



**TAFE, MF 2635 2WD TRACTOR**



भारत सरकार

कृषि मंत्रालय

(कृषि एवं सहकारिता विभाग)

**GOVERNMENT OF INDIA  
MINISTRY OF AGRICULTURE**

(DEPARTMENT OF AGRICULTURE & CO-OPERATION)

**केन्द्रीय कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान  
ट्रैक्टर नगर, बुदनी ( म.प्र. ) ४६६ ४४५**

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TAFE , MF 2635 2WD TRACTOR Commercial (Initial)

Manufacturer : M/s. Tractors and Farm Equipment Limited,  
P.O. Box No.3302  
35, Mahatma Gandhi Road,  
Nungambakkam, Chennai- 600 034

Test requested by (applicant) : The manufacturer  
Selected for test by : Applicant  
Place of running-in : At applicant's works

Duration of said running-in (h):  
- Engine : 12  
- Transmission : 16

Method of Selection : The tractor was submitted directly by the applicant for test. Hence method of selection is not known.

### 1. SPECIFICATIONS

1.1 Tractor:  
Make : TAFE  
Model : MF 2635 2WD  
Variants, if any :

S.No.	Variant models (*)	Variant features
1.	MF 2635 4WD	Same configuration with 4WD

\*The variant models have not been tested at this Institute yet.

Brand name : None  
Type : Four wheeled, rear wheel driven, general purpose agricultural tractor.  
Year of manufacture : KC AA (March, 2011)  
Chassis number : 618220  
Country of Origin : INDIA

1.2 Engine:  
Make : SIMPSON & Co. Limited  
Model : T III A TSJ 436-F7  
Type : Four stroke, turbo charged, water cooled, direct injection, diesel engine.  
Serial number : TSJ 436 E01658  
Engine speed (Manufacturer's recommended production setting)(rpm):  
- Maximum speed at no load : 2250 to 2450  
- Low idle speed : 600 to 800  
- Speed at maximum torque : 1400 to 1600  
Rated speed, (rpm):  
- For PTO use : 2200  
- For drawbar use : 2200



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**15. ADJUSTMENTS, DEFECTS, BREAKDOWNS AND REPAIRS**

S. No	Adjustment/ Defects/ breakdowns and Repairs	Tractor run hours
1.	During hydraulic performance test (load maintenance test) the hydraulic lift was dropped fully down within 5 minutes of time interval. On inspection the 'O' ring (Part No. 0195561) and washer back up / PVC spring washer (Part No. 0195834M01), were found in damaged condition. The above defect is categorized as Mn- 14 As per IS: 12207-2008. So, the 'O' ring (Part No. 'O' ring (Part No. 0195561) and washer back up / PVC spring washer (Part No. 0195834M01) were replaced with new ones to rectify the problem. - 'O' ring (Part No. 0195561) quantity 3 Nos. - washer back up / PVC spring washer (Part No. 0195834M01) quantity 2 Nos.	5.9
2	During the rotavation operation the LHS rear tyre was punctured so it was repaired.	82.5

**16. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS**

16.1 Evaluative (mandatory) / Non-evaluation (Non-mandatory) parameter applicable for qualifying Minimum Performance criteria as per Clause-4 (Table-1) of IS: 12207-2008 for acceptance of the tractor for the purpose of subsidies/NABARD financing are summarized as under:

S. No.	Characteristic	Category (Evaluative / Non Evaluative)	Requirements as per IS: 12207-2008	Values declared by the applicant(D)/ Requirement (R)	As observed	Whether meets the requirements (Yes/No.)
1	2	3	4	5	6	7
<b>16.1.1 PTO Performance :</b>						
a)	- Maximum power under 2 h test, (kW) (Natural ambient condition)	Evaluative	Declared value to be achieved with a tolerance of: -5 / +10% for PTO power >35hp. -7.5/+10% for PTO power ≤ 35 hp	45.5 (D)	49.5	Yes
b)	Power at rated engine speed, (kW)	Non Evaluative	-do-	45.5 (D)	49.5	Yes
c)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Non Evaluative	± 5%	265 (D)	267	Yes
d)	Maximum equivalent crankshaft torque, (Nm)	Non Evaluative	± 8%	250(D)	277	Yes
e)	Back-up torque, percent	Non Evaluative	7 percent, min.	Above 7% (D)	28.7	Yes



