COTTEC

CHINA
OFFICIAL TRACTOR
TEST AND
EVALUATION CENTRE

Address:
Luoyang Tractor Research Institute
Luoyang,Henan,China 471039
Tel: 86 379 62690001
Fax:86 379 62690002

OECD TEST REPORT OF DONGFENG –304(4WD) AGRICULTURAL TRACTOR (CODE 1)

Report on test in accordance with the OECD standard code for the official testing of agricultural tractor performance



OECD Approval
No.:1/2 292
Date:Nov. 15 2005

Tested Tractor
Make: Dongfeng
Model: 304
Type: 4WD
Speed version: 30 km/h

Submitted for test by
Name:Changzhou Dongfeng Agricultural Machinery Group Co.,Ltd (Changzhou Tractor Plant)
Address: Changzhou,Jiangsu, China
Tel: 86 519 3256638;3260424
Fax:86 519 3260445

This report includes 21 pages and may only be duplicated as a whole

TABLE OF CONTENTS

Page

1. SPECIFICATIONS OF TRACTOR 3

1.1 Identification 3
1.2 Engine 3
1.3 Transmission 5
1.4 Power take-off 7
1.5 Hydraulic power lift 7
1.6 Three point linkage 8
1.7 Swinging drawbar: 10
1.8 Trailer hitch 10
1.9 Holed drawbar: 10
1.10 Steering 10
1.11 Brakes 10
1.12 Wheels 10
1.13 Protective structure 11
1.14 Seat 11
1.15 Lighting 11

2. TEST CONDITIONS 12

2.1 Overall dimensions 12
2.2 Ground Clearance(unballasted tractor) 12
2.3 Tractor mass 12
2.4 Ballast 12
2.5 Track specifications 12
2.6 Tyres and track width specifications 12
2.7 Fuel 12
2.8 Oils and lubricants 13
3.COMPULSORY TESTS 13
3.1 Main power take-off performance 13
3.2. Hydraulic power and lifting force 14
3.3. Drawbar performance 16
3.4. Turning area and turning circle 16
3.5. Location of centre of gravity 16
3.6. Braking 17
3.7. Measurement of external noise level 18

4. OPTIONAL TESTS 18
4.1 Low temperature starting 18
5.REPAIRS 18
6.REMARKS 18
7.ANNEX Main power take-off test curves 1 20
8.ANNEX Main power take-off test curves 2 21

This report has been approved by the O.E.C.D. Co-ordinating Centre(CEMAGREF) in Antony(France) on Nov. 15,2005, Approved No. 1/2 292 FULL code.

	Note: Units shown below, which appear in ISO 1000:1992; Amdl:1998,shall be stated and followed by national units in parenthesis	
C[1]	Tractor manufacturer's name and address:	Changzhou Dongfeng Agricultural Machinery Group Co.,Ltd (Changzhou Tractor Plant)
D[1]	-Location of tractor assembly:	The manufacturer
D	-Submitted for test by:	The manufacturer
C	-Selected for test by:	The manufacturer with the agreement of the the COTTEC
D	-Place of running-in:	COTTEC, Luoyang, Henan, China
D	-Duration of running-in:	50.0 hours
C	-Location of test:	COTTEC, Luoyang, Henan, China
	1. SPECIFICATIONS OF TRACTOR	
	1.1 Identification	
C	- Make of the tractor:	Dongfeng
C	-Model(trade name):	DF304
C	-Type:	4WD
	1.1.1 Numbers	
D	-1st Serial No or prototype:	055529
C	- Serial No.:	055529
	1.1.2 Other Specifications	
D	- Models for other countries:	None
C	-Transmission type or gears x ranges:	Mechanical
C	-Speed version:	30 km/h
D	- Manufacturer identification or Technical type number: None	
	1.2 Engine	
C	-Make:	Changchai
C	-Model:	ZN390T
C	-Type:	4-stroke,water cooling ,vertical, vortex,indirect injection
C	-Serial No.:	C50602932A
	1.2.1 Cylinders	
C	-Number:	3
C	-Disposition:	Vertical, in line
D	-Bore/Stroke:	90/95 mm/mm
D	-Capacity:	1813 cm^3
D	-Compression ratio:	18

1. An item marked "C"indicates that the information declared by the manufacturer has been checked;an item marked "D" that the manufacturer's declaration has been endorsed.

D	-Arrangement of valves:	Overhead,in line
D	-Cylinder liners:	Wet
	1.2.2 Supercharging	None
	1.2.3 Fuel system	
C	-Fuel feed system:	Forced feed type
C	-Make of fuel filter:	Benbu
C	-Model of fuel filter:	CX0708T
C	-Type of fuel filter:	Paper cartridge,replaceable
D	-Capacity of fuel tank:	28 dm^3
C	-Make of injection pump:	WM
C	-Model/type of injection pump:	I pump,Single-acting pistion type
C	-Serial No :	0517622
	-Manufacturer's production setting of injection pump:	
C	. Flow rate(at rated engine speed and full load):	7.0 ± 0.5 dm^3 /h
D	.Timing:	$16^0\pm1^0$ before T.D.C.
D	-Make of injectors:	Kangda
D	-Model/type of injectors:	PF75S01525,Single hole,Pintle-type
D	-Injection pressure:	19.1 ± 0.5 MPa
C	-Make/Mode/Type of carburettor:	None
	1.2.4 Governor	
C	- Make:	WM
C	-Model/type:	T18,Mechanical,centrifugal
C	-Governed range of engine speed:	700～2700 min^{-1}(rev/min)
C	-Rated engine speed:	2500 min^{-1}(rev/min)
	1.2.5 Air cleaner	
	-Pre-cleaner	
C	.Make:	None
C	.Model/type:	None
C	.Location of air intake:	None
C	.Maintenance indicator:	None
	-Main-cleaner	
C	.Make:	Zhejiang Laixi
C	.Model/type:	KW1025,Dry
C	.Location of air intake:	Above front hood
C	.Maintenance indicator:	None
	1.2.6 Lubrication system	
D	-Type of feed pump:	JZX1420 Inner and outer roter type
C	-Type of filters:	Single stage , Paper cartridge,replaceable
C	-Number of filters:	1
	1.2.7 Cooling system	
C	-Type of coolant:	Water

