COTTEC

CHINA
OFFICIAL TRACTOR
TEST AND
EVALUATION CENTRE

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OECD TEST REPORT OF YTO-X1004 AGRICULTURAL TRACTOR (CODE 2)

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



OECD Approval
No.: 2/2 401
Date:Feb.21,2008

Tested Tractor	Submitted for test by
Make: YTO Model: YTO-X1004 Type: 4WD Speed version: 30 km/h	Name: China YTO Group Co., Ltd Address: Luoyang, Henan, China Tel: 86 379 64960764 Fax: 86 379 64969800

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[1]	Tractor manufacturer's name and address:	China YTO (Yituo) Group Co., Ltd, Luoyang, Henan, China
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 COTTEC
D	-Place of running-in:	COTTEC, Luoyang, Henan, China
D	-Duration of running-in:	60 hours
C	-Location of test:	COTTEC, Luoyang, Henan, China
	1. SPECIFICATIONS OF TRACTOR	
	1.1 Identification	
	1.1.1 Denomination	
C	- Make of the tractor:	YTO
C	-Model (trade name):	YTO-X1004
C	-Type:	4WD
	1.1.2 Numbers	
D	-1st Serial No or prototype:	0709801
C	- Serial No.:	0709801
	1.1.3 Other Specifications	
D	- Models for other countries:	东方红-X1004
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:	Dongfanghong
C	-Model:	LR6105T10X1
C	-Type:	4-stroke,water cooling ,Vertical, direct injection
C	-Serial No.:	YB0735362
	1.2.1 Cylinders	
C	-Number:	6
C	-Disposition:	Vertical, in line
D	-Bore/Stroke:	105 mm /125 mm
D	-Capacity:	6494 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:	Luoyang Yuanda
C	-Model of fuel filter:	CX0810S
C	-Type of fuel filter:	Paper cartridge, replaceable
D	-Capacity of fuel tank:	220 dm^3
C	-Make of injection pump:	China YTO injection Co.,Ltd
C	-Model/type of injection pump:	ZHBF69540Z-447A, cylinder plunger
C	-Serial No :	B070700088
	-Manufacturer's production setting of injection pump:	
C	. Flow rate (at rated engine speed and full load):	21 ± 0.5 dm^3 /h
D	.Timing:	$20^0 \pm 1^0$ before T.D.C.
D	-Make of injectors:	Wuxi Ouya
D	-Model/type of injectors:	6RAZL.320100,Multi-hole
D	-Injection pressure:	24 ± 1 MPa
C	-Make/Mode/Type of carburettor:	None
	1.2.4 Governor	
C	- Make:	Own make
C	-Model/type:	Mechanical, centrifugal
C	-Governed range of engine speed:	700～2600 rev/min
C	-Rated engine speed:	2400 rev/min
	1.2.5 Air cleaner	
	-Pre-cleaner	
C	.Make:	Banbu Air Cleaner Manufactory
C	.Model/type:	F5/6L912A-0000，cyclone type, integrated with main cleaner
C	.Location of air intake:	Above front hood, vertical
C	.Maintenance indicator:	None
	-Main cleaner	
C	.Make:	Banbu Air Cleaner Manufactory
C	.Model/type:	6RTF.210100, oil bath
C	.Location of air intake:	Above front hood, vertical
C	.Maintenance indicator:	None
	1.2.6 Lubrication system	
D	-Type of feed pump:	Rotator
C	-Type of filters:	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:	7
C	.Fan diameter:	490 mm
D	-Coolant capacity:	26 dm^3
C	-Type of temperature control:	Thermostat
D	-Super pressure system:	None

	1.2.8 Starting system	
C	-Make:	Hubei ShenDian Automobile electrical motor Manufacture Co.,Ltd
C	-Model/Type:	QD154E, solenoid engaged
D	-Starter motor power rating:	3.7 kW
C	-Cold starting aid:	Preheater
C	-Safety device:	Electrical switch on clutch pedal, forward and reverse shift lever in neutral position
	1.2.9 Electrical system	
C	-Voltage:	12 V (Negative earth)
	-Generator:	
C	.Make:	Hubei ShenDian Automobile electrical motor Manufacture CO.;LTD
C	.Model/Type:	JFZ1913, altermator, belt driven
D	.Power	1.0 kW
	-Battery of accumulators:	
C	.Number:	1
D	.Rating:	200 Ah at 20 hours rating
	1.2.10 Exhaust system	
C	-Make:	Own make
C	-Model/Type:	DFH,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:	VALEO
D	-Model/Type:	Dry, dual (for travel and PTO)
D	-Number of plates:	2
D	-Diameter of plates:	310 mm
C	-Method of operation:	Mechanically actuated by pedal
	1.3.2 Gear box	
D	-Make:	Own make
D	-Model/Type:	YT (3+1)×4, mechanical
	-Description:	12 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	3	1
C	Number of gears	4	4
C	Total of arrangements	12	4

