

(यह परीक्षण रिपोर्ट 30/11/2025 तक वैध है। / THIS TEST REPORT IS VALID UP TO : 30/11/2025)



ESCORTS LIMITED, FARMTRAC CHAMPION F2 TRACTOR



सत्यमेव जयते

भारत सरकार

कृषि एवं किसान कल्याण मंत्रालय
कृषि, सहकारिता एवं किसान कल्याण विभाग
मशीनीकरण एवं प्रौद्योगिकी प्रभाग

GOVERNMENT OF INDIA

MINISTRY OF AGRICULTURE AND FARMERS WELFARE

(Department of Agriculture, Cooperation & Farmers Welfare, Mechanization & Technology Division)

केन्द्रीय कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान

ट्रैक्टर नगर, बुदनी (म.प्र.) ४६६ ४४५

CENTRAL FARM MACHINERY TRAINING & TESTING INSTITUTE

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the tractor and permanently incorporated in the tractor and tested under Technical Extension vide test report No. **T-1493/2020/2020** released in **November, 2020**. Now the applicant has submitted an application vide letter No. ERC: Budni: FT champion F2-B-96/17 dated: 15.09.2018 for Batch testing of “**Escorts Limited, Farmtrac Champion F2**” tractor.

All necessary tests as per table-1 of clause 6.0 of IS: 5994 - 1998 (Reaffirmed in 2014) were carried out and test report released as under.

Manufacturer	: M/s. Escorts Limited, Plot No 2 & 3, Sector-13, Faridabad – 121 007 (Haryana)
Test requested by	: M/s. Escorts R & D Centre, 15/5, Mathura Road, Faridabad – 121 003 (Haryana)
Selected for test by	: The testing authority
Place of running-in	: At manufactures works.
Duration of said running-in, (h):	
- Engine	: 20
- Transmission	: 30
Method of Selection	: The test sample was selected randomly out of Five tractors from the production line by the representative of testing authority

Details of tractors made available for random selection :

Sr. No.	Chassis Number
i)	T052465457EH
ii)	T052465307EH
iii)	T052465615EH
iv)	T052465616EH
v)	T052465739EH

1. SPECIFICATIONS

1.1 Tractor:

Make	: Escorts Limited
Model	: Farmtrac Champion F2
Brand name	: Farmtrac
Type	: Four wheeled, rear wheel driven, unit construction, general purpose, agricultural tractor.
Year of manufacture	: 08/19
Chassis number	: T052465615EH
Country of origin	: India
Variants, if any *	: Yes

S. No.	Variant model*	Variant features
1.	Escorts Limited, 45 F9 (Brand Name: Farmtrac)	Change in PTO power (16.2%) and Nominal speed

Remark(*): Variant model has been tested vide test report no. **T-1085/1610/2017 (April, 2017)**

1.2 Engine:

Make	: Escorts Limited
Model	: E3.234-3A

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16. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS

16.1 On the basis of tests conducted the performance results have been summarized as evaluative (mandatory) and non-evaluation (not-mandatory) parameter applicable for qualifying Minimum Performance Criteria as per Clause-4 (Table-1) of **IS: 12207-2019** 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- 2019	Values declared by the applicant (D) / Requirement (R)	As observed	Whether meets the require- ments (Yes/No)
1	2	3	4	5	6	7
16.1.1	PTO Performance :					
a)	Max. power under 2 h test, (kW) (Natural ambient condition)	Evaluative	Declared value to be achieved with a tolerance of: $\pm 5\%$ for PTO power or engine power >26 kW, $\pm 10\%$ for PTO power or Engine power ≤ 26 kW.	27.8 (D)	27.3	Yes
b)	Power at rated engine speed, (kW)	Non Evaluative	-do-	27.8 (D)	26.7	Yes
c)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Evaluative	$+ 10\%$ Max.	250 (D)	264	Yes
d)	Maximum equivalent crankshaft torque, (Nm)	Non Evaluative	$\pm 8\%$	143 (D)	143.5	Yes
e)	Back-up torque, percent	Evaluative	12 percent, min.	12 (D) / (R) minimum	24.4	Yes
f)	Maximum operating temperature($^{\circ}$ C)					
	1) Engine oil	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.	125 (D)	100	Yes
	2) Coolant (liquid)	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.	118 (D)	99	Yes
g)	Engine oil consumption, (g/kWh)	Evaluative	Not exceeding 1% of SFC at max. power under High ambient conditions	2.67 (R)	0.46	Yes
h)	Smoke level, (m^{-1})	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 (R)	0.29	Yes