D	-Type of pump:	Centrifugal,belt driven
	-Specification of fan or blower:	
C	.Number of fan blades:	6
C	.Fan diameter:	Φ380 mm
D	-Coolant capacity:	8.2 dm^3
C	-Type of temperature control:	Thermostat
D	-Superpressure system:	None
	1.2.8 Starting system	
C	-Make:	Jiangsu Henli
C	-Model/Type:	QD138,D.C. solenoid engaged
D	-Starter motor power rating:	2.5 kW
C	-Cold starting aid:	Eletrothermic plug
C	-Safety device:	Main shift lever in neutral position
	1.2.9 Electrical system	
C	-Voltage:	12 (Negative earth) V
	-Generator:	
C	.Make:	Changzhu shenfa
C	.Model/Type:	JF11A-P90,Altermator,belt driven
D	.Power	0.35 kW
	-Battery of accumulators:	
C	.Number:	1
D	.Rating:	105 Ah at 20 hours rating
	1.2.10 Exhaust system	
C	-Make:	Own make
C	-Model/Type:	DF300,expansion type,silencer
C	-Location:	Right-hand side of the engine,vertical
	1.3 Transmission	
	1.3.1 Clutch(Travel and Power Take-off)	
D	-Make:	Own make
D	-Model/Type:	Single plate,dry,dual clutch for transmission & PTO
D	-Number of plates:	2
D	-Diameter of plates:	240 mm
C	-Method of operation:	Mechanically actuated by pedal
	1.3.2 Gear box	
D	-Make:	Own make
D	-Model/Type:	DF (4+1)×2, Mechanical
	-Description:	8 forward speed gear,2 reverse speed gear, main gear is constant-mesh cylindrical gear,auxiliary gear is constant-mesh cylindrical gear,engaging sleeve gear shifting

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

D	-Available options	None
	1.3.3 Rear axle and final drives	
D	-Make:	Own make
D	-Model/Type:	Crown wheel and pinion bevel gear differential and spur gear type final drives external gearing
	-Differential lock	
D	.Type:	Tooth inlayed type
C	.Method of engagement:	Mechanically actuated by pedal
C	.Method of disengagement:	Self-disengagement by spring
	1.3.4 Front axle and final drives	
D	-Make:	Own make
D	-Model/Type:	Crown wheel and pinion gear type differential and stage bevel gear type final drives
	-Differential lock:	None
	1.3.5 Total ratios and travelling speeds	

		Gear No	Group or range	Number of engine revolutions for one revolution of the driving wheels	Nominal travelling speed(*) at rated engine speed of 2500 rev/min km/h
C		1	L	268.1636	1.81
C		2	L	166.7959	2.91
C		3	L	105.7464	4.59
C		4	L	78.6671	6.17
C		5	H	51.6358	9.40
C		6	H	32.0592	15.14
C		7	H	20.3940	23.80
C		8	H	15.1870	31.94
C		R1	L	206.5430	2.35
C		R2	H	39.8176	12.19
		(*)Calculated with the dynamic radius index of 515 mm(ISO 4251/1-1998).			

C	-Number of revolutions of front wheels for one revolution of rear-wheels: 1.47

	1.4 Power take-off	
	1.4.1 Main power take-off	
C	-Type:	Semi-independent
C	-Method of engagement:	Mechanically actuated by pedal
C	-Number of shafts:	1
C	-Method of changing power take-off shaft ends speeds:	By hand lever
	1.4.1.1 Power take-off proportional to engine speed	
	Power take-off at 540 rev/min	
C	-Location:	At rear of the tractor
C	-Diameter of power take-off shaft end:	35 mm
C	-Number of splines:	6, in conformity with ISO 500/1991
C	-Height above ground:	600 mm
C	-Distance from the median plane of the tractor:	0 mm
C	-Distance behind rear wheel axis:	334 mm
C	-PTO speed at rated engine speed:	617 rev/min
C	-Engine speed at standard power take-off speeds	2187 rev/min
C	-Ratio of rotation speeds (engine speed/p.t.o. speed):	4.05
D	-Power restriction and maximum torque (Manufacturer's recommendation):	32.0 kW 495.3 N.m
C	-Direction of rotation(viewed from behind tractor):	Clockwise
	Power take-off at 1000 rev/min:	
C	-Location:	At rear of the tractor
C	-Diameter of power take-off shaft end:	35 mm
C	-Number of splines:	6, not in conformity with ISO 500/1991
C	-Height above ground:	600 mm
C	-Distance from the median plane of the tractor:	0 mm
C	-Distance behind rear wheel axis:	334 mm
C	-PTO speed at rated engine speed:	1116.0rev/min
C	-Engine speed at standard power take-off speeds	2238 rev/min
C	-Ratio of rotation speeds (engine speed/p.t.o. speed):	2.24
D	-Power restriction and maximum torque (Manufacturer's recommendation):	32.0 kW 273.6 N.m
C	-Direction of rotation(viewed from behind tractor):	Clockwise
	1.4.1.2 Power take-off proportional to ground speed:	None
	1.4.2 Optional power take-off:	None
	1.5 Hydraulic power lift	
C	-Make:	Own make
C	-Model:	DF300
C	-Type:	Hydraulic,three hitch point
C	-Type of hydraulic system:	Open centre system
C	-Type and number of cylinders:	Single acting,1
C	-Type of linkage lock for transport:	Hydraulic
D	-Relief valve pressure setting:	12.0±0.5 MPa

