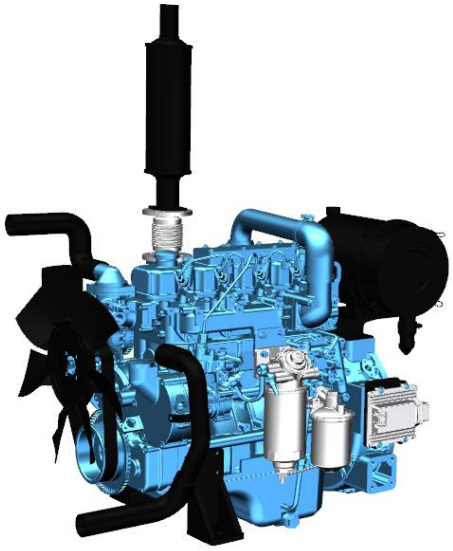
Version: 2023V01
Implementation from 2023-01-01

YCDV254FHZ-50

Prime power: 36.8 kW @ 1500 r/min
Standby power: 40.5 kW @ 1500 r/min



Definitions

Prime Power:

It aligns with the basic power PRP defined in GB/T 2820 and ISO 8528. On the condition that maintenance is carried out according to the intervals and methods defined by Yuchai, it represents the maximum power continuously output by variable loads, without limit on the annual running time. The allowable average output power in a 24h cycle should not be greater than 70% of the prime power.

Standby Power:

It aligns with the Emergency Standby Power (ESP) defined in GB/T 2820 and ISO 8528. On the condition that maintenance is carried out according to the intervals and methods defined by Yuchai, when the public power grid fails or (or the engine runs up to 200h per year under the test conditions), it means the maximum power of a certain variable power series. The allowable average output power within a 24h operating cycle should not be greater than 70% of the standby power.

Main technical parameters:

number of cylinders	4
cylinder arrangement	vertical
air intake	turbo supercharging
combustion system	direct injection
compression ratio	17.5:1
cylinder diameter	89 mm
piston stroke	100 mm
total piston displacement	2.5L
crankshaft rotation steering	counterclockwise (viewed from flywheel end)
firing sequence (the one farthest from the flywheel is cylinder 1)	1-3-4-2
dry weight (without water tank)	230 kg
wet weight (without water tank)	250 kg

Dimensions:

L (from the front of the radiator to the rear of the air filter)	760 mm
W	630 mm
H (including radiator and mounting feet)	740 mm

Rotational inertia of shaft system:

flywheel	0.31 kg·㎡

Performance level:

speed drop	≤1%
speed fluctuation rate	≤0.5%
speed regulation form	Electrically controlled high voltage common rail

Test conditions:

ambient temperature	25 ℃
atmospheric pressure	100 kPa
relative humidity	30 %
intake resistance under maximum working condition	≤5 kPa
exhaust back pressure limit	≤10 kPa
fuel temperature (intake pump)	38±2 ℃

Note: Unless otherwise specified, the data in this parameter table are measured under this test condition. If the engine is used under test conditions other than the above test conditions, it should be properly adjusted according to the actual environment. For details, please contact Yuchai's technical service department.

Supporting parameters:

Item	Unit	Supporting parameters	
		Prime	Standby
		50 Hz @ 1500 r/min	
total engine power	kW	36.8	40.5
engine net power	kW	34.3	38
fan power consumption	kW	1.5	1.5
other power losses	kW	1	1
mean effective pressure	MPa	1.183	1.3
intake flow	m^3 /min	2.17	2.24
exhaust temperature limit (post turbo)	℃	550	550
exhaust flow	m^3 /min	4.87	5.14
turbocharging pressure ratio		2.41	2.46
thermal efficiency	%	36.9	36.6
piston average moving speed	m/s	5	5
coolant flow	L/min	60	60
fan air volume	m^3 /min	90	90
adapted unit power (power factor: 0.8)	kW	30	33
	kVA	37.5	41.3
assumed generator efficiency	%	80	80

Thermal equilibrium:

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

Item	Unit	Supporting parameters	
		Prime	Standby
		50 Hz @ 1500 r/min	
total fuel chemical energy	kW	100	110
output power (total)	kW	36.8	40.5
output power (net)	kW	34.3	38
fan power consumption	kW	1.5	1.5
other power losses	kW	1	1
coolant heat dissipation	kW	32.5	33
intake air inter-cooling heat dissipation	kW	/	/
exhaust heat dissipation	kW	23	24.5
thermal radiation heat dissipation	kW	7.7	12

Heat dissipation of water tank at an ambient temperature of 50 ℃:

Item	Unit	Supporting parameters	
		Prime	Standby
		50 Hz @ 1500 r/min	
total fuel chemical energy	kW	103	114
output power (total)	kW	36.8	40.5
output power (net)	kW	34.3	38
fan power consumption	kW	1.5	1.5
other power losses	kW	1	1
coolant heat dissipation	kW	34.5	35
intake air inter-cooling heat dissipation	kW	/	/
exhaust heat dissipation	kW	24	25.5
thermal radiation heat dissipation	kW	7.7	13

Cooling system

total coolant capacity	12.5 L
engine coolant capacity	2.5 L
radiator coolant capacity	8 L
pipeline coolant capacity	2 L
maximum engine water outlet temperature	97 ℃
thermostat working temperature	initial working (78±2) ℃, full working ＜86 ℃

Maximum water temperature rise value:

-standby power: 8 ℃

-prime power: 7 ℃

Radiator

cooling area	20 ㎡
dry weight of water tank intercooler	25 kg
material	aluminum
core density	/mm
core width	640 mm
core height	628 mm
minimum pressure of pressure cap	(75±5) kPa
resistance limit value	5kPa

Water pump

speed	4200 r/min
drive method	belt drive

Fan

diameter	430 mm
transmission ratio	1.41:1
material	plastic
number of blades	7
blow / suction	blow

Air intake system

Air filter

Maximum intake resistance:

clean air filter	2.5 kPa
dirty air filter	5 kPa
air filter form	dry paper filter element

Dip angle

lateral dip	±10 °
longitudinal dip	±10 °

Fuel system

Injection type	electrically controlled high voltage common rail

Fuel injector

type	electronically controlled ejectors + porous ejectors
fuel injector opening pressure	electronically controlled

Fuel pump

transmission type	gear transmission
fuel inlet pump flow rate @ 1500 rpm	1.0 L/min
maximum fuel inlet temperature limit	45 ℃
inlet pressure at the front end of the fuel inlet pump (absolute pressure)	（35-100）kPa
maximum diesel return pressure of the fuel pump	20kPa

Diesel filter

Fine filtration

rated flow rate	3 L/h
maximum original resistance	13 kPa

Filtering efficiency:

when≥4μm	≥98.5 %
at 6-14 μm	≥99 %
when ≥14μm	≥99.99 %

Fuel consumption

Note: Diesel density at 0.835 kg/L

working condition	1500r/min	
	g/(kW ħ)	L/h
standby	230	11.2
prime	228.3	10.1
75% prime	238.5	7.9
50% prime	247.9	5.5

Lubricating system

total oil capacity (dry engine)	7 L
total oil capacity (oil change)	6.5 L
oil pan oil capacity low/high	4/6 L
maximum oil temperature (oil pan)	120 ℃
working oil temperature (oil pan)	(90-115) ℃
idle oil pressure	≥ 100 kPa
rated speed oil pressure	(250-600) kPa
ratio of oil consumption to fuel consumption	＜ 0.2%

Oil filter

When the original resistance of the assembly is ≤ 25kPa at a rated flow rate of 16L/min,

Filtering efficiency:

when 15μm≤particles＜20μm	＞75 %
when 20μm≤particles＜30μm	＞95 %
when 30μm≤particles＜40μm	＞99 %
when particles≥40μm	＞99.9999 %

Electrical system

type	negative grounding

Charger

voltage	14V
output current	35A

Starter

type	electric starting, 1 unit
voltage	12V
power	3.8 kW
flywheel tooth count	117
starter tooth count	11

Cold start (test data for reference only)

24V					
Battery specification×Quantity 12V/120Ah×2					
starting temperature	℃	-15	-20	-25	-30
starting speed	r/min	215	185	153	138
starting current	A	246	305	342	372
starting voltage	V	20.16	18.96	18.48	17.90
starting time	s	2.6	2.9	4.8	5.6
preheating time	s	0	40	50	60
12V					
Battery specification×Quantity 12V/180Ah×1					
starting temperature	℃	-15	-20	-25	-30
starting speed	r/min	151	138	126	120
starting current	A	497	532	583	607
starting voltage	V	11.16	10.32	9.72	9.48
starting time	s	3.4	4.9	6.8	7.2
preheating time	s	0	45	50	60

Air intake auxiliary heating device

type	Preheating grid
specification	0.5 kW

Water preheater

recommended specification	2 kW/220V
engine preheating water outlet interface	Φ16
engine preheating water inlet interface	NPT 1/4

Oil heater

recommended specification	150W/220V

interface (oil pan, 1, shared with oil drain hole)	M14×1.5

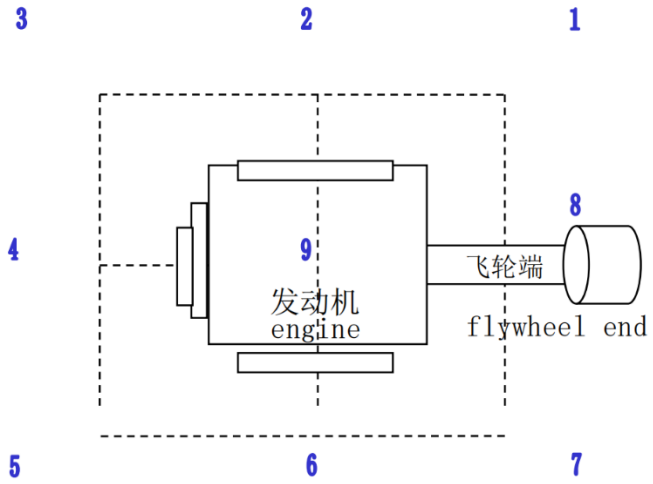
Exhaust system

maximum exhaust back pressure	10 kPa
inner diameter of exhaust port	Φ48mm

Noise

Noise data (36.8 kW @ 1500 r/min)

Position	Sound pressure level Lp, dB(A)
1	80.7
2	86.8
3	85.5
4	90.5
5	86.6
6	87.7
7	79.9
8	81
9	85.3



Noise spectrum (36.8kW @ 1500 r/min)

Frequency, Hz	Noise, dB(A)
63	43.2
125	55
250	70.6
500	72.7
1K	75.8
2K	76.6
4K	75.1
8K	64.6
16K	43.2