

(यह परीक्षण रिपोर्ट 31/12/2025 तक वैध है। / THIS TEST REPORT IS VALID UP TO : 31/12/2025)



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

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T- 1505/2032/2020	TAFE, MF 6028 TRACTOR - Commercial (1 st Batch Test)
	THIS TEST REPORT IS VALID UPTO: 31/12/2025

The “TAFE, MF 6028” tractor had undergone “Initial Commercial Test” at this Institute and a test report No. T- 1055/1580/2016 released in December,2016. Thereafter, the firm had made modification in the specification of the tractor such as change in gear transmission ratio are permanently incorporated and tested under Technical Extension vide test report No.- T-1504/2031/2020 released in December,2020. Now the applicant has submitted an application vide letter No. Nil dated 14.02.2020 for Batch testing of “TAFE, MF 6028”.

All necessary tests as per Table-1 of clause 6.0 of IS: 5994 - 1998 (Reaffirmed in 2014) were carried out and test report released as under.

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.).
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
Selected for test by	: The testing authority
Place of running-in	: At manufacturer's works
Duration of said running-in, (h):	
- Engine	: 12
- Transmission	: 16
Method of Selection	: The test sample was selected randomly out of Five tractors from the production line by the representative of testing authority.

Tractors chassis serial number made available for random selection:

- | | |
|------|------------------------------|
| i) | MEA0935EBL1262317 |
| ii) | MEA0935EBL1262329 |
| iii) | MEA0935EBL1262341 (Selected) |
| iv) | MEA0935EBL1262556 |
| v) | MEA0935EBL1262629 |

T- 1505/2032/2020	TAFE, MF 6028 TRACTOR - Commercial (1 st Batch Test)
	THIS TEST REPORT IS VALID UPTO: 31/12/2025

14. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS

14.1 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/ Requirement (D) (R)	As observed	Whether meets the requirements (Yes/No)
1	2	3	4	5	6	7
14.1.1	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 $>26\text{ kW} \pm 10\%$ for PTO power and or engine $\leq 26\text{ kW}$	16.0 (D)	16.2	Yes
b)	Power at rated engine speed, kW	Non-Evaluative	-do-	16.0 (D)	16.2	Yes
c)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Evaluative	+ 10%	295 (D)	312	Yes
d)	Maximum equivalent crankshaft torque, (Nm)	Non-Evaluative	$\pm 8\%$	68.0 (D)	69.1	Yes
e)	Back-up torque, percent	Evaluative	12 percent, min.	12 (R) 12 (D)	15.9	Yes
f)	Maximum operating temperature ($^{\circ}\text{C}$)					
	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.	127 (D)	104	Yes
	2) Coolant (liquid)	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
g)	Engine oil	Evaluative	Not exceeding 1% of SFC	3.15	0.79	Yes

T- 1505/2032/2020	TAFE, MF 6028 TRACTOR - Commercial (1st Batch Test)
	THIS TEST REPORT IS VALID UPTO: 31/12/2025

	consumption, (g/kWh)		at max. power under High ambient conditions	(R)		
h)	Smoke level	Evaluative	Maximum light absorption coefficient of 3.25 per metre or equivalent BOSCH No. 5.2 or 75 Hatridge value (As per CMVR)	3.25 per metre (R)	0.35	Yes

1	2	3	4	5	6	7	
14.1.2 Drawbar performance:							
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 (R)	9.45	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 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) 12.2 (R)	14.4	Yes	
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)	89	Yes	
14.1.3 Power lift and hydraulic pump performance:							
a)	Maximum lifting capacity throughout the range of lift, (kN):						
	1)	At hitch points	Evaluative	Tolerance of ± 10%	5.8 (D)	6.12	Yes
	2)	With the standard frame	Evaluative	The lift capacity should at least be 24 kg/PTO kW. and it should be	8.0 (D)	4.58	Yes

T- 1505/2032/2020	TAFE, MF 6028 TRACTOR - Commercial (1st Batch Test)
	THIS TEST REPORT IS VALID UPTO: 31/12/2025

				21.5 kg/engine kW where the tractor is not provided with a PTO shaft	3.81 (R)		
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)	05	Yes