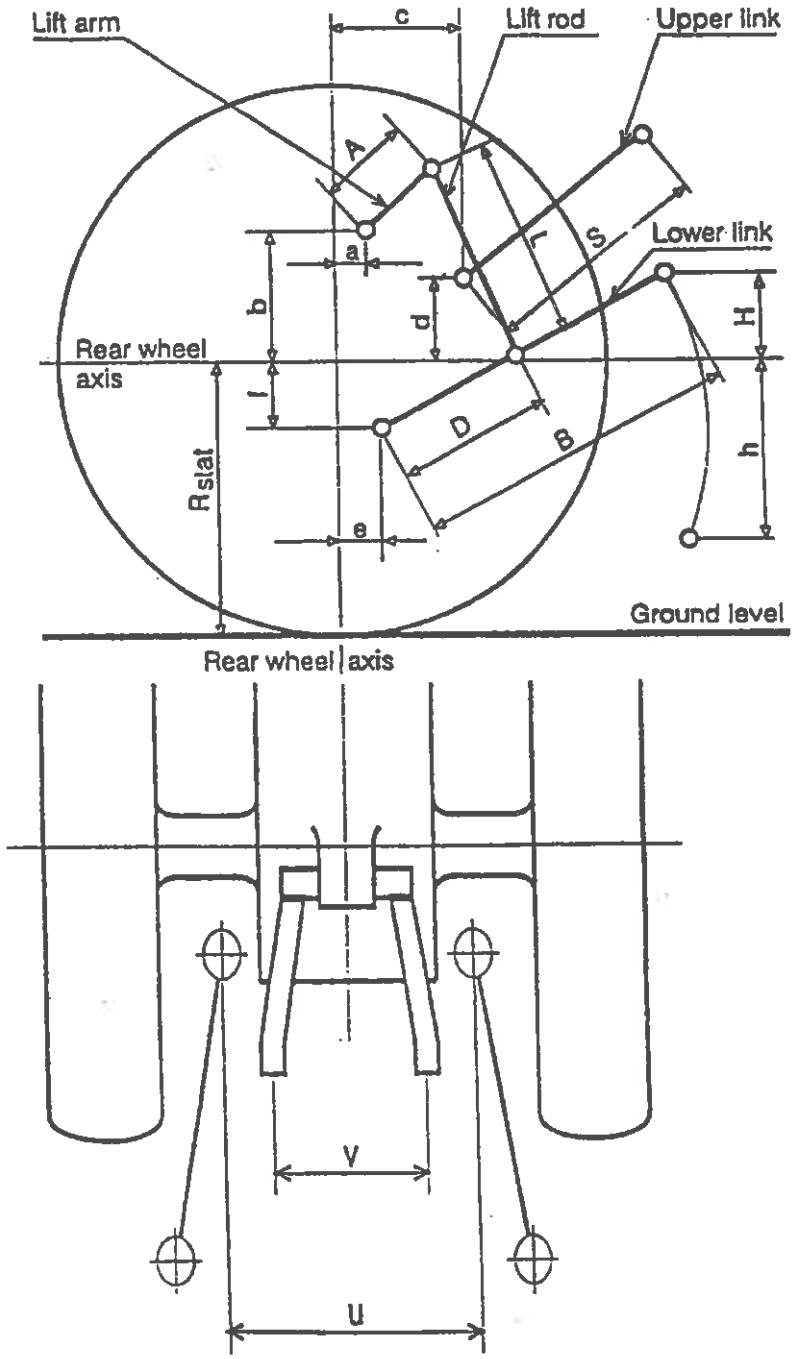
D	-Opening pressure of cylinder safety valve :	None
D	-Lift pump type:	Gear pump
D	-Transmission between pump and engine:	Driven by engine cam shaft
C	-Type and number of filters:	Cartridge type, 1
C	-Site of oil reservoir:	Transmission housing
C	-Type, number and location of tapping points:	1 double acting outlets at the rear
D	-Maximum volume of oil available to external cylinders:	10 dm^3

1.6 Three point linkage

C	-Category	1 ,in conformity with ISO730-1:1994+Cor.1:1995
C	-Category Adapter:	None

				Dimension or range	Setting used in test	
				mm	mm	
C		Length of lift arms :	(A)	200	200	
C		Length of lower links :	(B)	700	700	
		Distance of lift arm pivot point from rear wheel axis:				
C		-Horizontally	(a)	57	57	
C		-Vertically	(b)	395	395	
C		Horizontal distance between the 2 lower link points:	(u)	321	321	
C		Horizontal distance between the 2 lift arms end points:	(v)	294	294	
C		Length of upper link:	(S)	From 500 to 760	580	
		Distance of upper link pivot point from rear wheel axis:				
C		-Horizontally:	(c)	246	246	
C		-Vertically	(d)	260、290、320	320	
		Distance of lower link pivot point from rear wheel axis:				
C		-Horizontally:	(e)	140	140	
C		-Vertically	(f)	100	100	
C		Distance of lower link pivot point to lift rod pivot points on lwer links:	(D)	260、310、360	310	
C		Length of lift rods:	(L)	From 465 to 600	530	
		Height of lower hitch points relative to the rear wheel axis:				
C		-in low position	(h)	From 120 to 470	330	
C		-in high position	(H)	From 210 to 440	300	
C		Height above ground of lower hitch points when locked in transport position:		Any height at lift range	Any height at lift range	
		(*)Assuming r=515 mm rear tyre dynamic radius index of ISO 4251/1-1998				

