

OECD Approval No. : 2/3 149  
Date of approval : 22<sup>nd</sup> of May 2019

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



**Agricultural Tractor Make** : TAFE  
**Model** : TAFE 6530 4WD  
**Type** : 4 WD (MEA51F49< 30 km/h Speed)  
**Manufactured by** : M/s. Tractors and Farm Equipment Limited, P.O.  
Box No.3302, 77 (Old 35), Mahatma Gandhi Road,  
Nungambakkam, CHENNAI - 600 034,  
(TAMIL NADU), INDIA.  
**Submitted for test by** : The manufacturer  
**Report No.** : T-1243/1770/57/OECD/2019  
**Date** : May, 2019

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**GOVERNMENT OF INDIA**  
**MINISTRY OF AGRICULTURE AND FARMERS WELFARE**  
(DEPARTMENT OF AGRICULTURE, CO-OPERATION 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>2/3 149</b>	<b>Date of approval:</b>	<b>22<sup>nd</sup> of May 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	metric horsepower
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.

T-1243/1770/57/OECD/2019	<b>TAFE 6530 4WD TRACTOR</b>
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[C]	Tractor manufacturer's name and address	:	M/s. Tractors and Farm Equipment Limited, P.O. Box No.3302, 77 (Old 35), Mahatma Gandhi Road, Nungambakkam, Chennai - 600 034, (Tamil Nadu) India.
[D]	Location of tractor assembly	:	<b>(i)</b> M/s. Tractors and Farm Equipment Limited, 10/205, Kalladipatti (P.O) 624 201, Dindigul District, (Tamil Nadu) India. <b>(ii)</b> M/s. Tractors and Farm Equipment Limited, Doddaballapur Plant, Plot No. 1, Kiadb Industrial area, Doddaballapur, Bangalore -561 203 (Karnataka), 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	:	12
	-Transmission	:	16
[C]	Date of start of test	:	09 <sup>th</sup> October, 2018
[C]	Location of test	:	Government of India, Central Farm Machinery Training and Testing Institute, P.O. - Tractor Nagar, BUDNI – 466445 (M.P.), INDIA
[C]	Code version	:	OECD Standard Code 2 (February, 2018)

## 1. SPECIFICATIONS OF TRACTOR

### 1.1 Identification:

#### 1.1.1 Denomination

[C]	Make of tractor	:	TAFE
[C]	Model (trade name)	:	TAFE 6530 4WD
[C]	Type	:	4 WD, Standard Agricultural Tractor

#### 1.1.2 Numbers:

[D]	1 <sup>st</sup> Serial No. or prototype	:	MEA51F49YH1137168
[C]	Serial No.	:	MEA51F491Y1136968

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

[D]	Model(s) for other countries	:	Not announced
[C]	Transmission type or gears x ranges	:	Mechanical, sliding mesh gearbox with epicyclic reduction unit for high -low range selection. 8 Forward, 2 Reverse gears

[C]	Speed version	:	<30 km/h
[D]	Manufacturer identification or Technical type no.	:	MEA51F49
<b>1.2</b>	<b>Engine:</b>		
[C]	Make	:	SIMPSON & Co.Ltd.
[C]	Model	:	SJ 436 E
[C]	Type	:	Four stroke, naturally aspirated, water cooled, direct injection, diesel engine
[C]	Serial No.	:	SJ436E-20096
<b>1.2.1</b>	<b>Cylinders:</b>		
[C]	Number/disposition	:	Four, vertical, in-line
[D]	Bore/Stroke	:	95 mm / 127 mm
[D]	Capacity	:	3600 cm <sup>3</sup>
[D]	Compression ratio	:	18.3 : 1
[D]	Arrangement of valves	:	Overhead
[D]	Cylinder liners	:	Dry type
<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>		
[C]	Make	:	Bosch
[D]	Model	:	F 002 H20 138
[C]	Type	:	Primary and secondary- paper element
[C]	Number(s)	:	Two
[C]	Capacity of fuel tank	:	60 dm <sup>3</sup>
	<b>Injection pump:</b>		
[C]	Make	:	Bosch, India
[C]	Model	:	0460 424 400, VE4/12F1150L1098
[C]	Type	:	Rotary
[C]	Serial Number	:	66017432
	<b>Manufacturer's production setting of injection pump:</b>		
[D]	Flow rate (rated engine speed & full load)	:	11.35 to 11.75 dm <sup>3</sup>
[D]	Timing	:	0.66 ± 1° BTDC
	<b>Injectors:</b>		
[C]	Make	:	Bosch
[C]	Model	:	F 002 C80 018
[C]	Type	:	Multi hole (six holes)
[C]	Injection pressure	:	25.0 + 0.8 MPa
<b>1.2.4</b>	<b>Governor:</b>	:	In-built with Fuel Injection Pump
[D]	Governed range of engine speed	:	750 to 2530 rev/min
[C]	Rated engine speed	:	2300 rev/min.

