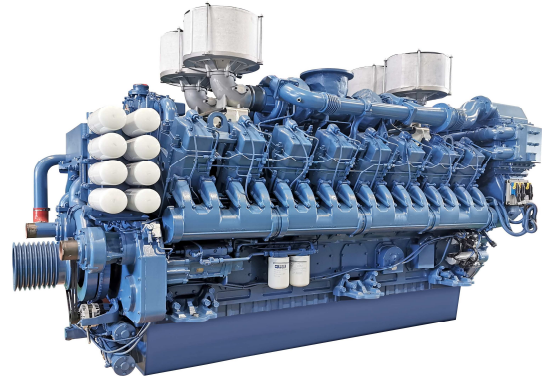


# YC16VC4200-D31

Prime power: 2808 kW @ 1500 r/min

Standby power: 3089 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 .....	16
Configuration .....	Vertical, V-type
Aspiration .....	Turbocharged, water-air intercooled
Combustion system .....	Direct injection
Compression ratio .....	13.5:1
Bore .....	200 mm
Stroke .....	210 mm
Displacement .....	105.56 L
Rotation .....	Counterclockwise (viewed from the flywheel end)
Firing order (viewed from the belt pulley end) .....	left
1—right 1-left 6—right 6-left 2—right 2-left 5—right 5-left 8—right	
8-left 3-right 3-left 7-right 7-left 4-right 4	
Dry weight (without radiator) .....	12200 kg
Wet weight (without radiator) .....	13000 kg

## Overall dimensions

Length (from front end of radiator to rear end of air filter)	
.....	3910 mm
Width .....	1690 mm
Height (with radiator and mounting support) .....	2450 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 .....	1652 mm
Height relative to the center of the crankshaft .....	225 mm

Centerline deviation relative to the crankshaft center gravity	
.....	44 mm

## Moments of rotation inertia

Engine .....	44.42 kg·m <sup>2</sup>
Flywheel .....	29.36 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 .....	35 %
Max. operating intake resistance .....	≤3.7 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 YC16VC4200-D31 Diesel Engine(Basic Type) for Genset**
**Matching parameters**

Designation	Unit	Matching parameters	
		Standby	Prime
		50 Hz @ 1,500 r/min	
Gross engine power	kW	3089	2808
Net engine power	kW	2931	2650
Fan power consumption (belt pulley driven)	kW	156	156
Other power loss	kW	2	2
Mean effective pressure	MPa	2.51	2.28
Intake air flow	m <sup>3</sup> /min	267	255
Exhaust temperature limit (after turbocharger)	°C	≤580	≤550
Exhaust flow	m <sup>3</sup> /min	657	627
Boost pressure ratio		4.26	4.0
Thermal efficiency	%	39.5	40.5
Mean piston speed	m/s	10.5	10.5
Coolant flow(high temperature)	L/min	2000	2000
Coolant flow(low temperature)	L/min	1600	1600
Cooling fan air flow	m <sup>3</sup> /min	4200	4200
Typical gen-set electrical output (power factor:0.8)	kW	2800	2500
	kVA	3500	3125
Assumed generator efficiency	%	95.5	94.3

**Thermal balance parameters**

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

Designation	Unit	Thermal balance parameters	
		Standby	Prime
		50 Hz @ 1,500 r/min	
Total fuel chemical energy	kW	7758	6979
Output power (gross)	kW	3089	2808
Output power (net)	kW	2931	2650
Fan power consumption	kW	156	156
Other power loss	kW	2	2
Heat dissipation capacity(coolant circulation)	kW	1000	926
Heat dissipation capacity(intake intercooled system)	kW	1050	950
Heat dissipation of exhaust	kW	2450	2150
Heat dissipation of thermal radiation	kW	180	160

## Cooling system

Total coolant capacity.....	874 L
Engine coolant capacity.....	334 L
Radiator coolant capacity.....	540 L
Pipeline coolant capacity.....	40 L
Engine max. outlet coolant temperature(high temperature).	≤95℃
Engine max. inlet coolant temperature(low temperature)....	≤67℃
Pressure difference between inlet and outlet of water pump (max. hydrostatic head).....	135.5/332 kPa
Thermostat operation temperature	
Initial open.....	(75±2)℃
full open.....	<85℃
Max. coolant temperature rise(high temperature):	
-Standby power.....	9℃
-Prime power.....	8℃
Max. coolant temperature rise(low temperature):	
-Standby power.....	11℃
-Prime power.....	10℃

## Radiator

Cooling area(high temperature).....	858m <sup>2</sup>
Cooling area(low temperature).....	929m <sup>2</sup>
Dry weight.....	2200kg
Core material.....	Aluminum
Width of core.....	2800 mm
Height of core.....	2646 mm
Min. pressure of pressure cap.....	(70±5)kPa
Coolant resistance limit.....	90 kPa

## Intercooler

Cooling area.....	180 m <sup>2</sup>
Core material.....	T2,B10
Air resistance limit.....	20 kPa

## Coolant pump

Rotation speed.....	2700 r/min
Drive mode.....	gear driven

## Intake system

### Air filter

Max. intake resistance:

-Clean air filter .....	2.45 kPa
-Dirty air filter .....	6 kPa
-Air filter type.....	dry-type, filter cartridge of hardware cloth

### Inclination

Transverse inclination/longitudinal inclination (volume of engine oil sump: 400 L) .....

