

(यह परीक्षण रिपोर्ट 31/05/2022 तक वैध है/ THIS TEST REPORT IS VALID UPTO 31/05/2022)



FORCE MOTORS LIMITED, OX 25 ORCHARD DLX LT TRACTOR



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½df"kJ l gdfjrk , oafdl ku dY; k.k foHkkx] e' khuhdj.k , oa i kS| kfxdh i Hkkx½

GOVERNMENT OF INDIA
MINISTRY OF AGRICULTURE AND FARMERS WELFARE
(Deptt. of Agricultural, Cooperation & Farmer's Welfare,
Mechanization & Technology Division)

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T-1239/1766/2019	FORCE MOTORS LIMITED, OX 25 ORCHARD DLX LT TRACTOR Commercial (Initial)
	(THIS TEST REPORT IS VALID UPTO 31/05/2022)

Manufacturer : M/s. Force Motors Limited,
Mumbai – Pune Road
Akurdi, PUNE (M.S.) - 411 035

Month: May	Test Report No. T- 1239/1766/2019	Year: 2019
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Type of Test : **COMMERCIAL (Initial) Test**
 Test code/Procedure : IS: 5994-1998 (Reaffirmed in 2014)
 IS: 9253-2013 and IS: 12207-2014
 Period of Test : **June, 2018 to March, 2019**
 Test Report No. : **T- 1239/1766/2019**
 Month/Year : **May, 2019**

- i) The results reported in this report are observed values and no corrections have been applied for atmospheric and site conditions.
- ii) The data given in this report pertain to the particular machine submitted by the applicant, for tests.
- iii) The results presented in this report do not in any way attribute to the durability of the machine.
- iv) This report should not be reproduced in part or full without prior permission of the Director, Central Farm Machinery Training and Testing Institute, Budni (M.P.)

SELECTED CONVERSIONS		
Sl. No	Units	Conversion Factor
1.	Force:	
	1 kgf	9.80665 N
		2.20462 lbf
2.	Power:	
	1 Mechanical horsepower	1.01387 metric horsepower
		745.7 W
	1 metric horsepower	735.5 W
1 kW	1.35962 metric horsepower	
3.	Pressure:	
	1 psi	6.895 kPa
	1 kgf/cm ²	98.067 kPa = 735.56 mm of Hg
	1 bar	100 kPa = 10 N/cm ²
	1 mm of Hg	1.3332 m-bar

ABBREVIATIONS	
apa	As per applicant
TDC	Top Dead Centre
IS	Indian Standard
LHS/RHS	Left Hand Side/ Right Hand Side
Hg.	Mercury
Temp.	Temperature
N.R.	Not recorded
rpm	Revolutions per minute
O.D/I.D	Outer diameter/ Inner diameter
N.A.	Not available/ Not applicable
PTO	Power take-off
R.H.	Relative Humidity

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Manufacturer : M/s. Force Motors Limited.
Mumbai - Pune Road,
Akurdi, Pune (M.S.) - 411 035

Test requested by : M/s. Force Motors Limited.,
Mumbai - Pune Road
Akurdi, Pune (M.S.) - 411 035

Place of running-in : At Force motors Ltd. Pune.

Duration of said running-in, (h):

- Engine : 30
- Transmission : 33

Method of Selection : The tractor was submitted directly by the applicant for test. Hence, method of selection is not known.

1. SPECIFICATIONS

- 1.1 Tractor:**
- Make : M/s. Force Motors Ltd.
 - Model : OX 25 ORCHARD DLX LT
 - Type : Four wheeled, rear wheel driven, unit construction, general purpose agricultural tractor.
 - Year of manufacture : 2017
 - Chassis number : T08015580F17
 - Country of Origin : INDIA
- 1.2 Engine:**
- Make : M/s. Force Motors Ltd.
 - Model : TD1950F(27)
 - Type : Water cooled, four stroke, naturally aspirated, direct injection diesel engine.
 - Serial number : D10039368
 - Year of manufacture : 2017
- Engine speed (Manufacturer's recommended production setting)(rpm):**
- Maximum speed at no load, (rpm) : 2400 to 2500
 - Low idle speed, (rpm) : 700 to 750
 - Speed at max. torque, (rpm) : 1300 to 1500
- Rated speed, (rpm):**
- For PTO use : 2200
 - For drawbar use : 2200
- 1.3 Cylinder & Cylinder Head:**
- Number : Three
 - Disposition : Inline, vertical
 - Bore/stroke, (mm) : 90.9/100
 - Capacity as specified by the applicant, (cc) : 1947
 - Compression ratio, (apa) : 18.3 : 1 to 18.8 : 1

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Type of cylinder head	: Monoblock
Type of cylinder liners	: Dry, Replaceable
Type of combustion chamber	: Direct combustion, open cavity on piston crown, Hemispherical
Arrangement of valves	: Overhead, Inline
Valve clearance (cold/hot) :	
- Inlet valve, (mm)	: 0.10/0.15
- Exhaust valve, (mm)	: 0.30/0.35
1.4 Fuel System:	
Type of fuel system	: Gravity and forced feed
1.4.1 Fuel tank:	
Capacity, (l)	: 28.6
Location	: Above bell housing.
Provision for draining of sediments/ water	: Not provided, however water separator is provided.
Material of fuel tank	: Metallic
1.4.2 Water separator:	
Make	: Hilux
Type	: Gravity separation, inverted funnel
Location	: Between the fuel tank and fuel feed pump
1.4.3 Fuel Feed Pump:	
Make	: Bosch, India
Type	: Plunger
Model/Group combination No.	: FP/KE 22AD310, 9 440 030 028
Provision of sediment bowl	: Provided (metallic)
Method of drive	: Through cam shaft of fuel injection pump
1.4.4 Fuel filters:	
Make	: Bosch, India
Model/Group combination No.	: 9 450 030 117
Number	: Two
Type of elements:	
- Primary	: Cloth
- Secondary	: Paper
Capacity of final stage filter, (l)	: 0.4
1.4.5 Fuel Injection pump:	
Make	: Bosch, India
Model/Group combination No.	: F 002 A0Z 850, PES3A85D320RS2870
Type	: Inline, plunger
Serial number	: 71967158
Method of drive	: Through timing gears
1.4.6 Fuel injectors:	
Make	: Bosch, India
Model/Group combination No.	: 9430 030 100 (Holder number)
Nozzle Holder No.	: DSLA 148 P 1026
Type	: Multihole (five holes)

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Manufacturer's production pressure setting, (Mpa)	: 25.5 ± 0.8
Injection timing	: 14±1 degree before TDC
Firing order	: 1-3-2
1.4.7 Governor:	
Make	: Bosch, India
Model/Group combination No.	: RSV 375....1100 A5C1242R
Type	: Mechanical, centrifugal, variable speed
Serial no.	: 71947772
Rated engine speed, (rpm)	: 2200
Governor range of engine speed, (rpm)	: 700 to 2500
1.5 Air Intake system:	
1.5.1 Pre-cleaner	: Not provided
1.5.2 Air cleaner:	
Make	: M/s. Mahle
Type	: Dry
Location	: Above the engine on LHS, under the bonnet
Range of suction pressure at maximum power, (kPa)	: 1.7
Number and type of element	: One, paper
Size of paper element [OD/ID/Length] (mm):	: 132.0/68.6/294.9
Maintenance schedule	: i) Clean daily in extremely dusty condition or weekly in normal working condition. ii) Replace after every 500 hours of operation.
1.6 Exhaust system :	
Type of silencer	: Downdraught, Horizontal (cylindrical)
Position of silencer outlet with respect to SIP, (mm):	
- Downward	: 365
- Longitudinal	: 1780
- Lateral	: 420 (On RHS)
Range of exhaust gas pressure at maximum power, (kPa)	: 2.0 to 2.1
Provision of spark arresting device	: None
Provision against entry of rain water	: Not applicable as silencer is horizontal.
1.7 Lubricating system:	
Type	: Force feed and splash
Oil sump capacity, (l)	: 5.00
Total lub oil capacity, (l)	: 5.80
Oil change period	: First change after 50 hours and subsequently after every 250 hours of operation.
Cooling device, (if any)	: None
Filters:	
Type	: Full flow, spin-on throwaway type
Number	: One

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Pump:	
Make	: M/s. Force motors limited
Type	: Gear
Method of drive	: Through drive shaft of fuel injection pump
Pressure release setting, (kPa)	: 685-785
Minimum permissible pressure, (kPa)	: 122
1.8 Cooling system:	
Type	: Forced circulation of coolant and water
Coolant water ratio	: 50:50
Details of pump	: Centrifugal with semi-open type impeller, having 08 vanes of 78.8 mm diameter and driven through crankshaft pulley by a cogged 'V' - belt common to alternator.
Details of fan	: Suction type having eight polypropylene blades of 355 mm diameter and mounted on water pump shaft.
Means of temperature control	: Thermostat
Bare radiator capacity, (l)	: 2.0
Expansion flask capacity (l)	: 0.7
Total coolant capacity, (l)	: 6.7
Radiator cap pressure, (kPa)	: 88
1.9 Starting System:	
Type	: 12V, DC, Electrical
Aid for cold starting	: None
Any other device provided for easy starting	: Not available
1.10 Electrical System:	
1.10.1 Battery:	
Make	: Amaron
Model	: HYB75D31R
Type	: Lead acid
Capacity and rating	: 12V, 75Ah at 20h discharge rate
Location	: On RHS of Clutch housing in a separate metallic box.
1.10.2 Starter:	
Make	: Autolek
Model	: STM 1153W
Type	: Pre-engaging, solenoid operated
Voltage and power rating	: 12V, 2.0 kW
Serial Number	: Not available
1.10.3 Generator:	
Make	: BOSCH, India
Model	: F 002 G10 017
Type	: Alternator
Serial number	: Not available

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Output rating : 14V, 23A
Method of drive : Through crankshaft pulley by a V-belt common to water pump.

1.10.4 Voltage regulator: : In built with alternator

1.10.5 Details of lights:

Description	No. & capacity of bulb	Height of the centre of beam above ground level, (mm)	Size of beam, (mm)	Distance of centre of the beam from outside edge of tractor at standard rear track setting, (mm)
Front Lights:				
-Head lights	2,12V, 35/35 W	980	125 ϕ	598
-Parking lights	2,12V, 5 W	1130	75 x 70	252
-Turn-cum-Hazard indicator light	2,12V, 21 W	1130	75 x 70	180
Rear lights:				
-Parking-cum-brake light	2,12V, 21/5 W	1115	75 x 70	265
-Turn-cum-Hazard indicator light	2,12V, 21 W	1115	75 x 70	180
- Plough light (on RHS mudguard)	1,12V, 55 W	1290	130 x 75	245
- Reflector(s) with tail light	2 (Red)	1115	35 x 60	220
- Registration plate light	Part of rear tail light			

1.10.6 Main switch : Key turn type having three positions viz **OFF**, circuit - **ON**, and **START**.

1.10.7 Light switch : Rotary type having five positions viz.
i) OFF
ii) Parking + dash board
iii) Head light (short beam) + (ii)
iv) Head light (long beam) + (ii)
v) Head light (long beam)

1.10.8 Horn:
Make : Addon
Type : 12V, 2B Electromagnetic vibrator.
Location : In front of radiator, under the bonnet

1.10.9 Fuse box : Contains 7 Nos. of fuses, each of 10 A capacities.

1.10.10 Details of other electrical accessories:

1.10.10.1 Flasher Unit:
Make : Wimson
Type : Electronic
Capacity : 12V, 85 Flashes/ min

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Capacity:

- Turn signal : 21W x 2 + 2W x 1
- Hazard signal : 21W x 4 + 2W x 2
- Flashes/Min. : 85

- 1.10.10.2 Safety switch** : Provided on clutch pedal i.e. engine will not start unless clutch pedal is depressed.

