

OECD Approval No. : 2/3 156

Date of approval : 4<sup>th</sup> of July 2019

**Report on test in accordance with  
OECD STANDARD CODE 2  
for the Official Testing of Agricultural and Forestry Tractors**



**Agricultural Tractor Make** : Escorts Limited  
**Model** : FARMTRAC 6050 C 4WD  
**Type** : 4WD (B76R2 - 30 km/h Speed)  
**Manufactured by** : M/s. Escorts Limited,  
Plot No. 2 & 3, Sector – 13  
FARIDABAD (HARYANA) – 121 007,  
INDIA  
**Submitted for test by** : The manufacturer  
**Report No.** : T- 1255/1782/60/OECD/2019  
**Date** : July, 2019

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**GOVERNMENT OF INDIA**  
**Ministry of Agriculture and Farmers Welfare,**  
**(Department of Agriculture, Cooperation and Farmers Welfare)**  
**Mechanization and Technology Division**  
**CENTRAL FARM MACHINERY TRAINING & TESTING INSTITUTE**  
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This is a report on a tractor test in accordance with **OECD STANDARD CODE 2** for the Official Testing of Agricultural and Forestry Tractors.

It does not contain an evaluation of the tractor on practical work.

<b>OECD No.:</b>	<b>2/3 156</b>	<b>Date of approval:</b>	<b>4<sup>th</sup> of July 2019</b>
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In this report unit of all performance characteristics are given corresponding to the International system of units.

The relationship to the Technical System of Units is given by the following conversions:								
Force	1	kN	=	1000	N	=	102	kgf
Power	1	kW	=	1000	W	=	1.36	Ps
Pressure	1	MPa	=	10	bar	=	10.2	kgf/cm <sup>2</sup>
	100	kPa	=	1000	mbar	=	750.1	mm of Hg

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**Statement**

The information opposite each item in the specification portion of this report has been validated by the Testing Station. An item marked [C] indicates to the test report user that the information declared by the manufacturer has been checked whereas an item marked [D] indicates that the manufacturer's declaration has been endorsed.

<b>T- 1255/1782/60/OECD/2019</b>	<b>FARMTRAC 6050 C 4WD TRACTOR</b>
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[C]	Tractor manufacturer's name and address	:	M/s. Escorts Limited, Plot No. 2 & 3, Sector – 13 FARIDABAD (HARYANA) – 121 007, INDIA
[D]	Location of tractor assembly	:	M/s. Escorts Limited, Plant -1,18/4, Mathura Road, FARIDABAD (HARYANA) – 121 007, INDIA
[D]	Submitted for test by	:	The manufacturer
[C]	Selected for test by	:	Testing Authority in the agreement with the manufacturer.
[D]	Place of running-in	:	At manufacture's works
[D]	Duration of running-in:		
	-Engine	:	20 hours
	-Transmission	:	30 hours
[C]	Date of start of test	:	22 <sup>nd</sup> February ,2019
[C]	Location of test	:	Government of India, Central Farm Machinery Training and Testing Institute, P.O.- Tractor Nagar, BUDNI – 466 445 (M.P.), INDIA
[C]	Code version	:	OECD Standard Code 2 (February, 2019)

## 1. SPECIFICATIONS OF TRACTOR

### 1.1 Identification:

#### 1.1.1 Denomination

[C]	Make of tractor	:	Escorts Limited
[C]	Model (trade name)	:	Farmtrac 6050 C
[C]	Type	:	4 WD, Standard Agricultural Tractor

#### 1.1.2 Numbers:

[D]	1 <sup>st</sup> Serial No. or prototype	:	M6SB76R2FBB426319
[C]	Serial No.	:	M6SB76R2EBF436396

#### 1.1.3 Other specification (if applicable):

[D]	Model(s) for other countries	:	Not announced
[C]	Transmission type or gears x ranges	:	Mechanical, Combination of synchromesh & Constant mesh, 8 Forward, 8 Reverse
[C]	Speed version	:	30 km/h
[D]	Manufacturer identification or Technical type no.	:	B76R2

### 1.2 Engine:

[C]	Make	:	Escorts Limited
[C]	Model	:	E3.276C-3A
[C]	Type	:	Four stroke, water cooled, direct injection, diesel engine.
[C]	Serial No.	:	E2441907

<b>1.2.1</b>	<b>Cylinders:</b>		
[C]	Number/disposition	:	Three, vertical, in-line
[D]	Bore/Stroke	:	98 mm / 122 mm
[D]	Capacity	:	2761 cm <sup>3</sup>
[D]	Compression ratio	:	17.5 (±5%) : 1
[D]	Arrangement of valves	:	Overhead
[D]	Cylinder liners	:	Wet, Replaceable
<b>1.2.2</b>	<b>Supercharging:</b>	:	<b>Not applicable</b>
<b>1.2.3</b>	<b>Fuel system:</b>		
[C]	Fuel feed system	:	Gravity and force feed
	<b>Filter(s):</b>		
[D]	Make	:	Bosch, India
[D]	Model	:	9 450 030 120
[D]	Type	:	Spin On
[C]	Number(s)	:	One
[C]	Capacity of fuel tank	:	60.0 dm <sup>3</sup>
	<b>Injection pump:</b>		
[C]	Make	:	Bosch, India
[C]	Model	:	F002A3ZF30, PES3A90D410RS3500
[C]	Type	:	Plunger, in-line
[C]	Serial Number	:	85553063
	<b>Manufacturer's production setting of injection pump:</b>		
[D]	Flow rate (rated engine speed & full load)	:	9.46 ± 0.36 dm <sup>3</sup> /h
[D]	Timing	:	8 ± 1 degree before TDC
	<b>Injectors:</b>		
[C]	Make	:	Bosch, India
[C]	Model	:	F 002 C70 023
[C]	Type	:	Multihole
[D]	Injection pressure	:	25.0 to 25.8 MPa
<b>1.2.4</b>	<b>Governor:</b>		
[C]	Make	:	Bosch, India
[C]	Model	:	RSV375...1000A4C1855L
[C]	Type	:	Mechanical, variable speed
[D]	Governed range of engine speed	:	700 to 2230 rev/min
[C]	Rated engine speed	:	2000 rev/min.
<b>1.2.5</b>	<b>Air cleaner:</b>		
	<b>Pre-cleaner</b>	:	<b>Not available</b>
	<b>Main cleaner:</b>		
[D]	Make	:	Donaldson
[C]	Model	:	Not announced
[C]	Type	:	Dry, paper element
[C]	Location of air intake	:	Forward of radiator, under the bonnet
[C]	Maintenance indicator	:	Warning light on dash board