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1	2	3	4	5	6	7
16.1.2	Drawbar performance:					
a)	Maximum drawbar pull with ballast corresponding to 15 percent wheel slip, (kN)	Non Evaluative	Minimum 70% of static mass with ballast	17.03 Minimum (R) 16.32 (D)	20.76	Yes
b)	Maximum drawbar pull with unballast corresponding to 15 percent wheel slip, (kN)	Evaluative	Minimum 70% of static mass of tractor with out/ standard ballast	12.32 Minimum (R) 12.24 (D)	16.10	Yes
c)	Maximum drawbar power without ballast, or with standard ballast as the case may be, kW	Evaluative	Minimum 80 % of PTO power as referred in SI No. i) a) of PTO performance in case of tractors having total static mass > 1500 kg Minimum 75 % of PTO power as referred in SI No. i) a) of PTO performance in case of light weight tractors having 1500 kg total static mass of tractor Minimum 75 % of the engine power as referred in SI No. i) a) of engine performance in case of tractors which do not have a PTO shaft.	21.8 Minimum (R) 22.5 (D)	23.5	Yes
d)	Maximum transmission oil temperature (°C)	Evaluative	The declared value should not exceed the maximum value specified by oil company	125(D)	86	Yes
16.1.3	Power lift and hydraulic pump performance :					
a)	Maximum lifting capacity throughout the range of lift, (kN):					
	1) At hitch points	Evaluative	±10 percent	13.70 (D)	13.34	Yes
	2) With the standard frame	Evaluative	The lift capacity should at least be 24 kg/PTO kW. and it should be 21.5 kg/engine kW where the tractor is not provided with a PTO shaft	6.43 (D) 3.48 Minimum (R)	11.77	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	The observed value should not exceed 50 mm	50 (D)	80	No
16.1.4	Brake performance at 25 kmph:					
a)	Maximum stopping distance at a force, equal to or less than 600 N on brake pedal with unballast, (m):					
	1) Cold brake	Evaluative	10	10 (R)	6.56	Yes
	2) Hot brake	Evaluative	10	10 (R)	6.55	Yes

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1	2	3	4	5	6	7
b)	Maximum force exerted on the brake pedal to achieve a deceleration of 2.5 m/s ² (N)	Evaluative	600	600 (R)	238 to 250	Yes
c)	Whether parking brake is effective at a force of 600 N at foot pedal(s) or 400 N at hand lever, N	Evaluative	Yes / No	Yes (R)	315	Yes
16.1.5	Noise measurement :					
a)	Maximum ambient noise emitted by the tractor dB(A)	Evaluative	As per CMVR	88 (R)	85	Yes
b)	Maximum noise at operator's ear level dB(A)	Evaluative	As per CMVR	96 (R)	96	Yes
16.1.6	Amplitude of mechanical vibrations at :					
	1) Left foot rest	Non Evaluative	100 microns (max)	100(R)	138	No
	2) Right foot rest		-do-		68	Yes
	3) Seat (with driver seated)		-do-		44	Yes
	4) Steering wheel		do-		148	No
16.1.7	Air cleaner oil pull over:					
	Maximum air cleaner oil pull over, (%)	Evaluative	0.25 % (max.)	0.25 % (max.)	0.17	Yes
16.1.8	Haulage requirements :					
a)	Gross mass of the trailers, (tones):					
	1) Two wheel	Non	--	5.0 (D)	5.0	Yes
	2) Four wheel	Evaluative	--	6.0(D)	6.0	Yes
b)	Distance travelled / litre of fuel consumption, (km/l):					
	1) Two wheel	Non	--	6.5 to 7.5 (D)	5.64 to 5.67	No
	2) Four wheel	Evaluative	--	6.5 to 7.5 (D)	4.55 to 5.04	No
c)	Fuel consumption (ml/km/tonne):					
	1) Two wheel	Non	--	27 to 33 (D)	35.3 to 35.4	No
	2) Four wheel	Evaluative	--	27 to 33 (D)	33.0 to 36.7	No

