motor & Alternator:**
- Presence of soil/oil in housing : None
- Condition of bearings and other components : Normal

T-1560/2088/2021	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

### 13. ADJUSTMENTS, DEFECTS, BREAKDOWNS AND REPAIRS

Sl. No.	Adjustments/Defects/Breakdowns and Repairs	Tractor run hours
	None	

### 14. COMPARISON OF SPECIFICATION AND PERFORMANCE CHARACTERISTICS OF PREVIOUS SAMPLE (TEST REPORT No. T- 998/1522/2015, T-1357/1884/2020 and PRESENT SAMPLE.

		<u>Previous sample</u>	<u>Present sample</u>
<b>14.1 Specification:</b>			
<b>14.1.1 Tractor:</b>			
Make	:	TAFE Ltd.	
Model	:	MF 5245 DI PLANETARY PLUS V1	
<b>14.1.2 Engine:</b>			
Make	:	SIMPSON & Co. Limited	
Model	:	T III A SJ 327 –F3	
Bore/Stroke, (mm)	:	95/127	
Specified cubic capacity, (cc)	:	2700	
Rated engine speed, (rpm)	:	2250	
<b>14.1.2.1 Fuel system:</b>			
Make & model of fuel feed pump	:	FP/KSG22AD312	FP/KSG22AD317
Make & model of fuel filters	:	F 002 H20 151	
Make and model of fuel injection pump	:	F 002 A0Z 787	
Make & model of fuel injectors	:	F 002 C80 018, DSLA 145 P 1150	
Type of injector	:	Multiholes	
Manufacturer's production pressure setting, (MPa)	:	25.0 to 25.8	
Injection timing	:	12 +/-2 degree before TDC	
Make & model of governor	:	RSV375...1125 A1C 1822R	
<b>14.1.2.2 Lubricating system:</b>			
Total lubricating oil capacity, (l)	:	7.0	6.8
<b>14.1.3 Transmission:</b>			
<b>14.1.3.1 Clutch:</b>			
Type of clutch plate	:	Dual, dry friction plates	
Size, OD/ID,(mm):			
- Transmission	:	302/196.7	302.1 / 196.7 $\phi$
- PTO	:	253.6/171.9	253.9 / 172.1 $\phi$
<b>14.1.3.2 Gear Box:</b>			
<b>No. of speeds:</b>			
- Forward	:	08	
- Reverse	:	02	
<b>Range of speed, (kmph):</b>			
- Forward	:	2.64 to 34.83	2.64 to 34.86
- Reverse	:	3.59 to 14.38	3.58 to 14.38

T-1560/2088/2021	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

14.1.4 Service Brake:		<u>Previous sample</u>	<u>Present sample</u>
Make	:	JMI	
Type	:	Mechanical, oil immersed Multi discs	
No. of friction disc	:	<b>Three</b>	<b>Four</b>
		(on each wheel side)	
Area of liners, (cm <sup>2</sup> )	:	<b>1269.59</b>	<b>1694.5</b>
		(on each wheel side)	
<b>14.1.5 Wheel equipment:</b>			
<b>Make &amp; Size of tyres</b>			
- Front	:	MRF, 6.00-16, 8 PR	
- Rear	:	MRF, 14.9-28, 12 PR	
<b>Standard Track width, (mm):</b>			
- Front	:	1325	1320
- Rear	:	1330	1330
<b>14.1.5.1 Wheel base, (mm)</b>	:	1770	
<b>14.1.6 Overall dimensions, (mm):</b>			
- Length	:	3375	3380
- Width	:	1745	1800
- Height (at exhaust pipe)	:	2215	2205
- Ground clearance, (mm)	:	370	365
<b>14.1.7 Operational mass of unballasted/Standard ballasted tractor, (kg):</b>			
- Front	:	810	750
- Rear	:	1190	1250
- Total	:	2000	2000
<b>14.1.8 Conformity with following IS:</b>		<u>Previous sample</u>	<u>Present sample</u>
i)	Guide lines for declaration of power and specific fuel consumption and labelling of agricultural tractors [IS10273: 1987]	Conformed	Conforms
ii)	Agricultural tractors - Rear mounted power take-off - Types 1, 2 and 3 [IS:4931-1995]	Conformed	Conforms
iii)	Agricultural wheeled tractors - Rear mounted three-point linkage: Part 1 Categories 1, 2, 3 & 4 (fourth revision) [IS 4468(Part-I):1997/ISO 730-1:1994]	<b>Did not conform</b>	<b>Does not conform</b>
iv)	Drawbar for agricultural tractors – Link type [IS 12953:1990]	Conformed	Conforms
v)	Agricultural tractors - Operator's seat technical requirement [IS 12343 –1998]	Conformed	<b>Does not conform</b>
vi)	Guide for safety & comfort of operator of agricultural tractors: Part 1 General requirements: [IS 12239 (PT-1) 1996/ISO 4254-1:1989, 2019]	<b>Did not conform</b>	<b>Does not conform</b>
vii)	Tractors and machinery for agriculture and forestry – Technical means for ensuring safety Part 2: Tractors [(IS 12239 (PT-2) 1999)]	<b>Did not conform</b>	<b>Does not conform</b>
viii)	Guide lines for location and operation of operator controls on agricultural tractors and machinery [IS: 8133-1983]	Conformed	<b>Conforms</b>