**1.2.6 Lubrication System:**

[D]	Type of feed pump	:	Gear pump
[D]	Type of filter(s)	:	Full flow, spin-on paper element.
[C]	Number of filter(s)	:	One

**1.2.7 Cooling System:**

[C]	Type of coolant	:	Water (with coolant)
[D]	Type of pump	:	Semi open, centrifugal pump

**Specification of fan:**

[D]	Number of fan blades	:	6
[D]	Fan diameter	:	380 mm
[C]	Total Coolant capacity	:	7.40 dm <sup>3</sup>
[C]	Type of temperature control	:	Thermostat
[C]	Over pressure system	:	49 kPa

**1.2.8 Starting system:**

[D]	Make	:	Auto Lek
[C]	Model	:	STM-1656
[C]	Type	:	Electrical, solenoid operated
[C]	Starter motor power rating	:	3.0 kW
[C]	Cold starting aid	:	Not available
[C]	Safety device	:	Starter will not operate unless the forward -reverse shifter lever is in neutral position.

**1.2.9 Electrical System:**

[C]	Voltage	:	12V
<b>Generator:</b>			
[C]	Make	:	Autolek
[C]	Model	:	ALTN- 5009E
[C]	Type	:	Alternator
[C]	Power	:	0.42 kW @ 6000 rev/min
<b>Battery:</b>			
[C]	Number	:	One
[D]	Rating	:	88 Ah at 20 hours discharge rate

**1.2.10 Exhaust System:**

[D]	Make	:	Farmtrac
[D]	Model	:	D10540140
[C]	Type	:	Up draught, elliptical
[C]	Location	:	On LHS of engine

**1.2.11 Reagent Injection System : Not applicable**

**1.2.12 Diesel Particulate Filter : Not applicable**

**1.3 Transmission:****1.3.1 Clutch (Travel alone):**

[D]	Make	:	Valeo
[D]	Model	:	Not announced
[D]	Type	:	Dual , Dry (for travel & PTO)
[D]	Number of plate(s)	:	Two
[D]	Diameter of plate(s)	:	280 mm (for both travel and PTO)
[C]	Method of operation:		
	- Travel	:	By pressing the clutch pedal fully, on LHS
	- PTO	:	By a hand lever provided on LHS of operator's seat.

**1.3.2 Gear Box:**

[D]	Make	:	Carraro
[D]	Model	:	Not Announced
[D]	Type	:	Mechanical, Combination of synchromesh & Constant mesh

	Description:	Forward	Reverse
[C]	Number of gears	4	4
[C]	Number of ranges	2 ('L' & 'H')	2 ('L' & 'H')
[C]	Total of arrangements	8	8

'L' = LOW; 'H' = HIGH

[D]	Available options	:	None
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**1.3.3 Rear axle and final drives:**

[D]	Make	:	Carraro
[D]	Model	:	Not announced
[D]	Type	:	Crown wheel & pinion

**Differential lock:**

[D]	Type	:	Dog clutch
[C]	Method of engagement	:	By depressing a pedal, on RHS
[C]	Method of disengagement	:	By releasing the above pedal

**1.3.4 Front axle:****Front axle and final drives:**

[D]	Make	:	DANA
[D]	Model	:	P47
[D]	Type	:	Non-adjustable
	- Differential lock	:	<b>None</b>

**1.3.5 Total ratios and traveling speeds:**

	Movement	GEAR	RANGE	Number of engine revolutions for one revolution of the driving wheels	Nominal traveling speed (*) at rated engine speed of <b>2000</b> rev/min, (km/h)
[C]	Forward	1	L	175.62	2.75
[C]		2	L	120.12	4.02
[C]		3	L	81.92	5.88
[C]		4	L	56.85	8.50
[C]		1	H	47.86	10.07
[C]		2	H	32.70	14.74
[C]		3	H	22.31	21.64
[C]		4	H	15.49	31.11
[C]	Reverse	1	L	176.12	2.74
[C]		2	L	120.27	4.01
[C]		3	L	81.94	5.89
[C]		4	L	56.99	8.47
[C]		1	H	48.01	10.04
[C]		2	H	32.78	14.72
[C]		3	H	22.37	21.59
[C]		4	H	15.54	31.08

'L' = LOW; 'H' = HIGH

\* Calculated with a tyre dynamic radius index of 640 mm (ISO: 4251-1:2017)

[C] Number of revolutions of front wheels for one revolution of rear wheels : 1.603

**1.4 Power take-off:****1.4.1. Main Power Take-Off:**

[C] Type : Independent  
 [C] Method of engagement : By a separate PTO clutch lever  
 [C] Number of shafts : One  
 [C] Method of changing power take-off shaft ends and speeds : Not available

**1.4.1.1 Power take-off proportional to engine speed:**

	<b><u>Power take-off at</u></b>	:	<b><u>540 (rev/min)</u></b>		<b><u>540 E (rev/min)</u></b>
[C]	- Location	:	At rear of tractor		At rear of tractor
[C]	- Diameter of power take-off shaft end	:	34.80 mm		34.80 mm
[C]	- Number of splines	:	6, not in conformity with ISO:500– 3 : 2014		6, not in conformity with ISO:500– 3 :2014
[C]	- Height above ground	:	630 mm		630 mm
[C]	- Distance from the median plane of the tractor	:	0 mm		0 mm



