OECD Approval No. : 1/1982
Date of approval : 10th April, 2002

Report on test in accordance with
OECD STANDARD CODE 1
for the Official Testing of Agricultural and Forestry Tractors



Agricultural Tractor

TAFE 45 DI (2 WD) TRACTOR

Manufactured by	:	**M/s Tractors and Farm Equipment Ltd., 35, Mahatma Gandhi Road, Nungambakkam, CHENNAI – 600 034 Tamil Nadu, INDIA**
Submitted for test by	:	**The manufacturer**
Report No.	:	**T- 437/882/04/OECD**
Date	:	**May, 2002**

GOVERNMENT OF INDIA
Ministry of Agriculture, (Deptt. of Agriculture and Co-opn.)
CENTRAL FARM MACHINERY TRAINING & TESTING INSTITUTE
Tractor Nagar.P.O., BUDNI (M.P.) 466 445

T-437/882/04/OECD	TAFE 45 DI (2 WD) TRACTOR	

This is a report on a tractor test in accordance with **OECD STANDARD CODE 1** for the Official Testing of Agricultural and Forestry Tractors.

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

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In this report 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:							
Forces	1	kN	=	1000	N	= 102	kgf
Powers	1	kW	=	1000	W	= 1.36	Ps
Pressures	1	MPa	=	10	bar	= 10.2	kgf/cm^2
	100	kPa	=	1000	mbar	= 750.10	mm of Hg

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Tractor manufacturer's name and address	:	M/s Tractors and Farm Equipment Ltd., P.B. No. 3302, 35, Mahatma Gandhi Road, Nungambakkam, CHENNAI - 600 034, INDIA
Location of tractor assembly	:	M/s Tractors and Farm Equipment Ltd., Huzur Gardens, SEMBIAM, CHENNAI - 600 011, INDIA
Submitted for test by	:	The manufacturer
Selected for test by	:	The manufacturer
Place of running-in	:	At manufacturer's works
Duration of running-in	:	Engine - 12 h Transmission - 20 h
Location of test	:	Government of India, Central Farm Machinery Training & Testing Institute, P.O. Tractor Nagar, 466 445 Budni (Madhya Pradesh), INDIA

1. SPECIFICATIONS OF TRACTOR

1.1 Identification:

Make	:	TAFE
Model	:	45 DI
Type	:	2 WD
Number of driving wheels	:	Two (2)
Serial No.	:	152979
1st Serial No.	:	101388

1.2 Engine:

Make	:	Simpsons
Model	:	S 325
Type	:	Four stroke, direct injection, naturally aspirated, water cooled diesel engine.
Serial No.	:	45290

1.2.1 Cylinders:

Number	:	Three
Disposition	:	Vertical, inline
Bore/Stroke	:	91.4/127 mm
Capacity	:	2500 cm^3
Compression ratio	:	18.5:1
Arrangement of valves	:	Overhead
Cylinder liners	:	Dry

1.2.2	**Supercharging**	:	Not provided
1.2.3	**Fuel system:**		
	Fuel feed system	:	Gravity and force feed
	Filters:		
	Make	:	MICO LIC BOSCH, India
	Model	:	0450 117012
	Type	:	Replaceable, paper elements
	Number	:	Two
	Capacity of fuel tank	:	45 dm^3
	Injection pump:		
	Make	:	MICO LIC BOSCH, India
	Model	:	9 400 030 644, PES 3A 80D 320 RS 2617-1
	Type	:	Inline, plunger
	Serial Number	:	08350401
	Manufacturer's production setting of injection pump:		
	- Flow rate	:	10.23 dm^3/h (at rated engine speed and full load)
	- Timing	:	26 degree before TDC
	Injectors:		
	Make	:	MICO LIC BOSCH, India
	Model	:	9430 034212
	Type	:	'S' Multihole
	Injection pressure	:	23 + 0.8 MPa
1.2.4	**Governor:**		
	Make	:	MICO LIC BOSCH, India
	Model	:	RSV 300-1125A2C2123R
	Type	:	Centrifugal, mechanical, variable speed.
	Governed range of engine speed	:	600 to 2475 rev/min.
	Rated engine speed	:	2250 rev/min.
1.2.5	**Air cleaner:**		
	Pre-cleaner	:	Not provided
	Main cleaner:		
	Make	:	Own make
	Model	:	Not specified
	Type	:	Dry paper element
	Location of air intake	:	In front of radiator under the bonnet.
	Maintenance indicator	:	Provided on the Instrument panel

1.2.6 Lubricating System:

Type of pump	:	Rotary, lobe
Type of filter(s)	:	Full flow, paper element
Number	:	One

1.2.7 Cooling System:

Type of coolant	:	Ethylene Glycol + water in the ratio of 1:3
Type of pump	:	Centrifugal

Specification of fan:

Type	:	Suction
Number of fan blades	:	4
Fan diameter	:	390 mm
Coolant capacity	:	10.5 dm^3
Type of temperature control	:	Thermostat
System pressure	:	50 kPa

1.2.8 Starting system:

Make	:	LUCAS, TVS, INDIA
Model	:	3 SM 114
Type	:	Pre-engaged solenoid
Starter motor power rating	:	2.2 kW
Cold starting aid	:	Glow plug provided in air intake manifold
Safety device	:	Neutral safety switch provided

1.2.9 Electrical System:

Voltage	:	12 V
Generator:		
Make	:	LUCAS TVS, INDIA
Model	:	A 115 – 28
Type	:	Ventilated Alternator
Power	:	0.43 kW
Battery:		
Number	:	One
Rating	:	75 Ah. at 20 hours

1.2.10 Exhaust System:

Make	:	Own make
Model	:	None
Type	:	Down draft, multi chamber expansion
Location	:	Silencer provided below the LHS foot rest.

