COTTEC

CHINA
OFFICIAL TRACTOR
TEST AND
EVALUATION CENTRE

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OECD TEST REPORT OF Luzhong-404 AGRICULTURAL TRACTOR (CODE 2 - February 2008)

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



OECD Approval
No.: 2/2 446
Date: Nov.18, 2008

Tested Tractor	Submitted for test by
Make: Luzhong Model: Luzhong -404 Type: 4WD Speed version: 30 km/h	Name: Shandong Weifang Luzhong Tractor Co., Ltd Address: Weifang, Shandong, China Tel: 86 536 8321421 Fax: 86 536 8318240

This report includes 23 pages and may only be duplicated as a whole

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	Note: Units shown below, which appear in ISO 1000:1992; Amdl:1998, shall be stated and followed by national units in parenthesis	
C	Tractor manufacturer's name and address:	Shandong Weifang Luzhong Tractor Co., Ltd Weifang, Shandong, China
D	-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 COTTEC
D	-Place of running-in:	COTTEC, Luoyang, Henan, China
D	-Duration of running-in:	50.0 hours
C	-Date, location of test and code version:	From Sep.1 to Sep.22, 2008 COTTEC, Luoyang, Henan, China Code2 - February 2008
	1. SPECIFICATIONS OF TRACTOR	
	1.1 Identification	
	1.1.1 Denomination	
C	- Make of the tractor:	Luzhong
C	-Model (trade name):	Luzhong -404
C	-Type:	4WD
	1.1.2 Numbers	
D	-1st Serial No or prototype:	034757
C	- Serial No.:	034757
	1.1.3 Other Specifications	
D	- Models for other countries:	鲁中-404
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:	Fujian Lijia Co.,Ltd
C	-Model:	SL3105ABT-1
C	-Type:	4-stroke,water cooling ,vertical, direct injection
C	-Serial No.:	8050169
	1.2.1 Cylinders	
C	-Number:	3
C	-Disposition:	Vertical, in line
D	-Bore/Stroke:	105 mm /117 mm
D	-Capacity:	3039 cm^3
D	-Compression ratio:	17.0
D	-Arrangement of valves:	Overhead, in line
D	-Cylinder liners:	Wet
	1.2.2 Supercharging	None

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

	1.2.3 Fuel system	
C	-Fuel feed system:	Forced feed type
C	-Make of fuel filter:	Chengdu Zeren industry Co.,Ltd
C	-Model of fuel filter:	CX7085
C	-Type of fuel filter:	Replaceable paper cartridge
D	-Capacity of fuel tank:	28 dm^3
C	-Make of injection pump:	WUXI WEIFU HIGH-TECH CO.,Ltd
C	-Model/type of injection pump:	3I346-85, cylinder plunger
C	-Serial No :	70867288
	-Manufacturer's production setting of injection pump:	
C	. Flow rate (at rated engine speed and full load):	8.8 ± 0.5 dm^3 /h
D	.Timing:	$16^0 \sim 23^0$ before T.D.C.
D	-Make of injectors:	Shangong Tanda fuel pump Co.,Ltd
D	-Model/type of injectors:	KDPF75501(507), Multi-hole
D	-Injection pressure:	18.5~19.5 MPa
C	-Make/Mode/Type of carburettor:	None
	1.2.4 Governor	
C	- Make:	WUXI WEIFU HIGH-TECH CO.,LTD
C	-Model/type:	P110, Mechanical, centrifugal
C	-Governed range of engine speed:	700~2350 rev/min
C	-Rated engine speed:	2200 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:	Weifang Hanchao mechanism Co.,Ltd
C	.Model/type:	LZT.300.11A.010, dry air filter, replaceable paper cartridge
C	.Location of air intake:	At the front of radiator and inside the engine bonnet, horizontal
C	.Maintenance indicator:	None
	1.2.6 Lubrication system	
D	-Type of feed pump:	Roter
C	-Type of filters:	Replaceable paper cartridge
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:	7
C	.Fan diameter:	425 mm
D	-Coolant capacity:	9 dm^3
C	-Type of temperature control:	Thermostat
D	-Super pressure system:	None

	1.2.8 Starting system	
C	-Make:	Wuxi Minxian automobile appliance Co.Ltd
C	-Model/Type:	QD13L, solenoid engaged
D	-Starter motor power rating:	2.5 kW
C	-Cold starting aid:	None
C	-Safety device:	Forward and reverse lever in neutral position
	1.2.9 Electrical system	
C	-Voltage:	12 V (Negative earth)
	-Generator:	
C	.Make:	Ningbo Huatai
C	.Model/Type:	JF131, altermator, belt driven
D	.Power	0.35 kW
	-Battery of accumulators:	
C	.Number:	1
D	.Rating:	120 Ah at 20 hours rating
	1.2.10 Exhaust system	
C	-Make:	Luoyang Yituo Dongfang automobile assembly Co.Ltd
C	-Model/Type:	LZT300.22.020, interference type silencer with internal perforated pipe
C	-Location:	Right-hand side of the engine, vertical
	1.3 Transmission	
	1.3.1 Clutch (Travel and PTO)	
D	-Make:	Rongcheng Huanghai clutch Co.,Ltd
D	-Model/Type:	LZT500A.21.011, dry, dual (for travel and PTO)
D	-Number of plates:	2
D	-Diameter of plates:	254 mm
C	-Method of operation:	Mechanically actuated by pedal
	1.3.2 Gear box	
D	-Make:	Own make
D	-Model/Type:	LZT300.37.101, mechanical
	-Description:	8 forward speed gear,4 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	1
C	Number of gears	4	4
C	Total of arrangements	8	4

