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 HHJM-300(2WD) AGRICULTURAL TRACTOR (CODE 2)

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



OECD Approval
No.: 2/2 382
Date: Aug .27 ,2007

Tested Tractor

Make: HHJM
Model: 300
Type: 2WD
Speed version: 30 km/h

Submitted for test by

Name: Jiangsu Yueda Yancheng Tractor Manufacturering Co., Ltd (Yancheng Tractor Factory)
Address: Yancheng,Jiangsu,China
Tel: 86 515 8260118
Fax: 86 515 8230611

This report includes 22 pages and may only be duplicated as a whole

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This report has been approved by the O.E.C.D. Co-ordinating Centre(CEMAGREF) in Antony(France) on Aug .27 ,2007 , Approved No. 2/2 382.

	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:	Jiangsu Yueda Yancheng Tractor manufacturering Co., Ltd(Yancheng Tractor Factory)Yancheng,Jiangsu,China
O.	-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:	31.0 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:	HHJM
C	-Model(trade name):	300
C	-Type:	2WD
	1.1.2 Numbers	
D	-1st Serial No or prototype:	07121500016
C	- Serial No.:	07121500016
	1.1.3 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:	Jiangsu Jianghuai
C	-Model:	TY395IT
C	-Type:	4-stroke,water cooling ,Vertical, direct injection
C	-Serial No.:	07B0400188
	1.2.1 Cylinders	
C	-Number:	3
C	-Disposition:	Vertical, in line
D	-Bore/Stroke:	95/105 mm/mm
D	-Capacity:	2230 cm^3
D	-Compression ratio:	18.0

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.

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:	Yanjing Motor Accessory Works
C	-Model of fuel filter:	C0708
C	-Type of fuel filter:	Paper cartridge,replaceable
D	-Capacity of fuel tank:	35 dm^3
C	-Make of injection pump:	Wuxi Weifu
C	-Model/type of injection pump:	3I341-85 left 1150,cylinder plunger
C	-Serial No :	70171078
	-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:	$22^0 \pm 1^0$ before T.D.C.
D	-Make of injectors:	Wuxi Weifu
D	-Model/type of injectors:	PF75sa,Long neck,Multi-hole
D	-Injection pressure:	19.5 ± 0.5 MPa
C	-Make/Mode/Type of carburettor:	None
	1.2.4 Governor	
C	- Make:	Wuxi Weifu
C	-Model/type:	T7B,Mechanical,centrifugal
C	-Governed range of engine speed:	600～2375 min^{-1}(rev/min)
C	-Rated engine speed:	2200 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 linhai jiangnen
C	.Model/type:	K1317,Paper Cartridge
C	.Location of air intake:	Under front hood
C	.Maintenance indicator:	None
	1.2.6 Lubrication system	
D	-Type of feed pump:	Rotor
C	-Type of filters:	JX0811,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:	Φ300 mm
D	-Coolant capacity:	7.2 dm^3
C	-Type of temperature control:	Thermostat
D	-Superpressure system:	None
	1.2.8 Starting system	
C	-Make:	Yancheng Motor Works
C	-Model/Type:	QD1315,D.C. solenoid engaged
D	-Starter motor power rating:	2.5 kW
C	-Cold starting aid:	Electrothermic plug
C	-Safety device:	Automatic return
	1.2.9 Electrical system	
C	-Voltage:	12 (Negative earth) V
	-Generator:	
C	.Make:	Yancheng Motor Works
C	.Model/Type:	JF11,Altermator,belt driven
D	.Power	0. 35 kW
	-Battery of accumulators:	
C	.Number:	1
D	.Rating:	80 Ah at 20 hours rating
	1.2.10 Exhaust system	
C	-Make:	Own make
C	-Model/Type:	JM-300,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:	Dry,dual clutch for transmission & PTO
D	-Number of plates:	2
D	-Diameter of plates:	250 mm
C	-Method of operation:	Mechanically actuated by pedal
	1.3.2 Gear box	
D	-Make:	Own make
D	-Model/Type:	(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	Creeper device
	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:	Balanced arm type, telescopic axle
	-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	L1	203.5569	2.098
C		2	L2	152.1409	2.807
C		3	L3	108.5291	3.936
C		4	L4	73.1265	5.841
C		5	H1	44.1316	9.679
C		6	H2	32.9845	12.950
C		7	H3	23.5293	18.153
C		8	H4	15.8540	26.942
C		R1	R1	159.9376	2.671
C		R2	R2	34.6748	12.318
		(*)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:	None
	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:	515 mm
C	-Distance from the median plane of the tractor:	0 mm
C	-Distance behind rear wheel axis:	286 mm
C	-PTO speed at rated engine speed:	596 rev/min
C	-Engine speed at standard power take-off speeds	1994 rev/min
C	-Ratio of rotation speeds (engine speed/p.t.o. speed):	3.692
D	-Power restriction:	22 kW
D	-Maximum torque transmissible:	400.0 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:	515 mm
C	-Distance from the median plane of the tractor:	0 mm
C	-Distance behind rear wheel axis:	286 mm
C	-PTO speed at rated engine speed:	1047 rev/min
C	-Engine speed at standard power take-off speeds	2100 rev/min
C	-Ratio of rotation speeds (engine speed/p.t.o. speed):	2.100
D	-Power restriction:	22 kW
D	-Maximum torque transmissible:	201.0 N.m
C	-Direction of rotation(viewed from behind tractor):	Clockwise
	1.4.1.2 Power take-off proportional to ground speed	
C	-Indicate 540 or 1000 min^{-1} (rev/min):	None
C	-Travelling distance for one revolution of take-off shaft:	None
C	-Number of power take-off shaft revolutions for one revolution of (rear) driving wheels:	None
C	-Direction of rotation with forward gear engaged (viewed from behind tractor):	None
	1.4.2 Optional power take-off:	None
	1.5 Hydraulic power lift	
C	-Make:	Shandong Hongyi
C	-Model:	Hongyi
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±0.5 MPa