1.3 Transmission:

1.3.1 Clutch (Travel and power take-off):

Make	:	Amalgamations Repco
Model	:	None
Type	:	Dry friction disc
Number of plates	:	Two
Diameter of plates	:	305 mm (travel) and 254 mm (PTO)
Method of disengagement	:	Mechanically actuated by pedal.

1.3.2 Gear Box:

Make	:	Own make
Model	:	None
Type	:	Mechanical, sliding mesh gears
Description	:	Central shift arrangement

	Forward	Reverse
Number of gears	4	1
Number of ranges/groups	2	2
Total of arrangements	8	2

Available options : High/Low

1.3.3 Rear axle and final drives:

Make	:	Own make
Model	:	None
Type	:	Semi floating, final reduction through crown wheel and bevel pinion.

Differential lock:

Type	:	Mechanical coupling
Method of engagement	:	By depressing a pedal on RHS of the operator's seat.
Method of disengagement	:	Self disengagement

1.3.4 Front axle and final drives : Not provided

1.3.5. Total ratios and travelling speeds:

Gear No.	Range	Number of engine revolutions for one revolution of the driving wheels	Nominal travelling speed (*) at rated engine speed of 2250 rev/min (km/h)
		Forward	Forward
1	Low	200.94	2.58
2	Low	137.01	3.78
3	Low	100.32	5.16
4	Low	74.74	6.92
5	High	50.23	10.30
6	High	34.25	15.11
7	High	25.09	20.62
8	High	18.69	27.68
9	RL	147.56	3.51
10	RH	36.89	14.03

(*) Calculated with a tyre dynamic radius index (ISO:4251-1-1998) of 610 mm (tyre: 13.6-28).

1.4 Power take-off:

1.4.1. Main Power Take-Off:

Type	:	Independent
Method of engagement	:	Positive engagement by hand lever provided on LHS
Number of shafts	:	One
Method of changing power take-off shaft ends speeds	:	Fixed speed

1.4.1.1 Power take-off proportional to engine speed:

Power take-off at 540 (rev./min):

Location	:	At rear of the tractor
Diameter of power take-off shaft end	:	34.77 mm
Number of splines	:	6, in conformity with ISO 500:1991
Height above ground	:	490 mm
Distance from the median plane of the tractor	:	0 mm
Distance behind rear axle centre	:	300 mm
Maximum torque transmissible	:	882.6 Nm
Direction of rotation (viewed from shaft end)	:	Clockwise

PTO type	PTO speed (rev/min)	Engine speed (rev./min)	Engine/PTO transmission ratio	Power restriction
1	540	1790	3.314	None
	679	2250		

1.4.1.2 Power take-off proportional to ground speed : Not provided

1.4.2 Optional Power take-off : None

1.5 Hydraulic power-lift:

Make : Own make
Type : Hydraulic 3 point hitch, position and draft control
Model : None
Type of hydraulic system : Open centre

Type and number of cylinders : Single acting, one

Type of linkage lock for transport : Lock for control lever on Hydraulic quadrant

Relief valve pressure setting (tolerance) : 19 - 22.5 MPa
Opening pressure of cylinder safety valve : Safety valve not provided
Lift pump type : Reciprocating piston

Transmission between pump and engine : Gear drive
Type and number of filters : Wire mesh strainer at suction, one

Site of oil reservoir : Transmission case

Type, number and location of tapping points:
- Type : Threaded, female
- Number : Four
- Location : Two on top of lift cover, one at left hand side and one at right hand side of the lift cover.

Maximum volume of oil available to external cylinders : 10 dm^3

1.6 Three point linkage:

- Category	:	1 of ISO standard 730 -1:1994 + Cor.1:1995
- Category adapter	:	None

