

व्यावसायिक -वैरिएंट (प्रथम बैच परीक्षण) संख्या/No. : T- 1537/2065/2021
COMMERCIAL - VARIANT TEST REPORT माह/Month : May, 2021
(1st Batch Test)

(यह परीक्षण रिपोर्ट 31/05/2026 तक वैध है। / THIS TEST REPORT IS VALID
UPTO:31/05/2026)



TAFE, MF 241 DI PLANETARY PLUS V1 TRACTOR



भारत सरकार

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मशीनीकरण एवं प्रौद्योगिकी प्रभाग

GOVERNMENT OF INDIA

MINISTRY OF AGRICULTURE AND FARMERS WELFARE
DEPARTMENT OF AGRICULTURE, COOPERATION & FARMERS WELFARE,
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T- 1537/2065/2021	TAFE, MF 241 DI PLANETARY PLUS V1 TRACTOR – COMMERCIAL-VARIANT (FIRST BATCH TEST)
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Manufacturer : M/s Tractors and Farm Equipment Limited,
Post Box No. 3302, Old – 35 (New-77)
Mahatma Gandhi Road, Nungambakkam,
Chennai – 600 034 (T.N.)

Test requested by : The Manufacturer

Month: May	Test Report No. T- 1537/2065/2021	Year: 2021
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Type of Test : **COMMERCIAL -Variant- (First Batch Test)**
 Test code/Procedure : IS: 5994-1998 and IS: 12207-2019.
 Period of Test : October, 2020 to February, 2021
 Test Report No. : T- 1537/2065/2021
 Month/Year : May,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 was submitted by applicant for test.
- 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 variant (first batch test report) and should be read in conjunction with the Commercial Base model (1st batch test) of “**TAFE, MF 241 DI**” Tractor bearing report no. **T- 1536/2064/2021** released on **May, 2021** & variant test report bearing report no. **T-1045/1570/2016, (October, 2016)**.

SELECTED CONVERSIONS

SELECTED CONVERSIONS		
Sl. No	Units	Conversion Factor
1	Force:	
	1 kgf	9.80665 N 2.20462 lbf
2	Power:	
	1 Mechanical horse power	1.01387 Metric horse power 745.7 W
	1 Metric horse power	735.5 W
	1 kW	1.35962 Metric horse power
3	Pressure:	
	1 psi	6.895 kPa
	1 kgf/cm ²	98.067 kPa = 735.56 mm of Hg
	1 bar	100 kPa = 10 N/cm ²
	1 mm of Hg	1.3332 m-bar

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

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Manufacturer	: M/s. Tractors and Farm Equipment Limited, Post Box No. 3302, Old - 35 (New-77) Mahatma Gandhi Road, Nungambakkam, Chennai- 600 034 (TamilNadu).
Location of other manufacturing plants (apa)	: M/s. Tractors and Farm Equipment Limited, Kalladipatti Plant, 10/205, Kalladipatti (P.O.), Pin code - 624 201 Dindigul Disti., Tamilnadu. M/s. Tractors and Farm Equipment Limited, Doddaballapur Plant, Plot No. 1, Kiadb Industrial Estate Doddaballapur- Bangalore - 561 203.
Test requested by (applicant)	: The Manufacturer
Place of running-in	: At manufacturer's works
Duration of said running-in, (h):	
- Engine	: 12
- Transmission	: 16
Method of Selection	: Due to Covid-19 pandemic, it was not possible to conduct the random selection. Nor was it 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. SCOPE OF TEST

The tractor model "TAFE, MF 241 DI PLANETARY PLUS V1" tractor had undergone Commercial (Variant) test vide test report number T-1045/1570/2016, (October, 2016) was released. This tractor model is a variant of "TAFE, MF 241 DI" tractor bearing test report no. T-1536/2064/2021, released in May, 2021 derived on the basis of following differences in the technical specifications as per IS 12207:2019.

All necessary tests as per Table-1 of clause 6.0 of IS: 5994 - were carried out and test report released as under.

1.1. The major features of Base model and Variant model are listed below.

S. No.	Parameters	Base Model Test Report No. (T- 1536/2064/2021, May, 2021)	Variant Model (T- 1045/1570/2016, October, 2016)
1.	Make & Model of Tractor	TAFE, MF 241 DI	TAFE & MF 241 DI PLANETARY PLUS V1
2.	Range of Nominal speed, (kmph):		
	- Forwards	2.30 to 30.36	2.23 to 29.47 Variation of (-3.2 to -2.7%)
	- Reverse	3.13 to 12.49	3.04 to 12.18 Variation of (-2.9 to -2.5 %)
3.	Reduction through crown wheel and bevel pinion	5.571:1 (39/7T)	3.45:1 (38/11T)
4.	Rear differential & Final drive	Reduction through crown wheel and bevel pinion	Planetary reduction Unit 3.14:1 (Ring: 45T, Sun:21T & Planet gear :12 T)

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1	2	3	4
5.	Oil Capacity of Transmission, (l)	25.0	35.3
6.	Type of brake system	Mechanical, Dry discs	Mechanical, Oil Immersed discs
	Location	At the end of rear axle shaft	Outside the differential housing on each side
	No. of disc & area of liners (cm ²)	Two & 909.2 (on each wheel side)	Four & 1680.2 (on each wheel side)

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.	Air Cleaner Oil	SAE 20W40/ TAFE genuine oil / TAFE engine oil (TEO)	As recommended
2.	Engine oil		As recommended
3.	Gearbox, differential, rear axle, final drive, hydraulic & brake system		Oil originally filled in the tractor was not changed
4.	Steering gear box oil	Servo Transmission T-20	
5.	Grease	Servo grease MP	Servo Grease MP

3.0 SPECIFICATIONS

3.1	Tractor:	
	Make	: TAFE
	Model	: MF 241 DI PLANETARY PLUS V1
	Brand name	: None
	Variant, if any	: None
	Type	: Four wheeled, rear wheel drive, Unit construction, General purpose, standard Agricultural Tractor
	Month and year of manufacture	: 09 20
	Chassis number	: MEA908A5JL2310060
3.2	Engine:	
	Make	: Simpson Co. Ltd.
	Model	: T III A S325.1 –F2
	Type	: Four stroke, liquid cooled, naturally aspirated, direct injection, diesel engine.
	Serial number	: S325.1103857
	Year of manufacture	: Not available
	Country of origin	: India
3.2.1	Engine speed (rpm), (Manufacturer's recommended production settings):	
	- Maximum speed at no load	: 2100 to 2200
	- Low idle speed	: 600 to 800
	- Speed at maximum torque	: 1200 to 1400
	Rated speed, (rpm):	