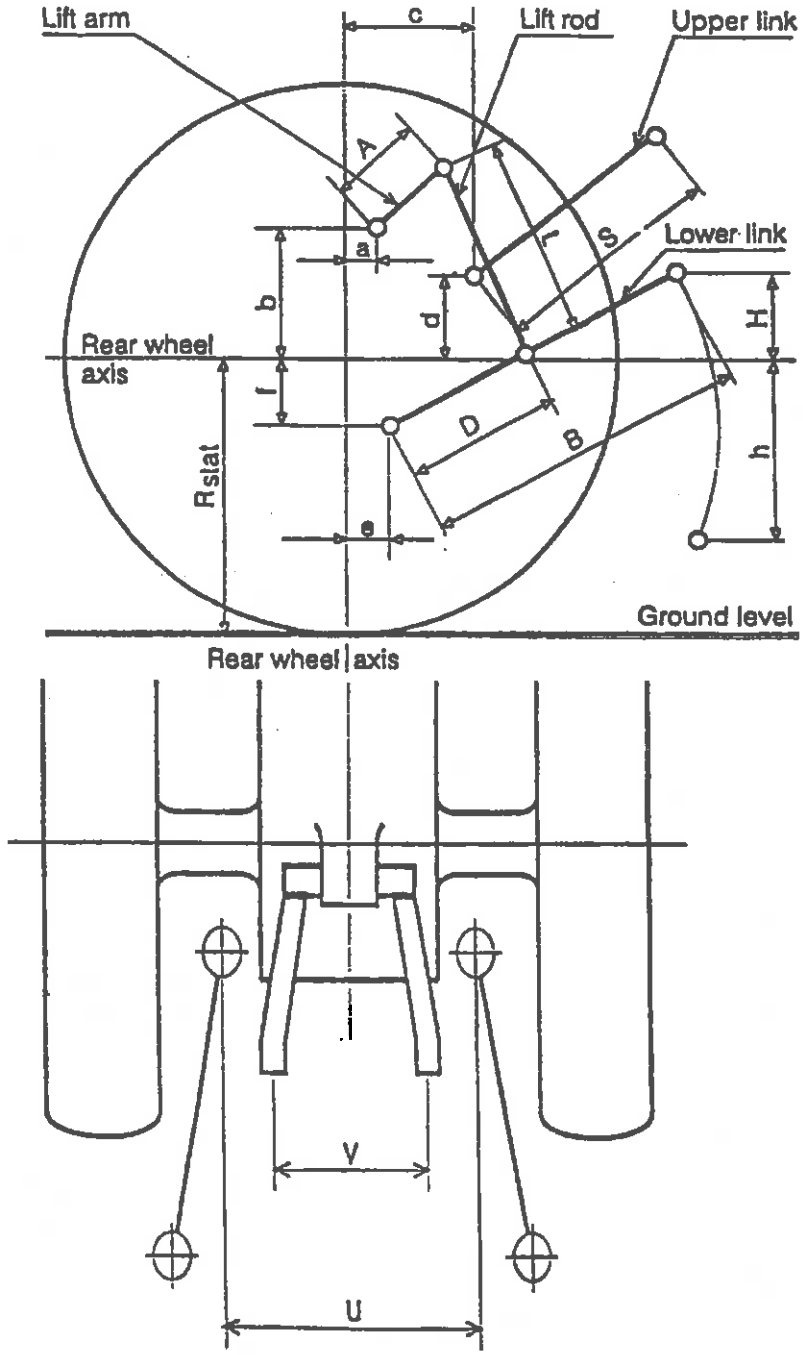
D	-Opening pressure of cylinder safety valve :	None
D	-Lift pump type:	Gear pump CBN-E314
D	-Transmission between pump and engine:	Driven by engine cam shaft
C	-Type and number of filters:	Cartridge type, 1
C	-Site of oil reservoir:	Transmission housing
C	-Type, number and location of tapping points:	One coupler pair quick shift adaptor, At rear of tractor
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)	240	240	
C		Length of lower links :	(B)	810	810	
		Distance of lift arm pivot point from rear wheel axis:				
C		-Horizontally	(a)	68	68	
C		-Vertically	(b)	310	310	
C		Horizontal distance between the 2 lower link points:	(u)	487	487	
C		Horizontal distance between the 2 lift arms end points:	(v)	470	470	
C		Length of upper link:	(S)	From 425 to 620	480	
		Distance of upper link pivot point from rear wheel axis:				
C		-Horizontally:	(c)	286	286	
C		-Vertically	(d)	287,317	317	
		Distance of lower link pivot point from rear wheel axis:				
C		-Horizontally:	(e)	-28	-28	
C		-Vertically	(f)	96	96	
C		Distance of lower link pivot point to lift rod pivot points on lwer links:	(D)	430	430	
C		Length of lift rods:	(L)	From 410 to 540	510	
		Height of lower hitch points relative to the rear wheel axis:				
C		-in low position	(h)	From 135 to 415	355	
C		-in high position	(H)	From 220 to 420	258	