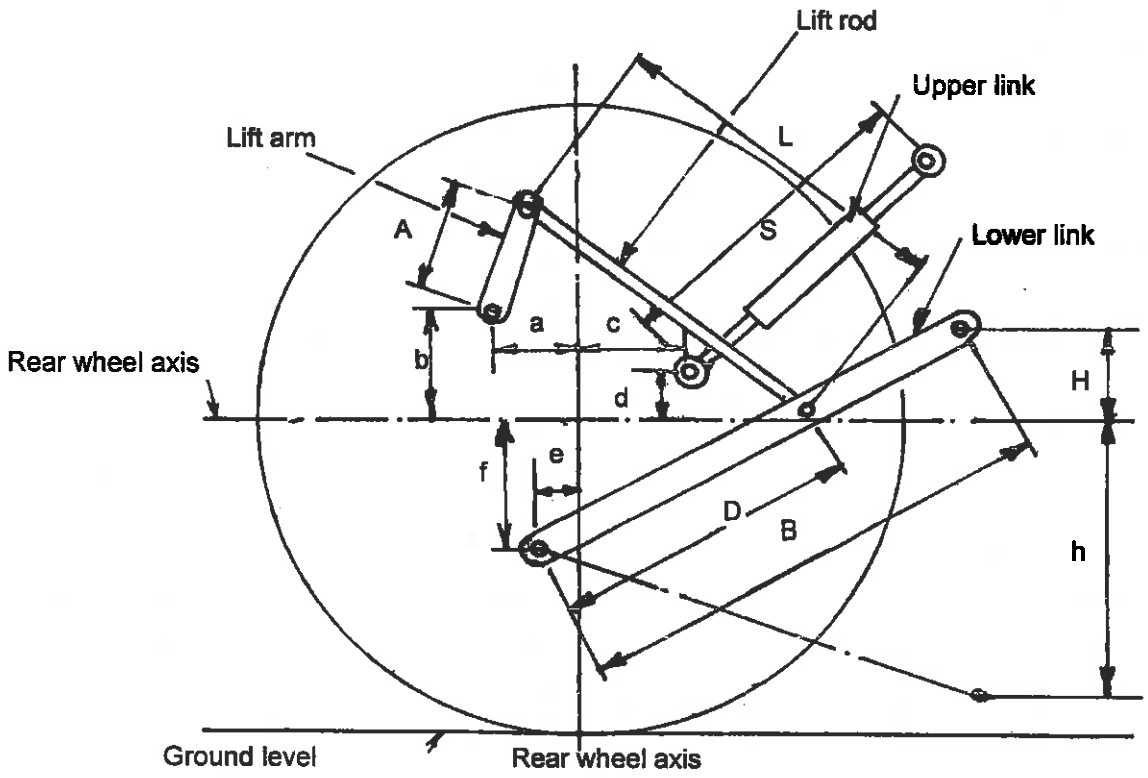


Figure 1.1
Lift test – Linkage geometry

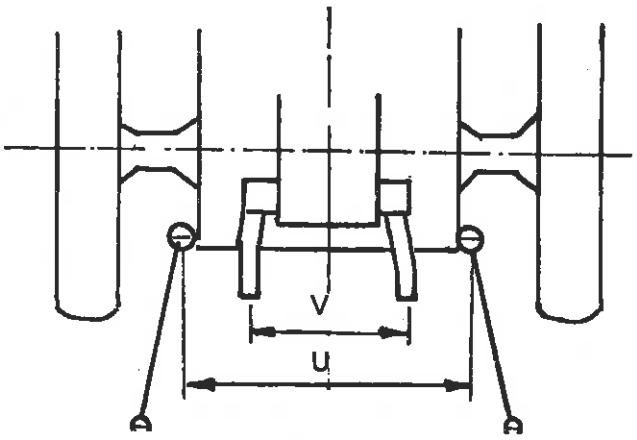


Figure 1.2
Lift test – Linkage geometry

		Dimension or range mm	Settings used in test mm
Length of lift arms:	(A)	260	260
Length of lower links:	(B)	890	890
Distance of lift arm pivot point from rear-wheel axis:			
- horizontally	(a)	195	195 Forward
- vertically	(b)	225	225
Horizontal distance between the 2 lower link points:	(u)	500	500
Horizontal distance between the 2 lift arm end points:	(v)	535	535
Length of upper link:	(S)	From 590 to 830	715
Distance of upper link pivot point from rear wheel axis:			
- horizontally	(c)	135	135 behind
- vertically	(d)	280	280
Distance of lower link pivot point from rear wheel axis:			
- horizontally	(e)	45	45 Forward
- vertically	(f)	115	115
Distance of lower link pivot points to lift rod pivot points on lower links:	(D)	From 455 to 585	455
Length of lift rods:	(L)	575	575
Height of lower hitch points relative to the rear-wheel axis:			
- in low position	(h)	425	425
- in high position	(H)	260	260
Height above ground of lower hitch points when locked in transport position (*)	-		870

(*) Assuming r = rear tyre dynamic radius index (ISO:4251-1:1998) : 610mm (tyre :13.-6-28)

Table 1.1
Dimensions of linkage geometry when connected to the standard frame

1.7 Swinging drawbar(optional):

Type	:	Clevis
Height above ground		
- Maximum	:	345 mm
- Minimum	:	295 mm
Type of adjustment	:	By reversing the swinging drawbar hitch
Distance of hitch point from rear-wheel axis,		
- Horizontally	:	845 mm
Distance of hitch point from power take-off shaft end:		
- Vertically	:	145 mm - 195 mm
- Horizontally	:	218 mm
Lateral adjustment (centre of clevis):		
- Right hand	:	130 mm
- Left hand	:	130 mm
Distance of pivot point from rear-wheel axis, - Horizontally	:	518 mm forward
Diameter of drawbar pin hole	:	25.45 mm
Maximum vertical permissible load:		
- at 356 mm from PTO shaft	:	7.56 kN
- at 254 mm from PTO shaft	:	9.79 kN

1.8 Trailer hitch (Optional): Not provided

1.9 Holed drawbar (Optional):

Number of holes	:	07
Distance between holes	:	80 mm
Hole diameter	:	25 mm
Thickness/Width of drawbar	:	38 mm/76 mm
Height above ground:		
- Minimum	:	185 mm
- Maximum	:	905 mm
Horizontal distance to power take-off shaft end (rear) lower links in horizontal position.	:	545 mm