D	-Available options	None

	1.3.3 Rear axle and final drives	
D	-Make:	Own make
D	-Model/Type:	Helical gear type differential and single stage epicyclic gear type final drives
	-Differential lock	
D	.Type:	Mechanical, two planet gear
C	.Method of engagement:	Mechanically actuated by pedal
C	.Method of disengagement:	Hydraulic release mechanism, brake by pedal
	1.3.4 Front axle and final drives	
D	-Make:	Own make
D	-Model/Type:	Helical gear type differential and single stage epicyclic 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 2400 rev/min km/h
C		1	L	319.8378	2.25
C		2		214.8120	3.35
C		3		176.6546	4.07
C		4		113.0589	6.36
C		1	M	151.1403	4.76
C		2		101.6862	7.07
C		3		83.6235	8.60
C		4		53.5190	13.44
C		1	H	69.2526	10.39
C		2		46.5120	15.46
C		3		38.2500	18.81
C		4		24.4800	29.38
C		1	R	148.3306	4.85
C		2		99.6230	7.22
C		3		81.9268	8.78
C		4		52.4331	13.72
		(*) Calculated with the dynamic radius index of 795 mm (ISO 4251-1:2005)			

C	-Number of revolutions of front wheels for one revolution of rear-wheels:	1.293
	1.4 Power take-off	
	1.4.1 Main power take-off	
C	-Type:	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 exchanging PTO shafts

	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:	747 mm	
C	-Distance from the median plane of the tractor:	0 mm	
C	-Distance behind rear wheel axis:	522 mm	
C	-PTO speed at rated engine speed:	610 rev/min	
C	-Engine speed at standard power take-off speeds	2124 rev/min	
C	-Ratio of rotation speeds (engine speed/p.t.o speed):	3.933	
D	-Power restriction:	70.0 kW	
D	-Maximum torque transmissible:	1300 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:	21, in conformity with ISO 500-1:2005, ISO 500-2:2004, ISO 500-3:2004	
C	-Height above ground:	747 mm	
C	-Distance from the median plane of the tractor:	0 mm	
C	-Distance behind rear wheel axis:	522 mm	
C	-PTO speed at rated engine speed:	996 rev/min	
C	-Engine speed at standard power take-off speeds	2409 rev/min	
C	-Ratio of rotation speeds (engine speed / p.t.o speed):	2.409	
D	-Power restriction:	70 kW	
D	-Maximum torque transmissible:	750 Nm	
C	-Direction of rotation (viewed from behind tractor):	Clockwise	
	1.4.1.2 Power take-off proportional to ground speed		
	Type of Power take-off	540 rev/min	1000 rev/min
C	-Travelling distance for one revolution of take-off shaft:	289 mm	177 mm
C	-Number of power take-off shaft revolutions for one revolution of (rear) driving wheels:	17.28	28.22
C	-Direction of rotation with forward gear engaged	Clockwise (viewed from behind tractor)	
	1.4.2 Optional power take-off:	None	
	1.5 Hydraulic power lift		
C	-Make:	Own make	
C	-Model:	None	
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:	19±0.5 MPa	
D	-Opening pressure of cylinder safety valve :	21±0.5 MPa	

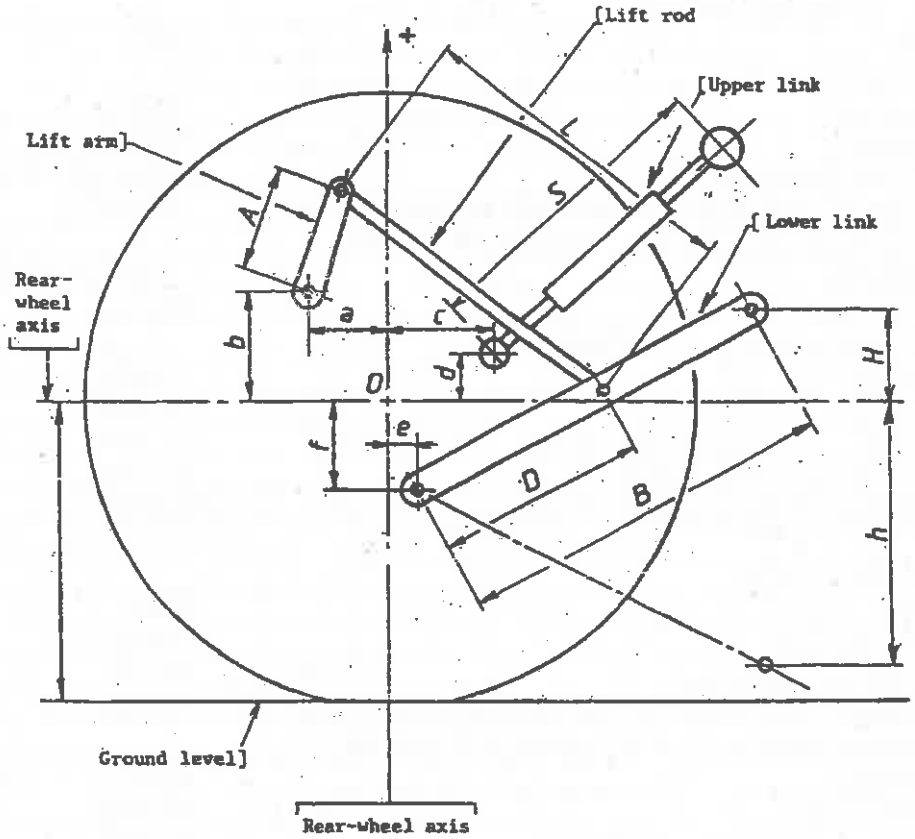
D	-Lift pump type:	Gear pump
D	-Transmission between pump and engine:	Driven by engine cam shaft
C	-Type and number of filters:	Cartridge type, 2
C	-Site of oil reservoir:	Transmission housing
C	-Type, number and location of tapping points:	Coupler pairs quick shift adaptor, At rear of tractor
D	-Maximum volume of oil available to external cylinders:	16 dm^3