	-Available options	None

	1.3.3 Rear axle and final drives	
D	-Make:	Own make
D	-Model/Type:	LZT400.38.101, bevel gear type differential and epicyclic gear type final drives
	-Differential lock	
D	.Type:	Mechanical
C	.Method of engagement:	Mechanically actuated by pedal
C	.Method of disengagement:	Mechanically actuated by pedal
	1.3.4 Front axle and final drives	
D	-Make:	Yantai Jielinda gear Co.,Ltd
D	-Model/Type:	LZT404.31.101,bevel gear type differential and full closed 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 2200 rev/min km/h	
C		1	L	200.877	2.44	
C		2		138.490	3.53	
C		3		101.460	4.82	
C		4		65.830	7.43	
C		1	H	46.750	10.47	
C		2		32.230	15.18	
C		3		23.610	20.73	
C		4		15.320	31.94	
C		1	R	135.370	3.61	
		2		93.330	5.24	
		3		68.377	7.16	
C		4		44.366	11.03	
		(*) Calculated with the dynamic radius index of 590 mm (ISO 4251-1:2005)				

C	-Number of revolutions of front wheels for one revolution of rear-wheels:	1.405
	1.4 Power take-off	
	1.4.1 Main power take-off	
C	-Type:	Semi-independent
C	-Method of engagement:	By hand lever
C	-Number of shafts:	1
C	-Method of changing power take-off shaft ends and 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 500-1:2005, ISO 500-2:2004, ISO 500-3:2004
C	-Height above ground:	575 mm
C	-Distance from the median plane of the tractor:	0 mm
C	-Distance behind rear wheel axis:	388 mm
C	-PTO speed at rated engine speed:	635 rev/min
C	-Engine speed at standard power take-off speeds	1872 rev/min
C	-Ratio of rotation speeds (engine speed/PTO speed):	3.467
D	-Power restriction:	28.0 kW
D	-Maximum torque transmissible:	500 Nm
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, in conformity with ISO 500-1:2005, ISO 500-2:2004, ISO 500-3:2004
C	-Height above ground:	575 mm
C	-Distance from the median plane of the tractor:	0 mm
C	-Distance behind rear wheel axis:	388 mm
C	-PTO speed at rated engine speed:	1076 rev/min
C	-Engine speed at standard power take-off speeds	2045 rev/min
C	-Ratio of rotation speeds (engine speed / PTO speed):	2.045
D	-Power restriction:	28.0 kW
D	-Maximum torque transmissible:	270 Nm
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:	Shandong Hongyu
C	-Model:	LZT300.55.001
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:	16±0.5 MPa
D	-Opening pressure of cylinder safety valve :	None

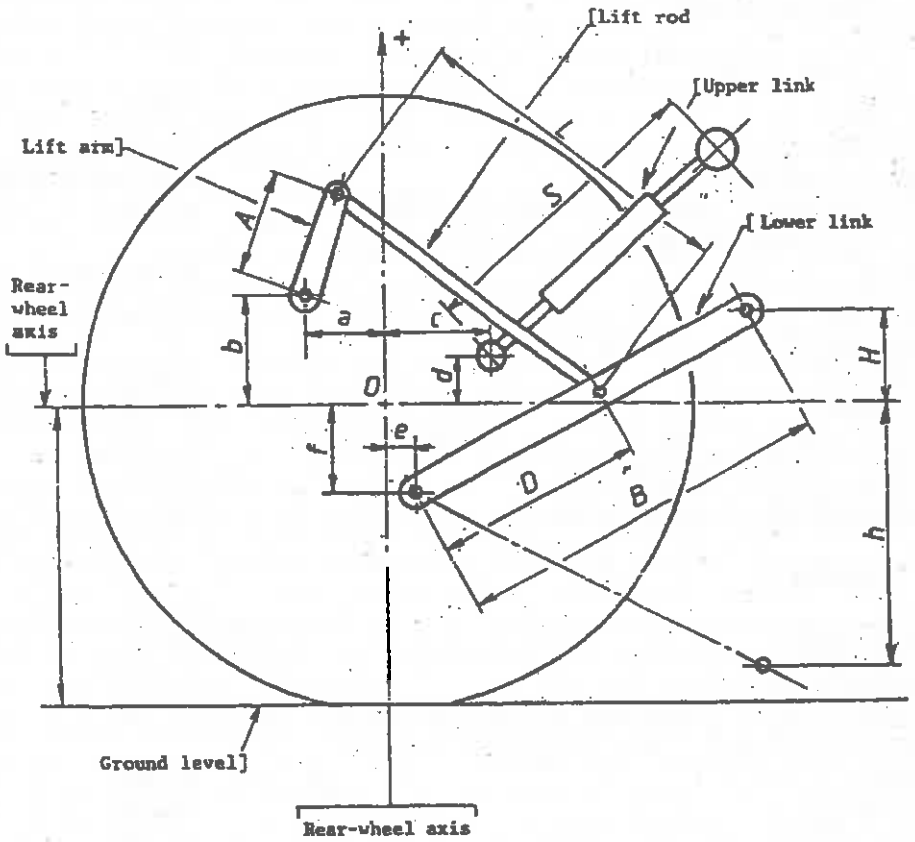
D	-Lift pump type:	Gear pump
D	-Transmission between pump and engine:	Driven by engine cam shaft
C	-Type and number of filters:	Metal net, 1
C	-Site of oil reservoir:	Above the rear axle
C	-Type, number and location of tapping points:	Coupler pairs quick shift adaptor, At rear of tractor
D	-Maximum volume of oil available to external cylinders:	6 .0 dm^3