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1	2	3	4	5	6	7
<b>f) Maximum operating temperature (°C)</b>						
1)	Engine oil	Non 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)	118	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)	95	Yes
g)	Engine oil consumption, (g/kWh)	Evaluative	Not exceeding 1% of SFC at max. power under High ambient conditions	2.85 Maximum (R)	0.37	Yes
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 meter Maximum (R)	1.23	Yes
<b>16.1.2 Drawbar performance :</b>						
a)	Maximum drawbar pull with ballast corresponding to 15 percent wheel slip, (kN)	Non Evaluative	Minimum 65% of static mass with ballast	26.0(D) 24.16 (R)	30.86	Yes
b)	Maximum drawbar pull with standard ballast corresponding to 15 percent wheel slip, (kN)	Evaluative	Minimum 65% of static mass of tractor with standard ballast	18.0 (D) 17.21 (R)	23.34	Yes
c)	Maximum drawbar power with standard ballast, (kW).	Evaluative	Min. 80% of PTO power as referred in 17.1.2(a) of PTO performance	37.0(D) 39.6 (R)	42.4	Yes
d)	Maximum transmission oil temperature (°C)	Non Evaluative	The declared value should not exceed the maximum value specified by oil company	132(D)	103	Yes



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1	2	3	4	5	6	7
<b>16.1.3 Power lift and hydraulic pump performance :</b>						
<b>a) Maximum lifting capacity throughout the range of lift, (kN):</b>						
1)	At hitch points	Non Evaluative	[Tolerance of minus 10%]	20.5 (D)	17.05	No
2)	With the standard frame	Evaluative	The lift capacity should at least be 18 kg/PTO hp. And it should be 16 kg/engine hp where the tractor is not provided with a PTO shaft	19.5 (D) 11.72 Minimum (R)	14.59	Yes
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	[Tolerance of plus 5 mm]	50 (D) 50 Maximum (R)	192	No
<b>16.1.4 Brake performance at 25 kmph:</b>						
<b>a) Maximum stopping distance at a force, equal to or less than 600 N on brake pedal with road ballast, (m):</b>						
1)	Cold brake	Evaluative		10	10(R)	6.37 Yes
2)	Hot brake	Evaluative		10	10(R)	6.92 Yes
b)	Maximum force exerted on the brake pedal to achieve a deceleration of 2.5 m/s <sup>2</sup> (N)	Evaluative		600	600(R)	80 & 225 Yes
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
<b>16.1.5 Noise measurement :</b>						
a)	Maximum ambient noise emitted by the tractor at by-standard's position dB(A)	Evaluative		As per CMVR	88(R)	83 Yes
b)	Maximum noise at operator's ear level dB(A)	Evaluative		As per CMVR	98(R)	96 Yes
<b>16.1.6 Amplitude of mechanical vibrations at :</b>						
1)	Left foot rest	Non Evaluative		100 microns (max)	100(R)	30 Yes
	Right foot rest			100(R)	40 Yes	
2)	Seat (with driver seated)			-do-	100(R)	40 Yes



1	2	3	4	5	6	7
	3) Steering wheel		-do-	100(R)	60	Yes
<b>16.1.7 Haulage requirements :</b>						
a) Gross mass of the trailers, (tones):						
	1) Two wheel	Non Evaluative	To be specified by the manufacturer	6.0 (D)	6.0	Yes
	2) Four wheel			8.0 (D)	8.0	Yes
b) Distance travelled / litre of fuel consumption, (km/l):						
	1) Two wheel	Non Evaluative	-do-	4.80 to 5.90(D)	3.09 to 3.12	No
	2) Four wheel			4.80 to 5.25(D)	2.99	No
c) Fuel consumption (ml/km/tonne):						
	1) Two wheel	Non Evaluative	-do-	36.0 to 45.0(D)	45.77 to 53.89	No
	2) Four wheel			36.0 to 45.0(D)	41.74	Yes

1	2	3	4	5	6	7
<b>16.1.8 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	Manufacturer has not recommended the tractor for puddling operation. Hence, the puddling test was not conducted.	Not applicable
	1) Clutch assembly					
	2) Brake housings					
	3) Front axle hubs					