T-1560/2088/2021	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

	<u>Previous sample</u>	<u>Present sample</u>
ix) Tractors and machinery for agriculture and 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]	: Conformed	Conforms
x) Agricultural Tractors and Machinery - Lighting device for travel on public roads [IS: 14683-1999]	: Conformed	Conforms
<b>14.2 Performance Characteristics:</b>		
<b>14.2.1 PTO Performance:</b>		
Maximum Power, (kW)	: 31.8*	32.3
Power at Rated engine speed, (kW)	: 31.8*	32.3
Specific fuel consumption corresponding to maximum power, (g/kWh)	: 231*	261
Maximum equivalent crankshaft torque, (Nm)	: 153*	171.3
Back up torque, (%)	: 13.4*	25.4
<b>*Results are compared with the tech. Ext. report no. T-1357/1884/2020.</b>		
<b>Maximum temperatures (degree):</b>		
Engine oil	: 120	112
Coolant	: 91	100
<b>Lub. oil consumption, (g/kWh)</b>	: 0.32	0.74
<b>14.2.2 Drawbar performance :</b>		
Maximum power with unballasted/Standard ballasted tractor, (kW)	: 28.7	27.8
Maximum pull with unballasted/ Standard ballasted Tractor, corresponding to 15 percent wheel slip, (kN)	: 16.96	17.85
Maximum drawbar pull with ballast corresponding to 15 percent wheel slip, (kN)	25.18	24.41
Maximum transmission oil temperature (deg. C)	: 86	80
<b>14.2.3 Hydraulic performance:</b>		
Hydraulic pump discharge at minimum pressure and rated engine speed (l/min.)	: 17.39	18.10
Maximum hydraulic power, (kW)	: 4.4	4.5
Sustained pressure of the open relief valve, (MPa)	: 19.0	19.5
<b>Maximum lifting capacity, (kN):</b>		
- At the hitch point	: 15.38	14.81
- At the standard frame	: 14.59	12.91
Total drop in height of lift during load maintenance test, (mm)	: 55	100

T-1560/2088/2021	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

Previous sample | Present sample

**14.2.4 Brake performance test at 25 kmph speed:**

**Parameter**

	Cold	Hot	Cold	Hot
Maximum Stopping distance (with Road Ballast), (m)	5.74	6.65	7.24	7.29
Maximum force exerted on the brake Pedal effort required to achieve deceleration of 2.5 m/sq sec, (N)	213 to 241		194 to 249	
Weather parking brake is effective at a force of 600N at foot pedal (s) or 400 N at hand lever	Effective		Effective	

**14.2.5 Noise measurement:**

- Maximum noise at bystanders position, (A)	: 79	84
- Maximum noise at operator's ear level dB(A)	: 94	94

**14.2.6 Mechanical vibration:**

Maximum amplitude of vibration at (microns):		
- Foot rest – LHS & RHS	: 120 & 140	96 & 151
- Steering wheel	: 150	193
-Driver's seat, (driver in seat):	: 130	60

