



**TAFE, MF 241 DI 4WD TRACTOR**



सत्यमेव जयते

भारत सरकार

GOVERNMENT OF INDIA

कृषि एवं किसान कल्याण मंत्रालय

(कृषि, सहकारिता एवं किसान कल्याण विभाग, मशीनीकरण एवं प्रौद्योगिकी प्रभाग)

MINISTRY OF AGRICULTURE AND FARMERS WELFARE

(Deptt.of Agriculture,Co-operation & Farmers Welfare, Mechanization & Technology Division)

केन्द्रीय कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान

**CENTRAL FARM MACHINERY TRAINING & TESTING INSTITUTE**

(An ISO : 9001 - 2008 Certified Institute)

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1	2	3	4
9.	Range of speed, (kmph):		
	- Forwards	2.29 to 29.95	2.22 to 29.33 (variation of 2.1 to 3.1 %)
	- Reverse	3.08 to 12.27	3.03 to 12.14 (variation of 1.1 to 1.6 %)
10.	Number of front wheel revolutions for one revolution of rear wheel	Not applicable	1.59
11.	<b>Front wheel:</b>		
	Type	Pneumatic, ribbed	Pneumatic, traction
	Size & ply rating	6.00-16 & 8 PR	8.00-18 & 4 PR
	Inflation pressure (kPa)	230/200 (Road/Field)	200/175 (Road/Field)
	Size of wheel rim	W 4.50 x 16	W 6 x 18
12.	<b>Rear Tyres: -</b>		
	Size & ply rating	13.6-28,12PR	12.4-28,12PR
	Size of wheel rim	W 12 x 28	W 11 x 28
13.	Wheel base ,(mm)	1770	1965
14.	Type of steering system	Manual, Re-circulating ball & nut	Hydrostatic power steering

Subsequent to the examination of the case in light of Indian Standard IS 12207-2014, the following tests were considered to be carried out:

- Specification checking
- Two hour maximum PTO power performance test.
- Nominal speed test
- Drawbar performance test
- Noise measurement test
- Tiring ability test
- Centre of gravity test

## 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 in case of variant model
1.	Engine and Air cleaner oil	20.W40	As recommended
2.	Transmission and hydraulic oil	SAE 90	Oil originally filled in the tractor was not changed
3.	Steering housing oil	SAE 140	--do--
4.	Grease	Servo Grease MP	Servo Grease MP

## 3. ESSENTIAL TESTS

### 3.1. SPECIFICATIONS

	<u>Base Model</u>	<u>Variant Model</u>
<b>3.1.1 Tractor:</b>		
Make	: TAFE	TAFE
Model	: MF 241 DI	MF 241 DI 4WD
Brand name	: None	None





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1	2	3	4	5	6
22.	<b>Change related to statutory/ regulatory requirements (As per Table 4):</b>				
a)	Engine operating principle (spark/ compression ignition, two/four stroke)	Compression Ignition, 4 stroke	Compression Ignition, 4 stroke	Compression Ignition, 4 stroke	No change
b)	Number & arrangement of cylinders	Four vertical inline	Four vertical inline	Four vertical inline	No change
c)	Maximum declared PTO power, (kW)	27.2	27.2	27.2	No change
d)	Engine displacement, (cc)	2500	2500	2500	No change
e)	Rated engine speed, (rpm)	2000	2000	2000	No change
23.	<b>Other changes:</b>				
a)	Engine Model	T III A S325.1 –F2	T III A S325.1 –F2	T III A S325.1 –F2	No change
b)	Type of air cleaner	Oil bath	Oil bath	Oil bath	No change
c)	Brake system	Mechanical, Dry disc brake	Mechanical, Dry disc brake	Mechanical, Dry disc brake	No change
d)	Wheel base,(mm)	1755	1965	1965	<b>Changed</b>
e)	Overall length ,(mm)	3320	3310	3310	<b>Changed</b>

## 7. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS

- 7.1 On the basis of test conducted the performance results have been summarized as evaluative (mandatory) and non – evaluative (not mandatory) parameters applicable for qualifying Minimum Performance Criteria as per clause-4 table-1 of Indian Standard **12207: 2014** for acceptance of tractor for the purpose of subsidies/NABARD financing for the applicable features for this tractor model.

