

[ONLINE TESTING]

(यह परीक्षण रिपोर्ट 31/07/2025 तक वैध है। / THIS TEST REPORT IS VALID UPTO : 31/07/2025)



TAFE, MF 7235 DI TRACTOR



भारत सरकार

कृषि एवं किसान कल्याण मंत्रालय
(कृषि एवं किसान कल्याण विभाग)

GOVERNMENT OF INDIA

MINISTRY OF AGRICULTURE AND FARMERS WELFARE
(DEPARTMENT OF AGRICULTURE & 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

T- 1668/2199/2022	TAFE, MF 7235 DI TRACTOR – Commercial (Initial)
	THIS TEST REPORT IS VALID UPTO : --/--/2025

Manufacturer : **M/s. Tractor and Farm Equipment Limited**, Post Box No. 3302, Old-35 (New- 77), Mahatma Gandhi Road, Nungambakkam, Chennai - 600 034 (Tamil Nadu)

Location of other manufacturing plants (apa) : **(i) M/s. Tractor and Farm Equipment Limited**, Kalladipatti Plant, 10/205, Kalladipatti (P.O.), Pin code- 624201, Dindigul district, (Tamil Nadu)
(ii) M/s. Tractor and Farm Equipment Limited, Doddaballapur plant, Plot No. 1, Kiadb Industrial Estate, Doddaballapur, Bangalore – 561203
(iii) M/s. Tafe Motors and Tractor Limited, Plot No. 1, Sector – D, Industrial Area, Mandideep - 462046 Dist. - Raisen (M. P.)

Test requested by (applicant) : The manufacturer
Selected for test by : The Testing Authority
Place of running-in : At Institute
Duration of said running-in, (h):
- Engine : 12
- Transmission : 24

Method of Selection : The test sample was selected randomly out of five tractors from the production line by the representative of testing authority through online.

Details of tractors made available for random selection	
Sr. No.	Chassis serial Number
1	MEA11A3AKM2395821
2	MEA11A3AKM2395822
3	MEA11A3AKM2395823
4	MEA11A3AKM2395824
5	MEA11A3AKM2395770

1. SPECIFICATIONS

1.1 Tractor:
Make : TAFE
Model : MF 7235 DI
Brand name : None
Variants, if any : None
Type : Rear Wheel Drive, Standard Agricultural Tractor.
Month & Year of manufacture : 10/ 21
Chassis number : MEA11A3AKM2395824
Country of origin : India

1.2 Engine:
Manufacturer"s address : M/s. Simpsons & Co. Ltd.,Huzur Garden, Sembiam, Chennai- 600011
Make : Simpson & Co. Ltd.
Model : T III A S334-F5.2
Type : Four stroke, natural aspirated, water cooled, direct injection, diesel engine
Serial number : S334 18084
Year of manufacture : 2021

18. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS

18.1 On the basis of tests conducted the performance results have been summarized as evaluative (mandatory) / Non-evaluation (Non-mandatory) parameter applicable for qualifying Minimum Performance criteria as per Clause-4 (Table-1) of **Indian standard: 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
18.1.1	PTO Performance :					
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 ≤ 26 kW	22.0 (D)	21.8	Yes
b)	Power at rated engine speed, (kW)	Non Evaluative	-do-	22.0 (D)	21.5	Yes
c)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Evaluative	+10 percent Max.	265 (D)	249	Yes
d)	Maximum equivalent crankshaft torque, (Nm)	Non Evaluative	± 8 percent	138 (D)	125.9	Yes
e)	Back-up torque, percent	Evaluative	12 percent	12 (D) 12 (R) Minimum	22.8	Yes
f)	Maximum operating temperature, ($^{\circ}$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 (water)	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)	93	Yes
g)	Engine oil consumption, (g/kWh)	Evaluative	Not exceeding 1% of SFC at max. power under High ambient conditions	2.52 (Maximum) (R)	0.55	Yes
h)	Smoke level	Evaluative	Maximum light absorption coefficient of 3.25 per meter or equivalent BOSCH No. 5.2 or 75 Hatridge value (As per CMVR)	3.25 per metre (Maximum) (R)	0.16	Yes