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	- For PTO use	: 2000
	- For drawbar use	: 2000
3.3	Cylinder & Cylinder Head:	
	Number	: Three
	Disposition	: Vertical, Inline
	Bore/stroke, (mm)	: 91.4/127
	Capacity as specified by the applicant, (cc)	: 2500
	Compression ratio	: 18.5: 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 / 0.25
	- Exhaust valve, (mm)	: 0.30 / 0.25
3.4	Fuel System:	
	Type of fuel feed system	: Gravity & force feed
3.4.1	Fuel tank:	
	Capacity, (l)	: 45.2
	Location	: Above clutch housing
	Provision for draining of sediments/ water	: Not provided
	Material of fuel tank	: Metallic
3.4.2	Water separator:	
	Make	: Engine tech (apa)
	Type	: Gravity inverted funnel
	Location	: In between fuel tank & feed pump
3.4.3	Fuel feed pump:	
	Make	: Bosch, Made in India
	Type	: Plunger with hand primer
	Model/Group combination No.	: FP/KSG22AD45/2, 9 440 030 030
	Provision of sediment bowl	: Not Provided
	Method of drive	: Through camshaft of fuel injection pump
3.4.4	Fuel filters:	
	Make	: Bosch, Made in India
	Model/Group combination No.	: F 002 H20 151
	Number	: Two
	Type of elements:	: Cloth- (Primary) & Paper- (Secondary)
	Capacity of final stage filter, (l)	: 0.50
3.4.5	Fuel Injection pump:	
	Make	: BOSCH India
	Model/Group combination No.	: F 002 AOZ 778, PES3A80D320RS2000
	Type	: Plunger, Inline
	Serial number	: 07659804
	Method of drive	: Through timing gears

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- 3.4.6 Fuel injectors:**
 Make : BOSCH, Made in India
 Model/Group combination No.:
 Holder Number : F 002 C70 018
 Nozzle Number : DSL A 146 P 5514
 Type : Multi holes (five holes)
 Manufacturer's production pressure setting, (MPa) : 25.0 to 25.8
 Injection timing : 14 + 0/-2-degree BTDC
 Firing order : 1-2-3
- 3.4.7 Governor:**
 Make : BOSCH, Made in India
 Model/Group combination No. : RSV375...1000 A4C 1617R
 Type : Mechanical, centrifugal, variable speed
 Rated engine speed, (rpm) : 2000
 Governed range of engine speed, (rpm) : 600 to 2200
- 3.5 Air intake system:**
- 3.5.1 Pre-cleaner:**
 Make : TAFE (apa)
 Type : Centrifugal with transparent dust collector
 Location : On top of the air cleaner inlet tube, above the bonnet
- 3.5.2 Air cleaner:**
 Make : TAFE (apa)
 Type : Oil bath
 Location : RHS of tractor, under the bonnet
 Range of suction pressure at maximum power, (kPa) : 4.7
 Oil capacity, (l) : 0.50
 Oil change period : After every 100 hours of operation in both normal condition and dusty condition.
- 3.6 Exhaust System:**
 Type of silencer : Up draft (cylindrical)
 Location : On LHS of engine
Position of silencer outlet with respect to SIP, (mm):
 - Vertical : 940
 - Longitudinal : 1170
 - Lateral : 440 (on LHS)
 Range of exhaust gas pressure at maximum power (kPa) : 3.5 to 4.7
 Provision of spark arresting device : **Not provided**
 Provision against entry of rain water : A bend provided at the top of silencer
- 3.7 Lubricating system:**
 Type : Forced feed-cum -splash
 Oil sump capacity, (l) : 6.50
 Total lub oil capacity, (l) : 7.00

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Oil change period	:	First change after 100 hours and subsequently after every 300 hours of operation.
Type of cooling device, (if any)	:	Not Provided
3.7.1 Filters:		
Make	:	TAFE (apa)
Type	:	Full flow spin on throw away
Number	:	One
3.7.2 Pump:		
Make	:	M/s. Simpson & Co.(apa)
Type	:	Rotary, lobe type
Method of drive	:	Through timing gears
Pressure release setting, (kPa)	:	343 to 448 (apa)
Minimum permissible pressure, (kPa)	:	1.0 (apa)
3.8 Cooling system:		
Type	:	Force circulation of water.
Brand name of the coolant	:	Not Available
Coolant water ratio	:	Not Available
3.8.1 Details of Pump	:	Centrifugal, semi-open impeller of 69.5 mm diameter, having six number of vanes and driven through crankshaft pulley by a "V"-belt common to alternator.
3.8.2 Details of fan	:	Suction type, having seven numbers of polypropylene blades of 390 mm diameter and mounted on water pump shaft.
Means of temperature control	:	Thermostat
Bare radiator capacity, (l)	:	2.40
Coolant expansion tank capacity, (l)	:	0.45
Total coolant capacity, (l)	:	8.00
Radiator cap pressure, (kPa)	:	88
3.9 Starting System:		
Type	:	12 V, DC, Electrical
Aid for cold starting	:	None
Any other device provided for easy starting	:	None
3.10 Electrical System:		
3.10.1 Battery:		
Make and model	:	Amaron & TR510D31R
Type	:	Lead acid
Capacity and rating	:	12V, 80 Ah at 20 hours discharge rate.
Location	:	Above clutch housing in a separate metallic bracket, under the bonnet.
3.10.2 Starter:		
Make	:	Autolek
Model	:	STM1103V
Type	:	Pre-engaging, solenoid operated
Power rating	:	12V, 2.2 kW
Serial number	:	Not available
3.10.3 Generator:		

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Make : Pricol
 Model : Not available
 Type : Alternator
 Serial number : Not available
 Output rating : 12V, 36 Amp
 Method of drive : Driven through crankshaft pulley by a cogged "V" belt common to alternator
3.10.4 Voltage regulator : In-built with alternator