**14.2.7 Haulage Test**

**wheel trailer**

	<b>Two</b>	<b>Four</b>	<b>Two</b>	<b>Four</b>
-Gross mass of trailer, (tonnes)	: 5.0	6.0	5.0	6.0
- Average speed, (kmph)	: 29.54	28.13	31.57	31.57
	to	to	to	to
	29.75	29.33	31.82	31.82
-Distance traveled per litre of fuel consumed, (km)	: 5.58	5.20	5.17 to	4.98
	to	to	5.44	to
	5.61	5.33		5.37
- Average fuel consumption (cc/km/tonne)	: 35.63	31.22	36.75	31.03
	to	to	to	to
	35.78	32.03	38.69	33.45

T-1560/2088/2021	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

**14.3 Qualifying performance (comparable limit) for batch model in comparison to ICT model (Vide test report No. T – 998/1522/2015) (please refer clause 7.6 of IS:12207-2019):**

S. No.	Characteristic	Requirements as per IS: 12207-2019		As observed		Whether meets the requirements (Yes/No)
		Column – 4 of Table-1	Clause 7.6	Previous sample	Present sample	
1	2	3	4	5	6	7
<b>14.3.1</b>	<b>Drawbar performance:</b>					
<b>a)</b>	Maximum drawbar pull with ballast corresponding to 15 percent wheel slip, (kN)	Minimum 70% of static mass with ballast	The performance shall be within 7.5 of ICT or limit specified under column 3 whichever is higher	25.18	24.41	Yes
<b>b)</b>	Maximum drawbar pull without ballast corresponding to 15 percent wheel slip, (kN)	Minimum 70% of static mass of tractor without / standard ballast		16.96	17.85	Yes
<b>c)</b>	Maximum drawbar power without ballast, (kW).	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.		28.7	27.8	Yes
<b>d)</b>	Maximum transmission oil temperature (°C)	The declared value should not exceed the maximum value specified by oil company.		86	80	Yes
<b>14.3.2</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	±10 percent	The performance shall be within 7.5 of ICT or limit specified under column 3 whichever is higher	15.38	14.81	Yes
	2) With the standard frame	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		14.59	12.91	No
<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 min., (mm)	The observed value should not exceed 50 mm		55	100	No



<b>T-1560/2088/2021</b>	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

**14.4 Salient Observations:**

**14.4.1 Laboratory test:**

<u>Previous Sample</u>	<u>Present Sample</u>
<b>14.4.1.1 PTO Performance Test:</b>	
<p>i) The specific fuel consumption corresponding to maximum power was recorded as 231 g/kWh against the declaration of 265 g/kWh.(In Tech. Ext. report, T-1357/1884/2020)</p> <p>ii) The backup torque was 13.4%. (In Tech. Ext. report, T-1357/1884/2020)</p>	<p>i) The specific fuel consumption corresponding to maximum power was recorded as 261 g/kWh against the declaration of 265 g/kWh, which is within the tolerance limit of IS: 12207-2019.</p> <p>ii) The backup torque is 25.4 %.</p>
<b>14.4.1.2 Drawbar Performance Test:</b>	
<p>During ten hours drawbar performance tyre creeping was noted as 30 mm on RHS tyre.</p>	<p>During ten hours drawbar performance, creeping of LHS &amp; RHS rear tyre over the rims was recorded as 30 &amp; 70 mm respectively.</p>
<b>14.4.1.3 Hydraulic Performance Test</b>	
<p>Maximum drop in the height of the point of application of the force after each 5 minutes interval for a total duration of 30 minute, (mm) was noted 55 mm</p>	<p>Maximum drop in the height of the point of application of the force after each 5 minutes interval for a total duration of 30 minute, (mm) was noted 100 mm</p>

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

Following literature has been submitted during the course of testing.

i)	Workshop Service Manual of MF 5245 DI Planetary Plus V1 Tractors (Combined with other TAFE models)	Workshop Service Manual of MF 241 DI & MF 5245 DI Planetary Plus V1 Tractors (Part – 1 & Part – 2)
ii)	Parts Book of MF 5245 DI Planetary Plus V1 Tractor	Parts Book of MF 5245 DI Planetary Plus V1 Tractor
iii)	Operator Manual of MF 5245 DI Planetary Plus V1 Tractor Model.	Operator instruction book (common) of MF 1035 DI V2, MF 241 DI, MF 241 DI Planetary Plus V1 & MF 5245 DI Planetary Plus V1 Tractor Models.

