

CAT3516B 1820KW Prime Diesel Generator

1.Scopy of Supply

CAT3516B 1820KW/2275KVA 10.5KV 50Hz 0.8pf Prime Diesel Generatorset

Air intake system

Air filter, single core tank type, with maintenance indicator

Cooling system

SCAC for cylinder liner water cooling system

Cooling water tank

Fan and fan drive

Fan and belt protective cover

Drain pipe with valve

Caterpillar Long Life Coolant

Exhaust system

Dry exhaust manifold

Flange outlet

Two 8-inch stainless steel corrugated pipes

Fuel system

Fuel fine filter

fuel cooler

Fuel hose - loose

Hand oil pump

Oil water separator

Generator and generator accessories

3-phase 4-wire, brushless, salient pole, 5/6 pitch

Caterpillar permanent magnet excitation

6 leads

Digital voltage regulator, reactive power/power factor control, RFI suppressor, minimum/maximum excitation limit, excitation diode monitoring;

H-class insulation, F-class temperature rise

Reactive voltage drop regulation

Terminal strip

Speed control system

Caterpillar electronic control unit ADEM3

Lubrication system

Lubricating oil

Gear type lubricating oil pump

Engine oil cooler

Oil filter, oil filler, and oil level gauge

Oil drain pipe with valve

Crankcase ventilation pipe

Installing the system

The radiator, diesel engine, and generator are installed on a common chassis

Spring damping pad

编制人:

审核人:

批准:

日期: 2023-09-12

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Starting system/charging system

45A charging generator

DC 24V starting motor

Battery, battery cable and battery bracket

Battery negative shut-off switch

Other attachments:

Generator anti-condensation and dehumidification heater 1.2kw 220v (installed)

Cylinder liner water heater 9KW 400v three-phase (installed)

2. Technical specifications

Caterpillar diesel engine

3516B TA, V-16, 4-stroke water-cooled diesel engine

Cylinder diameter: 170.00 mm (6.69 in)

Stroke: 215.00 mm (8.46 in)

Displacement: 78.08 L (4764.73 in³)

Compression ratio: 15.5:1

Aspirated: Supercharged cooling

Fuel system: Caterpillar unit pump

Governor type: Caterpillar ADEM3

Caterpillar generator

Frame size: Y5060H4

Excitation: Caterpillar permanent excitation

Pitch: 0.8333

Number of poles: 4

Number of bearings: double bearings

Number of leads: 6

IP level: IP23

Consistency: Guide Axis

Overspeed capacity: 120% of rated speed

Waveform deviation (line to line): 2%

Voltage regulator: digital voltage regulator

Voltage regulation: below $\pm 1/2\%$ (steady state)

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Telephone sensing influence coefficient: less than 50

Harmonic distortion: less than 5%

Caterpillar EMCP 4 Control Instrument Panel

EMCP 4.4

Programmable relay protection function: 8 programmable digital inputs, 8 A-type dry contacts

Operation/automatic/shutdown control, speed regulation, voltage regulation, local and remote emergency shutdown, MODBUS communication

The digital indication items include:

Engine speed RPM, operating hours, oil pressure, coolant temperature, start counter, system DC voltage

Line voltage, phase voltage, average voltage, phase current, frequency

Unit protection and alarm/shutdown include:

Control switch not in automatic mode, low lubricating oil pressure, high coolant temperature, low coolant level, overspeed, excessive turning

Parallel function:

Automatic parallel connection

In automatic parallel mode, the EMCP 4.4 controller automatically adjusts the voltage and frequency of the generator set. When the generator output is synchronized with the second source, the EMCP 4.4 controller provides a signal to close the generator circuit breaker.

Manual parallel connection

In manual parallel mode, the operator will manually adjust the voltage and frequency of the generator set. When the generator set is synchronized with the second source, the operator will initiate the generator circuit breaker closing command. It has a 3-phase synchronization check function to prevent out of phase parallel connection.

Synchronous check mode

In synchronous check mode, the EMCP 4.4 controller automatically adjusts the voltage and frequency of the generator set and does not provide a signal to close the generator circuit breaker. When the generator set is synchronized with the second source, the operator will initiate the generator circuit breaker closing command. It has a 3-phase synchronization check function to prevent out of phase parallel connection.

Soft loading/unloading

When distributing loads, soft loading and soft unloading reduce instability and equipment risks by increasing or decreasing the load in a controlled manner before controlling the closure or disconnection of the development motor circuit breaker.

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Technical data

Low BSFC	
Generator set performance	
Rated power of generator set @ 0.8 pf	2275 kVA
Rated power of generator set with fan	1820 ekW
Fuel consumption	
With fan, 100% load	470.8 L/hr
With fan, 75% load	346.3 L/hr
With fan, 50% load	239.2 L/hr
Cooling system	
Air throttle (system)	0.12 kPa
Air flow rate (maximum value at rated speed of radiator configuration)	2254 m³/min
Engine/coolant/capacity/with radiator/expansion tank	380.2 L
Engine coolant capacity	233 L
Radiator coolant capacity	131 L
Inlet	
Combustion intake air flow rate	151.7 m³/min
Exhaust system	
Exhaust pipe gas temperature	554.3°C
Exhaust flow rate	443.2 m³/min
Exhaust pipe flange size (inner diameter)	203.2 mm
Exhaust system back pressure (maximum allowable value)	6.7 kPa
Heat removal	
Heat dissipation of coolant (all)	751 kW
Heat dissipation of exhaust pipe (all)	2080 kW
Heat dissipated from the engine to the atmosphere	166 kW
The heat emitted from the generator into the atmosphere	94 kW
Alternator	
Motor starting capacity at 30% pressure drop	3167 skVA
Frame	Y5060H4
Temperature rise	105°C
Lubrication system	
Oil Pan with Filter/Filling	401.3 L