

YC6TH1220-D31

Prime power: 815 kW @ 1500 r/min

Standby power: 897 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	14:1
Bore	175 mm
Stroke	195 mm
Displacement	28.14 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)	3400 kg
Wet weight (without radiator)	3567 kg

Overall dimensions

Length (from front end of radiator to rear end of air filter)	2817 mm
Width(with radiator)	2000 mm
Height (with radiator and mounting support)	1992 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	941.1 mm
Height relative to the center of the crankshaft	276.1 mm

Centerline deviation relative to the crankshaft center gravity (Move to the exhaust pipe side)

Moments of rotation inertia

Engine	15.14 kg·m ²
Flywheel	9.85 kg·m ²

Performance rating

Speed droop	≤ 1 %
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	897	815
Net engine power	kW	862	780
Fan power consumption (belt pulley driven)	kW	34	34
Other power loss	kW	1	1
Mean effective pressure	MPa	2.54	2.31
Intake air flow	m ³ /min	58.06	54.34
Exhaust temperature limit (after turbocharger)	°C	≤550	≤550
Exhaust flow	m ³ /min	148.48	133.01
Boost pressure ratio	/	3.79	3.47
Thermal efficiency	%	39.98	40.61
Mean piston speed	m/s	9.75	9.75
Coolant flow	L/min	1000	1000
Cooling fan air flow	m ³ /min	1700	1700
Typical gen-set electrical output (power factor:0.8)	kW	800	730
	kVA	1000	912.5
Assumed generator efficiency	%	92.8	93.6

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	2236	1996
Output power (gross)	kW	897	815
Output power (net)	kW	862	780
Fan power consumption	kW	34	34
Other power loss	kW	1	1
Heat dissipation capacity(coolant circulation)	kW	484	443
Heat dissipation capacity(intake intercooled system)	kW	230	196
Heat dissipation of exhaust	kW	578	500
Heat dissipation of thermal radiation	kW	47	42

Cooling system

Total coolant capacity.....	214 L
Engine coolant capacity.....	66 L
Radiator coolant capacity.....	142 L
Pipeline coolant capacity.....	6 L
Engine max. outlet coolant temperature.....	97°C
Pressure difference between inlet and outlet of water pump (max. hydrostatic head).....	150 kPa
Thermostat operation temperature	
Initial open.....	(75±2)°C
full open.....	<(85±2)°C

Intake system

Air filter

Max. intake resistance:

-Clean air filter 2.45 kPa

-Dirty air filter 5 kPa

-Air filter type.....Dry-type, filter cartridge of paper

Inclination

Transverse inclination/longitudinal inclination (volume of engine oil sump: 155 L) 15°/ 5°

Fuel system

Injection system.....Electronic unit pump

Parameters of YC6TH1220-D31 Diesel Engine(Basic Type) for Genset

Max. coolant temperature rise:

- Standby power.....8℃
- Prime power.....7℃

Radiator

- Cooling area.....439 m²
- Dry weight.....600kg
- Core material.....aluminum
- Number of lines.....190
- Density of core.....13 cooling fins/inch
- Width of core.....1924 mm
- Height of core.....1520 mm
- Min. pressure of pressure cap.....(50±5)kPa
- Coolant resistance limit.....20 kPa

Intercooler

- Cooling area.....146 m²
- Core material.....aluminum
- Number of lines.....120
- Density of core.....12 cooling fins/inch
- Width of core.....1920 mm
- Height of core.....1470 mm
- Air resistance limit.....15 kPa

Coolant pump

- Rotation speed.....3240 r/min
- Drive mode.....Pulley driven

Fan

- Diameter.....1442 mm
- Drive ratio.....1.36:1
- Material.....Steel
- Number of blades.....8
- Type.....Blowing

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Injector

- Type.....Mechanical
- Injector opening pressure(32~34) MPa

Fuel pump

- Drive mode Gear driven
- Fuel delivery pump flow @1,500 rpm≥12 L/min
- Max. fuel inlet temperature limit..... 75 ℃
- Allowed fuel inlet pressure of front end of fuel delivery pump (absolute pressure).....60 kPa
- Maximum fuel return pressure of fuel pump(absolute pressure) 171 kPa