T-1560/2088/2021	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

### 15. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS

**15.1** On the basis of tests conducted the performance results have been summarized as evaluative (mandatory) and non-evaluative (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:

S. No.	Characteristic	Category (Evaluative / Non Evaluative)	Requirements as per IS: 12207-2019	Values declared by the applicant (D) / Requirement (R)	As observed	Whether meets the requirements (Yes/No)
1	2	3	4	5	6	7
<b>15.1.1</b>	<b>PTO Performance :</b>					
<b>a)</b>	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.	32.8 (D)	32.2	Yes
<b>b)</b>	Power at rated engine speed, (kW)	Non Evaluative	-do-	32.8 (D)	32.2	Yes
<b>c)</b>	Specific fuel consumption corresponding to max. power, (g/kWh)	Evaluative	+ 10% Max.	265 (D)	261	Yes
<b>d)</b>	Max. equivalent crankshaft torque, (Nm)	Non Evaluative	$\pm 8\%$	155 (D)	171.3	<b>No</b>
<b>e)</b>	Back-up torque, percent	Evaluative	12 percent, min.	12 (D) 12 (R)	25.4	Yes
<b>f)</b>	Maximum operating temperature( <sup>o</sup> C)					
	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.	132 (D)	112	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.	112 (D)	100	Yes
<b>g)</b>	Engine oil consumption, (g/kWh)	Evaluative	Not exceeding 1% of SFC at max. power under High ambient conditions	2.58 (R)	0.74	Yes
<b>h)</b>	Smoke level, (m <sup>-1</sup> )	Evaluative	Maximum light absorption coefficient of 3.25 per metre or equivalent BOSCH No. 5.2 or 75 Hatridge value ( <b>As per CMVR</b> )	3.25 (R)	0.20	Yes

T-1560/2088/2021	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

1	2	3	4	5	6	7
<b>15.1.2</b>	<b>Drawbar performance:</b>					
<b>a)</b>	Maximum drawbar pull with ballast corresponding to 15 percent wheel slip, (kN)	Non Evaluative	Minimum 70% of static mass with ballast	22.0 (D) 20.51 (R)	24.41	Yes
<b>b)</b>	Maximum drawbar pull with standard ballast corresponding to 15 percent wheel slip, (kN)	Evaluative	Minimum 70% of static mass of tractor without/ standard ballast	14.0 (D) 13.72 (R) Minimum	17.85	Yes
<b>c)</b>	Maximum drawbar power with standard 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 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.	26.0 (D) 25.8 (R) Minimum	27.8	Yes
<b>d)</b>	Maximum transmission oil temperature (°C)	Evaluative	The declared value should not exceed the maximum value specified by oil company	132 (D)	80	Yes
<b>15.1.3</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	±10 percent	16.0 (D)	14.81	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	8.0 (D) 7.58 Minimum (R)	12.91	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 minute, (mm)	Non Evaluative	The observed value should not exceed 50 mm	50 (D) 50 (R) Maximum	100	<b>No</b>

