



## TAFE, MF 6028 TRACTOR



सत्यमेव जयते

भारत सरकार

कृषि एवं किसान कल्याण मंत्रालय  
कृषि, सहकारिता एवं किसान कल्याण विभाग  
मशीनीकरण एवं प्रौद्योगिकी प्रभाग

GOVERNMENT OF INDIA

MINISTRY OF AGRICULTURE AND FARMERS WELFARE

(Department of Agriculture, Cooperation & Farmers Welfare, Mechanization & Technology Division)

केन्द्रीय कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान

ट्रैक्टर नगर, बुदनी (म.प्र.) ४६६ ४४५

**CENTRAL FARM MACHINERY TRAINING & TESTING INSTITUTE**

(An ISO : 9001 - 2015 Certified Institute)

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<b>T- 1504/2031/2020</b>	<b>TAFE, MF 6028 TRACTOR- Commercial -(Technical Extension)</b>
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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.**

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 Dist., Tamilnadu

: **M/s. Tractors and Farm Equipment Limited,**  
Doddaballapur Plant, Plot No. 1,  
Kiadb Industrial Estate  
Doddaballapur Bangalore - 561 203

Test requested by (applicant) : **Manufacturer**

## 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	API-Class CF or CH-4	As recommended
2.	Transmission, hydraulic system, steering system & brake systems oil	Trac ELF SF3 or DONAX-TD or Mobil Fluid 423or 424 or Tractran UTH	Oil originally filled in the systems was not changed
3.	Front axle housing oil	SAE 90 or (Trac ELF SF3)	As recommended
4.	Grease	Servo grease MP3	MP Grease

## 3. ESSENTIAL TESTS

### 3.1. SPECIFICATIONS

The following are the brief specifications of the tractor. However, for detail specifications of the tractor, the test report No. **T-1055/1580/2016** released in **December, 2016** should be referred.

<b>3.1.1 Tractor:</b>	<u>Previous Sample</u>	<u>Present Sample</u>
Make	:	TAFE LTD.
Model	:	MF 6028
Brand name	:	<b>None</b>
Type	:	Four wheeled, four wheel driven (4WD), General Purpose, Unit Construction, Agricultural Tractor.
Month & Year of manufacture	:	LF (i.e. November, 2015)   02/20
Chassis Serial number	:	MEA0935ELF3000048   MEA0935EBL1262341
Country of Origin	:	India
<b>3.1.2 Engine:</b>		
Make	:	Mitsubishi Heavy Industries – VST Diesel Engine Pvt. Ltd.
Model	:	MVS3L2-JCT
Type	:	Four stroke, liquid cooled, naturally aspirated, indirect injection, diesel engine
Serial number	:	MES3L2 JCT A6616 G5   A12664K7
	<u>Previous Sample</u>	<u>Present Sample</u>

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

**6.1** On the basis of test conducted the performance results have been summarized as evaluative (mandatory) and non – evaluative (not mandatory) parameters applicable for qualifying Minimum Performance Criteria as per clause-4 table-1 of Indian Standard **12207: 2019** 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: 12207-2019	Values declared by the applicant (D)/ Requirement (R)		As observed		Whether meets the requirements (Yes/No)
				Previous sample	Present sample	Previous sample	Present sample	
1	2	3	4	5a	5b	6 a	6b	7
<b>6.1.1 PTO Performance:</b>								
a)	Maximum power under 2 h test, (kW) (Natural ambient condition)	Evaluative	Declared value to be achieved with a tolerance of: $\pm 5\%$ for PTO power and or Engine power $>26$ kW. $\pm 10\%$ for PTO power and or engine $\leq 26$ kW	16.0 (D)	16.0 (D)	15.3	16.2	Yes
b)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Evaluative	+ 10%	295 (D)	295 (D)	314	312	Yes
<b>6.1.2 Drawbar performance:</b>								
a)	Maximum drawbar pull with ballast corresponding to 15 percent wheel slip, (kN)	Non-Evaluative	Minimum 70% of static mass with ballast	Ballasting not recommended by the manufacturer				Not applicable
b)	Maximum drawbar pull without ballast corresponding to 15 percent wheel slip, (kN)	Evaluative	Minimum 70% of static mass of tractor without ballast or with standard ballast, as the case may be	6.80 (D)	6.80 (D)	7.64	9.45	Yes
				6.44 (R)	6.80 (R)			
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 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.	13.5 (D)	13.5 (D)	12.0	14.4	Yes
				11.5 (R)	12.2 (R)			