[C]	- Distance behind rear-wheel axis	:	370 mm	370 mm
[C]	- PTO speed at rated engine speed	:	625 rev/min	864 rev/min
[C]	- Engine speed at standard power take-off speed	:	1728 rev/min	1250 rev/min
[C]	- Ratio of rotation speeds (Engine speed/ PTO speed)	:	3.200 : 1	2.316 : 1
[D]	- Power restriction	:	<b>None</b>	<b>None</b>
[D]	Maximum torque transmissible	:	610 Nm	610 Nm
[C]	Direction of rotation (viewed from rear of tractor)	:	Clockwise	Clockwise

1.4.1.2 **Power take-off proportional to ground speed** : **None**

1.4.2 **Optional power take-off** : **None**

### 1.5 **Hydraulic power-lift:**

[D]	Make	:	MITA
[D]	Model	:	Not Announced
[D]	Type of hydraulic system	:	Open centre, live
[D]	Type and number of cylinders	:	Single acting, one
[C]	Type of linkage lock for transport	:	Hydraulic
[D]	Relief valve pressure setting (tolerance)	:	18.63 ± 0.98 MPa
[D]	Opening pressure of cylinder safety valve	:	22.5 MPa
[D]	Lift pump type	:	Gear type
[D]	Transmission between pump and engine	:	Gear drive
[D]	Number and Type of filter(s)	:	One, Spin on type
[D]	Site of oil reservoir	:	Differential housing
[C]	<b>Type, number and location of tapping points:</b>		
[D]	- Type	:	Quick coupling
[C]	- Number	:	Two
[C]	- Location	:	Behind the operator's seat
[C]	- Maximum volume of oil available to external cylinders	:	25 dm <sup>3</sup>

### 1.6 **Three point linkage:**

[C]	Category	:	1 (Not in conformity with category 1 of ISO 730:2009/Amd.1:2014)
[C]	Category adapter	:	None

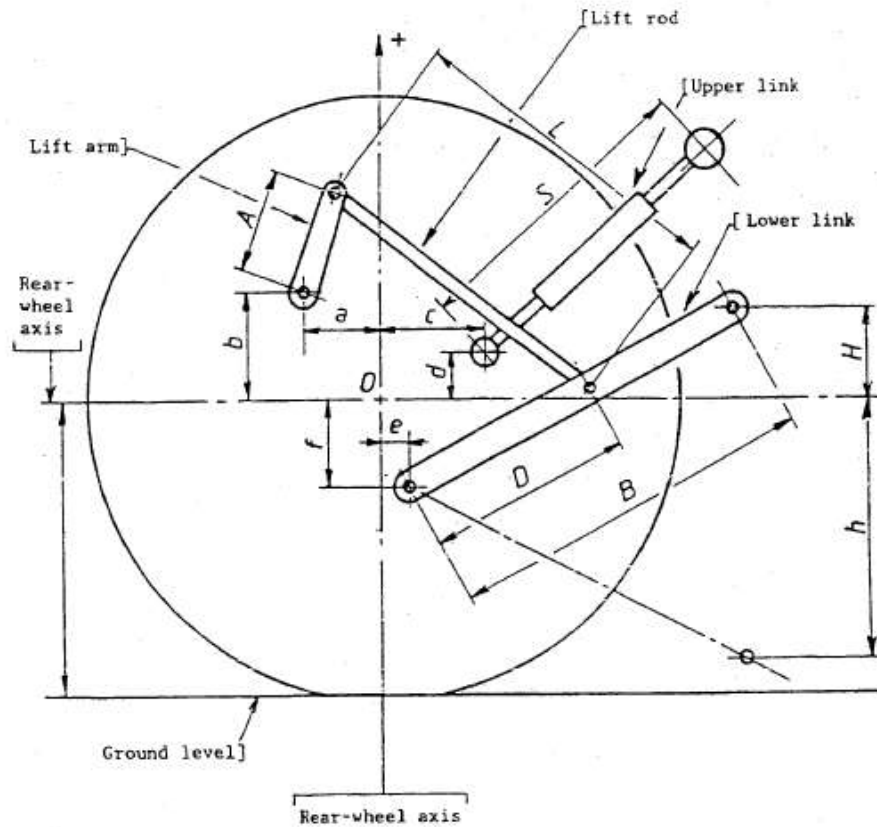


Fig. 1.1

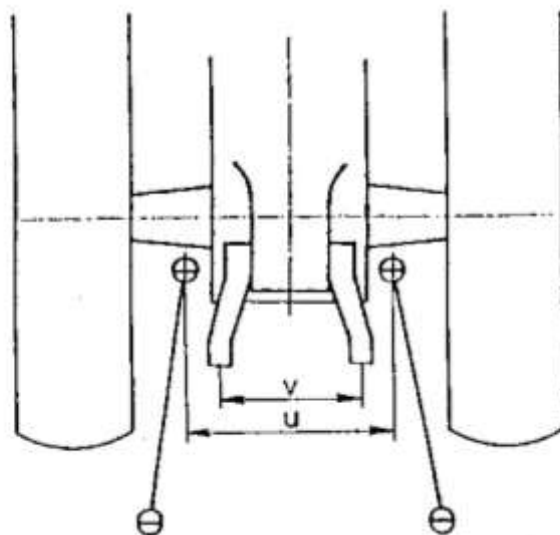


Fig. 1.2

Table: Linkage Geometry dimensions (Ref. fig. 1.1 & 1.2):