1.11 Instrument panel details:

- i) Engine speed cum cumulative hour meter (0-30) RPM x 100
- ii) Water temperature gauge (40 to 120°C with coloured zones)
- iii) Engine oil pressure gauge (0 to 10 kg/cm²)
- iv) Main starting switch (key turn type)
- v) Light switch (Rotary type)
- vi) Horn push button
- vii) Turn indicator switch
- viii) Hazard indicator light switch
- ix) Turn indicator cum hazard indicator light
- x) Head light (long beam) indicator light
- xi) Battery charging indicator light
- xii) Parking brake indicator light
- xiii) Mobile charging socket
- xiv) Hand accelerator lever
- xv) Rear view mirror
- xvi) Steering control wheel

1.12 Transmission System:

1.12.1 Clutch:

- Make : M/s. Amalgamations Repco Limited
- Type : Dual, Dry friction plate
- No. of friction plate, (s) : Two

Size, {OD/ID (mm)}:

- Transmission : 280 / 166 Φ
- PTO : 225 / 151 Φ

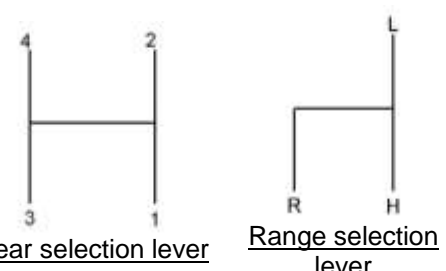
Method of operation:

- Transmission : Operated by clutch pedal, which disengages the main transmission when depressed to half way; whereas PTO and hydraulic pump will get dis-engaged when clutch pedal is depressed fully.
- PTO : By hand lever provided on LHS of operator's seat

1.12.2 Gear box:

- Make : M/s Force Motors Ltd
- Type : Mechanical, Constant mesh gears
- No. of speed:**
- Forward : 08
- Reverse : 04

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- Gear shifting pattern : 
- Location of gear shifting levers : Centre shifting, in front of operator's seat
- Oil capacity, (l) : 19.5 (common to differential, rear axle, brake & final drive).
- Oil changing period : First change after 100 hours of operation & subsequently changes after every 1000 hours of operation.

1.12.3 Nominal Speeds:

Movement	Gear No.	No of engine revolutions for one revolution of driving wheel	Nominal speed at rated engine speed when fitted with 11.2-24 size tyre of 515 mm radius index, (kmph)
Forward	L1	270.39	1.58
	L2	157.28	2.71
	L3	95.81	4.45
	L4	59.44	7.18
	H1	75.39	5.66
	H2	43.87	9.74
	H3	26.69	16.00
	H4	16.56	25.80
Reverse	R1	162.23	2.63
	R2	94.54	4.52
	R3	57.45	7.44
	R4	35.58	12.02

1.12.4 Differential Unit:

- Type : Crown wheel and bevel pinion with differential unit accommodated inside the differential housing.
- Reduction through Crown wheel and bevel pinion : 4.875 : 1 (39/8T)
- Oil capacity of final drive, (l) : 19.5 (common to gear box, rear axle, brake & final drive)
- Oil changing period : First change after 100 hours of operation & subsequently changes after every 1000 hours of operation.
- Differential lock:**
- Type : Mechanical, pin type
- Method of operation : On RHS of foot pedal operated

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1.12.5 Rear axle & final drive:

- Type : Crown wheel and pinion with differential and epicyclical final reduction units on both axles
- Reduction through final drive : 5.25:1 (Sun-12, Ring-51, Planet-19)
- Oil capacity of final drive, (l) : 19.5 (common to gear box ,brake & differential unit)
- Oil changing period : First change after 750 hours of operation & subsequently changes after every 1000 hours of operation.

1.13 Power Lift (Hydraulic system):

- Make : M/s. Force Motors Limited (apa)
- Type : Open Center, Non-Live, ADDC
- No. & type of cylinders : One, single acting
- Type of linkage lock for transport : Hydraulic response control valve in closed position serves as transport lock.

Hydraulic Pump:

- Make : Rexroth
- Type : Gear
- Location : On RHS of gearbox
- Method of drive : Through main shaft of gearbox with engaging /disengaging lever for hydraulic pump.
- No. & type of filters : Two, one wire mesh strainer and one spin on filter before hydraulic pump in suction pipe.
- Hydraulic oil capacity, (l) : 10.4
- Oil change period : After every 1000 hours of operation.
- Provision for external tapping : Provided
- Details of control levers** : (i) Hydraulic operation lever (raising/ lowering)
(ii) External circuit lever
(iii) Position & draft control selector lever
(iv) Response control knob/transport lock
(v) Hydraulic pump engagement / disengagement lever
- Method of draft sensing : Through top link

1.13.1 Three point linkage :

Sl. No.	Observations	As per IS: 4468-(Part-2) -1993, (Reaffirmed in Oct., 2017) (Cat. I & I N), (mm)	As measured (mm)	Remarks	
1	2	3	4	5	
I.	Upper hitch points:				
	a)	Dia of hitch pin hole	19.30 to 19.50/ 19.30 to 19.51	19.40/25.80	Conforms to cat-I & IN
	b)	Width of ball	44.0 / 44.0 (max)	44.0/51.0	--do--
II.	Lower hitch points:				
	a)	Dia of hitch pin hole	22.40 to 22.65 / 22.40 to 22.73	22.40	Conforms to cat-I & IN
	b)	Width of ball	34.8 to 35.0 / 34.8 to 35.0	35.0	--do--

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1	2	3	4	5
III.	Lateral distance from lower hitch point to centre line of tractor	359 / 218 (min)	359	Conforms to cat-I
IV.	Lateral movement of lower hitch points	100 (min) / 50 (min)	200	Conforms to cat-I & IN
V.	Distance from end of power take-off to centre of lower hitch point (lower links in horizontal position)	450 to 575 / 300 to 375	585	Does not conform
VI.	Transport height	820 (min) / 600 (min)	835	Conforms to cat-I & IN
VII.	Power range (without force)	560 (min) / 420(min)	655, 610 & 560	--do--
VIII.	Leveling adjustment	100 (min) / 75 (min)	165	--do--
IX.	Lower hitch point clearance	100 (min) / 100 (min)	145	--do--
X.	Lower hitch point height	200 (max)/200 (max)	180, 200 & 200	--do--

1.13.2 Linkage geometry dimensions [Refer Fig.-1(a)]:

The following are dimensions observed, corresponding to **515 mm** as tyre dynamic radius index:

Sl. No.	Particular	Notation	Dimension or range, (mm)	Setting used during test (mm)
1.	Length of lower link	A	745	745
2.	Length of lift arm	B	225	225
3.	Length of lift rods	C	445 to 560	465
4.	Length of top link	D	515 to 740	605
5.	Distance of lift rod connection point from pivot point of lower link.	E	420, 460 & 500	460
6.	Distance of lower link pivot point from rear wheel axis,			
	-Horizontally	F	90, behind	90 ,behind
	-Vertically	G	140, below	140 ,below
7.	Distance of upper link pivot point from rear wheel axis:			
	-Horizontally	H	235 & 240, behind	240,behind
	-Vertically	J	200 & 250, above	200,above
8.	Distance of lift arm pivot point from rear wheel axis:			
	-Horizontally	K	55, behind	55,behind
	-Vertically	L	260, above	260,above
9.	Height of lower hitch points relative to the rear wheel axis:			
	- In high position	M	205 to 320	295
	- In low position	N	- 485 to -205	315
10.	Height of lower link hitch points when locked in transport position		295 mm above	

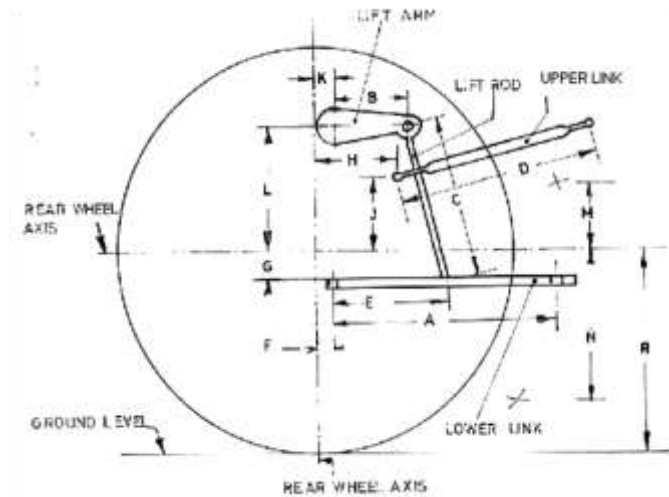


Fig. 1 (a): DIMENSIONAL NOTATIONS FOR TABLE OF LINKAGE GEOMETRY

1.13.3 Drawbar:

1.13.3.1 Linkage Drawbar {Refer Fig.1(b)} :

Notation	As per IS: 12953-1990, (Cat.I & IN) (mm)	As measured, (mm)	Remarks
A	683±1.5/400 ± 1.5	683.5	Conforms to Cat-I
B	75 (min) / 75 (min)	75.3	Conforms to cat-I & IN
C	30 (min) / 30 (min)	30.2	-do-
D \emptyset	21.79 to 22.0	22.0	-do-
E	39.0 (min)	43.3	-do-
F \emptyset	12.0 (min)	12.1	-do-
G	15.0(min)	15.3	-do-
H \emptyset	25 ± 1	25.4	-do-
J	80 ± 1.5	81.0	-do-
No. of holes	07/05	07	Conforms to Cat-I

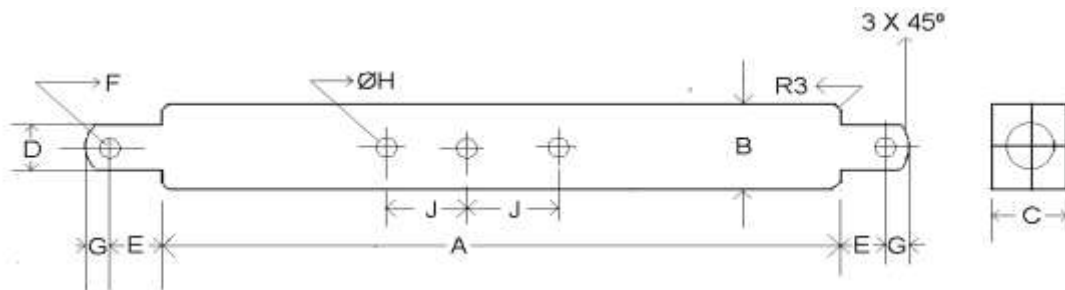


Fig.1 (b): DIMENSIONAL NOTATIONS FOR LINKAGE DRAWBAR

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1.13.3.2 Swinging drawbar : Not provided

1.14 Power take-off shaft:

Type : Type - I, not independent
Method of engaging : By a hand lever provided at LHS of operator's seat.
No. of shaft,(s) : One, Dual speed
PTO speed corresponding to rated engine speed, (rpm) : 598 & 1196
Distance behind rear axle, (mm) : 250
Engine to PTO speed ratio : 3.679 : 1 and 1.839 : 1
Power restriction, (if any) : None

1.14.1 Specifications of Power Take-Off Shaft: -

Specification	As per IS: 4931-1995 (Reaffirmed in : 2014) (Type-I)	As observed	Remarks
1	2	3	4
Nominal speed, (rpm)	540 ± 10 / 1000 ± 25	540 & 1000 rpm of PTO shaft corresponds to 1987 & 1839 rpm of engine respectively.	Conforms
No. of splines	6	6	Conforms
Direction of rotation	Clockwise	Clockwise	Conforms
Location	The position of the centre of the end of PTO shaft shall be within 50 mm to right or left of the centre line of the tractor.	Centrally located	Conforms
Dimensions, (mm) (See Fig.2):			
D∅	34.79 ± 0.06	34.81	Conforms
d∅	28.91 + 0.05 - 0.15	28.92	--do--
B∅	29.4 ± 0.1	30.20	Doesn't not conform
A∅ (optional)	8.3 ± 0.1	8.25	Conforms
W	8.69 - 0.09 - 0.16	8.44	Doesn't not conform
a	7	7	Conforms
b (optional)	25 ± 0.5	24.22	Doesn't not conform
c	38	38	Conforms
X	30°	30°	--do--
B	76 (min)	88	--do--
h	350/450 to 675	425	Doesn't not conform

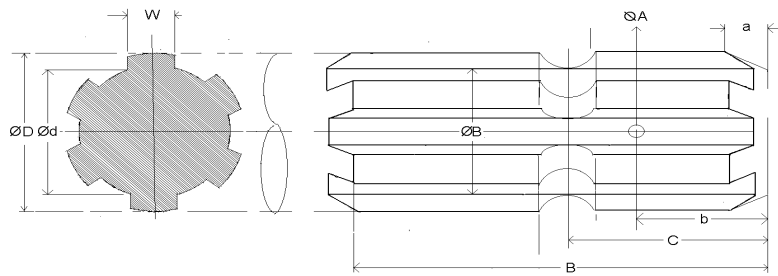


Fig.2: DIMENSIONAL NOTATIONS FOR TYPE-I POWER TAKE-OFF SHAFT

1.14.2 Power Take Off Master Shield : Provided
Dimensions of PTO master shield for type I & II PTO (mm) {See Fig. 2(b)}

Specification	As per IS 4931-1995	As observed	Remarks
k	70 (min)	85	Conforms
m	125±5	123	Conforms
n	85±5	83	Conforms
p	285±5	283	Conforms
r	76(max.)	57	Conforms

