

YC6MJ600-D30

Prime power: 401 kW @ 1,500 r/min
Standby power: 441 kW @ 1,500 r/min



Definition

Prime Power

It corresponds to the prime power (PRP) defined in GB/T 2820 and ISO 8528. Prime power (PRP) is the maximum power which an engine is capable of delivering continuously whilst supplying a variable electrical load when operated for an unlimited number of hours per year with the maintenance intervals and procedures being carried out as prescribed by Yuchai. The permissible average output power over 24h of operation shall not exceed 70% of PRP.

Standby Power

It corresponds to the emergency standby power (ESP) defined in GB/T 2820 and ISO 8528. Emergency standby power (ESP) is the maximum power available during a variable electrical power sequence, for which an engine is capable of delivering in the event of a utility power outage or under test conditions for up to 200h of operation per year with the maintenance intervals and procedures being carried out as prescribed by Yuchai. The permissible average output power over 24h of operation shall not exceed 70% of ESP.

Main technical parameters

Number of cylinders: 6
 Configuration: vertical, in-line
 Induction system: turbocharged & intercooled
 Combustion system: direct injection
 Compression ratio: 14:1
 Bore: 131 mm
 Piston stroke: 145 mm
 Displacement: 11.73 L
 Rotation: anticlockwise (viewed from flywheel)
 Firing order (cylinder 1 further from flywheel): 1-5-3-6-2-4
 Dry weight (without radiator): 1,050 kg
 Gross weight (without radiator): 1,100 kg

Dimension (L*W*H)

Length (from the front end of the radiator to the rear end of the air filter): 2,146 mm
 Width: 1,125 mm
 Height (including radiator and mounting support): 1,450 mm

Center of gravity (dry engine, with the center of rear face of flywheel housing as origin)

Forward of rear face of flywheel housing: 586 mm
 Above crankshaft center line: 181 mm

Offset RHS of center line from the crankshaft center line: 23 mm

Rotational inertia of shafting

Engine: 3.02 kg·m²
 Flywheel: 2.35 kg·m²

Performance level

Speed drop: ≤3%
 Speed fluctuation rate: ≤0.5%
 Speed governing mode: electronic

Test conditions

Ambient temperature: 25°C
 Atmospheric pressure: 100 kPa
 Relative humidity: 30%
 Intake resistance under maximum working condition: ≤5 kPa
 Exhaust back pressure limit: ≤10 kPa
 Fuel temperature (feed pump): 38±2°C

Note: Unless otherwise specified, the data in this parameter list are measured under test conditions. If the engine operates under test conditions other than those described above, appropriate adjustments shall be made according to the actual environment. For details, please contact the technical service department of Yuchai

Supporting Parameter List of YC6MJ600-D30 G-drive Diesel Engine (Basic Type)
Supporting parameters

| Item | Unit | Supporting Parameters | |
|--|---------------------|-----------------------|-------|
| | | Standby | Prime |
| | | 50 Hz @ 1500 r/min | |
| Total engine power | kW | 441 | 401 |
| Net engine power | kW | 427 | 387 |
| Fan power consumption | kW | 14 | 14 |
| Other power losses | kW | 0 | 0 |
| Mean effective pressure | MPa | 3.01 | 2.73 |
| Air intake flow | m ³ /min | 23.7 | 22.0 |
| Exhaust temperature limit (post-turbo) | °C | 550 | 550 |
| Exhaust flow | m ³ /min | 61.2 | 55.1 |
| Turbocharged pressure ratio | | 4.0 | 3.8 |
| Thermal efficiency | % | 40.7 | 41.6 |
| Mean movement speed of piston | m/s | 7.25 | 7.25 |
| Coolant flow | L/min | 400 | 400 |
| Fan air volume (at the static pressure of 640 kPa) | m ³ /min | 650 | 650 |
| Adaptive genset power (power factor: 0.8) | kW | 400 | 360 |
| | kVA | 500 | 450 |
| Assumed generator efficiency | % | 93.6 | 93.0 |

Heat balance

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

| Item | Unit | Supporting Parameters | |
|---|------|-----------------------|-------|
| | | Standby | Prime |
| | | 50 Hz @ 1500 r/min | |
| Total chemical energy of fuel | kW | 1084 | 965 |
| Output power (total) | kW | 441 | 401 |
| Output power (net) | kW | 427 | 387 |
| Fan power consumption | kW | 14 | 14 |
| Other power losses | kW | 0 | 0 |
| Heat dissipation of coolant | kW | 190 | 187 |
| Heat dissipation of intake intercooler | kW | 103 | 93 |
| Exhaust heat dissipation | kW | 316 | 254 |
| Heat dissipation through heat radiation | kW | 34 | 30 |