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1	2	3	4	5	6	7	
16.1.9	Wetland cultivation :						
	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 (R)	The major breakdowns were not observed in the field test during initial commercial testing of the base model of tractor having test report No.T-982 / 1506 / 2015 released in September 2015 . So, as per the provision as laid down in clause 7.2 of IS: 12207-2019, the field test during the batch testing of this tractor model was not conducted.	Yes
	1)	Clutch assembly	-do-				
	2)	Brake housings	-do-				
	3)	Front axle hubs	-do-				
	4)	Engine Oil	-do-				
5)	Transmission Oil	-do-					
16.1.10	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)	Does 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)	Does 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	Not applicable		
h)	1)	Maximum travelling speed at rated engine speed in reverse gears, kmph	Evaluative	Should not exceed 20 Kmph	14.48 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
16.1.11	Labelling of tractors (Provision of labelling 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 Champion F2	Yes	
	3) Month & Year of manufacture	Evaluative		08 / 19	Yes	
	4) Engine number	Evaluative		E2471303	Yes	
	5) Chassis number	Evaluative		T052465615EH	Yes	
	6) Declaration of PTO power, kW	Evaluative		27.8	Yes	
16.1.12	Discard limit for:					
(a)	Cylinder bore diameter, (mm)	Evaluative	To be specified by Manufacturer	95.30	95.00 to 95.01	Yes
(b)	Clearance between piston & cylinder liner at skirt, (mm)	Non Evaluative		0.50	0.127 to 0.131	Yes
(c)	Piston diameter	Non Evaluative		When ring groove clearance exceeds discard limit of 0.50 mm	94.855 to 94.882	Yes
(d)	Ring end gap (mm):					
	- Top comp. ring.	Evaluative	-do-	3.00	0.45	Yes
	- 2 nd comp. ring.		-do-	3.00	1.05 to 1.10	Yes
	- Oil ring.		-do-	3.00	0.45 to 0.55	Yes
(e)	Ring groove clearance (mm):					
	- Top comp. ring.	Evaluative	-do-	--Tapered--		Not applicable
	- 2 nd comp. ring.		-do-	0.50	0.091 to 0.102	Yes
	- Oil ring.		-do-	0.50	0.042 to 0.046	Yes
(f)	Diametrical clearance of main bearings (mm):	Evaluative	-do-	0.40	0.081 to 0.093	Yes
(g)	Clearance of big end bearings, (mm):					
	- Diametrical	Evaluative	-do-	0.40	0.068 to 0.078	Yes
	- Axial	Evaluative	-do-	0.75	0.30	Yes
(h)	Crankshaft end float	Evaluative	-do-	0.75	0.30	Yes
(j)	Clearance between king pin and bush,(mm)	Non Evaluative	-do-	0.50	0.13 to 0.26	Yes
(k)	Clearance between center pin and bush,(mm)	Non Evaluative	-do-	0.50	0.20 to 0.23	Yes
16.1.13	Literature (Submission to test agency)					
(a)	Operator manual	Evaluative	Provided / Not Provided	Provided	Provided	Yes
(b)	Parts Catalogue	Evaluative	Provided / Not Provided	Provided	Provided	Yes
(c)	Workshop/ Service manual	Evaluative	Provided / Not Provided	Provided	Provided	Yes

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1	2	3	4	5	6	7
16.1.14	Fitment of Roll Over Protective Structure (ROPS): for tractors having more than 1150 mm rear track width	Evaluative	ROPS should meet the requirement of IS:11821 or OECD code or equivalent International Standard	Provided	Not Fitted	Not Applicable
16.1.15	Standard accessories	Evaluative	Trailer hitch, front tow hook, linkage drawbar should be provided with tractor	Provided	Provided	Yes
16.1.16	Accessories (Optional)	Non Evaluative	Ballast weights if fitted should meet the requirement of CMVR.	Provided	Provided	Yes