<b>1.2.5</b>	<b>Air cleaner:</b>		
	<b>Pre-cleaner</b>	:	<b>Not available</b>
	<b>Main cleaner:</b>		
[C]	Make	:	Donaldson
[D]	Model	:	FP-G070018
[C]	Type	:	Dry, paper element
[C]	Location	:	In front of radiator, under the bonnet
[C]	Maintenance indicator	:	Warning light on dashboard
<b>1.2.6</b>	<b>Lubrication System:</b>		
[D]	Type of feed pump	:	Rotary (lobe), pump
[C]	Type of filter(s)	:	Full flow, spin-on paper element.
[C]	Number of filter(s)	:	One
<b>1.2.7</b>	<b>Cooling System:</b>		
[C]	Type of coolant	:	Water (with coolant)
[D]	Type of pump	:	Centrifugal pump
	<b>Specification of fan:</b>		
[D]	Number of fan blades	:	06
[D]	Fan diameter	:	394 mm
[C]	Total Coolant capacity	:	12.5 dm <sup>3</sup>
[D]	Type of temperature control	:	Thermostat
[D]	Over pressure system	:	88 kPa
<b>1.2.8</b>	<b>Starting system:</b>		
[D]	Make	:	Lucas-TVS
[D]	Model	:	3SM114
[D]	Type	:	Electrical, solenoid operated.
[D]	Starter motor power rating	:	2.2 kW
[D]	Cold starting aid	:	Heater plug provided in the intake manifold
[C]	Safety device	:	Starter will not operate unless the 'Low-High' and Power Take-Off gear lever is in neutral position.
<b>1.2.9</b>	<b>Electrical System:</b>		
[C]	Voltage	:	12V
	<b>Generator:</b>		
[C]	Make	:	Lucas TVS
[C]	Model	:	A115
[C]	Type	:	Alternator
[D]	Power	:	0.43 kW
	<b>Battery:</b>		
[C]	Number	:	One
[D]	Rating	:	80 Ah at 20 hours discharge rate

**1.2.10 Exhaust System:**

[D]	Make	:	KLN
[D]	Model	:	992217
[C]	Type	:	Cylindrical, up drought
[C]	Location	:	On RHS 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 and Power take-off):**

[D]	Make	:	M/s VALEO
[D]	Model	:	Not announced
[D]	Type	:	Dual clutch, Dry (for travel & PTO)
[D]	Number of plate(s)	:	Two
[D]	Diameter of plate(s)	:	305 mm for travel & 254 mm for PTO

**[C] Method of operation:**

-Travel	:	By pressing clutch pedal halfway, on LHS
-PTO	:	By pressing clutch pedal fully, on LHS

**1.3.2 Gear Box:**

[D]	Make	:	TAFE
[D]	Model	:	Not announced
[D]	Type	:	Mechanical, sliding mesh gearbox with epicyclic reduction coupler for High-Low range selection.

	Description:	Forward	Reverse
[C]	Number of gears	4	1
[C]	Number of ranges	2 ('L' & 'H')	2 ('L' & 'H')
[C]	Total of arrangements	8	2

'L' = LOW; 'H' = HIGH

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

[D]	Make	:	TAFE
[D]	Model	:	Not announced
[D]	Type	:	Crown wheel and pinion with differential unit accommodated inside the differential housing.

**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 and final drives:**

[D]	Make	:	TAFE
[D]	Model	:	G4.1
[D]	Type	:	Crown wheel & pinion with differential assembly accommodated inside the differential housing.
	- Differential lock	:	Not available

**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 2300 rev/min, (km/h)
1	2	3	4	5	6
[C]	Forward	1	L	210.48	2.76
[C]		2	L	143.99	4.05
[C]		3	L	105.11	5.53
[C]		4	L	78.38	7.40
[C]		1	H	51.41	11.29
[C]		2	H	35.02	16.60
[C]		3	H	25.67	22.59
[C]		4	H	19.11	30.42
[C]	Reverse	1	L	154.51	3.76
[C]		2	H	37.77	15.40

'L' = LOW, 'H' = HIGH

\* Calculated with a tyre dynamic radius index of 670 mm (ISO: 4251-1:2005)

[C] Number of revolutions of front wheels for one revolution of rear wheels : 1.406

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

[C]	Type	:	Semi independent
[C]	Method of engagement	:	Mechanical, by a hand 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:****Power take-off at 540 (rev/min):**