1	2	3	4	5	6	7	
18.1.2	Drawbar performance :						
a)	Maximum drawbar pull with ballast corresponding to 15 percent wheel slip, (kN)	Non Evaluative	Minimum 70 percent of static mass with ballast	15.50 (D) 15.38 (R) (Minimum)	17.81	Yes	
b)	Max. drawbar pull with standard ballast, as the case may be corresponding to 15 percent wheel slip or 7 percent track slip, (kN)	Evaluative	Minimum 70 percent of static mass of tractor without ballast or with standard ballast, as the case may be	12.00 (D) 12.08 (R) (Minimum)	13.85	Yes	
c)	Maximum drawbar power with standard ballast as the case may be, (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.	18.0 (D) 17.4 (R) (Minimum)	17.9	Yes	
d)	Max. transmission oil temperature (°C)	Evaluative	The declared value should not exceed the maximum value specified by oil company	132 (D)	83	Yes	
18.1.3	Power lift and hydraulic pump performance :						
a)	Maximum lifting capacity throughout the range of lift, (kN):						
	1)	At hitch points	Evaluative	[Tolerance of ± 10%]	11.00 (D)	10.49	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.	6.0 (D) 5.13 (R) (Minimum)	8.52	Yes
b)	Maximum drop in the height of the point of application of the force after each 5 min. interval for a total duration of 30 min/ mm	Non Evaluative	The observed value should not exceed 50 mm.	50 (D) 50 (R) (Maximum)	00	Yes	
18.1.4	Brake performance at 25 kmph:						
a)	Maximum stopping distance at a force, equal to or less than 600 N on brake pedal with standard ballast, (m):						
	1)	Cold brake	Evaluative	10	10 (R)	6.94	Yes
	2)	Hot brake	Evaluative	10	10 (R)	7.16	Yes
b)	Maximum force exerted on the brake pedal to achieve a deceleration of 2.5 m/s ² . (N)	Evaluative	600	600 (R)	164 to 211	Yes	

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1	2	3	4	5	6	7
c)	Whether parking brake is effective at a force of 600 N at foot pedal(s) or 400 N at hand lever	Evaluative	Yes / No	Yes (R)	Yes	Yes
18.1.5	Noise measurement :					
a)	Maximum ambient noise emitted by the tractor at bystanders position, dB(A)	Evaluative	88 dB(A) for >1.5 tonne GVW and 85 dB(A) for <1.5 tonne GVW (as per CMVR)	88 (R)	81	Yes
b)	Maximum noise at operator's ear level dB(A)	Evaluative	As per CMVR	96 (R)	93	Yes
18.1.6	Amplitude of mechanical vibrations at :					
	1) Left foot rest	Non Evaluative	100 microns (max)	100 (D)	106	No
	2) Right foot rest				101	No
	3) Seat (with driver seated)				64	Yes
	4) Steering Wheel				230	No
18.1.7	Air cleaner oil pull over :					
	Maximum air cleaner oil pull over (%)	Evaluative	0.25 % (max.)	0.25	0.13	Yes
18.1.8	Haulage requirements :					
a)	Gross mass of the trailers, (tones):					
	-Two wheel	Non Evaluative	--	4.0 (D)	4.0	Yes
b)	Distance travelled / litre of fuel consumption, (km/l):					
	-Two wheel	Non Evaluative	--	4.5 to 7.5 (D)	6.67 to 7.01	Yes
c)	Fuel consumption (ml/km/tonne):					
	-Two wheel	Non Evaluative	--	25 to 30 (D)	35.66 to 37.48	No
18.1.9	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	The manufacturer has recommended that the tractor is not suitable for wetland cultivation (puddling operation).	The manufacturer has recommended that the tractor is not suitable for wetland cultivation (puddling operation) and therefore, the wetland cultivation (puddling operation) test was not conducted.	Not applicable
	1) Clutch assembly	-do-				
	2) Brake housings	-do-				
	3) Front axle hubs	-do-				
	4) Engine oil	-do-				
	5) Transmission oil	-do-				