			Dimension or range, (mm)	Settings used during test, (mm)
[C]	Length of lift arms:	(A)	240	240
[C]	Length of lower links:	(B)	790	790
	Distance of lift arm pivot point from rear-wheel axis:			
[C]	- Horizontally	(a)	155	155
[C]	- Vertically	(b)	265	265
[C]	Horizontal distance between the 2 lower link points:	(u)	340	340
[C]	Horizontal distance between the 2 lift arm end points:	(v)	490	490
[C]	Length of upper link:	(S)	525 to 765	665
	Distance of upper link pivot point from rear wheel axis:			
[C]	- Horizontally	(c)	300, 315, 330	300
[C]	- Vertically	(d)	245, 275 & 345	275
	Distance of lower link pivot point from rear wheel axis:			
[C]	- Horizontally	(e)	140, Behind	140, Behind
[C]	- Vertically	(f)	160	160
[C]	Distance of lower link pivot points to lift rod pivot points on lower links:	(D)	325, 380 & 480	325
[C]	Length of lift rods:	(L)	370 to 555	425
	Height of lower hitch points relative to the rear-wheel axis:			
[C]	- in low position	(h)	- 605 to - 85	- 440
[C]	- in high position	(H)	45 to 295	185
[C]	Height above ground of lower hitch points when locked in transport position (*)	--	Any height within lift range	

(\*) Assuming  $r = 640$  mm, tyre dynamic radius index of ISO: 4251-1:2017(E) (pneumatic tyred tractors only).

**1.7 Swinging drawbar : None**

**1.8 Trailer hitch:**

- [C] - Type : Clevis
- [C] - Hole diameter : 33 mm
- [C] - Height above ground : 520 to 715 mm
- [C] - Distance of hitch point from rear-wheel axis, horizontally : 495 mm
- Distance of hitch point from power take-off shaft end:
- [C] - Vertically : 85 mm
- [C] - Horizontally : 125 mm
- [D] - Maximum vertical permissible load : 4.7 KN

**1.9 Holed drawbar:**

[C]	Number of holes	:	7
[C]	Distance between holes	:	79.5 mm
[C]	Hole diameter	:	24.9 mm
[C]	Thickness / Width of drawbar	:	30.2 mm / 75.3 mm
[C]	Height above ground:		
	- Minimum	:	35 mm
	- Maximum	:	935 mm
[C]	Horizontal distance to power take-off shaft end (rear)	:	560 mm

**1.10 Steering:**

[D]	Make	:	Danfoss
[D]	Model	:	Not announced
[C]	Type	:	Hydrostatic, open center
[C]	Method of operation	:	Manual, through steering control wheel
[C]	Pump(s)	:	Rexroth
[D]	Ram(s)	:	Reciprocating
[D]	Working pressure, MPa	:	9.41 ± 0.49

**1.11 Brakes:****1.11.1 Service brake:**

[D]	Make	:	M/s. BIL
[D]	Model	:	Not announced
[D]	Type	:	Oil immersed disc brake
[C]	Method of operation	:	Mechanical, Independent or coupled pedal operation
[C]	Trailer braking take-off (hydraulic or air brake)	:	None

**1.11.2 Parking brake:**

[C]	Type	:	Pawl and ratchet
[C]	Method of operation	:	Manual, by a hand lever

**1.12 Wheels:**

	Number		
[C]	Front	:	Two (driving & steering )
[C]	Rear	:	Two (driving)
[C]	Wheel base	:	1885 mm

**Track width adjustment:**

		Minimum [mm]	Maximum [mm]	Adjustment method
[C]	Front	1200	1550	Reversing wheels and offset lug rims
[C]	Rear	1340	1530	Reversing wheels and offset lug rims

**1.13 Protective structure:**

[D]	Make	:	Escorts Limited
[D]	Model	:	Two post foldable

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- [D] Type : Rear roll bar  
 [D] Manufacturers name and address : M/s. Escorts Limited,  
 Plant 1, 18/4, Mathura Road,  
 FARIDABAD (HARYANA) – 121 007,  
 INDIA  
 [D] Protective device : Roll  
 [D] Tilttable / not tilttable : Tilttable  
**OECD approval:**  
 [D] Approval number : Not applicable  
 [D] Date of approval : Not applicable  
 [D] Number of minor modification : Not applicable  
 certificates, if any

**1.14 Seat:**

**1.14.1 Driver's seat:**

- [C] Make : Pilot  
 [D] Model : Not announced  
 [C] Type : Cushioned  
 [C] Seat and steering wheel reversible : No  
 [C] Type of suspension : Two helical coil springs  
 [C] Type of dampening : Hydraulic shock absorber

**Range of adjustment:**

- [C] Longitudinally : ± 80 mm  
 [C] Vertically : ± 30 mm  
 [C] Safety belt : Retractable seat belt (Push button style)

**1.14.2 Optional driver's seat(s)** : Not provided

**1.14.3 Passenger seat** : Not provided

**1.15 Lighting:**

		Height of centre above ground	Size	Distance from outside edge of lights to median plane of tractor
		[mm]	[mm]	[mm]
[C]	Head lights	1100	60 Φ	185
[C]	Side lights	1335	85 x 80	825
[C]	Rear lights	1320	85 x 80	780
[C]	Reflectors	1320	50 x 75	722

**2. TEST CONDITIONS**

<b>2.1</b>	<b>Overall dimensions (unballasted tractor):</b>			
Length [mm]	Width		Height at top of	
	Minimum [mm]	Maximum [mm]	Protective Structure [mm]	Exhaust pipe [mm]
3245	1810	1900	2455	2380

- 2.2** Ground clearance (unballasted tractor) : 400 mm  
 Clearance – limiting part : Below steering tie rod

**2.3 Tractor Mass:**

		Unballasted	
		Without driver	With driver
		[kg]	[kg]
Front	820	820	
Rear	1315	1390	
Total	2135	2210	

**2.4 Tyres and track width specifications:**

Tyres		Front	Rear
- Dimensions		8.3-20	14.9 – 28
- Ply rating		6	12
- Type		Pneumatic, diagonal	Pneumatic, diagonal
- Maximum load (tyre manufacturer's)	kN	6.57	22.55
- Maximum load (tractor manufacturer's)	kN	6.57	22.55
- Inflation pressure (tyre manufacturer's)	kPa	210	110
- Dynamic radius index	mm	420	640
- Chosen track width	mm	1550	1430

