

[ONLINE TESTING]

(यह परीक्षण रिपोर्ट 31/12/2026 तक वैध है / THIS TEST REPORT IS VALID UPTO 31/12/2026)



ESCORTS LIMITED, FARMTRAC 6050 F1 UM 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)

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Page 1 of 50

T-1614/2145/2021	ESCORTS LIMITED, FARMTRAC 6050 F1 UM TRACTOR Commercial (1 st Batch)
	THIS TEST REPORT IS VALID UPTO: 31/12/2026

The “Escorts Limited, Farmtrac 6050 F1 UM” tractor had undergone “Initial Commercial Test” at this Institute vide test report No. T- 1018/1542/2016 released on March, 2016. Thereafter, the firm had made modification in the specification of the tractor and permanently incorporated and tested under Commercial Technical Extension test vide test report No. T- 1613/2145/2021, released in December, 2021. Now the applicant has submitted an application No. 28/2020-21/56, dated 09.02.2021 for Batch testing of “Escorts Limited, Farmtrac 6050 F1 UM” tractor.

Applicant has informed vide letter no. FT6050F1UM-B-142/20 dated: 06.03.2021 that the last cut-off chassis number of tractor produced was T052527538KK in respect of “Escorts Limited, Farmtrac 6050 F1UM”.

All necessary tests as per Table-1 of clause 6.0 of IS: 5994 - 1998 (Reaffirmed in January, 2019) 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	: The manufacturer
Selected for test by	: The manufacturer
Place of running-in	: At manufacturer’s works place
Duration of said running-in, (h):	
- Engine	: 20
- Transmission	: 30
Method of Selection	: Due to Covid-19 Pandemic, it was not possible to conduct the random selection. Nor was possible for applicant to facilitate the random selection. As a last resort, applicant requested to allow the direct submission of Test Sample, which was allowed.

1. Specifications

1.1 Tractor:	
Make	: Escorts Limited
Model	: Farmtrac 6050 F1 UM
Type	: Four wheeled, four wheel driven, general purpose, agricultural tractor
Month & Year of manufacture	: 04/21
Chassis number	: T052546597AK
Country of origin	: India
1.2 Engine:	
Make	: Escorts Limited
Model	: AF 3.344F-3A
Type	: Four stroke, naturally aspirated, liquid cooled, direct injection, diesel engine.
Serial number	: E2527656
1.2.1 Engine speed(Manufacturer’s recommended production setting), (rpm):	
- Maximum speed at no load	: 2150 to 2250
- Low idle speed	: 600 to 700
- Speed at maximum torque	: 1000 to 1200

T-1614/2145/2021	ESCORTS LIMITED, FARMTRAC 6050 F1 UM TRACTOR Commercial (1st Batch)
	THIS TEST REPORT IS VALID UPTO: 31/12/2026

14. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS

14.1 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.)
1	2	3	4	5	6	7
14.1.1	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.	32.3 (D)	31.8	Yes
b)	Power at rated engine speed, kW	Non Evaluative	-do-	32.3 (D)	31.6	Yes
c)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Evaluative	+ 10% Max.	260 (D)	270	Yes
d)	Maximum equivalent crankshaft torque, (Nm)	Non Evaluative	± 8 percent	215 (D)	193.6	No
e)	Back-up torque, percent	Evaluative	12 percent	12 (D)	18.8	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.	130 (D)	118	Yes
	2) Coolant / cylinder liner temperature, in case of air cooled engine	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.	110 (D)	96	Yes
g)	Engine oil consumption, (g/kWh)	Evaluative	Not exceeding 1% of SFC at max. power under High ambient conditions	2.73 (R) Max.	0.34	Yes
h)	Smoke level, m^1	Evaluative	Maximum light absorption coefficient of 3.25 per meter or equivalent BOSCH No. 5.2 or 75 hatridge value (As per CMVR)	3.25 (R) maximum	0.18	Yes

T-1614/2145/2021	ESCORTS LIMITED, FARMTRAC 6050 F1 UM TRACTOR Commercial (1 st Batch)					
	THIS TEST REPORT IS VALID UPTO: 31/12/2026					

1	2	3	4	5	6	7	
14.1.2 Drawbar Performance:							
a)	Maximum drawbar pull with standard ballast corresponding to 15 percent wheel slip, (kN)	Evaluative	Minimum 70% of static mass of tractor without / standard ballast	19.67 (D)	27.36	Yes	
				19.74 (Minimum) (R)			
b)	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.	25.84(D)	27.3	Yes	
				25.44 Minimum (R)			
d)	Maximum transmission oil temperature (°C)	Evaluative	The declared value should not exceed the maximum value specified by oil company	125(D)	102	Yes	
14.1.3 Power lift and hydraulic pump performance :							
a)	Maximum lifting capacity throughout the range of lift, (kN):						
	1)	At hitch points	Evaluative	±10 percent	13.7 (D)	14.12	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	9.8 (D)	11.92	Yes
				7.5 Minimum (R)			
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	
				50 Maximum (R)			
14.1.4 Brake performance at 25 kmph:							
a)	Maximum stopping distance at a force, equal to or less than 600 N on brake pedal with ballast, (m):						
	1)	Cold brake	Evaluative	10	10 (R)	7.64	Yes
	2)	Hot brake	Evaluative	10	10 (R)	7.79	Yes
b)	Maximum force exerted on the brake pedal to achieve a deceleration of 2.5 m/s ² (N)	Evaluative	600	600 (R)	280 to 307	Yes	

