

# YC6A245L-D21

Prime power: 165 kW @ 1500 r/min

Standby power: 181.5 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 .....	132 mm
Displacement .....	7.255L
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) .....	725 kg
Wet weight (without radiator) .....	750 kg

## Overall dimensions

Length (from front end of radiator to rear end of air filter) .....	1740 mm
Width .....	960 mm
Height (with radiator and mounting support) .....	1150 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 .....	589 mm
Height relative to the center of the crankshaft .....	215mm

Centerline deviation relative to the crankshaft center gravity .....	-29.4 mm
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## Moments of rotation inertia

Engine .....	1.9 kg·m <sup>2</sup>
Flywheel .....	1.5 kg·m <sup>2</sup>

## Performance rating

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

## 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	181.5	165
Net engine power	kW	174	158
Fan power consumption (belt pulley driven)	kW	5	5
Other power loss	kW	2.5	2
Mean effective pressure	MPa	2.0	1.83
Intake air flow	m <sup>3</sup> /min	12.6	12.1
Exhaust temperature limit (after turbocharger)	°C	443	455
Exhaust flow	m <sup>3</sup> /min	34.8	33.5
Boost pressure ratio		3.1	3
Thermal efficiency	%	40.8	41.5
Mean piston speed	m/s	6.6	6.6
Coolant flow	L/min	315	317
Cooling fan air flow	m <sup>3</sup> /min	277.8	277.8
Typical gen-set electrical output (power factor:0.8)	kW	160	144
	kVA	200	180
Assumed generator efficiency	%	91.9	91.1

**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	444	398
Output power (gross)	kW	181.5	165
Output power (net)	kW	174	158
Fan power consumption	kW	5	5
Other power loss	kW	2.5	2
Heat dissipation capacity(coolant circulation)	kW	87	74
Heat dissipation capacity(intake intercooled system)	kW	38	33
Heat dissipation of exhaust	kW	132	121
Heat dissipation of thermal radiation	kW	6.5	5

Heat dissipating capacity of Yuchai engine with A9FE0-1316100 radiator at an ambient temperature of 50°C is as follows:

Designation	Unit	Energy balance parameters	
		Standby	Prime
		50 Hz @ 1500 r/min	
Total fuel chemical energy	kW	450	405
Output power (gross)	kW	181.5	165
Output power (net)	kW	174	158
Fan power consumption	kW	5	5
Other power loss	kW	2.5	2
Heat dissipation capacity(coolant circulation)	kW	88	76
Heat dissipation capacity(intake intercooled system)	kW	39	35
Heat dissipation of exhaust	kW	135	124
Heat dissipation of thermal radiation	kW	6.5	5

### Cooling system

Total coolant capacity.....	54.66 L
Engine coolant capacity.....	20.66 L
Radiator coolant capacity.....	30 L
Pipeline coolant capacity.....	4 L
Engine max. outlet coolant temperature.....	97℃
Pressure difference between inlet and outlet of water pump (max. hydrostatic head).....	48 kPa
Thermostat operation temperature	
Initial open.....	(70±2)℃
full open.....	<80℃
Max. coolant temperature rise:	
-Standby power.....	8℃
-Prime power.....	7℃

### Radiator

Cooling area.....	71.3m <sup>2</sup>
Dry weight.....	100kg
Core material.....	Aluminum
Number of lines.....	88
Density of core.....	13 cooling fins/inch
Width of core.....	892 mm
Height of core.....	820 mm
Min. pressure of pressure cap.....	(50±5)kPa
Coolant resistance limit.....	25 kPa

### Intercooler

Cooling area.....	40.4 m <sup>2</sup>
Core material.....	Aluminum
Number of lines.....	38
Density of core.....	11 cooling fins/inch
Width of core.....	880 mm
Height of core.....	800 mm
Air resistance limit.....	15 kPa

### Coolant pump

Rotation speed.....	3350 r/min
Drive mode.....	Pulley driven

### Fan

Diameter.....	670 mm
Drive ratio.....	0.64:1
Material.....	Steel
Number of blades.....	6
Type.....	Blowing