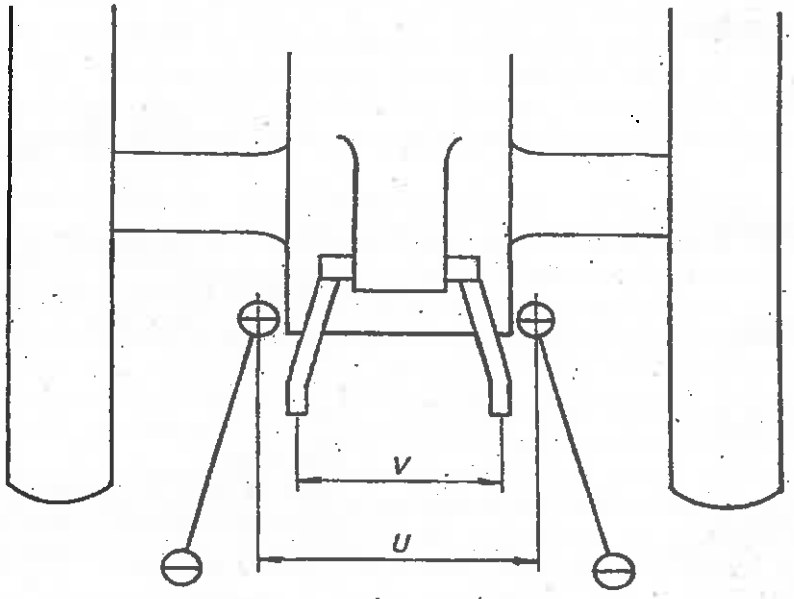
1.6 Three point linkage

C	-Category	2 ,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)	230	230
C		Length of lower links :	(B)	970	970
		Distance of lift arm pivot point from rear wheel axis:			
C		-Horizontally	(a)	182	182
C		-Vertically	(b)	371	371
C		Horizontal distance between the 2 lower link points:	(u)	468.5	468.5
C		Horizontal distance between the 2 lift arms end points:	(v)	525	525
C		Length of upper link:	(S)	From 580 to 870	745
		Distance of upper link pivot point from rear wheel axis:			
C		-Horizontally:	(c)	From 367 to 379	379
C		-Vertically	(d)	From 156 to 206	156
		Distance of lower link pivot point from rear wheel axis:			
C		-Horizontally:	(e)	130	130
C		-Vertically	(f)	244.5	244.5
C		Distance of lower link pivot point to lift rod pivot points on lwer links:	(D)	From 456 to 524	456
C		Length of lift rods:	(L)	From 638 to 768	730
		Height of lower hitch points relative to the rear wheel axis:			
C		-in low position	(h)	From 370 to 720	595
C		-in high position	(H)	From -25 to 270	80
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 = 795 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	472 mm
C	.Minimum	372 mm
C	-Type of adjustment:	By reversing drawbar
C	-Distance of hitch point from rear wheel axis, horizontally:	877 mm
	-Distance of hitch point from power take-off shaft end:	
C	.Vertically:	240 mm & 340 mm
C	.Horizontally:	355 mm
	-Lateral adjustment (centre of clevis)	
C	.Right hand:	137 mm
C	.Left hand:	137 mm
C	-Distance of pivot point from rear wheel axis, horizontally:	140 mm
C	-Diameter of drawbar pinhole:	28.5 mm
D	-Maximum vertical permissible load:	12.0 kN
	1.8 Trailer hitch	
C	-Type:	Fixed
C	-Hole diameter :	34 mm
C	-Height above ground:	560 mm
C	-Distance of hitch point from rear wheel axis, horizontally:	680 mm
	-Distance of hitch point from power take-off shaft end:	
C	.Vertically:	80 mm
C	.Horizontally:	158 mm
D	-Maximum vertical permissible load:	12.0 kN
	1.9 Holed drawbar:	None
	1.10 Steering	
D	-Make:	Jining Like
D	-Model/Type:	BZZ1-160, Hydrostatic steering system
	-Method of operation	
D	.Pump:	HLCB-D16/12, Gear pump
D	.Ram:	Double acting ram actuating directly on front axle
D	-Working pressure:	12.5 MPa
	1.11 Brakes	
	1.11.1 Service brake	
D	-Make:	Own make
D	-Model/Type:	1204-1.43.001/ Oil –immersed multi-plate discs
C	-Method of operation:	Hydrostatic operated by pedals
C	-Trailer braking take-off:	Pneumatic braking, operated by pedals
	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:	2688.5 mm
	-Track width adjustment:	

		Minimum mm	Maximum mm	Adjustment method
D	Front	1672	2153	Reversing wheels and off-set lug rims
D	Rear	1600	2200	Reversing wheels and off-set lug rims

	1.13 Protective structure	
C	-Make:	Own make
C	-Model:	1204-1.45.001
C	-Type:	Protective cab
C	-Manufacture's name and address:	Own make
	-Protective device:	
C	-Cab/frame / rollguard / other:	Cab
C	-Tiltable / not tiltable:	Not tiltable
	-OECD approval	
C	.Approval number:	4/1 077
C	.Date of approval:	Aug.13,2008
C	.Nos. of minor modification certificates, if any:	None
	1.14 Seat	
	1.14.1 Driver's seat	
C	-Make:	Grammer
C	-Model:	DS 85H/90
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:	60 mm
C	-Safety belt:	None
	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	1400	140×130	290
C	Front direction lights	1815	110×35	860
C	Front position lights	1780	110×35	860
C	Rear direction lights	1850	115×60	822
C	Rear position lights	1850	85×60	707
C	Stop lights	1850	95×60	622
C	Reflectors lights	1555	85×50	770