[C]	- Location	:	At rear of tractor
[C]	- Diameter of power take-off shaft end	:	34.73 mm
[C]	- Number of splines	:	6, Not In conformity with ISO:500 - 3:2004
[C]	- Height above ground	:	547 mm
[C]	- Distance from the median plane of	:	0 mm



	the tractor		
[C]	- Distance behind rear-wheel axis	:	300 mm
[C]	- PTO speed at rated engine speed	:	694 rev/min
[C]	- Engine speed at standard power take-off speed	:	1789 rev/min
[C]	- Ratio of rotation speeds (Engine speed/ PTO speed)	:	3.313 : 1
[D]	- Power restriction	:	None
[D]	Maximum torque transmissible	:	750 Nm
[C]	Direction of rotation (viewed from rear of tractor)	:	Clockwise
<b>1.4.1.2</b>	<b>Power take-off proportional to ground speed</b>	:	<b>Not available</b>
<b>1.4.2</b>	<b>Optional power take-off</b>	:	<b>Not available</b>
<b>1.5</b>	<b>Hydraulic power-lift:</b>		
[D]	Make	:	TAFE
[D]	Model	:	Not announced
[D]	Type of hydraulic system	:	Open centre, live, ADDC
[D]	Type and number of cylinders	:	Single acting, one
[C]	Type of linkage lock for transport	:	Not available
[D]	Relief valve pressure setting (tolerance)	:	20.4 to 23.9 MPa
[D]	Opening pressure of cylinder safety valve	:	25 ± 1 MPa
[D]	Lift pump type	:	Scotch Yoke (Radial piston pump)
[D]	Transmission between pump and engine	:	Gear drive
[D]	Number and type of filter(s)	:	One, wire mesh strainer inside the transmission housing
[D]	Site of oil reservoir	:	Centre Housing and Transmission case
	<b>Type, number and location of tapping points:</b>		
[D]	- Type	:	Quick coupling
[C]	- Number	:	Four
[D]	- Location	:	Behind the operator's seat.
[C]	- Maximum volume of oil available to external cylinders	:	35 dm <sup>3</sup>
<b>1.6</b>	<b>Three point linkage:</b>		
[C]	Category	:	2 (Not in conformity with Category 2 of ISO 730: 2009)
[C]	Category adapter	:	Not available



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

			Dimension or range, (mm)	Settings used during test, (mm)
	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>
[C]	Length of lift arms:	<b>(A)</b>	260	260
[C]	Length of lower links:	<b>(B)</b>	950	950
	Distance of lift arm pivot point from rear-wheel axis:			
[C]	- Horizontally	<b>(a)</b>	195	195
[C]	- Vertically	<b>(b)</b>	240	240
[C]	Horizontal distance between the 2 lower link points:	<b>(u)</b>	485	485
[C]	Horizontal distance between the 2 lift arm end points:	<b>(v)</b>	530	530
[C]	Length of upper link:	<b>(S)</b>	665 to 840	730
	Distance of upper link pivot point from rear wheel axis:			
[C]	- Horizontally	<b>(c)</b>	207, 216 & 220	216
[C]	- Vertically	<b>(d)</b>	135, 177 & 213	177
	Distance of lower link pivot point from rear wheel axis:			
[C]	- Horizontally	<b>(e)</b>	30,forward	30,forward
[C]	- Vertically	<b>(f)</b>	210	210
[C]	Distance of lower link pivot points to lift rod pivot points on lower links:	<b>(D)</b>	435 & 500	500
[C]	Length of lift rods:	<b>(L)</b>	635 to 730	675
	Height of lower hitch points relative to the rear-wheel axis:			
[C]	- in low position	<b>(h)</b>	-585 to -350	-470
[C]	- in high position	<b>(H)</b>	50 to 240	170
[C]	Height above ground of lower hitch points when locked in transport position (*)	--	170	170

(\*) Assuming  $r = 670$  mm, tyre dynamic radius index of ISO: 4251-1:2005 (pneumatic tyred tractors only).

### 1.7 Swinging drawbar

[C]	Type	:	Clevis
[C]	Height above the ground	:	415 mm (fixed)
[C]	Type of adjustment	:	None
[C]	Distance of hitch point from rear-wheel axis, horizontally	:	650 mm & 710 mm
	Distance of hitch point from power take-off shaft end:		
[C]	- Vertically	:	75 mm
[C]	- Horizontally	:	350 mm & 410 mm

