



**ESCORTS LIMITED,
FARMTRAC 60 EPI SMPS 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
CENTRAL FARM MACHINERY TRAINING & TESTING INSTITUTE
TRACTOR NAGAR, BUDNI (M.P.) - 466 445

TRACTOR -

T-831/1340/2012

ESCORTS LIMITED, FARMTRAC 60 EPI SMPS TRACTOR - Commercial (Variant)



2. FUEL AND LUBRICANTS

2.1 Fuel

: The High-speed diesel oil supplied by M/s Indian Oil Corporation Limited having density of 0.836 g/cc at 15°C was used.

2.2 Lubricants:

S. No.	Particulars	As recommended by the manufacturer	As used during the test
1.	Engine and air cleaner oil	SAE 15W40 (API-CF4)/SAE 20W40 (API CD/SF, IS 13656, E-DL-2)	SAE 20W40
2.	Transmission, differential, final drive and hydraulic system oil	SAE 80W90 / EP80 (API GL-5, IS:1118; EP Type GL-5)	Oil originally filled in the tractor was not changed
3.	Steering housing oil	Castrol-TQ, DEXRON-II	--do--
4.	Grease	Servo Grease MP	Servo Grease MP

3. ESSENTIAL TESTS

3.1 SPECIFICATIONS

3.1.1 Tractor:

	<u>Base model</u>	<u>Variant model</u>
Make	: Escorts Limited	Escorts Limited
Model	: Farmtrac - 60 SMPS	Farmtrac - 60 EPI SMPS
Type	: Four wheeled, Rear-wheel drive, Standard Agricultural Tractor.	
Year of manufacture	: 2011	2011
Chassis serial number	: T2206179	T2208151
Country of origin	: India	India

3.1.2 Engine:

Make	: Escorts Limited	Escorts Limited
Model	: AF 3.344F-3A	AF 3.344F-3A
Type	: Four stroke, naturally aspirated, water cooled, direct injection, diesel engine.	
Serial number	: E2209353	E2211410
Country of origin	: India	India
Engine speed (rpm), (Manufacturer's recommended production setting):		
- Maximum speed at no load	: 2150 to 2250	2150 to 2250
- Low idle speed	: 600 to 700	600 to 700
- Speed at maximum torque	: 1000 to 1200	1000 to 1200
Rated speed, (rpm):		
- For PTO use	: 1850	1850
- For drawbar use	: 1850	1850

3.1.3 Cylinder & Cylinder Head:

Number	: Three	Three
Disposition	: Vertical, Inline	Vertical, Inline
Bore/stroke, (mm)	: 111.76 / 117	111.76 / 117



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1	2	3	4	5	6
18.	xviii)	Type of hydraulic pump, location, drive, speed	Same configuration in base & variant models (refer para 3.1.13.1).		No change
19.	xix)	Positioning of Hydraulic Sensing Mechanism	Through top link	Through top link	No change
20.	xx)	Change related to ergonomics, safety comfort, statutory / regulatory requirements:			
	a)	IS: 10273	Conformed	Conforms	No change
	b)	IS: 4931	Did not conform	Conforms	Changed
	c)	IS: 4468	Did not conform	Does not conform	No change
	d)	IS: 12953	Conformed	Conforms	No change
	e)	IS:12343	Did not conform	Does not conform	No change
	f)	IS:12239 (Pt-I)	Did not conform	Does not conform	No change
	g)	IS:12239 (Pt-II)	Did not conform	Does not conform	No change
	h)	IS:8133	Did not conform	Does not conform	No change
	i)	IS: 6283	Conformed	Conforms	No change
	j)	IS:14683	Conformed	Conforms	No Change
21.	xxi)	Rear Final Drive:			
		Reduction through crown wheel and pinion	6.167 : 1 (37/6 T)	2.818:1 (31/11T)	Changed
		Reduction ratio of final drive	None	4.500:1 (56/20/16T)	Changed
22.	xxii)	Type of fuel Injection pump:	Same configuration in base & variant models (refer para 3.1.4.5).		No change
23.	Change related to statutory/ regulatory requirements (As per Table 4):				
	a)	Engine operating principle (spark/ compression ignition, two/four stroke)	Compression Ignition, 4 stroke	Compression Ignition, 4 stroke	No change
	b)	Number & arrangement of cylinders	Three, vertical inline	Three, vertical inline	No change
	c)	Maximum PTO power (kW)	32.3	32.3	No change
	d)	Engine displacement (cc)	3440	3440	No change
	e)	Rated engine speed (rpm)	1850	1850	No change

6. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS

6.1 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.