2 TEST CONDITIONS

Overall dimensions

	Length	Width		Height at top of	
		Minimum	Maximum	Protective Structure	Exhaust Silencer
	mm	mm	mm	mm	mm
Ballasted	4940	2110	2660	2925	2901
Unballasted	4475	2010	2610	2928	2905

2.2 Ground Clearance (unballasted tractor)

-Clearance limiting part: Under the front axle 480 mm

2.3 Tractor mass

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

	Unballasted		Ballasted	
	Without driver kg	With driver kg	Without driver kg	With driver kg
Front	1945	1957	2579	2591
Rear	2671	2734	2826	2889
Total	4616	4691	5405	5480

2.4 Ballast

	Weights		Water
	Number	Total mass kg	kg
Front	10	493	—
Rear	6	296	—
Optional	—	—	—

2.5 Track specifications: None

2.6 Tyres and track width specifications

	Front	Rear
Tyres:		
.dimensions	14.9-26	16.9-38
.ply rating	8	10
.type	Cross ply	Cross ply
.maximum load (tyre manufacturer's)	17.6 kN	27.6 kN
.maximum load (tractor manufacturer's)	17.6 kN	27.6 kN
.inflation pressure (tyre manufacturer's)	147 ～ 196 kPa	147 ～ 196 kPa
.dynamic radius index	615 mm	795 mm
Chosen track width	1800 mm	1600 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	22	500	500
Gear box, rear axle and final drives, in common with hydraulic system	60	1000	—
Front axle and final drives	8.8	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:	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:

3 COMPULSORY TESTS RESULTS

3.1 Main power take-off

-Date and location of tests: Sep.14, 2007, 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							
67.94	2180	905	2569	17.375	20.39	255.7	3.33
3.1.2 POWER AT RATED ENGINE SPEED							
65.20	2404	998	2833	17.882	20.98	274.2	3.11
3.1.3 STANDARD POWER TAKE-OFF SPEED (1000±25 or 540±10 rev/min)							
65.20	2404	998	2833	17.882	20.98	274.2	3.11
3.1.4 PART LOADS 3.1.4.1 The torque corresponding to maximum power at the rated engine speed							
65.20	2404	998	2833	17.882	20.98	274.2	3.11
3.1.4.2 85% of torque obtained in 3.1.4.1							
56.14	2437	1012	2872	16.103	18.89	286.8	2.97
3.1.4.3 75% of torque obtained in 3.1.4.2							
42.40	2451	1017	2888	13.598	15.95	320.7	2.66
3.1.4.4 50% of torque obtained in 3.1.4.2							
28.49	2473	1027	2914	11.073	12.99	388.7	2.19
3.1.4.5 25% of torque obtained in 3.1.4.2							
14.46	2501	1038	2947	8.832	10.36	610.8	1.40
3.1.4.6 Unloaded							
1.98	2530	1050	2981	6.945	8.15	—	—

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							
65.20	2404	998	2833	17.882	20.98	274.2	3.11
3.1.5.2 85% of torque obtained in 3.1.5.1							
56.14	2437	1012	2872	16.103	18.89	286.8	2.97
3.1.5.3 75% of torque obtained in 3.1.5.2							
42.40	2451	1017	2888	13.598	15.95	320.7	2.66
3.1.5.4 50% of torque obtained in 3.1.5.2							
28.49	2473	1027	2914	11.073	12.99	388.7	2.19
3.1.5.5 25% of torque obtained in 3.1.5.2							
14.46	2501	1038	2947	8.832	10.36	610.8	1.40
3.1.5.6 Unloaded							
1.98	2530	1050	2981	6.945	8.15	—	—
3.1.6 PART LOADS AT DIFFERENT ENGINE SPEEDS							
3.1.6.1 Maximum power at rated engine speed							
65.20	2404	998	2833	17.882	20.98	274.2	3.11
3.1.6.2 80% of power obtained in 3.1.6.1 at max. speed setting							
52.07	2435	1011	2869	15.355	18.02	294.9	2.89
3.1.6.3 80% of power obtained in 3.1.6.1 with governor control set to 90% of rated engine speed							
52.13	2165	899	2551	14.240	16.71	273.1	3.12
3.1.6.4 40% of power obtained in 3.1.6.1 with governor control set to 90% of rated engine speed							
26.04	2163	898	2549	9.187	10.78	352.8	2.42
3.1.6.5 60% of power obtained in 3.1.6.1 with governor control set to 60% of rated engine speed							
38.95	1436	596	1692	10.025	11.76	257.4	3.31
3.1.6.6 40% of power obtained in 3.1.6.1 with governor control set to 60% of rated engine speed							
26.11	1444	599	1702	7.340	8.61	281.1	3.03

-No load maximum engine speed: 2530 rev/min

-Torque(equivalent crankshaft) at maximum power

.At rated engine speed: 259.0 Nm

.At 1-hour test: 297.6 Nm

-Maximum torque (equivalent crankshaft) (engine speed: 1649 rev/min): 325.4 Nm

Mean atmospheric conditions	
Temperature	22 ℃
Pressure	100.1 kPa
Relative humidity	41 %
Maximum Temperature:	
Coolant	81 ℃
Engine oil	91 ℃
Fuel	31 ℃
Engine air intake	35 ℃