1	2	3	4	5	6	7
14.1.4	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)	4.70	Yes
	2) Hot brake	Evaluative	10	10 (R)	4.80	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	98 to 115	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
14.1.5	Noise measurement:					
a)	Maximum ambient noise emitted by the tractor dB(A)	Evaluative	As per CMVR	88 (R)	78	Yes
b)	Maximum noise at operator's ear level dB(A)	Evaluative	As per CMVR	96 (R)	89	Yes
c)	Amplitude of mechanical vibrations at:					
	1) Left foot rest	Non-Evaluative	100 microns (max)	100(R)	29	Yes
	2) Right foot rest				34	Yes
	3) Seat (with driver seated)				60	Yes
	4) Steering wheel				93	Yes
14.1.6	Air cleaner:					
	Air cleaner oil pull over, (%)	Evaluative	0.25 % (Maximum)	Dry type air cleaner fitted	Not applicable	Yes
14.1.7	Haulage requirements:					
a)	Gross mass of the trailers, (tones):					
	1) Two wheel	Non-Evaluative	--	1.5 (D)	1.5	Yes
	2) Four wheel		--	Not recommended	Not applicable	
b)	Distance travelled / liter of fuel consumption, (km/l):					
	1) Two wheel	Non-	--	5.0 to 6.0 (D)	6.13 to 6.24	Yes

T- 1505/2032/2020	TAFE, MF 6028 TRACTOR - Commercial (1 st Batch Test)					
	THIS TEST REPORT IS VALID UPTO: 31/12/2025					

	2)	Four wheel	Evaluative	--	Not recommended	Not applicable	
c)	Fuel consumption (ml/km/tonne) :						
	1)	Two wheel	Non-Evaluative	--	100 to 400 (D)	106.9 to 108.8	Yes
	2)	Four wheel		--	Not recommended	Not applicable	

1	2	3	4	5	6	7	
14.1.8	Wetland cultivation:						
	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 observed.	Yes
	1)	Clutch assembly	-do-				
	2)	Brake housings	-do-				
	3)	Front axle hubs	-do-				
	4)	Engine Oil	-do-				
5)	Transmission Oil	-do-					
14.1.9	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)	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)	Dimension of three-point linkage	Non-Evaluative	Should meet the requirements of IS 4468 (part 1) (as amended from time to time)	Meets the requirement		Yes	

T- 1505/2032/2020	TAFE, MF 6028 TRACTOR - Commercial (1st Batch Test)
	THIS TEST REPORT IS VALID UPTO: 31/12/2025

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

1	2	3	4	5	6	7
h)	1) Maximum traveling speed at rated engine speed in reverse gear, kmph	Evaluative	Should not exceed 20 kmph	7.79 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 warring 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
14.1.10	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 6028		Yes
	3) Year of manufacture	Evaluative		02	20	Yes
	4) Engine number	Evaluative		A12664K7		Yes
	5) Chassis number	Evaluative		MEA0935EBL12 62341		Yes
	6) Declaration of PTO power, (kW)	Evaluative		16		Yes
	7) Specific fuel consumption, g/kWh	Evaluative		295		Yes
14.1.11	Discard limit for:					
a)	Cylinder bore diameter, (mm)	Evaluative	To be specified by Manufacturer	78.20 (D)	77.982 to 78.030	Yes
b)	Clearance between piston & cylinder liner at	Non-Evaluative		0.30 (D)	0.078 to 0.105	Yes

T- 1505/2032/2020	TAFE, MF 6028 TRACTOR - Commercial (1st Batch Test)
	THIS TEST REPORT IS VALID UPTO: 31/12/2025

	skirt, (mm)					
(c)	Piston diameter	Non-Evaluative	-do-	77.80 (D)	77.925 to 77.940	Yes
(d)	Ring end gap (mm):					
	- Top comp. ring	Evaluative	-do-	1.50(D)	0.25 to 0.30	Yes
	- 2 nd comp. ring.	Evaluative	-do-	1.50(D)	0.50	Yes
	- Oil ring.	Evaluative	-do-	2.00(D)	0.40 to 0.45	Yes
(e)	Ring groove clearance (mm):					
	- Top comp. ring	Evaluative	-do-	0.30 (D)	Tapered rings	Yes
	- 2 nd comp. ring.	Evaluative	-do-	0.30 (D)	0.075 to 0.085	Yes
	- Oil ring.	Evaluative	-do-	0.20 (D)	0.025 to 0.035	Yes
1	2	3	4	5	6	7
(f)	Clearance of main bearings (mm):					
	Diametrical clearance	Evaluative	-do-	0.10 (D)	0.047 to 0.099	Yes
(g)	Clearance of big end bearings, (mm):					
	- Diametrical	Evaluative	-do-	0.15 (D)	0.039 to 0.094	Yes
	- Axial	Evaluative	-do-	0.50 (D)	0.20	Yes
(h)	Crankshaft end float	Evaluative		0.50 (D)	0.20	Yes
(i)	Clearance between centre pin and bush, (mm)	Non-Evaluative	-do-	0.50 (D)	0.135 to 0.300	Yes