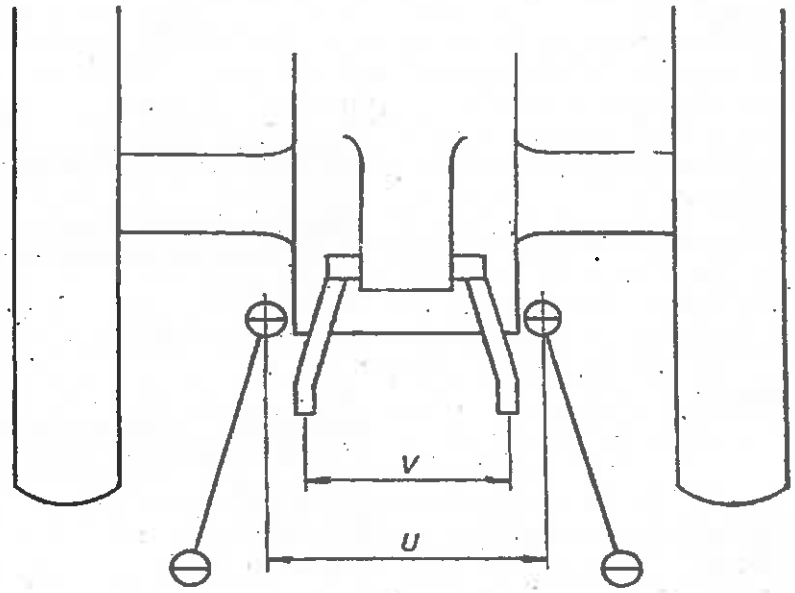
1.6 Three point linkage

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

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

				Dimension or range	Setting used in test	
				mm	mm	
C		Length of lift arms :	(A)	240	240	
C		Length of lower links :	(B)	720	720	
		Distance of lift arm pivot point from rear wheel axis:				
C		-Horizontally	(a)	164	164	
C		-Vertically	(b)	309	309	
C		Horizontal distance between the 2 lower link points:	(u)	425	425	
C		Horizontal distance between the 2 lift arms end points:	(v)	500	500	
C		Length of upper link:	(S)	From 440 to 685	485	
		Distance of upper link pivot point from rear wheel axis:				
C		-Horizontally:	(c)	406	406	
C		-Vertically	(d)	210,240,270	240	
		Distance of lower link pivot point from rear wheel axis:				
C		-Horizontally:	(e)	210	210	
C		-Vertically	(f)	160	160	
C		Distance of lower link pivot point to lift rod pivot points on lwer links:	(D)	From 300 to 365	365	
C		Length of lift rods:	(L)	From460 to 600	570	
		Height of lower hitch points relative to the rear wheel axis:				
C		-in low position	(h)	From 230 to 555	470	
C		-in high position	(H)	From 75 to 330	140	
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 = 590 mm rear tyre dynamic radius index of ISO 4251-1:2005				





Figures 1.1 Lift test-linkage geometry

	1.7 Swinging drawbar:	
C	-Type:	Clevis
	-Height above ground	
C	.Maximum	390 mm
C	.Minimum	290 mm
C	-Type of adjustment:	By reversing drawbar
C	-Distance of hitch point from rear wheel axis, horizontally:	813 mm
	-Distance of hitch point from power take-off shaft end:	
C	.Vertically:	195 & 295 mm
C	.Horizontally:	425 mm
	-Lateral adjustment (centre of clevis)	
C	.Right hand:	85 mm
C	.Left hand:	85 mm
C	-Distance of pivot point from rear wheel axis, horizontally:	225 mm
C	-Diameter of drawbar pinhole:	32 mm
D	-Maximum vertical permissible load:	10.0 kN
	1.8 Trailer hitch	
C	-Type:	Fixed
C	-Hole diameter :	40 mm
C	-Height above ground:	523 mm
C	-Distance of hitch point from rear wheel axis, horizontally:	538 mm
	-Distance of hitch point from power take-off shaft end:	
C	.Vertically:	35 mm
C	.Horizontally:	150 mm
D	-Maximum vertical permissible load:	10.0 kN
	1.9 Holed drawbar:	None
	1.10 Steering	
D	-Make:	Zhenjiang hydraulic accessory Co.Ltd
D	-Model/Type:	LZT354.40C.0157,hydrostatic steering system
	-Method of operation	
D	.Pump:	CBE306B-060/125, Gear pump
D	.Ram:	Double acting ram actuating directly on front axle
D	-Working pressure:	6.3±0.3 MPa
	1.11 Brakes	
	1.11.1 Service brake	
D	-Make:	Weifang Chengyuxin mechanism Co,.Ltd
D	-Model/Type:	LZT400.43.002/003,oil-immersed double discs, mechanical
C	-Method of operation:	By pedals
C	-Trailer braking take-off:	Hydraulic
	1.11.2 Parking brake	
C	-Type:	Mechanical
C	-Method of operation:	Hand lever with ratchet
	1.12 Wheels	
	-Number	
C	.Front:	2, steering & driving
C	.Rear:	2, driving

C	-Wheelbase:		1924 mm		
	-Track width adjustment:				
			Minimum mm	Maximum mm	Adjustment method
D		Front	1250	1250	None
D		Rear	1200	1500	Reversing wheels and off-set lug rims
	1.13 Protective structure				
C	-Make:		Own make		
C	-Model:		LZT400.46A.001		
C	-Type:		Rear roll bar		
C	-Manufacture's name and address:		Own make		
	-Protective device:				
C	-Cab/frame / roll guard / other:		Rear roll bar		
C	-Tiltable / not tiltable:		Tiltable		
	-OECD approval		None		
C	.Approval number:		None		
C	.Date of approval:		None		
C	.Nos. of minor modification certificates, if any:		None		
	1.14 Seat				
	1.14.1 Driver's seat				
C	-Make:		Zhangjiagang Shenjie		
C	-Model:		400.44.001-1		
C	-Type:		Adjustable suspension		
C	-Seat and steering wheel reversible:		No		
C	-Type of suspension:		Mechanical		
C	-Type of damping:		Spring		
	-Range of adjustment:				
C	.Longitudinal:		150 mm		
C	.Vertical:		None		
C	-Safety belt:		Yes		
C	-Type:		Two points seat belt		
	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	1135	165×125	168
C		Front direction lights	1125	70×125	235
C		Front position lights	1125	70×125	235
C		Rear direction lights	1275	75×65	665
C		Rear position lights	1275	45×65	590
C		Stop lights	1275	70×65	545
C		Work lights	1440	90×80	705
C		Rear reflector	1275	45×65	590

2 TEST CONDITIONS

Overall dimensions

	Length	Width		Height at top of	
		Minimum	Maximum	Protective Structure	Exhaust Silencer
	mm	mm	Mm	mm	mm
Ballasted	3705	1515	1815	2285	2132
Unballasted	3480	1515	1815	2288	2136