Fuel filter

Pre- filter

- Rated flow..... 15 L/min
- Max. original resistance 15 kPa
- Water separation efficiency at the rated flow ≥95 %
- Filter efficiency:
- For particles of 25 μm.....99 %
- For particles of 10 μm.....85 %

Fine- filter

- Rated flow..... 14 L/min
- Max. original resistance 10 kPa
- Filtering efficiency:
- For particles of 6 μm99.9 %
- For particles of 4 μm99.6 %

Fuel consumption

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

Load condition	1500 r/min	
	g/(kW·h)	L/h
Standby	209.8	225.4
Prime	206.1	201.2
75% prime	217.6	159.3
50% prime	223.9	109.3

Lubricating system

- Total oil capacity(dry engine) 113 L
- Total oil capacity(oil change) 110 L
- Oil sump capacity - low level/high level 73/105 L
- Max. oil temperature (in oil sump) 120 °C
- Operating oil temperature(in oil sump)..... (90~115) °C
- Oil pressure(idle speed) ≥150 kPa
- Oil pressure(rated speed)..... (250~500) kPa
- Oil-fuel consumption ratio <0.3%

Oil filter

The filtering efficiency at the rated flow of 44 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
- Output current 27A

Starter

- Type Electric start, 2
- Voltage 24V
- Power 7.5 kW
- Number of teeth of flywheel..... 140
- Number of teeth of starter..... 10

Cold start (test data, for reference only)

24 V					
Battery specification × quantity: ≥12V/195Ah×4. And the min CCA of Battery should be 1100A when apply to cold area and plateau area.					
Starting temperature	°C	-15	-20	-25	-30
Starting speed	r/min	/	/	/	/
Starting current	A	/	/	/	/
Starting voltage	V	/	/	/	/
Starting time	s	/	/	/	/
Preheating time	s	/	/	/	/

Auxiliary intake heater

- Type...../
- Specification /

Water preheater

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

Oil heater

- Recommended specification.1kW/220 V
- Interface (oil sump, 2)..... M22×1.5

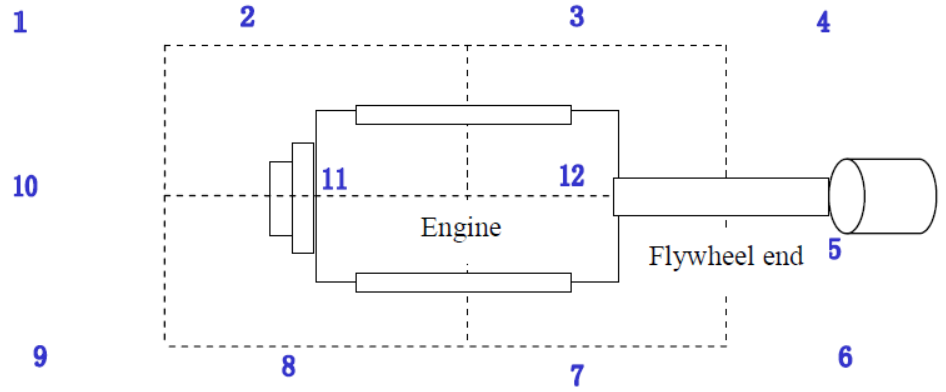
Exhaust system

- Max. exhaust backpressure..... 10 kPa
- Inner diameter of exhaust port pipe..... Φ250 mm

Noise

Noise data (815 kW @ 1500 r/min)

Position	Noise, dB(A)
1	106.7
2	108.7
3	107.2
4	106.1
5	105.5
6	106.2
7	107.8
8	108.4
9	106.1
10	104.6
11	108.5
12	106



Noise spectrum (815 kW @ 1500 r/min)

Frequency, Hz	Noise, dB(A)
63	60
125	78
250	88
500	96
1K	94
2K	97
4K	96
8K	96