16.1.17 CATEGORY OF BREAKDOWNS / DEFECTS :					
S. No.	Category of Breakdown	Category (Evaluative / Non Evaluative)	Requirements as per IS: 12207-2019	As observed	Whether meets the requirement (Yes/No.)
1.	Critical breakdown	Evaluative	There is no 'critical breakdown' during the course of testing	None	Yes
2.	Major breakdowns	Evaluative	There are not more than 1 major breakdowns and neither of them is of repetitive nature	None	Yes
3.	Minor breakdowns	Evaluative	There are not more than 3 minor defects during the test and the frequency of each is not be more than two	None	Yes
4.	Total breakdowns	Evaluative	In no case, the total number of breakdowns should exceed four that is, (1 major + 3 minor) or 4 minor breakdowns	None	Yes

16.2 Salient Observations:

16.2.1 Laboratory tests:

16.2.1.1 PTO Performance Test:

- i) The maximum PTO power was recorded as **27.3 kW** against the declaration of **27.8 kW**, which meets the requirement of IS: 12207-2019 with regard to tolerance limit.
- ii) The rated PTO power was recorded as **26.7 kW** against the declaration of **27.8 kW**, which meets the requirement of IS: 12207-2019 with regard to tolerance limit.
- iii) The specific fuel consumption corresponding to maximum power was recorded as **264 g/kWh** against the declaration of **250 g/kWh**, which is within the tolerance limit of IS: 12207-2019.
- iv) The maximum equivalent crankshaft torque was recorded as **143.5 N-m** against the declaration of **143.0 N-m**, which is within the permissible limit as specified in IS: 12207-2019.
- v) The backup torque is **24.4 %** and meets the requirement of IS:12207-2019.
- vi) Power drop of **6.2%** was recorded between natural and high ambient condition, which is considered on higher side. This should be looked into for necessary corrective action.

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16.2.1.2 Drawbar performance test:

During ten hours drawbar performance test, creeping of LHS & RHS rear tyre over the rims was recorded as **45 & 40 mm** respectively. This should be looked into for necessary corrective action.

16.2.1.3 Hydraulic performance test:

- i) The maximum cumulative drop in height of lower links during lift load maintenance test was recorded as **80 mm** against the maximum requirement **50 mm**. It indicates internal leakage of hydraulic fluid. It should be looked into for necessary corrective action at production level.
- ii) The lifting capacity at coupled frame was recorded as **11.77 kN** and the moment about rear axle was computed as **16.89 kN-m**, whereas moment about front axle is computed as **13.14 kN-m**. The moment about rear axle with coupled frame is on higher side as compared to moment about front axle. It is therefore recommended that the lifting capacity of hydraulic system may be reduced suitably or more standard ballast recommendation may be reviewed to avoid front lifting of tractor.

16.2.1.4 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 especially on LHS & RHS foot rest, operator's seat & steering control wheel to improve the operational comfort and service life of components.

16.2.1.5 Specifications of three point linkage:

- i) The parameter Lateral distance from lower hitch point to centre line of tractor does not meet the requirement of IS: 4468 (Part-1) -1979 (Reaffirmed 2014). 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. Keeping in view the spirit of standardization, necessary improvement may be incorporated.

16.2.1.6 Haulage test:

- i) Distance travelled / litre of fuel consumption with two and four wheel trailer was recorded as **5.64 to 5.67** and **4.55 to 5.04 km/l** against the declaration of **6.5 to 7.5** and **6.5 to 7.5 km/l** respectively. Which does not meet the requirement as per tolerance limit specified in IS:12207-2019. This should be looked into for necessary correction.
- ii) Specific fuel consumption with two and four wheel trailer was recorded as **35.3 to 35.4** and **33.0 to 36.7 ml/km/tonne** against the declaration **27 to 33** and **27 to 33 ml/km/tonne** respectively. which does not meet the requirement as per tolerance limit specified in IS:12207-2019. This should be looked into for necessary correction.