3.2 Hydraulic power and lifting force

- Date and location of tests: Sep. 18, 2007, 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)				2400		
3.2.1.2.1 Maximum (sustained) pressure with relief valve open as measured at the coupler Pump stalled: Yes	19.5	61.0	69.5	2485		
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	17.6	69.0		2496	28.5	8.36
3.2.1.2.3 Maximum available flow and maximum power from one coupler pair:	15.8	66.0		2509	41.9	11.03
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):	15.8	67.0		2510	42.2	11.16

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	200 mm	110 mm
Vertical movement: without lifting force:	675 mm	880 mm
with lifting force:	640 mm	832 mm
Maximum corrected force exerted through full range	37.56 kN	32.01 kN
Corresponding pressure of hydraulic fluid	17.6 MPa	17.6 MPa
Moment about rear wheel axle	41.32 kNm	54.74 kNm
Maximum tilt angle of mast from vertical	—	11.2^0

Lifting heights relative to the horizontal plane including the lower link pivot points												
mm	-440	-400	-350	-300	-200	-100	0	100	200	290	300	392
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 17.6 MPa												
kN	—	—	37.56	39.20	42.04	43.32	43.96	45.18	45.78	46.31	—	—
At the frame, corresponding pressure 17.6 MPa												
kN	33.35	33.92	—	36.21	36.87	37.06	36.21	35.73	34.01	—	33.06	32.01

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

-Date and location of tests: Sep.20, 2007, COTTEC

-Type of track: Concrete

Height of drawbar above ground mm	Tyre inflation pressure	
	Front kPa	Rear kPa
472	180	180

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	20.66	37.18	2.00	2484	2927	15.02	536	1.59	26	75	83	20	40	100.2
L2	30.51	37.49	2.93	2465	2905	15.09	437	1.95	26	75	83	20	40	100.2
L3	36.84	37.25	3.56	2452	2889	15.02	402	2.12	26	75	83	20	40	100.2
M1	43.18	37.55	4.14	2430	2863	15.03	379	2.25	27	77	84	20	40	100.2
L4	52.24	37.17	5.06	2230	2628	15.01	340	2.51	27	77	84	20	40	100.2
M2	55.54	34.12	5.86	2185	2575	9.23	319	2.67	27	77	84	20	40	100.2
M3	57.37	27.91	7.40	2185	2575	6.24	309	2.76	27	78	85	20	40	100.2
H1	60.00	23.79	9.08	2185	2575	4.55	296	2.88	27	78	85	20	40	100.2
M4	56.49	17.09	11.90	2185	2575	2.92	315	2.71	28	79	85	20	40	100.2
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														
M2	54.39	29.58	6.62	2400	2828	7.04	336	2.54	28	79	85	20	40	100.2
3.3.2.1.1 75 % of pull corresponding to maximum power at rated engine speed														
M2	42.40	22.22	6.87	2440	2875	4.84	357	2.39	28	79	85	20	40	100.2
3.3.2.1.2 50 % of pull corresponding to maximum power at rated engine speed														
M2	29.13	14.79	7.09	2465	2905	2.96	428	1.99	28	79	85	20	40	100.2
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														
M3	42.35	22.16	6.88	2010	2368	4.97	327	2.61	29	80	85	20	40	100.2
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														
M3	29.03	14.78	7.07	2028	2390	2.82	410	2.08	29	80	85	20	40	100.2
3.3.2.2 In selected gear/speed setting nearest between 7 km/h and 10 km/h at rated engine speed														
M3	55.10	24.37	8.14	2400	2828	5.86	332	2.57	30	80	86	20	40	100.2
3.3.2.2.1 75 % of pull corresponding to maximum power at rated engine speed														
M3	43.15	18.36	8.46	2448	2885	4.12	345	2.47	30	80	86	20	40	100.2
3.3.2.2.2 50 % of pull corresponding to maximum power at rated engine speed														
M3	29.63	12.26	8.70	2470	2910	2.08	396	2.15	30	80	86	20	40	100.2
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	43.00	18.32	8.45	2015	2374	3.75	325	2.62	30	80	86	20	40	100.2
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	29.73	12.29	8.71	2036	2399	1.78	357	2.39	30	80	86	20	40	100.2

4 OPTIONAL TEST RESULTS

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

-Date and location of tests: Sep.21, 2007, COTTEC

-Type of track: Concrete

Height of drawbar above ground mm	Tyre inflation pressure	
	Front kPa	Rear kPa
468	180	180

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 hummidity	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	23.31	42.38	1.98	2465	2905	15.08	493	1.73	26	76	84	21	35	100.2
L2	34.35	42.35	2.92	2444	2880	15.05	408	2.09	26	76	84	21	35	100.2
L3	41.50	42.32	3.53	2428	2861	15.01	384	2.22	26	76	84	21	35	100.2
M1	48.48	42.36	4.12	2420	2852	15.01	363	2.35	26	76	84	21	35	100.2
L4	55.45	38.54	5.18	2185	2575	10.56	320	2.66	26	76	84	21	35	100.2
M2	56.46	34.51	5.89	2185	2575	8.69	315	2.71	27	78	85	21	35	100.2
M3	58.38	28.21	7.45	2185	2575	5.34	304	2.80	27	78	85	21	35	100.2
H1	61.10	24.17	9.10	2185	2575	4.05	291	2.93	28	79	86	21	35	100.2
M4	57.43	17.30	11.95	2185	2575	2.44	309	2.76	28	79	86	21	35	100.2
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	45.34	15.77	10.35	2448	2885	2.59	338	2.52	30	80	89	21	35	100.2
4.1.2.2 FIVE-HOUR TEST at pull corresponding to 15% wheelslip , with additional ballast : 0 kg														
L2	34.31	42.30	2.92	2445	2881	15.01	410	2.08	30	80	89	21	35	100.2