	Lateral adjustment (centre of clevis):		
[C]	- Right hand	:	240 mm
[C]	- Left hand	:	250 mm
[C]	Distance of pivot point from rear-wheel axis, horizontally	:	120 mm
[C]	Diameter of drawbar pinhole	:	33.0 mm
[D]	Maximum vertical permissible load	:	10 kN
<b>1.8</b>	<b>Trailer hitch</b>	:	<b>Not available</b>
<b>1.9</b>	<b>Holed drawbar:</b>		
[C]	Number of holes	:	7
[C]	Distance between holes	:	80 mm
[C]	Hole diameter	:	24.5 mm
[C]	Thickness / Width of drawbar	:	38 mm / 76 mm
[C]	Height above ground:		
	- Minimum	:	85 mm
	- Maximum	:	910 mm
[C]	Horizontal distance to power take-off shaft end (rear)	:	625 mm
<b>1.10</b>	<b>Steering:</b>		
[D]	Make	:	Danfoss
[D]	Model	:	Not announced
[D]	Type	:	Hydrostatic, open center
[D]	Method of operation	:	Manual, through steering control wheel
[D]	Pump(s)	:	Gear type
[D]	Ram(s)	:	Double acting cylinder
[D]	Working pressure	:	14.0 MPa
<b>1.11</b>	<b>Brakes:</b>		
<b>1.11.1</b>	<b>Service brake:</b>		
[D]	Make	:	JMI
[D]	Model	:	Not announced
[D]	Type	:	Oil immersed brake
[C]	Method of operation	:	Mechanical, independent or coupled pedal operation
[C]	Trailer braking take-off (hydraulic or air brake)	:	<b>Not available</b>
<b>1.11.2</b>	<b>Parking brake:</b>		
[C]	Type	:	Pawl and ratchet
[C]	Method of operation	:	Manual, by a hand lever
<b>1.12</b>	<b>Wheels:</b>		
	Number		
[C]	Front	:	Two (driving & steering)
[C]	Rear	:	Two (driving)
[C]	Wheel base	:	2100 mm

**Track width adjustment:**

		Minimum [mm]	Maximum [mm]	Adjustment method
[C]	Front	1250	1600	Reversing wheels and offset lug rims
[C]	Rear	1425	2140	Reversing wheels and offset lug rims

**1.13 Protective structure:**

[D]	Make	:	TAFE
[D]	Model	:	Not announced
[D]	Type	:	Two post foldable
[D]	Manufacturers name and address	:	Tractors and farm Equipment Limited, Kalladipatti Plant, 10/205, kalladipatti (P.O.), Pin code – 624 201, Dindigul Distt., Tamil Nadu, India
[D]	Protective device	:	Roll guard
[D]	Tiltable / not tiltable	:	Not Tiltable

**OECD approval:**

[D]	Approval number	:	Not applicable
[D]	Date of approval	:	Not applicable
[D]	Number of minor modification certificates, if any	:	Not applicable

**1.14 Seat:****1.14.1 Driver's seat:**

[C]	Make	:	M/s Harita Seating Systems Ltd.
[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	:	± 65 mm
[C]	Vertically	:	+ 30 mm
[D]	Safety belt	:	Provided

**1.14.2** Optional driver's seat(s) : Not fitted on tractor

**1.14.3** Passenger seat : Not fitted on tractor

**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	1165	155 x 95	220
[C]	Side lights	1435	110 x 50	850
[C]	Rear lights	1435	90 x 75	782
[C]	Reflectors	1435	45 x 55	805

## 2. TEST CONDITIONS

<b>2.1</b>	<b>Overall dimensions (standard ballasted tractor):</b>			
Length [mm]	Width		Height at top of	
	Minimum [mm]	Maximum [mm]	Protective Structure [mm]	Exhaust pipe [mm]
3625	1960	2600	2520	2150

- 2.2** Ground clearance : 315 mm  
(standard ballasted tractor)  
Clearance – limiting part : Swinging drawbar mounting bracket

### 2.3 Tractor Mass (with protective structure):

		Standard ballasted	
		Without driver	With driver
		[kg]	[kg]
Front		1155	1170
Rear		1685	1745
Total		2840	2915

### 2.4 Tyres and track width specifications:

<b>Tyres</b>		<b>Front</b>	<b>Rear</b>
- Dimensions		9.5 – 24	16.9 – 28
- Ply rating		6	8
- Type		Pneumatic, diagonal	Pneumatic, diagonal
- Maximum load (tyre manufacturer's)	kN	13.32	28.47
- Maximum load (tractor manufacturer's)	kN	12.7	22.0
- Inflation pressure (tyre manufacturer's)	kPa	200	83
- Dynamic radius index	mm	495	670
- Chosen track width	mm	1430	1425

### 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 )
1	2	3	4
Engine oil sump	7.8	After every 250 hours of operation	After every 250 hours of operation
Gear box, differential, rear axle, rear final drive, hydraulic & service brakes	35.0	After every 1000 hours of operation	Not applicable

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1	2	3	4
Front axle	5.0	First change 150-200 hours & after every 1000 hours of operation	Not applicable
Front final drive (on each side)	0.8	First change 150-200 hours & after every 1000 hours of operation	Not applicable

### 2.6.2 Specifications:

	Recommended	Used during test
<b>Engine:</b>		
Type	SAE 20W40	As recommended
Viscosity	10-12 cst at 100°C	
Classification	MIL-L-46152/MIL-L-2104C	
<b>Transmission, hydraulic fluid, service brake, rear axle and rear final drive oil:</b>		
Type	Tract Elf SF 31	As recommended
Viscosity	10-11 cSt at 100°C	
Classification	API Gulf	
<b>Front axle &amp; front final drive oil:</b>		
Type	SAE 80W90	As recommended
Viscosity	10-11 cSt at 100°C	
Classification	API Gulf	
<b>Steering oil:</b>		
Type	Automotive transmission fluid	Servo TQ
Viscosity	7 – 8.4 cST at 100°C	As recommended
Classification	Transmission Fluid F	

### 2.6.3 Grease:

Number of lubricating points:

Grease nipples : 13 Nos.

