



## ESCORTS LIMITED, FARMTRAC 45 TRACTOR



भारत सरकार

### GOVERNMENT OF INDIA

कृषि मंत्रालय (कृषि एवं सहकारिता विभाग, मशीनीकरण एवं प्रौद्योगिकी प्रभाग)

Ministry of Agriculture (Deptt. of Agri. & Co-op, Mechanization & Technology Division)

केन्द्रीय कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान

### CENTRAL FARM MACHINERY TRAINING & TESTING INSTITUTE

(An ISO : 9001-2008 Certified Institute)

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T-873/1387/2013

ESCORTS LIMITED, FARMTRAC 45 TRACTOR- Commercial (Initial)

The Tractor namely "Escorts Limited, Farmtrac 45" was got tested under ICT earlier vide test report No. T-377/785, May 1999. Further, Manufacturer of this make & model not submitted for batch tests which was due on May, 2002 and requested to test under Initial Commercial Test vide letter No. ERC: Budni: FT45-B-52/12 dated 28<sup>th</sup> June, 2012 along with application. The clarification in this regard was obtained from the applicant. The applicant explain & stated that this model is no longer in their production since, 2009 onwards and also they upgrade this product on the base of current Industry scenario, marketing requirements, future & current statutory requirements with some major changes in engine/brake/hydraulic system. The applicant produced last chassis no. as T-2161822 bearing engine serial no. E232102. (Ref. letter no.ERC: Budni: FT 45-B-52/12 dated 30<sup>th</sup> Oct. 2012). The applicant 's request was accepted by the competent authority for Initial Commercial Test with the same model name after receiving undertaking from applicant vide letter no. ERC: Budni: FT-45-B-52/12 dated 30<sup>th</sup> Oct. 2012. Accordingly, the relevant tests are conducted on the tractor and this test report is released as under:

<b>Manufacturer</b>	: M/s. Escorts Limited, Plot No 2 & 3, Sector-13, Faridabad – 121 007 (Haryana)
Test requested by (applicant)	: M/s. Escorts R&D Center, 15/5, Mathura Road, Faridabad (Haryana) – 121 003 At Applicant's works
Place of running-in	: At Applicant's works
Duration of said running-in, (h):	
- Engine	: 20
- Transmission	: 30
<b>Method of Selection</b>	: The tractor was submitted directly by the applicant for test. Hence, method of selection is not known.

<b>1.1 Tractor:</b>	
Make	: Escorts Limited
Model	: Farmtrac – 45
Variants, if any	: None
Type	: Four wheeled, rear-wheel driven, unit construction, Standard Agricultural Tractor
Year of manufacture	: 2012
Chassis number	: T 2245300
Country of origin	: India
<b>1.2 Engine:</b>	
Make	: Escorts Limited (apa)
Model	: AF 3.315H-3A
Type	: Four stroke, water cooled, naturally aspirated, direct injection, diesel engine.
Serial number	: E 2248964
<b>1.2.1 Engine speed(Manufacturer's recommended production setting), (rpm):</b>	
- Maximum speed at no load	: 2150 to 2250
- Low idle speed	: 600 to 700
- Speed at maximum torque	: 1000 to 1200
<b>Rated speed, (rpm):</b>	
- For PTO use	: 1850
- For drawbar use	: 1850

**1. SPECIFICATIONS**

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ESCORTS LIMITED, FARMTRAC 45 TRACTOR- Commercial (Initial)