**2.5 Fuel:**

Type : High speed diesel conforming to IS:1460-2005  
 Density at 15 °C : 0.836 g/cm<sup>3</sup>

**2.6 Oils and lubricants:****2.6.1 Capacity and change interval:**

	Capacity, ( dm <sup>3</sup> )	Oil change, ( h )	Filter change, ( h )
Engine oil sump	5.5	First change after 50 hours of operation and subsequently after every 250 hours of operation.	First change after 50 hours of operation and subsequently after every 250 hours of operation.
Gear box, rear axle, rear final drive, hydraulic and service brakes	25.0	After every 1200 hours of operation.	Not applicable
Front axle	6.0	After every 1200 hours of operation.	Not applicable
Steering housing	0.8	First change after 200 hours of operation and subsequently after every 1200 hours of operation.	Not applicable

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### 2.6.2 Specifications:

	Recommended	Used during test
<b>Engine:</b>		
Type	SERVO ULTRA 40(E)	As recommended
Viscosity	146.28 cSt at 40°C 14.15 cSt at 100 °C	
Classification	API CI-4 Plus/SL	
<b>Transmission, Service brake, Rear axle and final drive (rear) oil:</b>		
Type	Universal Tractor Transmission Oil	As recommended
Viscosity	96.7 (Typ) at 40°C 10.5-12.5 at 100 °C	
Classification	SAE 20W30	
<b>Hydraulic fluid:</b>		
Type	Universal Tractor Transmission Oil	As recommended
Viscosity index (ISO 3448: 1992+corr 1: 1993)	90.0 (Typ) at 40°C 11-12 at 100 °C	
Viscosity at 65 °C	31.55 cSt	
<b>Front axle (centre Beam) oil:</b>		
Type	Universal Tractor Transmission Oil	As recommended
Viscosity	90.0 (Typ) at 40°C 11-12 at 100 °C	
Classification	API GL-4	
<b>Front Axle and final drive:</b>		
Type	Synthetic gear oil	As recommended
Viscosity	90.0 (Typ) at 40°C 14-17 at 100 °C	
Classification	API GL-5	
<b>Steering oil :</b>		
Type	Trasfluid III	As recommended
Viscosity	47.64 cSt at 100°C 8.89 cSt at 100°C	
Classification	Dextron III (H)	

### 2.6.3 Grease:

Number of lubricating points:

Grease nipples : 07 Nos.  
Grease cups : Not available

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### 3. COMPULSORY TESTS RESULTS

#### 3.1 Main power take-off test:

Date and location of tests : 25.03.2019, CFMTTI, BUDNI (M.P.), India  
Type of dynamometer bench : FUCHINO ESF 1000 S, Eddy current

Power, (kW)	Speed			Fuel consumption			Specific Energy, (kWh/l)
	Engine	PTO	Fan	Hourly		Specific	
	(rev/min)			(kg/h)	(l/h)	(g/kWh)	
1	2	3	4	5	6	7	8
<b>3.1.1 Maximum Power – One-Hour Test:</b>							
30.1	2000	625	2658	7.91	9.46	263	3.18
<b>3.1.2 Power at Rated Engine Speed (2000 rev/min) :</b>							
30.1	2000	625	2658	7.91	9.46	263	3.18
<b>3.1.3 Standard Power Take-Off Speed [540 ± 10 (rev/min)] :</b>							
28.0	1728	540	2297	6.90	8.25	247	3.39
<b>3.1.4 Part Loads:</b>							
<b>3.1.4.1 The torque corresponding to maximum power at rated engine speed :</b>							
30.1	2000	625	2658	7.91	9.46	263	3.18
<b>3.1.4.2 85 % of torque obtained in 3.1.4.1 :</b>							
26.8	2090	653	2778	7.13	8.53	266	3.14
<b>3.1.4.3 75 % of torque defined in 3.1.4.2 :</b>							
20.3	2118	662	2815	5.69	6.81	280	2.98
<b>3.1.4.4 50 % of torque defined in 3.1.4.2 :</b>							
13.8	2141	669	2845	4.27	5.11	309	2.70
<b>3.1.4.5 25 % of torque defined in 3.1.4.2 :</b>							
6.9	2163	676	2875	3.19	3.82	462	1.81
<b>3.1.4.6 Unloaded :</b>							
1.2	2186	683	2905	2.29	2.74	1908	0.44
<b>3.1.5 Part Loads at Standard Power Take-Off Speed [540± 10 (rev/min)] :</b>							
<b>3.1.5.1 The torque corresponding to maximum power :</b>							
28.0	1728	540	2297	6.90	8.25	247	3.39
<b>3.1.5.2 85 % of torque obtained in 3.1.5.1 :</b>							
25.3	1843	576	2449	6.35	7.60	251	3.33
<b>3.1.5.3 75 % of torque defined in 3.1.5.2 :</b>							
19.0	1846	577	2453	4.90	5.86	258	3.24
<b>3.1.5.4 50 % of torque defined in 3.1.5.2 :</b>							
12.7	1850	578	2459	3.82	4.57	300	2.78