2.2 Ground Clearance (unballasted tractor): 235 mm
-Clearance limiting part: the hitch pin on swinging drawbar

2.3 Tractor mass
-Mass(with rear roll bar and full fuel tank):

	Unballasted		Ballasted	
	Without driver kg	With driver kg	Without driver kg	With driver kg
Front	923	929	1117	1123
Rear	1227	1296	1360	1429
Total	2150	2225	2477	2552

2.4 Ballast

	Weights		Water
	Number	Total mass kg	kg
Front	12	145	—
Rear	4	182	—
Optional	—	—	—

2.5 Track specifications: **None**

2.6 Tyres and track width specifications

	Front	Rear
Tyres:		
.dimensions	8.3-20	12.4-28
.ply rating	6	8
.type	Cross ply	Cross ply
.maximum load (tyre manufacturer's)	6.8 kN	14.8 kN
.maximum load (tractor manufacturer's)	6.8 kN	14.8 kN
.inflation pressure (tyre manufacturer's)	90～120 kPa	80～120 kPa
.dynamic radius index	420 mm	590 mm
Chosen track width	1250 mm	1300 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 dm^3	Oil change h	Filter change h
Engine	7	250	250
Gear box, rear axle and final drives	27	500	—
hydraulic system	12	500	500
Front axle and final drives	7	500	—
Steering	0.8	500	—

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

	Recommended	Used during test
Engine oil .Type: .Viscosity: .Classification:	SAE 10W/30 11.4 cSt at 100 ℃. API-CD	Same as recommended
Transmission oil, Hydraulic fluid, Steering oil, rear axle and final drives oil, Front axle and final drives oil .Type: .Viscosity: .Classification:	SAE 80W/90 9.3 cSt at 100 ℃ API GL-4	Same as recommended

2.8.3 Grease

-Number of lubrication points: 12

3 COMPULSORY TESTS RESULTS

3.1 Main power take-off

-Date and location of tests: Sep.1, 2008, COTTEC

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

Power	Speed			Fuel consumption			Specific energy
	Engine	P.T.O	Fan	Hourly		Specific	
kW	rev/min			kg/h	l/h	g/kWh	kWh/l
3.1.1 MAXIMUM POWER-ONE-HOUR TEST							
25.61	2174	627	2718	7.42	8.71	289.8	2.94
3.1.2 POWER AT RATED ENGINE SPEED							
25.36	2198	634	2748	7.55	8.86	297.7	2.86
3.1.3 STANDARD POWER TAKE-OFF SPEED (1000±25 or 540±10 rev/min)							
23.18	1872	540	2340	6.52	7.65	281.3	3.03
3.1.4 PART LOADS 3.1.4.1 The torque corresponding to maximum power at the rated engine speed							
25.36	2198	634	2748	7.55	8.86	297.7	2.86
3.1.4.2 85% of torque obtained in 3.1.4.1							
22.15	2257	651	2821	6.82	8.00	307.8	2.77
3.1.4.3 75% of torque obtained in 3.1.4.2							
16.79	2278	657	2848	5.62	6.59	334.8	2.55
3.1.4.4 50% of torque obtained in 3.1.4.2							
11.30	2295	662	2869	4.62	5.42	408.9	2.08
3.1.4.5 25% of torque obtained in 3.1.4.2							
5.66	2312	667	2890	3.67	4.31	648.9	1.31
3.1.4.6 Unloaded							
1.48	2333	673	2916	2.84	3.33	—	—

Power	Speed			Fuel consumption			Specific energy
	Engine	P.T.O	Fan	Hourly		Specific	
kW	rev/min			kg/h	l/h	g/kWh	kWh/l
3.1.5 PART LOADS AT STANDARD POWER TAKE-OFF (1000±25 or 540±10 rev/min)							
3.1.5.1 The torque corresponding to maximum power							
23.18	1872	540	2340	6.52	7.65	281.3	3.03
3.1.5.2 85% of torque obtained in 3.1.5.1							
20.47	1942	560	2428	5.95	6.98	290.7	2.93
3.1.5.3 75% of torque obtained in 3.1.5.2							
15.47	1955	564	2444	4.95	5.81	320.0	2.66
3.1.5.4 50% of torque obtained in 3.1.5.2							
10.47	1980	571	2475	3.96	4.65	378.4	2.25
3.1.5.5 25% of torque obtained in 3.1.5.2							
5.47	2011	580	2514	3.02	3.54	552.5	1.54
3.1.5.6 Unloaded							
1.34	2021	583	2526	2.24	2.63	—	—
3.1.6 PART LOADS AT DIFFERENT ENGINE SPEEDS							
3.1.6.1 Maximum power at rated engine speed							
25.36	2198	634	2748	7.55	8.86	297.7	2.86
3.1.6.2 80% of power obtained in 3.1.6.1 at max. speed setting							
20.15	2269	654	2836	6.43	7.54	319.1	2.67
3.1.6.3 80% of power obtained in 3.1.6.1 with governor control set to 90% of rated engine speed							
20.21	1980	571	2475	5.92	6.95	292.9	2.91
3.1.6.4 40% of power obtained in 3.1.6.1 with governor control set to 90% of rated engine speed							
10.19	1984	572	2480	3.86	4.53	378.9	2.25
3.1.6.5 60% of power obtained in 3.1.6.1 with governor control set to 60% of rated engine speed							
15.15	1317	380	1646	3.84	4.51	253.4	3.36
3.1.6.6 40% of power obtained in 3.1.6.1 with governor control set to 60% of rated engine speed							
10.12	1319	380	1649	2.83	3.32	279.7	3.05

-No load maximum engine speed: 2333 rev/min
-Torque(equivalent crankshaft) at maximum power
.At rated engine speed: 110.2 Nm
.At 1-hour test: 112.5 Nm
-Maximum torque (equivalent crankshaft) (engine speed: 1397 rev/min): 155.8 Nm

Mean atmospheric conditions	
Temperature	27 ℃
Pressure	100.1 kPa
Relative humidity	35 %
Maximum Temperature:	
Coolant	84 ℃
Engine oil	94 ℃
Fuel	33 ℃
Engine air intake	38 ℃