1.10 Steering:

Make	:	ROSS
Model	:	None
Type	:	Hydrostatic
Method of operation	:	Steering wheel operated with hydraulic power
- Pump (s)	:	1, Gear pump
- Ram (s)	:	2, double acting
- Working pressure	:	11.0 Mpa

1.11 Brpakes:

1.11.1 Service brake:

Make	:	Brakes India Ltd
Model	:	None
Type	:	Mechanical, internal expanding shoe
Method of operation	:	Independently/combined foot operated with interlocking arrangement for simultaneous operation.
Trailer braking take-off (hydraulic or air brake)	:	None

1.11.2 Parking brake:

Type	:	Mechanical linkage
Method of operation	:	Pull type hand lever operation on LHS.

1.12 Wheels:

Number:		
- Front	:	2 steering
- Rear	:	2 driving
Wheel base	:	1925 mm

Track width adjustment:

	Minimum (mm)	Maximum (mm)	Adjustment method
Front	1230	1830	Changing the position of front axle
Rear	1330	1920	Changing the position of wheel disc on the rim lugs and reversing the wheel disc .

1.13 Protective structure : Not provided

1.14 Seat:

1.14.1 Driver's seat:

Make	:	Harita Grammar
Model	:	None
Type	:	Cushioned
Seat and steering wheel reversible	:	No
Type of suspension	:	Coil spring
Type of damping	:	Hydraulic shock absorber
Ranpge of adjustment:		
- Longitudinal	:	56 mm
- Vertically	:	50 mm
Safety belt	:	Not fitted

1.14.2 Optional driver's seat(s) : No provision

1.14.3 Passenger seat : Not fitted

1.15 Lighting:

	Height above ground of centre	Size	Distance from outside edge of lights to median plane of tractor
	(mm)	(mm)	(mm)
Head lights	980	165 x 100	225
Side lights	1450	115 x 50	565
Rear lights	1415	115 x 65	565
Reflectors (Rear mudguard)	1320	50 ϕ	495
Flashers	1450	115 x 50	565

2. TEST CONDITIONS

2.1 Overall dimensions:

	Length	Width		Height at top of tail lamp
		minimum	maximum	
	(mm)	(mm)	(mm)	(mm)
Unballasted	3180	1685	2300	1475
Ballasted	3400	2455	2455	1475

2.2 Ground clearance (unballasted tractor):

Ground clearance	:	330 mm
Clearance – limiting part	:	Oil sump drain plug

2.3 Tractor Mass:

	Ballasted		Unballasted	
	Without driver	With driver	Without driver	With driver
	(kg)	(kg)	(kg)	(kg)
Front	830	835	690	695
Rear	2110	2180	1020	1090
Total	2940	3015	1710	1785

2.4 Ballast

Front: 1 Front bracket : 20 kg
4 weights, total : 100 kg

Rear: 18 weights, total : 880 kg
Water in the tyres : 230 kg

2.5 Tyres and track width specifications:

		Front	Rear
Tyres:			
- dimensions		6.00 x 16	13.6 x 28
- ply rating		6	8
- type		Ribbed	Traction
- maximum load (tyre manufacturer's)	kN	5.6	16.12
- maximum load (tractor manufacturer's)	kN	4.25	11.57
- inflation pressure (tyre manufacturer's)	kPa	230	110
- dynamic radius index	mm	342	610
Chosen track width	mm	1360	1330

2.6 Fuel:

Type : High speed diesel fuel conforming to IS:1460-1998

Density at 15 °C : 0.839 g/cm^3

2.7 Oils and lubrication:

2.7.1 Capacity and change interval:

	Capacity (dm^3)	Oil change (h)	Filter change (h)
Engine sump	6.0	First - 50 Subsequent - 200	First - 50 Subsequent - 200
Gear box, rear `axle final drive and hydraulic system.	29.0	First - 100 Subsequent - 600	–
Power steering	1.5	No change	1 year

2.7.2 Specifications:

	Recommended	Used during test
Engine oil:		
- Type - Viscosity - Classification	HD X 30 10 – 12 cSt @ 100°C SAE 30	HD X 30 10 – 12 cSt @ 100°C SAE 30
Transmission oils:		
- Type - Viscosity	HD 90 16 – 18 cSt @ 100 °C	HD 90 16 – 18 cSt @ 100 °C
Hydraulic fluid :		
- Type - Viscosity	HD 90 16 – 18 cSt @ 100 °C	HD 90 16 – 18 cSt @ 100 °C
Steering oil:		
- Type - Viscosity - Classification	Castrol (G M Type A) 7 – 8.4 cSt @ 100°C –	Castrol (GM Type A) 7 – 8.4 cSt @ 100°C –