<b>1.3 Cylinder &amp; Cylinder Head:</b>	
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	: Wet, replaceable
Type of combustion chamber	: Direct injection, open chamber in piston crown.
Arrangement of valves	: Overhead, inline
<b>Valve clearance (cold):</b>	
- Inlet valve, (mm)	: 0.40
- Exhaust valve, (mm)	: 0.60
<b>1.4 Fuel System:</b>	
Type of fuel feed system	: Gravity and force feed
<b>1.4.1 Fuel tank:</b>	
Capacity, (l)	: 60.0
Location	: Above Flywheel housing
Provision for draining of sediments/water	: Not provided, however water separator is provided between fuel tank and feed pump.
Material of fuel tank	: Metallic
<b>1.4.2 Water Separator:</b>	
Make	: Hilux
Type	: Inverted funnel gravity separation with swirling motion
Location	: In between fuel tank & fuel feed pump
Capacity (l)	: 0.50
<b>1.4.3 Fuel feed pump:</b>	
Make	: Bosch, India
Type	: Plunger with hand primer
Model/Group combination No.	: FP/KS22AD62, 9 440 030 029
Provision of sediment bowl	: Provided (Metallic)
Method of drive	: Through cam shaft of fuel injection pump
<b>1.4.4 Fuel filters:</b>	
Make	: Bosch, India
Nozzle holder Number	: 9 450 030 120
Number	: Two
<b>Type of elements:</b>	
- Primary	: Cloth
- Secondary	: Paper
Capacity of final stage filter, (l)	: 0.50
<b>1.4.5 Fuel Injection pump:</b>	
Make	: Bosch, India
Model/Group combination No.	: F 002 AOZ 918, PES 3A 95 D 410 RS 2000
Type	: Inline, Plunger
Serial number	: 20449160
Method of drive	: Through timing gears





**15.2 Clutch:**  
 Any marked wear on clutch friction plates : None  
 Condition of clutch release bearing : Normal  
 Condition of release levers & springs : Normal  
 Condition of pilot bearing : Normal  
 Presence of oil in clutch housing : None  
 Any marks on fly wheel/ pressure plate : None  
**Overall thickness of clutch plate, (mm):**  
 -Transmission : 10.80 to 10.90  
 - PTO : 7.62 to 7.63  
 Against discard limit of 7.5 mm & 6.0 mm for transmission and PTO clutch plate  
**Height of lining over rivet head, (mm):**  
 -Transmission : 1.42 to 1.48  
 - PTO : 1.22 to 1.38  
 Against discard limit of wear up to rivet head fouling

**15.3 Transmission gears:**  
 Any visual damage, pitting & chipping of any transmission gear teeth : None  
 Backlash between crown wheel and pinion, (mm) : 0.256  
 Re-shim to attain the desired backlash

**15.4 Brakes:**

Description	Initial specified overall thickness of brake disc, (mm)	Measured thickness of brake disc after test, (mm)	Initial specified depth of oil groove (mm)	Measured depth of oil groove, (mm)	Discard limit, (mm)
Left	4.65	4.67 to 4.72	1.45 (min)	0.76 to 0.87	Wear up to oil groove depth
Right	4.65	4.62 to 4.73	1.45 (min)	0.75 to 0.80	

**15.5 Front axle:**  
 Any marked wear of king pins : None  
 Any marked wear of king pin bushes : None  
 Clearance between king pin and bushes, (mm) : 0.083 to 0.197  
 Condition of bearings for stub axles : Normal  
 Condition of king pin bearings : Normal  
 Condition of seals for stub axles and king pins : Normal  
 Clearance between centre pin and bushes, (mm) : 0.352 to 0.439  
**Observation**  
 Against the discard limit of 0.4 mm  
 Against the discard limit of 0.5 mm

**15.6 Steering system:**  
 Visual condition of the components of complete steering assembly : Normal

**15.7 Starter motor & Alternator:**  
 Presence of soil/oil in housing : None  
 Condition of bearings and other components : Normal



**16. ADJUSTMENTS, DEFECTS, BREAKDOWNS AND REPAIRS**

Sl. No.	Adjustments/Defects/Breakdowns and Repairs	Category of breakdown as per IS:12207-2008	Tractor run hours
1	The internal leakage in hydraulic system was observed and therefore, the lift of hydraulic was not hold the load in upward vertical position. 'Ring for hydraulic cylinder dowel' (part no. D10059200) and 'ring for hydraulic lift safety valve' (part no. D 10059580) was found damage. It was replaced with new one.	Mn 14	17.66

**17. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS**

**17.1** Evaluative (mandatory) / Non-evaluative (Non-mandatory) parameter applicable for qualifying Minimum Performance criteria as per Clause-4 (Table-1) of IS: 12207-2008 for acceptance of the tractor for the purpose of subsidies/NABARD financing are summarized as under:

Sl. No.	Characteristic	Category (Evaluative / Non Evaluative)	Requirements as per IS: 12207-2008	Values declared by the applicant/ (D) Requirement (R)	As observed	Whether meets the requirements (Yes/No.)
1	2	3	4	5	6	7
<b>17.1.1</b>	<b>PTO Performance :</b>					
a)	Maximum 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	28.7 (D)	30.3	Yes
b)	Power at rated engine speed, (kW)	Non Evaluative	± 5%	236 (D)	240	Yes
c)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Non Evaluative	± 8%	171.6(D)	186.5	No
d)	Maximum equivalent crankshaft torque, (Nm)	Non Evaluative	10 percent, min.	15 % (D)/ 10% (R)	22.5	Yes
e)	Back-up torque, percent	Non Evaluative				
f)	<b>Maximum operating temperature, (°C)</b>					
1)	Engine oil	Non 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)	112	Yes



1	2	3	4	5	6	7
	2) Coolant (water)	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)	96	Yes
g)	3) Engine oil consumption, (g/kWh)	Evaluative	Not exceeding 1% of SFC at max. power under High ambient conditions	2.42 (R)	0.778	Yes
h)	4) Smoke level	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 per metre (R)	0.21	Yes
<b>17.1.2 Drawbar performance :</b>						
a)	Maximum drawbar pull with ballast corresponding to 15 percent wheel slip, (kN)	Non Evaluative	Minimum 65% of static mass with ballast	17.4 (R)	22.71	Yes
b)	Max. drawbar pull without ballast corresponding to 15 percent wheel slip, (kN)	Evaluative	Minimum 65% of static mass of tractor without ballast	17.5 (D)		
c)	Maximum drawbar power without ballast, (kW).	Evaluative	Min. 80% of PTO power as referred in 16.1.1 (a) of PTO performance	12.94 (R)	18.10	Yes
d)	Maximum transmission oil temperature (°C)	Non Evaluative	The declared value should not exceed the maximum value specified by oil company	13.0 (D)		
				24.2 (R)	26.5	Yes
				22.96 (D)		
				125 (D)	84	Yes
<b>17.1.3 Power lift and hydraulic pump performance :</b>						
a)	Maximum lifting capacity throughout the range of lift, (kN):		[Tolerance of minus 10%]			
	1) At hitch points	Non Evaluative		14.7 (D)	15.84	Yes
	2) With the standard frame	Evaluative	The lift capacity should at least be 18 kg/PTO hp. and it should be 16 kg/engine hp where the tractor is not provided with a PTO shaft	7.17 (R) (Minimum)		
				7.85 (D)	12.92	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 Minutes, (mm)	Non Evaluative	[Tolerance of plus 5 mm]	50 (R)		



1	2	3	4	5	6	7
<b>17.1.4 Brake performance at 25 kmph:</b>						
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)	7.44	Yes
	2) Hot brake	Evaluative	10	10 (R)	7.52	Yes
b)	Maximum force exerted on the brake pedal to achieve a deceleration of 2.5 m/s <sup>2</sup> (N)	Evaluative	600	600 (R)	281 to 284	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 (R)	Yes	Yes
<b>17.1.5 Noise measurement :</b>						
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	98 (R)	93	Yes
<b>17.1.6 Amplitude of mechanical vibrations at :</b>						
	1) Left foot rest	Non Evaluative	100 microns (max)	100 (R)	90	Yes
	2) Right foot rest				220	No
	3) Seat (with driver seated)				70	Yes
	4) Steering Wheel				130	No
<b>17.1.7 Haulage requirements :</b>						
a)	Gross mass of the trailers, (tones):			5.0 (D)	5.0	Yes
	1) Two wheel	Non Evaluative	--	6.0 (D)	6.0	Yes
	2) Four wheel		--			
b)	Distance travelled / litre of fuel consumption, (km/l):			8.0 to 9.0 (D)	6.02	No
	1) Two wheel	Non Evaluative	--	8.0 to 9.0 (D)	5.25	No
	2) Four wheel		--			
c)	Fuel consumption (ml/km/tonne):			30 to 35 (D)	33.24	Yes
	1) Two wheel	Non Evaluative	--	30 to 35 (D)	31.75	Yes
	2) Four wheel		--			
<b>17.1.8 Wetland cultivation :</b>						
	Sealing for the following assemblies:	Evaluative				
	1) Clutch assembly	-do-	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	No ingress of mud and / or water was observed	Yes
	2) Brake housings	-do-				
	3) Front axle hubs	-do-				