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:	Clevis
	-Height above ground	
C	.Maximum	470 mm
C	.Minimum	295 mm
C	-Type of adjustment:	Reversing
C	-Distance of hitch point from rear wheel axis,horizontally:	642 mm
	-Distance of hitch point from power take-off shaft end:	
C	.Vertically:	129 mm
C	.Horizontally:	356 mm
	-Lateral adjustment(centre of clevis)	
C	.Right hand:	164 mm
C	.Left hand:	164 mm
C	-Distance of pivot point from rear wheel axis,horizontally:	345 mm
C	-Diameter of drawbar pinhole:	Φ33.0 mm
D	-Maximum vertical permissible load:	12.0 kN
	1.8 Trailer hitch	
C	-Type:	None
C	-Hole diameter :	None
C	-Height above ground:	None
C	-Distance of hitch point from rear wheel axis,horizontally:	None
	-Distance of hitch point from power take-off shaft end:	None
C	.Vertically:	None
C	.Horizontally:	None
D	-Maximum vertical permissible load:	None
	1.9 Holed drawbar:	**None**
	1.10 Steering	
D	-Make:	Eaton Fluid Power (jining) Co.,Ltd
D	-Model/Type:	BZZ-80, Hydrostaticsteering system
	-Method of operation	
D	.Pump:	CBY-E306, Gear pump
D	.Ram:	1,double acting ram actuating directly on front axle
D	-Working pressure:	16.0±0.5 MPa
	1.11 Brakes	
	1.11.1 Service brake	
D	-Make:	Hangzhou Podwer Metallurgy Research Institute
D	-Model/Type:	Oil bath,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
C	.Rear:	2,driving
C	-Wheelbase:	1780 mm