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1	2	3	4	5a	5b	6 a	6b	7
d)	Tractor fitted with air conditioned/heated cabin Maximum drawbar power with standard ballast, (kW).	Evaluative	Minimum 70 % of PTO power as referred in SI No. i) a) of PTO performance in case of tractors having total static mass > 1500 kg	Not applicable		Not applicable		Not applicable
e)	Maximum transmission oil temperature (°C)	Evaluative	The declared value should not exceed the maximum value specified by oil company	132 (D)	86	89	Yes	
<b>6.1.3 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 mud and / or water was observed	Yes	
1)	Clutch assembly	-do-						
2)	Brake housings	-do-						
3)	Front axle hubs	-do-						
4)	Engine oil							
5)	Transmission oil	-do-						
<b>6.1.4 Safety features:</b>								
a)	Guards against moving and hot parts	Evaluative	Belt drives, pulleys, silencer, hydraulic 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)	Not applicable as the rear track width of tractor is less than 1150 mm.		Not applicable		
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)	Meets the requirement		Yes		
f)	Specifications of linkage drawbar	Evaluative	Should meet the requirements of IS 12953 (As amended from time to time)	Meets the requirement		Yes		
g)	Swinging drawbar (wherever fitted)	Evaluative	Should meet the requirements of IS 12362 (Part 3) (As amended from time to time)	Meets the requirement		Yes		
h)	1) Maximum traveling speed at rated engine speed in reverse gear, kmph	Evaluative	Should not exceed 20 kmph	7.79 kmph (Meets the requirement)		Yes		
	2) Audible warning signal on tractor	Evaluative	As soon as the travelling speed in reverse gear reaches to 20 kmph, an audible warning signal on tractor 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		
<b>6.1.5</b>	<b>Labelling of tractors (Provision of labelling plate):</b>							
	1) Make	Evaluative	Should conform to the requirements of CMVR along-with maximum PTO power in kW and year of manufacture in numerical form <table border="1" style="margin: 5px auto;"><tr><td>MM</td><td>YY</td></tr></table> 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.	MM	YY	TAFE		Yes
MM	YY							
	2) Model	Evaluative		MF 6028		Yes		
	3) Month & Year of manufacture	Evaluative		02	20	Yes		
	4) Engine number	Evaluative		A12664K7		Yes		
	5) Chassis number	Evaluative		MEA0935EBL126 2341		Yes		
	6) Declaration of PTO power, (kW)	Evaluative		16		Yes		
	7) Declaration Specific Fuel Consumption g/kWh	Evaluative	295		Yes			

<b>6.1.6</b>	<b>Literature (Submission to test agency)</b>				
(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
<b>6.1.7</b>	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
<b>6.1.8</b>	Standard Accessories	Evaluative	Trailer hitch, front tow hook, linkage drawbar should be provided with the tractor.	Provided	Yes
<b>6.1.9</b>	Accessories (optional)	Non-Evaluative	Ballast weights, if fitted, should meet the requirement of CMVR	Not fitted	Not applicable

<b>6.2 CATEGORY OF BREAKDOWNS / DEFECTS (As per Clause 5.0 of IS:12207-2019):</b>					
S. 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 2 Major breakdowns and neither of them is of repetitive nature.	None	Yes
3.	Minor	Evaluative	There are not more than 5 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 five that is, (2 major + 3 minor) or (1 major + 4 minor) or 5 minor breakdowns.	None	Yes

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**6.3 Salient Observations:**

**6.3.1 PTO performance test:**

- i) The maximum power in case of previous & present sample were observed as **15.3 & 16.2 kW** against the declaration of **16.0 kW**, which meets the requirement of IS: 12207-2019 with regard to tolerance limit.
- ii) The specific fuel consumption corresponding to maximum power in case of previous & present sample was measured as **312 & 316 g/kWh** against the declaration of **295 g/kWh**, which meets the requirement of IS: 12207-2019 with regard to tolerance limit.

