व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT (Variant)

संख्या/No. : T-832/1341/2012
माह/Month : June, 2012

TAFE, MF 7250 DI POWER DRIVE POWER STEERING TRACTOR

सत्यमेव जयते

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

CENTRAL FARM MACHINERY TRAINING & TESTING INSTITUTE
TRACTOR NAGAR, BUDNI (M.P) - 466 445

E-mail : fmti-mp@nic.in, Web site : cfmtti.dacnet.nic.in
Telephone : 07564-234729 Fax : 07564-234743

Manufacturer : **M/s. Tractors and Farm Equipment Limited,**
P.O. Box No.3302,
35, Mahatma Gandhi Road,
Nungambakkam, CHENNAI- 600 034,
(TAMIL NADU)

Test requested by (applicant) : **M/s. Tractors and Farm Equipment Limited,**
P.O. Box No.3302,
35, Mahatma Gandhi Road,
Nungambakkam, CHENNAI- 600 034,
(TAMIL NADU)

Selected for test by : Applicant

Place of running-in : At applicant's works

Duration of said running-in (h):

- Engine : 12
- Transmission : 24

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

1. SCOPE OF TEST

The **"TAFE, MF 7250"** tractor had undergone "Commercial (Initial) test at this Institute and test reports **No. T-642/1148/2008** was released in October, 2008. Now the applicant has submitted an application vide letter No. Nil dated 29.11.2011 for testing of **"TAFE, MF 7250 DI POWER DRIVE POWER STEERING"** tractor as a Variant of **"TAFE MF 7250"** tractor.

The applicant having enclosed a list of following differences in the technical specifications between tractor models **"TAFE,MF 7250"** and **"TAFE, MF 7250 DI POWER DRIVE POWER STEERING"** and requested to test the **"TAFE, MF 7250 DI POWER DRIVE POWER STEERING" tractor** as a variant of **"TAFE,MF 7250"** tractor :-

The major features of Base model and Variant model are listed below:

S. No.	Particulars	Base model	Present sample
1	2	3	4
1.	Make & model of tractor	TAFE, MF 7250	TAFE, MF 7250 DI Power Drive Power Steering
2.	Model of engine	T III S 325	T III A S 325 – F4
3.	Capacity of fuel tank (l)	60.0	65.0
4.	Provision of water separator	Provided	Not provided
5.	Make & model of primary pump	Bosch, FP/KSG22AD45/2	Delphi-TVS, 66248070A
6.	Make & Model of fuel filters	Bosch, F 002 I 20 138	Delphi-TVS, 2FSG 6248070A
7.	Make & type of fuel injection pump	Bosch, India, Inline Plungers	Delphi-TVS, Rotary
8.	Model /group combination number of fuel injection pump	F 002 A0Z 480, PES3A80D 320 RS 2000	S 07B3A DPT G 8972A392A
9.	Injection timing	18 ± 2 degree before TDC	10 ± 0.2, degree before TDC

1	2	3	4	5	6
		Model/Group combination No.	FP/KSG22AD45/2, 9 440 030 030	2 FSG 66248070A	**Changed**
	b)	**Fuel filters:**			
		Make	Mico Lic Bosch	Delphi- TVS	**Changed**
		Model/Group combination No.	F 002 H20 138	2FSG6248070A	**Changed**
	c)	**Fuel injectors:**			
		Make	BOSCH India	DELPHI-TVS	**Changed**
		Model/Group combination No.	F002 C70009 789	LJBG00931AKF, Holder no. L014PGAA KH1059069	**Changed**
	d)	**Governor:**			
		Make	Mico Lic Bosch	DELPHI-TVS	**Changed**
		Model/Group combination No.	RSV 375... 1125 A4C 1428 R	In built with FIP	**Changed**
	e)	Front axle	Rigid type	Rigid type	**Changed**
	f)	Wheel base (mm)	1920	1930	**Changed**
	g)	Overall length (mm)	3580	3570	**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	30.5 (D)	30.5 (D)	30.8	31.6	Yes
b)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Non Evaluative	± 5%	265 (D)	265 (D)	255	263	Yes
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	6.46	Yes
	2) Hot brake	Evaluative	10	10 (R)	10 (R)	6.33	6.58	Yes