-Track width adjustment:

		Minimum mm	Maximum mm	Adjustment method
D	Front	1050	1450	Telescopic axle
D	Rear	1150	1450	Reversing wheels and off-set lug rims

1.13 Protective structure

C	-Make:	HHJM
C	-Model:	300.45.001
C	-Type:	Rear roll bar
C	-Manufacture's name and address:	Own make
	-Protective device:	
C	-Cab/frame/rollguard/other:	Rear roll bar
C	-Tiltable/not tiltable:	Tiltable with tools
	-OECD approval	
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:	Yecheng wuxing
C	-Model:	Xinli
C	-Type:	Adjustable suspension
C	-Seat and steering wheel reversible:	No
C	-Type of suspension:	Mechanical
C	-Type of damping:	None
	-Range of adjustment:	
C	.Longitudinal:	±75 mm
C	.Vertical:	0 mm
C	-Safety belt:	Yes

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	1040	135×75	180
C		Side lights	1230	75×65	525
C		Rear lights	1370	110×75	685
C		Reflectors	1230	40×65	565
C		Brake lights	1230	75×65	525
		Front turn lights	1030	80×30	280
		Rear turn lights	1230	75×65	640

2 TEST CONDITIONS

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

2.1 Overall dimensions

	Length	Width		Height at top of	
		Minimum	Maximum	Protective Structure	Exhaust Silencer
	mm	mm	mm	mm	mm
Ballasted	3375	1435	1735	2335	2035
Unballasted	3230	1435	1735	2340	2038

2.2 Ground Clearance(unballasted tractor)

-Clearance limiting part: Under the front axle 310 mm

2.3 Tractor mass

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

	Unballasted		Ballasted	
	Without driver	With driver	Without driver	With driver
	kg	kg	kg	kg
Front	653	660	733	741
Rear	919	987	1052	1119
Total	1572	1647	1785	1860

2.4 Ballast

	Weights		Water
	Number	Total mass kg	kg
Front	5	60	—
Rear	4	153	—
Optional	—	—	—

2.5 Track specifications: None

2.6 Tyres and track width specifications

	Front	Rear
Tyres:		
.dimensions	5.00-15	11.2-24
.ply rating	6	8
.type	Cross ply	Cross ply
.maximum load (tyre manufacturer's)	4.65 kN	11.05 kN
.maximum load (tractor manufacturer's)	4.65 kN	11.05 kN
.inflation pressure(tyre manufacturer's)	220～250kPa	80～120kPa
.dynamic radius index	311 mm	515 mm
Chosen track width	1150 mm	1165 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	6.0	100	100
Rear axle and final drives, in common with gear box,	20.2	500	—
Steering	0.9	1000	—
Hydraulic system	10.0	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, rear axle and final drives oil, Front axle and final drives oil .Type: .Viscosity: .Classification:	 SAE 80W/90 9.3cSt 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: Mar. 16,2007,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-ONE-HOUR TEST							
20.41	2200	596	2200	5.98	7.02	293.1	2.91
3.1.2 POWER AT RATED ENGINE SPEED							
20.41	2200	596	2200	5.98	7.02	293.1	2.91
3.1.3 STANDARD POWER TAKE-OFF SPEED(1000±25 or 540±10min^{-1}(rev/min)							
18.78	1994	540	1994	5.36	6.29	285.5	2.99
3.1.4 PART LOADS							
3.1.4.1 the torque corresponding to maximum power at the rated engine speed							
20.41	2200	596	2200	5.98	7.02	293.1	2.91
3.1.4.2 85% of torque obtained in 3.1.4.1							
18.08	2293	621	2293	5.44	6.38	300.9	2.83
3.1.4.3 75% of torque obtained in 3.1.4.2							
13.63	2311	626	2311	4.38	5.14	321.3	2.65
3.1.4.4 50% of torque obtained in 3.1.4.2							
9.17	2326	630	2326	3.55	4.17	387.2	2.20
3.1.4.5 25% of torque obtained in 3.1.4.2							
4.66	2348	636	2348	2.81	3.30	602.8	1.41
3.1.4.6 unloaded							
1.08	2374	643	2374	2.23	2.62	—	—

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							
18.78	1994	540	1994	5.36	6.29	285.5	2.99
3.1.5.2 85% of torque obtained in 3.1.5.1							
16.83	2104	570	2104	4.96	5.82	294.7	2.89
3.1.5.3 75% of torque obtained in 3.1.5.2							
12.81	2130	577	2130	4.04	4.74	315.4	2.70
3.1.5.4 50% of torque obtained in 3.1.5.2							
8.59	2149	582	2149	3.24	3.80	377.0	2.26
3.1.5.5 25% of torque obtained in 3.1.5.2							
4.30	2167	587	2167	2.50	2.93	581.1	1.47
3.1.5.6 unloaded							
0.93	2186	592	2186	1.97	2.31	—	—
3.1.6 PART LOADS AT DIFFERENT ENGINE SPEEDS							
3.1.6.1 Maximum power at rated engine speed							
20.41	2200	596	2200	5.98	7.02	293.1	2.91
3.1.6.2 80% of power obtained in 3.1.6.1 at max. speed setting							
16.32	2302	624	2302	5.01	5.88	306.9	2.78
3.1.6.3 80% of power obtained in 3.1.6.1 with governor control set to 90% of rated engine speed							
16.37	1983	537	1983	4.72	5.54	288.4	2.96
3.1.6.4 40% of power obtained in 3.1.6.1 with governor control set to 90% of rated engine speed							
8.14	1979	536	1979	2.95	3.46	362.4	2.35
3.1.6.5 60% of power obtained in 3.1.6.1 with governor control set to 60% of rated engine speed							
12.29	1325	359	1325	3.39	3.98	275.8	3.09
3.1.6.6 40% of power obtained in 3.1.6.1 with governor control set to 60% of rated engine speed							
8.14	1322	358	1322	2.40	2.82	295.0	2.89