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1	2	3	4	5	6	7	8
<b>3.1.5.5 25 % of torque defined in 3.1.5.2 :</b>							
6.7	1850	578	2459	2.64	3.16	394	2.12
<b>3.1.5.6 Unloaded :</b>							
1.0	1853	579	2463	1.78	2.13	1780	0.47
<b>3.1.6 PART LOADS AT DIFFERENT ENGINE SPEEDS</b>							
<b>3.1.6.1 Maximum power at rated engine speed:</b>							
30.1	2000	625	2658	7.91	9.46	263	3.18
<b>3.1.6.2 80% of power obtained in 3.1.6.1 at max. speed setting :</b>							
24.0	2102	657	2794	6.47	7.74	270	3.10
<b>3.1.6.3 80% of power obtained in 3.1.6.1 with governor control set to 90% of rated engine speed :</b>							
24.0	1802	563	2395	5.94	7.11	248	3.38
<b>3.1.6.4 40% of power obtained in 3.1.6.1 with governor control set to 90% of rated engine speed :</b>							
12.0	1802	563	2395	3.55	4.25	296	2.82
<b>3.1.6.5 60% of power obtained in 3.1.6.1 with governor control set to 60% of rated engine speed :</b>							
18.0	1200	375	1595	4.09	4.89	227	3.68
<b>3.1.6.6 40% of power obtained in 3.1.6.1 with governor control set to 60% of rated engine speed :</b>							
12.0	1200	375	1595	2.86	3.42	238	3.51

No load maximum engine speed : 2186 rev/min

Torque (equivalent crankshaft) at maximum power:

-At rated engine speed : 143.56 Nm

-At one hour test : 143.56 Nm

Maximum torque (equivalent crankshaft) (Engine speed: 950 rev/min) : 177.95 Nm

**Mean atmospheric conditions:**

-Temperature : 23 °C

-Pressure : 98.0 kPa

-Relative humidity : 30.0 %

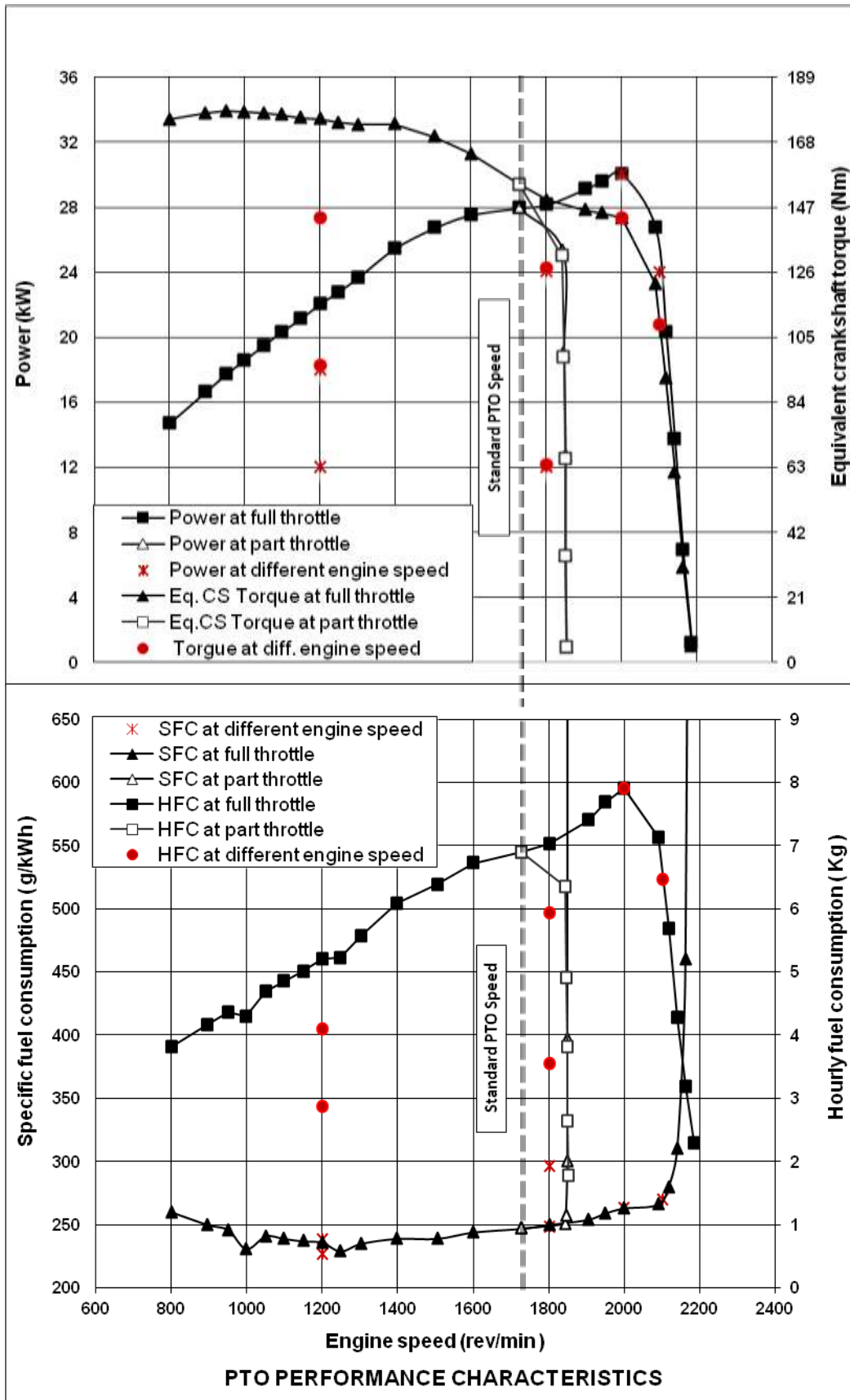
**Maximum temperatures:**

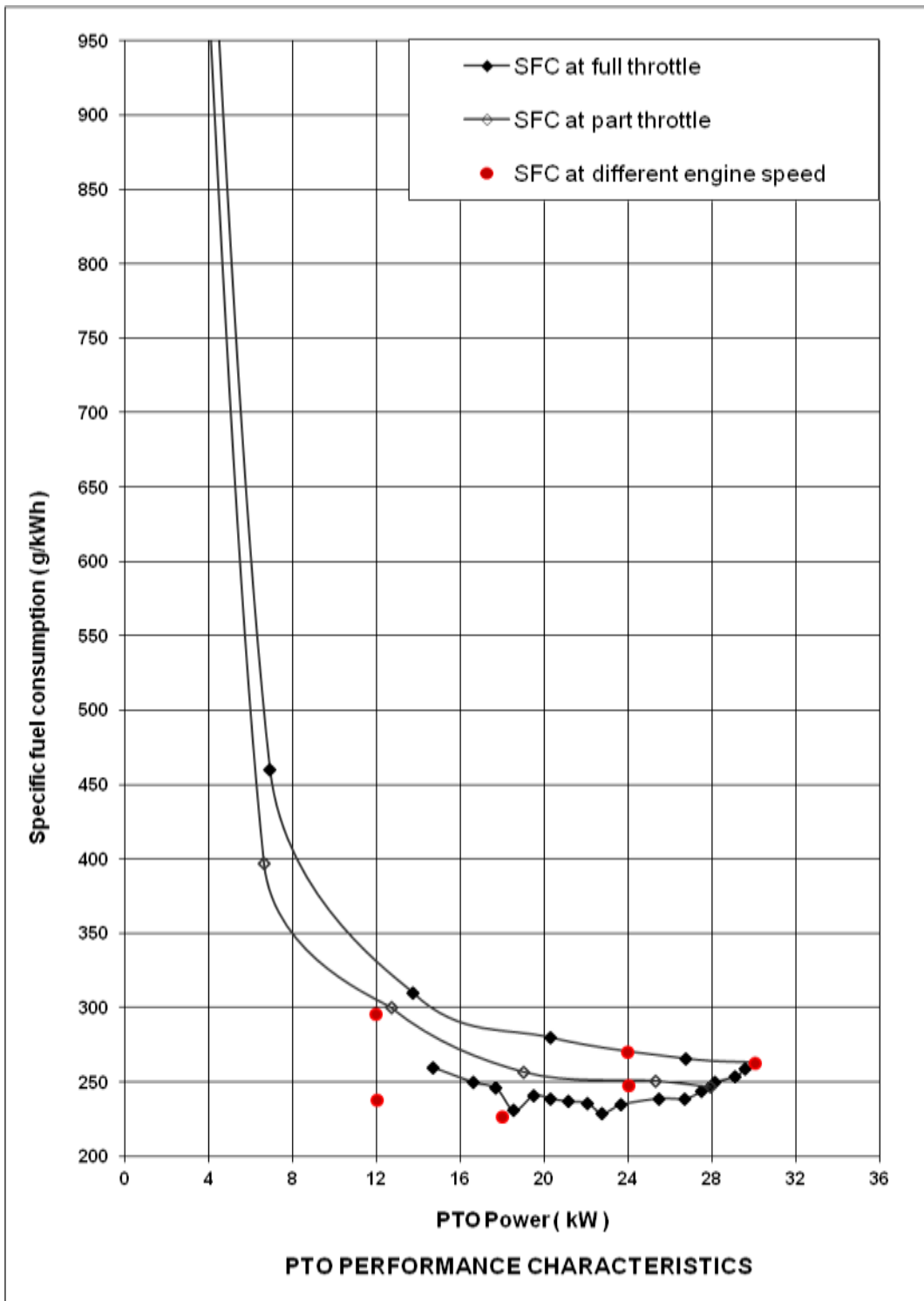
-Coolant : 83 °C

-Engine oil : 100 °C

-Fuel : 42 °C

-Engine air intake : 28 °C





**3.2.1 Hydraulic Power and Lifting force Test:**

Date of tests : 24.04.2019

**3.2.1.1 Hydraulic Fluid Data:**

- Hydraulic fluid type : Universal Tractor Transmission Oil  
 Viscosity index (ISO 3448: 1992+corr 1: 1993) : 90.0 (Typ) at 40°C  
 : 11-12 at 100 °C  
 Viscosity at 65 °C : 31.55 cSt

**3.2.1.2 Compulsory Reporting (Test Results):**

1	2	Press- ure, (MPa)	Reservoir oil Temp. °C		Engine speed, (rev/min)	Flow rate, (l/min)	Power, (kW)
			(min.)	(max.)			
3	4	5	6	7	8		
1.	Rated Engine speed (Manufacturer's specification)	--	--	--	2000	--	--
2.	Maximum (sustained) pressure with relief valve open as measured at the coupler. Pump stalled- No	19.5	60	65	2141	0.0	0.0
3.	Flow rate corresponding to a hydraulic pressure equivalent to 90% of the actual relief valve pressure setting and corresponding hydraulic power.	17.6	64		2144	35.1	10.3
4.	Maximum available flow and maximum power from one coupler pair	18.0	64		2144	34.7	10.4
5.	Maximum available flow and maximum power from coupler pairs operating simultaneously (flow through two or in over coupler pair if required)	Not applicable	Not applicable		Not applicable	Not applicable	Not applicable

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### 3.2.2 Power Lift Test:

-Linkage settings for test - See Table at Page 10, and Fig. 1.1 & 1.2

	At hitch point	On the frame
Height of lower hitch points above ground in down position	200 mm	200 mm
Vertical movement:		
- Without lifting force	625 mm	625 mm
- With lifting force	605 mm	590 mm
Maximum corrected force exerted through full range	13.70 kN	9.51 kN
Corresponding pressure of hydraulic fluid	17.6 MPa	17.6 MPa
Moment about rear wheel axle	12.74 kNm	14.65 kNm
Maximum tilt angle of mast from vertical	--	15 degree

Lifting height relative to the horizontal plane including the lower link pivot points:									
mm	-240	-200	-100	0	+100	+200	+250	+350	+365
Lifting forces (the values of the force measured have been corrected to correspond to a hydraulic pressure equivalent to 90% of actual relief valve pressure setting of the hydraulic lift system.)									
At the hitch point in (kN)	13.61	14.21	14.58	14.70	14.61	14.36	14.18	13.77	13.70
Corresponding pressure 17.6 MPa:									
At the frame in (kN)	11.76	12.04	11.95	12.02	11.52	10.80	10.46	9.51	--
Corresponding pressure 17.6 MPa									