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S. No.
1
6.1.1
a)
b)
c)
6.1.2

6.2
6.2.1
6.2.1

6.2.1

CENT



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 model	Variant Model	Base model	Variant model	
1	2	3	4	5 a	5 b	6 a	6 b	7
6.1.1	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	32.3 (D)	32.3 (D)	31.6	33.0	Yes
b)	Power at rated engine speed, (kW)	Non Evaluative	-do-	32.3 (D)	32.3 (D)	31.6	33.0	Yes
c)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Non Evaluative	± 5%	265 (D)	265 (D)	256	257	Yes
6.1.2	Labelling of tractors (Provision of labelling plate):							
1)	Make	Evaluative	Should conform to the requirements of CMVR along-with declared value of PTO HP	--		Escorts Limited		Yes
2)	Model	Evaluative		--		Farmtrac 60 EPI SMPS		Yes
3)	Year of manufacture	Evaluative		--		2011		Yes
4)	Engine serial number	Evaluative		--		E2211410		Yes
5)	Chassis number	Evaluative		--		T2208151		Yes
6)	Declaration of PTO power, kW (HP)	Evaluative		--		32.3 (43.3)		Yes

6.2 Salient Observations:

6.2.1 Laboratory tests:

6.2.1.1 PTO Performance:

- The maximum PTO power in case of base and variant models were observed as 31.6 & 33.0 kW respectively against the declaration of 32.3 & 32.3 kW respectively and which **meets** the requirement of IS: 12207-2008 with regard to tolerance.
- The specific fuel consumption in case of base and variant models corresponding to maximum power were **observed** as 256 & 257 g/kWh respectively against the declaration of 265 & 265 g/kWh respectively and which meets the requirement of IS: 12207-2008 with regard to tolerance.

6.2.1.2 Three point linkage:

The lateral distance from lower hitch point to the centre line of tractor does not meet the requirement of IS: 4468 (Part-1)-1997. This should be looked into for necessary corrective action.



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Some of the parameters of linkage drawbar conform to Cat. I and some of them conforms to Cat. II. Keeping in view the spirit of standardization, the necessary improvements may be incorporated.

6.3 Maintenance / Service Problems:

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

6.4 Recommendation with regard to safety on tractor:

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

- i) Provision for spark arresting device in exhaust system.
- ii) Provision for retaining the fuel shut-off lever in "STOP" position.
- iii) The minimum cautionary notice as per clause 11.2 of IS: 12239 (Part-2)-1999 should be provided.

6.5 Adequacy of Literature supplied with machine:

6.5.1 The following literature was supplied with the test sample for reference during the test

- a) Operator's manual
- b) Supplementary repair manual for Farmtrac 60 EPI SMPS Tractor
- c) Part's catalogue for Farmtrac 60 EPI SMPS Tractor

6.5.2 The modified literature submitted by the applicant was found adequate. The literature should also be brought out in regional languages for guidance of users.

The results of the tests carried out on variant model "Farmtrac 60 EPI SMPS" have been compared with those on base model "Farmtrac 60 SMPS" and found within the limit, as specified in Indian Standard:12207-2008.

TESTING AUTHORITY:

C. V. CHIMOTE
TEST ENGINEER

P. K. VERMA
SENIOR AGRICULTURAL ENGINEER

V. N. KALE
DIRECTOR

Test Report compiled by: **Shri. Pramod Yadav**, Senior Technical Assistant.

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7. Applicant's Comments

Para No.	Our Reference	Applicant's comments
7.1	6.2.1.2, 6.2.1.3, 6.4	These aspects are further being looked into & will try to eliminate these deviations soon wherever necessary.

ANNEXURE-I

TRACTOR RUN HOURS DURING TEST

A.	LABORATORY AND TRACK TESTS:	HOURS
1.	Running-in	--
2.	PTO performance test	3.0
3.	Theoretical speed test	1.3
B.	Miscellaneous test and other run hours including idle run, transportation, trials and preparation for test	0.2
	TOTAL:	4.5