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1	2	3	4	5	6	7
18.1.10	Safety features:					
a)	Guards against moving and hot parts	Evaluative	Belt drives, pullies, 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: 12343-2021	-	Does not 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)	Dimensions of three point linkage	Non Evaluative	Should meet the requirements of IS: 4468 (Part-I) (As amended from time to time)	-	Does not meet the requirement	No
f)	Specifications of linkage drawbar	Evaluative	Should meet the requirements of IS:12953-1990	-	Meets the requirement	Yes
g)	Swinging drawbar (wherever fitted)	Evaluative	Should meet the requirement of IS: 12362 (Part 3) (As amended from time to time)	-	Not fitted	Not applicable
h)	1) Maximum travelling speed at rated engine speed in reverse gears, Kmph	Evaluative	Should not exceed 20 Kmph	-	11.24 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 shall 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

1	2	3	4	5	6	7
18.1.11	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 7235 DI	Yes	
	3) Month & Year of manufacture	Evaluative		10/21	Yes	
	4) Engine number	Evaluative		S33418084	Yes	
	5) Chassis number	Evaluative		MEA11A3AKM23 95824	Yes	
	6) Declaration of PTO power, kW	Evaluative		22.0	Yes	
	7) Specific fuel consumption ,g/kWh	Evaluative		265	Yes	
18.1.12	Discard limit for:					
(a)	Cylinder bore diameter, (mm)	Evaluative	To be specified by Manufacturer	89.925	88.931 to 88.948	Yes
(b)	Clearance between piston & cylinder liner at skirt, (mm)	Non Evaluative		0.25 With new ring	0.110 to 0.124	Yes
(c)	Piston diameter at skirt, mm	Non Evaluative		Piston is discard when the ring grove clearance exceed 0.25 with new ring	88.824 to 88.512	Yes
(d)	Ring end gap (mm):					
	- Top comp. ring.	Evaluative	-do-	1.50	0.25 to 0.30	Yes
	- 2 nd comp. ring.		-do-	1.50	0.30 to 0.35	Yes
	- Oil ring.		-do-	1.32	0.25 to 0.35	Yes
(e)	Ring groove clearance (mm):					
	- Top comp. ring.	Evaluative	-do-	0.25	0.072 to 0.081	Yes
	- 2 nd comp. ring.	-do-	-do-	0.25	0.060 to 0.064	Yes
	- Oil ring.	-do-	-do-	0.25	0.051 to 0.052	Yes
(f)	Clearance of main bearings, (mm):					
	- Diametrical	Evaluative	-do-	0.25	0.098 to 0.138	Yes
	- Crank shaft end float	Evaluative	-do-	0.50	0.15	Yes
(g)	Clearance of big end bearings, (mm):					
	- Diametrical	Evaluative	-do-	0.25	0.097 to 0.164	Yes
	- Axial	Evaluative	-do-	0.75	0.25 to 0.30	Yes
(h)	Clearance between king pin and bush,(mm)	Non Evaluative	-do-	0.50	0.083 to 0.152	Yes
(i)	Clearance between center pin and bush,(mm)	Non Evaluative	-do-	1.25	0.131 to 0.191	Yes

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1	2	3	4	5	6	7
18.1.13	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 / Not Provided	Provided	Yes
(b)	Parts Catalogue	Evaluative		Provided / Not Provided	Provided	Yes
(c)	Workshop/ Service manual	Evaluative		Provided / Not Provided	Provided	Yes
18.1.14	Fitment of Roll Over Protective Structure (ROPS): 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
18.1.15	Standard accessories	Evaluative	Trailer hitch, front tow hook, linkage drawbar should be provided with tractor	Provided	Provided	Yes
18.1.16	Accessories (Optional)	Non Evaluative	Ballast weights if fitted should meet the requirement of CMVR.	Provided	Provided	Yes