1	2	3	4	5	6	7
<b>17.1.9</b>	<b>Safety features :</b>					
a)	Guards against moving and hot parts	Evaluative	As per CMVR	At present no requirements	Provided	Yes
b)	Lighting arrangement	Evaluative	As per CMVR	--	Provided	Yes
<b>17.1.10</b>	<b>Labelling of tractors (Provision of labelling plate):</b>					
1)	Make	Evaluative	Should conform to the requirements of CMVR along-with declared value of PTO HP	--	Escorts Limited	Yes
2)	Model	Evaluative		--	Farmtrac -45	Yes
3)	Year of manufacture	Evaluative		--	12-E-09 (2012, May 9 <sup>th</sup> )	Yes
4)	Engine number	Evaluative		--	E-2248964	Yes
5)	Chassis number	Evaluative		--	T-2245300	Yes
6)	Declaration of PTO power, (kW)	Evaluative		--	28.7	Yes
<b>17.1.11</b>	<b>Discard limit for:</b>					
a)	Cylinder bore diameter, (mm)	Evaluative	To be specified by the manufacturer	112.271 for 1 <sup>st</sup> grading & 112.323 for 5 <sup>th</sup> grading (D)	111.78 to 111.81	Yes
b)	Clearance between piston & cylinder liner at skirt, (mm)	Non Evaluative		0.55 (D)	0.183 to 0.189	Yes
<b>(c)</b>	<b>Ring end gap (mm):</b>					
-	Top comp ring.	Evaluative	-do-	2.0	0.55 to 0.56	Yes
-	2 <sup>nd</sup> comp ring.		-do-	2.0	0.55 to 0.56	Yes
-	Oil ring.		-do-	2.0	0.55 to 0.56	Yes
<b>(d)</b>	<b>Ring groove clearance (mm):</b>					
-	Top comp ring.	Evaluative	-do-	0.7	0.118 to 0.127	--
-	2 <sup>nd</sup> comp ring.		-do-	0.7	0.107 to 0.108	Yes
-	Oil ring.		-do-	0.4	0.075 to 0.078	Yes
<b>(e)</b>	<b>Clearance of main bearings (mm):</b>					
-	Diametrical clearance	Evaluative	To be specified by the manufacturer	0.5	0.10 to 0.119	Yes
-	Crankshaft end float	Evaluative		0.8	0.38	Yes
<b>(f)</b>	<b>Clearance of big end bearings, (mm):</b>					
-	Diametrical	Evaluative	-do-	0.6	0.067 to 0.102	Yes
-	Axial	Evaluative	-do-	0.8	0.35 to 0.50	Yes
<b>(g)</b>	Clearance between king pin and bush, (mm)	Non Evaluative	-do-	0.4	0.083 to 0.197	Yes
<b>(h)</b>	Clearance between centre pin and bush, (mm)	Non Evaluative	-do-	0.5	0.352 to 0.439	Yes