1	2	3	4	5 a	5 b	6 a	6 b	7
b)	Maximum force exerted on the brake pedal to achieve a deceleration of 2.5 m/s² (N)	Evaluative	600	600 (R)	600 (R)	123 to 255	172 To 209	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		
	2) Model	Evaluative		--		MF 7250 DI Power Drive Power Steering		Yes
	3) Year of manufacture	Evaluative		--		KFAA (September 2011)		Yes
	4) Engine serial number	Evaluative		--		S325 D42339		Yes
	5) Chassis serial number	Evaluative		--		665547		Yes
	6) Declaration of PTO power, kW	Evaluative		--		30.5		Yes
	7) Specific Fuel Consumption (gm/kWh)	Evaluative		--		255		Yes

7.2 Salient Observations:

7.2.1 Laboratory tests:

7.2.1.1 PTO Performance:

i) The specific fuel consumption in case of base and variant models corresponding to maximum power was observed as 255 & 263 g/kWh respectively against the declaration of 265 g/kWh. Which is within the tolerance limit of IS: 12207:2008.

ii) The maximum PTO power in case of base and variant models was observed as 30.8 & 31.6 kW respectively against the declaration of 30.5 kW which is within the specified limit.

7.2.1.2 Air cleaner oil pull over:

i) During air cleaner oil pull over test when the tractor tilted 15 degree aterally on RHS up position the mass of air cleaner oil was increased by 340.6 g (42.70 percent of air cleaner oil) in half an hours run. The engine was having closed lobe breather wherein the breather of engine is connected to the air cleaner inlet tube. The engine lubricating oil was sucked by the air cleaner from the engine breather in side the air cleaner assembly resulting in increase of mass of air cleaner oil. This behavior of the air intake system is considered abnormal for continuous operation of the engine.

ii) To rectify the above problem, the firm has requested for replacement of the Close Lobe Breather (CLB. Part No. 005911) with new ones having same specification. The same was replaced and air cleaner oil pull over test was repeated but no improvement was recorded.

iii) After the failure of test, the firm has requested to interchange the location of Close Lobe Breather (CLB Unit Part No. 005911) and engine oil filling cap. The existing and modified location of these units are shown in **Annexure-I.** The request for interchanging the location of Close Lobe Breather (CLB Unit Part No. 005911) and engine oil filling cap was accepted by the competent authority as per the provision of Clause 3.2.4 of IS 12207 – 2008 and the supplementary air cleaner oil pull over test was conducted and the defect was rectified.

The percentage of air cleaner oil pull over was recorded as 0.09 % against the maximum requirement of 0.25 % as per IS: 12207-2008. The test was conducted satisfactory only after supplementary test by modification in the system. It is therefore recommended that, the modified location of Close Lobe Breather (CLB Unit Part No. 005911) and engine oil filling cap (Refer Annexure-I) should be permanently incorporated in the regular production of this tractor model".

7.2.1.3 Three point linkage:

i) The lateral distance from 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 the conforms 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):

The width of operator's seat provided on the tractor does not meet the requirements of relevant Indian Standard and calls necessary improvement.

i) The width of operator's seat provided on the tractor does not meet the requirements of relevant Indian Standard and calls necessary improvement.

ii) Vertical distance from seat index point to the centre of clutch and brake pedals.

7.2.1.5 Symbols of operator's control and other displays [Conformity with IS: 6283 (Part 1 & 2)-1998]:

A colour zone of engine revolution gauge has not been provided as per requirements of Indian Standard and calls for necessary improvements.

7.2.1.6 Labelling plate:

The size of letters imposed / punched on labelling plate is observed as 2 mm only, which is not easily readable. This should be improved.

7.3 Maintenance / Service Problems:

No noticeable maintenance or service problem was observed during the test. However, suitable provision for draining the sediments/water may be provided at the fuel tank.

7.4 Recommendation with regard to safety on tractor:

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

i) Provision of vertical retainer at clutch pedal.

ii) Provision of spark arresting device in exhaust system.

iii) Provision of power take-off master shield

iv) Provision of differential lock.

v) Provision of working clearance around the Parking Brake handl lever as per the requirements of Indian Standards.

7.5 Adequacy of Literature supplied with machine:

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

i) Owner's service manual Book-1

7.5.2 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 mode **"TAFE, MF 7250 DI Power Drive Power Steering"** have been compared with those on base model **"TAFE, MF 7250"** and found within the limit, as specified in Indian Standard 12207-2008.