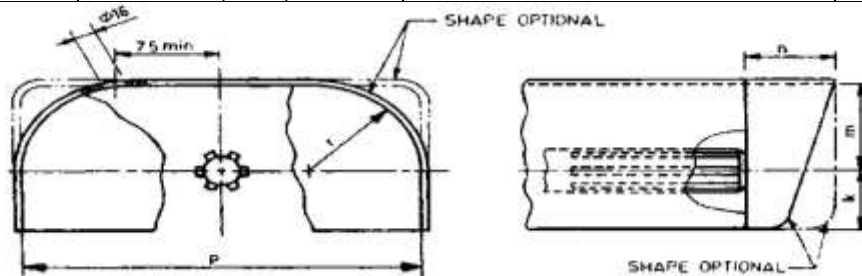


Fig.2 (b): DIMENSIONAL NOTATIONS OF PTO SHAFT MASTER SHIELD

1.15 Towing hitch:

1.15.1 Front:

Type : Clevis
Location : At front axle mounting bracket.
Height above ground level, (mm) : 415
Type of adjustment : Fixed
Width of clevis, (mm) : 85.2
Dia of pin hole, (mm) : 32.9

1.15.2 Rear:

Type : Clevis
Location : At rear of transmission housing
Height above ground level, (mm):
- Maximum : 535
- Minimum : 300
Number of positions : 06
- Type of adjustment : By changing the position and/or by reversing the hitch on mounting bracket

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	Distance of hitch point, (mm):	
	- From rear wheel centre	: 410
	- From power take-off shaft end	: 160
	Dia of pin hole, (mm)	: 32.0
	Width of clevis, (mm)	: 74.3
1.16	Steering System:	
	Make	: M/s. ZF steering gear (I) Ltd.
	Type	: Hydraulic Assisted, worm and roller with recirculating ball type having single drop arm.
	Location	: Above intermediate (clutch) housing
	Method of operation	: Manually; by steering control wheel
	Diameter of steering control wheel, (mm)	: 430
	Steering oil capacity, (l)	: 0.8
	Lubricant change period	: First change after 500 hours of operation & subsequently after every 1000 hours of operation.
1.17	Brakes:	
1.17.1	Service Brake:	
	Make	: M/s. Force Motors Limited
	Type	: Mechanical, oil immersed multi disc brakes
	Location	: Inside the rear axle housing, between the differential housing and planetary reduction unit on both side.
	No. of disc(s) on each wheel side	: Two (on each side)
	Area of liners, (cm ²)	: 469.0 (on each side)
	Material of liners	: Graphite (apa)
	Method of operation	: Individual/combined pedal operation by right foot.
	Oil capacity, (l)	: 19.5 (common to gear box final drive & differential unit).
1.17.2	Parking Brake:	
	Type	: Pawl and ratchet arrangement
	Method of operation	: Service brake when locked in position by a hand lever provided on RHS of operator's seat acts as parking brake.
1.18	Wheel Equipment:	
1.18.1	Steered Wheel,(s):	
	Make	: CEAT
	Number	: Two
	Type of tyre	: Pneumatic, ribbed
	Size	: 5.00-15
	Ply rating	: 4
	Maximum permissible loading capacity of each tyre at 280 kPa pressure, (kgf)	: 365
	Recommended inflation pressure, (kPa):	
	- For field work	: 200
	- For transport	: 200

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Track width, (mm) : 1180 (std.)
Method of changing track width : NA
Make & size of rim : Wheels India & 4J x 15

1.18.2 Drive wheel(s):

Make : CEAT
Number : Two
Type of tyre : Pneumatic, traction
Size : 11.2 – 24
Ply rating : 8
Maximum permissible loading capacity : 1250
of each tyre at 240 kPa pressure, (kgf)
Recommended inflation pressure, (kPa):
- For field work : 100
- For transport : 100
Track width, (mm) : 1180 (std.), 1285, 1295, 1475, 1485,
1585 & 1595
Method of changing track width : By changing the position of wheel disc
on rim lugs and by reversing the wheel
disc.
Make & size of wheel rim : Wheels India & W10 x 24

1.18.3 Wheel base, (mm)

Method of changing wheel base, if any, : 1585
and range : None

1.19 Operator's seat:

Make : M/s. Pinnacle Industries Ltd.(apa)
Type : Cushioned
Type of suspension : Two helical coil springs provided
Type of damping : Hydraulic shock absorber provided

Range of adjustment, (mm):

Vertical (back rest only) : Nil
Lateral : Nil
Longitudinal : ± 27.5

1.20 Provision for safety and comfort of operator :

1.20.1 Conformity with IS: 12343-1998, (Re-affirmed in 2014) :

All parameters meets the minimum requirements of IS: 12343-1998, (Re-affirmed in 2014), **except the following:**

- i) Longitudinal distance from SIP to differential lock pedal.
- ii) Vertical distance from SIP to clutch pedal.
- iii) Longitudinal distance from SIP to center of steering control wheel.

1.20.2 Conformity with IS: 6283 (Part-1) – 2006 (Re-affirmed in 2014) & IS: 6283 (Part-2) – 2007 (Re-affirmed in 2014) :

Controls are identifiable with symbols as per IS: 6283 (Part-1) – 2006 (Re-affirmed in 2014) & IS: 6283 (Part-2) – 2007 (Re-affirmed in 2014), **except the following:**

- i) Indication of fuel level gauge, grease lubricating frequency, oil lubricant, type & frequency.
- ii) Colour codes for fuel level gauge.

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1.20.3 Conformity with IS:8133-1983 (Re-affirmed in 2014), except the following:
Location and movement of various controls meets the requirement of IS: 8133-1983 (Re-affirmed in 2014).

1.20.4 Conformity with IS: 12239 (Part-1)-1996 (Re-affirmed in October, 2017):
Meets the requirements of **IS: 12239 (Part-1)-1996 (Re-affirmed in October, 2017), except the following:**

- i) Hand holds for easy mounting & dismounting of the operator has not been provided
- ii) Vertical retainness at both sides on foot steps.
- iii) Width of foot steps.

1.20.5 Conformity with IS:12239 (Part-2)-1999 (Re-affirmed in 2014):
Meets the requirements of **IS:12239 (Part-2)-1999 (Re-affirmed in 2014), except the following:**

- i) The spark arrester has not been provided in exhaust system
- ii) The working clearance around position control lever & mudguard should be provided as per the requirement of IS: 12239 (part-2)-1999.

1.20.6 Conformity with IS: 14683 – 1999 (Re-affirmed in 2014) :
Lightings provided on the tractor meets the requirements and conform to IS: 14683-1999(Re-affirmed in 2014).

1.20.7 Rear view mirror has been provided

1.20.8 Slow moving emblem:
Slow moving emblem has been provided.

1.21 Labelling of tractor as per IS: 10273-1987 (Reaffirmed in 2014):
The labelling plate is riveted on outside of LHS fender and provides the following information:

Name of Manufacturer	M/s. Force motors Limited, Pune- 411 035 (INDIA)		
Make	Force motors Limited		
Model	OX25 ORCHARD DLX LT		
Year of manufacturer	2017		
Engine Serial Number	D10039368		
Chassis Serial Number	T08015580F17		
Maximum P.T.O Power, (kW)	17		
Specific fuel consumption, (g/kwh)	260	TOTAL PERMISSIBLE MASSES	1835 kg
	Permissible front axle load		630 kg
	Permissible rear axle load		1205 kg

1.22 Ballast Conditions:

Particulars	Ballast mass as used, (kg)			
	Front		Rear	
	Water	C.I.weight	Water	C.I. weight
i) As used during drawbar performance test	NIL	NIL	160	160
ii) As used during field test:	NIL	NIL	160	160
iii) As used during haulage test	NIL	NIL	160	160

1.22.1 Standard Ballast, if provided : None

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1.23 Masses:

Particulars		Mass of the tractor without operator but with all the liquid reservoirs full, (kg)		
		Front	Rear	Total
i)	Without ballast	615	875	1490
ii)	With ballast as used during drawbar performance test	615	1195	1810
iii)	With ballast as used during field test	615	1195	1810
iv)	With ballast as used during haulage test with trailer hitch and canopy	620	1220	1840

1.24 Overall dimensions:

Condition	Length, (mm)	Width, (mm)	Height, (mm)	Ground Clearance, (mm)
Without Ballast	3000	1495	1415	270 (below center of front axle)

1.25 Number of external lubricating Points:

- Oiling : Nil
- Greasing nipples : 23
- Grease cups (front wheel hubs) : 02

1.26 Colour of tractor:

- Chassis & engine : Blue
- Sheet metal:**
- Bonnet and mudguard : Blue & white
- Wheel rim & disc : White

2. FUEL AND LUBRICANTS

2.1 Fuel : The High-speed diesel oil supplied by M/s Indian Oil Corporation Limited having density of **0.836 g/cm³** at 15°C was used.

2.2 Lubricants:

Sl. No.	Particulars	As recommended by the manufacturer	As used during the test
1.	Engine oil and Hydraulic oil	15W40	15W40
2.	Hydraulic system	20W40	20W40
3.	Transmission & brake system	EP-90 / HD 90	Oil originally filled in the system was not changed
4.	Steering system	Mechanical EP-90 Power Str. - ATF	--do--
5.	Grease	Servo grease MP-2	General multipurpose grease

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3. PTO PERFORMANCE TEST

Date(s) of test : 31.07.2018 & 01.08.2018
Tractor run at the Institute prior to start of PTO test (h) : 2.95
Type of dynamometer bench used : SAJ-AG-250 Eddy Current

3.1 The results of power take-off performance are tabulated in Table-1 and graphically represented in Fig. 3, 4 and 5.

Table – 1

Power, (kW)	Speed (rpm)		Fuel consumption			Specific energy (kWh/l)
	PTO	Engine	(l/h)	(kg/h)	Specific, (kg/ kWh)	
1	2	3	4	5	6	7
a) Maximum power – 2 hours test:						
17.3	598	2200	5.63	4.71	0.272	3.07
16.2	598	2200	5.30	4.43	0.273	3.06*
b) Power at rated engine speed (2200 rpm):						
17.3	598	2200	5.63	4.71	0.272	3.07
16.2	598	2200	5.30	4.43	0.273	3.06*
c) Power at standard power take-off speed (540 ± 10 rpm):						
16.1	540	1987	5.17	4.32	0.268	3.11
15.3	540	1987	4.94	4.13	0.270	3.10*
d) Varying loads at rated engine speed (2200 rpm):						
i) Torque corresponding to maximum power available at rated engine speed:						
17.3	598	2200	5.63	4.71	0.272	3.07
ii) 85% of the torque obtained in (i):						
15.6	634	2332	5.32	4.45	0.285	2.93
iii) 75% of the torque obtained in (ii) :						
11.8	639	2351	4.40	3.68	0.312	2.68
iv) 50% of the torque obtained in (ii) :						
8.0	644	2369	3.58	2.99	0.374	3.75
v) 25% of the torque obtained in (ii) :						
4.1	656	2413	2.81	2.35	0.573	1.46
vi) Unloaded						
0.1	662	2435	2.09	1.75	17.500	0.05
e) Varying loads at standard PTO speed:						
i) Torque corresponding to maximum power available at standard PTO speed:						
16.1	540	1987	5.17	4.32	0.268	3.11
ii) 85% of the torque obtained in (i):						
14.6	575	2115	4.86	4.06	0.278	3.00
iii) 75% of the torque obtained in (ii) :						
11.0	579	2130	4.00	3.34	0.304	2.75
iv) 50% of the torque obtained in (ii) :						
7.4	583	2145	3.18	2.66	0.359	2.33
v) 25% of the torque obtained in (ii) :						
3.8	591	2174	2.46	2.06	0.542	1.54
vi) Unloaded						
0.1	597	2196	1.79	1.50	15.000	0.06

* Under high ambient conditions.