T-1614/2145/2021	ESCORTS LIMITED, FARMTRAC 6050 F1 UM TRACTOR Commercial (1 st Batch)					
	THIS TEST REPORT IS VALID UPTO: 31/12/2026					

1	2	3	4	5	6	7
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)	Yes	Yes
14.1.5	Noise measurement :					
a)	Maximum ambient noise emitted by the tractor dB(A)	Evaluative	As per CMVR	88 (R)	84	Yes
b)	Maximum noise at operator's ear level dB(A)	Evaluative	As per CMVR	96 (R)	94	Yes
14.1.6	Amplitude of mechanical vibrations at :					
1)	Left foot rest	Non Evaluative	100 microns (max)	100(R)	103	No
2)	Right foot rest		-do-		138	No
3)	Seat (with driver seated)		-do-		104	No
4)	Steering wheel		do-		66	No
14.1.7	Air cleaner oil pull over:					
	Maximum air cleaner oil pull over	Evaluative	0.25 % (max.)	Dry type air cleaner is provided	Not applicable	
14.1.8	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 Evaluative	--	4.92 to 5.30	3.96 to 4.02	No
2)	Four wheel		4.98 to 5.51	3.76 to 3.83	No	
c)	Fuel consumption (ml/km/tonne):					
1)	Two wheel	Non Evaluative	--	36.27 to 40.14 (D)	49.81 to 50.53	No
2)	Four wheel		31.43 to 33.85 (D)	43.52 to 44.33	No	
14.1.9	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 this tractor model having test report No. T-1018/1542/2016 released in March, 2016. 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-				

T-1614/2145/2021	ESCORTS LIMITED, FARMTRAC 6050 F1 UM TRACTOR Commercial (1st Batch)
	THIS TEST REPORT IS VALID UPTO: 31/12/2026

1	2	3	4	5	6	7	
14.1.10	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		9.64 kmph (Meets the requirement)	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 applicable	Yes	
14.1.11	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 6050 F1 UM	Yes
	3) Month & Year of manufacture	Evaluative				04/21	Yes
	4) Engine number	Evaluative				E2527656	Yes
	5) Chassis number	Evaluative				T052546597AK	Yes
	6) Declaration of maximum PTO power, kW	Evaluative				32.3	Yes

T-1614/2145/2021	ESCORTS LIMITED, FARMTRAC 6050 F1 UM TRACTOR Commercial (1st Batch)
	THIS TEST REPORT IS VALID UPTO: 31/12/2026

1	2	3	4	5	6	7
14.1.12	Literature (Submission to test agency)					
(a)	Operator manual	Evaluative	The printed literature in booklet form should be provided as per IS 8132 and should submit along with the test sample		Provided	Yes
(b)	Parts Catalogue	Evaluative			Provided	Yes
(c)	Workshop/ Service manual	Evaluative			Provided	Yes
14.1.13	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		Not Fitted	Not applicable
14.1.14	Standard accessories	Evaluative	Trailer hitch, front tow hook, linkage drawbar should be provided with tractor		Provided	Yes
14.1.15	Accessories (Optional)	Non Evaluative	Ballast weights if fitted should meet the requirement of CMVR.		Provided	Yes

14.2 CATEGORY OF BREAKDOWNS / DEFECTS (As per clause 5.0 of IS:12207-2019):					
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

14.3 Salient Observations:

14.3.1 Laboratory tests:

14.3.1.1 PTO Performance test:

- i) The maximum equivalent crankshaft torque is recorded as **193.6 N-m** against the declaration of **215 N-m**, which does not meet the requirement of IS: 12207-2019 with regard to tolerance limit.

T-1614/2145/2021	ESCORTS LIMITED, FARMTRAC 6050 F1 UM TRACTOR Commercial (1 st Batch)
	THIS TEST REPORT IS VALID UPTO: 31/12/2026

14.3.1.2 Drawbar Performance test

- i) During drawbar performance test, the maximum drawbar power was recorded as **24.8 kW** against the declaration of **25.84 kW**, which is 2 % less than the minimum requirement of **25.44 kW** and which does not meet the evaluative requirement of IS: 12207-2019 with regard to tolerance limit.
Thereafter, following checking / adjustment / setting were performed:
 - a) Injection pressure of fuel injectors was checked and injection pressure was observed as **248 to 250 kg/cm²** against the declaration of **255 kg/cm²**. Hence, Injection pressure of all three injectors was adjusted to **255 kg/cm²**.
 - b) Tappet clearance was checked and measured as **0.40 mm & 0.60 mm** for inlet & exhaust valve respectively, which was found within the declaration value.
 - c) Clutch assembly was checked & no defect was observed
- ii) The creeping of rear tyres over the rims was recorded as **15 mm & 20 mm** in both LHS and RHS tyre during 10 hours drawbar performance test. This should be looked into for necessary corrective action.