The values below are the heat dissipation of MJLE0-1316100A radiator at the ambient temperature of 50°C.

| Item | Unit | Supporting Parameters | |
|---|------|-----------------------|-------|
| | | Standby | Prime |
| | | 50 Hz @ 1500 r/min | |
| Total chemical energy of fuel | kW | 1118 | 1007 |
| Output power (total) | kW | 441 | 401 |
| Output power (net) | kW | 427 | 387 |
| Fan power consumption | kW | 14 | 14 |
| Other power losses | kW | 0 | 0 |
| Heat dissipation of coolant | kW | 192 | 189 |
| Heat dissipation of intake intercooler | kW | 105 | 94 |
| Exhaust heat dissipation | kW | 344 | 292 |
| Heat dissipation through heat radiation | kW | 36 | 31 |

Cooling system

| | |
|---|--------|
| Total coolant capacity: | 85.4 L |
| Coolant capacity of engine: | 18 L |
| Coolant capacity of radiator: | 63.4 L |
| Coolant capacity of pipeline: | 4 L |
| Maximum coolant outlet temperature of engine: | 99℃ |
| Thermostat working temperature: initial opening temperature: (80±2)℃; full opening temperature: | ≤90℃ |
| Maximum water temperature rise: | |
| -standby power | 8.5℃ |
| -prime power | 8℃ |

Radiator

| | |
|-----------------------------------|--------------------|
| Cooling area: | 168 m ² |
| Dry weight: | 288 kg |
| Material: | aluminum |
| Number of rows: | 115 |
| Core density: | 14 fins per inch |
| Core width: | 1,116 mm |
| Core height: | 1,140 mm |
| Minimum pressure of pressure cap: | (50±5) kPa |
| Resistance limit: | 30 kPa |

Intercooler

| | |
|-------------------|-------------------|
| Cooling area: | 82 m ² |
| Material: | aluminum |
| Number of rows: | 50 |
| Core density: | 12 fins per inch |
| Core width: | 1,062 mm |
| Core height: | 1,100 mm |
| Resistance limit: | <12.5 kPa |

Water pump

| | |
|-------------|-------------|
| Speed: | 2,893 r/min |
| Drive mode: | belt drive |

Fan

| | |
|---------------------|------------|
| Diameter: | 914 mm |
| Transmission ratio: | 1.04:1 |
| Material: | iron sheet |
| Number of blades: | 6 |
| Air blast/suction: | air blast |

Air intake system

Air filter

| | |
|----------------------------|-------------------------------|
| Maximum intake resistance: | |
| Clean air filter: | 3.5 kPa |
| Dirty air filter: | 5 kPa |
| Alarm value: | 6.2 kPa |
| Air filter type: | dry type paper filter element |

Inclination angle

| | |
|--|---------|
| Transverse/longitudinal inclination (oil volume of oil pan: 30 L): | 10°/10° |
|--|---------|

Fuel system

| | |
|------------------------|--|
| Fuel injection system: | electronically controlled high-pressure common rail type |
|------------------------|--|

Fuel injector

| | |
|-------------------------------------|---|
| Type: | electronically controlled injector with multiple jets |
| Starting pressure of fuel injector: | electronically controlled |

Fuel pump

| | |
|--|------------------|
| Drive type: | gear drive |
| Fuel delivery pump flow @ 1,500 rpm: | 4.1 L/min |
| Maximum fuel inlet temperature limit: | 70℃ |
| Permissible inlet pressure (absolute pressure) at the front end of fuel delivery pump: | (-100 ~ 150) kPa |
| Maximum fuel return pressure of fuel pump: | 20 kPa |

Fuel filter

Primary filter

| | |
|--|---------|
| Rated flow: | 7 L/min |
| Maximum original resistance: | 12 kPa |
| Water separation efficiency at rated flow: | ≥95% |
| Filter efficiency: | |
| at 25 μm | 99% |
| at 10 μm | 85% |

Secondary filter

| | |
|------------------------------|---------|
| Rated flow: | 7 L/min |
| Maximum original resistance: | 10 kPa |
| Filter efficiency: | |
| at 14 μm | 99.99% |
| at 6 μm | 99.9% |
| at 4 μm | 99.6% |

Fuel consumption

Note: The fuel density is 0.835 kg/L.