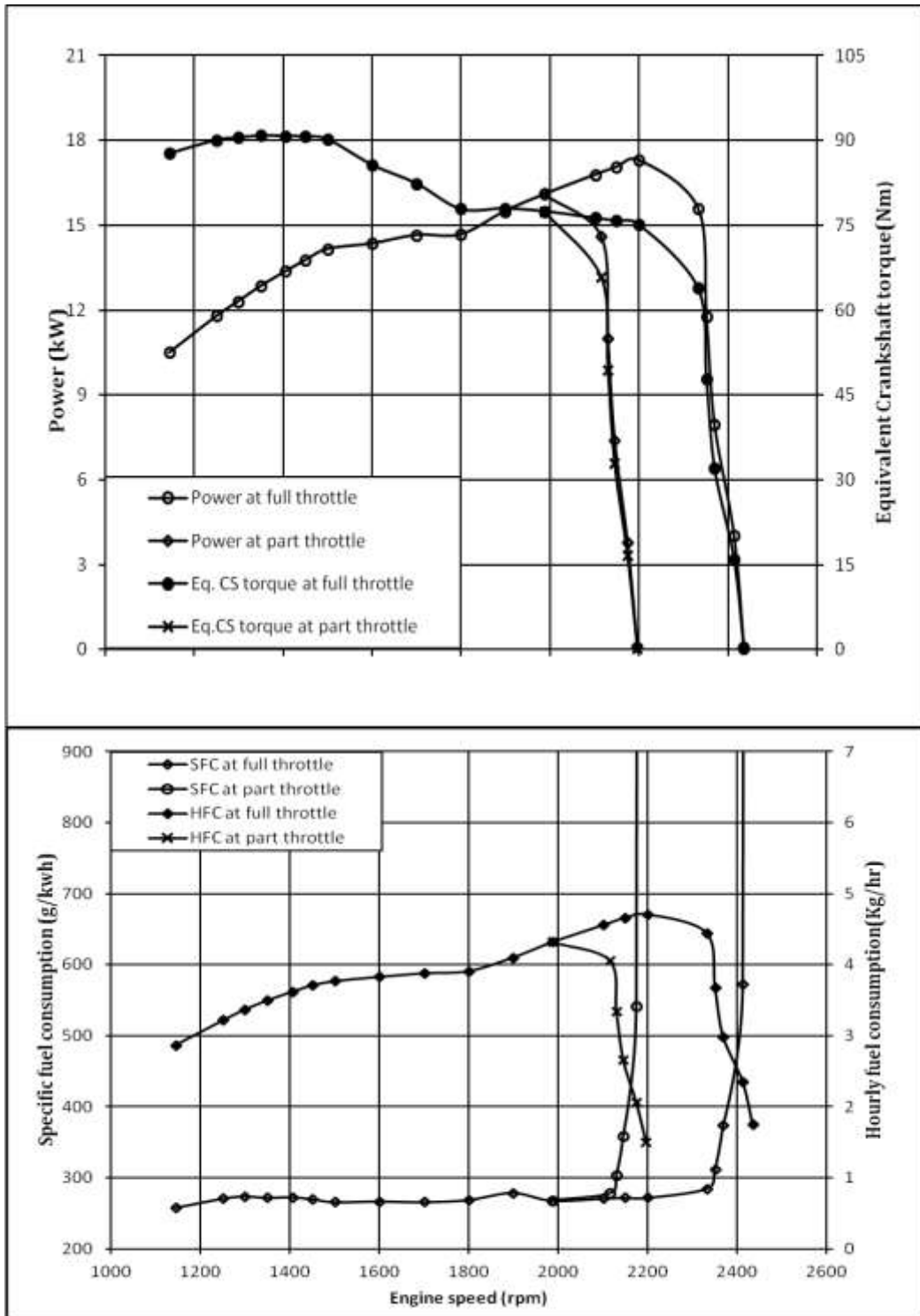


Fig.3: PTO PERFORMNACE CHARACTERISTICS (NATURAL AMBIENT)

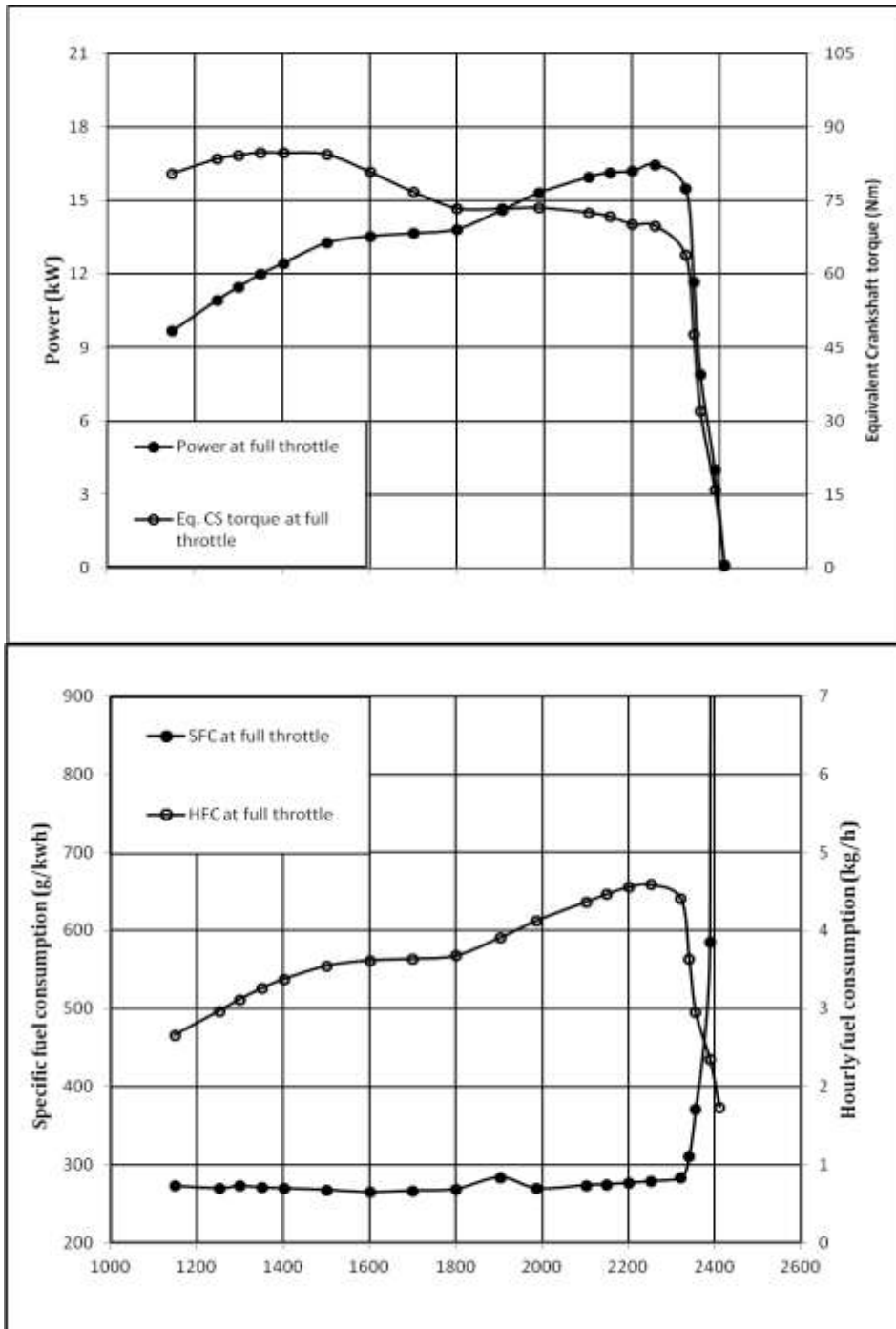


Fig.4: PTO PERFORMANCE CHARACTERISTICS (HIGH AMBIENT)

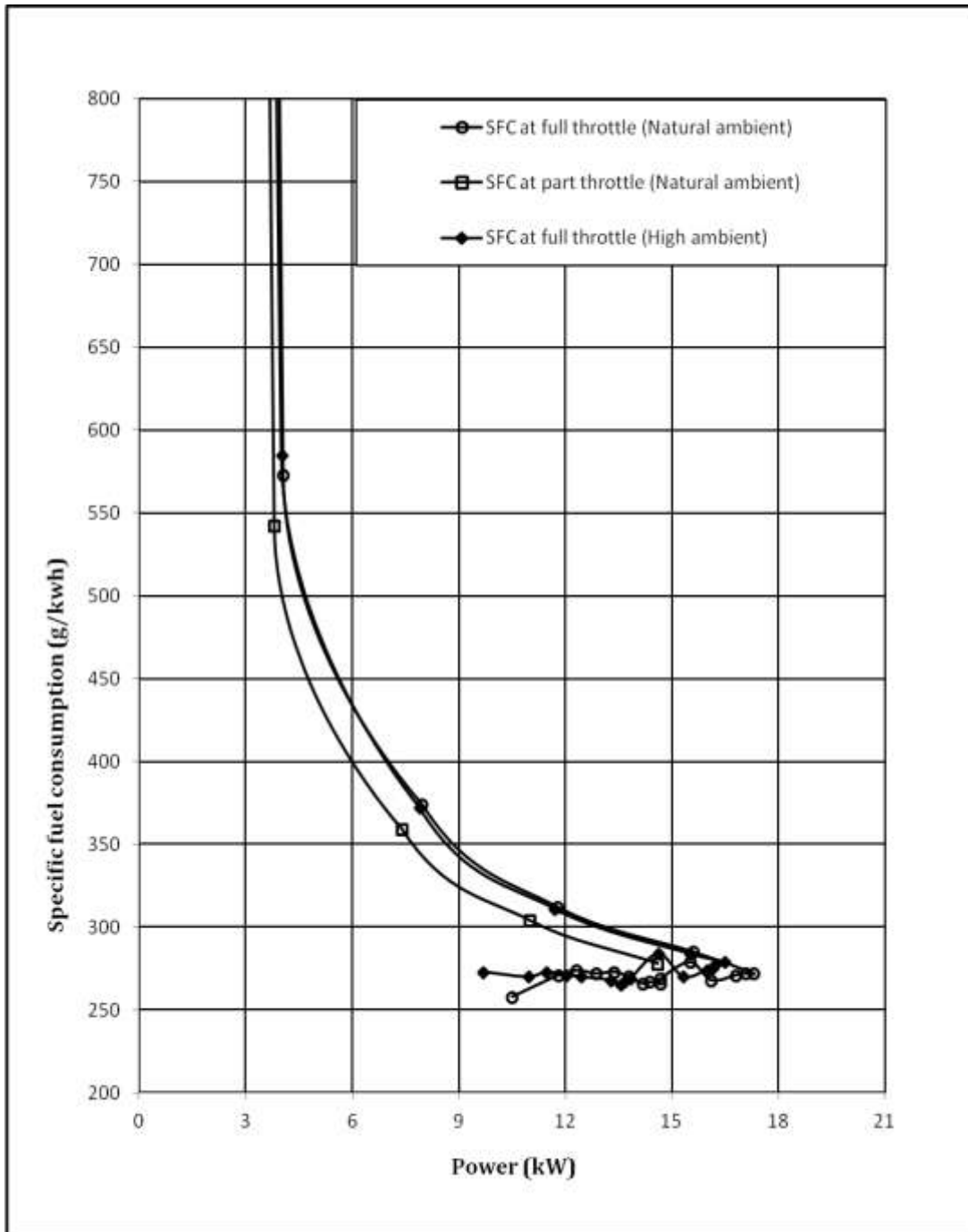


Fig.5: PTO PERFORMNACE CHARACTERISTICS

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	<u>Natural ambient</u>	<u>High ambient</u>
-No load maximum engine speed (rpm) :	2435	2410
-Equivalent crankshaft torque at maximum power, (Nm) :	75.1	70.2
-Maximum equivalent crankshaft torque (Nm) :	90.9	84.9
-Engine speed at maximum equivalent crankshaft torque (rpm) :	1350	1350
- Backup torque, (%) :	21.0	20.9
Smoke level , maximum light absorption coefficient, (per meter) :	0.64	--
- Range of atmospheric conditions:		
Temperature (°C) :	25 to 27	43 to 44
Pressure, (kPa) :	98.3 to 98.6	99.3 to 99.6
Relative humidity (%) :	72 to 76	38 to 57
- Maximum temperatures, (°C):		
Engine oil :	87	101
Coolant (Water) :	93	105
Fuel :	51	67
Air intake :	57	73
Exhaust gas :	459	455
-Pressure at maximum power:		
Intake air, (kPa) :	1.7	1.7
Exhaust gas, (kPa) :	2.0 to 2.1	2.5 to 3.1
-Consumptions :		
Lub oil, (g/kWh) :	--	0.40
Coolant (% of total coolant capacity) :	--	Nil

4. DRAWBAR PERFORMANCE TEST

Date(s) of test	:	19.12.2018, 20.12.2018 & 21.12.2018
Tractor run at the Institute prior to start of drawbar test, (h)	:	18.76
Type of track	:	Concrete

Height of drawbar, (mm):

-Without ballast	:	550
-With ballast	:	480

- 4.1 The results of drawbar performance test consisting of maximum power and pull without ballast / with ballast and ten hours test are tabulated in **Table – 2**. The results of the tests with ballast are also represented graphically in **Fig. 6 & 7**.