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



Figures 1.1
Lift test-linkage geometry

	1.7 Swinging drawbar:	
C	-Type:	Fixed
	-Height above ground:	
C	.Maximum	502 mm
C	.Minimum	347 mm
C	-Type of adjustment:	Reversing
C	-Distance of hitch point from rear wheel axis,horizontally:	770 mm
	-Distance of hitch point from power take-off shaft end:	
C	.Vertically:	189 mm
C	.Horizontally:	436 mm
	-Lateral adjustment(centre of clevis)	
C	.Right hand:	59 mm
C	.Left hand:	59 mm
C	-Distance of pivot point from rear wheel axis,horizontally:	174 mm
C	-Diameter of drawbar pinhole:	Φ30 mm
D	-Maximum vertical permissible load:	6.5kN
	1.8 Trailer hitch	
C	-Type:	Fixed
C	-Hole diameter :	Φ30 mm
C	-Height above ground:	466 mm
C	-Distance of hitch point from rear wheel axis,horizontally:	506 mm
	-Distance of hitch point from power take-off shaft end:	
C	.Vertically:	134 mm
C	.Horizontally:	172 mm
D	-Maximum vertical permissible load:	12 kN
	1.9 Holed drawbar:	**None**
	1.10 Steering	
D	-Make:	Xinxing
D	-Model/Type:	BZZI-80, Hydrostatic steering system
	-Method of operation	
D	.Pump:	CBT-E306B Gear pump
D	.Ram:	1,double acting ram actuating directly on front axle
D	-Working pressure:	7±0.5 MPa
	1.11 Brakes	
	1.11.1 Service brake	
D	-Make:	Own make
D	-Model/Type:	Dry, disc, double plates, mechanical
C	-Method of operation:	By pedals
C	-Trailer braking take-off:	Pneumatic braking,operated by tractor pedals
	1.11.2 Parking brake	
C	-Type:	Mechanical
C	-Method of operation:	Depressed by brake pedals and ratched by hand lever
	1.12 Wheels	
	-Number	
C	.Front:	2,steering & driving
C	.Rear:	2,driving

C	-Wheelbase:	1705 mm
	-Track width adjustment:	

		Minimum mm	Maximum mm	Adjustment method
D	Front	1100	1400	Reversing wheels and off-set lug rims
D	Rear	1100	1400	Reversing wheels and off-set lug rims

	1.13 Protective structure	
C	-Make:	Own make
C	-Model:	DF300
C	-Type:	Rear Roll Bar Frame
C	-Manufacture's name and address:	Own make
	-Protective device :	
C	.Cab/frame/rollguard/other:	Frame
C	.Tiltable/not tiltable:	Tiltable
	-OECD approval	
C	.Approval number:	7/S/0 230
C	.Date of approval:	Oct. 11,2005
C	.Nos. of minor modification certificates,if any:	None
	1.14 Seat	
	1.14.1Driver's seat	
C	-Make:	Dongfeng
C	-Model:	280.44C.101
C	-Type:	Fixed
C	-Seat and steering wheel reversible:	No
C	-Type of suspension:	None
C	-Type of damping:	None
	-Range of adjustment:	
C	.Longitudinal:	230 mm
C	.Vertical:	0 mm
C	-Safety belt:	Yes
C	.Type:	Purposeless
	1.14.2 Optional driver's seat(s):	None
	1.14.3 Passenger seat:	None
	1.15 Lighting	

			Height above ground of center mm	Size mm	Distance from outside edge of lights to median plane of tractor mm
C		Head lights	894	140×45	238
C		Side lights	1158	70×70	518
C		Rear lights	1275	115×75	580
C		Reflectors	1158	70×70	518
C		Brake lights	1158	70×70	518

2 TEST CONDITIONS

Separate tables may be added to report other test conditions or equipments.

2.1 Overall dimensions

	Length mm	Width		Height at top of	
		Minimum mm	Maximum mm	Protective Structure mm	Exhaust Silencer mm
Ballasted	3275	1385	1685	2313	1999
Unballasted	3195	1385	1685	2318	2005

2.2 Ground Clearance(unballasted tractor)

-Clearance limiting part: Under the front axle 332 mm

2.3 Tractor mass

-Mass(with protective structure and full fuel tank):

	Unballasted		Ballasted	
	Without driver kg	With driver kg	Without driver kg	With driver kg
Front	599	609	756	767
Rear	915	980	1105	1169
Total	1514	1589	1861	1936

2.4 Ballast

	Weights		Water kg
	Number	Total mass kg	
Front	6	117	—
Rear	6	230	—
Optional	—	—	—

2.5 Track specifications: None

2.6 Tyres and track width specifications

	Front	Rear
Tyres:		
.dimensions	6.50-16	11.2-24
.ply rating	6	6
.type	Cross ply	Cross ply
.maximum load (tyre manufacturer's)	5.65 kN	12.2 kN
.maximum load (tractor manufacturer's)	5.65 kN	12.2 kN
.inflation pressure(tyre manufacturer's)	160～200kPa	100～150 kPa
.dynamic radius index	350 mm	515 mm
Chosen track width	1150 mm	1206 mm

2.7 Fuel

-Type: Standard diesel fuel in conformity with GB 10327(China standard)