**6.3.2 Drawbar performance test:**

- i) The maximum drawbar power in case of previous & present sample with unballasted condition was recorded as **12.0 kW & 14.4 kW** against the minimum requirement of **11.5 kW and 12.2 kW** respectively which meets the requirement of IS: 12207-2019.
- ii) The maximum drawbar in case of previous & present sample with unballast condition corresponding to 15%-wheel slip was recorded as **7.64 kN and 9.45 kN** respectively against the minimum requirement of **6.44 & 6.80 kN** which meets the requirement of IS: 12207-2019.
- iii) During ten hours drawbar performance test, creeping of LHS & RHS rear tyre over the rims was observed as **25 & 50 mm** respectively. This should be looked into for necessary corrective action.

**6.4 Field performance test**

- i) Draft sensing mechanism may be provided in the hydraulic system for better suitability of the field operation. This should be looked into for necessary corrective action.

**6.4.1 Wet land cultivation (Puddling operation)**

- i) No ingress of mud/or water was noticed during puddling operation of the tractor. Hence, It meets the requirements of IS: 11082-1984 (Technical requirements of agricultural tractors for wetland operation). The tractor is found suitable for wetland operation (Puddling).

**6.5 Maintenance / Service Problems:**

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

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

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.

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

**6.7.1** Literature was supplied with the tractor for reference during the test.

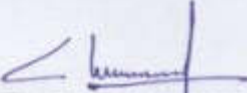
- a) Operator Instruction book
- b) Parts book
- c) Workshop Service manual

**6.7.2** The supplied literature was found adequate.


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

## 7. CITIZEN CHARTER


Time frame for Testing & Evaluation as per Citizen Charter	Duration of Test	Whether the Test Report is released within the time frame given in Citizen Charter	Remarks
10 Months	05 Month (April, 2020 to November, 2020)	Yes	--None--

TESTING AUTHORITY:


C.S. RAGHUWANSHI  
AGRICULTURAL ENGINEER



C.V. CHIMOTE  
TEST ENGINEER



J.J.R. NARWARE  
DIRECTOR

The report compiled by Sh. Shivkumar Sharma, Senior Technical Assistant

## 8. APPLICANT COMMENT'S

--None--

**ANNEXURE- I****BRIEF SPECIFICATION OF IMPLEMENTS USED DURING FIELD TEST**

S. No.	Parameters	MB Plough	Rotavator
1	Make	Mahindra & Mahindra	Mahindra
2	Type	Mounted	Mounted
3	No. of Discs / Blades	Two	16 in 4 flanges
4	Type of Bottom / Blades	General purpose	Hatchet
5	Size of Bottom / Blades (mm)	255	220 x 68 x 7.5
6	Spacing of Bottom /Flanges, (mm)	170	190
7	Lower hitch point span, (mm)	480	515
8	Mast height, (mm)	375	365
9	Overall Dimensions (mm):		
	Length	1035	745
	Width	760	1010
	Height	840	790
10	Gross Mass, (Kg)	95	165

**ANNEXURE – II****TRACTOR RUN HOURS DURING TEST**

A.	LABORATORY AND TRACK TESTS:	HOURS
1.	Running-in	28.0
2.	Nominal speed test	1.00
3.	PTO performance test	11.8
B.	FIELD TEST:	
1.	MB ploughing	11.5
2.	Rotavation	11.8
3.	Wetland cultivation (including water proof)	15.6
C.	Miscellaneous test and other run hours, including idle run transportation, trial and preparation for test.	1.50
	<b>Total</b>	<b>81.2</b>