3.10.5 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)
Front Lights:				
- Head lights	2, 12V, 60/55W	1020	125 ϕ	695
- Parking lights	2, 12V, 5W	1330	58 x 48	220
- Turn cum hazard light	2, 12V, 21W	1330	110 x 45	140
Rear lights:				
- Tail light/Brake light	2, 12V, 21/5W	1340	90 x 75	240
- Turn/Hazard light	2, 12V, 21W	1340	90 x 75	145
- Plough light (on RHS mudguard)	1, 12V, 55W	1450	125 x 70	350
- Reflectors (Red)	2	1340	45 x 52	190
- Registration plate light (RHS)	1, 12V, 5 W	1060	85 x 15	850

3.10.6 Main switch : Key turn type, having three positions viz:
 i) OFF,
 ii) Circuit ON
 iii) START

3.10.7 Light switch : Combination switch with multifunction.
 i) OFF
 ii) Parking lights + Dash board light
 iii) Head lights (short beam) + (ii)
 iv) Head lights (long beam) + (ii)
 v) Turn indicator
 vi) Horn push button

3.10.8 Horn:
 Make : Addon
 Type : 12 V, 2B, Electromagnetically vibrated type
 Location : In front of radiator, under the bonnet.

3.10.9 Fuse box : Contains 5 number of fuses of following capacity:

Capacity	25A	15A	10A	5A
Number	01	02	01	01

3.10.10 Details of other electrical accessories:

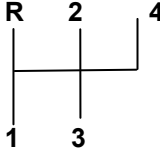
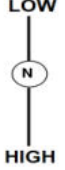
3.10.10.1 Starting safety switch : Starter will not operate unless the main high-low range shifting lever is in neutral position.

3.10.10.2 Flasher Unit:

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Make	:	BGLI
Capacity:		
- Turn signal	:	12V, 21W x 2 +2W x 1
- Hazard signal	:	12V, 21W x 4 + 2Wx2
Flashes/min.	:	12V, 85
3.10.10.3 Seven pin trailer socket	:	Provided
3.11 Instrument panel details:		
i)		Engine speed-cum-cumulative run hour meter (0 to 30 x100 rpm)
ii)		Coolant temperature gauge with coloured zone
iii)		Fuel level gauge with coloured zone
iv)		Engine oil pressure gauge with coloured zone
v)		Main switch (key-turn type)
vi)		Battery charging warning indicator
vii)		Battery volt meter with coloured zone
viii)		Turn/hazard indicator
ix)		Head light long beam ON indicator
x)		Hazard light switch
xi)		Mobile charging socket
xii)		Hand accelerator lever
xiii)		Steering control wheel
xiv)		Horn push button
xv)		Rear view mirror
3.12 Transmission System:		
3.12.1 Clutch:		
Make	:	Valeo (apa)
Type	:	Dual, dry friction plate
No. of friction plate(s)	:	Two
Size (OD/ID), (mm):		
-Transmission	:	254/172 (apa)
-PTO	:	302/197 (apa)
Material of clutch lining		Cerametallic (apa)
Method of operation-Transmission	:	By pressing the clutch pedal on LHS, half way
-PTO	:	By depressing the same pedal fully.
3.12.2 Gear box:		
Make	:	TAFE (apa)
Model identification mark	:	Not available
Type	:	Mechanical, partial constant mesh with epicyclical gear reduction unit for High-Low range selection
No. of speeds:		
- Forward	:	08
- Reverse	:	02
Location of gear shifting levers	:	In center in front of driving seat

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Gear shifting pattern	: R 2 4  1 3	 LOW N HIGH Low-High range gear Shift lever
Oil capacity (l)	: 35.3 (Common with differential, rear final drive, hydraulic & brake systems).	
Oil changing period	: First change after 200 hours and subsequently after every 750 hours of operation.	
Range of nominal Speed, (kmph):	Range of nominal Speed, (kmph):	
- Forward	: 2.23 to 29.47	
- Reverse	: 3.04 to 12.18	
3.12.3 Rear Differentia unit:		
Type	: Crown wheel and bevel pinion with differential unit accommodated inside the differential housing.	
Reduction through crown wheel & bevel pinion	: 3.45: 1 (38/11 T)	
Oil capacity (l)	: 35.3 (Common with gear box, rear final drive, hydraulic & brake systems).	
Oil changing period	: First change after 300 hours and subsequently after every 900 hours of operation.	
Differential lock	: Not provided	
3.12.4 Rear axle & final drive:		
Type	: Planetary reduction at the end of rear axle	
Reduction through final drive	: 3.143:1 (Ring gear:45T, Sun gear:21T & Planet gear :12T)	
Oil capacity of final drive, (l)	: 35.3 (common with gearbox, differential, hydraulic & brake system)	
Oil changing period	: First change after 300 hours and subsequently after every 900 hours of operation.	
3.13 Power lift (Hydraulic system):		
- Make	: TAFE (apa)	
- Type	: Open centre, non-live, ADCC	
- No. and type of internal cylinder	: One, single acting.	
- Type of linkage lock for transport	: Hydraulic response control knob in fully closed position acts as a transport lock.	
3.13.1 Hydraulic pump:		
- Make & Model	: TAFE (apa)	
- Type	: Scotch yoke (piston type) Mark-1A	
- Location & drive	: Inside the transmission housing, driven through counter shaft of gear box.	
No. & Type of filter	: One wire mesh strainer inside transmission housing.	
Hydraulic oil capacity, (l)	: 35.3 (common with gear box, differential, rear axle, final drive & brake system).	

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Oil change period : First change after 300 hours and subsequently after every 900 hours of operation.