Oil consumption during ten hours duration of tests 4.1.2.1 and 4.1.1.2: 32 g/h

4.2 Low temperature starting

-Date and location of tests: Oct.29, 2007 , 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: -10 ℃

4.3 Turning area and turning circle

	Without brakes	
	Right-hand m	Left-hand m
Radius of turning area	5.85	5.77
Radius of turning circle	5.72	5.64

4.4 Location of center of gravity

-Height above ground: 941 mm
-Distance from the vertical plane containing the axis of the rear-wheels: 1122 mm
-Distance from the median longitudinal plane of the tractor: 14 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: Oct.8, 2007, COTTEC

4.5.1 Cold service braking device test

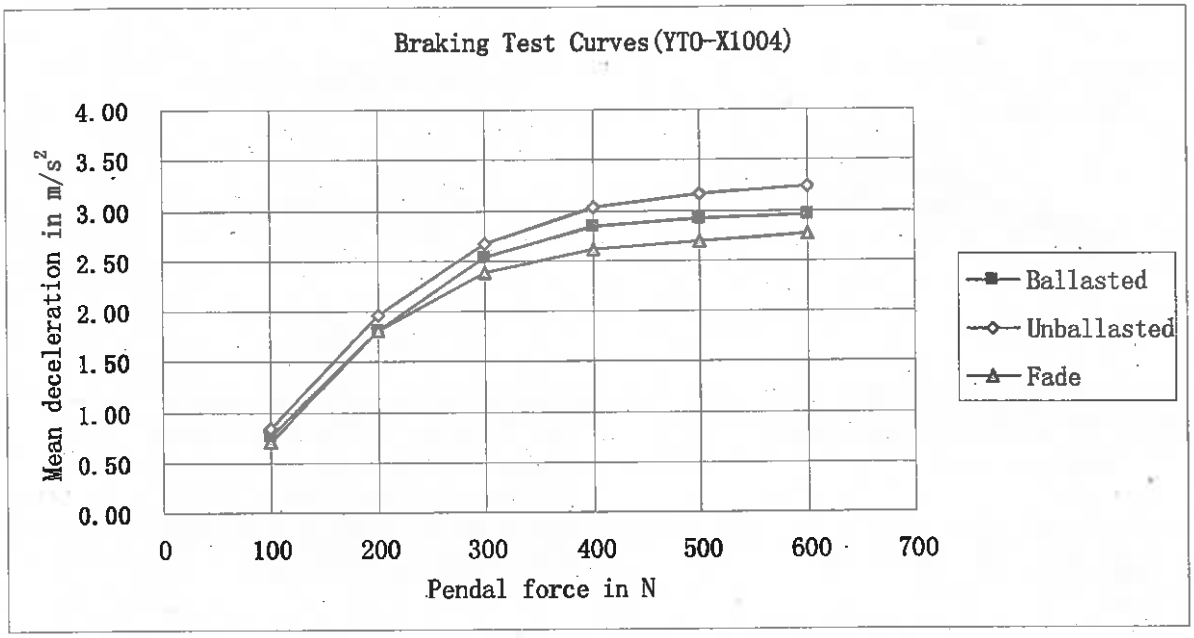
	Speed before application of brakes km/h	Braking device control force kN	Mean deceleration m/s^2	Minimum stopping distance without locking the wheels m
Ballasted tractor	30.7	0.1	0.75	48.2
	30.7	0.2	1.82	20.0
	30.7	0.3	2.53	14.4
	30.7	0.4	2.84	12.8
	30.7	0.5	2.91	12.5
	30.7	0.6	2.96	12.3
Unballasted tractor	30.7	0.1	0.84	43.3
	30.7	0.2	1.97	18.5
	30.7	0.3	2.67	13.6
	30.7	0.4	3.03	12.0
	30.7	0.5	3.16	11.5
	30.7	0.6	3.25	11.2

-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	30.7	0.1	0.70	52.0
	30.7	0.2	1.80	20.2
	30.7	0.3	2.38	15.3
	30.7	0.4	2.62	13.9
	30.7	0.5	2.69	13.5
	30.7	0.6	2.75	13.2

-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:	Oct.24, 2007, COTTEC
-Sound level meter, make/mode/type:	ONO SOKKI LA-5111
-Type of track:	Concrete
-Gear number:	H4
-Travelling speed before acceleration:	23.0 km/h
-Sound level:	87.2 dB(A)