Grease cups : Not available

## 3. COMPULSORY TESTS RESULTS

### 3.1 Main power take-off test:

Date and location of tests : 31.12.2018, CFMTTI, BUDNI (M.P.), India

Type of dynamometer bench : FUCHINO ESF -1000S, Eddy current

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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>							
36.0	2299	694	3690	9.60	11.48	267	3.14
<b>3.1.2 Power at Rated Engine Speed (2300 rev/min) :</b>							
36.0	2299	694	3690	9.60	11.48	267	3.14
<b>3.1.3 Standard Power Take-Off Speed [540 ± 10 (rev/min)] :</b>							
32.7	1789	540	2871	7.99	9.56	244	3.42
<b>3.1.4 Part Loads:</b>							
<b>3.1.4.1 The torque corresponding to maximum power at rated engine speed :</b>							
36.0	2299	694	3690	9.60	11.48	267	3.14
<b>3.1.4.2 85 % of torque obtained in 3.1.4.1 :</b>							
32.5	2438	736	3913	9.10	10.89	280	2.98
<b>3.1.4.3 75 % of torque defined in 3.1.4.2 :</b>							
24.4	2432	734	3903	7.25	8.67	297	2.81
<b>3.1.4.4 50 % of torque defined in 3.1.4.2 :</b>							
16.2	2432	734	3903	5.57	6.66	344	2.43
<b>3.1.4.5 25 % of torque defined in 3.1.4.2 :</b>							
8.1	2445	738	3924	4.17	4.99	515	1.62
<b>3.1.4.6 Unloaded :</b>							
1.6	2462	743	3952	3.16	3.78	1975	0.42
<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>							
32.7	1789	540	2871	7.99	9.56	244	3.42
<b>3.1.5.2 85 % of torque obtained in 3.1.5.1 :</b>							
28.5	1835	554	2945	7.01	8.39	246	3.40
<b>3.1.5.3 75 % of torque defined in 3.1.5.2 :</b>							
21.6	1855	560	2977	5.60	6.70	259	3.22
<b>3.1.5.4 50 % of torque defined in 3.1.5.2 :</b>							
14.6	1892	571	3037	4.25	5.08	291	2.87
<b>3.1.5.5 25 % of torque defined in 3.1.5.2 :</b>							
7.5	1922	580	3085	3.02	3.61	403	2.08



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1	2	3	4	5	6	7	8
<b>3.1.5.6 Unloaded :</b>							
1.1	1945	587	3122	2.07	2.48	1882	0.44
<b>3.1.6 PART LOADS AT DIFFERENT ENGINE SPEEDS</b>							
<b>3.1.6.1 Maximum power at rated engine speed:</b>							
36.0	2299	694	3690	9.60	11.48	267	3.14
<b>3.1.6.2 80% of power obtained in 3.1.6.1 at max. speed setting :</b>							
28.8	2428	733	3897	8.23	9.84	286	2.93
<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>							
28.8	2071	625	3324	7.45	8.91	259	3.23
<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>							
14.4	2071	625	3324	4.48	5.36	311	2.69
<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>							
21.6	1378	416	2212	5.29	6.33	245	3.41
<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>							
14.4	1378	416	2212	3.65	4.37	253	3.30

No load maximum engine speed : 2462 rev/min

Torque (equivalent crankshaft) at maximum power:

-At rated engine speed : 149.32 Nm

-At one hour test : 149.32 Nm

Maximum torque (equivalent crank- shaft) (Engine speed 1352 rev/min) : 191.13 Nm

**Mean atmospheric conditions:**

-Temperature : 23 °C

-Pressure : 98.9 kPa

-Relative humidity : 29 %

**Maximum temperatures:**

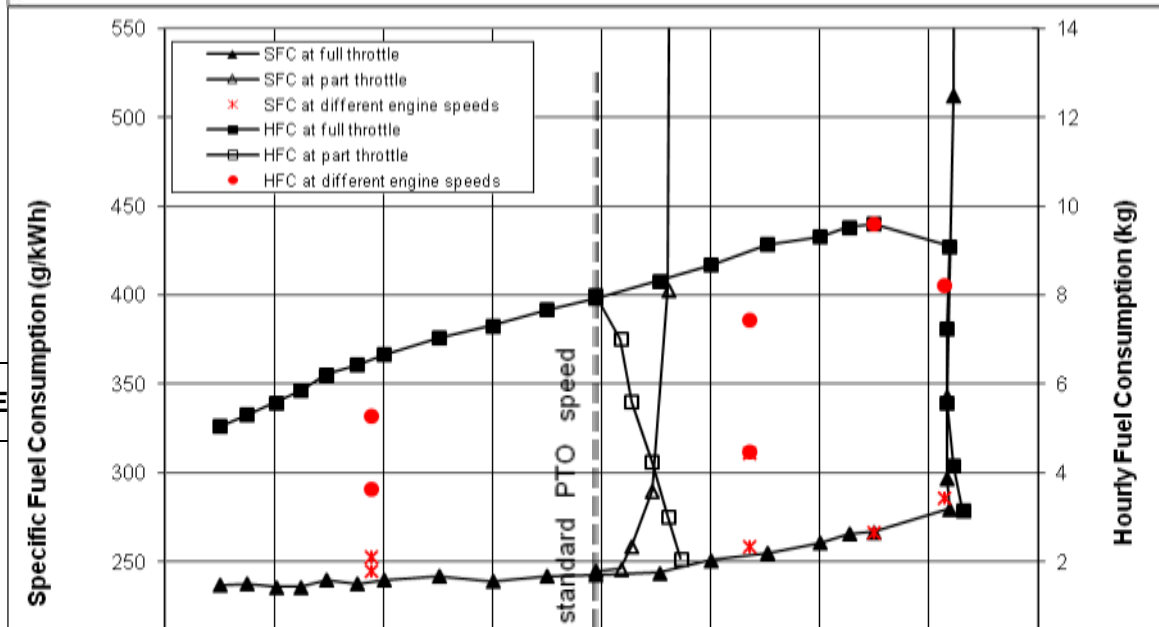
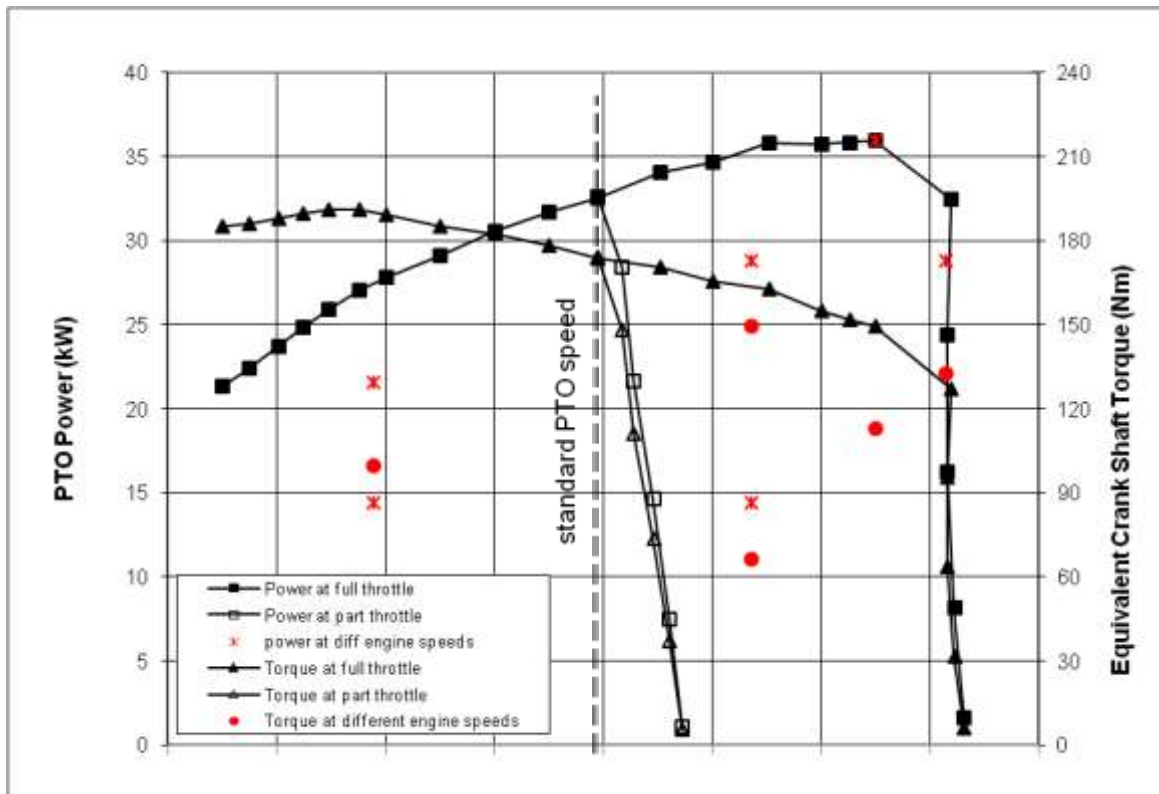
-Coolant : 81 °C