Table - 2**DRAWBAR PERFORMANCE TEST**

Gear	Travel Speed, (Km/h)	Draw-bar power, (kW)	Draw-bar pull, (kN)	Engine Speed, (rpm)	Wheel Slip, (%)	Fuel consumption		Specific Energy, (kWh/l)	Atmospheric conditions				Temperature (°C)			Max. sustained pull, (kN)
						(kg/kWh)	(l/h)		Temp (°C)	Pressure (kPa)	R.H. (%)	Fuel	Trans. oil	Coolant (Water)	Engine oil	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
i) Maximum power test (Tractor without ballasted):																
L2	2.50	8.6	12.43	2330	14.8	0.390	4.01	2.14	22	99.5	35	32	83	69	93	13.00
L3	3.96	13.6	12.34	2266	15.2	0.353	5.74	2.37	22	99.4	34	34	80	77	92	12.79
L4	6.96	15.4	7.95	2199	4.8	0.288	5.31	2.90	22	99.5	35	34	77	78	93	10.03
H1	5.33	15.3	10.33	2201	7.6	0.286	5.23	2.93	22	99.4	35	34	75	79	95	12.49
H2	9.66	16.3	6.09	2202	2.7	0.268	5.23	3.12	22	99.5	32	34	61	80	94	7.47
ii) Maximum power test (Tractor ballasted):																
L2	2.45	10.7	15.68	2319	14.9	0.382	4.89	2.19	23	99.3	25	32	83	75	93	16.63
L3	4.13	14.1	12.31	2200	7.9	0.309	5.21	2.71	23	99.3	22	34	80	76	95	15.04
L4	6.98	16.4	8.47	2201	3.5	0.261	5.12	3.20	24	99.3	26	35	78	81	96	10.14
H1	5.40	15.1	10.06	2203	5.4	0.287	5.18	2.91	24	99.3	28	35	63	81	95	12.07
H2	9.59	15.7	5.89	2200	2.3	0.277	5.20	3.02	24	99.3	30	35	53	80	89	7.47

Contd..Table-2

Gear	Travel Speed, (Km/h)	Draw-bar power, (kW)	Draw-bar pull, (kN)	Engine Speed, (rpm)	Wheel Slip, (%)	Fuel consumption		Specific Energy, (kWh/l)	Atmospheric conditions				Temperature (°C)			Max. sustained pull, (kN)
						(kg/kWh)	(l/h)		Temp (°C)	Pre-ssure (kPa)	R.H. (%)	Fuel	Trans. oil	Coolant (Water)	Eng-ine oil	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
iii) Five hours test at 75 percent of pull obtained at maximum Power (ballasted wheeled tractor):																
L3	4.52	11.6	9.21	2326	5.1	0.321	4.47	2.59	11	99.5	31	21	52	61	80	--
iv) Five hours test at pull corresponding to 15 percent wheel slip (ballasted wheeled tractor):																
L2	2.43	10.6	15.68	2317	--	0.358	4.59	2.30	21	99.2	25	31	84	69	90	--
									23	99.5	30	34	88	88	97	

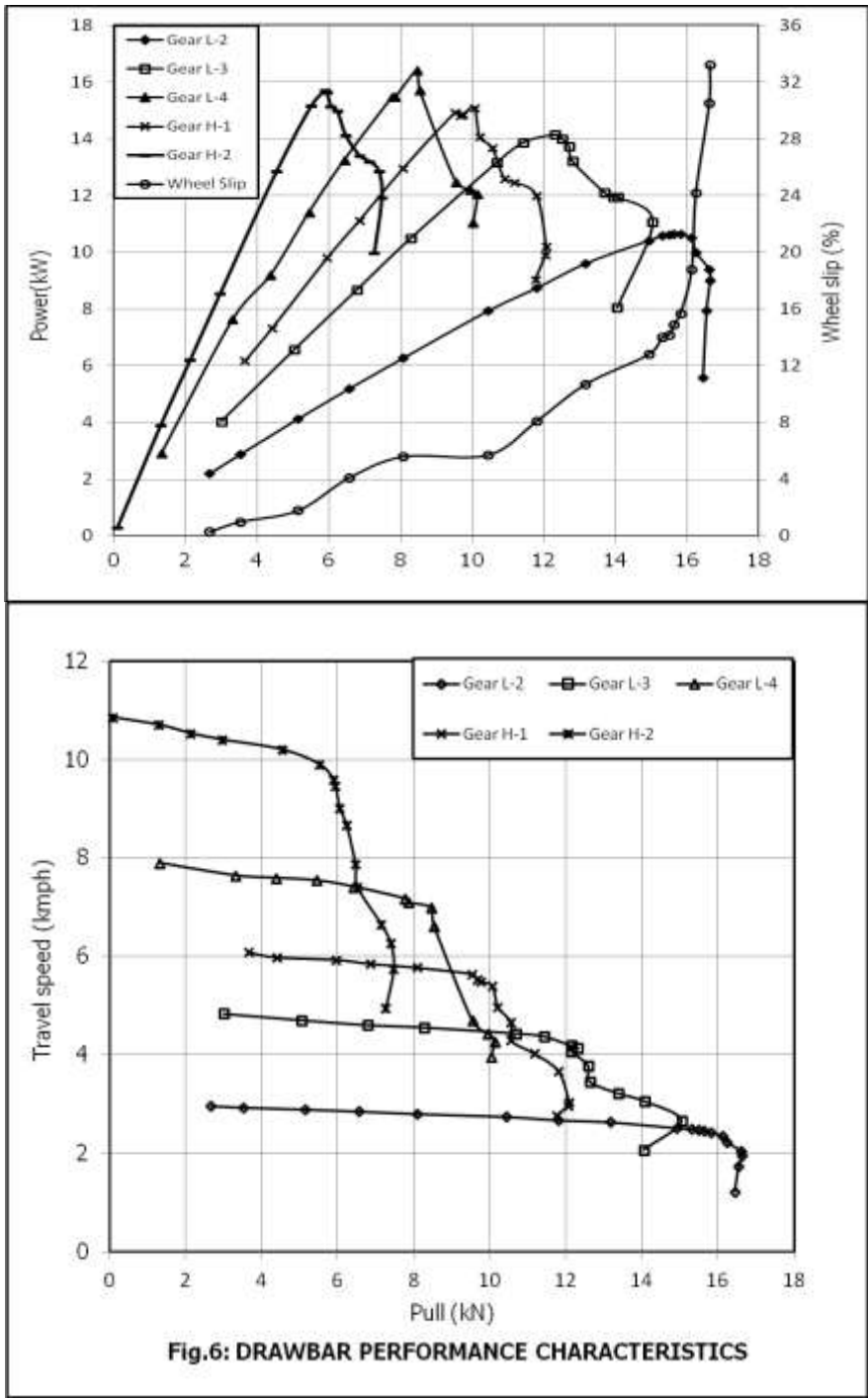
i) The coolant (Water) and lub oil consumption during 10 hours test were observed as **5.0** and **Nil ml/h** respectively.

ii) Tyre Creeping, (mm) :

- LHS : Nil
- RHS : Nil

iii) Maximum temperatures during entire drawbar test, (°C):

Engine oil : 97
Coolant (Water) : 86
Transmission oil : 88
Fuel : 36



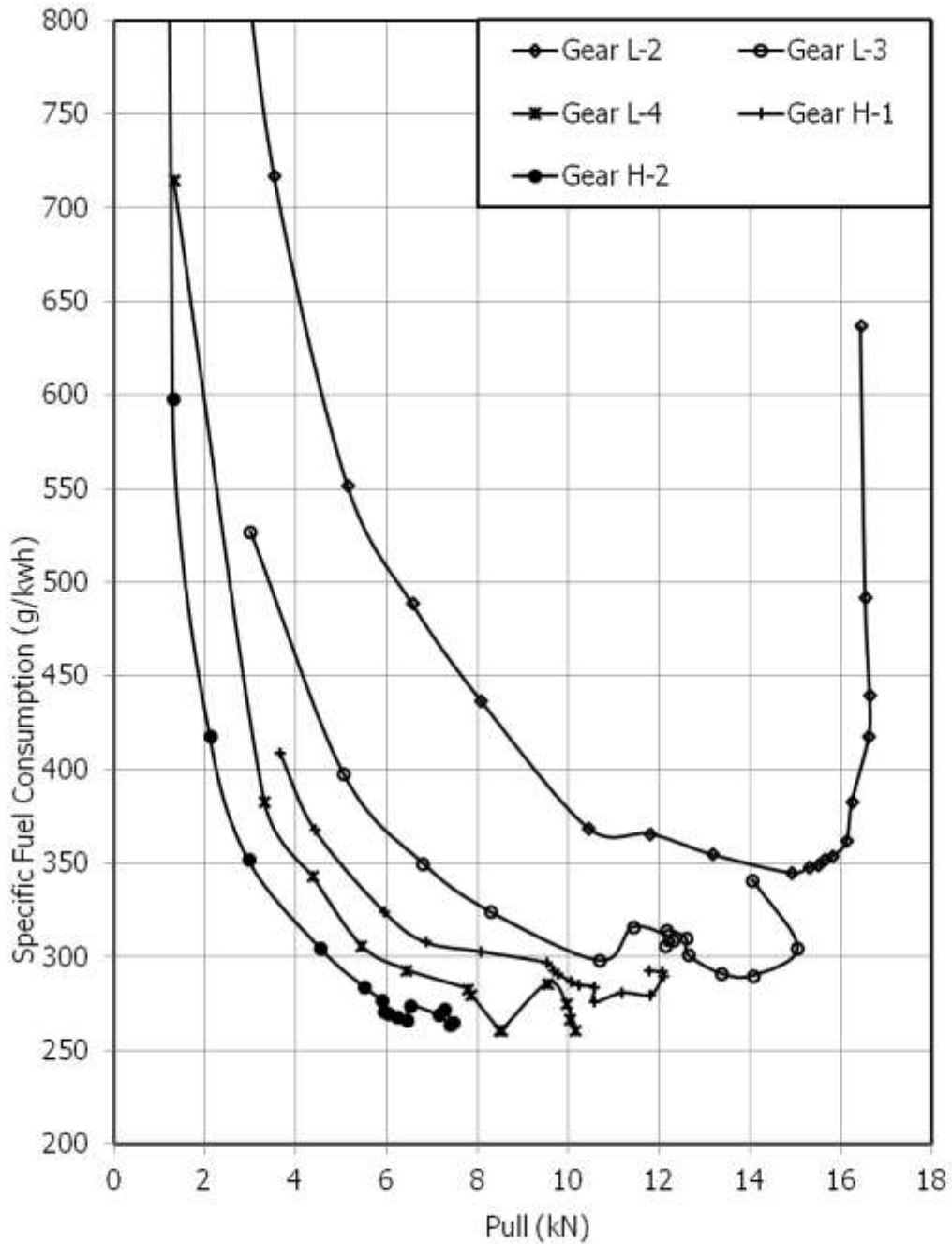


Fig.7: DRAWBAR PERFORMANCE CHARACTERISTICS

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5. POWER LIFT AND HYDRAULIC PUMP PERFORMANCE TEST

Date(s) of test : 30.08.2018,31.8.2018 & 04.09.2018
 Tractor run at the Institute prior to start of hydraulic test, (h) : 16.38
 Pump speed at rated engine speed (rpm) : 2522

5.1 Hydraulic power test:

Pump delivery rate at minimum pressure and rated engine speed, (l/min) : 20.1
 Maximum hydraulic power,(kW) : 5.3
 Pump delivery rate at maximum hydraulic power, (l/min) : 19.9
 Pressure at maximum hydraulic power, (MPa) : 16.0
 Sustained pressure of the open relief valve, (MPa) : 17.5