5. REPAIRS: None

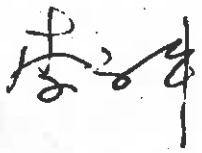
6. REMARKS: None

Director of the COTTEC
Senior engineer



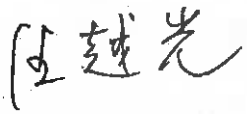
Sun Zhendong

Vice-director of the COTTEC
Senior engineer



Li Jingzhong

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



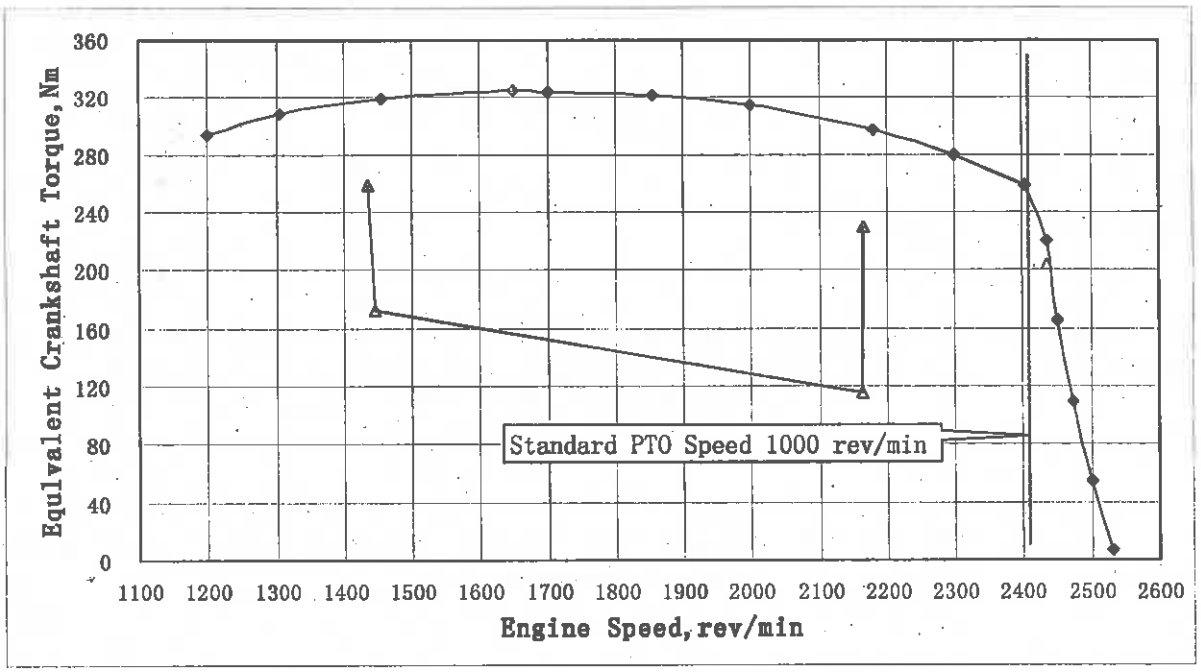
Ren Yueguang

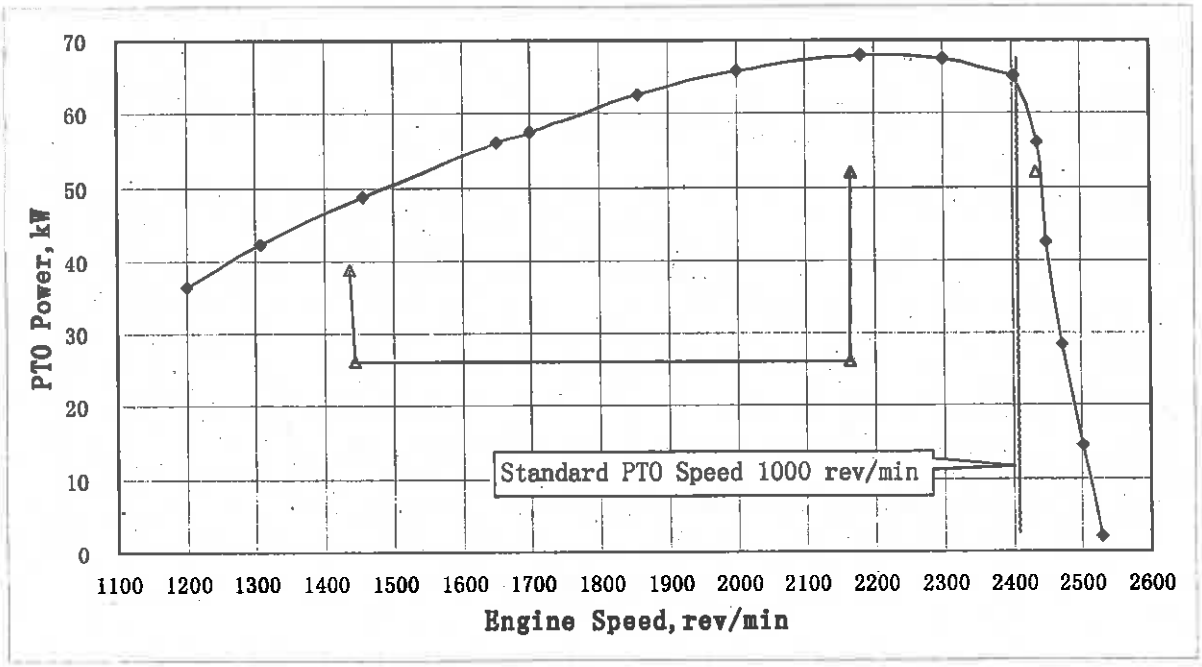
Members of the tractor test board:
Chen Zhiqiang Yan Xiaofang, Gao Bo
Zheng Zhigang, Li Yong, Zhao Jun,
Sun Zhennan, Yang Hongmei,Liu Hui
Sun Panpan,Liu Zhiqiang,Bai Demin,
Yi Xiaodong, Liu Hongqiang,

