Version: 2024V01 Implemented on: Jan. 30, 2024

YC16VC4900-D30

Prime power: 3280 kW @ 1500 r/min

Standby power: 3608 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^2

Flywheel ..... 29.36 kg·m^2

Performance rating

Speed droop ..... ≤0.5%

Steady state speed band ..... ≤0.5 %

Test conditions

Ambient temperature ..... 25 ℃

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 ℃

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 @ 1,500 r/min	
Gross engine power	kW	3608	3280
Net engine power	kW	3501	3173
Fan power consumption (Motor driven fan)	kW	105	105
Other power loss	kW	2	2
Mean effective pressure	MPa	2.74	2.49
Intake air flow	m^3 /min	329	298
Exhaust temperature limit (after turbocharger)	℃	≤580	≤560
Exhaust flow	m^3 /min	749	675
Boost pressure ratio		4.7	4.3
Thermal efficiency	%	38.2	39.2
Mean piston speed	m/s	10.5	10.5
Coolant flow(high temperature)	L/min	1800	1800
Coolant flow(low temperature)	L/min	2000	2000
Cooling fan air flow	m^3 /min	6300	6300
Typical gen-set electrical output (power factor:0.8)	kW	3300	3000
	kVA	4125	3750
Assumed generator efficiency	%	94.3	94.6

（Note: the engine does not have a fan, and the power consumption and air volume of the fan are for reference only. The parameters are designed and provided by each water tank manufacturer according to their own selection.）

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	9458	8369
Output power (gross)	kW	3608	3280
Output power (net)	kW	3501	3173
Fan power consumption	kW	105	105
Other power loss	kW	2	2
Heat dissipation capacity(coolant circulation)	kW	1220	1067
Heat dissipation capacity(intake intercooled system)	kW	1300	1122
Heat dissipation of exhaust	kW	3100	2700
Heat dissipation of thermal radiation	kW	220	190
Heat dissipation of fuel	kW	10	10

Cooling system

Total coolant capacity……..885 L

Engine coolant capacity……..450 L

Radiator coolant capacity……435 L

Pipeline coolant capacity……Calculate according to radiator pipe

Engine max. outlet coolant temperature(high temperature). ≤98℃

Engine max. inlet coolant temperature(low temperature)…. ≤64℃

Pressure difference between inlet and outlet of water pump

(max. hydrostatic head)……159/343 kPa

Thermostat operation temperature

Initial open…… (75±2)℃

full open…… ＜85℃

Max. coolant temperature rise(high temperature):

-Standby power……11.6℃

-Prime power……10.2℃

Max. coolant temperature rise(low temperature):

-Standby power……11.0℃

-Prime power……9.6℃

Radiator(horizontal)

Cooling area(high temperature)……1050m^2

Cooling area(low temperature)……1850m^2

Dry weight……2456kg

Core material……Aluminum

Width of core……/ mm

Height of core……/ mm

Min. pressure of pressure cap..... (70±5)kPa

Coolant resistance limit……50 kPa

Intercooler

Cooling area……220 m^2

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: 460 L) ..... . 20°/15°

Fuel system

Injection system……..…High pressure common rail

Injector

Type……Electronically controlled, with multi

Injector opening pressure……Electronically conti

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	220.6	953.2
Prime	214.6	843.0
75% prime	204.5	602.5
50% prime	208.5	409.5

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 ℃

Operating oil temperature(in oil sump)..... (70~110) ℃

Oil pressure(idle speed) ..... （200-500）kPa

Oil pressure(rated speed)..... (400~900) kPa

Oil-fuel consumption ratio.....＜0.5 %

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

Charger

Voltage 27V

Electric current .....55 A

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	℃	-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

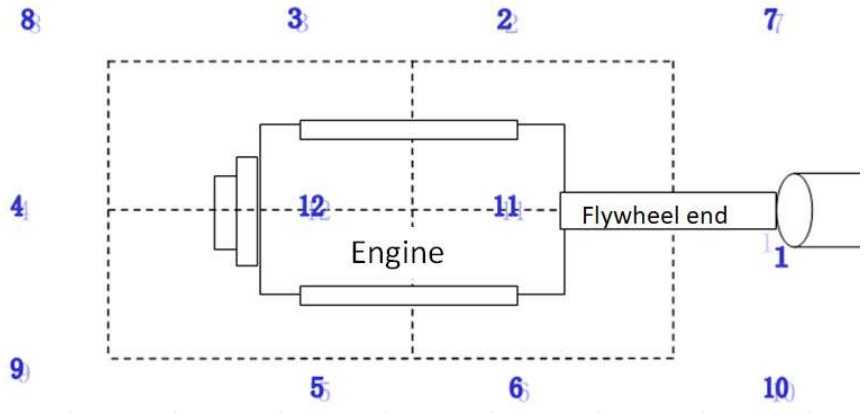
Max. exhaust backpressure..... 10 kPa

Inner diameter of single exhaust port pipe.....≥Φ300 mm

Noise

Noise data (3280 kW @ 1500 r/min)

Position	Noise, dB(A)
1	107.3
2	110.7
3	110.0
4	107.0
5	109.8
6	108.6
7	107.5
8	104.6
9	104.8
10	105.5
11	108.7
12	108.0



Noise spectrum (3280 kW @ 1500 r/min)

Frequency, Hz	Noise, dB(A)
63	50.7
125	75.7
250	81.9
500	86.5
1K	90.6
2K	90.0
4K	91.8
8K	100.3
16K	85.1