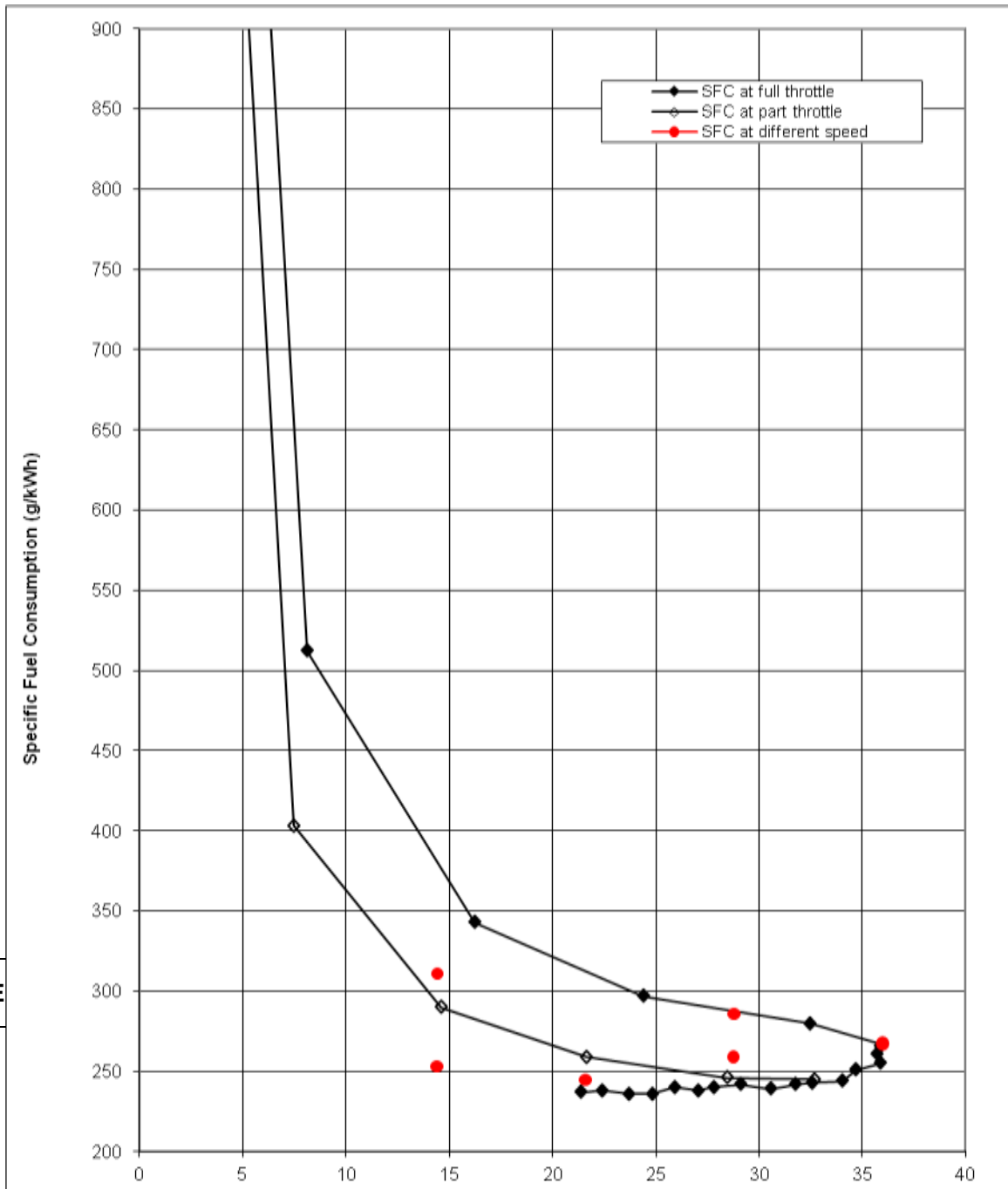
-Engine oil : 107 °C

-Fuel : 46 °C

-Engine air intake

: 25 °C





**3.2 Hydraulic power and lifting force:**

Date of tests : 05.02.2019 &amp; 06.02.2019

**3.2.1 Hydraulic Power and Lifting force Test:****3.2.1.1 Hydraulic Fluid Data:**

- Hydraulic fluid type : Tract Elf SF 31
- Viscosity index : 104  
(ISO 3448: 1992+ corr 1: 1993)
- Viscosity at 65 °C : 70 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.)			
1	2	3	4	5	6	7	8
1.	Rated Engine speed (Manufacturer's specification)	--	--	--	2300	--	--
2.	Maximum (sustained) pressure with relief valve open as measured at the coupler. Pump stalled- No	23.0	60	66	2462	0.0	0.0