TESTING AUTHORITY:

H.L. YADAV
SENIOR AGRICULTURAL ENGINEER

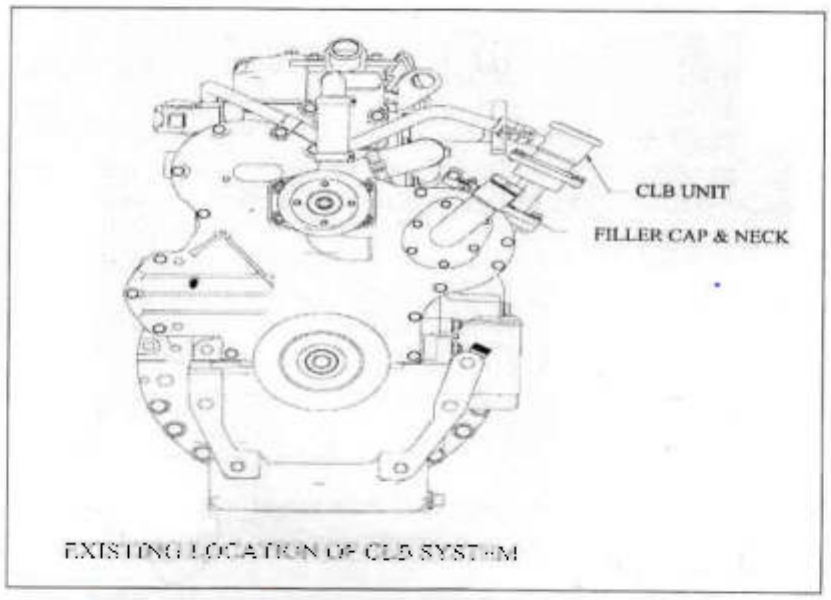
V.N. KALE
DIRECTOR

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

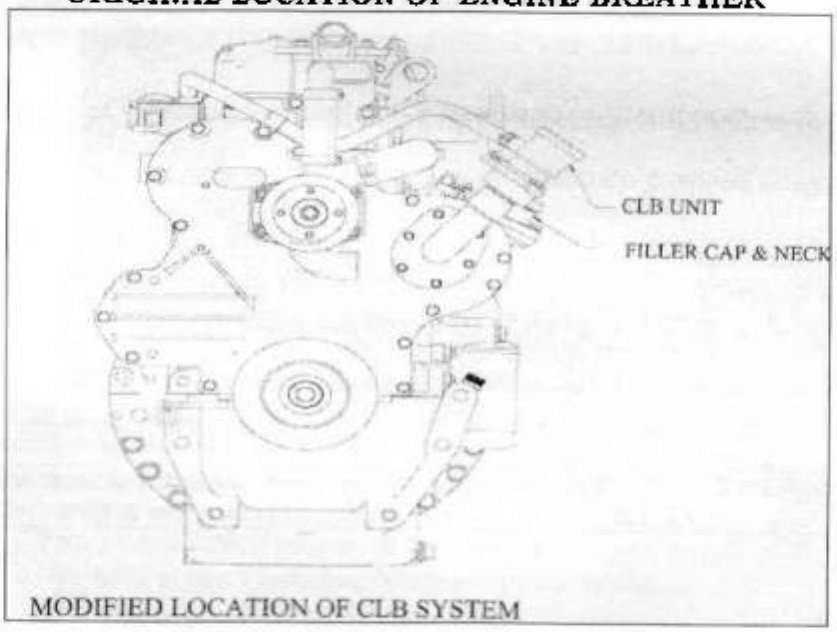
8. APPLICANT'S COMMENTS

Para No.	Our Reference	Applicant's comments
8.1	7.2.1.2, 7.2.1.3, 7.2.1.4, 7.2.1.5	Regarding the non-conformity we will study and take appropriate corrective actions.

ANNEXURE - I



ORIGINAL LOCATION OF ENGINE BREATHER



MODIFIED LOCATION OF ENGINE BREATHER

ANNEXURE-II

TRACTOR RUN HOURS DURING TEST

A.	LABORATORY AND TRACK TESTS	HOURS
1.	Running-in	Nil
2.	PTO Performance Test	3.3
3.	Brake test	1.5
4.	Air cleaner oil pull over test	7.0
5.	Turning ability	0.3
7.	Theoretical speed test	1.0
B.	Miscellaneous test and other run hours, including idle run transportation, trial and preparation for test.	0.1
	TOTAL	13.2