-Density at 15 ℃ 0.8523 g/cm^3

2.8 Oils and lubricants

2.8.1 Capacity and change interval

	Capacity	Oil change	Filter change
	dm^3	h	h
Engine	4.5	100	100
Gear box, rear axle and final drives, in common with hydraulic system	25	1000	—
Front axle and final drives	4	1000	—
Steering	1.5	1000	—

2.8.2 Specifications(SAE,API,CCMC,ACEA,Mil.L,ISO)

	Recommended	Used during test
Engine oil .Type: .Viscosity: .Classification:	 SAE10W/30 11.4cSt at 100 ℃ API-CC	Same as recommended
Transmission oil,Hydraulic fluid,Steering oil .Type: .Viscosity: .Classification:	 SAE 85W/90 9.3cSt at 100 ℃ API GL-4	Same as recommended

2.8.3 Grease

-Number of lubrication points: 18

3 COMPULSORY TESTS RESULTS

3.1 Main power take-off

-Date and location of tests: Oct 23,2005 COTTEC

-Type of dynamometer: LPA-Bedienpult 250 Elec. dynamometer:

Power	Speed			Fuel consumption			Specific energy
	Engine	P.T.O	Fan	Hourly		Specific	
kW	min^{-1}(rev/min)			kg/h	l/h	g/kW.h	kW.h/l
3.1.1 MAXIMUM POWER-TWO-HOUR TEST							
21.90	2499	617	2499	6.12	7.18	279.4	3.05
3.1.2 POWER AT RATED ENGINE SPEED							
21.90	2499	617	2499	6.12	7.18	279.4	3.05
3.1.3 STANDARD POWER TAKE-OFF SPEED(1000±25 or 540±10min^{-1}(rev/min)							
21.60	2187	540	2187	6.05	7.10	280.1	3.04
3.1.4 PART LOADS 3.1.4.1 the torque corresponding to maximum power at the rated engine speed							
21.90	2499	617	2499	6.12	7.18	279.4	3.05
3.1.4.2 85% of torque obtained in 3.1.4.1							
18.91	2538	627	2538	5.45	6.39	288.2	2.96
3.1.4.3 75% of torque obtained in 3.1.4.2							
14.32	2562	633	2562	4.56	5.35	318.5	2.68
3.1.4.4 50% of torque obtained in 3.1.4.2							
9.63	2586	639	2586	3.68	4.32	382.0	2.23
3.1.4.5 25% of torque obtained in 3.1.4.2							
4.85	2605	643	2605	2.84	3.33	585.3	1.46
3.1.4.6 unloaded							
1.50	2629	649	2629	2.15	2.52	—	—

Power	Speed			Fuel consumption			Specific energy
	Engine	P.T.O	Fan	Hourly		Specific	
kW	min^{-1}(rev/min)			kg/h	l/h	g/kW.h	kW.h/l
3.1.5 PART LOADS AT STANDARD POWER TAKE-OFF[1000±25 or 540±10min^{-1}(rev/min)]							
3.1.5.1 the torque corresponding to maximum power							
21.60	2187	540	2187	6.05	7.10	280.1	3.04
3.1.5.2 85% of torque obtained in 3.1.5.1							
18.60	2215	547	2215	5.23	6.14	281.2	3.03
3.1.5.3 75% of torque obtained in 3.1.5.2							
14.04	2230	551	2230	3.97	4.66	282.7	3.01
3.1.5.4 50% of torque obtained in 3.1.5.2							
9.45	2251	556	2251	3.14	3.68	332.3	2.56
3.1.5.5 25% of torque obtained in 3.1.5.2							
4.79	2282	563	2282	2.33	2.73	486.5	1.75
3.1.5.6 unloaded							
1.19	2301	568	2301	1.69	1.98	—	—
3.1.6 PART LOADS AT DIFFERENT ENGINE SPEEDS							
3.1.6.1 Maximum power at rated engine speed							
21.90	2499	617	2499	6.12	7.18	279.4	3.05
3.1.6.2 80% of power obtained in 3.1.6.1 at max. speed setting							
17.51	2546	629	2546	4.95	5.81	282.7	3.02
3.1.6.3 80% of power obtained in 3.1.6.1 with governor control set to 90% of rated engine speed							
17.45	2250	556	2250	4.96	5.82	284.2	3.00
3.1.6.4 40% of power obtained in 3.1.6.1 with governor control set to 90% of rated engine speed							
8.78	2248	555	2248	2.98	3.50	339.5	2.51
3.1.6.5 60% of power obtained in 3.1.6.1 with governor control set to 60% of rated engine speed							
13.15	1500	370	1500	3.75	4.40	285.2	2.99
3.1.6.6 40% of power obtained in 3.1.6.1 with governor control set to 60% of rated engine speed							
8.73	1500	370	1500	2.65	3.11	303.7	2.81

-No load maximum engine speed: 2629 rev/min
-Torque(equivalent crankshaft) at maximum power
.At rated engine speed: 83.7 Nm
.At 2-hour test: 83.7 Nm
-Maximum torque(equivalent crankshaft) (engine speed:1507 rev/min): 99.3 Nm

Mean atmospheric conditions	
Temperature	20 ℃
Pressure	98.9 kPa
Relative humidity	60 %
Maximum Temperature:	
Coolant	77 ℃
Engine oil	98 ℃
Fuel	23 ℃
Engine air intake	25 ℃

3.2 Hydraulic power and lifting force
-Date and location of test: Aug. 1,2005 COTTEC
3.2.1 Hydraulic power test
3.2.1.1 Hydraulic fluid data
- Hydraulic fluid type: SAE 85W/90
-Viscosity index(ISO3448+Corr 1:1993): 9.3cSt at 100 ℃