-No load maximum engine speed: 2374 rev/min

-Torque(equivalent crankshaft) at maximum power

.At rated engine speed: 88.6 Nm

.At 1-hour test: 88.6 Nm

-Maximum torque(equivalent crankshaft) (engine speed:1565 rev/min): 102.9 Nm

Mean atmospheric conditions	
Temperature	17 ℃
Pressure	101.1 kPa
Relative humidity	25 %
Maximum Temperature:	
Coolant	71 ℃
Engine oil	85 ℃
Fuel	24 ℃
Engine air intake	21 ℃

3.2 Hydraulic power and lifting force

-Date of test: March 13,2007 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.	min^{-1}	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	16.00	60.1	69.6	2333		
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	14.40	68.3		2341	16.0	3.84
3.2.1.2.3 Maximum available flow and maximum power from one coupler pair:	12.90	63.2		2358	21.7	4.67
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 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	160 mm	135 mm
Vertical movement: without lifting force:	613 mm	783 mm
with lifting force:	585 mm	753 mm
Maximum corrected force exerted through full range	10.58 kN	7.51 kN
Corresponding pressure of hydraulic fluid	14.40 MPa	14.40 MPa
Moment about rear wheel axle	8.27 kN.m	10.45 kN.m
Maximum tilt angle of mast from vertical	—	14.4^0

Lifting heights relative to the horizontal plane including the lower link pivot points											
mm	-284	-259	-200	-100	0	100	200	300	326	400	469
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 14.40 MPa											
kN	—	10.58	11.63	12.82	13.52	14.29	14.74	15.70	15.81	—	—
At the frame, Corresponding pressure 14.40 MPa											
kN	12.66	—	12.38	12.14	11.58	11.03	10.19	9.52	—	8.86	7.51

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

-Date of tests: Mar. 17,2007

-Type of track: Concrete

Height of drawbar above ground	Tyre inflation pressure	
	Front	Rear
mm	kPa	kPa
358	220	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	Temperature	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)														
L1	5.40	10.25	1.90	2338	2338	14.89	594	1.44	18	93	82	13	40	100.2
L2	7.25	10.31	2.53	2332	2332	14.89	506	1.68	18	93	82	13	40	100.2
L3	10.12	10.28	3.54	2327	2327	14.89	433	1.97	18	93	83	14	40	100.2
L4	15.08	10.32	5.26	2200	2200	9.94	375	2.28	19	94	83	14	40	100.2
H1	18.42	7.47	8.88	2200	2200	8.26	328	2.60	19	94	83	14	40	100.2
H2	17.23	5.10	12.16	2200	2200	6.08	349	2.44	19	94	83	14	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														
L4	15.08	10.32	5.26	2200	2200	9.94	375	2.28	19	94	83	14	40	100.2
3.3.2.1.1 75 % of pull corresponding to maximum power at rated engine speed														
L4	12.07	7.79	5.58	2320	2320	9.48	396	2.15	19	94	83	14	40	100.2
3.3.2.1.2 50 % of pull corresponding to maximum power at rated engine speed														
L4	8.42	5.18	5.85	2350	2350	6.20	470	1.81	19	94	83	14	40	100.2
3.3.2.1.3. highest gear/speed setting at reduced engine speed able to achieve both 3.3.2.1.1 and 3..3.2.1.2 ; same pull and traveling speed as in 3.3.2.1.1														
H1	12.17	7.67	5.71	1414	1414	8.20	308	2.77	19	94	83	14	40	100.2
3.3.2.1.4 same gear/speed selection as 3.3.2.1.3 at reduced engine speed; same pull and travelling speed as in 3.3.2.1.2														
H1	8.17	5.13	5.73	1380	1380	5.59	329	2.59	18	93	82	14	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														
H1	18.42	7.47	8.88	2200	2200	8.26	328	2.60	19	94	83	14	40	100.2
3.3.2.2.1 75 % of pull corresponding to maximum power at rated engine speed														
H1	14.91	5.73	9.58	2270	2270	6.22	365	2.34	19	94	83	15	40	100.0
3.3.2.2.2 50 % of pull corresponding to maximum power at rated engine speed														
H1	10.18	3.75	9.88	2310	2310	3.82	413	2.06	19	94	83	15	40	100.0
3.3.2.2.3 highest gear/speed setting at reduced engine speed able to achieve both 3.3.2.2.1 and 3..3.2.2.2 ; same pull and travelling speed as in 3.3.2.2.1														
H2	14.96	5.67	9.60	1715	1715	5.93	279	3.05	20	94	83	15	40	100.0
3.3.2.2.4 same gear/speed setting as 3.3.2.2.3 at reduced engine speed; same pull and travelling speed as in 3.3.2.2.3														
H2	9.89	3.70	9.87	1690	1690	3.24	306	2.78	19	93	82	14	40	100.0

