

# YC6B180L-D20

Prime power: 120 kW @ 1500 r/min

Standby power: 132 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 an 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 .....	17.5:1
Bore .....	108 mm
Stroke .....	125 mm
Displacement .....	6.87 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) .....	700 kg
Wet weight (without radiator) .....	760 kg

## Overall dimensions

Length (from front end of radiator to rear end of air filter) .....	1720 mm
Width .....	900 mm
Height (with radiator and mounting support) .....	1200 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 .....	412 mm
Height relative to the center of the crankshaft .....	142 mm

Centerline deviation relative to the crankshaft center gravity .....	36 mm
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## Moments of rotation inertia

Engine .....	2.01 kg·m <sup>2</sup>
Flywheel .....	1.75 kg·m <sup>2</sup>

## Performance rating

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

## Test conditions

Ambient temperature .....	25 °C
Atmospheric pressure .....	100 kPa
Relative humidity .....	30 %
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.**

**Matching parameters**

Designation	Unit	Matching parameters	
		Standby	Prime
		50 Hz @ 1500 r/min	
Gross engine power	kW	132	120
Net engine power	kW	128	116
Fan power consumption (belt pulley driven)	kW	4	4
Other power loss	kW	0	0
Mean effective pressure	MPa	1.54	1.40
Intake air flow	m <sup>3</sup> /min	8.40	7.63
Exhaust temperature limit (after turbocharger)	°C	485	477
Exhaust flow	m <sup>3</sup> /min	19.7	17.8
Boost pressure ratio		2.33	2.23
Thermal efficiency	%	41.8	42.4
Mean piston speed	m/s	6.25	6.25
Coolant flow	L/min	142	142
Cooling fan air flow	m <sup>3</sup> /min	164	164
Typical gen-set electrical output (power factor:0.8)	kW	110	100
	kVA	138	125
Assumed generator efficiency	%	88.0	88.0

**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	316	283
Output power (gross)	kW	132	120
Output power (net)	kW	128	116
Fan power consumption	kW	4	4
Other power loss	kW	0	0
Heat dissipation capacity(coolant circulation)	kW	71	61
Heat dissipation capacity(intake intercooled system)	kW	19	17
Heat dissipation of exhaust	kW	80	72
Heat dissipation of thermal radiation	kW	14	13

Heat dissipating capacity of Yuchai engine with B7G20-1316100 radiator at an ambient temperature of 40 °C is as follows:

Designation	Unit	Energy balance parameters	
		Standby	Prime
		50 Hz @ 1500 r/min	
Total fuel chemical energy	kW	320	288
Output power (gross)	kW	132	120
Output power (net)	kW	128	116
Fan power consumption	kW	4	4
Other power loss	kW	0	0
Heat dissipation capacity(coolant circulation)	kW	71	63
Heat dissipation capacity(intake intercooled system)	kW	20	18
Heat dissipation of exhaust	kW	83	74
Heat dissipation of thermal radiation	kW	14	13

### Cooling system

Total coolant capacity.....	31 L
Engine coolant capacity.....	12 L
Radiator coolant capacity.....	16 L
Pipeline coolant capacity.....	3 L
Engine max. outlet coolant temperature.....	99°C
Thermostat operation temperature	
Initial open.....	(70±2)°C
full open.....	<80°C
Max. coolant temperature rise:	
-Standby power.....	8.0°C
-Prime power.....	7.8°C

### Radiator& Intercooler

Dry weight.....	75kg
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### Radiator

Cooling area.....	40m <sup>2</sup>
Core material.....	Copper
Length of core.....	784 mm
Width of core.....	96 mm
Height of core.....	740 mm
Min. pressure of pressure cap.....	(50±5)kPa
Coolant resistance limit.....	15 kPa

### Intercooler

Cooling area.....	20.84 m <sup>2</sup>
Core material.....	Copper
Length of core.....	784 mm
Width of core.....	96 mm
Height of core.....	740 mm
Air resistance limit.....	10 kPa

### Coolant pump

Rotation speed.....	2283 r/min
Drive mode.....	Pulley driven

### Fan

Diameter.....	630 mm
Drive ratio.....	1.52:1
Material.....	Steel
Number of blades.....	6
Type.....	Blowing

### Intake system

#### Air filter

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

### Inclination

Transverse inclination/longitudinal inclination (volume of engine oil sump: 15 L) .....	10°/ 10°
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### Fuel system

Injection system.....	Mechanical pump+electronic governor
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#### Injector