3.2.1.2 Compulsory Reporting(Test Results):

	Pressure	Reservoir oil Temperature ℃		Engine Speed	Flow rate	Power
	Mpa	Min.	Max.	min^{-1}	L/min	kW
Rated Engine Speed (Manufactures Specification)				2500		
3.2.1.2 .1 Maximum (sustained) pressure with relief valve open as measured at the coupler Pump stalled: Yes	12.50	60	64	2584		
3.2.1.2 .2 Flow rate corresponding to a hydraulic pressure equivalent to 90 percent of the actual relief valve pressure setting and corresponding hydraulic power	11.25	65		2590	24.7	4.65
3.2.1.2 .3 Maximum available flow and maximum power from one coupler pair:	11.00	64		2592	26.2	4.80
3.2.1.2 .4 Maximum available flow and maximum power from coupler pairs operating simultaneously(flow through two or more coupler pairs if required):	—	—		—	—	—

3.2.2 Power lift test
-Linkage settings for test-see Table 1.1 and Figures 1.1

	At the hitch point	On the frame
Height of lower hitch points above ground in down position	185 mm	163 mm
Vertical movement: without lifting force:	630 mm	712 mm
with lifting force:	608 mm	680 mm
Maximum corrected force exerted through full range	6.62 kN	5.01 kN
Corresponding pressure of hydraulic fluid	11.25 MPa	11.25 MPa
Moment about rear wheel axle	5.56 kN.m	7.26 kN.m
Maximum tilt angle of mast from vertical	—	9^0

Lifting heights relative to the horizontal plane including the lower link pivot points											
mm	-252	-230	-200	-100	0	100	200	300	378	400	428
Lifting forces (the values of force measured are correspond to a hydraulic pressure equivalent to 90 % of the actual relief value pressure setting of the hydraulic lifting system) At the hitch point,Corresponding pressure 11.25 MPa											
kN	—	6.62	6.77	7.21	7.28	7.32	7.21	7.17	7.09	—	—
At the frame, Corresponding pressure 11.25 MPa											
kN	6.62	—	6.82	6.79	6.57	6.25	5.92	5.50	—	5.15	5.01

3.3 Drawbar performance

-Date of tests: Aug. 2,2005
-Type of track: Concrete

	Height of drawbar above ground	Tyre inflation pressure	
		Front	Rear
	mm	kPa	kPa
Unballasted	377	160	100
Ballasted	375	160	100

Gear umber and and range	Power	Drawbar pull	Speed	Engine Speed	Fan Speed	Slip of wheels	Specific fuel consumption	Specific energy	Temperature			Atmospheric conditions		
									Fuel	Coolant	Engine oil	Temperat-ure	Relative hummidity	Pressure
	kW	kN	km/h	Min^{-1}	Min^{-1}	%	g/kW.h	kW.h/l	℃	℃	℃	℃	%	kPa
3.3.1 MAXIMUM POWER IN TESTED GEARS (unballasted tractor)														
1	6.15	13.50	1.64	2585	2585	15.07	532	1.58	33	77	98	28	50	98.6
2	9.77	13.43	2.62	2570	2570	15.02	427	1.97	33	77	98	28	50	98.6
3	15.05	13.28	4.08	2525	2525	14.97	338	2.49	33	77	98	28	50	98.6
4	17.66	11.02	5.77	2510	2510	9.60	326	2.58	33	77	98	28	50	98.6
5	18.81	7.40	9.15	2510	2510	5.54	307	2.74	33	77	98	28	50	98.6
6	18.12	4.32	15.10	2510	2510	2.78	333	2.53	33	77	98	28	50	98.6
3.3.2 MAXIMUM POWER IN TESTED GEARS(ballasted tractor)														
1	6.99	15.25	1.65	2588	2588	15.10	489	1.72	33	79	100	29	50	98.5
2	11.06	15.14	2.63	2572	2572	15.08	401	2.09	33	79	100	29	50	98.5
3	17.19	15.06	4.11	2510	2510	13.25	333	2.52	33	79	100	29	50	98.5
4	18.23	11.22	5.85	2510	2510	6.74	315	2.66	33	79	100	29	50	98.5
5	19.09	7.52	9.14	2510	2510	4.26	303	2.77	33	79	100	29	50	98.5
6	18.65	4.44	15.12	2510	2510	2.44	310	2.71	33	79	100	29	50	98.5
3.3.3 FIVE-HOUR TESTS 3.3.3.1 FIVE-HOUR TEST at 75 % of pull at maximum power(at rated engine speed)														
5	14.89	5.60	9.57	2548	2548	2.84	345	2.43	33	78	98	29	45	98.4
3.3.3.2 FIVE-HOUR TEST at pull corresponding to 15 % wheel slip with additional ballast: 0 kg														
2	11.03	15.10	2.63	2512	2512	15.06	401	2.10	33	78	99	28	40	98.2

Oil consumption during ten hours duration of tests 3.3.3.1 and 3.3.3.2: 47.2 g/h

3.4 Turning area and turning circle

	Without brakes	
	Right-hand	Left-hand
	m	m
Radius of turning area	3.69	3.85
Radius of turning circle	3.60	3.76

3.5 Location of center of gravity

-Height above ground: 717 mm
-Distance from the vertical plane containing the axis of the rear-wheels: 653 mm
-Distance from the median longitudinal plane of the tractor: -2 mm
-If the angle of suspension of the tractor is less then 20° ,indicate its value: None