Provision for external tapping : Provided
Details of control:
 i) Position control lever
 ii) Draft control lever

Method of draft sensing : Through top link

3.13.2 Three-point linkage:

Sl. No.	Observations	As per IS: 4468- (Part-1) - 1997 ((Cat.I / Cat.II), (mm))	As measured, (mm)	Remarks
1	2	3	4	5
I. Upper hitch points:				
	a) Dia of hitch pin hole	19.30 to 19.50 / 25.70 to 25.90	25.89	Conforms to cat –II
	b) Width of ball	44.0 (max.) / 51.0(max.)	43.78	-do-
1	2	3	4	5
II. Lower hitch points:				
	a) Dia of hitch pin hole	22.40 to 22.65/ 28.70 to 29.00	22.42/ 28.95	Conforms to cat –II
	b) Width of ball	34.8 to 35.0 / 44.8 to 45.0	44.7	-do-
III.	Lateral distance from lower hitch point to centre line of tractor	359 / 435	364	Does not conform
IV.	Lateral movement of lower hitch points	100 (min) / 125 (min)	125	Conforms to cat –II
V.	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 –II
VI.	Transport height	820 (min) / 950 (min)	1020	Conforms to cat –I & II
VII.	Power range (without force)	560(min) / 650 (min)	605	Conforms to cat I & II
VIII.	Leveling adjustment	100 (min) / 100 (min)	335	-do-
IX.	Lower hitch point clearance	100 (min) / 100 (min)	185	-do-
X.	Lower hitch point height	200 (max) / 200 (max)	200	-do-

3.13.3 Drawbar:

3.13.3.1 Linkage Drawbar [Refer Fig. 1 (A)]:

Notation	As per IS: 12953-1995 (Cat. I)/ (Cat.II) (mm)	As measured, (mm)	Remarks
A	683 ± 1.5 / 825 ± 1.5	683.0	Conforms to Cat-I
B	75 (min) / 75 (min)	80.25	Conforms to Cat.I & II
C	30 (min) / 30 (min)	30.74	--do--
D \emptyset	21.79 to 22.0 / 27.79 to 28.00	21.92	Conforms to Cat-I
E	39.0 (min) / 49.0 (min)	50.31	Conforms to Cat.I & II
F \emptyset	12.0 (min) / 12.0 (min)	12.34	--do--
G	15.0 (min) / 15.0 (min)	15.50	--do--
H \emptyset	25 ± 1 / 25 ± 1	24.93	--do--
J	80 ± 1.5 / 80 ± 1.5	80.1	--do--

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No. of holes	07/09	07	Conforms to Cat-I
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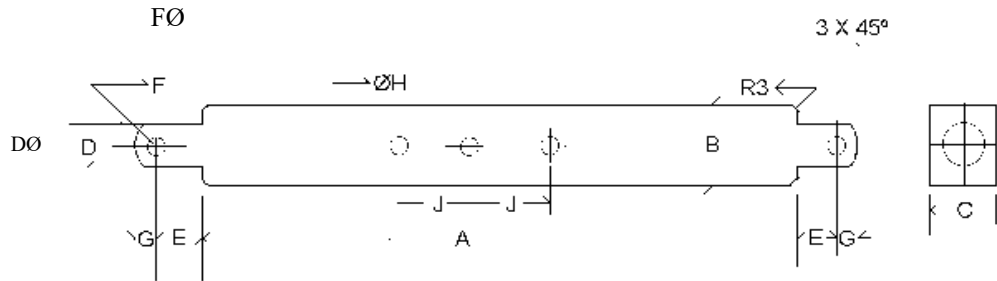


Fig. 1 (A): DIMENSIONAL NOTATIONS FOR LINKAGE DRAWBAR

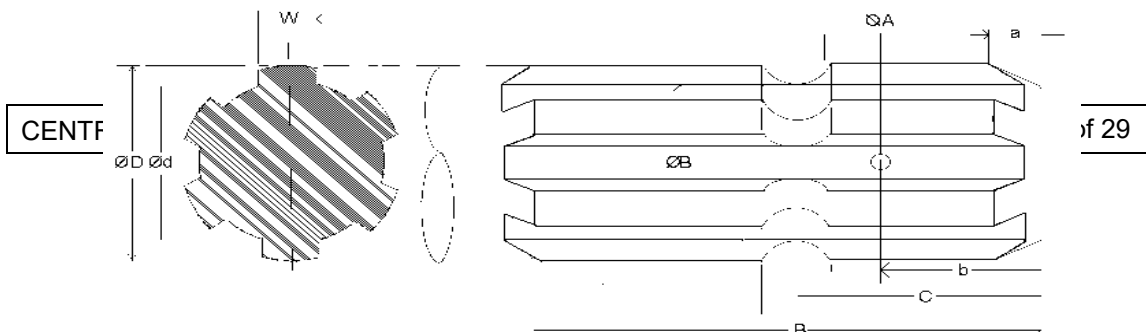
3.13.3.2 Swinging drawbar [Refer Fig.1 (c)]: : Not Provided

3.14.1 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) : 720
Other speed corresponding to rated engine speed (rpm) : None
Distance behind rear axle, (mm) : 305
Engine to PTO speed ratio : 2.778: 1
Whether the PTO shaft is capable of transmitting the full power of engine : Yes

3.14.2 Specifications of Power Take-Off Shaft: [Refer Fig. 2]

Specification	As per IS:4931-1995 (Type-I)	As observed	Remarks
Nominal speed (rpm)	540 ± 10	540 rpm of PTO shaft corresponds to 1500 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	In the centre line of tractor	Conforms
Dimensions (mm) (See Fig. 2):			
DØ	34.79 ± 0.06	34.81	Conforms
dØ	28.91 ± 0.05	28.89	Conforms
BØ	29.4 ± 0.1	29.46	Conforms
AØ (Optional)	8.3 ± 0.5	Not available	Not applicable
W	8.69 – 0.09 - 0.16	8.60	Conforms
a	7	7	Conforms



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b (Optional)	25 ± 0.5	NA	Not applicable
c	38	38	Conforms
X	30°	30°	Conforms
B	76 (min)	87	Conforms
h	450 to 675	485	Conforms

Fig. 2 (a): DIMENSIONAL NOTATIONS FOR TYPE- I POWER TAKE- OFF SHAFT

3.14.2.1 Power Take-off Master Shield : Not Provided

3.15 Towing hitch:

3.15.1 Front:

Type : Clevis
Location : At front of bumper inbuilt
Height above ground level, (mm) : 555
Type of adjustment : Fixed
Width of clevis, (mm) : 55
Dia of pin hole, (mm) : 33

3.15.2 Rear:

Type : Clevis
Location : At rear of transmission housing
Height above ground level, (mm):
- Maximum : 685
- Minimum : 470
- No. of positions : 04
- Type of adjustment : By changing the position of hitch and reversing it on its mounting bracket.
Distance of hitch point, (mm):
- From rear wheel centre : 425
- From power take-off shaft end : 120
Dia of pin hole, (mm) : 31
Width of clevis, (mm) : 70

3.16 Steering:

Make of distributor : Rane (apa)
Type : Mechanical, Re-circulating ball & nut type
Location : Above the clutch housing
Method of operation : Manual, by steering control wheel
Diameter of steering control wheel, (mm) : 450
Steering oil capacity, (l) : 0.90
Lubricant change period : First change after 100 hours and 500 hours of operation.