Date: Jan. 04,2008

ANNEX I

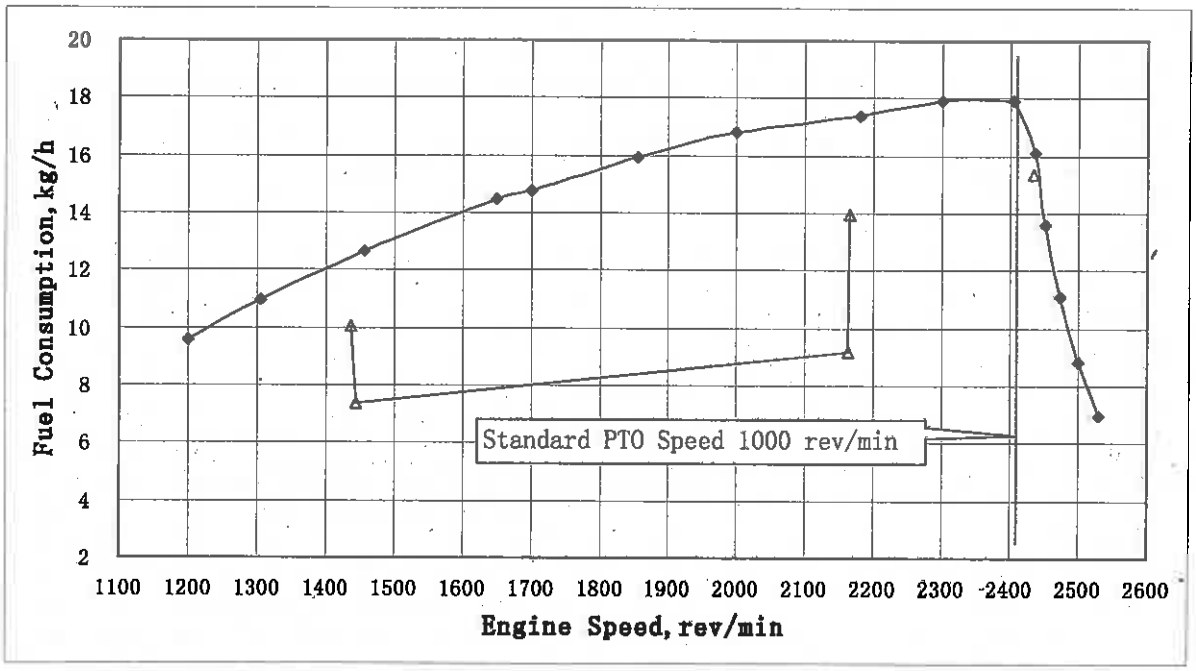
Main power take-off test curves 1

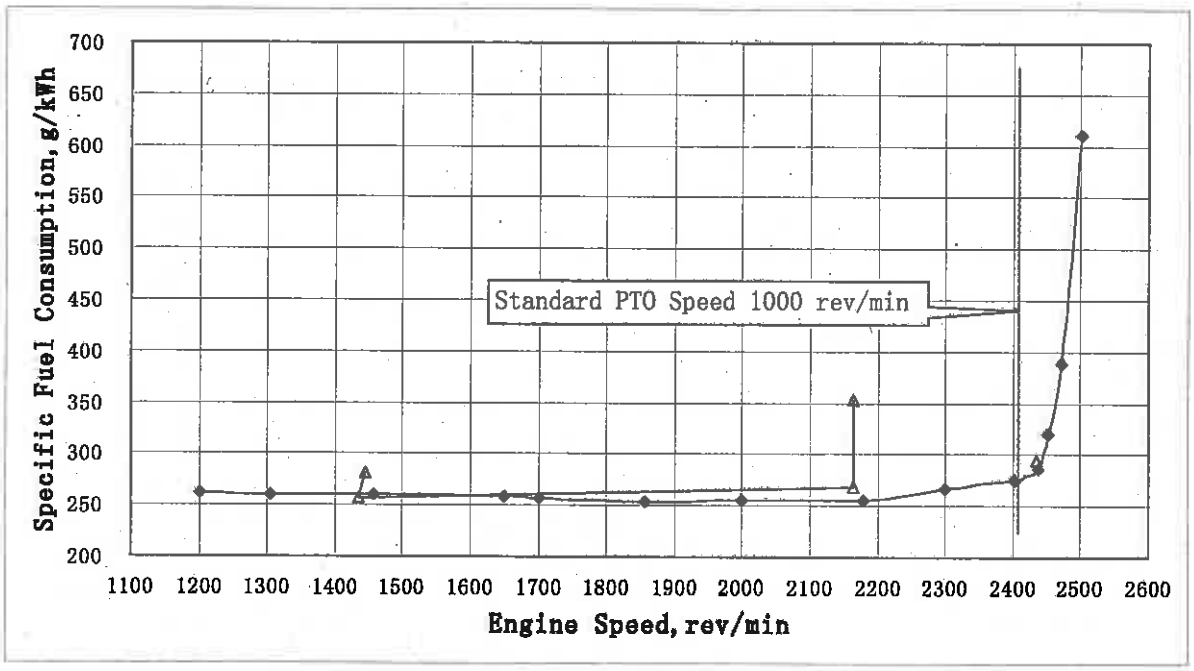




ANNEX Ⅱ

Main power take-off test curves 2





ANNEX III

Main power take-off test curves 3