18.2 CATEGORY OF BREAKDOWNS / DEFECTS (As per clause 5.0 of IS:12207-2019):					
S. No.	Category of Breakdown	Category (Evaluative / Non Evaluative)	Requirements as per IS: 12207-2019	As observed	Whether meets the requirement (Yes/No.)
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 02 major breakdowns and neither of them is of repetitive nature.	None	Yes
3.	Minor breakdowns	Evaluative	Not more than five and frequency of each should 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 5 minor breakdowns.	None	Yes

18.3 Conformity with following IS:

- i) Guide lines for declaration of power and specific fuel consumption and labelling of agricultural tractors (First revision) [IS10273: 1987 (Reaffirmed in January, 2019)] : Conforms
- ii) Agricultural tractors - Rear mounted power take-off - Types 1, 2 and 3 (third revision) [IS:4931-1995 (Reaffirmed in January, 2019)] : 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 (Reaffirmed in 2017)] : **Does not conform**
- iv) Drawbar for agricultural tractors – Link type [IS 12953:1990 (Reaffirmed October, 2017)] : Conforms
- v) Agricultural tractors - Operator’s seat technical requirement (IS 12343 –2021) : **Does not conform**
- vi) Guide for safety & comfort of operator of agricultural tractors: Part 1 General requirements (first revision): [IS 12239 (PT-1)-2018 /ISO 4254-1:2018] : **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) (Reaffirmed in January, 2019)] : **Does not conform**
- viii) Guide lines for location and operation of operator controls on agricultural tractors and machinery (first revision) IS: 8133- 2021 : **Does not conform**
- 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 (Reaffirmed in January, 2019)] : **Does not conform**
- x) Agricultural Tractors and Machinery - Lighting device for travel on public roads [(IS: 14683-1999) (Reaffirmed in January, 2019)] : Conforms

18.4 Salient Observations:

18.4.1 Laboratory tests:

18.4.1.1 Hydraulic Performance:

The maximum tilt angle of mast from vertical over the full range of lift was observed as **8.3** degrees against the minimum requirement of 10 degree as per IS: 12224-1987. This should be looked into for necessary corrective action.

18.4.1.2 Mechanical Vibration:

The amplitude of mechanical vibration on various assemblies marked as (*) in Chapter-10 of this test report is on higher side especially at especially on the left and right foot rest and steering wheel. This calls for dampening down of vibrations to improve the operational comfort and service life of components.

18.4.1.3 Three point linkage:

- (i) The lateral distance from lower hitch point to centre line of the tractor of three point linkage does not meet the requirement of IS: 4468 (Part-I): 1997 (Re-affirmed in October, 2017). This should be looked into for necessary corrective action.
- (ii) The distance from end of power take-off to centre of lower hitch point (lower links in horizontal position) does not meet the requirement of IS: 4468 (Part-I): 1997 (Re-affirmed in October, 2017). This should be looked into for necessary corrective action.
- (iii) Some of the parameters of three point linkages conform to Cat. I and some of them conform to Cat. II. Keeping in view the spirit of standardization, necessary improvements may be incorporated.

18.4.1.4 Operator's Seat:

- (i) Vertical distance from seat index point to the centre of accelerator pedal has been measured as 545 mm, against the requirement of 230 to 460 mm.
- (ii) Vertical distance from seat index point to the centre of steering control wheel has been measured as 185 mm, against the requirement of 265 to 385 mm.
- (iii) Vertical distance of seat index point from foot rest has been measured as 600 mm, against the requirement of 450 to 520 mm.

Above parameters does not meet the requirement of IS: 12343-2021. This should be looked into for necessary corrective action.

18.4.1.5 Operator's work place:

Operator's work place meets the requirements of IS: 12239 (Part-I) 1996 (Reaffirmed Oct., 2017), except the following:

- (i) Width of foot step.
- (ii) Provision of spark arresting device in the exhaust system.

Above parameters does not meet the requirement of IS: 12239 (Part-I) 1996 (Reaffirmed Oct., 2017). This should be looked into for necessary corrective action.

18.4.1.6 Constructional requirement with regard to safety:

Meets the requirements of IS: 12239 (Part-II)-1996 (Re-affirmed in January, 2019), except the following:

- (i) Differential lock has not been provided.
- (ii) Master shield around the PTO shaft has not been provided.
- (iii) The working clearance around mudguard (RHS) & parking hand lever has been measured as 40 mm against the minimum requirement of 70 mm.