3.6 Braking

-Date of tests: Aug. 7,2005

3.6.1 Cold service braking device test

	Speed before application of brakes	Braking device control force	Mean deceleration	Minimum stopping distance without locking the wheels
	km/h	kN	m/s^2	m
Ballasted tractor	32.8	0.10	0.96	43.2
	32.8	0.20	1.81	22.9
	32.8	0.30	2.52	16.5
	32.8	0.35	2.84	14.6
	32.8	0.40	3.17	13.1
	32.8	0.45	3.32	12.5
	32.8	0.50	3.37	12.3
Unballasted tractor	32.8	0.10	1.08	38.4
	32.8	0.20	2.00	20.8
	32.8	0.30	2.71	15.3
	32.8	0.35	3.10	13.4
	32.8	0.40	3.40	12.2
	32.8	0.45	3.52	11.8
	32.8	0.50	3.55	11.7

-Maximum deviation of tractor from its original course: 0 mm

-Abnormal vibration: None

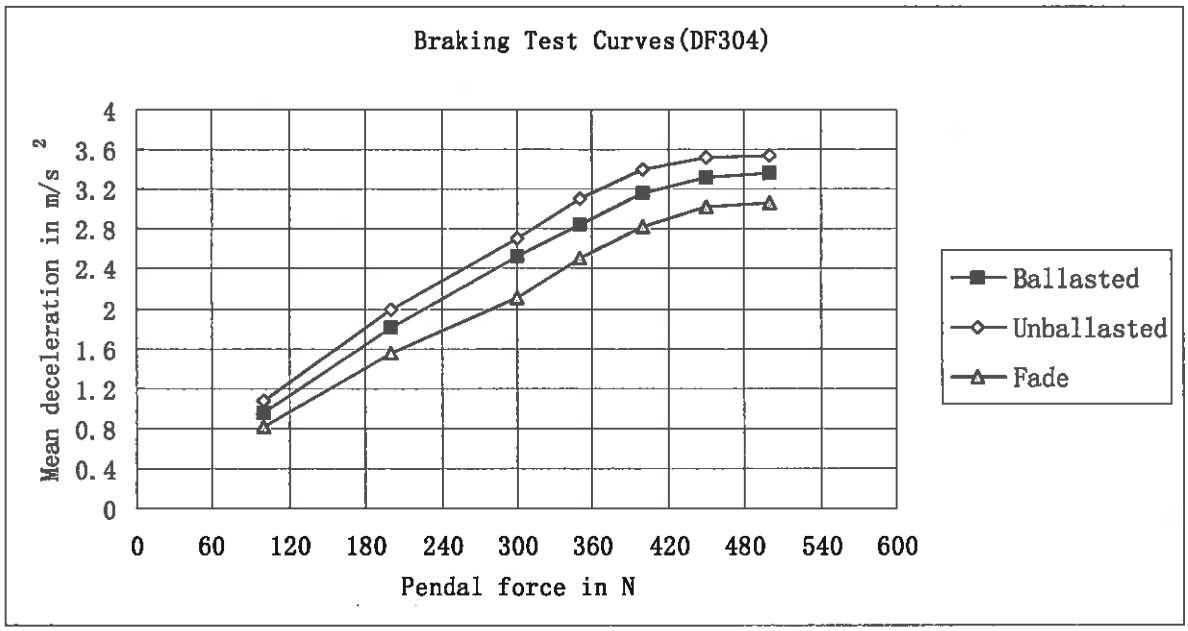
3.6.2 Fade test

Speed before application of brakes	Braking control force	Mean deceleration	Minimum stopping distance without locking the wheels
km/h	kN	m/s^2	m
32.8	0.10	0.82	50.6
32.8	0.20	1.55	26.8
32.8	0.30	2.10	19.8
32.8	0.35	2.50	16.6
32.8	0.40	2.82	14.7
32.8	0.45	3.03	13.7
32.8	0.50	3.07	13.5

-Maximum deviation of tractor from its original course: 0 mm

-Abnormal vibration: None

-Brake heating method: Driving



3.6.3 Parking braking device test

	Uphill	Downhill
Braking device control force N	250	230

3.7 Measurement of external noise

-Date of tests:	Aug.9,2005
-Sound level meter, make/mode/type:	B & K 2209
-Type of track:	Concrete
-Gear number:	8
-Travelling speed before accceleration:	24.6 km/h
-Sound level:	85.4 dB(A)

4 OPTIONAL TEST RESULTS

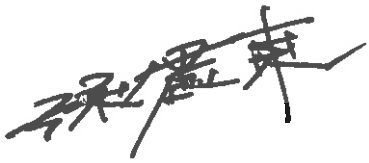
4.1 Low temperature starting

-Date of tests:	Aug.11,2005
-Detail of the starting aids used for the tests,battery included:	None
-Fuel	
.Type	-35#
.Octane or cetane number:	>50
.Pour-point and other specifications:	-30 ℃
-Engine oil	
.Type:	SAE10W/30
.Viscosity and other specifications:	11.4 cSt at 100 ℃
-Test results	
.Starting procedure used for the tests:	The manufacturer's procedure
.Lowest temperature at which the engine started:	-2.0 ℃

5 REPAIRS None

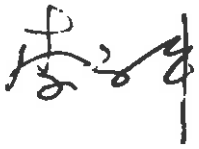
6 REMARKS None

Director of the COTTEC
Senior engineer



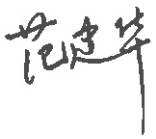
Sun Zhendong

Vice-director of the COTTEC
Senior engineer



Li Jingzhong

Responsible engineer for these tests and editor for the test report publish:
Senior engineer