14.1.12	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	Provided	Yes
(b)	Parts Catalogue	Evaluative		Provided	Provided	Yes
(c)	Workshop/ Service manual	Evaluative		Provided	Provided	Yes
14.1.13	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
14.1.14	Standard Accessories	Evaluative	Trailer hitch, front tow hook, linkage drawbar should be provided with the tractor.	Provided		Yes
14.1.15	Accessories (optional)	Non-Evaluative	Ballast weights, if fitted, should meet the requirement of CMVR	Not fitted		Not applicable

14.2	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.)	

T- 1505/2032/2020	TAFE, MF 6028 TRACTOR - Commercial (1 st Batch Test)
	THIS TEST REPORT IS VALID UPTO: 31/12/2025

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

14.3 Salient Observations:

14.3.1 Laboratory tests:

14.3.1.1 PTO Performance Test:

- i) The maximum power in case of previous & present sample was recorded as **15.3 & 16.2 kW** respectively against the declaration of **16.0 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 **314 & 312 g/kWh** respectively against the declaration of **295 g/kWh** which meets the requirement of **IS: 12207-2019**.
- iii) The maximum equivalent crankshaft torque was recorded as **64.9 N-m & 69.1 Nm** in case of previous & present sample respectively against the declaration of **68 N-m**, which is within the permissible limit as specified in **IS: 12207-2019**.
- iv) The backup torque is **15.9 %** & meets the evaluative requirement of **IS: 12207-2019**.

14.3.1.2 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.

14.4 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.

14.4.1 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).

- 14.7.2 The supplied literature was found adequate.
- 14.7.3 However, these literatures should be brought out in other vernacular languages of India for guidance of users.

15. Citizen charter

Duration of Test	Time frame for testing & evaluation as per citizen charter	Whether the report released within time frame given in the citizen charter	Remark
09 Months (April, 2020 to November, 2020)	10 Months	Yes	--None--

TESTING AUTHORITY:


C.S. RAGHUWANSHI
 AGRICULTURAL ENGINEER


C.V. CHIMOTE
 TEST ENGINEER


J.J.R. NARWARE
 DIRECTOR

Test Report compiled by Shri Shivkumar Sharma, Senior Technical Assistant.

16. APPLICANT COMMENT'S

Para no.	Our reference	Applicant comments
16.1	14.3.1.1 (i), (ii) (iii), & (iv), 14.3.1.2 (i), (ii), (iii), 14.4, 14.4.1, 14.6 & 14.6.3	We will study & take appropriate corrective actions.

16. APPLICANT COMMENT'S

Para no.	Our reference	Applicant comments
16.1	14.3.1.1 (i), (ii) (iii), & (iv), 14.3.1.2 (i), (ii), (iii), 14.4, 14.4.1, 14.6 & 14.6.3	We will study & take appropriate corrective actions.

T- 1505/2032/2020	TAFE, MF 6028 TRACTOR - Commercial (1 st Batch Test)
	THIS TEST REPORT IS VALID UPTO: 31/12/2025

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

TRACTOR RUN HOURS DURING TEST

A.	LABORATORY AND TRACK TESTS	HOURS
1.	Running-in	28.0
2.	PTO Performance Test	11.8
3.	Power lift and hydraulic pump performance test	3.0
4.	Drawbar performance test	12.2
5.	Brake test	1.0
6.	Noise measurement	1.5
7.	Mechanical vibration test	1.0
8.	Nominal speed test	1.0
B.	FIELD TEST	
1.	MB ploughing	11.5
2.	Rotavation	11.8
3.	Wetland cultivation (including water proof)	15.6
C.	HAULAGE TEST	7.8
D.	Miscellaneous test and other run hours including idle run, transportation, trials and preparation for test	6.8
	TOTAL:	113.0