Type.....	P-type, mechanical
Injector opening pressure .....	(25~26) MPa

#### Fuel pump

Drive mode .....	Gear driven
Fuel delivery pump flow @1,500 rpm .....	1.04 L/min
Max. fuel inlet temperature limit.....	57 °C
Allowed fuel inlet pressure of front end of fuel delivery pump (absolute pressure).....	(35~150) kPa
Maximum fuel return pressure of fuel pump .....	20 kPa

#### Fuel filter

Rated flow.....	1.2 L/min
Max. original resistance .....	≤7.5 kPa
Water separation efficiency at the rated flow .....	≥95 %
Filter efficiency:	
For particles of 10 μm.....	≥96 %

### Fuel consumption

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

Load condition	1500 r/min	
	g/(kW·h)	L/h
Standby	201.3	31.8
Prime	198.4	28.5
75% prime	203.1	21.9
50% prime	211.7	15.2

### Lubricating system

- Total oil capacity(dry engine) ..... 17 L
- Total oil capacity(oil change) ..... 15 L
- Oil sump capacity - low level/high level ..... 15/17 L
- Max. oil temperature (in oil sump) .....115 °C
- Operating oil temperature(in oil sump)..... (90~115) °C
- Oil pressure(idle speed) ..... ≥120 kPa
- Oil pressure(rated speed)..... (250~600) kPa
- Oil-fuel consumption ratio ..... <0.1 %

### Oil filter

The filtering efficiency at the rated flow of 30 L/min and the assembly initial resistance ≤25 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/14V  
Output current ..... 27A/90A

### Starter

Type .....Electric start, 1  
Voltage ..... 24V/12V  
Power .....6kW/5.5kW  
Number of teeth of flywheel..... 110  
Number of teeth of starter..... 11

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

24 V				
Battery specification×quantity:12V/180Ah×2				
Starting temperature	°C	25	-15	-25
Starting speed	r/min	264	280	375
Starting current	A	213	441	722
Starting voltage	V	22.9	19.2	16.6
Starting time	s	2.3	9.2	22.5
Preheating time	s	0	0	30

12 V				
Battery specification×quantity:12V/180Ah×2(in parallel)				
Starting temperature	°C	25	-15	-25
Starting speed	r/min	203	129	89
Starting current	A	698	734	926
Starting voltage	V	9.7	8.6	6.6
Starting time	s	3.6	4.1	4.4
Preheating time	s	0	0	45

### Auxiliary intake heater

Type..... Grating-type  
Specification .....2.1 kW

### Water preheater

Recommended specification. ....1.5 kW/220 V  
Engine preheater water outlet interface (thermostat).... NPT 1/4  
Engine preheater water inlet interface (distributor)..... NPT 3/8

### Oil heater

Recommended specification. ....150 W/220 V  
Interface (oil sump, 1)..... M22×1.5

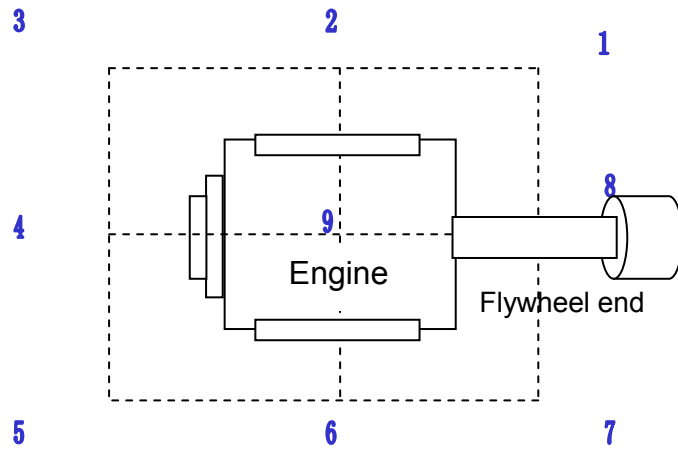
### Exhaust system

Max. exhaust backpressure..... 10 kPa  
Inner diameter of exhaust port pipe.....Φ79 mm

## Noise

### Noise data (120 kW @ 1500 r/min)

Position	Noise, Lp dB(A)
1	88.7
2	94.4
3	91.6
4	99.1
5	91.8
6	97.5
7	90.1
8	87.2
9	93.3



### Noise spectrum (120 kW @ 1500 r/min)

Frequency, Hz	Noise, dB(A)
63	49.5
125	65.3
250	77.3
500	81.5
1k	89.6
2k	86.0
4k	83.4
8k	72.3
16k	68.4