Sl. No.	Characteristic	Category (Evaluative / Non Evaluative)	Requirements as per IS: 12207-2014	Values declared by the applicant/ requirement		As observed		Whether Variant model meets the requirements (Yes/ No.)
				Base model	Variant Model	Base model	Variant model	
1	2	3	4	5 a	5 b	6 a	6 b	7
7.1.1	<b>PTO Performance :</b>							
a)	- Max. power under 2 h test, (kW ) (Natural ambient condition)	Evaluative	Declared value to be achieved with a tolerance of: -5 / +10% for PTO power >26 kW. -7.5/+10% for PTO power ≤ 26 kW or-5 / +10% for engine power >26 kW. -7.5/+10% for engine power ≤ 26 kW	27.2	27.2	28.3	27.8	Yes
b)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Non Evaluative	+ 5%	265	265	241	250	Yes



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1	2	3	4	5 a	5 b	6 a	6 b	7
<b>7.1.2 Drawbar performance :</b>								
a)	Max. drawbar pull with ballast corresponding to 15 percent wheel slip, (kN)	Non Evaluative	Minimum 65% of static mass with ballast	18.62 (D) 17.40 (R) Minimum	18.35 (D) 18.45 (R) Minimum	23.51	24.36	Yes
b)	Maximum drawbar pull without ballast corresponding to 15 percent wheel slip, (kN)	Evaluative	Minimum 65% of static mass of tractor without ballast	13.00 (D) 11.79 (R) Minimum	14.20 (D) 14.31 (R) Minimum	15.74	18.50	Yes
c)	Maximum drawbar power without ballast, (kW)	Evaluative	Minimum 80 % of PTO power as referred in SI No. i) a) of PTO performance in case of tractors having total static mass > 1500 kg.	22.0 (D) 22.6 (R) Minimum	22.6 (D) 22.2 (R) Minimum	25.6	22.7	Yes
d)	Max. transmission oil temperature (°C)	Non Evaluative	The declared value should not exceed the maximum value specified by oil company	132	132	89	83	Yes
<b>7.1.3 Noise measurement:</b>								
a)	Maximum ambient noise emitted by the tractor dB(A)	Evaluative	As per CMVR	88 (R)	88 (R)	82	83	Yes
b)	Maximum noise at operator's ear level dB(A)	Evaluative	As per CMVR	96 (R)	96 (R)	94	95	Yes
<b>7.1.4 Labelling of tractors (Provision of labelling plate):</b>								
1)	Make	Evaluative	Should conform to the requirements of CMVR along-with declared value of PTO HP	TAFE	TAFE			Yes
2)	Model	Evaluative		MF 241 DI	MF 241 DI 4WD			Yes
3)	Year of manufacture	Evaluative		KE	FF			Yes
4)	Engine serial number	Evaluative		S325.1G03173	S325.1G33081			Yes
5)	Chassis serial number	Evaluative		MEA8D061KE2 024402	MEA8F611FF3 000035			Yes
6)	Declaration of PTO power, kW	Evaluative		27.2	28.35			Yes





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1	2	3	4	5	6	7
7.1.5	<b>Literature (Submission to test agency):</b>					
(a)	Operator manual	Evaluative	Provided/ Not Provided	Provided	Provided	Yes
(b)	Parts Catalogue	Evaluative	Provided/Not Provided	Provided	Provided	Yes
(c)	Workshop/ Service manual	Evaluative	Provided/Not Provided	Provided	Provided	Yes

**7.2 Salient Observations:****7.2.1 Laboratory tests:****7.2.1.1 PTO Performance:**

- i) The maximum PTO power in case of base and variant models was observed as **28.3 & 27.8 kW** against the declaration of **27.2 kW** respectively, which meets the requirement of IS: 12207-2014 with regard to tolerance limit.
- ii) The specific fuel consumption in case of base and variant models corresponding to maximum power was observed as **241 & 250 g/kWh** against the declaration of **265 g/kWh** respectively, which meets the requirement of IS:12207-2014 with regard to tolerance.

**7.2.1.2 Drawbar performance:**

During 10 hour drawbar test in case of base and variant models, creeping of LHS and RHS rear tyre over the rims was observed as **75 & 90** and **30 & 20** mm respectively, which was considered on higher side. This should be looked into for necessary corrective action.

**7.2.1.3 Three point linkage:**

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

**7.2.1.4 Linkage drawbar:**

Some of the parameters of the drawbar linkage conform to Cat.-I and some of them conform to Cat.-II. Keeping in view of the spirit of standardization, the necessary improvements may be incorporated.

**7.2.1.5 Operator's Seat:**

The width of seat does not meet the requirement of IS: 12343-1998 (Re-affirmed in March, 2009) and calls for necessary corrective action.

**7.3 Maintenance / Service Problems:**

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

**7.4 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 range selector lever & mudguard.
- iii) Provision of differential lock.
- iv) Provision of PTO shaft master shield.



