



Version: 2020V01 Implemented on: Jan.15, 2020

# YC6K520-D30

Prime power: 356 kW @ 1500 r/min

Standby power: 382 kW @ 1500 r/min

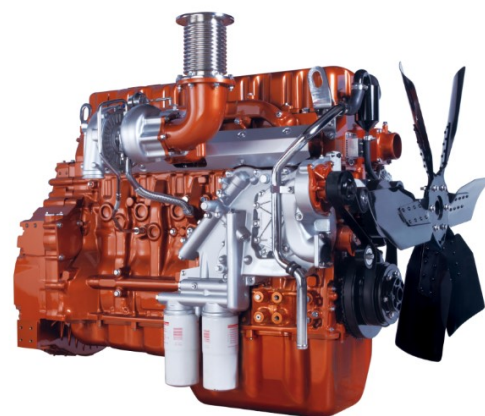
## Definitions

### Prime Power

It corresponds to the prime rated power (PRP) of GB/T 2820 and ISO 8528, and refers to the maximum power accessible at the variable load for an unlimited running hours per year, with the maintenance intervals and procedures being carried out as prescribed by Yuchai, and the allowed average output power within 24 h shall not be higher than 70% of the prime power.

### Standby Power

It corresponds to the emergency standby power (ESP) of GB/T 2820 and ISO 8528, and refers to the maximum power accessible at a certain variable load series in the event of a utility power outage or under test conditions for a limited running hours up to 200 h per year, with the maintenance intervals and procedures being carried out as prescribed by Yuchai. The allowed average output power within 24 h shall not be higher than 70% of the standby power.



## Main technical parameters

Number of cylinders .....	6
Configuration .....	Vertical, in-line
Aspiration .....	Turbocharged, air-air intercooled
Combustion system .....	Direct injection
Compression ratio .....	16.5:1
Bore .....	129 mm
Stroke .....	155 mm
Displacement .....	12.16 L
Rotation .....	Counterclockwise (viewed from the flywheel end)
Firing order (viewed from the belt pulley end) .....	1-5-3-6-2-4
Dry weight (without radiator) .....	1260 kg
Wet weight (without radiator) .....	1305 kg

## Overall dimensions

Length (from front end of radiator to rear end of air filter) .....	2372 mm
Width .....	1120 mm
Height (with radiator and mounting support) .....	1488 mm

## Centre of gravity (dry engine, with the center of the rear end face of the flywheel shell as the origin)

From the rear end face of the flywheel .....	661.03 mm
Height relative to the center of the crankshaft .....	233mm

Centerline deviation relative to the crankshaft center gravity .....	-5.58 mm
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## Moments of rotation inertia

Engine .....	93.9 kg·m <sup>2</sup>
Flywheel .....	2.78 kg·m <sup>2</sup>

## Performance rating

Speed droop .....	≤ 1 %
Steady state speed band .....	≤ 0.5 %

## Test conditions

Ambient temperature .....	25 °C
Atmospheric pressure .....	100 kPa
Relative humidity .....	55 %
Max. operating intake resistance .....	≤ 5 kPa
Exhaust backpressure limit .....	≤ 10 kPa
Fuel temperature (fuel inlet pump) .....	38±2 °C

**Attention: Unless otherwise explicitly specified, all parameter data are measured under standard test condition as above. If the engine is operated under other test conditions rather than the test condition above, it shall be adjusted properly according to the actual environment. Contact the Yuchai Technical Service Department for details.**

## Parameters of YC6K520-D30 Diesel Engine(Base Type) for Genset



## Matching parameters

Designation	Unit	Matching parameters	
		Standby	Prime
		50 Hz @ 1500 r/min	
Gross engine power	kW	382	356
Net engine power	kW	365	339
Fan power consumption (belt pulley driven)	kW	16	16
Other power loss	kW	1	1
Mean effective pressure	MPa	2.51	2.34
Intake air flow	m <sup>3</sup> /min	23.2	20.88
Exhaust temperature limit (after turbocharger)	°C	520	500
Exhaust flow	m <sup>3</sup> /min	67	59
Boost pressure ratio		2.8	2.65
Thermal efficiency	%	40.1	40.5
Mean piston speed	m/s	8.25	8.25
Coolant flow	L/min	395	395
Cooling fan air flow (Static pressure 459kPa)	m <sup>3</sup> /min	516	516
Typical gen-set electrical output (power factor:0.8)	kW	340	320
	kVA	425	400
Assumed generator efficiency	%	93.6	94