T-1560/2088/2021	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

1	2	3	4	5	6	7
<b>15.1.4</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)	7.24	Yes
2)	Hot brake	Evaluative	10	10 (R)	7.29	Yes
<b>b)</b>	Maximum force exerted on the brake pedal to achieve a deceleration of 2.5 m/s <sup>2</sup> (N)	Evaluative	600	600 (R)	194 to 249	Yes
<b>c)</b>	Whether parking brake is effective at a force of 600 N at foot pedal(s) or 400 N at hand lever, N	Evaluative	Yes / No	Yes (R)	Yes	Yes
<b>15.1.5</b>	<b>Noise measurement :</b>					
<b>a)</b>	Maximum ambient noise emitted by the tractor dB(A)	Evaluative	As per CMVR	88 (R)	84	Yes
<b>b)</b>	Maximum noise at operator's ear level dB(A)	Evaluative	As per CMVR	96 (R)	94	Yes
<b>15.1.6</b>	<b>Amplitude of mechanical vibrations at :</b>					
1)	Left foot rest	Non Evaluative	100 microns (max)	100 (R)	96	Yes
2)	Right foot rest				151	<b>No</b>
3)	Seat (with driver seated)	Non Evaluative	100 microns (max)	100 (R)	193	<b>No</b>
4)	Steering wheel	Non Evaluative	100 microns (max)	100 (R)	60	Yes
<b>15.1.7</b>	<b>Air cleaner oil pull over test :</b>					
	Maximum air cleaner oil pull-over, (%)	Evaluative	0.25 % (max.)	0.25 (R)	0.12	Yes
<b>15.1.8</b>	<b>Haulage requirements :</b>					
<b>a)</b>	<b>Gross mass of the trailers, (tones):</b>					
1)	Two wheel	Non Evaluative	As specified by the manufacturer	5.0 (D)	5.0 (D)	Yes
2)	Four wheel			6.0 (D)	6.0(D)	Yes
<b>b)</b>	<b>Distance travelled / litre of fuel consumption, (km/l):</b>					
1)	Two wheel	Non Evaluative	As specified by the manufacturer	5.35 to 5.75 (D)	5.17 to 5.44	<b>No</b>
2)	Four wheel			5.20 to 5.60 (D)	4.98 to 5.37	<b>No</b>
<b>c)</b>	<b>Fuel consumption (ml/km/tonne):</b>					
1)	Two wheel	Non Evaluative	As specified by the manufacturer	35.7 to 45.0 (D)	36.8 to 38.7	Yes
2)	Four wheel			32.0 to 40.0 (D)	31.0 to 33.5	Yes

T-1560/2088/2021	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

1	2	3	4	5	6	7	
<b>15.1.9</b>	<b>Wetland cultivation :</b>						
	Sealing for the following assemblies:		Evaluative	The identified assemblies should essentially meet the requirement of IS: 11082. No water ingress in the identified assembly given in column-2. If tractor does not meet the requirements of wetland cultivation, it may be recommended for dry land operation only.	There should be no ingress of water and / or mud (R)	No ingress of water and / or mud was reported during ICT of this tractor mode, tested vide test report no T 998/1522/2 015.	Yes
	1)	Clutch assembly	-do-				
	2)	Brake housings	-do-				
	3)	Front axle hubs	-do-				
	4)	Engine Oil	-do-				
5)	Transmission Oil	-do-					
<b>15.1.10</b>	<b>Safety features :</b>						
a)	Guards against moving and hot parts	Evaluative	Belt drives, pullies, silencer, hydraulics pipes(as per IS-12239 Part 2)	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 meet the requirements</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)	<b>Does not meet the requirements</b>	<b>No</b>		
f)	Specifications of linkage drawbar	Evaluative	Should meet the requirements of IS 12953 (As amended from time to time)	Meets the requirement	Yes		
g)	Specifications of Swinging drawbar (wherever fitted)	Evaluative	Should meet the requirements of IS 12362 (Part 3) (As amended from time to time)	Not fitted	Not applicable		

T-1560/2088/2021	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

1	2	3	4	5	6	7
h)	1)	Maximum travelling speed at rated engine speed in reverse gears, (kmph)	Evaluative	Should not exceed 20 Kmph	14.38 (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. Not applicable	Not applicable	Not applicable
<b>15.1.11</b>	<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 and year of manufacture in numerical MM YY 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	TAFE	Yes
	2)	Model	Evaluative		MF 5245 DI PLANETARY PLUS V1	Yes
	3)	Month & Year of manufacture	Evaluative		11/20	Yes
	4)	Engine number	Evaluative		SJ327A94353	Yes
	5)	Chassis number	Evaluative		MEA4A6D7LL2 324802	Yes
	6)	Declaration of PTO power, (kW)	Evaluative		32.8	Yes
	7)	Declaration of specific fuel consumption, (g/kWh)	Evaluative		265	Yes
<b>15.1.12</b>	<b>Discard limit for:</b>					
<b>(a)</b>	Cylinder bore diameter, (mm)	Evaluative	To be specified by Manufacturer	95.18	95.000 to 95.022	Yes
<b>(b)</b>	Clearance between piston & cylinder liner at skirt, (mm)	Non Evaluative		0.25 with new rings	0.138 to 0.140	Yes
<b>(c)</b>	Piston diameter at skirt, mm	Non Evaluative		discarded when ring groove clearance exceeds 0.25 mm with new rings	94.870 to 94.874	Yes