1	2	3	4	5	6	7
<b>16.1.9 Safety features :</b>						
a)	Guards against moving and hot parts	Evaluative	As per CMVR	As per CMVR	Provided	Yes
b)	Lighting arrangement	Evaluative	As per CMVR		Provided	Yes

1	2	3	4	5	6	7
<b>16.1.10 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	Yes
	2) Model	Evaluative		--	MF 2635 2 WD	Yes
	3) Year of manufacture	Evaluative		--	KC AA (June,2011)	Yes
	4) Engine number	Evaluative		--	TS J436 E 01658	Yes
	5) Chassis number	Evaluative		--	618220	Yes
	6) Declaration of PTO power, (kW)	Evaluative		--	45.5	Yes



1	2	3	4	5	6	7
<b>16.1.11 Discard limit for:-</b>						
(a)	Cylinder bore diameter, (mm)	Evaluative	To be specified by the manufacturer	95.202	95.01 to 95.02	Yes
(b)	Clearance between piston & cylinder liner at skirt, (mm)	Non Evaluative		0.25 (with new rings)	0.128 to 0.134 0.41 to 0.45 (with new rings)	Yes
<b>(c) Ring end gap (mm):</b>						
	- Top comp. ring.	Evaluative	-do-	1.50	0.45	Yes
	- 2 <sup>nd</sup> comp. ring.			1.50	1.00 to 1.05	Yes
	- Oil ring.			1.50	0.50	Yes
<b>(d) Ring groove clearance (mm):</b>						
	- Top comp. ring.	Evaluative	-do-	-	Tapered ring	-
	- 2 <sup>nd</sup> comp. ring.			0.25	0.061 to 0.066	Yes
	- Oil ring.			0.25	0.054 to 0.064	Yes
<b>(e) Clearance of main bearings (mm):</b>						
	- Diametrical clearance	Evaluative	-do-	0.50	0.115 to 0.128	Yes
	- Crankshaft end float	Evaluative	-do-	0.50	0.25	Yes
<b>(f) Clearance of big end bearings, (mm):</b>						
	- Diametrical	Evaluative	-do-	0.50	0.087 to 0.126	Yes
	- Axial	Evaluative	-do-	0.25	0.25	Yes
(g)	Clearance between king pin and bush, (mm)	Non Evaluative	-do-	0.35	0.11 to 0.15	Yes
(h)	Clearance between center pin and bush, (mm)	Non Evaluative	-do-	1.25	0.10 to 0.13	Yes

1	2	3	4	5	6	7
<b>16.1.12 CATEGORY OF BREAKDOWNS / DEFECTS :</b>						
Sl. No.	Characteristic	Category (Evaluative / Non Evaluative)	Requirements as per IS: 12207-2008	As observed	Whether meets the requirements (Yes/No.)	
1.	Critical	Evaluative	No critical breakdown	None	Yes	
2.	Major	Evaluative	Not more than two and neither of them should be repetitive in nature	None	Yes	
3.	Minor	Evaluative	Not more than five and frequency of each should not be more than two.	One	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	



1	2	3	4	5
<b>16.2 Optional requirements as per Clause-4 (Table-2) of IS:12207-2008:</b>				
Sl. No.	Characteristic	Requirements as per IS: 12207-2008	As observed	Remarks
1	Air cleaner oil pull over, max. oil pull over (%)	0.25% (max.)	Dry type air cleaner provided	Not applicable
2.	Seating requirements	Should meet the requirements of IS: 12343-1998	Does not meet the requirements	No
3.	Fitment of ROPS	With a provision for fitment of ROPS.	Provided	Yes
		If ROPS fitted it should meet the requirement of IS: 11821-1992	Fitment provision for ROPS provided	Yes
4.	Technical requirements for PTO shaft	Should meet the requirements of IS: 4931 -1995	Meet the requirements	Yes
5.	Dimensions of three point linkage	Should meet the requirements of IS: 4468 (Part-I)-1997	Meet the requirements	Yes
6.	Specifications of linkage drawbar	Should meet the requirements of IS: 12953-1990..	Meets the requirements	Yes
8	Specifications of swinging drawbar	Should meet the requirements of IS:12362 Part 3-1994.	Not provided	Not applicable
9.	Accessories	Trailer hitch, front tow hook, linkage drawbar may be provided.	Provided	Yes