## Energy balance parameters

**Note:** The calorific value of diesel is 42,770 kJ/kg

Designation	Unit	Energy balance parameters	
		Standby	Prime
		50 Hz @ 1500 r/min	
Total fuel chemical energy	kW	953	880
Output power (gross)	kW	382	356
Output power (net)	kW	365	339
Fan power consumption	kW	16	16
Other power loss	kW	1	1
Heat dissipation capacity(coolant circulation)	kW	220	206
Heat dissipation capacity(intake intercooled system)	kW	58	48
Heat dissipation of exhaust	kW	254	233
Heat dissipation of thermal radiation	kW	39	37

Heat dissipating capacity of Yuchai engine with TD8D0-1316100SF1 radiator at an ambient temperature of 45 °C is as follows( water):

Designation	Unit	Energy balance parameters	
		Standby	Prime
		50 Hz @ 1500 r/min	
Total fuel chemical energy	kW	971	892
Output power (gross)	kW	382	356
Output power (net)	kW	365	339
Fan power consumption	kW	16	16
Other power loss	kW	1	1
Heat dissipation capacity(coolant circulation)	kW	248	215
Heat dissipation capacity(intake intercooled system)	kW	52	43
Heat dissipation of exhaust	kW	252	243

## Parameters of YC6K520-D30 Diesel Engine(Base Type) for Genset



Heat dissipation of thermal radiation	kW	37	35
<b>Cooling system</b>			
Total coolant capacity...../ L			
Engine coolant capacity.....20 L			
Radiator coolant capacity...../ L			
Pipeline coolant capacity...../ L			
Engine max. outlet coolant temperature.....95°C			
Thermostat operation temperature			
Initial open.....(83±2)°C			
full open.....(93±2)°C			
Max. coolant temperature rise:			
-Standby power.....8.0°C			
-Prime power.....7.5°C			
<b>Radiator &amp; Intercooler</b>			
Dry weight...../ kg			
<b>Radiator</b>			
Cooling area...../ m <sup>2</sup>			
Core material.....Aluminum			
Width of core...../ mm			
Height of core...../ mm			
Thickness of core...../ mm			
Min. pressure of pressure cap.....(50±5)kPa			
Coolant resistance limit.....25 kPa			
<b>Intercooler</b>			
Cooling area...../ m <sup>2</sup>			
Core material.....Aluminum			
Width of core...../ mm			
Height of core...../ mm			
Thickness of core...../ mm			
Air resistance limit.....10 kPa			
<b>Coolant pump</b>			
Rotation speed.....3090 r/min			
Drive mode.....Pulley driven			
<b>Fan</b>			
Diameter.....950 mm			
Drive ratio.....1.09:1			
Material.....Plastic			
Number of blades.....8			
Type.....Blowing			
<b>Intake system</b>			
<b>Air filter</b>			
Max. intake resistance:			
-Clean air filter ..... 3.5 kPa			
-Dirty air filter ..... 5 kPa			
-Warning of intake resistance ..... 6.2 kPa			
-Air filter type.....Dry-type, filter cartridge of paper			
Rated flow.....1650 kg/h			
<b>Inclination</b>			
Transverse inclination/longitudinal inclination (volume of engine oil sump: 52 L) ..... 15°/20°			
<b>Fuel system</b>			
Injection system.....High pressure common rail			
<b>Injector</b>			
Type.....Electronically controlled, with multiple jets			
Injector opening pressure.....Electronically controlled			
<b>Fuel pump</b>			
Drive mode ..... Gear driven			
Fuel delivery pump flow @1,500 rpm ...../			
Max. fuel inlet temperature limit.....70 °C			
Allowed fuel inlet pressure of front end of fuel delivery pump (absolute pressure)..... (15~70) kPa			
Maximum fuel return pressure of fuel pump .....20 kPa			
<b>Fuel filter</b>			
<b>Pre- filter</b>			
Rated flow.....7 L/min			
Max. original resistance ..... 12 kPa			
Water separation efficiency at the rated flow ..... ≥95 %			
Filter efficiency:			
For particles of 25 μm..... ≥99 %			
For particles of 10 μm..... ≥85 %			
<b>Fine- filter</b>			
Rated flow.....7 L/min			
Max. original resistance ..... 10 kPa			
Filtering efficiency:			
For particles of 10 μm..... ≥98 %			
For particles of 3 μm ..... ≥95 %			

## Parameters of YC6K520-D30 Diesel Engine(Base Type) for Genset



## Fuel consumption

**Note:** The density of diesel is 0.835 kg/L.

Load condition	1500 r/min	
	g/(kW·h)	L/h
Standby	210	96
Prime	208	89
75% prime	221	72
50% prime	219	48