Tapping point:

a) Relief valve test : At external tapping point
 b) Pump performance test : Pump outlet
 Temperature of hydraulic fluid, (°C) : 60 to 64

5.2 Lifting capacity test :

Test	Height of lower hitch point above ground in down position, (mm)	Vertical movement with lifting forces, (mm)	Maximum corrected force exerted through full range, (kN)	Corresponding pressure, (MPa)	Moment about rear axle, (kN-m)	Maximum tilt angle of mast from vertical (degrees)
At hitch points	200	575	10.91	15.8	11.75	--
On the standard frame	200	575	8.56	15.8	12.37	20.2

5.3 Maintenance of lift load:

Force applied at the frame, (kN) : 7.70
 Temperature of hydraulic fluid at the start of test, (°C) : 60

Test data:

Elapsed time (minute)	5	10	15	20	25	30
Cumulative drop in height of lift, (mm)	05	05	05	05	05	05

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6. BRAKE TEST

6.1 Service brake:

6.1.1 Cold brake test:

Date of test(s) : 13.08.2018
 Type of Track : Concrete
 Maximum attainable speed (kmph):
 - Unballasted Tractor : 28
 -With road ballasted Tractor 28

		At maximum attainable travel speed			
Unballasted tractor	Braking device control force, (N)	471	401	331	260
	Mean deceleration, (m/sec ²)	4.96	4.32	3.67	2.50
	Stopping distance, (m)	6.10	7.00	8.23	12.10
Road Ballasted tractor	Braking device control force, (N)	486	414	342	270
	Mean deceleration, (m/sec ² .)	4.84	3.76	3.43	2.50
	Stopping distance, (m)	6.25	8.04	8.82	12.10

		At 25 kmph travel speed			
Unballasted tractor	Braking device control force, (N)	478	399	320	241
	Mean deceleration, (m/sec ²)	4.51	4.03	3.40	2.50
	Stopping distance, (m)	5.35	5.98	7.09	9.65
Road Ballasted tractor	Braking device control force, (N)	484	405	325	246
	Mean deceleration, (m/sec ² .)	4.38	3.84	3.37	2.50
	Stopping distance, (m)	5.50	6.28	7.15	9.65

6.1.2 Brake fade test:

		At maximum attainable travel speed			
Road Ballasted tractor	Braking device control force, (N)	495	423	352	280
	Mean deceleration, (m/sec ²)	4.45	3.72	3.47	2.50
	Stopping distance, (m)	6.80	8.13	8.71	12.10
		At 25 kmph travel speed			
Road Ballasted tractor	Braking device control force, (N)	500	424	347	271
	Mean deceleration, (m/sec ²)	4.19	3.69	3.31	2.50
	Stopping distance, (m)	5.75	6.53	7.28	9.65

Max. deviation of tractor from its original course, (m) : None
 Abnormal vibration : None
 The brakes were heated by : Self braking

6.2 Parking brake test:

Particulars	Parked on 18 percent slope		Parked on 12 percent slope with trailer of 1.54 tonnes.	
	Facing up	Facing down	Facing up	Facing down
Braking device control force, (N)	461	419	376	388
Efficacy of parking brake	----- Effective -----			

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7. NOISE MEASUREMENT

7.1 Noise at bystander's position:

Date of test : 29.06.2018
 Type of track : Concrete
 Background noise level, dB (A) : 58

Atmospheric conditions:

Temperature, (°C) : 29
 Pressure, (kPa) : 96.7
 Relative humidity, (%) : 77
 Wind velocity, (m/s) : 1.4

TEST DATA:

S. No.	G e a r	Travelling speed before acceleration, (kmph)	Noise level, dB (A)
1.	L1	1.24	82
2.	L2	2.13	82
3.	L3	3.47	83
4.	L4	5.61	82
5.	H1	4.53	82
6.	H2	7.78	82
7.	H3	12.77	83
8.	H4	19.98	85

7.2 Noise at operator's ear level:

Date of test : 19.12.2018
 Type of track : Concrete
 Background noise level, dB(A) : 55

Atmospheric conditions:

Temperature, (°C) : 19
 Pressure, (kPa) : 99.5
 Relative humidity, (%) : 37
 Wind velocity, (m/s) : 1.1

Test Data:

Gear	Drawbar pull at which the tractor develops the maximum noise level, (kN)	Corresponding travelling speed, (kmph)	Noise level dB (A)
L2	10.92 to 12.35	2.66 to 2.46	91
L3	12.21 to 12.19	4.01 to 3.98	93
*L4	6.33	7.44	93
H1	6.89 to 10.33	5.88 to 5.33	92
H2	5.13 to 6.09	10.15 to 9.66	92

* Gear corresponds to the nominal traveling speed nearest to 7.5 kmph.

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8. MECHANICAL VIBRATION MEASUREMENT

Date of test : 20.02.2018
Type of test surface : Concrete

1 Sl. No.	2 Measuring points		3				4	
			Vibration, microns					
			At no load		At load corresponding to 85% of maximum PTO power			
		VD	HD	VD	HD	VD	HD	
i)	Foot rest	Left	50	60	60	130*		
		Right	70	70	80	100		
ii)	Steering control wheel		70	40	230*	210*		
iii)	Seat	Bottom	30	30	60	90		
		Back	20	30	90	190*		
iv)	Mudguard	Left	20	30	210*	240*		
		Right	70	40	270*	210*		
v)	Head light	Left	40	60	50	180*		
		Right	30	30	160*	80		
vi)	Battery base, centre		50	60	160*	270*		
vii)	Tail light	Left	60	150*	180*	110*		
		Right	120*	100	170*	160*		
viii)	Plough light		200*	60	120*	280*		
ix)	Gear shifting lever		30	20	90	100		
x)	Accelerator lever	Hand	40	30	240*	130*		
		Foot	60	40	90	100		
xi)	Brake pedal	Left	120*	40	220*	120*		
		Right	60	30	250*	250*		
xii)	Clutch pedal		60	120*	180*	140*		
xiii)	Main hydraulic control lever		40	20	180*	160*		
xiv)	PTO engaging lever		40	20	90	50		
xv)	Differential Lock		10	10	70	40		

*The amplitude of mechanical vibration is on higher side.

9. LOCATION OF CENTRE OF GRAVITY

Condition	Particulars	Coordinates
Tractor under unballasted condition but with all the liquid reservoirs full & the operator replaced by a 75 kg mass on the seat	Height above ground, (mm)	599.9
	Distance forward from the vertical plane containing the axis of rear wheels, (mm)	643.8
	Distance from the median plane parallel to the longitudinal axis of tractor bisecting the track, (mm)	1.8 (towards RHS)

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10. TURNING ABILITY

Characteristics	Minimum turning diameter,(m)		Minimum clearance diameter,(m)	
	LHS	RHS	LHS	RHS
Brakes released	5.65	5.90	5.89	6.13
Brake applied	4.91	5.00	5.13	5.22

11. OPERATOR'S FIELD OF VISION

The operator's field of vision to the front and rear from the operator's seat is represented in **Fig. 8**. The observations are as under:

1. The non visible space in front is **7025 mm** which is **3.58** times of wheel base (i.e. 1960 mm).
2. The non-visible space on LHS and RHS is **2600 mm** which is **1.89** times of standard rear track width (i.e. 1375 mm).

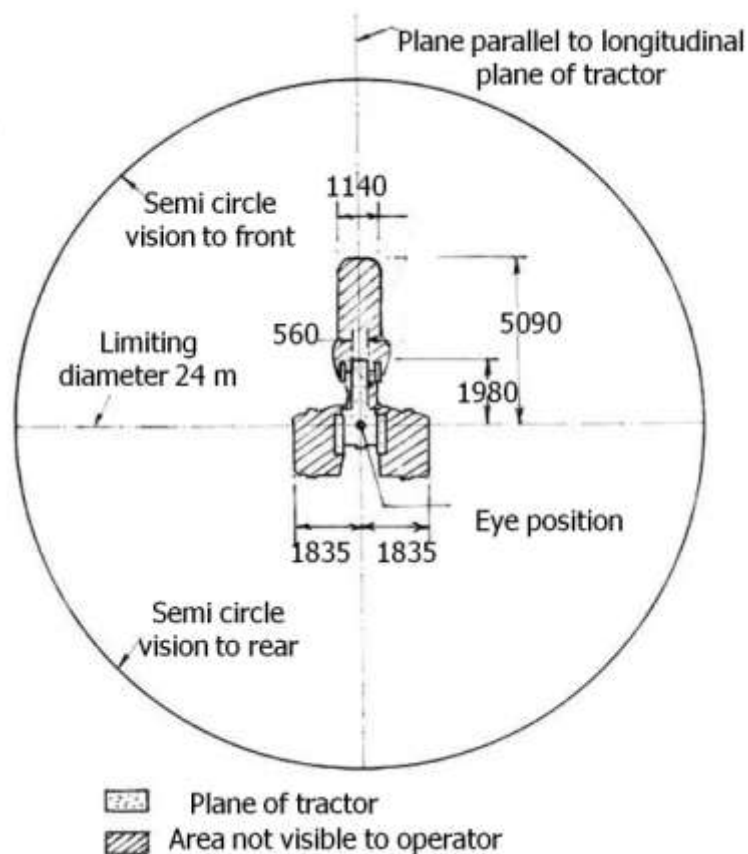


Fig. 8: Operator's field of vision

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12. FIELD TEST

12.1 The field tests comprising of M.B. ploughing and rotavation were conducted for 21.5 and 15.6 hours respectively.

All the field tests were conducted at the full accelerator settings, when the no load speed of the engine varied from 2377 to 2420 rpm.

12.2 The brief specifications of the implements used during field tests are given in **Annexure – I**.

12.3 The summary of field test observation with M.B. plough and rotavator is given in Table – 3.

Table – 3

SUMMARY OF FIELD PERFORMANCE TEST

S No.	Parameter/operation	M.B. Ploughing	Rotavation
i)	Type of soil (refer IS:7926-1975)	Heavy	Heavy
ii)	Av. Soil moisture, (%)	10 to 18	9 to 18
iii)	Bulk density of soil, (g/cc)	1.45 to 1.60	1.5 to 1.6
iv)	Cone index, (kg/cm ²)	8.17 to 9.36	7.32 to 9.36
v)	Gear used	A-3	A-3
vi)	Av. Speed of operation, (kmph)	2.31 to 2.41	2.87 to 2.94
vii)	Av. Wheel slip, (%)	15 to 19	-1.3 to - 2.0
viii)	Av. Depth of cut, (cm)	15 to 17	7 to 8
ix)	Av. Working width, (cm)	58 to 63	104 to 107
x)	Area covered, (ha/h)	0.111 to 0.127	0.234 to 0.242
xi)	Fuel consumption:		
	- (l/h)	2.75 to 2.83	3.53 to 3.73
	- (l/ha)	21.64 to 24.84	14.65 to 15.38
xii)	Av. Draft of implement, (kN)	5.8 to 6.6	--

Remarks: The average lub oil and coolant (water) consumptions during the entire field tests were observed to be **Nil & 1.34 ml/h** respectively.

12.4 Wet land cultivation (Puddling Operation):

The manufacturer does not recommend for **wet land cultivation (puddling operation)**. Hence puddling test was not conducted.

13. HAULAGE TEST

Type of trailer :

Gross mass of trailer, (tonnes) : 2.5
Height of trailer hitch above ground level, (mm) : 490
Gear used during the test for negotiating slopes upto 8% : H-4

Average travel speed, (kmph) : 25.85 to 26.34

Average fuel consumption:

- (l/h) : 6.42 to 6.45
- (ml/km/tonne) : 62.09 to 62.38
Average distance traveled per litre of fuel consumption, (km) : 6.41 to 6.44

General observations:

Effectiveness of brakes : Effective
Maneuverability of tractor-trailer combination : Satisfactory

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14. COMPONENTS/ASSEMBLY INSPECTION

The engine and other assemblies were dismantled after **81.7** hours of tractor operation at this Institute.