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16.2.1.6 Air cleaner pull over test:

- i) Maximum air cleaner oil pull over was recorded as **1.06 %** against the maximum requirement of **0.25 %**, which was not meeting the evaluative requirement of IS:12207-2019. Upon this, air cleaner bowl (Part No. D10019180AI.9) was replaced with new one and repeat test was conducted as per 3.2.3 of IS:12207-2019.
- ii) The firm has stated that the air cleaner bowl was wrongly fitted by the vender in batch model vide letter No. ERC:Budni:FT Champion F2-B-116/18 dated: 25.07.2020. this should be looked into for stringent quality control at production level.

16.3 Maintenance / Service Problems:

No noticeable maintenance / service problem was observed during the test.

16.4 Recommendation with regard to safety on tractor:

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

- i) The spark arrester should be provided in the exhaust system
- ii) PTO master shield should be provided around the PTO shaft.
- iii) Working clearance between the Position & Draft control lever of hydraulic system should be as per requirement of relevant test code.
- iv) Differential lock should be not been provided.
- v) Width of foot step should be as per requirement of relevant test code.
- vi) Steering wheel angle should be as per requirement of relevant test code.
- vii) Fuel shut-off knob should remain in "Stop" position
- viii) There should be provision to attach trailer brake valve.

16.5 Adequacy of Literature supplied with machine:

Following literatures of tractor model was supplied with the test sample for reference during the test.

- i) Operator's Manual of ESCORTS, FARMTRAC CHAMPION F2 tractor model
- ii) Parts Catalogue of ESCORTS, FARMTRAC CHAMPION F2 tractor model
- iii) Workshop Service / Repair Manual of ESCORTS, FARMTRAC CHAMPION F2 tractor model

16.5.1 The supplied literatures were found adequate; **except the following**

- a) Technical specifications of drawbar performance and hydraulic performance are not provided into operator's manual.


16.5.2 However, these literatures should be brought out in other vernacular languages of India for guidance of users

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17. Citizen charter

Time frame for testing & evaluation as per citizen charter	Duration of Test	Whether the report released within time frame given in the citizen charter	Remark
10 Months	13 Months (October , 2019 to, October, 2020)	No	To rectify the problem persist in the air cleaner system, manufacturer has taken the time of 04 months to rectify the problem.

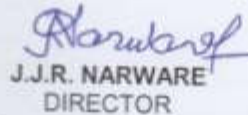
TESTING AUTHORITY:



RAJNEESH PATEL
AGRICULTURAL ENGINEER



C.V. CHIMOTE
TEST ENGINEER



J.J.R. NARWARE
DIRECTOR

The report compiled by: Shri Pratyush Satya, Senior Technical Assistant.

18. APPLICANT'S COMMENTS

Para No.	Our Reference	Applicant's comments
18.1	15.1.8 (iii, v, vi, vii & viii), 16.1.10 (c & e), 16.2.1.5 & 16.2.1.6	These are being studied and corrective action would be taken in near future
18.2	16.2.1.3, 16.2.1.4 & 16.4	Your valuable comments & suggestions for improvements are well taken under our policy of continuous product improvement. These aspects are further being looked into & will try to eliminate these deviations soon wherever necessary.

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ANNEXURE - I

TRACTOR RUN HOURS DURING TEST

A.	LABORATORY AND TRACK TESTS	HOURS
1.	Running-in	50
2.	PTO Performance Test	12.25
3.	Power lift and hydraulic pump performance test	3.16
4.	Drawbar performance test	15.95
5.	Brake test	1.00
6.	Noise measurement	1.00
7.	Air cleaner oil pull over test	3.50
8.	Mechanical vibration test	0.92
9.	Nominal speed test	0.67
B.	HAULAGE TEST	5.02
C.	Miscellaneous test and other run hours including idle run, transportation, trials and preparation for test	9.96
TOTAL:		103.43