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

7.5.1 The following literature was supplied with the tractor for reference during the test.

- i) Operator's manual (for MF 241 DI & MF 241 DI 4WD tractor models)
- ii) Parts catalogue (for MF 241 DI 4WD tractor model)
- iii) Service manual (for MF 1035 DI V2, MF 1035 DI MAHASHAKTI V2, MF 1035 DI V13, MF 241 DI, MF 241 DI PLANETARY PLUS VMF 241 DI 4WD, MF 245 DI, MF5245 DI PLANETARY PLUS V1 & MF 5245 DI 4WD tractor models)

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

The results of the tests carried out on variant model "Tafe, MF 241 DI 4WD Tractor" have been compared with those on base model "Tafe, MF 241 DI Tractor" and found within the limit, as specified in Indian Standard: 12207-2014.

**8. Citizen Charter**

Duration of Test	Test duration under citizen charter	Whether the report released within time frame given citizen charter	Remark, if any
10 Months	8 Month (February ,2016 to September,2016)	Yes	Nil

**TESTING AUTHORITY:-**PRAMOD YADAV  
AGRICULTURAL ENGINEERC.V. CHIMOTE  
TEST ENGINEERY.K RAO  
SENIOR AGRICULTURAL  
ENGINEERJ.J.R. NARWARE  
DIRECTOR**9. APPLICANT'S COMMENTS**

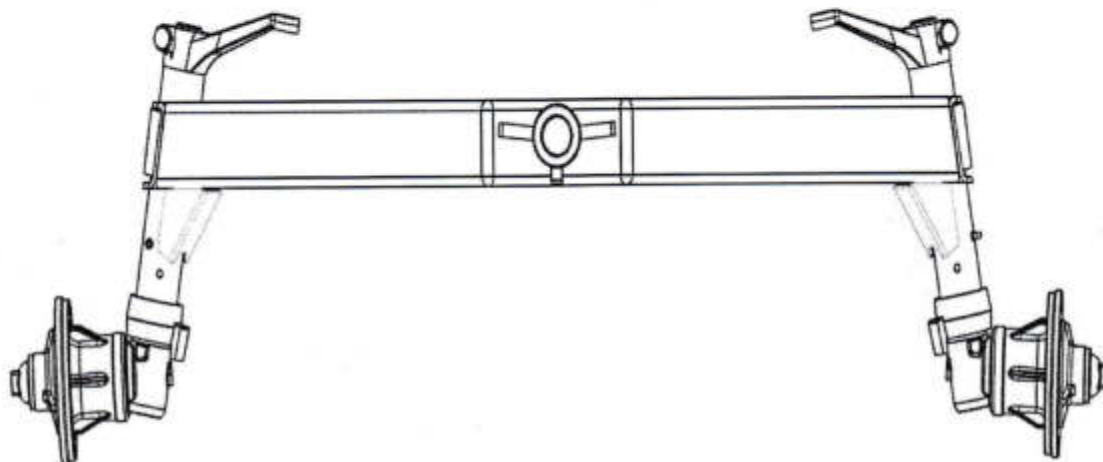
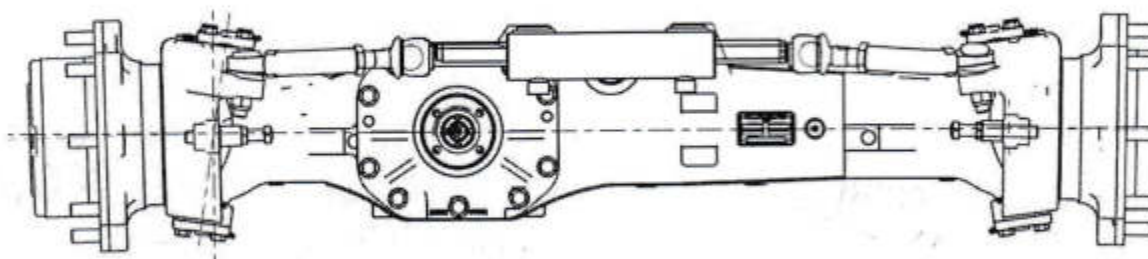
Para No.	Our Reference	Applicant's comments
9.1	7.2.1.2, 7.2.13, 7.2.14, 7.2.1.5, 7.4 & 7.7.2	We will initiate the corrective action at the earliest.



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ANNEXURE -

FRONT AXLE DESIGN ON BASE MODEL TAFE, MF 241 DIFRONT AXLE DESIGN ON VARIANT MODEL TAFE, MF 241 DI 4WDTRACTOR RUN HOURS DURING TEST

ANNEXURE -

A.	LABORATORY AND TRACK TESTS	HOURS
1.	Running -in	--
2.	PTO Performance Test	4.0
3.	Drawbar performance test	17.5
4.	Noise measurement	1.5
5.	Location of centre of gravity	0.2
6.	Turning ability	0.4
7.	Nominal speed test	1.7
B.	Miscellaneous test and other run hours, including idle run transportation, trial and preparation for test.	3.4
Total		28.5