3.16 Brakes:

3.16.1 Service Brake:

Make : JMI
Type : Mechanical, Oil immersed discs
Location : On half axle shaft, outside the differential housing in each side
No. of disc(s) : Four (on each wheel side)
Area of liners, (cm²) : 1680.2 (on each wheel side)
Material of liners : Not specified

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Method of operation	:	Individual or combined pedal operated by right foot.
Brake oil capacity, (l)	:	35.3 (Common with gearbox, differential, rear final drive, & hydraulic system.
Oil change period	:	First change after 300 hours and subsequently after every 900 hours of operation.

3.16.2 Parking Brake:

Type	:	Pawl & ratchet arrangement
Location & Method of operation	:	By locking service brake in position by a hand lever provided on LHS side of fender.

3.17 Wheel Equipment:

3.17.1 Steered Wheel(s):

Make & model	:	JK tyre & Sona
Number	:	Two
Type of tyre	:	Pneumatic, ribbed
Size & ply rating	:	6.00 -16 & 6PR
Maximum permissible loading capacity of each tyre at inflation pressure (230 kPa) recommended for road work pressure, (kgf)	:	450 as per IITAC manual

Recommended inflation pressure, kPa:

- for field work	:	200
- for road work	:	230
Track width, (mm)	:	1315 (std) & 1515
Method of changing track width	:	By reversing the wheel rim.
Make & size of rim	:	WIL & 4.50E x 16

3.17.2 Driving wheel:

Make	:	JK tyre
Number	:	Two
Type of tyre	:	Pneumatic, traction
Size & ply rating	:	13.6-28 & 12 PR
Maximum permissible loading capacity of each tyre at inflation pressure (110 kPa) recommended for road work pressure, (kgf)	:	1180 as per ITTAC manual

Recommended inflation pressure, (kPa)

- for field work	:	98
- for road work	:	110
Track width, (mm)	:	1250,1340 (std),1480,1500, 1600,1620, 1760 & 1880
Method of changing track width	:	By reversing the wheel disc & changing the position of wheel disc on offset rim lugs.
Make & size of rim	:	WIL & W11 x 28

3.17.3 Wheel base, (mm)

	:	1765
Method of changing wheel base, if any	:	None

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3.18 Operator's seat:

Make : Harita Seating system Ltd. (apa)
 Type : Cushioned with back rest
 Type of suspension : Two helical springs
 Type of damping : Hydraulic shock absorber

Range of adjustment, (mm):

- Vertical : Nil
 - Lateral : Nil
 - Longitudinal : ± 75

3.19 Provision for safety and comfort of operator:

3.19.1 Conformity with IS: 12343-1998:

i) Longitudinal distance from SIP to center line of clutch & brake pedal.

3.19.2 Conformity with IS: 6283 (Part-1) – 2006 & IS: 6283 (Part-2) – 2007:

All the controls are identifiable with symbols as per IS: 6283 (Part-1) – 2006 & IS: 6283 (Part-2) – 2007, **except the following:**

i) Oil, lubricant, type & frequency symbols has not been provided.

3.19.3 Conformity with IS:8133-1983, except the following:

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

3.19.4 Conformity with IS: 12239 (Part-1)-2018:

Meets the requirements of IS: 12239 (Part-1)-2018, **except the following:**

i) Vertical retainess at both side of clutch pedal.
 ii) The spark arrester has not been provided in the exhaust system.

3.19.5 Conformity with IS:12239 (Part-2)-1999:

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

i) Working clearance between draft control lever, position control lever and mudguard.
 ii) PTO master shield has not been provided.

3.19.6 Conformity with IS: 14683 – 1999:

All lighting arrangements meet the requirements of IS: 14683-1999.

3.19.7 Rear view mirror:

Rear view mirror is provided

3.19.8 Slow moving emblem:

Slow moving vehicle emblem has been provided.

3.20 Labelling of tractor as per IS: 10273-1987:

Location: -The Labeling plate riveted on RHS of below dashboard the following information:

Name of Manufacturer	:	Tractors and Farm Equipment Limited, Chennai, Tamil Nadu.
Make	:	TAFE
Model	:	MF 241 DI PLANETARY PLUS V1
Month & Year of manufacture	:	09 & 20
Engine Serial Number	:	S325.1103857
Chassis Serial Number	:	MEA908A5JL2310060
Maximum PTO Power, kW	:	27.2
Specific fuel consumption, g/kWh	:	265

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3.21 Mass of tractor with standard ballast, (kg):

- Front : 740
 - Rear : 1160
 - Total : 1900

3.22 Overall dimensions (mm): With standard ballast

Length : 3370
 Width : 1710
 Height : 2195
 Ground Clearance : 315 (below transmission housing)

3.23 Number of external lubricating points:

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

3.24 Colour of tractor:

Chassis & engine : Charcoal grey

Sheet metal:

Bonnet & Mudguard : Red
 Rim & Disc : Silver grey

3.2 NOMINAL SPEED TEST

Movement	Gear No.	No. of engine revolutions for one revolution of driving wheel		Nominal speed at rated engine speed when fitted with 13.6-28 size tyres 610 mm radius index, (kmph).		Variation in nominal speed (%)
		Base Model (Batch)	Variant model (Batch)	Base Model (Batch)	Variant model (Batch)	
Forward	L1	200.04	205.98	2.30	2.23	-3.0
	L2	136.44	140.48	3.37	3.27	-3.0
	L3	74.41	76.52	6.18	5.99	-3.1
	L4	60.60	62.36	7.59	7.38	-2.8
	H1	49.97	51.41	9.19	8.94	-2.7
	H2	34.08	35.07	13.50	13.09	-3.0
	H3	18.57	19.13	24.77	23.98	-3.2
Reverse	H4	15.15	15.52	30.36	29.47	-2.9
	RL	146.78	151.26	3.13	3.04	-2.9
	RH	36.78	37.64	12.49	12.18	-2.5

3.3 PTO PERFORMANCE TEST

Date(s) of test : 25.11.2020

Tractor run at the Institute prior to start of PTO test (h) : 4.50

Type of dynamometer bench used : Fuchino -ESF 1000S eddy current

3.1 Maximum power two hours test under natural ambient condition was conducted. The results of Power take-off performance, maximum power two hours test of previous & present sample are tabulated in **Table-1**.