3.2 Hydraulic power and lifting force

- Date and location of tests: Sep.6, 2008, COTTEC

3.2.1 Hydraulic power test

3.2.1.1 Hydraulic fluid data

- Hydraulic fluid type: SAE 80W/90
- Viscosity index (ISO3448+Corr 1:1993): 28.5 mm^2/s at 65 ℃

3.2.1.2 Compulsory Reporting (Test Results):

	Pressure	Reservoir oil Temperature ℃		Engine Speed	Flow rate	Power
	MPa	Min	Max	rev/min	L/min	kW
Rated Engine Speed (Manufactures Specification)				2200		
3.2.1.2.1 Maximum (sustained) pressure with relief valve open as measured at the coupler Pump stalled: Yes	16.0	61.3	69.2	2301		
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	14.4	67.9		2305	22.4	5.38
3.2.1.2.3 Maximum available flow and maximum power from one coupler pair:	13.2	64.8		2315	24.9	5.48
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):	13.2	65.1		2314	25.0	5.50

3.2.2 Compulsory power lift test

-Linkage settings for test-see Table 1.1 and Figure 1.1

	At the hitch point	On the frame
Height of lower hitch points above ground in down position	120 mm	110 mm
Vertical movement: without lifting force:	610 mm	722 mm
with lifting force:	582 mm	674 mm
Maximum corrected force exerted through full range	14.77 kN	11.98 kN
Corresponding pressure of hydraulic fluid	14.4 MPa	14.4 MPa
Moment about rear wheel axle	13.74 kNm	18.45 kNm
Maximum tilt angle of mast from vertical	—	10.0^0

Lifting heights relative to the horizontal plane including the lower link pivot points											
mm	-320	-310	-300	-200	-100	0	100	200	272	300	354
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 14.4 MPa											
kN	—	14.77	15.53	16.93	17.98	18.52	18.62	18.66	18.70	—	—
At the frame, corresponding pressure 14.4 MPa											
kN	18.13	—	17.60	17.53	16.97	16.15	15.05	13.82	—	12.43	11.98

3.3 Compulsory drawbar power and fuel consumption test (unballasted tractor)

-Date and location of tests: Sep.9, 2008, COTTEC

-Type of track: Concrete

Height of drawbar above ground mm	Tyre inflation pressure	
	Front kPa	Rear kPa
525	120	110

Gear number 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	Temperature	Relative humidity	Pressure
	kW	kN	km/h	Min^{-1}	Min^{-1}	%	g/kWh	kWh/l	℃	℃	℃	℃	%	kPa
3.3.1 MAXIMUM POWER IN TESTED GEARS (unballasted tractor)														
L1	9.99	16.49	2.18	2308	2885	15.01	518	1.65	32	82	93	26	45	100.1
L2	14.22	16.46	3.11	2280	2850	15.03	440	1.94	32	82	93	26	45	100.1
L3	19.12	16.59	4.15	2230	2788	15.05	388	2.20	32	82	93	26	45	100.1
L4	20.00	10.33	6.97	2173	2716	4.82	379	2.25	33	83	94	27	45	100.1
H1	21.44	7.78	9.92	2171	2714	3.82	352	2.42	33	84	94	27	45	100.1
H2	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3.3.2 FUEL CONSUMPTION														
3.3.2.1 In selected gear/speed setting nearest 7.5 km/h, at maximum power at rated engine speed														
L4	19.87	10.02	7.14	2200	2750	3.92	387	2.20	33	82	94	26	45	100.1
3.3.2.1.1 75 % of pull corresponding to maximum power at rated engine speed														
L4	15.60	7.54	7.45	2275	2844	3.00	426	2.00	33	82	95	26	45	100.1
3.3.2.1.2 50 % of pull corresponding to maximum power at rated engine speed														
L4	10.83	5.11	7.63	2305	2881	1.96	510	1.67	33	82	95	27	45	100.1
3.3.2.1.3 Next higher gear/ speed setting at reduced engine speed; same pull and travelling speed as in 3.3.2.1.1														
H1	15.71	7.61	7.43	1608	2010	2.94	332	2.57	33	83	95	27	45	100.1
3.3.2.1.4 Same gear as 3.3.2.1.3 at reduced engine speed; same pull and travelling speed as in 3.3.2.1.2														
H1	10.79	5.07	7.66	1638	2048	1.72	357	2.39	34	83	95	27	45	100.1
3.3.2.2 In selected gear/speed setting nearest between 7 km/h and 10 km/h at rated engine speed														
L4	19.87	10.02	7.14	2200	2750	3.92	384	2.22	33	82	94	26	45	100.1
3.3.2.2.1 75 % of pull corresponding to maximum power at rated engine speed														
L4	15.60	7.54	7.45	2275	2844	3.00	426	2.00	33	82	95	26	45	100.1
3.3.2.2.2 50 % of pull corresponding to maximum power at rated engine speed														
L4	10.83	5.11	7.63	2305	2881	1.96	510	1.67	33	82	95	27	45	100.1
3.3.2.2.3 Next higher gear/speed setting at reduced engine speed: same pull and travelling speed as in 3.3.2.2.1														
H1	15.71	7.61	7.43	1608	2010	2.94	332	2.57	33	83	95	27	45	100.1
3.3.2.2.4 Same gear as 3.3.2.2.3 at reduced engine speed; same pull and travelling speed as in 3.3.2.2.2														
H1	10.79	5.07	7.66	1638	2048	1.72	357	2.39	34	83	95	27	45	100.1

*Remark: Maximum power in the gear H2 was not measured , because the forward speed in this gear exceeded the safety limit of testing equipment.

