

راد دیزل نمایندگی ژنراتور کاترپیلار

021-58437

www.raddiesel.ir

| موتور دیزل | | |
|--|-----------------------------|---------------------------|
| Manufacturer | Caterpillar | تولید کننده |
| Model | 3516C-HD TA | مدل |
| Number of cylinders | 12 | تعداد سیلندر ها |
| Cylinder arrangement | vertical | آرایش سیلندر ها |
| Displacement , Liters | 78.08 | جا به جایی |
| Bore × Stroke , mm | 170× 215 | قطر سیلندر × کورس پیستون |
| Compression Ratio | 14.0:1 | نسبت تراکم |
| Aspiration | Turbocharged Aftercooled | سیستم تنفس |
| Gross engine power, kWb | 2000 | قدرت نافالص موتور |
| Fan Power, kWm | 2200 | قدرت فن |
| Combustion air flow, m ³ /min | 183.7 | جریان هوای احتراق |
| Exhaust gas temp.(after turbo) , °C | 477.8 ° | دمای گاز خروجی از اگزوز |
| Exhaust gas flow (after turbo) , m ³ /min | 484.2 | جریان هوای خروجی از اگزوز |



ژنراتور

| | | |
|-------------------------------------|---------------------------|----------------------------|
| Manufacturer | Caterpillar | تولید کننده |
| Standby power at rated voltage ,KVA | 2750 | توان standby در ولتاژ نامی |
| Efficiency, % | 90.3 | راندمان |
| Power factor | 0.8 | ضریب قدرت |
| Phase | 3 | فاز |
| Frequency, Hz | 50 | فرکانس |
| Speed, Rpm | 1500 | سرعت |
| Voltage, V | 380 | ولتاژ |
| Excitation | PM | سیستم تمریک |
| Voltage Regulator | Three phase sensing | رگولاتور ولتاژ |
| Voltage Regulation, % | Less than +/- 1/2% | تنظیم ولتاژ |
| Over speed, Rpm | 2250 | مداکثر سرعت مجاز |
| Insulation class | H | کلاس عایق |
| Connection | Terminal strip connection | اتصال |
| Protection class | IP23 | کلاس حفاظتی |

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DIESEL GENERATOR SET

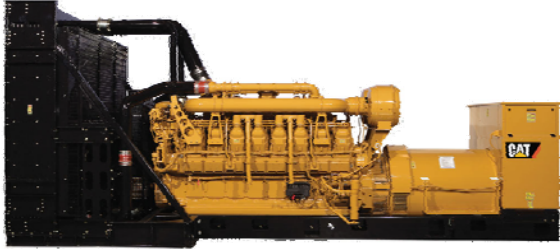


Image shown may not reflect actual package

Standby 2200 ekW 2750 kVA 50 Hz 1500 rpm 11000 Volts

Caterpillar is leading the power generation Market place with Power Solutions engineered to deliver unmatched flexibility, expandability, reliability, and cost-effectiveness.

FUEL/EMISSIONS STRATEGY

- Low fuel consumption

DESIGN CRITERIA

- The generator set accepts 100% rated load in one step per NFPA 110 and meets ISO 8528-5 transient response.

FULL RANGE OF ATTACHMENTS

- Wide range of bolt-on system expansion attachments, factory designed and tested
- Flexible packaging options for easy and cost effective installation

SINGLE-SOURCE SUPPLIER

- Fully prototype tested with certified torsional vibration analysis available

WORLDWIDE PRODUCT SUPPORT

- Cat[®] dealers provide extensive post sale support including maintenance and repair agreements
- Cat dealers have over 1,800 dealer branch stores operating in 200 countries.
- The Cat S•O•SSM program effectively detects internal engine component condition, even the presence of unwanted fluids and combustion by-products.

CAT[®] 3516C-HD TA DIESEL ENGINE

- Reliable, rugged, durable design
- Four-stroke diesel engine combines consistent performance and excellent fuel economy with minimum weight

CAT GENERATOR

- Matched to the performance and output characteristics of Cat engines
- Industry leading mechanical and electrical design
- High efficiency

CAT EMCP 4 CONTROL PANELS

- Simple user friendly interface and navigation
- Scalable system to meet a wide range of customer needs
- Integrated Control System and Communications Gateway