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3.	Flow rate corresponding to a hydraulic pressure equivalent to 90% of the actual relief valve pressure setting and corresponding hydraulic power.	20.7	64	2464	16.7	5.8
4.	Maximum available flow and maximum power from one coupler pair	21.0	65	2464	16.5	5.8
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

### 3.2.2 Power Lift Test:

-Linkage settings for test - See Table at Page 11, 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	640 mm	640 mm
- With lifting force	565 mm	555 mm
Maximum corrected force exerted through full range	19.76 kN	16.60 kN
Corresponding pressure of hydraulic fluid	20.7 MPa	20.7 MPa
Moment about rear wheel axle	18.18 kNm	25.40 kNm
Maximum tilt angle of mast from vertical	--	15.3 degree

Lifting height relative to the horizontal plane including the lower link pivot points:									
mm	-255	-200	-100	00	+100	+200	+250	+300	+310
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)	19.76	21.11	22.83	24.17	25.05	25.71	26.07	26.66	27.22
Corresponding pressure 20.7 MPa:									
At the	16.60	17.41	18.45	18.87	18.80	18.42	18.34	17.69	18.92

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frame in (kN)									
Corresponding pressure 20.7 MPa:									

**3.3 Drawbar power and fuel consumption test (standard ballasted tractor):**

Date(s) of tests : 07.02.2019

Type of track : Concrete

Height of drawbar above ground, (mm)	Tyre inflation pressure	
	Front	Rear
	[kPa]	[kPa]
500	200	83

## 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</b>	<b>Maximum Power in tested Gears (Standard ballasted tractor):</b>													
1L	17.7	24.80	2.57	2448	3929	15.3	426	1.96	36	81	101	24	38	98.8
2L	25.4	24.81	3.69	2382	3823	14.9	379	2.21	36	83	103	25	37	98.8
3L	27.6	18.73	5.31	2300	3692	7.1	344	2.43	36	83	104	24	41	98.8
4L	28.4	13.97	7.32	2300	3692	4.3	337	2.48	36	82	102	24	43	98.9
1H	28.6	9.06	11.34	2300	3692	2.8	334	2.50	36	82	103	23	41	98.8

**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</b>	<b>Fuel Consumption:</b>													
<b>3.3.2.1</b>	In Selected gear / speed setting nearest 7.5 km/h, at maximum power at rated engine speed:													
4L	28.4	13.97	7.32	2300	3692	4.3	337	2.48	36	82	102	24	43	98.9
<b>3.3.2.1.1</b>	75% of pull corresponding to maximum power at rated engine speed:													
4L	23.0	10.49	7.89	2453	3937	3.2	381	2.19	37	82	102	25	39	98.8
<b>3.3.2.1.2</b>	50% of pull corresponding to maximum power at rated engine speed:													
4L	15.5	6.99	8.0	2448	3929	1.7	431	1.94	36	81	102	24	38	98.7
<b>3.3.2.1.3</b>	Higher gear / speed setting at reduced engine speed: Same pull and traveling speed as in 3.3.2.1.1:													
1H	23.0	10.49	7.89	1609	2583	3.3	329	2.54	35	84	98	25	37	98.7
<b>3.3.2.1.4</b>	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:													
1H	15.5	6.99	7.99	1608	2581	2.0	349	2.40	35	80	95	24	39	98.7
<b>3.3.2.2</b>	In Selected gear/speed nearest between 7 km/h and 10 km/h at rated engine speed:													
	Same as reported in 3.3.2.1 above.													
<b>3.3.2.2.1</b>	75% of pull corresponding to maximum power at rated engine speed:													
	Same as reported in 3.3.2.1.1 above.													
<b>3.3.2.2.2</b>	50% of pull corresponding to maximum power at rated engine speed:													
	Same as reported in 3.3.2.1.2 above.													
<b>3.3.2.2.3</b>	Higher gear / speed setting at reduced engine speed: Same pull and traveling speed as in 3.3.2.2.1:													
	Same as reported in 3.3.2.1.3 above.													
<b>3.3.2.2.4</b>	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:													
	Same as reported in 3.3.2.1.4 above.													

## 4. REPAIR AND ADJUSTMENTS PRIOR TO TESTS

Sl. No.	Particular			Hours of run
01	Prior to hydraulic power lifting force test, the hydraulic oil pressure was recorded lesser than 90% of its sustained pressure before lower link rise above horizontal position. Upon this, the hydraulic system was inspected and the following parts were replaced with new ones.			6.7
	Sl.No.	Part Name	Part Number	Quantity
	01	"O" ring	0195561M01	02
	02	Washer backup	0195874M01	01

## 5. REMARKS

--NONE--

TEST CARRIED OUT AT C.F.M.T. &amp; T.I., BUDNI (M.P.), INDIA

TESTING AUTHORITY



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