### Fuel system

Injection system.....electronic unit pump

### Injector

Type.....S type, with multiple jets  
Injector opening pressure.....Electronically controlled

### Fuel pump

Drive mode ..... Gear driven  
Fuel delivery pump flow @1,500 rpm ..... 10 L/min  
Max. fuel inlet temperature limit.....75 ℃

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

#### Pre- filter

Rated flow..... 40 L/min  
Max. original resistance..... 15kPa  
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..... 60 L/min  
Max. original resistance..... 10 kPa  
Filtering efficiency:  
For particles of 10 μm.....99.6 %  
For particles of 3 μm.....98.5 %

### Fuel consumption

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

Load condition	1,500 r/min	
	g/(kW·h)	L/h
Standby	212.1	784.6
Prime	206.3	693.8
75% prime	201.4	508.0
50% prime	205.9	346.2

### Lubricating system

- Total oil capacity(dry engine) .....520 L
- Total oil capacity(oil change) .....460 L
- Oil sump capacity .....460 L
- Max. oil temperature (in oil sump) .....110 °C
- Operating oil temperature(in oil sump)..... (70~110) °C
- Oil pressure(idle speed) ..... (200-500) kPa
- Oil pressure(rated speed)..... (400~700) kPa
- Oil-fuel consumption ratio..... <0.25 %

### Oil filter

- The filtering efficiency at the rated flow of 200 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

### Starter

- Type .....Electric start, 2
- Voltage ..... 24V
- Power ..... 2×11 kW
- Number of teeth of flywheel..... 199
- Number of teeth of starter..... 11

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

24 V					
Battery specification × quantity: 12V/210Ah×4 Attention: the minimum CCA of battery should not be less than 1200A when applied to the cold area or plateau.					
Starting temperature	°C	-15	-20	-25	-30
Starting speed	r/min	/	/	/	/
Starting current	A	/	/	/	/
Starting voltage	V	/	/	/	/
Starting time	s	/	/	/	/
Preheating time	s	/	/	/	/

### Water preheater

- Recommended specification. ....25 kW/380 V
- Engine preheater water outlet interface..... NPT1/2×2
- Engine preheater water inlet interface ..... NPT1×2

### Oil heater

- Recommended specification. ....2.22kW/220 V
- Interface (oil sump, 4)..... M22×1.5

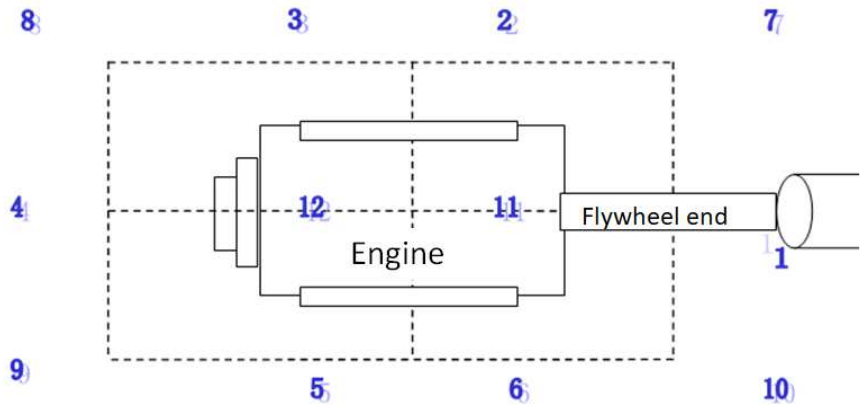
### Exhaust system

- Max. exhaust backpressure..... 10 kPa
- Inner diameter of single exhaust port pipe..... ≥Φ300 mm

### Noise

Noise data (2808 kW @ 1500 r/min)

Position	Noise, dB(A)
1	110.2
2	113.2
3	111.6
4	107.9
5	108.2
6	110.4
7	110.7
8	108.2
9	107.2
10	109.6
11	109.9
12	108.1



Noise spectrum (2808 kW @ 1500 r/min)

Frequency, Hz	Noise, dB(A)
63	53.9
125	71.9
250	88.3
500	89.2
1K	95.7
2K	94.1
4K	94.3
8K	103.7
16K	88.3