2.7.3 Grease:

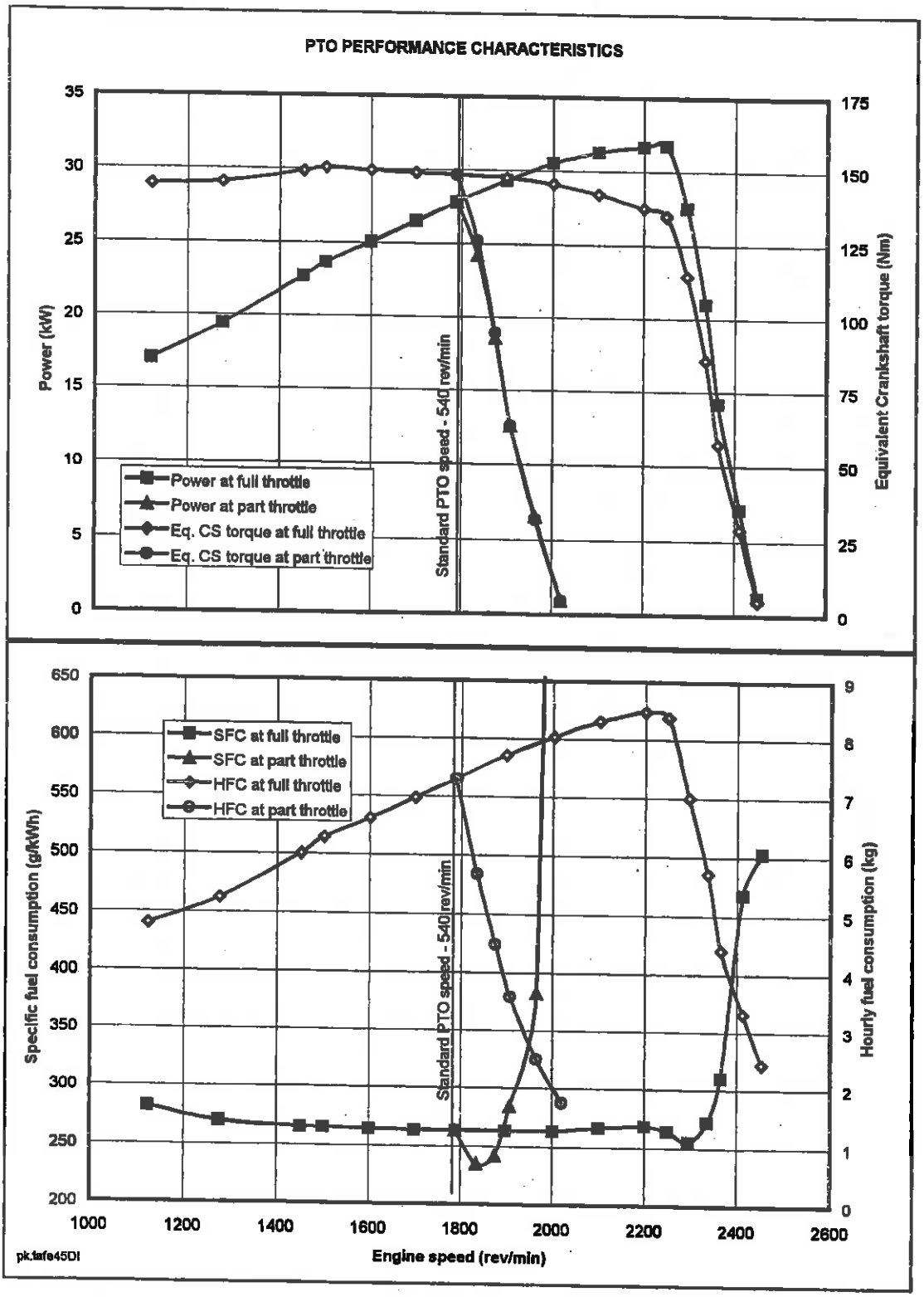
Number of lubricating points : 09

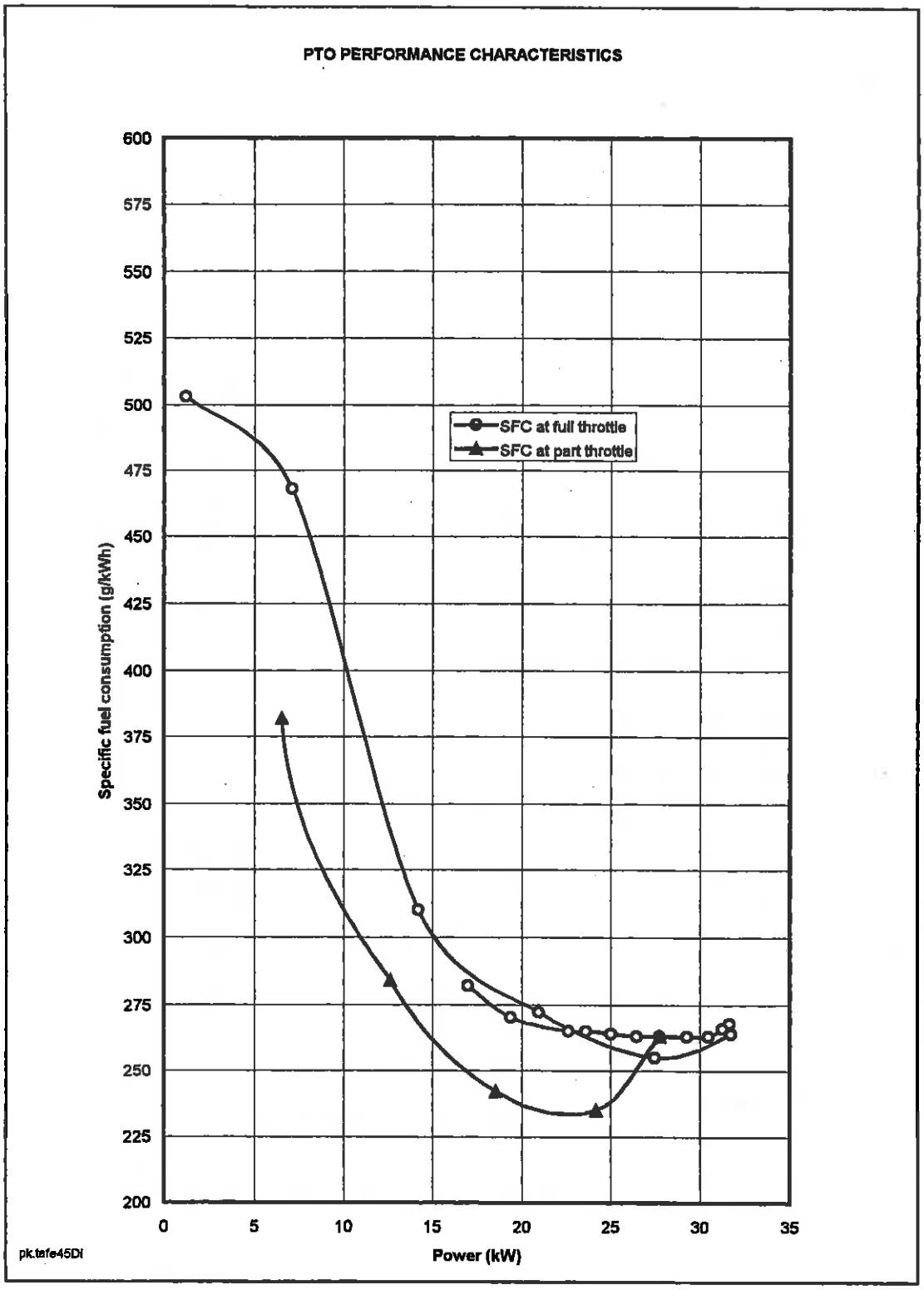
3. COMPULSORY TESTS RESULTS

3.1 Main power take-off:

- Date and location of tests : 15-5-2001 at CFMT&TI, BUDNI
- Type of dynamometer bench : FUCHINO ESF 1000

Power	Speed		Fuel consumption			Specific energy
	Engine	P.T.O.	Hourly		Specific	
kW	(rev/min)		l/h	kg/h	g/kWh	kWh/l
3.1.1 MAXIMUM POWER - TWO HOURS TEST						
31.7	2250	679	9.98	8.37	264	3.18
3.1.2 POWER AT RATED ENGINE SPEED						
31.7	2250	679	9.98	8.37	264	3.18
3.1.3 STANDARD POWER TAKE-OFF SPEED [540 ± 10 (rev/min)]						
27.8	1790	540	8.69	7.29	263	3.20
3.1.4 PART LOADS						
3.1.4.1 The torque corresponding to maximum power at rated engine speed						
31.7	2250	679	9.98	8.37	264	3.18
3.1.4.2 85 % of torque obtained in 3.1.4.1						
27.5	2296	693	8.34	7.00	255	3.30
3.1.4.3 75 % of torque defined in 3.1.4.2						
21.0	2336	705	6.81	5.71	272	3.08
3.1.4.4 50 % of torque defined in 3.1.4.2						
14.2	2365	714	5.26	4.41	310	2.70
3.1.4.5 25 % of torque defined in 3.1.4.2						
7.1	2412	728	3.95	3.31	468	1.79
3.1.4.6 Unloaded						
1.2	2452	740	2.90	2.43	503	1.67
