



TAFE, MF 7250 DI V1 TRACTOR



भारत सरकार

GOVERNMENT OF INDIA

कृषि मंत्रालय (कृषि एवं सहकारिता विभाग, मशीनीकरण एवं प्रौद्योगिकी प्रभाग)

Ministry of Agriculture (Deptt. of Agri. & Co-op, Mechanization & Technology Division)

केन्द्रीय कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान

CENTRAL FARM MACHINERY TRAINING & TESTING INSTITUTE

(An ISO : 9001-2008 Certified Institute)

ट्रैक्टर नगर, बुदनी (म.प्र.) ४६६ ४४५ TRACTOR NAGAR, BUDNI (M.P.) 466445

Phone : 07564-234729 Fax : 07564-234743 E-mail : fmti-mp@nic.in Website: <http://cfmtti.dacnet.nic.in>



3. ESSENTIAL TESTS

3.1. SPECIFICATIONS

	<u>Base Model</u>	<u>Variant Model</u>
3.1.1 Tractor:		
Make	: TAFE LTD.	TAFE LTD.
Model	: MF 7245	MF 7250 DI V1
Type	: Four wheeled, Rear-wheel driven, standard agricultural tractor	
Year of manufacture	: 2007	KCAC (June, 2013)
Chassis number	: 398561	841050
Country of Origin	: India	India
3.1.2 Engine:		
Make	: SIMPSON & Co. Limited	
Model	: S325.1	T III A S325-F4
Type	: Four stroke, naturally aspirated, water cooled, direct injection, diesel engine.	
Serial number	: S 325 .1b20995	S325E83546
Engine speed (Manufacturer's recommended production setting), (rpm) :		
- Maximum speed at no load	: 2100 to 2200	2300 to 2475
- Low idle speed	: 700 to 750	700 to 750
- Speed at maximum torque	: 1300 to 1500	1300 to 1500
Rated speed, (rpm):		
- For PTO use	: 2000	2250
- For drawbar use	: 2000	2250
3.1.3 Cylinder & Cylinder Head:		
Number	: Three	Three
Disposition	: Vertical, inline	Vertical, inline
Bore/stroke, (mm)	: 91.4 / 127 (apa)	91.4 / 127 (apa)
Capacity as specified by the applicant, (cc)	: 2500	2500
Compression ratio, (apa)	: 18.3 : 1	18.3 : 1
Type of cylinder head	: Mono block	Mono block
Type of cylinder liners	: Dry, replaceable	Dry, replaceable
Type of combustion chamber	: Direct-injection, Open cavity on piston crown	
Arrangement of valves	: Overhead, inline	Overhead, inline
Valve clearance (cold/hot):		
- Inlet valve, (mm)	: 0.30 / 0.25	0.30 / 0.25
- Exhaust valve, (mm)	: 0.30 / 0.25	0.30 / 0.25
3.1.4 Fuel System:		
Type of fuel feed system	:	Gravity and force feed
3.1.4.1 Fuel tank:		
Capacity, (l)	: 61.15	65.0
Location	: Above clutch housing.	
Provision for draining of sediments/ water	: Not provided	Not provided
Material of fuel tank	: LLDPE Polymer(apa)	Sheet metal



T-890/1405/2013	TAFE, MF 7250 DI V1 TRACTOR - COMMERCIAL (Variant)
-----------------	-----------------------------------------------------------

1	2	3	4	5	6
	d)	Fuel injectors:			
		Make	Bosch India	Delphi- TVS	Changed
		Model/Group combination No.	F002 C70 009	LJBG00931A (Holder no.) L014PGA (Production no.),HGX6980311 (Proto type)	Changed
		No. of holes	6 (multihole)	5 (multihole)	Changed
	e)	Governor:			
		Make	Bosch India	DELPHI-TVS	Changed
		Model/Group combination No.	RSV375...1125A4 C1626R	NA(In built with FIP)	Changed
		Rated engine speed, (rpm)	2000	2250	Changed
	f)	Governed range of engine speed (rpm)	700 to 2200	700-2475	Changed
		Location of gear shifting levers	Central shifting ,In-Front of operator's seat	Sidé shifting, RHS of operator's Seat	Changed
	g)	Overall length (mm)	3545	3580	Changed
	h)	Mass of tractor (unballasted) (kg),(front/rear/total)	825/1285/2110	845/1180/2025	Changed

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: 2008 for acceptance of tractor for the purpose of subsidies/NABARD financing for the applicable features for this tractor model.

S. No.	Characteristic	Category (Evaluative / Non Evaluative)	Requirements as per IS: 12207-2008	Values declared by the applicant (D)/ Requirement (R)		As observed		Whether Variant model meets the requirements (Yes/ No.)
				Base	Variant	Base	Variant	
1	2	3	4	5 a	5 b	6 a	6 b	7
7.1.1	PTO Performance :							
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 >35hp. -7.5/+10% for PTO power ≤ 35 hp	27.2 (D)	28.4 (D)	28.8	27.2	Yes
b)	Power at rated engine speed, (kW)	Non Evaluative	-do-	27.2 (D)	28.4 (D)	28.8	27.2	Yes



