

DIESEL GENERATOR SET



Engine Technical Data

| Physical Data | |
|--|---------------------------------------|
| Manufacturer: | Caterpillar |
| Model: | C7.1 |
| No. of Cylinders/Alignment: | 6 / In Line |
| Cycle: | 4 Stroke |
| Induction: | Turbocharged Air To Air Charge Cooled |
| Cooling Method: | Water |
| Governing Type: | Mechanical |
| Governing Class: | ISO 8528 G2 |
| Compression Ratio: | 16.0:1 |
| Displacement: l (cu.in) | 7.0 (427.8) |
| Bore/Stroke: mm (in) | 105.0 (4.1)/135.0 (5.3) |
| Moment of Inertia: kg m ² (lb. in ²) | 1.53 (5228) |
| Engine Electrical System: | |
| -Voltage/Ground: | 12/Negative |
| -Battery Charger Amps: | 85 |
| Weight: kg (lb) - Dry: | 788 (1737) |
| - Wet: | 822 (1812) |

| Air System | 50 Hz | 60 Hz |
|---|-----------------------------|--------------|
| Air Filter Type: | Paper Element | |
| Combustion Air Flow: | | |
| m ³ /min (cfm) | -Standby: 10.7 (377) | 15.0 (529) |
| | -Prime: 10.0 (354) | 14.4 (509) |
| Max. Combustion Air Intake | | |
| Restriction: kPa (in H ₂ O) | 3.0 (12.0) | 3.0 (12.0) |
| Radiator Cooling Air Flow: | | |
| m ³ /min (cfm) | 303.4 (10714) | 239.4 (8454) |
| External Restriction to | | |
| Cooling Air Flow: Pa (in H ₂ O) | 125 (0.5) | 125 (0.5) |

| Cooling System | 50 Hz | 60 Hz |
|---|------------------------------|-------------|
| Cooling System Capacity: | | |
| l (US gal) | 21.0 (5.5) | 21.0 (5.5) |
| Water Pump Type: | Centrifugal | |
| Heat Rejected to Water & Lube Oil: kW (Btu/min) | | |
| -Standby: | 75.7 (4305) | 80.1 (4555) |
| -Prime: | 69.1 (3930) | 73.5 (4180) |
| Heat Radiation to Room: Heat radiated from engine and alternator | | |
| kW (Btu/min) | -Standby: 22.3 (1268) | 25.0 (1422) |
| | -Prime: 20.0 (1137) | 22.6 (1285) |
| Radiator Fan Load: kW (hp) | 4.5 (6.0) | 8.0 (10.7) |
| Cooling system designed to operate in ambient conditions up to 50°C (122°F). Contact your local Cat dealer for power ratings at specific site conditions. | | |

| Lubrication System | |
|---------------------------------------|----------------------|
| Oil Filter Type: | Spin-On, Full Flow |
| Total Oil Capacity I (US gal): | 16.5 (4.4) |
| Oil Pan I (US gal): | 14.9 (3.9) |
| Oil Type: | API CH4 / CI4 15W-40 |
| Cooling Method: | Water |

| Performance | 50 Hz | 60 Hz |
|------------------------------------|----------------|----------------|
| Engine Speed: RPM | 1500 | 1800 |
| Gross Engine Power: kW (hp) | | |
| -Standby: | 149.1 (200.0) | 171.8 (230.0) |
| -Prime: | 136.0 (182.0) | 155.4 (208.0) |
| BMEP: kPa (psi) | | |
| -Standby: | 1701.0 (246.7) | 1633.0 (236.8) |
| -Prime: | 1551.0 (225.0) | 1477.0 (214.2) |
| Regenerative Power: kW | 6.7 | 7.7 |

| Fuel System | | | | |
|---|----------------------------|------------------|-----------------|-----------------|
| Fuel Filter Type: | Replaceable Element | | | |
| Recommended Fuel: | Class A2 Diesel or BSEN590 | | | |
| Fuel Consumption: l/hr (US gal/hr) | | | | |
| | 110% Load | 100% Load | 75% Load | 50% Load |
| Prime | | | | |
| 50 Hz | 35.1 (9.3) | 32.4 (8.6) | 25.0 (6.6) | 16.7 (4.4) |
| 60 Hz | 41.6 (11.0) | 37.9 (10.0) | 29.2 (7.7) | 19.9 (5.3) |
| Standby | | | | |
| 50 Hz | | 35.1 (9.3) | 27.3 (7.2) | 18.4 (4.9) |
| 60 Hz | | 41.6 (11.0) | 32.1 (8.5) | 22.0 (5.8) |
| (based on diesel fuel with a specific gravity of 0.85 and conforming to BS2869, Class A2) | | | | |

| Exhaust System | 50 Hz | 60 Hz |
|---|-----------------------------|-------------|
| Silencer Type: | Industrial | |
| Silencer Model & Quantity: | EXSY2 (1) | |
| Pressure Drop Across | | |
| Silencer System: kPa (in Hg) | - | - |
| Silencer Noise Reduction | | |
| Level: dB | - | - |
| Max. Allowable Back | | |
| Pressure: kPa (in. Hg) | 6.0 (1.8) | 6.0 (1.8) |
| Exhaust Gas Flow: | | |
| m ³ /min (cfm) | -Standby: 25.5 (902) | 32.2 (1137) |
| | -Prime: 23.9 (843) | 31.9 (1125) |
| Exhaust Gas Temperature: °C (°F) | | |
| -Standby: | 484 (903) | 407 (765) |
| -Prime: | 484 (903) | 407 (765) |