4 OPTIONAL TEST RESULTS

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

-Date of tests: Mar. 18,2007
-Type of track: Concrete

Height of drawbar above ground	Tyre inflation pressure	
	Front	Rear
mm	kPa	kPa
355	220	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	Temperature	Relative hummidity	Pressure
	kW	kN	km/h	Min^{-1}	Min^{-1}	%	g/kW.h	kW.h/l	℃	℃	℃	℃	%	kPa
4.1.1 OPTIONAL MAXIMUM POWER IN TESTED GEARS/SPEED SETTINGS														
L1	5.98	11.25	1.91	2360	2360	14.99	586	1.45	19	94	85	14	30	100.0
L2	7.90	11.22	2.54	2338	2338	14.99	486	1.75	29	94	85	15	30	100.0
L3	11.04	11.24	3.53	2324	2324	14.99	415	2.06	20	94	86	15	30	100.0
L4	15.96	11.08	5.19	2295	2295	14.89	374	2.28	20	95	86	15	30	100.0
H1	18.75	7.59	8.90	2200	2200	8.10	321	2.65	20	95	86	15	30	100.0
H2	17.92	5.29	12.19	2200	2200	5.84	338	2.52	20	95	86	15	30	100.0
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	15.00	5.64	9.57	2310	2310	5.80	357	2.39	18	92	82	13	50	100.6
4.1.2.2 FIVE-HOUR TEST at pull corresponding to 15% wheelslip , with additional ballast : 0 kg														
L2	7.87	11.18	2.53	2335	2335	14.99	492	1.73	20	95	86	16	50	100.0

Oil consumption during ten hours duration of tests 3.3.3.1 and 3.3.3.2: 30.0 g/h

4.2 Low temperature starting

-Date of tests: March 20,2007
-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: SAE20 or10 W-30
.Viscosity and other specifications: 11.4cSt at 100 ℃
-Test results
.Starting procedure used for the tests: The manufacturer's procedure
.Lowest temperature at which the engine started: -5.0 ℃

4.3 Turning area and turning circle

	Without brakes	
	Right-hand	Left-hand
	m	m
Radius of turning area	3.48	3.76
Radius of turning circle	3.36	3.65

4.4 Location of center of gravity

-Height above ground: 688 mm
-Distance from the vertical plane containing the axis of the rear-wheels: 713 mm
-Distance from the median longitudinal plane of the tractor: -3 mm
-If the angle of suspension of the tractor is less then 20° ,indicate its value: None