| Working condition | 1500 r/min | |
|-------------------|------------|-------|
| | g/(kW·h) | L/h |
| Standby | 206.9 | 109.3 |
| Prime | 202.6 | 97.3 |
| 75% of prime | 205.5 | 74.0 |
| 50% of prime | 205.1 | 49.3 |

Lubrication system

Total oil capacity (dry engine):.....37 L
 Total oil capacity (oil change):.....35 L
 Low/high level of oil capacity of oil pan:..... 28/35L
 Maximum oil temperature (oil pan):..... 120°C
 Maximum oil temperature (oil pan):..... (90~115)°C
 Idle oil pressure:..... ≥120 kPa
 Oil pressure at rated speed:..... (300~600) kPa
 Oil-fuel ratio:..... <0.1%

Oil filter

Filter efficiency under rated flow of 60 L/min and original resistance of assembly of ≤25 kPa:
 15 μm ≤ particle size < 20 μm.....>75%
 20 μm ≤ particle size < 30 μm.....>95%
 30 μm ≤ particle size < 40 μm.....>99%
 particle size ≥ 40 μm.....>99.9999%

Electrical system

Type:.....negative grounded

Charger (24V)

Voltage:..... 28 V
 Output current:.....55 A

Starter (24V)

Type:.....electronic, 1
 Voltage:.....24 V
 Power:.....9 kW
 Teeth number of flywheel:..... 119
 Teeth number of starter:..... 11

Cold start (test data, for reference only)

| 24V | | | | | |
|---|-------|--------------------|------|------|------|
| Battery specification × quantity 12V/200 Ah × 2 | | | | | |
| Starting temperature | °C | Normal temperature | -15 | -25 | -30 |
| Starting speed | r/min | 183 | 142 | 101 | 86 |
| Starting current | A | 203 | 374 | 421 | 504 |
| Starting voltage | V | 21.8 | 21.4 | 18.9 | 16.9 |
| Starting time | s | 1.3 | 7.2 | 2.1 | 4.5 |
| Warm-up time | s | 0 | 0 | 40 | 50 |

Intake auxiliary heating device

Type:..... grille
 Specification:.....2.2 kW

Coolant preheater

Recommended specification:.....3 kW/220 V
 Engine preheater outlet connector:..... NPT 1/2
 Engine preheater inlet connector:.....M14×1.5

Oil heater

Recommended specification:.....300 W/220 V
 Connector (oil pan, 1 Nr.):.....M22×1.5

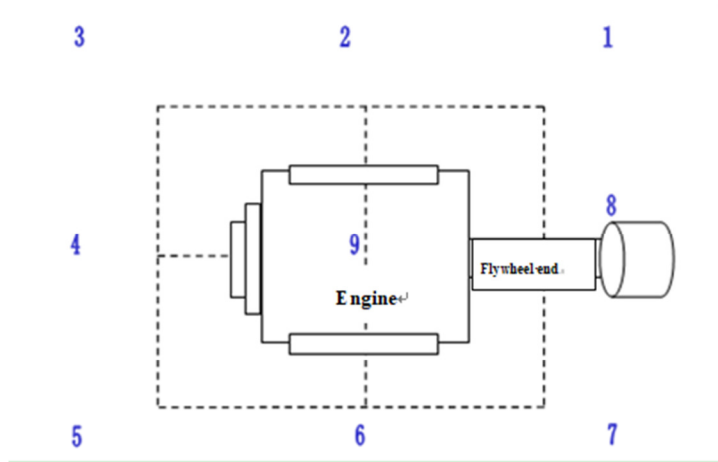
Exhaust system

Maximum exhaust back pressure:..... 10 kPa
 Inner diameter of exhaust port:.....φ125 mm

Noise

Noise data (401 kW @ 1,500 r/min)

| Position | Sound pressure level Lp, dB(A) |
|----------|--------------------------------|
| 1 | 92.6 |
| 2 | 100.1 |
| 3 | 94.6 |
| 4 | 94.4 |
| 5 | 91.4 |
| 6 | 95.9 |
| 7 | 92.3 |
| 8 | 94.5 |
| 9 | 96.9 |



Noise spectrum (401 kW @ 1,500 r/min)

| Frequency, Hz | Noise, dB(A) |
|---------------|--------------|
| 63 | 53.9 |
| 125 | 61.5 |
| 250 | 67.5 |
| 500 | 79.8 |
| 1K | 87.3 |
| 2K | 86.5 |
| 4K | 82.9 |
| 8K | 77.6 |
| 16K | 75.8 |

