

[ONLINE TESTING]



ESCORTS LIMITED, FARMTRAC 60 TRACTOR



भारत सरकार

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

GOVERNMENT OF INDIA

MINISTRY OF AGRICULTURE AND FARMERS WELFARE

(DEPARTMENT OF AGRICULTURE, CO-OPERATION AND FARMERS WELFARE)

केन्द्रीय कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान

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2. FUEL AND LUBRICANTS

2.1 Fuel : The High-speed diesel oil supplied by M/s Indian Oil Corporation Limited having density of 0.829 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 20W40	SAE 20W40
2.	Transmission, differential, final drive hydraulic and brake system oil	SAE 80W90/EP80	Oil originally filled in the tractor was not changed
3.	Steering housing oil	SAE 90/EP90	--do--
4.	Grease	Servo Grease MP	Servo Grease MP

3. Essential Tests

3.1 Specifications

	<u>Previous sample</u>	<u>Present sample</u>
3.1.1 Tractor:		
Make	Escorts limited	
Model	FARMTRAC 60	
Type	Four wheeled, rear-wheel driven, general purpose, agricultural tractor.	
Month & Year of manufacture	12/17	4/21
Chassis number	T052400786JF	T052545012AK
Country of origin	India	
3.1.2 Engine:		
Make	Escorts limited	
Model	AF3.315A-3A	
Type	Four stroke, naturally aspirated, water cooled, direct injection, diesel engine.	
Serial number	E2406593	E2526919
3.1.2.1 Engine speed(Manufacturer's recommended production setting), (rpm):		
- Maximum speed at no load	2300 to 2400	
- Low idle speed	600 to 700	
- Speed at maximum torque	1000 to 1200	
Rated speed, (rpm):		
- For PTO use	2000	
- For drawbar use	2000	
3.1.3 Cylinder & Cylinder Head:		
Number	Three	
Disposition	Vertical, Inline	
Bore/stroke, (mm)	111.76/106.68	
Capacity as specified by the applicant, (cc)	3140	
Compression ratio	18.4 (± 5%) : 1	
Type of cylinder head	Monoblock	
Type of cylinder liners	Dry, Non- replaceable	
Type of combustion chamber	Open chamber on piston crown.	

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4.1.2 Parking brake test:

Particulars	18 percent slope		12 percent slope with trailer of 1.98 tonnes.	
	Facing up	Facing down	Facing up	Facing down
Braking device control force, (N)	384	389	400	421
Efficacy of parking brake	-----Effective-----			

5.0 ADJUSTMENTS, DEFECTS, BREAKDOWNS AND REPAIRS

S. No.	Adjustment/Defect/Breakdown and Repairs	Category of Breakdown	Tractor run hours
--	-- None--		--

6.0 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: 2019** for acceptance of tractor for the purpose of subsidies/NABARD financing for the applicable features for this tractor model.

Sl. No.	Characteristic	Category (Evaluative / Non Evaluative)	Requirements as per IS: 12207-2019	Values declared by the applicant/ requirement		As observed		Whether present model meets the requirements (Yes/No.)
				Previous sample	Present sample	Previous sample	Present sample	
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% for PTO power or engine power >26 kW, ± 10% for PTO power or Engine power ≤ 26 kW.	31.3 (D)	31.3 (D)	31.3	31.7	Yes
b)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Evaluative	+ 10% Max.	254 (D)	254 (D)	251	257	Yes
6.1.2 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):							
	Cold brake	Evaluative	10 (R)	10	7.27	6.93	Yes	
	Hot brake	Evaluative	10 (R)	10	7.52	6.98	Yes	

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1	2	3	4	5	6 a	6 b	7
b)	Maximum force exerted on the brake pedal to achieve a deceleration of 2.5 m/s ² (N)	Evaluative	600	600	305 to 324	278 to 333	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
6.1.3 Safety features :							
a)	Guards against moving and hot parts	Evaluative	Belt drives, pulleys, silencer, hydraulics pipes(as per IS-12239 Part 2)		Meet the requirements		Yes
b)	Lighting arrangement	Evaluative	As per CMVR		Meet the requirements		Yes
c)	Seating requirements (Tractors having more than 1150 mm rear track width)	Non Evaluative	Should meet the requirements of IS: 12343 (As amended from time to time)		Do not meet the requirements		No
d)	Technical requirements for PTO shaft	Evaluative	Should meet the requirements of IS: 4931 (As amended from time to time)		Meet the requirements		Yes
e)	Dimensions of three point linkage	Non Evaluative	Should meet the requirements of IS: 4468 (Part-I) (As amended from time to time)		Do not meet the requirements		No
f)	Specifications of linkage drawbar	Evaluative	Should meet the requirements of IS 12953 (As amended from time to time)		Meet the requirements		Yes
g)	Specifications of Swinging drawbar (wherever fitted)	Evaluative	Should meet the requirements of IS 12362 (Part 3) (As amended from time to time)		Not provided		--
h)	1) Maximum travelling speed at rated engine speed in reverse gears, kmph	Evaluative	Should not exceed 20 Kmph		14.25 kmph (Meet the requirements)		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.		Not fitted		Not applicable