14.3.1.3 Hydraulic performance test:

- i) Maximum cumulative drop in height of hydraulic lift during lift maintenance load test for a total duration of 30 minute has been recorded as **80 mm** against the maximum requirement of **50 mm** as per IS-12207:2019. This should be looked into for necessary corrective action.

14.3.1.4 Mechanical Vibration:

- i) The amplitude of mechanical vibration on various assemblies / components marked as (*) in Chapter – 8 of this test report is on higher side. This calls for dampening down of vibrations especially on left & right foot rest and steering control wheel to improve the operational comfort and service life of components.

14.3.1.5 Three-point linkage:

- i) The Lateral distance from lower hitch point to centre line of tractor does not meet the requirement of IS: 4468- 1997 (Part-I) (Reaffirmed in October, 2017). This should be looked into for necessary corrective action at production level.
- 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.

14.3.1.6 Haulage test:

- i) Distance travelled per litre of fuel consumption with two wheel and four wheel was recorded **3.96 to 4.02** and **3.76 to 3.83 km/l** against the declaration of **4.92 to 5.30** and **4.98 to 5.51 km/l** respectively & which does not meet the requirement with regards to tolerance limit. This should be looked into for necessary corrective action.
- ii) Specific fuel consumption with two & four wheel trailer was recorded as **49.81 to 50.53** & **43.52 to 44.33 ml/km/tonne** against the declaration of **36.27 to 40.14** and **31.43 to 33.85 ml/km/tonne** respectively & which does not meet the requirement with regards to tolerance limit. This should be looked into for necessary corrective action.

14.4 Maintenance / Service Problems:

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

14.5 Recommendation with regard to safety on tractor:

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

- i) Longitudinal distance from seat index point to the centre of differential lock pedal has been measured as 195 mm against the requirement of 355 to 770 mm as per IS: 12343-1998 (Re-affirmed in January, 2019).
- ii) Vertical distance from seat index point to centre of foot rest has been measured as 660 mm. It should be maximum 630 mm as per IS: 12343-1998 (Re-affirmed in January, 2019).
- iii) Master shield around the PTO shaft should be provided as per the requirement of IS: 4931-1995 (Re-affirmed in January, 2019).
- iv) Vertical retainers at both sides of clutch pedal should be provided as per IS: 12239 (Part-1) – 2018.
- vi) Spark arrester should be provided in the exhaust system as per the requirement of IS: 12239 (Part-2)-1999 (Re-affirmed in January, 2019).
- vii) The working clearance between position and draft control lever of hydraulic system was observed as 30 mm against the minimum requirement 70 mm as per IS: 12239 (Part-2)-1999 (Re-affirmed in January, 2019).


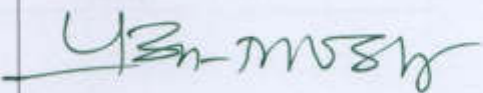
14.6. Adequacy of Literature supplied with machine:

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

- a) Operator's manual for Escorts Limited, Farmtrac 6050 F1 UM tractor model
- b) service manual for Escorts Limited, , Farmtrac 6050 F1 UM tractor model
- c) Spare part's catalogue for Escorts Limited, Farmtrac 6050 F1 UM tractor model

The supplied literature was found adequate as per IS: 8132-1999 (Reaffirmed in 2019)

TESTING AUTHORITY:

C.V. CHIMOTE TEST ENGINEER	
P.K. PANDEY DIRECTOR	

The report compiled by: **Poonam Khurasia, Senior Technical Assistant**

T-1614/2145/2021	ESCORTS LIMITED, FARMTRAC 6050 F1 UM TRACTOR Commercial (1 st Batch)
	THIS TEST REPORT IS VALID UPTO: 31/12/2026

15. APPLICANT COMMENTS

Para No.	Our Reference	Applicant's comments
15.1	14.1.1 (d), 14.1.3 (b), 14.1.6 [(1), (2) (3) & (4)] 14.1.8 [(b) & (c)], 14.1.10 [(c) & (e)], 14.3.1.1, 14.3.1.2 (ii), 14.3.1.3 (i), 14.3.1.4, 14.3.1.5 [(i) & (ii)], 14.3.1.6 [(i) & (ii)], 14.5 [(i), (ii), (iii), (iv), (v), (vi) & (vii)]	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, whenever necessary.

ANNEXURE - I

TRACTOR RUN HOURS DURING TEST

A.	LABORATORY AND TRACK TESTS	HOURS
1.	Running-in	50.00
2.	PTO Performance test	11.42
3.	Power lift and hydraulic pump performance test	1.50
4.	Drawbar performance test	15.51
5.	Brake test	1.00
6.	Noise measurement	1.30
7.	Mechanical vibration test	1.5
8.	Nominal speed test	2.00
B.	HAULAGE TEST	5.42
C.	Miscellaneous test and other run hours including idle run, transportation, trials and preparation for test	7.07
TOTAL:		96.72