### 3.3 Drawbar power and fuel consumption test (unballasted tractor):

Date(s) of tests : 09.04.2019

Type of track : Concrete

Height of drawbar above ground, (mm)	Tyre inflation pressure	
	Front	Rear
	[kPa]	[kPa]
550	210	110

## DRAWBAR TEST RESULTS

Gear Number & Range	Draw-bar power	Draw-bar pull	Speed	Engine speed	Fan speed	Slip of wheels	Specific fuel consumption	Specific Energy	Temperature			Atmospheric conditions		
									Fuel	Coolant	Engine oil	Temperature	R.H.	Pressure
	(kW)	(kN)	(km/h)	(rev/Min)	(rev/Min)	(%)	(g/kWh)	(kWh/l)	(°C)	(°C)	(°C)	(°C)	(%)	(kPa)
<b>3.3.1 Maximum Power in tested Gears:</b>														
1L	13.8	19.54	2.54	2119	2816	15.3	398	2.10	42	78	104	28	27	98.6
2L	19.0	18.52	3.69	2093	2782	15.1	382	2.19	41	88	108	27	30	98.6
3L	22.7	14.34	5.70	2003	2662	6.3	346	2.42	37	80	105	24	38	98.6
4L	23.0	9.76	8.48	2000	2658	3.4	337	2.48	44	86	99	33	27	98.6
1H	22.3	7.90	10.15	2000	2658	2.4	357	2.34	36	81	96	22	29	98.5

**Remark:** Maximum power in the gear '2H' was not measured because forward speed in this gear exceeded the safety limit of testing equipment.

Gear Number & Range	Draw-bar power	Draw-bar pull	Speed	Engine speed	Fan speed	Slip of wheels	Specific fuel consumption	Specific Energy	Temperature			Atmospheric conditions		
									Fuel	Coolant	Engine oil	Temperature	R.H.	Pressure
	(kW)	(kN)	(km/h)	(rev/Min)	(rev/Min)	(%)	(g/kWh)	(kWh/l)	(°C)	(°C)	(°C)	(°C)	(%)	(kPa)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
<b>3.3.2 Fuel Consumption:</b>														
<b>3.3.2.1 In selected gear / speed setting nearest 7.5 km/h, at maximum power at rated engine speed:</b>														
4L	23.0	9.76	8.48	2000	2658	3.4	337	2.48	44	86	99	33	27	98.6
<b>3.3.2.1.1 75% of pull corresponding to maximum power at rated engine speed:</b>														
4L	18.3	7.32	8.98	2096	2786	2.4	369	2.26	44	87	109	32	23	98.6
<b>3.3.2.1.2 50% of pull corresponding to maximum power at rated engine speed:</b>														
4L	12.5	4.88	9.23	2120	2818	0.8	425	1.97	46	87	110	33	22	98.6
<b>3.3.2.1.3 Higher gear / speed setting at reduced engine speed: Same pull and traveling speed as in 3.3.2.1.1:</b>														
1H	18.3	7.32	8.98	1762	2342	2.0	327	2.56	46	87	109	32	22	98.6
<b>3.3.2.1.4 Same gear / speed selection as 3.3.2.1.3 at reduced engine speed: Same pull and traveling speed as in 3.3.2.1.2:</b>														
1H	12.5	4.88	9.24	1787	2375	0.6	362	2.31	47	86	109	32	22	98.6
<b>3.3.2.2 In selected gear/speed nearest between 7 km/h and 10 km/h at rated engine speed:</b>														
1H	22.3	7.90	10.15	2000	2658	2.4	357	2.34	36	81	96	22	29	98.5
<b>3.3.2.2.1 75% of pull corresponding to maximum power at rated engine speed:</b>														
1H	17.7	5.93	10.72	2094	2783	1.5	369	2.27	47	88	111	33	22	98.6
<b>3.3.2.2.2 50% of pull corresponding to maximum power at rated engine speed:</b>														
1H	12.1	3.96	10.99	2123	2822	0.4	409	2.04	48	86	109	33	21	98.6
<b>3.3.2.2.3 Higher gear / speed setting at reduced engine speed: Same pull and traveling speed as in 3.3.2.2.1:</b>														
2H	17.7	5.93	10.74	1427	1897	1.1	314	2.66	48	87	109	33	21	98.6
<b>3.3.2.2.4 Same gear / speed selection as 3.3.2.2.3 at reduced engine speed: Same pull and traveling speed as in 3.3.2.2.2:</b>														
2H	12.1	3.95	11.02	1452	1930	0.3	347	2.41	50	80	103	34	19	98.5

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#### 4. OPTIONAL TESTS RESULTS

##### 4.1 Waterproofing test:

Date of tests : 01.04.2019  
 Water level from ground to top : 400  
 Gear number : 4L

##### Test result:

Parts	Checking method (describe in accordance with test procedures)	Result (Pass/Fail/Not Applied for)
Wheel axles	Visual Method	Pass
Engine sump, Transmission, Brake assembly & Hydraulic System	Visual Method	Pass
Clutch housing	Visual Method	Pass

**Statement** : The tractor is a waterproof tractor in accordance with the code.

#### 5. REPAIR AND ADJUSTMENTS PRIOR TO TESTS

Sl. No.	Particular	Hours of run
	-- None--	

#### 6. REMARKS

-- None--
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TEST CARRIED OUT AT C.F.M.T. & T.I., BUDNI (M.P.), INDIA

TESTING AUTHORITY



**C.S. RAGHUWANSHI**  
 AGRICULTURAL ENGINEER



**Y.K RAO**  
 SENIOR AGRICULTURAL ENGINEER



**J. J. R. NARWARE**  
 DIRECTOR

Test report compiled by **Shri. Vithato Keyho**, Senior Technical Assistant.