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Generator Performance Data

| Data Item | 50 Hz | | | | 60 Hz | | | | |
|--------------------------------|----------|----------------------------------|----------------------|----------|----------------------|----------------------|----------------------|--|----------------------|
| | 415/240V | 400/230V 230/115V 200/115V | 380/220V 220/110V | 220/127V | 480/277V 240/139V | 380/220V 220/110V | 240/120V 208/120V | | 440/254V 220/127V |
| Motor Starting Capability* kVA | 232 | 218 | 194 | 261 | 211 | 161 | 187 | | 195 |
| Short Circuit Capacity** % | 300 | 300 | 300 | 300 | 300 | 300 | 300 | | 300 |
| Reactances: Per Unit | | | | | | | | | |
| Xd | 2.750 | 2.960 | 3.280 | 2.450 | 2.780 | 3.350 | 3.700 | | 3.310 |
| X'd | 0.240 | 0.260 | 0.290 | 0.210 | 0.240 | 0.390 | 0.320 | | 0.290 |
| X''d | 0.101 | 0.109 | 0.121 | 0.090 | 0.102 | 0.163 | 0.136 | | 0.122 |

Reactances shown are applicable to prime ratings.

*Based on 30% voltage dip at 0.6 power factor and SHUNT excitation system.

** With optional Permanent Magnet generator or AREP excitation.

Generator Technical Data

| Physical Data | |
|----------------------------|----------|
| R Frame | |
| Model: | R2453L4 |
| No. of Bearings: | 1 |
| Insulation Class: | H |
| Winding Pitch - Code: | 2/3 - M0 |
| Wires: | 12 |
| Ingress Protection Rating: | IP23 |
| Excitation System: | SHUNT |
| AVR Model: | Mark V |

| Operating Data | |
|------------------------------------|---|
| Overspeed: RPM | 2250 |
| Voltage Regulation: (steady state) | +/- 0.5% |
| Wave Form NEMA = TIF: | 50 |
| Wave Form IEC = THF: | 2.0% |
| Total Harmonic Content LL/LN: | 2.0% |
| Radio Interference: | Suppression is in line with European Standard EN61000-6 |
| Radiant Heat: kW (Btu/min) | |
| -50 Hz: | 10.1 (574) |
| -60 Hz: | 12.7 (722) |

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Technical Data

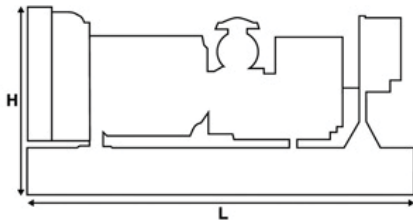
| Voltage 50 Hz | Prime | | Standby | |
|------------------|-------|-------|---------|-------|
| | kVA | kW | kVA | kW |
| 415/240V | 150.0 | 120.0 | 165.0 | 132.0 |
| 400/230V | 150.0 | 120.0 | 165.0 | 132.0 |
| 380/220V | 150.0 | 120.0 | 165.0 | 132.0 |
| 230/115V | 150.0 | 120.0 | 165.0 | 132.0 |
| 220/127V | 150.0 | 120.0 | 165.0 | 132.0 |
| 220/110V | 150.0 | 120.0 | 165.0 | 132.0 |
| 200/115V | 150.0 | 120.0 | 165.0 | 132.0 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

| Voltage 60 Hz | Prime | | Standby | |
|------------------|-------|-------|---------|-------|
| | kVA | kW | kVA | kW |
| 480/277V | 168.8 | 135.0 | 187.5 | 150.0 |
| 220/127V | 168.8 | 135.0 | 187.5 | 150.0 |
| 380/220V | 168.8 | 135.0 | 185.0 | 148.0 |
| 240/120V | 168.8 | 135.0 | 187.5 | 150.0 |
| | | | | |
| 440/254V | - | - | - | - |
| 220/110V | 168.8 | 135.0 | 185.0 | 148.0 |
| 208/120V | 168.8 | 135.0 | 187.5 | 150.0 |
| 240/139V | 168.8 | 135.0 | 187.5 | 150.0 |
| | | | | |
| | | | | |
| | | | | |

Weights & Dimensions

| Weights: kg (lb) | |
|----------------------------|-------------|
| Net (+ lube oil) | 1707 (3763) |
| Wet (+ lube oil & coolant) | 1728 (3810) |
| Fuel, lube oil & coolant | 2024 (4461) |

| Dimensions: mm (in) | |
|---------------------|-------------|
| Length | 2500 (98.4) |
| Width | 1120 (44.1) |
| Height | 1528 (60.2) |



Note: General configuration not to be used for installation. See general dimension drawings for detail.

Definitions

Standby Rating

These ratings are applicable for supplying continuous electrical power (at variable load) in the event of a utility power failure. No overload is permitted on these ratings. The alternator on this model is peak continuous rated (as defined in ISO 8528-3).

Prime Rating

Output available with varying load for an unlimited time. Average power output is 70% of the prime power rating. Typical peak demand is 100% of prime rated kW with 10% overload capability for emergency use for a maximum of 1 hour in 12. Overload operation cannot exceed 25 hours per year.

Standard Reference Conditions

Note: Standard reference conditions 25°C (77°F) air inlet temp, 100m (328ft) A.S.L. 30% relative humidity. Fuel consumption data at full load with diesel fuel with specific gravity of 0.85 and conforming to BS2869: 1998, Class A2.

General Data

Documents

A full set of operation and maintenance manuals and circuit wiring diagrams.

Quality Standards

The equipment meets the following standards: **IEC60034-1, IEC60034-22, ISO3046, ISO8528, NEMA MG 1-32, NEMA MG 1-33, 2004/108/EC, 2006/42/EC, 2006/95/EC.**

Performance No.:

Feature Code:

Gen. Arr. Number:

Source: U.S. Sourced

LEHF0000-00 (00/00)

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