Above parameters does not meet the requirement of IS: 12239 (Part-II)-1996 (Re-affirmed in January, 2019). This should be looked into for necessary corrective action.

18.4.1.7 Symbols for operator controls and displays:

Oil lubricant type & frequency are not identifiable with the symbols as per IS: 6283 (Part-1 & 2) -2006 & 2007 (re-affirmed in March, 2014). This should be pay attention for improvement as per relevant test code.

18.4.1.8 PTO master shield:

PTO master shield not provided on tractor as per the requirements of IS: 4931-1995 (Reaffirmed in 2004). This should be looked into for necessary corrective action.

18.4.2 Field performance test:**18.4.2.1 Wet land cultivation (Puddling Operation):**

The manufacturer has recommended that the tractor is not suitable for wetland cultivation (puddling operation) and therefore, the wetland cultivation (puddling operation) was not conducted. It is recommended that this fact that the tractor is not suitable for wetland (puddling) operation should be mentioned clearly & boldly in all the relevant literature of the tractor & also a cautionary notice regarding non-suitability of tractor for puddling operation may be displayed on the bonnet of the tractor.

18.4.2.2 Haulage performance:

The specific fuel consumption in case of two wheel trailer was recorded as 35.66 to 37.48 ml/km/tonne, against the declaration of 25 to 30 ml/km/tonne. The observed value was on higher side and does not meet the non - evaluative requirement of IS: 12207-2019 with regard to tolerance. This should be looked into for necessary corrective action.

18.5 Component/ assembly inspection:

During final wear assessment of brake system following observation as under:

- i) The brake lining material of LHS disc no.-1 on one side was found worn out completely up to oil groove.
- ii) The discard limit for overall thickness & depth of oil groove has been specified as "up to rivet head" vide application sheet. Whereas, rivets are not provided on brake disc.
- iii) The initial thickness of brake lining has been specified as "12.4 to 12.7 mm" vide application sheet. However thickness of brake lining was recorded as 3.64 to 4.15 mm only.

Above observation should be looked into for necessary corrective action.

18.6 Maintenance / Service Problems:

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

18.7 Recommendation with regard to safety on tractor:

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

- (i) Provision of spark arrester in the exhaust system of tractor's engine as per IS: 12239 (Part-I) 2018.
- (ii) Fuel shut-off knob does not remain in "STOP" position as per requirement of IS: 8133-2021.
- (iii) Width of foot step does not meet the requirement of IS: 12239 (Part-1)-2018. This should be provided as per the above referred standards.
- (iv) The working clearance between mudguard (RHS) & parking hand lever should be provided as per the requirement of IS: 12239 (Part-2) - 1999, (Reaffirmed in January, 2019).
- (v) There should be provision of differential lock.
- (vi) Master shield on PTO shaft should be provided.

18.8 Adequacy of Literature supplied with machine:


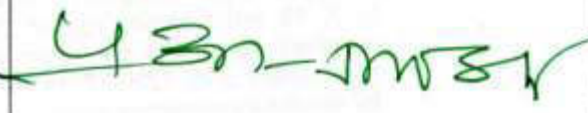
18.8.1 The following literature was supplied with the tractor for reference during the testing.

- (i) Operator Instruction book of "TAFE, MF 7235 DI" Tractor model.
- (ii) Service manual of "TAFE, MF 7235 DI" Tractor model.
- (iii) Parts Catalogue of "TAFE, MF 7235 DI" Tractor model.

18.8.2 The operator manual may be brought out for the guidance of users and service personnel as per IS:8132-1999 incorporating, inter alia, the following:

- (i) Coolant water ratio.
- (ii) Safe hitch height while using trailer.
- (iii) Discard limit of all components.

TESTING AUTHORITY:

C.V. CHIMOTE TEST ENGINEER	
P. K. PANDEY DIRECTOR	

Draft test report is compiled by: **Pramod Yadav**, Agricultural Engineer.