4.5 Braking

-Date of tests: March 18,2007

4.5.1 Cold service braking device test

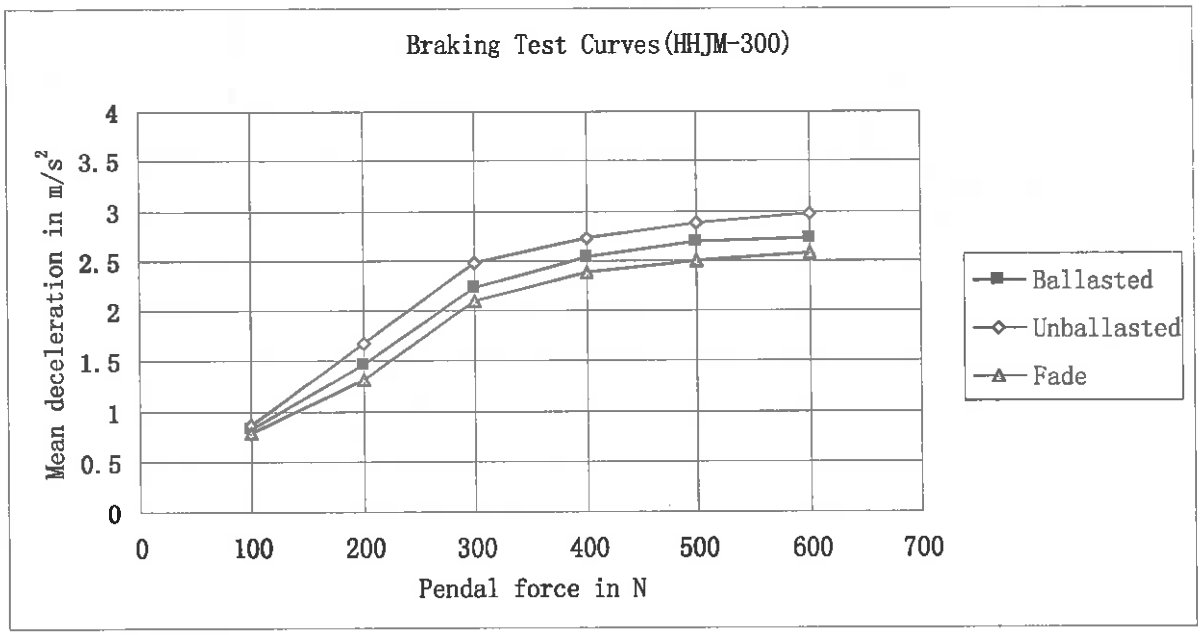
	Speed before application of brakes	Braking device control force	Mean deceleration	Minimum stopping distance without locking the wheels
	km/h	kN	m/s^2	m
Ballasted tractor	29.7	0.10	0.82	41.5
	29.7	0.20	1.46	23.3
	29.7	0.30	2.22	15.3
	29.7	0.40	2.54	13.4
	29.7	0.50	2.68	12.7
	29.7	0.60	2.72	12.5
Unballasted tractor	29.7	0.10	0.85	40.0
	29.7	0.20	1.68	20.3
	29.7	0.30	2.48	13.7
	29.7	0.40	2.72	12.5
	29.7	0.50	2.88	11.8
	29.7	0.60	2.98	11.4

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

4.5.2 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
29.7	0.10	0.78	43.6
29.7	0.20	1.32	25.8
29.7	0.30	2.10	16.2
29.7	0.40	2.38	14.3
29.7	0.50	2.50	13.6
29.7	0.60	2.58	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	270	250

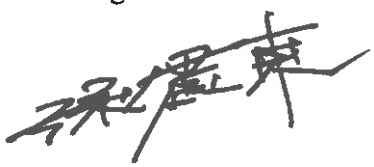
4.6 Measurement of external noise

-Date of tests:	March. 18,2007
-Sound level meter, make/mode/type:	ONO SOKKI LA-5111
-Type of track:	Concrete
-Gear number:	H4
-Travelling speed before acceleration:	22.0 km/h
-Sound level:	86.5 dB(A)

