

C7.1 ACERT

MARINE GENERATOR SET PACKAGE



106, 138, 164 ekW (133, 173, 204 kVA) 60 Hz
Radiator Cooled

GENERAL ENGINE SPECIFICATIONS

Basic Engine Specifications

In-line 6 cylinder, 4-Stroke-Cycle-Diesel	
Displacement	7.01 L (422.4 in ³)
Rated engine speed	1500 rpm
Low idle speed (programmable)	1100 rpm
Bore	105 mm (4.13 in)
Stroke	135 mm (5.32 in)
Aspiration	Turbocharged-Aftercooled
Governor	ECU
Fuel system type	Common Rail
Length (overall)	2659 mm (105 in)
Width	993 mm (39 in)
Height	1583 mm (62 in)
Weight, net dry (approx.)	1808-1996 kg (3978-4391 lb)
Rotation (from flywheel end)	Counterclockwise

Tolerances

Power	+/- 3%
Exhaust Stack Temperature	+/- 8%
Inlet Air Flow	+/- 5%
Intake Manifold Pressure	+/- 10%
Exhaust Flow	+/- 6%
Specific Fuel Consumption	+/- 3%
Heat Rejection	+/- 5%
Fuel Rate	+/- 5%

Generator

Power Factor	0.8
Frame	44.2/46.2
Insulation	Class H
Temperature Rise	
@ 40°C Ambient (110%)	Class H (150°K)
@ 50°C Ambient (110%)	Class H (140°K)
Winding Pitch Code	2/3
Terminals	12-lead reconnectable



Cat® C7.1 ACERT
Marine Generator Set Package
Image shown may not reflect actual engine

Emission Compliance

IMO Tier II
EPA Marine Tier 3
CCNR Stage 2

Marine Classification Society

ABS – BV – DNV* – GL – LR – RINA – CCS* – NKK*
(*Approvals pending)

Drip Proof	IP 23
Air Flow (44.2 frame)	0.37 m ³ /s (784 cfm)
Air Flow (46.2 frame)	0.43 m ³ /s (911 cfm)
Excitation System	AREP
Voltage Regulation (steady state)	±0.5%
Total Harmonic Content LL/LN	<4%
Wave Form: NEMA=TIF	<50
Wave Form: I.E.C.=THF	<2%

General Remarks

- For installation instructions please refer to drawing number 476-6264, 476-6265, 476-6266 for package and 452-3714 for attachments.
- For detailed information about fuel, oil, and cooling water treatment, please refer to "Caterpillar Commercial Diesel Engine Fluids Recommendations" (SEBU6251).

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AIR SYSTEM

Combustion Air Inlet System

Intake combustion air flow.....	14.6 m ³ /min (163 ekW), 14.5 m ³ /min (138 ekW), 13.6 m ³ /min (106 ekW)
Intake combustion air flow.....	51.6 cfm (163 ekW), 51.2 cfm (138 ekW) 48.0 cfm (106 ekW)
Intake combustion air temperature up to.....	50°C (122°F)

COOLING SYSTEM

HTC Cooling Water System (Engine Jacket Water)

Heat rejection to HTC cooling water system.....	121.9 kW (163 ekW), 104.0 kW (138 ekW), 81.8 kW (106 ekW)
Heat rejection to HTC cooling water system.....	6932 BTU/min (163 ekW), 5914 BTU/min (138 ekW), 4652 BTU/min (106 ekW)
HTC cooling water temperature engine out (nominal).....	100°C (212°F)
HTC cooling water refill capacity (Radiator).....	40 L (10.5 gal)
Coolant medium.....	Cat® Extended Life Coolant (ELC) or equal
Expansion tank pressure cap.....	100 kPa (14.5 psi)

Charge Air Cooling System (Aftercooler)*

Heat rejection to aftercooler.....	22.7 kW (163 ekW), 17.3 kW (138 ekW), 14.5 kW (106 ekW)
Heat rejection to aftercooler.....	1291 BTU/min (163 ekW), 984 BTU/min (138 ekW), 825 BTU/min (106 ekW)

Radiator Fan Data

Total radiator airflow (unrestricted).....	6.4 m ³ /sec
Total radiator airflow (unrestricted).....	1356 cfm
Total radiator airflow (125Pa restriction).....	5.8 m ³ /sec
Total radiator airflow (125Pa restriction).....	1228 cfm
Maximum allowable total duct restriction.....	125 Pa
Maximum allowable total duct restriction.....	0.5 in H ₂ O
Maximum allowable ambient temperature.....	50 °C
Maximum allowable ambient temperature.....	122 °F