T-1560/2088/2021	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

1	2	3	4	5	6	7
<b>(d)</b>	<b>Ring end gap (mm):</b>					
	Top comp. ring.	Evaluative	To be specified by Manufacturer	1.5	0.40 to 0.45	Yes
	2 <sup>nd</sup> comp. ring.			1.5	0.55 to 0.70	Yes
	Oil ring.			1.5	0.45 to 0.55	Yes
<b>(e)</b>	<b>Ring groove clearance (mm):</b>					
	Top comp. ring	Evaluative	-do-	Tapered ring		--
	2 <sup>nd</sup> comp. ring		-do-	0.25	0.072 to 0.080	Yes
	Oil ring		-do-	0.25	0.049 to 0.050	Yes
<b>(f)</b>	<b>Clearance of main end bearings, (mm):</b>					
	Diametrical	Evaluative	-do-	0.50	0.090 to 0.128	Yes
	Crankshaft end float	Evaluative	-do-	0.50	0.22	Yes
<b>(g)</b>	<b>Clearance of big end bearings, (mm):</b>					
	Diametrical	Evaluative	-do-	0.50	0.061 to 0.147	Yes
	Axial	Evaluative	-do-	0.75	0.25 to 0.30	Yes
<b>(h)</b>	<b>Clearance between king pin and bush,(mm)</b>	Non Evaluative	-do-	0.35	0.125 to 0.195	Yes
<b>(i)</b>	<b>Clearance between center pin &amp; bush,(mm)</b>	Non Evaluative	-do-	1.25	0.058 to 0.097	Yes
<b>15.1.13</b>	<b>Literature (Submission to test agency)</b>					
<b>(a)</b>	Operator manual	Evaluative	Provided / Not Provided	Provided	Provided	Yes
<b>(b)</b>	Parts Catalogue	Evaluative	Provided / Not Provided	Provided	Provided	Yes
<b>(c)</b>	Workshop/ Service manual	Evaluative	Provided / Not Provided	Provided	Provided	Yes
<b>15.1.14</b>	<b>Fitment of Roll Over Protective Structure (ROPS):</b> for tractors 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 Provided	Not fitted	Not applicable
<b>15.1.15</b>	<b>Standard accessories</b>	Evaluative	Trailer hitch, front tow hook, linkage drawbar should be provided with tractor	Provided	Provided	Yes
<b>15.1.16</b>	<b>Accessories (Optional)</b>	Non Evaluative	Ballast weights if fitted should meet the requirement of CMVR.	Provided	Provided	Yes

T-1560/2088/2021	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

<b>15.2 CATEGORY OF BREAKDOWNS / DEFECTS :(As per clause 5.0 of IS-12207-2019)</b>					
<b>S. No.</b>	<b>Category of Breakdown</b>	<b>Category (Evaluative / Non Evaluative)</b>	<b>Requirements as per IS: 12207-2019</b>	<b>As observed</b>	<b>Whether meets the requirement (Yes/No.)</b>
1.	Critical breakdown	Evaluative	There is no 'critical breakdown' during the course of testing	None	Yes
2.	Major breakdowns	Evaluative	There are not more than 1 major breakdowns and neither of them is of repetitive nature	None	Yes
3.	Minor breakdowns	Evaluative	There are not more than 3 minor defects during the test and the frequency of each is not be more than two	None	Yes
4.	Total breakdowns	Evaluative	In no case, the total number of breakdowns should exceed four that is, (1 major + 3 minor) or 4 minor breakdowns	None	Yes

**15.3 Salient Observations:**

**15.3.1 Laboratory tests:**

**15.3.1.1 PTO Performance:**

- i) The backup torque is **25.4 %**.
- ii) The specific fuel consumption corresponding to maximum power was measured as **261 g/kWh** against the declaration of **265 g/kWh**, which is within the tolerance limit of IS: 12207-2019.

**15.3.1.2 Drawbar performance:**

During 10 hour drawbar test, creeping of LHS and RHS rear tyre over the rims was observed as 30 and 70 mm respectively, which was considered on higher side. This should be looked into for necessary corrective action.