**16.3 Conformity with following IS:**

- i) Guidelines for declaration of power and specific fuel consumption and labeling of agricultural tractors (First revision) [IS: 10273-1987 (Reaffirmed in March, 2009)] : Conforms
- ii) Agricultural tractors – Rear mounted power take-off - Types 1, 2 and 3(third revision)[IS: 4931-1995 (Reaffirmed in March, 2009)] : Conforms
- iii) Agricultural wheeled tractors - Rear mounted three-point linkage: Part 1 Categories 1, 2, 3 & 4 (fourth revision) [IS 4468(Part-I):1997(Reaffirmed in March, 2007)/ISO 730-1:1994] : Conforms
- iv) Drawbar for agricultural tractors – Link type [IS 12953:1990 (Reaffirmed in March, 2007)]. : Conforms
- v) Agricultural tractors – Operator's seat technical requirement [IS 12343 –1998 (First revision) (Reaffirmed in March, 2009)]. : Does not conform
- vi) Guide for safety & comfort of operator of agricultural tractors: Part 1 General requirements (first revision) : [IS 12239 (PT-1)-1996(Reaffirmed in March, 2009)/ISO 4254-1:1989]. : 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 March, 2009)]. : Does not conform



- viii) Tractors and machinery for agriculture and forestry, powered lawn and garden equipment – Symbols for operator controls and other displays [IS: 6283 (Part-1 & Part-2) –2006 & 2007(Reaffirmed in March, 2009)/ ISO 3767-2:1991]]. : Does not conform
- ix) Guide lines for location and operation of operator controls on agricultural tractors and machinery (first revision) (IS: 8133 – 1983) (Reaffirmed in March, 2009)]. : Does not conform
- x) Agricultural Tractor & Machinery Lighting device for travel on public roads (IS: 14683-1999)(Reaffirmed in March, 2009)] : Conforms

**16.4 Salient Observations:**

**16.4.1 Laboratory tests:**

**16.4.1.1 PTO Performance:**

- i) The backup torque is **28.7%**.
- ii) The specific fuel consumption corresponding to maximum power was measured as **266 g/kWh** against the declaration of **265 g/kWh**, which meets the requirements of IS: 12207-2008.
- iii) The drop in maximum power in high ambient condition in comparison to natural ambient condition was recorded as **6.9 %** which is considered on higher side. This should be looked into.

**16.4.1.2 Drawbar Performance:**

- i) During drawbar performance the tyre creeping over rim of LHS &RHS tyre were observed **50 &80 mm** respectively, it is on higher side and should be looked into.

**16.4.1.3 Hydraulic Performance:**

- i) During hydraulic performance test (load maintenance test) the hydraulic lift was dropped fully down within 5 minutes of time interval. On inspection the 'O' ring (Part No. 0195561) and washer back up / PVC spring washer (Part No. 0195834M01), were found in damaged condition. The above defect is categorized as Mn- 14 As per IS: 12207-2008. So, the 'O' ring (Part No. 'O' ring (Part No. 0195561) and washer back up / PVC spring washer (Part No. 0195834M01) were replace new ones to rectify the problem. -'O' ring (Part No. 0195561) quantity 3 Nos. -washer back up / PVC spring washer (Part No. 0195834M01) quantity 2 Nos.
- ii) The drop in the height was observed **192 mm** during maintenance of lift load test, which is on very higher side and does not meets the requirements of IS:12207-2008.

**16.4.1.4 Mechanical Vibration:**

The amplitude of mechanical vibration on various assemblies marked as (\*) in Chapter-9 of this test report is on higher side. This calls for dampening down of vibrations to improve the operational comfort and service life of components.

**16.4.1.5 Three point linkage:**

- i) Some of the parameters of three point linkage conform to Cat. I and some of them conforms to Cat.II. In view of the spirit of standardization, necessary improvements may be incorporated.