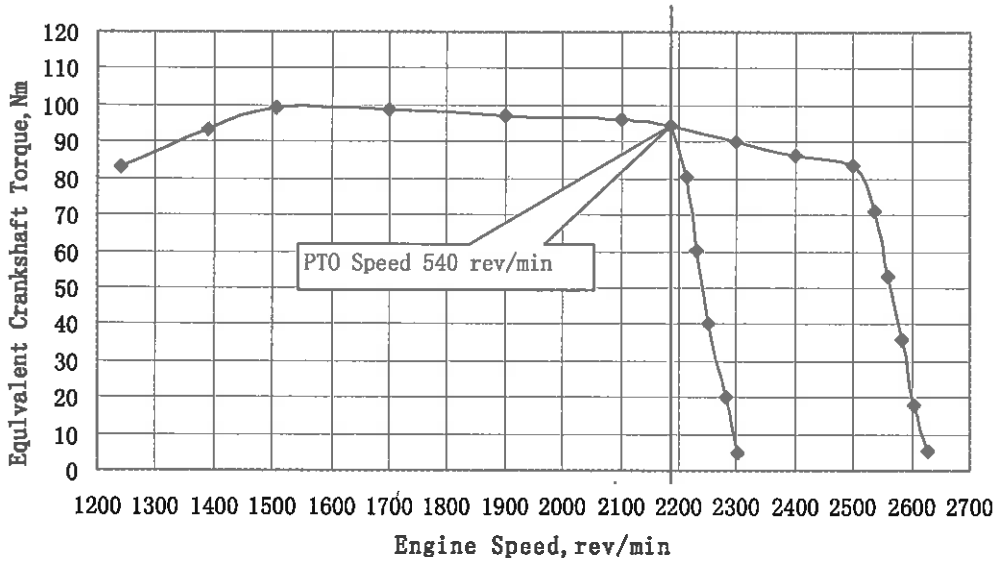


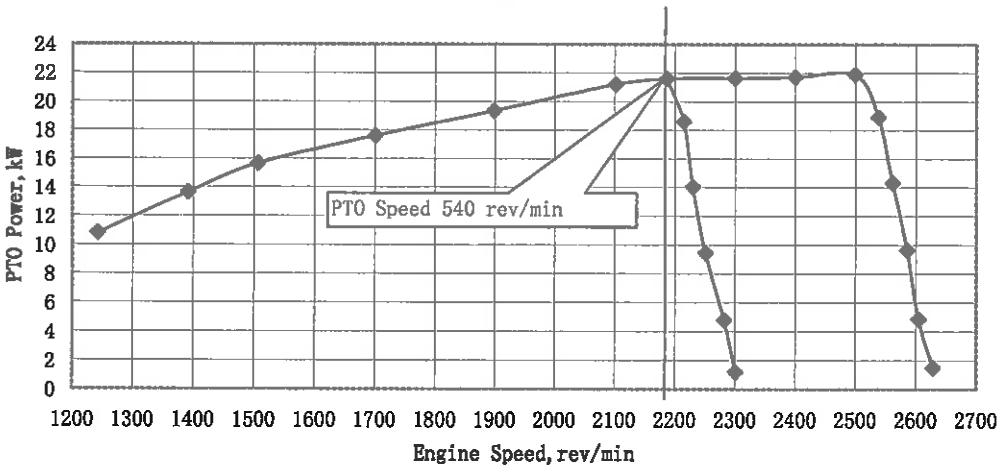
Fan Jianhua

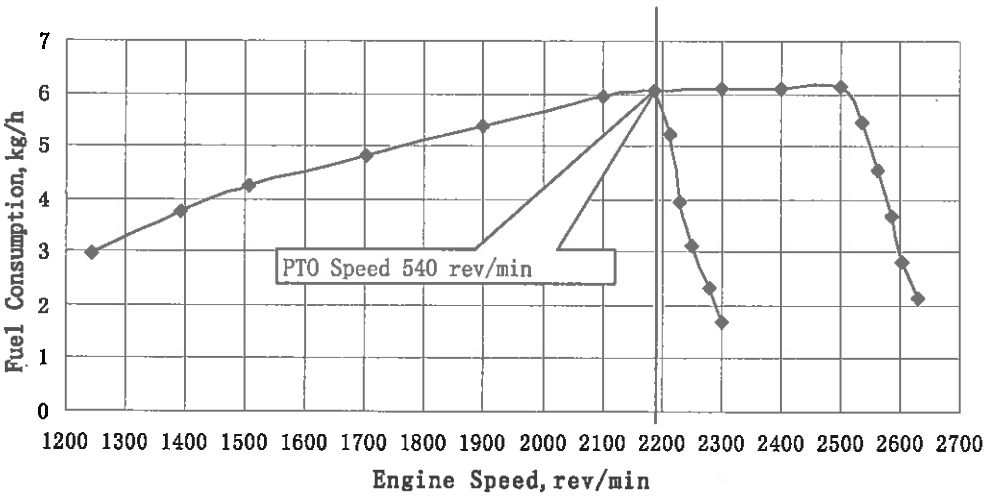
Date: Oct 24,2005

Members of the tractor test board:
Chen Zhiqiang Yan Xiaofang, Liu Hua,
Zheng Zhigang, Gao Bo, Zhao Jun,
Sun Zhennan, Yang Hongmei,Liu Hui
Sun Panpan,Liu Zhiqiang,Bai Demin
Yi Xiaodong,Liu Hongqiang

ANNEX
MAIN POWER TAKE-OFF TEST CURVES 1







ANNEX
MAIN POWER TAKE-OFF TEST CURVES 2