17.1.12 CATEGORY OF BREAKDOWNS / DEFECTS :					
S. No.	Category of breakdowns	Category (Evaluative / Non Evaluative)	Requirements as per IS: 12207-2008	As observed	Whether meets the requirements (Yes/No.)
1.	Critical	Evaluative	No critical breakdown	None	Yes
2.	Major	Evaluative	Not more than two and neither of them should be repetitive in nature	None	Yes
3.	Minor	Evaluative	Not more than five and frequency of each should not be more than two.	Two (Mn 14 & Mn 12)	Yes
4.	Total breakdowns	Evaluative	In no case, the total number of breakdowns should exceed five, that is, (2 major + 3 minor) or 5 minor breakdowns.	None	Yes
17.2 Optional requirements as per Clause-4 (Table-2) of IS:12207-2008:					
S. No.	Characteristic	Requirements as per IS: 12207-2008	As observed	Whether meets the requirements (Yes/No.)	
1	2	3	4	5	
1	Maximum oil pull over, (%)	0.25% (max.)	0.21	Yes	
2.	Seating requirements	Should meet the requirements of IS: 12343-1998	Does not meets the requirements	No	
3.	Fitment of ROPS	With a provision for fitment of ROPS. If ROPS fitted it should meet the requirement of IS: 11821-1992	ROPS not fitted	Not applicable	
4.	Technical requirements for PTO shaft	Should meet the requirements of IS: 4931 -1995	Does not meets the requirements	No	
5.	Dimensions of three point linkage	Should meet the requirements of IS: 4468 (Part-I)-1997	Meets the requirements	Yes	
6.	Specifications of linkage drawbar	Should meet the requirements of IS: 12953-1990.	Not provided	--	
7.	Specification of swinging drawbar	Should meet the requirements of IS: 12362 Part 3-1994.	Provided	Yes	
7.	Accessories	Trailer hitch, front tow hook, linkage drawbar may be provided.			

- 17.3 Conformity with following IS:**
- i) Guidelines for declaration of power and specific fuel consumption and labeling of agricultural tractors (First revision) [IS 10273:1987 (Reaffirmed in March, 2009)] : Conforms
  - ii) Agricultural tractors - Rear mounted power take-off - Types 1, 2 and 3 (third revision) [IS: 4931-1995 (Reaffirmed in March, 2009)] : Does not conform
  - iii) Agricultural wheeled tractors - Rear mounted three-point linkage: Part 1 Categories 1, 2, 3 & 4 (fourth revision) [IS 4468 (Part-I):1997 (Reaffirmed in March, 2007)/ISO 730-1:1994] : Does not conform



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- iv) Drawbar for agricultural tractors – Link type [IS 12953:1990 : Conforms (Reaffirmed in March, 2007)]
- v) Agricultural tractors - Operator's seat technical requirement [IS 12343 –1998 (First revision) (Reaffirmed in March, 2009)] : **Does not conform**
- vi) Guide for safety & comfort of operator of agricultural tractors: Part 1 General requirements (first revision) : [IS 12239 (PT-1)-1996 (Reaffirmed in February,2012)/ISO 4254-1:1989] : **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 March, 2009)] : **Does not conform**
- viii) Tractors and machinery for agriculture and forestry, powered lawn and garden equipment – Symbols for operator controls and other displays [IS: 6283 (Part-1 & Part-2) –2006 & 2007(Reaffirmed in March, 2009)/ ISO 3767-2:1991]] : **Does not conform**
- ix) Guide lines for location and operation of operator controls on agricultural tractors and machinery (first revision) (IS: 8133 – 1983) (Reaffirmed in March, 2009)] : **Does not conform**
- x) Agricultural Tractor & Machinery Lighting device for travel on public roads (IS: 14683-1999) (Reaffirmed in March, 2009)] : Conforms

**17.4 Salient Observations:****17.4.1 Laboratory tests:****17.4.1.1 PTO Performance:**

- i) The backup torque is. **22.5%**.
- ii) The maximum equivalent crankshaft torque was observed as **186.5 Nm** against the declaration of 171.6 Nm, which is on higher side of the tolerance limit of IS: 12207-2008. This should examine.

**17.4.1.2 Drawbar Performance:**

The tyre creeping during 10 hr. test was found as 65 and 120 mm on LHS & RHS tyre respectively. This is on higher side. This should look into.

**17.4.1.3 Hydraulic performance :**

The internal leakage in hydraulic system was observed and therefore, the lift of hydraulic was not hold the load in upward vertical position. 'Ring for hydraulic cylinder 10059580) was found damage. It was replaced with new one.