1	2	3	4	5 a	5 b	6 a	6 b	7
c)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Non Evaluative	± 5%	265 (D)	265 (D)	235	269	Yes
d)	Maximum equivalent crankshaft torque, (Nm)	Non Evaluative	± 8%	150.3 (D)	150.3 (D)	157.9	138.6	Yes
e)	Back-up torque, percent	Non Evaluative	7 percent, min.	7% (Min)	7% (Min)	15.0	20.0	Yes
f) Maximum operating temperature (°C)								
	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)	132 (D)	127	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)	112 (D)	105	89	Yes
g)	Engine oil consumption, (g/kWh)	Evaluative	Not exceeding 1% of SFC at max. power under High ambient conditions	2.35 (D)	2.75	2.31	0.26	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)	-	Max 3.25 per meter (R)	-	0.07	Yes
7.1.2 Power lift and hydraulic pump performance :								
a) Maximum lifting capacity throughout the range of lift, (kN):								
	1) At hitch points	Non Evaluative	[Tolerance of minus 10%]	13.2 (D)	13.2 (D)			
				11.88 (R)	11.88 (R)	11.80	10.27	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	12.2 (D)	12.2 (D)			
				6.82 (R) Minimum	6.44 (R) Minimum	11.02	10.73	Yes



1	2	3	4	5 a	5 b	6 a	6 b	7
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 Minutes, (mm)	Non Evaluative	[Tolerance of plus 5 mm]	50 (R)	50 (R)	31	120	No
7.1.3 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)	10 (R)	6.21	7.92	Yes
	2) Hot brake	Evaluative	10	10 (R)	10 (R)	7.33	8.12	Yes
b)	Maximum force exerted on the brake pedal to achieve a deceleration of 2.5 m/s ² (N)	Evaluative	600	600 (R)	600 (R)	155 to 210	253 to 264	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	Yes	Yes	Yes	Yes
7.1.4 Labelling of tractors (Provision of labelling plate):								
	1) Make	Evaluative	Should conform to the requirements of CMVR along-with declared value of PTO HP	TAFE	TAFE	Yes		
	2) Model	Evaluative		MF 7245	MF 7250 DI V1	Yes		
	3) Year of manufacture	Evaluative		KEZW	KCAC (June, 2013)	Yes		
	4) Engine serial number	Evaluative		S 325.1 B 20995	S325 E83546	Yes		
	5) Chassis serial number	Evaluative		398561	841050	Yes		
	6) Declaration of PTO power, kW	Evaluative		27.2	28.4	Yes		
	7) Specific Fuel Consumption (gm/kWh)	Evaluative		265	265	Yes		

7.2 Salient Observations:
 7.2.1 Laboratory tests:
 7.2.1.1 PTO Performance:
 i) The backup torque is observed as 20.0%
 ii) The percentage drop in maximum power during natural ambient and high ambient condition was observed as 6.3%, which was considered on higher side. This should be looked into for necessary corrective action
 iii) The maximum torque was observed as 1599 engine rpm against the declaration of 1300 to 1500 rpm. This should be looked into for necessary corrective action

7.2.1.2 Hydraulic performance :

- i) The lifting capacity at hitch points was observed as 10.27 kN against the declaration of 13.2 kN ,which is on lower side & does not meet the requirement of IS:12209-2008 with regard to tolerance .This should be looked into for necessary corrective action.
- ii) The drop in the height was observed **120 mm** during maintenance of lift load test, which is on very higher side and does not meets the requirements of IS:12207-2008.

7.2.1.3 Three point linkage:

- i) The width of ball of lower hitch point to the centre line of the tractor does not meets the requirement of IS: 4468 (Part-1)-1997. This should be looked into for necessary corrective action
- ii) Some of the parameters of three point linkage conform to Cat. - I and some of them conform to Cat.-II. In view of the spirit of standardization, necessary improvements may be incorporated.

7.2.1.4 Operator's seat (Conformity with IS: 12343-1998):

- i) The vertical distance from seat index point to the centre of clutch & brake pedals and width of operator's seat provided on the tractor does not meet the requirements of relevant Indian Standard and calls necessary improvement. This should be looked into for necessary corrective action

7.3 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 power take-off master shield
- iii) Provision of differential lock.
- iv) Provision of working clearance around the Parking Brake lever as per the requirements of Indian Standards.

7.4 Adequacy of Literature supplied with machine:

7.4.1 The following revised literature was supplied with test sample for reference.

- i) Owner's service manual Book-1

7.4.2 The supplied literature of this model of tractor was not found adequate. It is therefore recommended that, the literature may be updated for modified specifications and the following technical data should be incorporated.

- i) Information related to specific fuel consumption corresponding to the maximum power should be included in the technical specification of the tractor for the guidance of the user's.
- ii) Fuel saving tips should be included in the operator's manual.
- iii) All variants along with their features may be provided at a glance.

The results of the tests carried out on variant model "TAFE, MF 7250 DI V1 " have been compared with those on base model "TAFE, MF 7245 " and found within the limit, as specified in Indian Standard: 12207-2008.

8.0 Citizen charter

Duration of Test	Test duration under citizen charter	Whether the report released within time frame given in the citizen charter	Remark
2 Months (August, 2013 to September,2013)	10 Months	Yes	-

TESTING AUTHORITY:

PK Verma
P. K. VERMA
SENIOR AGRICULTURAL ENGINEER

C.R. LOHI
C.R. LOHI
DIRECTOR

Test report compiled by Sh. CHANCHLESH SINGH RAGHUWANSHI, Senior Technical Assistant.

9. Applicant's Comments

Para No.	Our Reference	Applicant's comments
9.0	7.2.1.2,7.2.1.3 & 7.2.1.4	Regarding the non conformity we will study and take appropriate corrective actions.