3.1.5 PART LOADS AT STANDARD POWER TAKE-OFF SPEED(540 ± 10 rev/min)						
3.1.5.1 The torque corresponding to maximum power :						
27.8	1790	540	8.69	7.29	263	3.20
3.1.5.2 85 % of torque obtained in 3.1.5.1						
24.2	1835	554	6.77	5.68	235	3.57
3.1.5.3 75 % of torque defined in 3.1.5.2						
18.6	1875	566	5.34	4.48	242	3.47
3.1.5.4 50 % of torque defined in 3.1.5.2						
12.6	1908	576	4.27	3.58	284	2.95
3.1.5.5 25 % of torque defined in 3.1.5.2						
6.5	1965	593	2.97	2.49	382	2.20
3.1.5.6 Unloaded						
1.0	2021	610	2.09	1.75	1823	0.46


PTO PERFORMANCE CHARACTERISTICS
Power (kW)
Equivalent Crankshaft torque (Nm)
Standard PTO speed - 540 rev/min
Power at full throttle
Power at part throttle
Eq. CS torque at full throttle
Eq. CS torque at part throttle
Specific fuel consumption (g/kWh)
Hourly fuel consumption (kg)
SFC at full throttle
SFC at part throttle
HFC at full throttle
HFC at part throttle
Engine speed (rev/min)
pk.tafe45DI


PTO PERFORMANCE CHARACTERISTICS
Specific fuel consumption (g/kWh)
600
575
550
525
500
475
450
425
400
375
350
325
300
275
250
225
200
0
5
10
15
20
25
30
35
Power (kW)
SFC at full throttle
SFC at part throttle
pk.tafe45Di