**17.4.1.4 Mechanical Vibration:**

The amplitude of mechanical vibration especially right foot rest and steering wheel and the various assemblies marked as (\*) in Chapter-9 of this test report is on higher side. This calls for dampening down of vibrations to improve the operational comfort and service life of components.

**17.4.1.5 Three point linkage:**

Diameter of hitch pin hole and lateral distance from lower hitch point to center line of tractor does not meet the requirements of **IS-4468-(Part I)-1997**. This should be looked into

**17.4.1.6 Drawbar linkages**

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



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**17.4.2 Field performance test:****17.4.2.2 Wet land cultivation (Puddling operation):**

No ingress of mud/or water was observed during wetland cultivation. Hence the tractor meets the requirements for wet land cultivation (Puddling operation) as per IS: 11082-1984 and found suitable for wetland cultivation.

**17.5 Haulage test**

The average distance travelled per liter of fuel consumption does not meet the declared value given by manufacturer .This should be looked into.

**17.6 Maintenance / Service Problems:**

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

**17.7 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) The working clearance around draft control lever and position control lever should as per IS: 12239 (Part-2) – 1999.
- iii) The working clearance around draft control lever has been not provided as per the requirement.
- iv) The minimum cautionary notice should be as per clause 11.2 of IS: 12239 (Part-2)-1999.
- v) Vertical retainers are not provided on both sides of clutch and brake pedals.
- vi) Fuel shut-off knob does not remain in "STOP" position without application of sustainable manual effort.
- vii) Provision of protection (safety guard) should be provided to minimize the possibility of in advertent contact with alternator and exhaust manifold.

**17.8 Adequacy of Literature supplied with machine:**

The following literature has been supplied with the tractor

- i) Operator's Manual
- ii) Tractor's part's catalogue
- iii) Service Manual –The initial settings and discard limits for cylinder bore as mentioned in the specification sheet is not specified in Tractor repair manual. This may be mentioned for the guidance of the users.

The provided Operator's manual during testing is found adequate. Service Manual should be provided essentially with inclusion of all specific data and information required for users.


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

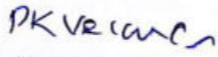


18. CITIZEN CHARTER

Time frame for Testing & Evaluation as per Citizen Charter	Duration of Test	Whether the Test Report is released within the time frame given in Citizen Charter	Remarks
10 Months	5 Months (November, 2012 to March, 2013)	Yes	None

TESTING AUTHORITY:

  
**PRADIPKUMAR C. MESHAM**  
 AGRICULTURAL ENGINEER

  
**P. K. VERMA**  
 SENIOR AGRICULTURAL ENGINEER

  
**C. R. LOHI**  
 DIRECTOR

19. Applicant's Comments

Para No.	Our Reference	Applicant's comments
19.1	17.3(ii), (iii), (v), (vii), (viii), (ix), 17.8(iii)	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.
19.2	17.4.1.1(iii), (17.4.1.2, 17.4.1.3, 17.4.1.5, 17.4.1.6, 17.7	These being studied & corrective action would be taken in near future.
19.3	17.4.1.4	We would be looking into possibility to reduce noise & vibration levels further.



ANNEXURE - I

TRACTOR RUN HOURS DURING TEST

A.	LABORATORY AND TRACK TESTS:	HOURS
1.	Running-in	--
2.	PTO performance test	12.1
3.	Power lift and hydraulic pump performance test	3.09
4.	Drawbar performance test	14.50
5.	Turning ability	0.2
6.	Location of centre of gravity	0.2
7.	Operator's field of vision	--
8.	Brake test	1.41
9.	Noise measurement	1.83
10.	Air Cleaner oil pullover test	3.50
11.	Mechanical vibration test	1.0
12.	Nominal speed test	0.87
<b>B.</b>	<b>FIELD TEST:</b>	11.08
1.	Disc ploughing	10.17
2.	Rotavation	15.17
3.	Wet land (puddling) operation (including water proof test)	9.55
<b>C.</b>	<b>HAULAGE TEST:</b>	7.77
<b>D.</b>	Miscellaneous test and other run hours including idle run, transportation, trials and preparation for test	<b>TOTAL: 92.44</b>