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Table – 1

	Power (kW)	Speed, (rpm)		Fuel consumption			Specific energy, (kWh/l)
		P.T.O.	Engine	(l/h)	(kg/h)	Specific, (kg/ kWh)	
a) Maximum power - 2 hours test:							
Previous sample	28.9	720	2000	8.41	7.03	0.244	3.43
Present sample	27.6	720	2000	7.79	6.51	0.236	3.54

Sl. No.	Parameters	Base Model (1 st Batch test)		Batch (Variant) Model
		Natural Ambient	High Ambient	Natural Ambient (Max. PTO Power Two Hours)
1	2	3	4	5
i)	No load maximum engine speed, (rpm)	2150	2142	2170
ii)	Equivalent crankshaft torque at maximum power (Nm)	134.6	130.2	131.9
iii)	Equivalent crankshaft torque at rated power (Nm)	134.6	130.2	131.9
iv)	Maximum equivalent crank shaft torque (Nm)	150.6	144.2	149.4
v)	Engine speed at maximum equivalent crankshaft torque, (rpm)	1200	1253	1150
vi)	Backup torque (%)	11.9≈12	10.8	13.3
viii)	Range of atmospheric conditions:			
	- Temperature, (°C)	25 to 27	42 to 45	28 to 29
	- Pressure, (kPa)	98.8 to 99.4	99.6 to 100.1	99.2 to 99.3
	- Relative humidity, (%)	43 to 50	20 to 24	27 to 31
vii)	Maximum Temperature, (°C):			
	- Engine oil	114	125	114
	- Coolant	93	110	92
	- Fuel	49	65	48
	- Air intake	38	53	36
	- Exhaust gas	443	435	438
viii)	Pressure at maximum power:			
	- Intake air, (kPa)	3.3 to 3.5	3.5	4.7
	- Exhaust gas, (kPa)	2.1 to 2.7	24.3 to 26.5	3.5 to 4.7
ix)	Consumptions:			
	Lub. Oil (g/kWh)	--	0.33	--
	-Coolant (% of total coolant capacity)	--	0.64	--

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4. OTHER APPLICABLE TESTS

4.1. BRAKE TEST

4.1 Service brake:

4.1.1 Cold brake test:

Date of test : 02.11.2020
 Type of Track : Concrete
 Maximum attainable speed (kmph):
 -Standard ballasted : 32.29
 -with road ballasted : 32.29

		At maximum attainable travel speed			
Standard ballast tractor	Braking device control, force (N)	415	337	260	182
	Mean deceleration, (m/sec ²)	3.46	3.21	3.07	2.50
	Stopping distance, (m)	11.76	12.53	13.12	16.09
Ballasted tractor	Braking device control force(N)	423	351	279	207
	Mean deceleration, (m/sec ² .)	3.40	3.22	3.09	2.50
	Stopping distance, (m)	11.77	12.49	13.01	16.09
		At 25 kmph travel speed			
Standard ballast tractor	Braking device control, force(N)	343	295	247	199
	Mean deceleration, (m/ sec ²)	3.31	2.98	2.75	2.50
	Stopping distance, (m)	7.56	8.10	8.77	9.65
Ballasted tractor	Braking device control force, (N)	359	317	275	250
	Mean deceleration, (m/sec ²)	3.34	2.94	2.63	2.50
	Stopping distance, (m)	7.60	8.20	9.15	9.65

4.4.1.2 Brake fade test:

		At maximum attainable travel speed			
Braking device control force (N)		481	394	307	220
Mean deceleration, (m/ sec ²)		3.34	3.22	3.07	2.50
Stopping distance, (m)		11.94	12.49	13.12	16.09
		At 25 kmph travel speed			
Braking device control force,(N)		370	328	286	243
Mean deceleration, (m/ sec ²)		3.24	2.77	2.68	2.50
Stopping distance, (m)		7.62	8.72	9.01	9.65

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

4.2 Parking brake test:

Particulars	18 percent slope		12 percent slope with trailer of 1.90 tones.	
	Up	Down	Up	Down
Braking device control force, (N)	333	348	200	215
Efficacy of parking brake	-----Effective-----			

5. ADJUSTMENTS, DEFECTS, BREAKDOWNS AND REPAIRS

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

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6. COMPARISON OF SPECIFICATION AND PERFORMANCE CHARACTERISTICS OF PREVIOUS SAMPLE (TEST REPORT No. T- 1045/1570/2016, OCTOBER, 2016) AND PRESENT SAMPLE

6.1	Specification:	<u>Previous sample</u>	<u>Present sample</u>
6.1.1	Tractor:		
	Make :	TAFE	
	Model :	MF 241 PLANETARY PLUS V1	
6.1.2	Engine:		
	Make :	SIMPSON & Co. Limited	
	Model :	T III A S325.1 –F2	
	Bore/Stroke, (mm) :	91.4/127	
	Specified cubic capacity, (cc) :	2500	
	Rated engine speed, (rpm) :	2000	
6.1.2.1	Fuel system:		
	Make & model of fuel feed pump :	Bosch, India FP/KSG22AD45/2, 9 440 030 030	Bosch, India FP/KSG22AD104/ F 002 A50 038
	Make & model of fuel filters :	Bosch, India & F 002 H20 151	
	Make & model of fuel injection pump :	Bosch, India F 002 AOZ 778, PES3 A80D 320RS 2000	
	Make & model of fuel injectors :	Bosch, India & F 002 C 800 018 DSL A 146 P 5514	
	Type of injector :	Multi holes (five holes)	
	Manufacturer's production pressure setting, (MPa) :	25.0 to 25.8	
	Injection timing :	14 + 0/-2 degree	
	Make & model of governor :	Bosch, India & RSV375....1000A4C1617R	
6.1.2.2	Lubricating system:		
	Total lubricating oil capacity, (l) :	6.90	7.00
6.1.3	Transmission:		
6.1.3.1	Clutch:		
	Type of clutch plate :	Dual, dry friction plate	
	Size, OD/ID, (mm) :	254 ϕ / 172 ϕ (apa)	
	-Transmission :	302 ϕ / 197 ϕ (apa)	
	-PTO :	302 ϕ / 197 ϕ (apa)	
6.1.3.2	Gear Box:		
	No. of speeds:		
	- Forward :	08	08
	- Reverse :	02	02
	Range of speed, (kmph):		
	- Forward :	2.20 to 29.14	2.23 to 29.47
	- Reverse :	3.00 to 12.00	3.04 to 12.18
6.1.4	Service Brake:		
	Make :	JMI	
	Type :	Mechanical, oil immersed disc brake.	
	No. of friction disc :	Four (on each wheel side)	
	Area of liners, (cm ²) :	1680.2 (on each wheel side)	