- No load maximum engine speed : 2452 rev/min

Torque (equivalent crankshaft) at maximum power:

- At rated engine speed : 134.6 Nm
- At 2 - hour test : 134.7 Nm

Maximum torque (equivalent crankshaft) (Engine speed : 1501 rev/min) : 150.3 Nm

Mean atmospheric conditions:

Temperature : 20 °C
Pressure : 97.30 kPa
Relative humidity : 74%

Maximum temperatures:

Coolant : 83 °C
Engine oil : 123 °C
Fuel : 39 °C
Engine air intake : 28 °C

3.2 Hydraulic power and lifting force:

Date of tests : 27.6.2001 & 28.6.2001

3.2.1. Hydraulic Power Test:

- Tapping point used for test : External circuit
- Temperature of hydraulic fluid if different from 65 ± 5°C : None
- Opening pressure of the unloading valve : Not applicable
- Clossing pressure of the unloading valve : Not applicable
- Sustained pressure with relief valve open : 23.5 MPa
- Pump stalled : Not applicable for open centre system.
- Pump delivery rate at minimum pressure : 20.8 l / min

	Flow rate (l / min)	Pressure (MPa)	Power (kW)
Flow rate corresponding to a hydraulic pressure equivalent to 90 percent of the actual relief valve pressure setting and corresponding hydraulic power	10.9	21.0	3.8
Flow rate and hydraulic pressure corresponding to maximum hydraulic power	18.4	18.0	5.5

3.2.2 Power Lift Test:

3.2.2.1 Standard setting (Ref. Table 1.1 and Fig. 1.1 & 1.2)

		At hitch point	On the frame
Height of lower hitch points above ground in down position	(mm)	185	185
Vertical movement without lifting forces	(mm)	685	685
with lifting forces	(mm)	620	605
Maximum corrected force exerted through full range	(kN)	13.07	12.47
Corresponding pressure of hydraulic fluid	(MPa)	23.67	23.48
Moment about rear wheel axle	(kNm)	11.04	18.14
Maximum tilt angle of mast from vertical	(Degrees)	–	10

Lifting height relative to the horizontal plane including the lower link pivot points.													
mm	-285	-200	-100	±0	+100	+200	+285	+300	+310	+315	+320	+325	+335
At the hitch point (kN)	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.)												
	13.07	15.84	15.57	16.55	17.01	17.76	-	18.73	18.67	18.63	--	18.87	19.00
	Corresponding pressure 21.1 MPa												
At the frame (kN)	12.47	13.11	14.21	14.99	14.96	14.47	14.50	14.42	14.46	–	14.44	–	–
	Corresponding pressure 21.1 MPa												

3.3 Drawbar power test (Unballasted and ballasted tractor):

Date of tests : 18.09.2001, 21.09.2001 and 22.09.2001

Type of track : Concrete

	Height of drawbar above ground	Tyre inflation pressure	
		Front	Rear
	mm	kPa	kPa
Unballasted	525	230	110
Ballasted	500	230	110

3.4 Turning area and turning circle:

	Without brakes	
	Left-hand	Right-hand
	(m)	(m)
Radius of turning area	3.631	3.396
Radius of turning circle	3.491	3.256

3.5 Location of centre of gravity:

Height above ground	:	834 mm
Distance forward from the vertical plane containing the axis of the rear wheels	:	750 mm
Distance from the median longitudinal plane of the tractor (to the left side)	:	6 mm