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1	2	3	4	5	6	7
6.1.4	Labeling of tractors (Provision of labeling plate):					
	1) Make	Evaluative	Should conform to the requirements of CMVR along-with declared value of PTO in kW and year of manufacture in numerical MM YY Digit 01-12 in box No.1 for MM will represent the month and next two digit in the box No.2 for YY will represent the year of manufacturing	ESCORTS LIMITED		Yes
	2) Model	Evaluative		FARMTRAC 60		Yes
	3) Month & Year of manufacture	Evaluative		-	4/21	Yes
	4) Engine number	Evaluative		-	E2526919	Yes
	5) Chassis number	Evaluative		-	T052545012AK	Yes
	6) Declaration of maximum PTO power, kW	Evaluative		31.3		Yes
6.1.5	Literature (Submission to test agency)					
(a)	Operator manual	Evaluative	Provided/Not Provided	Provided	Yes	
(b)	Parts Catalogue	Evaluative	Provided/Not Provided	Provided	Yes	
(c)	Workshop/ Service manual	Evaluative	Provided/Not Provided	Provided	Yes	

6.2	Conformity with following IS:	Previous sample	Present sample
i)	Guide lines for declaration of power and specific fuel consumption and labelling of agricultural tractors (First revision) [IS10273: 1987 (Reaffirmed in January, 2019)]	: Conformed	Conforms
ii)	Agricultural tractors - Rear mounted power take-off - Types 1, 2 and 3 (third revision) [IS:4931-1995 (Reaffirmed in January, 2019)]	: Conformed	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)]	: Did not conform	Does not conform
iv)	Drawbar for agricultural tractors – Link type [IS 12953:1990 (Reaffirmed in 2017)]	: Conformed	Conforms
v)	Agricultural tractors - Operator's seat technical requirement [IS 12343 –1998 (First revision) (Reaffirmed in January, 2019)]	: Did not conform	Does not conform
vi)	Guide for safety & comfort of operator of agricultural tractors: Part 1 General requirements (first revision): [IS 12239 (PT-1) 1996/ISO 4254-1:2018]	: Did not conform	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)]	: Did not conform	Does not conform
viii)	Guide lines for location and operation of operator controls on agricultural tractors and machinery (first revision) IS: 8133-1983 (Reaffirmed in January, 2019)]	: Did not conform	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)]	: Did not conform	Conforms
x)	Agricultural Tractors and Machinery - Lighting device for travel on public roads (IS: 14683-1999) (Reaffirmed in January, 2019)]	: Conformed	Conforms

6.3 Salient Observations:

6.3.1 Laboratory tests:

6.3.1.1 PTO Performance:

- i) The maximum power was observed as 31.7 kW in case of present sample against the declaration of **31.3** kW, which meets the requirement of IS: 12207-2019 with regard to tolerance limit.

- ii) The specific fuel consumption corresponding to maximum power in case of present sample was recorded as **257 g/kWh** against the declaration of **254 g/kWh**, which meets the requirement of IS: 12207-2019 with regard to tolerance limit.

6.3.2 Recommendation with regard to safety on tractor:

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

- i) Width of operator's seat should be as per relevant standard.
- ii) Longitudinal distance of steering control wheel from seat index point should be provided as per relevant standard
- iii) Fuel shut-off knob should be remain in "STOP" position without application of sustainable manual effort.
- iv) The spark arrester should be provided in the exhaust system.
- v) PTO master shield should be provided as per relevant standard.
- vi) Working clearance around various control levers should be provided as per as per relevant standard.
- vii) Adequate width of footsteps should be as per relevant standard.

6.4 Adequacy of Literature supplied with machine:


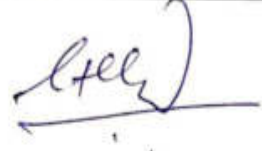

6.4.1 The following literature was supplied with test sample for reference during the test.

- a) Operator's manual for Farmtrac 60 model
- b) Repair manual for Farmtrac 60 model
- c) Spare part's catalogue for Farmtrac 60 model

The modified operator's manual submitted by the applicant was found adequate.

6.4.2 The literatures should also be brought out in national as well as other regional languages for the guidance of users and service personnel.

TESTING AUTHORITY:

C.V. CHIMOTE TEST ENGINEER	
Y.K.RAO SENIOR AGRICULTURAL ENGINEER	
P.K. PANDEY DIRECTOR	

The report compiled by: **NITESH KUMAR VERMA**, Agricultural Engineer

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7. Applicant's comments

Para no.	Our reference	Comments received from the applicant
7.1	6.2 (iii), (v), (vi), (vii) & (viii), 6.3.2 & 6.4.2	These being studied & corrective action would be taken in near future.

ANNEXURE- I

TRACTOR RUN HOURS DURING TEST

A.	LABORATORY AND TRACK TESTS	HOURS
1.	Running-in	--
2.	PTO performance test	3.32
3.	Nominal speed test	0.90
4.	Brake test	2.00
B.	Miscellaneous test and other run hours including idle run, transportation, trials and preparation for test	0.88
TOTAL:		7.1