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FACTORY INSTALLED STANDARD & OPTIONAL EQUIPMENT

| System | Standard | Optional |
|---------------------|--|--|
| Air Inlet | <ul style="list-style-type: none">• Single element canister type air cleaner with service indicator | <input type="checkbox"/> Dual element air cleaners |
| Cooling | <ul style="list-style-type: none">• Package mounted radiator | |
| Exhaust | <ul style="list-style-type: none">• Exhaust flange outlet | <input type="checkbox"/> Mufflers |
| Fuel | <ul style="list-style-type: none">• Secondary fuel filters• Fuel cooler• Fuel priming pump | |
| Generator | <ul style="list-style-type: none">• Matched to the performance and output characteristics of Cat engines | <input type="checkbox"/> Oversize & premium generators <input type="checkbox"/> Permanent magnet excitation (PMG) <input type="checkbox"/> Winding temperature detectors <input type="checkbox"/> Anti-condensation space heaters |
| Power Termination | <ul style="list-style-type: none">• Bus bar | <input type="checkbox"/> Circuit breakers, UL listed <input type="checkbox"/> Bottom cable entry <input type="checkbox"/> Right, left, and/or rear power termination |
| Governor | <ul style="list-style-type: none">• ADEM™ A3 | <input type="checkbox"/> Load share module |
| Control Panel | <ul style="list-style-type: none">• EMCP 4 | <input type="checkbox"/> EMCP 4.2 <input type="checkbox"/> EMCP 4.3 <input type="checkbox"/> EMCP 4.4 <input type="checkbox"/> Local & remote annunciator modules <input type="checkbox"/> Digital I/O Module <input type="checkbox"/> Generator temperature monitoring & protection |
| Mounting | | <input type="checkbox"/> Spring type vibration isolator <input type="checkbox"/> IBC 2006 seismic certification |
| Starting / Charging | <ul style="list-style-type: none">• 24 volt starting motor(s)• Batteries with rack and cables• Battery disconnect switch | <input type="checkbox"/> Battery chargers (10 & 20 Amp) <input type="checkbox"/> 45A charging alternator <input type="checkbox"/> Oversize batteries <input type="checkbox"/> Ether starting aids <input type="checkbox"/> Heavy duty starting motors <input type="checkbox"/> Barring device (manual) <input type="checkbox"/> Air starting motor with control & silencer <input type="checkbox"/> Jacket water heater |
| General | <ul style="list-style-type: none">• Paint – Caterpillar Yellow except rails and radiators gloss black | <input type="checkbox"/> UL 2200 listed <input type="checkbox"/> CSA Certification |

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SPECIFICATIONS

CAT GENERATOR

Frame 3010
Excitation PM
Pitch..... 0.6667
Number of poles.....4
Number of bearings2
Insulation.. Class H w/tropicalization and antiabrasion
IP ratingDrip proof IP23
Over speed capability - % of rated.....125%
Wave form deviation..... 3 %
Voltage regulator..... 3 phase sensing

CAT DIESEL ENGINE

3516C-HD, ATAAC, V-16, 4-Stroke Water-cooled Diesel

Bore170.00 mm (6.69 in)
Stroke215.00 mm (8.46 in)
Displacement78.08 L (4764.73 in³)
Compression ratio.....14.0:1
Aspiration.....TA
Fuel system.....Electronic unit injection
Governor Type.....ADEM3

CAT EMCP 4 CONTROL PANELS

EMCP 4 controls including:

- Run / Auto / Stop Control
- Speed and Voltage Adjust
- Engine Cycle Crank
- 24-volt DC operation
- Environmental sealed front face
- Text alarm/event descriptions

Digital indication for:

- RPM
- DC volts
- Operating hours
- Oil pressure (psi, kPa or bar)
- Coolant temperature
- Volts (L-L & L-N), frequency (Hz)
- Amps (per phase & average)
- ekW, kVA, kVAR, kW-hr, %kW, PF

Warning/shutdown with common LED indication of:

- Low oil pressure
- High coolant temperature
- Overspeed
- Emergency stop
- Failure to start (overcrank)
- Low coolant temperature
- Low coolant level

Programmable protective relaying functions:

- Generator phase sequence
- Over/Under voltage (27/59)
- Over/Under Frequency (81 o/u)
- Reverse Power (kW) (32)
- Reverse reactive power (kVA) (32RV)
- Overcurrent (50/51)

Communications:

- Six digital inputs (4.2 only)
- Four relay outputs (Form A)
- Two relay outputs (Form C)
- Two digital outputs
- Customer data link (Modbus RTU)
- Accessory module data link
- Serial annunciator module data link
- Emergency stop pushbutton