14.1 Engine:

14.1.1 Cylinder bore:

Cylinder No.	Cylinder bore dia, (mm)						Max. permissible wear limit, (mm)
	Top position		Middle position		Bottom position		
	Thrust side	Non-thrust side	Thrust Side	Non-thrust side	Thrust side	Non-thrust Side	
1.	90.926	90.923	90.924	90.920	90.923	90.917	91.128
2.	90.926	90.917	90.917	90.917	90.914	90.916	
3.	90.923	90.916	90.923	90.912	90.921	90.911	

14.1.2 Piston:

Piston No.	Piston dia, (mm)					Clearance between piston and cylinder liner at the skirt of the piston (mm)	
	Top (above top compression ring)		At skirt			As observed	Maximum permissible limit
	Thrust side	Non-thrust side	Thrust side	Non-thrust side	Maximum permissible limit		
1.	90.342	90.308	90.885	90.199	90.74	0.041	0.120
2.	90.281	90.258	90.876	90.197		0.050	
3.	90.341	90.285	90.875	90.198		0.048	

14.1.3 Ring end gap:

Rings	Ring end gap limit, (mm)									Maximum Permissible
	Cylinder No.1			Cylinder No. 2			Cylinder No. 3			
	Top	Mid- dle	Bott om	Top	Mid- dle	Bott- om	Top	Mid- dle	Bott- om	
1 st comp. ring	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	1.50
2 nd comp. ring	1.00	1.00	1.00	0.90	0.90	0.90	1.00	1.00	1.00	1.50
Oil ring	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	1.50

14.1.4 Ring side clearance:

Rings	Ring side clearance, (mm)			Max. Permissible clearance limit, (mm)
	Piston-I	Piston-II	Piston-III	
1st Compression ring	0.127	0.126	0.130	0.20
2nd Compression ring	0.092	0.098	0.099	0.15
Oil ring	0.048	0.058	0.059	0.10

14.1.5 Main bearings:

Bearing No.	Diametrical Clearance, (mm)	Crankshaft end Float, (mm)	Max. permissible clearance limit, (mm)	
			Diametrical clearance	Crankshaft end float
1.	0.056 to 0.061	0.25	0.24	0.50
2.	0.047 to 0.073			
3.	0.041 to 0.074			
4.	0.048 to 0.062			

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14.1.6 Big end bearings:

Bearing No.	Clearance, (mm)		Max. permissible clearance limit, (mm)	
	Diametrical	Axial	Diametrical	Axial
1.	0.069 to 0.070	0.20	0.24	0.24
2.	0.062 to 0.078	0.20		
3.	0.062 to 0.065	0.20		

14.1.7 Valve, guides and timing gears: Observation

Any marked sign of overheating of valves : **None**

Pitting of seat/faces of valves : **None**

Any visual damage to the teeth of timing gears : **None**

Spring Rate, (N/mm):

Intake : 23.63 to 23.81 | Against discard limit of 22.8 N/mm

Exhaust : 23.63 to 23.98

Clearance between valve guide and valve stem, (mm):

Intake valve : 0.048 to 0.056 | Against discard limit of 0.10 mm

Exhaust valve : 0.072 to 0.079 | Against discard limit of exhaust 0.125 mm

14.2 Clutch:

Any marked wear on clutch friction plate(s) : **None**

Condition of clutch release bearing : Normal

Condition of pilot bearing : Normal

Condition of diaphragm springs. : Normal

Presence of oil in clutch housing : **None**

Any marks on fly wheel/pressure plate : **None**

Overall thickness of clutch plate,(mm) :

-Main transmission : 9.68 to 9.86 | Against discard limit of 7.0 mm

-PTO : 8.15 to 8.35 | Against discard limit of 6.0 mm

Height of lining over rivet head, (mm) :

-Main transmission : 1.64 to 1.80 | Against discard limit of 0.05 mm

-PTO : 1.63 to 1.94 | Against discard limit of 0.05 mm

14.3 Transmission gears:

Any visual damage, pitting & chipping of any transmission gear teeth : **None**

Backlash between crown wheel and Pinion, (mm) : 0.25 | Against discard limit of 0.45 mm

14.4 Brakes:

Description	Initial specified thickness of brake lining, (mm)	Measured thickness of brake lining after test, (mm)	Measured depth of oil groove of brake disc, (mm)	Minimum permissible depth of oil groove of brake disc, (mm)
Left	0.05 / side	4.59 to 4.70	0.42 to 0.52	0.05 above oil groove side
Right	0.05/ side	4.62 to 4.83	0.43 to 0.64	

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- 14.5 Front axle:**
Any marked wear of king pins : **None**
Any marked wear of king pin bushes : **None**
Clearance between king pins and bushes, (mm) : 0.135 to 0.159 | Against discard limit of 0.75 mm
Condition of thrust bearings : Normal
Condition of bearings for stub axles (tapper roller bearing) : Normal
Condition of seals for stub axles and king pins : Normal
Clearance between centre pin and bush, (mm) : 0.043 to 0.236 | Against discard limit of 0.75 mm
- 14.6 Steering system:**
Visual condition of the components of complete steering assembly : Normal
- 14.7 Starter motor & Alternator:**
Presence of soil/oil in housing : **None**
Condition of bearings and other Components : Normal

15. ADJUSTMENTS, DEFECTS, BREAKDOWNS AND REPAIRS

Sl. No.	Adjustments/Defects/Breakdowns and Repairs	Tractor run hours
-	--None --	-

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16. SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS

16.1 Evaluative (mandatory) / Non-evaluation (Non-mandatory) parameter applicable for qualifying Minimum Performance criteria as per Clause-4 (Table-1) of IS: 12207-2014 for acceptance of the tractor for the purpose of subsidies/NABARD financing are summarized as under:

S. No.	Characteristic	Category (Evaluative / Non Evaluative)	Requirements as per IS: 12207-2014	Values declared by the applicant (D)/ Require- ment(R)	As observed	Whether meets the requirem ents (Yes/No.)
1	2	3	4	5	6	7
16.1.1	PTO Performance :					
a)	Maximum power under 2 hours test, (kW) (Natural ambient condition)	Evaluative	Declared value to be achieved with a tolerance of: -5 / +10% for PTO power >26 kW. -7.5/+10% for PTO power ≤ 26 kW or -5 / +10% for Engine power >26 kW. -7.5/+10% for Engine power ≤ 26 kW.	17.0 (D)	17.3	Yes
b)	Power at rated engine speed, (kW)	Non Evaluative	-do-	17.0 (D)	17.3	Yes
c)	Specific fuel consumption corresponding to maximum power, (g/kWh)	Non Evaluative	+ 5%	260 (D)	272	Yes
d)	Maximum equivalent crankshaft torque, (Nm)	Non Evaluative	± 8%	96 (D)	90.9	Yes
e)	Back-up torque, percent	Non Evaluative	10 percent, minimum (R)	10 (R)	21.0	Yes
f)	Maximum operating temperature (°C)					
	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)	101	Yes
	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.	110 (D)	105	Yes
g)	Engine oil consumption, (g/kWh)	Evaluative	Not exceeding 1% of SFC at max. power under High ambient conditions	2.73 (R)	0.40	Yes
h)	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)	0.64 per meter	Yes

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1	2	3	4	5	6	7	
16.1.2	Drawbar performance :						
a)	Maximum drawbar pull with ballast corresponding to 15 percent wheel slip, (kN)	Non Evaluative	Minimum 65% of static mass with ballast	14.5 (D)	15.68	Yes	
				11.54 (R)			
b)	Maximum drawbar pull without ballast corresponding to 15 percent wheel slip, (kN)	Evaluative	Minimum 65% of static mass of tractor without ballast	10.8 (D)	12.43	Yes	
				9.50 (R)			
c)	Maximum drawbar power without ballast, (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.	13.6 (D)	16.3	Yes	
				13.8 (R)			
d)	Maximum transmission oil temperature (°C)	Non Evaluative	The declared value should not exceed the maximum value specified by oil company	120 (D)	88	Yes	
16.1.3	Power lift and hydraulic pump performance :						
a)	Maximum lifting capacity throughout the range of lift, (kN):						
	1)	At hitch points	Non Evaluative	[Tolerance of minus 10%]	9.80 (D)	10.91	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	7.84(D)	8.56	Yes
					4.07 (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	0 (D)	05	Yes

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1	2	3	4	5	6	7	
16.1.4	Brake performance at 25 kmph:						
a)	Maximum stopping distance at a force, equal to or less than 600 N on brake pedal with road ballast, (m):						
	1)	Cold brake	Evaluative	10	10 (R)	5.50	Yes
	2)	Hot brake	Evaluative	10	10 (R)	5.75	Yes
b)	Maximum force exerted on the brake pedal to achieve a deceleration of 2.5 m/s ² (N)	Evaluative	600	600 (R)	246 to 271	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	
16.1.5	Noise measurement :						
a)	Maximum ambient noise emitted by the tractor dB(A)	Evaluative	As per CMVR	88 (R)	85	Yes	
b)	Maximum noise at operator's ear level dB(A)	Evaluative	As per CMVR	96 (R)	93	Yes	
16.1.6	Amplitude of mechanical vibrations at :						
1)	Left foot rest	Non Evaluative	100 microns (max)	100 (R)	130	No	
	Right foot rest			100 (R)	100	Yes	
	2) Seat (with driver seated)		-do-	100 (R)	190	No	
	3) Steering wheel		-do-	100 (R)	230	No	
16.1.7	Haulage requirements :						
a)	Gross mass of the trailers, (tones):						
	1)	Two wheel	Non Evaluative	As specified by the manufacturer	2.5 (D)	2.5	Yes
b)	Distance travelled / litre of fuel consumption, (km/l):						
	1)	Two wheel	Non Evaluative	As specified by the manufacturer	7.85 (D)	6.41 to 6.44	No
c)	Fuel consumption (ml/km/tonne):						
	1)	Two wheel	Non Evaluative	As specified by the manufacturer	50.9(D)	62.09 to 62.38	No

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1	2	3	4	5	6	7	
16.1.8	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.	The manufacturer has recommended that the tractor is not suitable for wetland cultivation (puddling operation).	Not recommend	Not applicable
	1)	Clutch assembly					
	2)	Brake housings					
	3)	Front axle hubs					
	4)	Engine Oil					
5)	Transmission Oil						
16.1.9	Safety features :						
a)	Guards against moving and hot parts	Evaluative	As per CMVR	----	Meet the requirements	Yes	
b)	Lighting arrangement	Evaluative	----do--	----	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 conform	No	
d)	Technical requirements for PTO shaft	Non Evaluative	Should meet the requirements of IS: 4931 (As amended from time to time)	----	Does not conform	No	
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 conform	No	
f)	Specifications of linkage	Non Evaluative	Should meet the requirements of IS 12953 and IS 12362 (Part 3) (As amended from time to time)	----	Meet the requirements	Yes	
	Swinging drawbar			----	Not Provided	---	

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16.1.10	Labelling of tractors (Provision of labelling plate):						
	1)	Make	Evaluative	Should conform to the requirements of CMVR along-with declared value of PTO HP	--	FORCE MOTORS LTD.	Yes
	2)	Model	Evaluative		--	OX 25 ORCHARD DLX LT	Yes
	3)	Year of manufacture	Evaluative		--	2017	Yes
	4)	Engine number	Evaluative		--	D10039368	Yes
	5)	Chassis number	Evaluative		--	T08015580F17	Yes
	6)	Declaration of PTO power, (kW)	Evaluative		--	17.0	Yes
16.1.11	Discard limit for:						
(a)	Cylinder bore diameter, (mm)		Evaluative	To be specified by the manufacturer	91.128	90.911 to 90.926	Yes
(b)	Clearance between piston & cylinder liner at skirt, (mm)		Non Evaluative	-do-	0.120	0.041 to 0.050	Yes
(c)	Ring end gap (mm):						
	-	1 st comp. ring.	Evaluative	-do-	1.50	0.35	Yes
	-	2 nd comp. ring.		-do-	1.50	0.90 to 1.00	Yes
	-	Oil ring.		-do-	1.50	0.35	Yes
(d)	Ring groove clearance (mm):						
	-	1 st comp. ring.	Evaluative	-do-	0.20	0.126 to 0.130	Yes
	-	2 nd comp. ring.		-do-	0.15	0.092 to 0.099	Yes
	-	Oil ring.		-do-	0.10	0.048 to 0.059	Yes
(e)	Clearance of main bearings (mm):						
	-	Diametrical clearance	Evaluative	-do-	0.24	0.041 to 0.074	Yes
	-	Crankshaft end float	Evaluative	-do-	0.50	0.25	Yes
(f)	Clearance of big end bearings, (mm):						
	-	Diametrical	Evaluative	-do-	0.24	0.062 to 0.078	Yes
	-	Axial	Evaluative	-do-	0.24	0.20	Yes
(g)	Clearance between king pin and bush, (mm)		Non Evaluative	-do-	0.75	0.135 to 0.159	Yes
(h)	Clearance between center pin and bush, (mm)		Non Evaluative	-do-	0.75	0.043 to 0.236	Yes