**15.3.1.3 Hydraulic Performance:**

The maximum Cumulative drop in height of lift during load maintenance test was observed was 100 mm which does not meet the limit of 50 mm of IS-12207-2019, this should be looked into for necessary corrective action.

**15.3.1.4 Mechanical Vibration:**

The amplitude of mechanical vibration on various assemblies marked as (\*) in Chapter-9 of this test report is on higher side, especially at the foot rest & steering control wheel. This calls for dampening down of vibrations to improve the operational comfort and service life of components.

**15.3.1.5 Three point linkage:**

The lateral distance from lower hitch point to center line of tractor and width of ball of lower links do not meet the requirements of IS-4468-(Part I)-1997. This should be looked into for necessary corrective action.

**15.3.1.6 Wear assessment of components**

The specified permissible limits for the valve spring rate not appropriate and should be looked into while submitting the technical specifications.

**15.4 Maintenance / Service Problems:**

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

CENTRAL FARM MACHINERY TRAINING & TESTING INSTITUTE– BUDNI	Page 48 of 50
--	---------------



<b>T-1560/2088/2021</b>	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

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

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

- i) Provision for spark arresting device in exhaust system.
- ii) The working clearance around the hand brake lever may be provided as per IS: 12239 (Part-2) – 1999.
- iii) Provision of PTO shaft master shield.
- iv) Differential lock may be provided.
- v) The Vertical distance of center of steering control wheel from SIP is less. This should be looked into for corrective action.
- vi) The vertical retainers on both side of the clutch and brake pedal should be provided.

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

**15.6.1** The following literature was supplied with the tractor for reference during the testing.

- i) Operator instruction book (common) of MF 1035 DI V2, MF 241 DI, MF 241 DI Planetary Plus V1 & MF 5245 DI Planetary Plus V1 Tractor Models.
- ii) Workshop Service Manual of MF 241 DI & MF 5245 DI Planetary Plus V1 Tractors (Part – 1 & Part – 2)
- iii) Parts Book of MF 5245 DI Planetary Plus V1 Tractor

**15.6.2** The supplied literature was found adequate However, it is recommended that relevant literature may be updated by incorporating the following information:

- i) The grade of engine, transmission lub. oil in operator's manual is found different as mentioned in the technical specifications. The change period of them is also shown different. This should be strictly check while submitting the technical specifications and printed literatures.
- ii) The printed literature has poor quality pictures of various parts and subassemblies of the tractor. For the user convince pictures should be easily identifiable.
- iii) Safe hitch height while using trailer.

**15.6.3** The literatures should also be brought out in national as well as other regional languages for the guidance of users and service personnel.

**TESTING AUTHORITY:**

<b>C.V. CHIMOTE</b> TEST ENGINEER	
<b>Y.K.RAO</b> SENIOR AGRICULTURAL ENGINEER	
<b>P.K. PANDEY</b> DIRECTOR	

Draft test report is compiled by: **NITESH KUMAR VERMA**, AGRICULTURAL ENGINEER

T-1560/2088/2021	<b>TAFE, MF 5245 DI PLANETARY PLUS V1 TRACTOR – Commercial (1<sup>st</sup> Batch)</b>
	<b>THIS TEST REPORT IS VALID UPTO: 31/07/2026)</b>

**16. Applicant's comments**

Para no.	Our reference	Comments received from the applicant
16.1	15.3.1.1,15.3.1.2,15.3.1.3, 15.3.1.4, 15.3.1.5, 15.3.1.6 & 15.5,	We will study and take appropriate corrective actions.

**ANNEXURE- I**

**TRACTOR RUN HOURS DURING TEST**

A.	LABORATORY AND TRACK TESTS:	HOURS
1.	Running-in	--
2.	PTO performance test	11.48
3.	Power lift and hydraulic pump performance test	3.50
4.	Drawbar performance test	17.80
5.	Brake test	2.0
6.	Noise measurement	1.48
7.	Air cleaner oil-pull over test	3.50
8.	Mechanical vibration test	1.0
9.	Nominal speed test	0.85
<b>B.</b>	<b>HAULAGE TEST:</b>	5.22
<b>C.</b>	Miscellaneous test and other run hours including idle run, transportation, trials and preparation for test	1.92
	<b>TOTAL:</b>	<b>48.8</b>