### Intake system

#### Air filter

Max. intake resistance:	
-Clean air filter .....	3.0 kPa
-Dirty air filter .....	3.5 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
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#### Injector

Type.....	Mechanical
Injector opening pressure .....	(26~27) MPa

#### Fuel pump

Drive mode .....	Gear driven
Fuel delivery pump flow @1,500 rpm .....	1.2 L/min
Max. fuel inlet temperature limit.....	70 ℃
Allowed fuel inlet pressure of front end of fuel delivery pump (absolute pressure).....	(35~100) 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 .....	≥96 %
Filtering efficiency:	
For particles of 25μm.....	85/ %
For particles of 40 μm.....	99 / %

### Fuel consumption

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

Load condition	1500 r/min	
	g/(kW·h)	L/h
Standby	206.5	44.7
Prime	203.3	40.1
75% prime	199.1	29.5
50% prime	203.2	20.05

### Lubricating system

Total oil capacity(dry engine) .....24 L  
 Total oil capacity(oil change) .....22L  
 Oil sump capacity - low level/high level ..... 16/22 L  
 Max. oil temperature (in oil sump) .....120 °C  
 Operating oil temperature(in oil sump)..... (90~115) °C  
 Oil pressure(idle speed) ..... ≥120 kPa  
 Oil pressure(rated speed)..... (250~500) kPa  
 Oil-fuel consumption ratio..... <0.2%

### Oil filter

The filtering efficiency at the rated flow of 60 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 ..... 35A/65A

### 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	-15	-20	-25	-32
Starting speed	r/min	200	146	113	86
Starting current	A	339	451	527	600
Starting voltage	V	21.2	18.9	18.3	16.7
Starting time	s	2.5	1.8	3.3	6.4
Preheating time	s	0	35	50	60
12 V					
Battery specification×quantity:12V/195Ah×2(in parallel)					
Starting temperature	°C	-15	-20	-25	-30
Starting speed	r/min	117.71	95.71	81.98	55.45
Starting current	A	720.7	798.44	895.62	1050.95
Starting voltage	V	8.47	7.57	6.96	6.02
Starting time	s	4.3	2.5	4.4	7.8
Preheating time	s	0	35	45	55

### Auxiliary intake heater

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

### Water preheater

Recommended specification .....2 kW/220 V  
 Engine preheater water outlet interface (thermostat)... NPT 3/8  
 Engine preheater water inlet interface (distributor)..... NPT 1/2

### Oil heater

Recommended specification ..... .90 W/220 V  
 Interface (oil sump, 1)..... M22×1.5

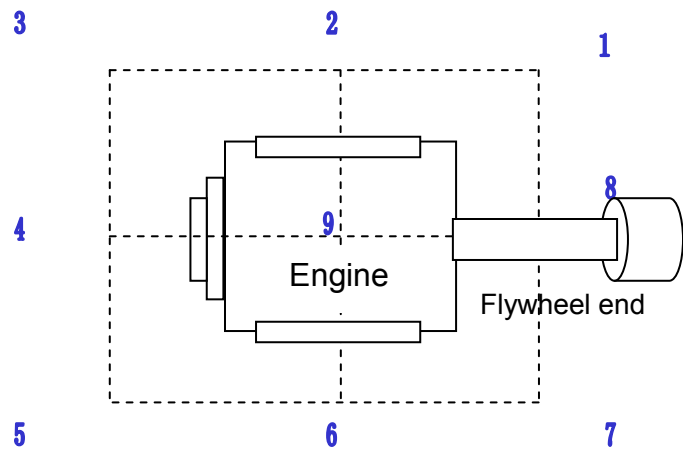
### Exhaust system

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

## Noise

### Noise data (165 kW @ 1500 r/min)

Position	Noise Lp, dB(A)
1	86.1
2	91.5
3	88.3
4	92.8
5	87.4
6	91.4
7	86.5
8	88.5
9	91.3



### Noise spectrum (165kW @ 1500 r/min)

Frequency, Hz	Noise, dB(A)
63	40.1
125	53.2
250	68.6
500	74.6
1k	76.5
2k	79.6
4k	78.2
8k	74.4
16K	77.2