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16.1.12	Literature (Submission to test agency)					
(a)	Operator manual	Evaluative	Provided/Not Provided	As per IS: 8133 -1983 (Reaffirmed 2014)	Provided	Yes
(b)	Parts Catalogue	Evaluative	Provided/Not Provided		Provided	Yes
(c)	Workshop/ Service manual	Evaluative	Provided/Not Provided		Provided	Yes

16.1.13	CATEGORY OF BREAKDOWNS / DEFECTS :				
S. No.	Category of Breakdown	Category (Evaluative / Non Evaluative)	Requirements as per IS: 12207-2014	As observed	Whether meets the requirement (Yes/No.)
1.	Critical breakdown	Evaluative	No critical breakdown	None	Yes
2.	Major breakdowns	Evaluative	Not more than two and neither of them should be repetitive in nature	None	Yes
3.	Minor breakdowns	Evaluative	Not more than five and frequency of each should not be more than two.	None	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

16.2	Optional requirements as per Clause-4 (Table-2) of IS:12207-2014:			
	Characteristic	Requirements as per IS: 12207-2014	As observed	Whether meets the requirements (Yes/No.)
1.	Fitment of ROPS	With a provision for fitment of ROPS.	Not provided	Not applicable
		If ROPS fitted it should meet the requirement of IS: 11821-1992	ROPS not fitted	Not applicable
2.	Accessories	Trailer hitch, front tow hook, linkage drawbar may be provided.	Provided	Yes

16.3 Conformity with following IS:

- i) Guide lines for declaration of power and specific fuel consumption and labelling of agricultural tractors [IS10273: 1987 (Reaffirmed 2014)] : Conforms
- ii) Agricultural tractors - Rear mounted power take-off - Types 1, 2 and 3 [IS:4931-1995 (Reaffirmed 2014)] : **Does not conform**
- iii) Agricultural wheeled tractors - Three-point linkage: Part 2 Category 1N (Narrow Hitch) [IS 4468 (Part-2):1993/ ISO 730-2:1979 (Reaffirmed 2014)] : **Does not conform**
- iv) Drawbar for agricultural tractors – Link type [IS 12953:1990 (Reaffirmed 2007)] : Conforms

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- v) Agricultural tractors - Operator's seat technical requirement [IS 12343 –1998 (Reaffirmed 2014)] : **Does not conform**
- vi) Guide for safety & comfort of operator of agricultural tractors: Part 1 General requirements: [IS 12239 (PT-1) 1996/ISO 4254-1:1989 (Reaffirmed Oct., 2017)] : **Does not conform**
- vii) Tractors and machinery for agriculture and forestry – Technical means for ensuring safety Part 2: Tractors (IS 12239 (PT-2) 1999) (Reaffirmed 2014)] : **Does not conform**
- viii) Guide lines for location and operation of operator controls on agricultural tractors and machinery [IS: 8133-1983 (Reaffirmed 2014)] : **Does not conform**
- ix) Tractors and machinery for agriculture and forestry, powered lawn and garden equipment - Symbols for operator controls and other displays Part 2 Symbols for agricultural tractors and machinery [IS:6283 (Part-1)- 2006 and IS: 6283 (Part-2)-2007 (Reaffirmed 2014)] : **Does not conform**
- x) Agricultural Tractors and Machinery - Lighting device for travel on public roads (IS: 14683-1999) (Reaffirmed 2014)] : **Conforms**

16.4 Salient Observations:

16.4.1 Laboratory tests:

16.4.1.1 PTO Performance:

- i) The maximum PTO power was recorded as **17.3 kW** against the declaration of **17.0 kW**, which meets the requirement of IS: 12207-2014 with regard to tolerance limit.
- ii) The specific fuel consumption corresponding to maximum power was recorded as **272 g/kWh** against the declaration of **260 g/kWh**, which meets the requirement of IS: 12207-2014 with regard to tolerance limit.
- iii) The maximum equivalent crankshaft torque was recorded as **90.9 N-m** against the declaration of **96.0 N-m**, which is within the permissible limit as specified in IS: 12207-2014.
- iv) The backup torque is **21.0 %** against the minimum requirement of **10.0%**, which meets the requirement of IS: 12207-2014 with regard to tolerance limit
- iv) The power drop under natural and high ambient condition was recorded as 6.4%. This should be looked into for corrective action.

16.4.1.2 Hydraulic performance:

- i) The maximum lifting capacity at standard frame throughout the range of lift was observed as **8.56 kN** and the moment about the rear axle was computed as **12.37 kN-m**, which is considered on higher side as compared to the moment from front axle i.e. **10.26 kN-m**. It is therefore, recommended that the lifting capacity of the hydraulic system may be reduced suitably or standard ballast mass at front axle may be provided to avoid front lifting of the tractor.

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16.4.1.3 Mechanical Vibration:

The amplitude of mechanical vibration on various assemblies marked as (*) in chapter- 8 of this test report is on higher side, especially at the steering control wheel, foot rest & operator's seat. This calls for dampening down of vibrations to improve the comfort and service life of components.

16.4.1.4 Three point linkage:

- i) Distance from end of power take – off to center of lower hitch point does not meet the requirements of IS: 4468-1997(Reaffirmed in 2014) and calls for necessary corrective action.
- ii) Some of the parameters of three point linkage conforms to cat-I and some of them conforms to cat-II keeping in view the spirit of standardization necessary improvements may be incorporated.

16.4.1.5 Specification of power take-off Shaft :

The dimension “B ϕ ”, “W” & “b” of the power take off shaft does not meet the requirements of IS: 4931-1995 (Reaffirmed in 2014) and calls for necessary corrective action.

16.4.1.6 Operator's Seat :

- i) The Longitudinal distance from seat index point to differential lock pedal of operator's seat does not meet the minimum requirements of IS: 12343-1998 (Re-affirmed in 2014).This should be looked into for corrective action.
- ii) The vertical distance from seat index point to clutch pedal of operator's seat does not meet the minimum requirements of IS: 12343-1998 (Re-affirmed in 2014).This should be looked into for corrective action.
- iii) The Longitudinal distance from seat index point to centre of steering control wheel of operator's seat does not meet the minimum requirements of IS: 12343-1998 (Re-affirmed in 2014).This should be looked into for corrective action.

16.4.1.7 Operator's work place:

Meets the requirements of IS: 12239 (Part-I)-1996 (Reaffirmed in 2014),**except the following :**

- i) Hand holds for easy mounting and dismounting of the operator's.
- ii) Vertical retainness at both sides.
- iii) Width of foot step is not provided as per the above standard.
- iv) Spark arresting device in the exhaust system is not provided.

16.4.1.8 Constructional requirement with regard to safety:

Meets the requirements of IS: 12239 (Part-II)-1996 (Reaffirmed in 2014),**except the following :**

- i) The working clearance between Position control and RHS fender has not been provided as per IS: 12239 (Part-II) 1999. This should be looked into for corrective action.
- ii) Minimum cautionary notice as per clause 11.2 of above referred standard.

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16.4.1.9 Symbols of operator's control and other displays:

Indication of fuel level gauge, Oil, grease lubrication type and its frequency are not identifiable with the symbols as per IS: 6283(Part-1) 2006 and IS: 6283 (Part-2)-2007 (Reaffirmed 2014). This should be looked into for corrective action.

16.4.2 Wetland cultivation (puddling operation):

Wetland operation (Puddling operation):

The manufacturer has recommended that the tractor is not suitable for wetland cultivation (puddling operation). Hence, the wetland cultivation (puddling operation) was not conducted. **Therefore, the declaration of the fact that the tractor is not suitable for Wetland cultivation (Puddling operation) should be mentioned clearly and boldly in all the literature relevant to this tractor model.**

16.5 Maintenance / Service Problems:

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

16.6 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) Hand holds for easy mounting & dismounting of the operator has not been provided
- iii) The working clearance around position control lever & RHS mudguard may be provided as per the requirement of IS: 12239 (part-2)-1999.
- iv) Vertical distance from Seat Index Point to centre of clutch pedal should meet the minimum requirement as per IS: 12343-1998.
- v) Longitudinal distance from Seat Index Point to centre of differential lock pedal should meet the minimum requirement as per IS: 12343-1998.
- vi) Longitudinal distance from Seat Index Point to centre of steering control wheel should meet the minimum requirement as per IS: 12343-1998.
- vii) Provision of vertical retainness at both sides of footsteps.
- viii) The width of foot step may be provided as per the requirement of IS: 12239 (part-2)-1999.

16.7 Adequacy of Literature supplied with machine:

16.7.1 The following literature was supplied with the tractor for reference during the test.

- a) Operation and maintenance owner's manual for OX-25 ORCHARD DLX LT TRACTOR
- b) Workshop manual OX-25 ORCHARD DLX LT TRACTOR
- c) Spare Parts Catalogue for OX-25 ORCHARD DLX LT TRACTOR

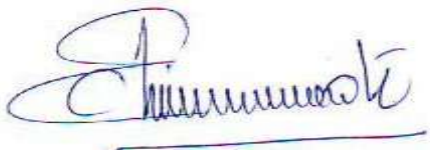
16.7.2 The supplied literature was found adequate. However, these literatures should be brought out in national as well as other regional languages of India for guidance of users.

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17. CITIZEN CHARTER

Time frame for Testing & Evaluation as per Citizen Charter	Duration of Test	Whether the Test Report is released within the time frame given in Citizen Charter	Remarks
10 Months	09 Months (June, 2018 to March ,2019)	Yes	None

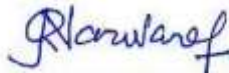
TESTING AUTHORITY:



C. V. CHIMOTE
TEST ENGINEER



Y.K.RAO
SENIOR AGRICULTURAL ENGINEER



J.J.R. NARWARE
DIRECTOR

The report compiled by: **Shri Shwetabh Singh**, Senior Technical Assistant

18. APPLICANT'S COMMENTS

Para No.	Our Reference	Applicant's comments
18.1	16.4.1.1 (iv)	We have noted the point and will look into.
18.2	16.4.1.2	We have noted the point and will look into.
18.3	16.1.6 & 16.4.1.3	We have noted the point and will look into for establishing the compliance.
18.4	16.4.1.4	We have noted the point and we will work towards establishing the compliance.
18.5	16.4.1.5	We have noted the point and we will work towards establishing the compliance.
18.6	16.4.1.6	We have noted the point and we will work towards establishing the compliance.
18.7	16.4.1.7	We have noted the point and we will work towards establishing the compliance.
18.8	16.4.1.8	We have noted the point and we will work towards

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		establishing the compliance.
18.9	16.4.1.9	We have noted the point and we will work towards establishing the compliance.

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Annexure-I

BRIEF SPECIFICATION OF IMPLEMENTS USED DURING FIELD TEST

S. No.	Item	Rotavator	M.B. Plough
1.	Make	Pushpak Deccan	Sona
2.	Type	Mounted	Mounted
3.	No. of blades/bottoms, (mm)	27, in 05 flanges	Two
4.	Type of blades/ bottoms, (mm)	L shape	Mould board
5.	Size of blades/ bottoms, (mm)	280 x 85 x 7	330
6.	Spacing of blades / bottoms, (mm)	225	240
7.	Lower hitch point span, (mm)	685	590
8.	Mast height, (mm)	545	490
9.	Overall dimensions, (mm):		
	- Length	870	1470
	- Width	1335	970
	- Height	990	1050
10.	Gross mass	290	165

ANNEXURE -II

TRACTOR RUN HOURS DURING TEST

A.	LABORATORY AND TRACK TESTS:	HOURS
1.	Running-in	--
2.	PTO performance test	10.0
3.	Drawbar performance test	15.9
4.	Power lift and hydraulic pump performance test	2.4
5.	Brake test	2.2
6.	Noise measurement	1.2
7.	Mechanical vibration test	1.0
8.	Theoretical speed test	0.8
B.	FIELD TEST:	
1.	Disc ploughing	21.5
2.	Rotavation	15.6
C.	HAULAGE TEST:	6.4
D.	Miscellaneous test and other run hours including idle run, transportation, trials and preparation for test	4.7
	TOTAL:	81.7