5 REPAIRS **None**

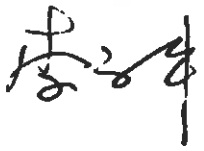
6 REMARKS **None**

Director of the COTTEC
Senior engineer



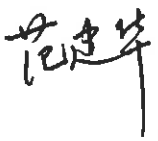
Sun Zhendong

Vice-director of the COTTEC
Senior engineer



Li Jingzhong

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

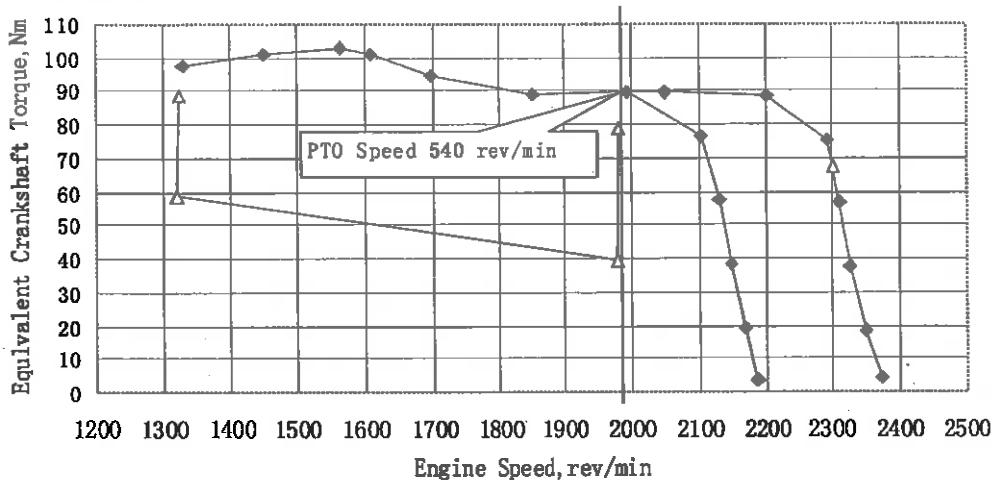


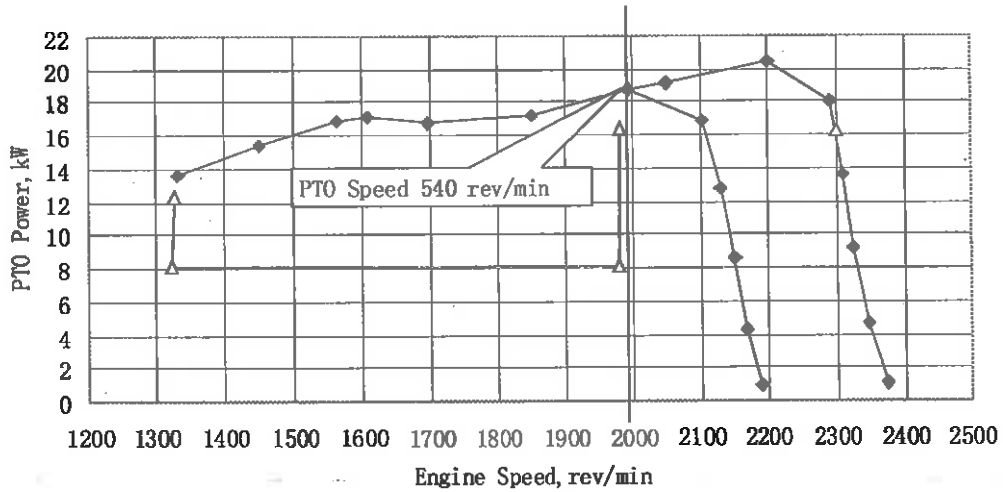
Fan Jianhua

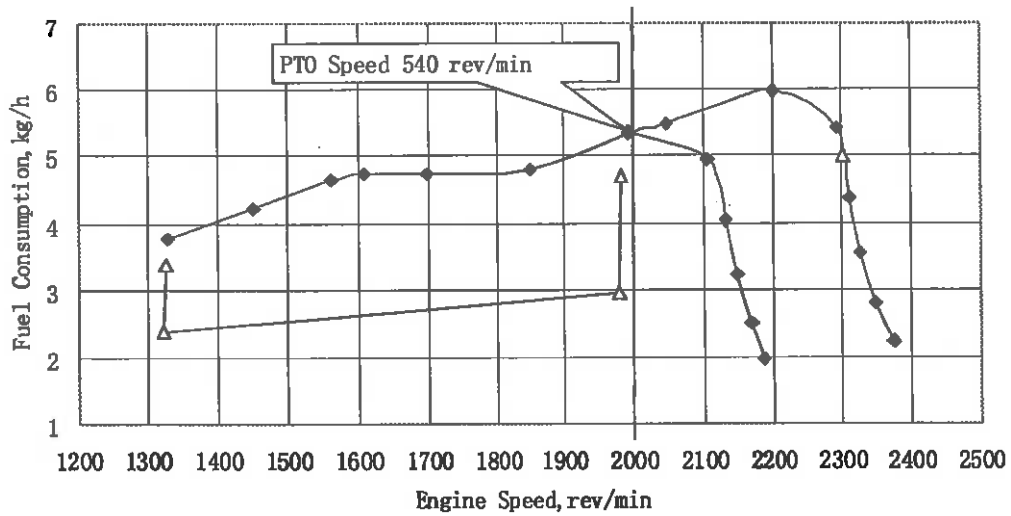
Members of the tractor test board:
Chen Zhiqiang Yan Xiaofang, Gao Bo
Zheng Zhigang, Li Yong, Zhao Jun,
Sun Zhennan, Yang Hongmei,Liu Hui
Sun Panpan,Liu Zhiqiang,Bai Demin,
Yi Xiaodong, Liu Hongqiang,

Date: Mar. 28,2007

ANNEX
MAIN POWER TAKE-OFF TEST CURVES 1







ANNEX
MAIN POWER TAKE-OFF TEST CURVES 2