4 OPTIONAL TEST RESULTS

4.1 Optional drawbar power and fuel consumption test (ballasted tractor)

-Date and location of tests: Sep.10, 2008, COTTEC

-Type of track: Concrete

Height of drawbar above ground mm	Tyre inflation pressure	
	Front kPa	Rear kPa
522	120	110

Gear number 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	Temperature	Relative humidity	Pressure
	kW	kN	km/h	Min^{-1}	Min^{-1}	%	g/kWh	kW/l	℃	℃	℃	℃	%	kPa
4.1.1 OPTIONAL MAXIMUM POWER IN TESTED GEARS/SPEED SETTINGS														
L1	11.53	19.12	2.17	2302	2878	15.05	452	1.89	33	83	94	27	40	100.0
L2	16.43	19.08	3.10	2270	2838	15.00	389	2.19	33	83	94	27	40	100.0
L3	20.88	18.16	4.14	2175	2719	12.96	363	2.35	33	84	95	27	40	100.0
L4	21.21	10.94	6.98	2172	2715	4.74	358	2.38	34	84	95	28	40	100.0
H1	22.11	8.00	9.95	2172	2715	3.68	343	2.48	34	85	95	28	40	100.0
H2	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4.1.2 OPTIONAL FIVE-HOUR TESTS														
4.1.2.1 FIVE-HOUR TEST at 75% of the pull corresponding to maximum power at rated speed														
H1	17.35	5.91	10.57	2275	2844	2.36	361	2.36	34	84	95	28	40	100.0
4.1.2.2 FIVE-HOUR TEST at pull corresponding to 15% wheel slip , with additional ballast : 0 kg														
L2	16.41	19.06	3.10	2268	2835	14.98	391	2.18	33	84	96	28	40	100.0

Oil consumption during ten hours duration of tests 4.1.2.1 and 4.1.2.2: 45 g/h

*Remark: Maximum power in the gear H2 was not measured , because the forward speed in this gear exceeded the safety limit of testing equipment.

4.2 Low temperature starting

-Date and location of tests: Sep.22, 2008, COTTEC

-Detail of the starting aids used for the tests, battery included:

-Fuel

.Type -35#

.Octane or cetane number: >50

.Pour-point and other specifications: -30 ℃

-Engine oil

.Type: SAE 10W/30 , API-CD

.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: -5 ℃

4.3 Turning area and turning circle

	Without brakes	
	Right-hand m	Left-hand m
Radius of turning area	4.17	4.35
Radius of turning circle	4.04	4.22

4.4 Location of center of gravity

-Height above ground: 739 mm
-Distance from the vertical plane containing the axis of the rear-wheels: 809 mm
-Distance from the median longitudinal plane of the tractor: -6 mm
-If the angle of suspension of the tractor is less then 20° ,indicate its value: None

4.5 Braking

-Date and location of tests: Sep.16, 2008, COTTEC

4.5.1 Cold service braking device test

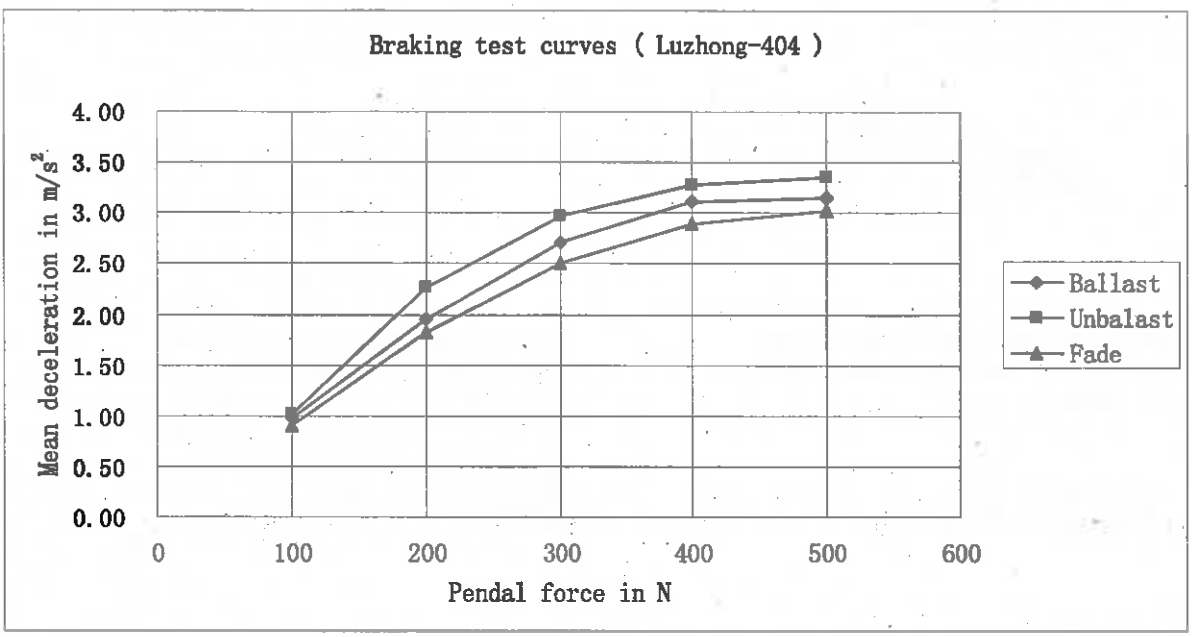
	Speed before application of brakes km/h	Braking device control force kN	Mean deceleration m/s^2	Minimum stopping distance without locking the wheels m
Ballasted tractor	32.5	0.1	0.97	41.9
	32.4	0.2	1.96	20.7
	32.4	0.3	2.72	14.9
	32.5	0.4	3.11	13.1
	32.5	0.5	3.16	12.9
Unballasted tractor	32.6	0.1	1.00	40.8
	32.5	0.2	2.26	18.0
	32.5	0.3	2.97	13.7
	32.6	0.4	3.28	12.5
	32.6	0.5	3.36	12.2

-Maximum deviation of tractor from its original course: 0 mm
-Abnormal vibration: None

4.5.2 Fade test

	Speed before application of brakes km/h	Braking device control force kN	Mean deceleration m/s^2	Minimum stopping distance without locking the wheels m
Ballasted tractor	32.4	0.1	0.90	44.9
	32.5	0.2	1.83	22.3
	32.3	0.3	2.52	16.0
	32.4	0.4	2.89	14.0
	32.4	0.5	3.02	13.4

-Maximum deviation of tractor from its original course: 0 mm
-Abnormal vibration: None
-Brake heating method: Driving