Compatible with the following:

- Digital I/O module
- Local Annunciator
- Remote CAN annunciator
- Remote serial annunciator

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50 Hz 1500 rpm 11000 Volts



Technical Data

| Open Generator Set - 1500 rpm/50 Hz | DM8444 | |
|---|---------------------------|---------------|
| Optimized for low fuel consumption | | |
| Generator Set Package Performance | | |
| Genset Power rating @ 0.8 pf | 2750 kVA | |
| Genset Power Rating | 2200 ekW | |
| Fuel Consumption | | |
| 100% Load with fan | 572.3 L/hr | 151.2 Gal/hr |
| 75% Load with fan | 437.1 L/hr | 115.5 Gal/hr |
| 50% Load with fan | 300.9 L/hr | 79.5 Gal/hr |
| Inlet Air | | |
| Combustion air inlet flow rate | 183.7 m ³ /min | 6487 cfm |
| Exhaust System | | |
| Exhaust stack gas temperature (engine out) | 477.8 °C | 892 °F |
| Exhaust gas flow rate | 484.2 m ³ /min | 17097.8 cfm |
| Exhaust system backpressure (maximum allowable) | 6.7 kPA | 26.9 in water |
| Heat Rejection | | |
| Heat rejection to jacket water | 757 kW | 43050 Btu/min |
| Heat rejection to exhaust | 218 kW | 12394 Btu/min |
| Heat rejection to aftercooler | 594 kW | 33781 Btu/min |
| Heat rejection to atmosphere from engine | 147 kW | 8360 Btu/min |
| Heat rejection to atmosphere from generator | 93.75 kW | 5336 Btu/min |
| Alternator | | |
| Motor starting capability @30% voltage dip | 5668 skVA | |
| Frame | 3010 | |
| Temperature Rise | 130 °C | 234 °F |
| Lube System | | |
| Sump refill with filter | 675 L | 123.1 gal |
| Emissions (Nominal)² | | |
| NO _x g/hp-hr | 5.25 g/hp-hr | |
| CO g/hp-hr | 0.38 g/hp-hr | |
| HC g/hp-hr | 0.02 g/hp-hr | |
| PM g/hp-hr | 0.02 g/hp-hr | |

¹ Some packages may have oversized generators with a different temperature rise and motor starting characteristics

Generator temperature rise is based on a 40° C ambient per NEMA MG1-32

² Emissions data measurement procedures are consistent with those described in EPA CFR 40 Part 89, Subpart D & E and ISO8179-1 for measuring HC, CO, PM, NO_x

Data shown is based on steady state operating conditions of 77°F, 28.42 in HG and number 2 diesel fuel with 35° API and LHV of 18,390 btu/lb. The nominal emissions data shown is subject to instrumentation, measurement, facility and engine to engine variations.

Emissions data is based on 100% load and thus cannot be used to compare to EPA regulations which use values based on a weighted cycle.

Values shown as zero may be greater than zero but were below the detection level of the equipment used at the time of measurement.

Emissions values are tailpipe out with aftertreatment installed.

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RATING DEFINITIONS AND CONDITIONS

Applicable Codes and Standards: AS1359, CSA C22.2 No 100-04, UL142, UL489, UL601, UL869, UL2200, NFPA 37, NFPA 70, NFPA 99, NFPA 110, IBC, IEC60034-1, ISO3046, ISO8528, NEMA MG 1-22, NEMA MG 1-33, 72/23/EEC, 98/37/EC, 2004/108/EC

Standby - Output available with varying load for the duration of the interruption of the normal source power. Average power output is 70% of the standby power rating. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year.

Ratings are based on SAE J1349 standard conditions. These ratings also apply at ISO3046 standard conditions

Fuel Rates are based on fuel oil of 35° API [16° C (60° F)] gravity having an LHV of 42 780 kJ/kg (18,390 Btu/lb) when used at 29° C (85° F) and weighing 838.9 g/liter (7.001 lbs/U.S. gal.). Additional ratings may be available for specific customer requirements, contact your Cat representative for details. For information regarding Low Sulfur fuel and Biodiesel capability, please consult your Cat dealer.

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DIMENSIONS

| Package Dimensions | | |
|--------------------|---------|----------|
| Length | 6951 mm | 273.7 in |
| Width | 2569 mm | 101.1 in |
| Height | 3095 mm | 121.9 in |

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