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6.1.5 Wheel equipment:		<u>Previous sample</u>	<u>Present sample</u>
Make & Size of tyres :			
- Front	:	Apollo & 6.00-16,8PR	JK Tyre & 6.00-16,8PR
- Rear	:	Apollo & 13.6-28, 12PR	JK Tyre & 13.6-28, 12PR
Standard Track width, (mm):			
- Front	:	1335	1315
- Rear	:	1360	1340
6.1.5.1 Wheel base, (mm)	:	1775	1765
6.1.6 Overall dimensions, (mm):			
- Length	:	3375	3370
- Width	:	1720	1710
- Height (at exhaust pipe)	:	2195	2195
- Ground clearance, (mm)	:	341 (below gear box housing drain plug)	345 (below gear box housing)
6.1.7 Operational mass of with standard ballast tractor(kg):			
- Front	:	750	740
- Rear	:	1170	1160
- Total	:	1920	1900
6.1.8 Conformity with following IS:		<u>Previous sample</u>	<u>Present sample</u>
i)	Guide lines for declaration of power and specific fuel consumption and labelling of agricultural tractors (First revision) [IS10273: 1987].	Conformed	Conforms
ii)	Agricultural tractors - Rear mounted power take-off - Types 1, 2 and 3 (third revision) [IS:4931-1995].	Conformed	Conforms
iii)	Agricultural wheeled tractors - Rear mounted three-point linkage: Part 1 Categories 1, 2, 3 & 4 (fourth revision) [IS 4468-1997(Part-I):1997].	Did not conform	Does not conform
iv)	Drawbar for agricultural tractors – Link type [IS 12953:1990].	Conformed	Conforms
v)	Agricultural tractors - Operator's seat technical requirement [IS 12343 –1998 (First revision)].	Conformed	Does not conform
vi)	Guide for safety & comfort of operator of agricultural tractors: Part 1 General requirements: [IS 12239 (PT-1) 2018].	Did not conform	Does not conform
vii)	Tractors and machinery for agriculture and forestry – Technical means for ensuring safety Part 2: Tractors (first revision) [(IS 12239 (PT-2) 1999)].	Did not conform	Does not conform
viii)	Guide lines for location and operation of operator controls on agricultural tractors and machinery (first revision) [IS: 8133-1983].	Conformed	Conforms
		<u>Previous</u>	<u>Present</u>

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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 .	: <u>sample</u> Conformed	<u>sample</u> Conforms
x)	Agricultural Tractors and Machinery - Lighting device for travel on public roads [(IS: 14683-1999)].	: Conformed	Conforms

6.2 Performance Characteristics:

6.2.1 PTO Performance:

	<u>Previous sample</u>	<u>Present sample</u>
Maximum Power, (kW)	28.9	27.6
Power at Rated engine speed, (kW)	28.9	27.6
Specific fuel consumption corresponding to maximum power, (g/kWh)	244	236

6.2.2 Brake performance test:

Parameter	Cold		Hot	
Maximum Stopping distance, (m)	6.46	6.89	7.60	7.62
Maximum force exerted on the brake Pedal effort required to achieve deceleration of 2.5 m/sq sec, (N)	201 to 215		233 to 243	
Weather parking brake is effective at a force of 600N at foot pedal (s) or 400 N at hand lever	Effective		Effective	

6.4 Salient Observations:

6.4.1 Laboratory test:

<u>Previous Sample</u>	<u>Present Sample</u>
6.4.1.1 PTO Performance Test: i) The maximum PTO power was observed as 28.9 kW against the declaration of 27.2 kW which meets the requirement of IS: 12207-2014 with regard to tolerance limit. ii) The specific fuel consumption corresponding to maximum power was recorded as 244 g/kWh against the declaration of 265 g/kWh , which meet the requirement of IS: 12207-2014 with regard to tolerance limit.	i) The maximum PTO power was recorded as 27.6 kW against the declaration of 27.2 kW , which meets the requirement of IS: 12207-2019 with regard to tolerance limit. ii) The specific fuel consumption corresponding to maximum power was recorded as 236 g/kWh against the declaration of 265 g/kWh , which is within the tolerance limit of IS: 12207-2019.

6.5 Adequacy of literature:

Following literature was supplied with the test sample for reference during the test.	
i) Operator's manual ii) Spare part's catalogue iii) Service manual	i) Operator's manual ii) Spare part's catalogue iii) Service manual

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7. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS

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

Sl. 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
7.1.1	PTO Performance:					
a)	Maximum power under 2 hours 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 ≤ 26 kW	27.2 (D)	27.6	Yes
b)	Power at rated engine speed, kW	Non-Evaluative	-do-	27.2 (D)	27.6	Yes
c)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Evaluative	+ 10%	265 (D)	236	Yes
d)	Maximum equivalent crankshaft torque, (Nm)	Non-Evaluative	$\pm 8\%$	155 (D)	149.4	Yes
e)	Back-up torque, percent	Evaluative	12 percent, min.	12 (R) 12 (D)	13.3	Yes
7.1.2	Brake performance at 25 kmph:					
a)	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)	7.60	Yes
	2) Hot brake	Evaluative	10	10 (R)	7.62	Yes
b)	Maximum force exerted on the brake pedal to achieve a deceleration of 2.5 m/s^2 (N)	Evaluative	600	600 (R) Maximum	233 to 243	Yes
c)	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	Yes	Yes