4.5.3 Parking braking device test

	Uphill	Downhill
Braking device control force N	290	270

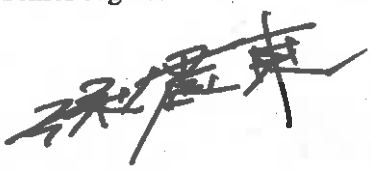
4.6 Measurement of external noise

-Date and location of tests:	Sep.16, 2008, COTTEC
-Sound level meter, make/mode/type:	ONO SOKKI LA-5111
-Type of track:	Concrete
-Gear number:	H4
-Travelling speed before acceleration:	24.4 km/h
-Sound level:	86.5 dB(A)

5. REPAIRS: None

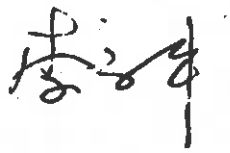
6. REMARKS: None

Director of the COTTEC
Senior engineer



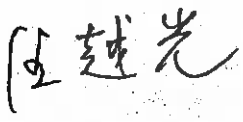
Sun Zhendong

Vice-director of the COTTEC
Senior engineer



Li Jingzhong

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



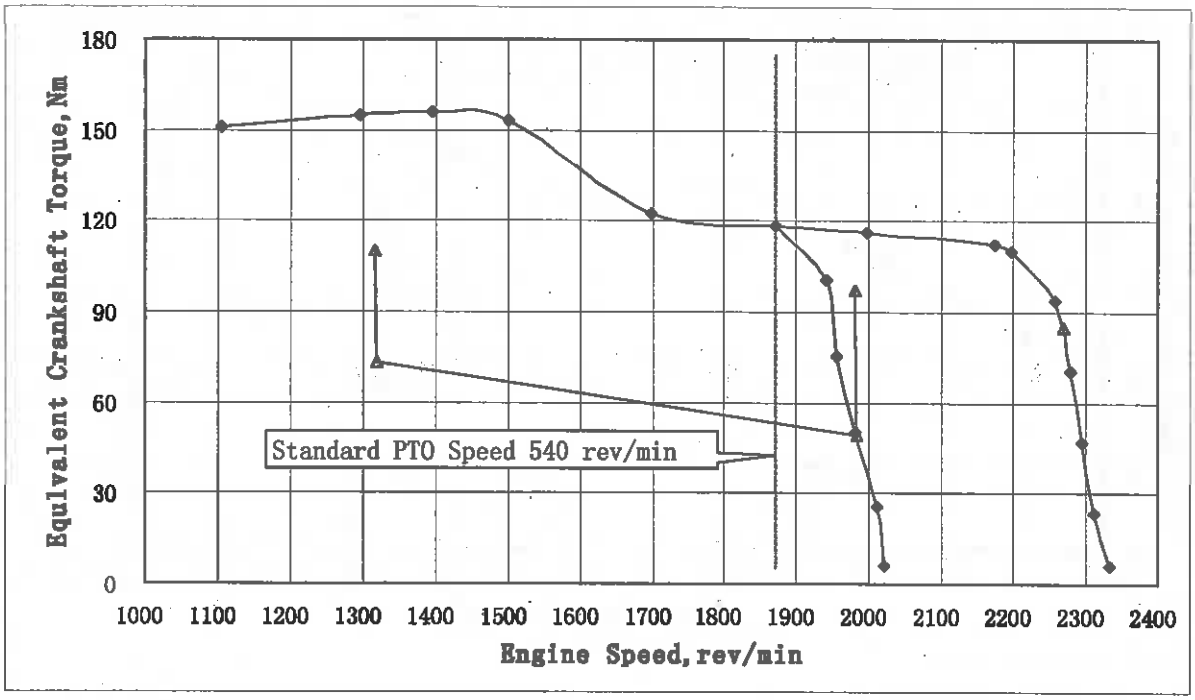
Ren Yueguang

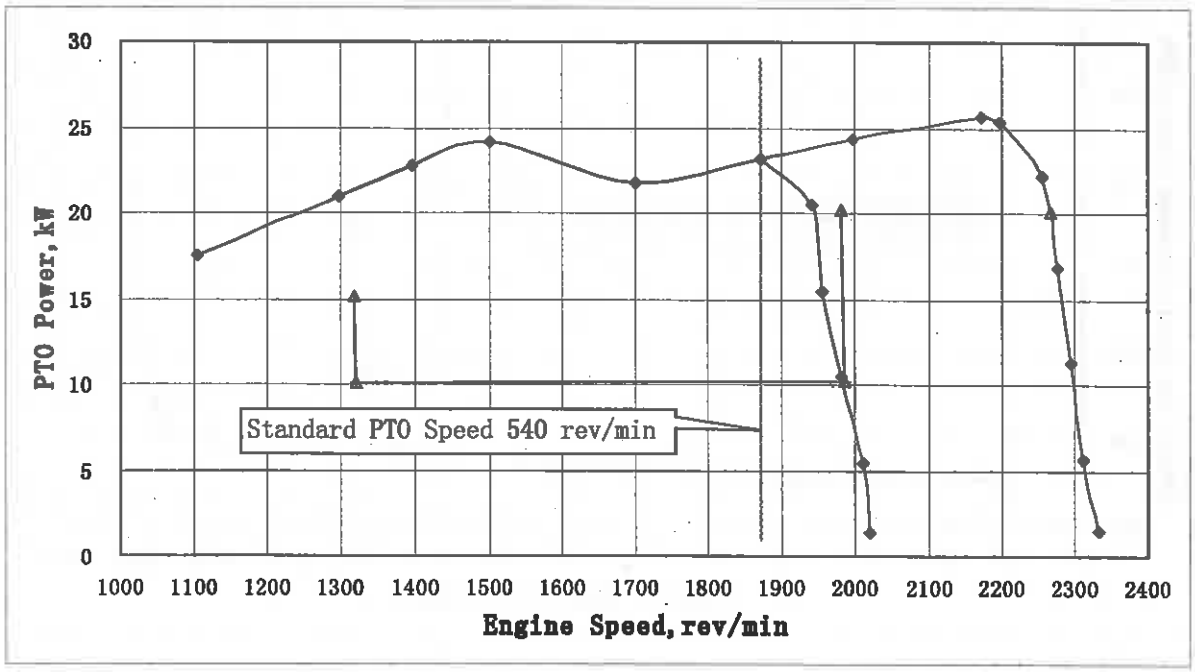
Members of the tractor test board:
Chen Zhiqiang Yan Xiaofang, Gao Bo
Zheng Zhigang, Li Yong, Zhao Jun,
Sun Zhennan, Yang Hongmei,Liu Hui
Sun Panpan,Liu Zhiqiang,Bai Demin,
Yi Xiaodong, Liu Hongqiang,