3.6 Braking performance:

Date of tests : 19.09.2001 and 25.09.2001

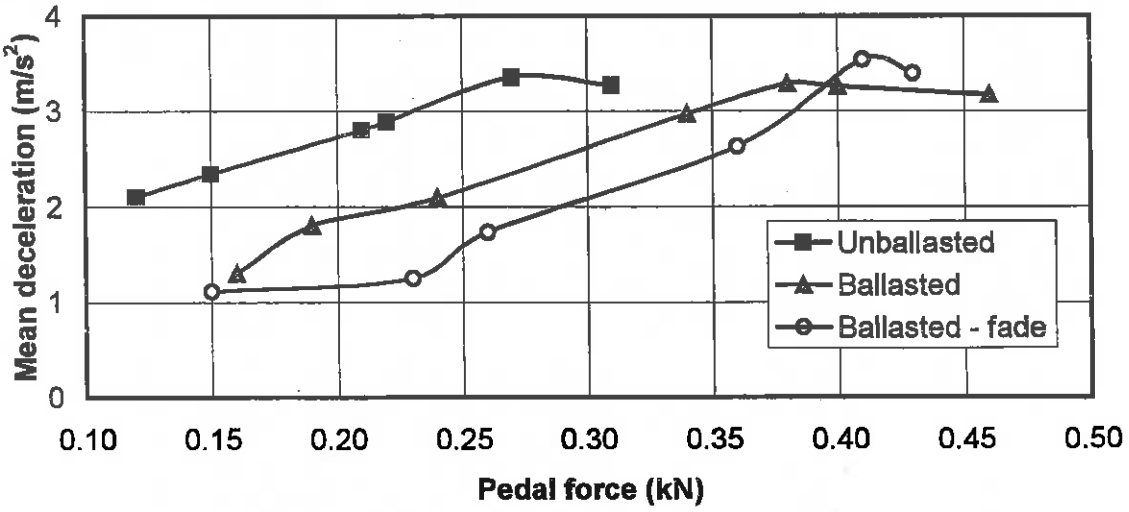


Figure
Cold service braking device test and fade test

DRAWBAR PERFORMANCE TEST

Gear number and range	Power	Draw-bar pull	Speed	Engine speed	Slip of wheels	Specific fuel consum-ption	Specific energy	Temperature				Atmospheric conditions		
								Fuel	Coolant	Eng-ine oil	Trans-miss-ion oil	Temp.	Rela-tive humi-dity	Pre-ssure
	kW	kN	km/h	rev/min	%	g/kWh	kWh/l	°C	°C	°C	°C	°C	%	kPa
3.3.1 MAXIMUM POWER IN TESTED GEARS - (Unballasted tractor)														
L1	8.4	12.5	2.43	2374	15.1	460	1.77	40	82	124	96	37	66	97.3
L2	12.2	12.4	3.54	2354	14.9	386	2.11	41	83	128	99	37	62	97.3
L3	16.4	12.3	4.80	2328	14.8	347	2.35	40	84	130	97	36	62	97.3
L4	21.5	12.3	6.28	2278	15.0	338	2.41	41	89	133	92	37	62	97.4
H1	24.9	9.2	9.74	2253	10.8	325	2.51	35	91	129	70	34	73	97.6
H2	26.1	6.4	14.59	2250	8.7	309	2.63	41	93	121	80	37	69	97.4
3.3.2 MAXIMUM POWER IN TESTED GEARS (Ballasted tractor)														
L1	14.2	21.8	2.35	2338	15.0	361	2.25	44	82	127	103	37	60	97.2
L2	20.1	21.5	3.37	2288	15.0	333	2.44	45	85	131	103	38	53	97.2
L3	24.2	18.6	4.68	2232	11.5	328	2.47	47	90	134	98	38	55	97.2
L4	25.0	13.7	6.56	2239	7.9	318	2.54	48	92	134	90	37	58	97.2
H1	26.3	9.5	10.00	2243	6.0	307	2.63	47	87	123	79	36	66	97.4
H2	27.4	6.6	14.88	2232	4.8	298	2.71	48	93	125	80	38	55	97.3
3.3.3 FIVE-HOUR TESTS														
3.3.3.1 FIVE-HOUR TEST at 75% of the pull corresponding to maximum power at rated speed														
L3	19.5	14.0	5.01	2310	8.50	319	2.56	34	84	133	96	34	69	97.6
3.3.3.2 FIVE-HOUR TEST at pull corresponding to 15% wheel slip														
L2	20.4	21.6	3.39	2288	14.4	330	2.47	39	84	131	106	37	64	97.4

Oil consumption during test 3.3.3, 9.76 ml/h

3.6.1 Cold service braking device test:

Unballasted Tractor			
Speed before application of brakes	Braking device control force	Mean deceleration	Stopping distance
(km/h)	(kN)	(m/s^2)	(m)
31.14	0.12	2.10	17.84
	0.15	2.34	16.00
	0.21	2.80	13.34
	0.22	2.89	12.95
	0.27	3.36	11.14
	0.31	3.27	11.44
Ballasted Tractor			
29.99	0.16	1.30	25.66
	0.19	1.80	19.31
	0.24	2.09	16.42
	0.34	2.97	11.57
	0.38	3.29	10.67
	0.40	3.26	10.39
	0.46	3.17	10.95

3.6.2 Fade test:

Speed before application of brakes	Braking device control force	Mean deceleration	Stopping distance
29.99	0.15	1.11	32.42
	0.23	1.25	27.78
	0.26	1.73	20.03
	0.36	2.63	12.38
	0.41	3.54	9.79
	0.43	3.40	10.20

- Maximum deviation of tractor from its original course : None
- Abnormal vibration : None
- Brake heating method : By means of towing the tractor for 1km at 24km/h with the towing force of 1.71kN

3.6.3 Parking braking device test:

	Ballasted tractor on 18% slope	
	Uphill	Downhill
Braking device control force(kN)	0.24	0.26

3.7 External Noise Level:

Date of tests	:	19.9.2001
Sound level meter:		
- Make	:	B & K
- Model	:	2230
- Type	:	Integrated
Type of track	:	Concrete
Gear number	:	H4
Travelling speed before acceleration	:	23.53 km/h
Sound level	:	87 dB(A)

3.8 Repairs and adjustments during Tests : None

3.9 Remarks : None

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

TESTING AUTHORITY

P.C. JAIN
ASSISTANT ENGINEER (T)

R.K. SINGHAI
SENIOR TEST ENGINEER

S.C. JAIN
DIRECTOR

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3.6.1 Cold service braking device test:

Speed before application of brakes	Braking device control force	Mean deceleration	Stopping distance
(km/h)	(kN)	(m/s^2)	(m)
Ballasted Tractor			
29.99	0.16	1.35	25.66
	0.24	2.11	16.42
	0.34	3.00	11.57
	0.38	3.25	10.67
	0.40	3.34	10.39

3.6.2 Fade test:

Speed before application of brakes	Braking device control force	Mean deceleration	Stopping distance
(km/h)	(kN)	(m/s^2)	(m)
29.99	0.15	1.07	32.42
	0.36	2.80	12.38