- 16.4.1.6 Operator's Seat:**
- i) The length does not meet the requirement of IS: 12343-1998. This should be looked into for necessary corrective action.
  - ii) Longitudinal distance from SIP to centre of steering control wheel. This should be looked into for necessary corrective action
- 16.4.1.7 Labelling Plate**
- i) The size of letters imposed / punched on labelling plate is observed as 5 mm only, which is not easily readable. This should be improved
- 16.4.2 Field performance:**
- 16.4.2.1 Dryland Operation:**
- i) The average area covered in disc ploughing operation with recommended size of implements was recorded in the range of 0.299 to 0.339 ha/h. Keeping in view the PTO power of the tractor, the area coverage is considered less, hence the recommended size of the implement may be reviewed.
- 16.4.2.2 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) was not conducted. It is recommended that in all the literature 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.
- 16.4.2.3 Haulage performance :**
- i) The distance travelled per liter of fuel consumption with two wheel & four trailers as observed as 3.09 to 3.12 Km & 2.99 km against the declaration of 64.80 to 5.90 & 4.80 to 5.25 Km respectively.
  - ii) The fuel consumption (ml/km/tonne) with two wheel trailers was observed as 45.77 to 53.89 ml/km/tonne of 36 to 45.0 ml/km/tonne respectively. This may be looked into.
- 16.5 Maintenance / Service Problems:**
- No noticeable maintenance or service problem was observed during the test however suitable draining system should be provided for draining sediment/water.
- 16.6 Recommendation with regard to safety on tractor:**
- The following requirements, inter alia, may be considered for incorporation on the tractor:
- i) Provision of spark arresting device in exhaust system.
  - ii) Provision of transport lock in hydraulic system.
  - iii) Provision of Power take-off master shield.
- 16.7 Adequacy of Literature supplied with machine:**
- 16.7.1** The following literature was supplied with test sample for reference.
- i) Owner's service manual
  - ii) Parts catalogue (draft copy) respect of MF 2635 2WD tractor



- 16.7.2** The supplied literature was not found adequate for this model of tractor. It is therefore recommended that, the literature may be updated for modified specifications and the following technical data should also be incorporated.
- i) Fuel saving tips should be included in the operator's manual.
  - ii) Information on the components / assemblies such as Fuel cooler etc.
  - iii) Information on PTO performance such as specific fuel consumption corresponding to the maximum power and backup torque has not been specified in the operator's manual.
  - iv) Safe hitch height while using trailer.
  - v) All variants along with their features may be provided at a glance.
  - vi) It is recommended that in all the literature 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.
- 16.7.3** These literatures may also be brought out in national & other regional languages for the guidance of user's and service personnel.

**TESTING AUTHORITY:**

*P.K. Verma*  
**P.K. VERMA**  
SENIOR AGRICULTURAL ENGINEER

*V.N. Kale*  
**V.N. KALE**  
DIRECTOR

Test report compiled by Shri. Chanchlesh Singh Raghuwanshi, Senior Technical Assistant.

**17.0 APPLICANT'S COMMENTS**

Para No.	Our Reference	Applicant's comments
17.1	16.3, 16.3 (v), (vi), (vii), (viii) & (ix)	Regarding the non-conformity we will study and take appropriate corrective action.



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

S. No.	Item	Disc Plough	Rotavator
1.	Make	TAFE	Field king
2.	Type	Mounted	Mounted
3.	No. of bottoms/blades	Three	42 in 7 flanges
4.	Type of bottoms/blades	Plain Concave	Hatchet
5.	Size of bottoms/blades, (mm)	660	265 x 75 x 6
6.	Spacing of bottoms/flanges, (mm)	490	245
7.	Lower hitch point span, (mm)	855	910
8.	Mast height, (mm)	450	590
9.	<b>Overall dimensions, (mm):</b>		
	- Length	1820	2055
	- Width	860	1140
	- Height	1100	970
10.	Gross mass, (kg)	340	430

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

A.	LABORATORY AND TRACK TESTS:	HOURS
1.	Running-in	--
2.	PTO performance test	12.5
3.	Power lift and hydraulic pump performance test	5.2
4.	Drawbar performance test	17.0
5.	Turning ability	0.3
6.	Location of centre of gravity	0.3
7.	Operator's field of vision	0.1
8.	Brake test	1.5
9.	Noise measurement	1.8
10.	Mechanical vibration test	1.0
11.	Theoretical speed test	0.8
B.	<b>FIELD TEST:</b>	
1.	Disc ploughing	21.2
2.	Rotavation	15.8
C.	<b>HAULAGE TEST:</b>	
D.	Miscellaneous test and other run hours including idle run, transportation, trials and preparation for test	5.9
	<b>TOTAL:</b>	<b>91.3</b>