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1	2	3	4	5	6	7
7.1.3	Safety features:					
a)	Guards against moving and hot parts	Evaluative	Belt drives, pulley, silencer, hydraulic pipes (As per IS 12239 (part 2))	Meets the requirement		Yes
b)	Lighting arrangement (Tractor having more than 1150 mm rear track width)	Evaluative	As per CMVR	Meets the requirement		Yes
c)	Seating requirement (Tractors having more than 1150 mm rear track width)	Non-Evaluative	Should meet the requirements of IS 12343 (as amended from time to time)	Doesn't Meet the requirement		No
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)	Dimension of three-point linkage	Non-Evaluative	Should meet the requirements of IS 4468 (part 1) (as amended from time to time)	Doesn't Meet the requirement		No
f)	Specifications of linkage drawbar	Evaluative	Should meet the requirements of IS 12953	Meet the requirements		Yes
g)	Swinging drawbar (wherever fitted)	Evaluative	Should meet the requirements of IS 12362 (Part 3) (As amended from time to time)	Meet the requirements		Yes
h)	1) Maximum traveling speed at rated engine speed in reverse gear, kmph	Evaluative	Should not exceed 20 kmph	12.18 kmph meets the requirements		Yes
i)	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 be activated, The safety aspects about the operation of shuttle technology shall be brought in operation and manufacturer /dealer shall ensure the training on this aspect to operator before the delivery of tractor.	Not applicable		Not applicable

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1	2	3	4	5	6	7
7.1.4	Labelling of tractors (Provision of labelling plate):					
1)	Make	Evaluative	Should conform to the requirements of CMVR along-with maximum PTO power in kW and year of manufacture in numerical Form MM YY Digit 01-12 in box No..1 for MM will represent the months & next two digits in box No.2 for YY will represent the year of manufacturing.	TAFE		Yes
2)	Model	Evaluative		MF 241 DI PLANETARY PLUS V1		Yes
3)	Month & Year of manufacture	Evaluative		09	20	Yes
4)	Engine number	Evaluative		S325.1L03857		Yes
5)	Chassis number	Evaluative		MEA908A5JL23 10060		Yes
6)	Declaration of PTO power, (kW)	Evaluative		27.2		Yes
7)	Specific fuel consumption, g/kWh	Evaluative		265		Yes
7.1.5	Literature (Submission to test agency)					
(a)	Operator manual	Evaluative	The printed literature in booklet form should be provided as per IS 8132 & should submit along with the test sample	Provided	Yes	
(b)	Parts Catalogue	Evaluative		Provided	Yes	
(c)	Workshop/ Service manual	Evaluative		Provided	Yes	
7.1.6	Fitment of roll Over protective structures (ROPS): 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	
7.1.7	Standard Accessories	Evaluative	Trailer hitch, front tow hook, linkage drawbar should be provided with the tractor.	Provided	Yes	
7.1.8	Accessories (optional)	Non-Evaluative	Ballast weights, if fitted, should meet the requirement of CMVR	Not fitted	Not applicable	

7.2 CATEGORY OF BREAKDOWNS / DEFECTS:					
Sl. No.	Category of breakdowns	Category (Evaluative / Non-Evaluative)	Requirements as per IS: 12207-2019	As observed	Whether meets the Requirements (Yes/No.)
1.	Critical	Evaluative	There is no 'critical breakdown' during the course of testing	None	Yes
2.	Major	Evaluative	There are not more than 1 major breakdowns	None	Yes
3.	Minor	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

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7.3 Salient Observations:

7.3.1 Laboratory tests:

7.3.1.1 PTO Performance Test:

- i) The maximum power in case of previous & present sample was recorded as **28.9 & 27.6 kW** respectively against the declaration of **27.2 kW** which meets the requirement of IS: 12207-2019.
- ii) The specific fuel consumption corresponding to maximum power in case of previous & present sample was recorded as **244 & 236 g/kWh** respectively against the declaration of **265 g/kWh** which meets the requirement of IS: 12207-2019.
- iii) The maximum equivalent crankshaft torque was recorded as **149.4 Nm** in case of present sample against the declaration of **155 Nm**, which is within the permissible limit as specified in IS: 12207-2019.
- iv) The backup torque is **13.3 %** & meets the evaluative requirement of **IS: 12207-2019**.

7.4 Maintenance / Service Problems:

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

7.5 Recommendation with regard to safety on tractor:

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

- i) There should be provision for spark arresting device in exhaust system as per IS:12239-(Part -1) 2018.
- ii) PTO master shield should be provided on tractor as per IS:12239 (Part-2)-1999.
- iii) Working clearance between draft control lever, position control lever and mudguard should be provided as per IS:12239 (Part-2)-1999.
- iv) Lateral distance from SIP to center line of clutch & outer brake pedal should be provided as per IS:12343-1998.
- v) Vertical retainance at both side of clutch pedal as per IS:12343-1998.

7.7 Adequacy of Literature supplied with machine:

7.7.1 Literature was supplied with the tractor for reference during the test.


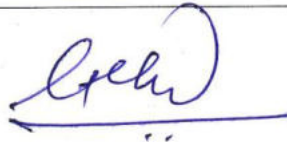

- a) Operator Instruction book for MF 1035 DI V2, MF 241 DI, MF 241 DI PLANETARY PLUS V1, MF 5245 DI PLANETARY PLUS V1 Tractors models.
- b) Parts book for MF 241 DI PLANETARY PLUS 1 tractor model.
- c) Workshop Service manual for MF 241 DI PLANETARY PLUS 1 tractor model.

7.7.2 The supplied literature was found adequate.

7.7.3 However, these literatures should be brought out in other vernacular languages of India for guidance of users.

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TESTING AUTHORITY:

C.V. CHIMOTE TEST ENGINEER	
Y.K. RAO SENIOR AGRICULTURAL ENGINEER	
P.K. PANDEY DIRECTOR	

Draft test report compiled by: Sh. C.S. Raghuwanshi, Agricultural Engineer.

8. APPLICANT'S COMMENTS

Para no.	Our reference	Applicant comments
8.1	7.5 (i), (ii), (iii), (iv), (v) ,7.7.2 & 7.7.3	We will study and take appropriate corrective actions.

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ANNEXURE -I

TRACTOR RUN HOURS DURING TEST

A.	LABORATORY AND TRACK TESTS	HOURS
1.	Running-in (Engine & Transmission)	36.0
2.	PTO Performance Test	3.4
3.	Brake test	1.8
4.	Nominal speed test	1.5
D.	Miscellaneous test and other run hours including idle run, transportation, trials and preparation for test	1.3
TOTAL:		44.0