## Lubricating system

Total oil capacity(dry engine)	34 L
Total oil capacity(oil change)	32 L
Oil sump capacity - low level/high level	16/32 L
Max. oil temperature (in oil sump)	120 °C
Operating oil temperature(in oil sump)	(90~115) °C
Oil pressure(idle speed)	≥200 kPa
Oil pressure(rated speed)	(300~600) kPa
Oil-fuel consumption ratio	<0.1 %

### Oil filter

The filtering efficiency at the rated flow of 180 L/min and the assembly initial resistance ≤50 kPa:

For 15μm≤particles<20μm	>75%
For 20μm≤particles<30μm	>95%
For 30μm≤particles<40μm	>99%
For particles≥40μm	>99.9999%

## Electric system

Type.....Negative ground

### Charger

Voltage	28V
Output current	27A

### Starter

Type	Electric start, 2
Voltage	24V
Power	8.5kW
Number of teeth of flywheel	143
Number of teeth of starter	11

## Cold start (test data, for reference only)

24 V					
Battery specification×quantity:12V/195Ah×4					
Starting temperature	°C	-15	-20	-25	-32
Starting speed	r/min	850	900	950	1100
Starting current	A	460	455	470	480
Starting voltage	V	15.6	15.8	15.3	15
Starting time	s	3.9	4.9	6	7
Preheating time	s	25	30	35	45

### Auxiliary intake heater

Type.....Grating-type  
Specification.....2.5 kW

### Water preheater

Recommended specification.....1 kW/220 V  
Engine preheater water outlet interface.....NPT 3/8  
Engine preheater water inlet interface.....M18x1.5

### Oil heater

Recommended specification.....300 W/220 V  
Interface (oil sump, 1).....M38×1.5

## Exhaust system

Max. exhaust backpressure.....10 kPa  
Inner diameter of exhaust port pipe.....Φ108 mm

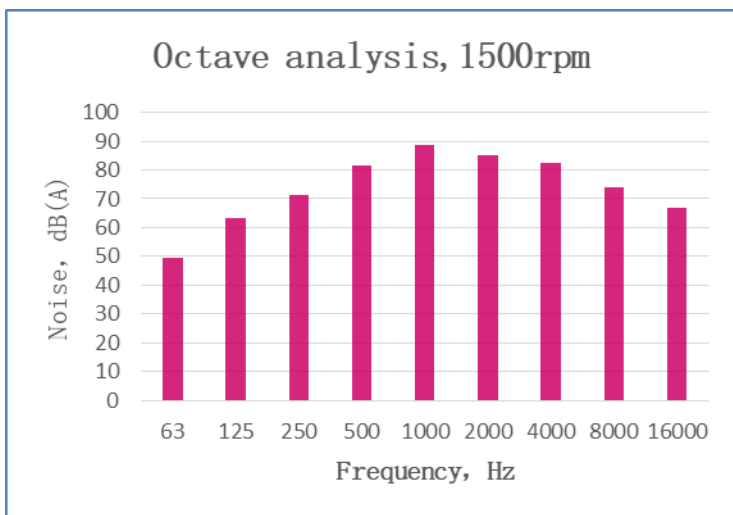
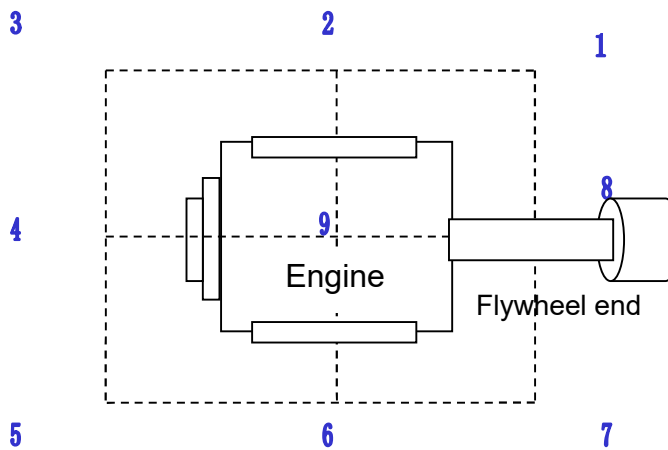
Parameters of YC6K520-D30 Diesel Engine(Base Type) for Genset



Noise

Noise data (356 kW @ 1500 r/min)

Position	Noise, Lp dB(A)
1	97.2
2	95.8
3	94.9
4	100
5	93.3
6	92.5
7	93.3
8	95.0
9	96.4



频率, Hz	噪声, dB(A)
63	49.4
125	63.5
250	71.2
500	81.5
1K	88.9
2K	85
4K	82.6
8K	74.1
16K	66.9