

YC6B160Z-D20

Prime power: 107 kW @ 1800 r/min

Standby power: 118 kW @ 1800 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,
Combustion system	Direct injection
Compression ratio	17.5:1
Bore	108 mm
Stroke	125 mm
Displacement	6.87L
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)	1350 mm
Width	850 mm
Height (with radiator and mounting support)	1100 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	142mm

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

Engine	2.01 kg·m ²
Flywheel	1.75 kg·m ²

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
		60 Hz @ 1800 r/min	
Gross engine power	kW	118	107
Net engine power	kW	113	102
Fan power consumption (belt pulley driven)	kW	5	5
Other power loss	kW	0	0
Mean effective pressure	MPa	1.14	1.03
Intake air flow	m ³ /min	7.26	6.83
Exhaust temperature limit (after turbocharger)	°C	563	530
Exhaust flow	m ³ /min	20.2	18.5
Boost pressure ratio		1.81	1.72
Thermal efficiency	%	36.6	37.1
Mean piston speed	m/s	7.5	7.5
Coolant flow	L/min	158	158
Cooling fan air flow	m ³ /min	186	186
Typical gen-set electrical output (power factor:0.8)	kW	100	90
	kVA	125	112.5
Assumed generator efficiency	%	88.5	88.5

Energy balance parameters

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

Designation	Unit	Energy balance parameters	
		Standby	Prime
		60 Hz @ 1800 r/min	
Total fuel chemical energy	kW	323	289
Output power (gross)	kW	118	107
Output power (net)	kW	113	102
Fan power consumption	kW	5	5
Other power loss	kW	0	0
Heat dissipation capacity(coolant circulation)	kW	98	87
Heat dissipation of exhaust	kW	89	78
Heat dissipation of thermal radiation	kW	18	17

Heat dissipating capacity of Yuchai engine with B7120-1301100A radiator at an ambient temperature of 50°C is as follows:

Designation	Unit	Energy balance parameters	
		Standby	Prime
		60 Hz @ 1800 r/min	
Total fuel chemical energy	kW	330	295
Output power (gross)	kW	118	107
Output power (net)	kW	113	102
Fan power consumption	kW	5	5
Other power loss	kW	0	0
Heat dissipation capacity(coolant circulation)	kW	98	87
Heat dissipation of exhaust	kW	89	78
Heat dissipation of thermal radiation	kW	18	17

Cooling system

Total coolant capacity.....	30 L
Engine coolant capacity.....	12 L
Radiator coolant capacity.....	15 L
Pipeline coolant capacity.....	3 L
Engine max. outlet coolant temperature.....	99℃
Thermostat operation temperature	
Initial open.....	(70±2)℃
full open.....	<80℃
Max. coolant temperature rise:	
-Standby power.....	8.0℃
-Prime power.....	7.8℃

Radiator

(drawing number: B7120-1316100A)

Dry weight.....	63kg
Cooling area.....	34m ²
Core material.....	Copper
Length of core.....	660 mm
Width of core.....	96 mm
Height of core.....	670 mm
Min. pressure of pressure cap.....	(50±5)kPa
Coolant resistance limit.....	15 kPa

Coolant pump

Rotation speed.....	2571r/min
Drive mode.....	Pulley driven

Fan

Diameter.....	630 mm
Drive ratio.....	0.74:1
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: 20 L)10°/ 10°
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Fuel system

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

Injector

Type.....	Mechanical
Injector opening pressure	(23~24) MPa

Fuel pump

Drive mode	Gear driven
Fuel delivery pump flow @1800 rpm	1.2 L/min
Max. fuel inlet temperature limit.....	57 ℃
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.....	≤10kPa
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	1800 r/min	
	g/(kW·h)	L/h
Standby	230.1	32.5
Prime	227.0	29.1
75% prime	223.6	21.5
50% prime	221.7	14.2

Lubricating system

Total oil capacity(dry engine) 17 L
 Total oil capacity(oil change) 15L
 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 6 kW/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. 1.5kW/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

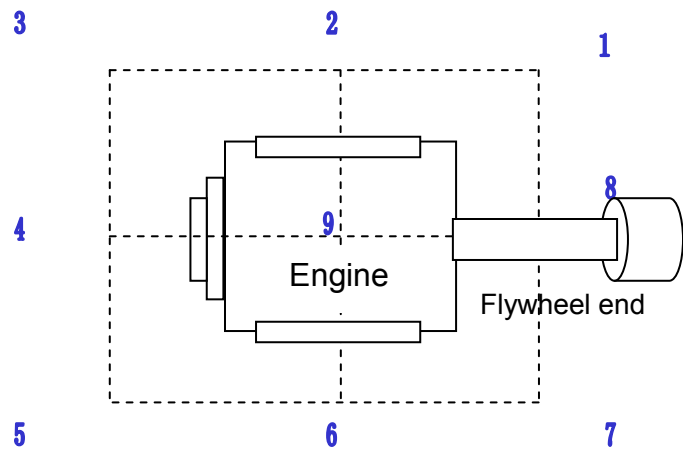
Exhaust system

Max. exhaust backpressure..... 10 kPa
 Inner diameter of exhaust port pipe..... Φ68 mm

Noise

Noise data (107kW @ 1800 r/min)

Position	Noise Lp, dB(A)
1	89.7
2	95.1
3	91.9
4	99.2
5	92.1
6	98.7
7	91.2
8	86.4
9	93.8



Noise spectrum (107kW @ 1800 r/min)

Frequency, Hz	Noise, dB(A)
63	50.0
125	65.3
250	77.4
500	81.6
1k	89.7
2k	86.1
4k	83.2
8k	71.6
16K	68.2