EXHAUST SYSTEM

Exhaust Gas Data

Exhaust gas flow (volume).....	32.4 m ³ /min (163 ekW), 29.9 m ³ /min (138 ekW), 25.3 m ³ /min kg/hr (106 ekW)
Exhaust gas flow (volume).....	114.4 cfm (163 ekW), 105.5 cfm (138 ekW), 89.3 cfm (106 ekW)
Exhaust stack temperature (within 300mm of turbo outlet).....	392.4 °C (163 ekW), 394.7 °C (138 ekW), 371.7 °C (106 ekW)
Exhaust stack temperature (within 300mm of turbo outlet).....	738.3 °F (163 ekW), 742.5 °F (138 ekW), 701.1 °F (106 ekW)
Engine exhaust connection.....	63 mm (2.5 in) ID, 6 x 9 mm (0.35 in) holes on 145 mm (50.7 in) PCD
Max. allowable system backpressure.....	15 kPa (60 in H ₂ O)

Specified system backpressure shall not be exceeded in any circumstances. Caterpillar advises to limit value of maximum allowable backpressure to 50% for new (clean) installations. Minimum diameter of customer piping should be according to "Customer piping diameter overview for Caterpillar engines."

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FUEL SYSTEM

Fuel rate.....	228.5 g/bkW-hr (163 ekW), 223.4 g/bkW-hr (138 ekW), 240.1 g/bkW-hr (106 ekW)
Fuel rate.....	40.4 kg/ hr (163 ekW), 36.5 kg/ hr (138 ekW), 30.5 kg/ hr (106 ekW)
Fuel flow transfer pump	4.1 L/min (1.1 gal/min)
Fuel pressure static head	+/- 2.8 m (9.2 ft)
Fuel supply line restriction (max.)	10 kPa (2.9 in Hg) (1.5 psi)
Fuel temperature transfer pump in (max.)	60°C (140°F)
Fuel return line restriction (max.)	10 kPa (2.9 in Hg) (1.5 psi)
Fuel supply / return connections	11 / 16 in O ring face seal (ORFS)
Diesel fuel grade	ISO-F-DMX/ISO-F-DMA/ISO 8217:1986 (E) Class F

LUBE SYSTEM

Sump type	Isolated
Sump capacity (max.)	21 L (5.55 gal)
Sump capacity (min.)	17.5 L (4.62 gal)
Sump refill capacity (with filter change).....	21 L (5.55 gal)
Oil change interval	500 Hr <i>(can be extended by S-O-SSM testing)</i>
Max. continuous operation angle (any direction)	25 degrees
Max. intermittent operation angle (any direction).....	30 degrees
Quality diesel engine oil (min.)	CI-4 10W30 or 15W40 <i>(compliant with Caterpillar specification ECF-2)</i>

STARTING SYSTEM

Electrical Starting System

Electrical starting motor	24 or 12 VDC
Cold starting	800 CCA <i>[at 0°C (32°F) ambient temperature]</i>

SOUND DATA (ISO 8528-10)

Mechanical Sound Pressure		Mechanical Sound Power	
163 ekW at distance 1 m (3.28 ft)	109.0 dB(A)	163 ekW	92.1 dB(A)
138 ekW at distance 1 m (3.28 ft)	109.0 dB(A)	138 ekW	92.1 dB(A)
106 ekW at distance 1 m (3.28 ft)	108.9 dB(A)	106 ekW	92.0 dB(A)

Mechanical Sound Power levels measured according to ISO 8528-10 with engine at 70% load.

Performance data is calculated in accordance with tolerances and conditions stated in this specification sheet and is only intended for purposes of comparison with other manufacturers' engines. Actual engine performance may vary according to the particular application of the engine and operating conditions beyond Caterpillar's control.

Power produced at the flywheel will be within standard tolerances up to 49°C (120°F) combustion air temperature measured at the air cleaner inlet, and fuel temperature up to 52°C (125°F) measured at the fuel filter base. Power rated in accordance with NMMA procedure as crankshaft power. Reduce crankshaft power by 3% for propeller shaft power.

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