Date: Oct. 9, 2008

ANNEX I

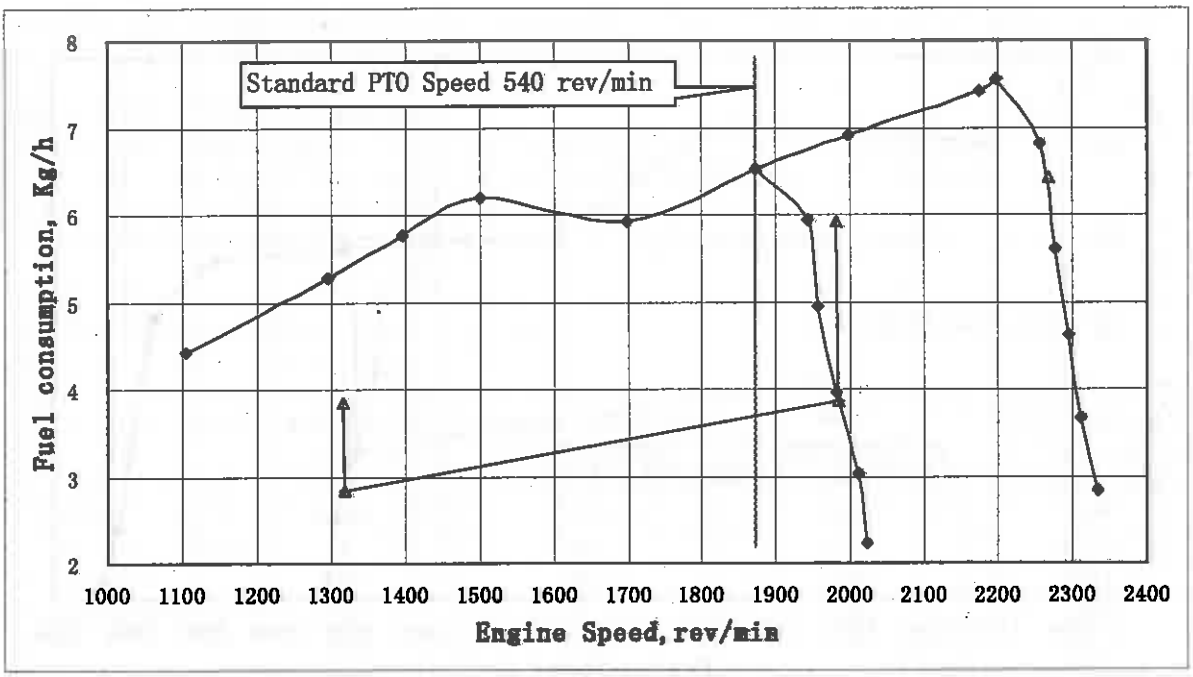
Main power take-off test curves 1

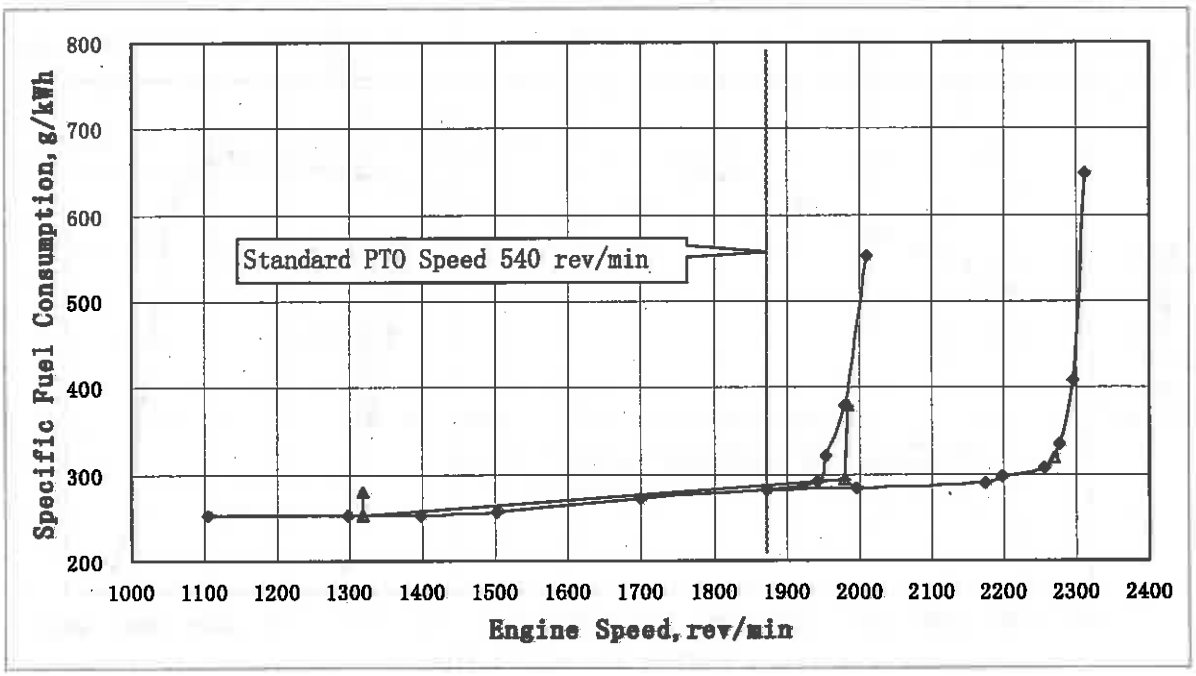




ANNEX II

Main power take-off test curves 2





ANNEX III

Main power take-off test curves 3

