

# Marine generator set

## Quiet Diesel™ Series

### 17.5/21.5 QD

### Model MDKBR



Cummins Onan Digital Display

# Cummins Onan

Performance you rely on.™



## Features and benefits

- Rugged dependability, high quality and innovation make Cummins Onan Marine Generators the leader in marine generator design and development, providing Performance you rely on.™
- The digital QD (Quiet Diesel) Series models are the first marine generator sets with self-monitoring capability and network communication.
- The optional Cummins Onan Digital Display provides user-friendly diagnostics including extensive engine and alternator information, self-diagnostic features and text display.
- The Cummins Onan Marine Generators with advanced design and development processes use technology to lower sound and vibration. Our sound shields minimize noise and deliver better sound quality. The optimized mounting system greatly reduces vibration.
- Certified to U.S. Environmental Protection Agency (EPA) emission standards.
- Cummins Onan Marine Generators have the largest worldwide certified distributor/dealer support network in the industry with more than 70 years of experience.

## Models and ratings

Model	kW/kVA	Voltage	Amps	Phase	Hz	Engine RPM
<b>17.5MDKBR</b>		110/220	159.1/79.5	1	50	1500
		115/230	152.2/76.1	1	50	1500
		120/240	145.8/72.9	1	50	1500
<b>21.5MDKBR</b>		17.5/21.9	33.2	3	50	1500
		21.5/21.5	179/89.6	1	60	1800
		21.5/26.9	74.6	3	60	1800

Other single and three phase configurations are available, contact your distributor/dealer for more information. Rating conditions are 100 kPa (29.6 in Hg) barometric pressure, 30% relative humidity and 25° C (77° F) (ref. ISO 3046).

## Sound level, weight, and size

	Sound level		Dimensions			
	50 Hz configuration	60 Hz configuration	Weight (dry)	Length	Width	Height
<b>With sound shield</b>	64 dB(A)*	67 dB(A)*	422 kg (930 lb)	1127 mm (44.4 in)	602 mm (23.7 in)	698 mm (27.5 in)
<b>Without sound shield</b>			395 kg (870 lb)	1127 mm (44.4 in)	602 mm (23.7 in)	672 mm (26.5 in)

\* Full load at 1 m, with optional Cummins Onan sound shield

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## Standard features

- Advanced digital electronic control providing extensive diagnostic capability
- Shutdown with diagnostic indicator light for: high engine coolant temperature, high exhaust temperature, low oil pressure, over speed/voltage, starter overcrank, no raw water flow, additional customer input and many more
- Start-run-stop switch with glow plug preheat and fuel pump priming modes for easy starting; run light and diagnostic indicator light
- Start function has automatic glow plug preheat providing better, cleaner starting
- Engine starter with automatic start disconnect
- Electronic governor allows the generator set to maintain isochronous frequency control and close voltage regulation to provide quality power for digital appliances and computers
- Switchable between 50/60 Hz
- Single phase AC alternator with single or dual voltages, brushless
- Digital voltage regulator integral with control
- 12 V DC electric system with battery charging, negative ground
- Electric fuel transfer pump for priming and lift capability
- DC control console mounted with isolation and DC protective circuit breakers
- Freshwater cooling system with heat exchanger, expansion tank and coolant recovery system
- Water cooled exhaust mixing elbow
- Gear-driven raw water pump
- AC mainline circuit breaker
- Running time meter
- Air intake silencer
- Captive focalized mounting systems with vibration isolators
- Full flow lube oil filter
- Oil drain and hose extension
- Electric fuel shut-off via electronic governing actuator
- Fuel filter/water separator
- Drip pan base capable of containing all generator set fluids
- Bulk head type connections for ease of installation include fuel in, fuel out, battery, raw water inlet, wet exhaust, generator set ground (vessel bond)
- Single point lifting bracket for ease of installation
- Plug-in watertight connector for optional remote control
- Closed crankcase breather re-circulation to eliminate engine room contamination
- Coolant overflow bottle to easily maintain coolant level
- Fire extinguisher access port
- Factory load tested
- Five year limited warranty

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## Engine details

**Design:** 4-cycle, water-cooled diesel

**Cylinders:** 4

**Bore:** 87 mm (3.43 in)

**Stroke:** 102.4 mm (4.03 in)

**Displacement:** 2434 cm<sup>3</sup> (148.47 in<sup>3</sup>)

**Compression ratio:** 24.3:1

**Max fuel lift:** 1.22 m (4 ft)

**Lube oil capacity:** 7.6 L (8 qt)

**Coolant capacity:** 7.6 L (8 qt)

**Coolant flow rate:**

50 Hz: 37.9 L/min (10.0 Gal/min)

60 Hz: 53.0 L/min (14.0 Gal/min)

### Typical fuel consumption

**No. 2 diesel fuel, L/hr (Gal/hr)**

**17.5 MDKBR-50 Hz**

**21.5 MDKBR-60 Hz**

No load

1.3 (0.3)

1.7 (0.4)

### Raw water flow rate:

50 Hz: 27 L/min (7.0 Gal/min)

60 Hz: 34.1 L/min (9.0 Gal/min)

**Starting system:** Remote 3-wire, 12 V starting battery required, 95 Ah, 625 CCA; 24 V optional

**Power (max):** SAEJ1995

50 Hz at 1500 RPM 24.5 kW (32.8 hp)

60 Hz at 1800 RPM 29.4 kW (39.4 hp)

**Fuel injection pump:** Bosch PFR-M mini

**Combustion chamber:** Spherical, three vortex combustion system

**Max raw water lift:** 1.22 m (4 ft)

1/4 load

2.3 (0.6)

2.8 (0.7)

1/2 load

3.4 (0.9)

4.0 (1.0)

3/4 load

4.7 (1.2)

5.4 (1.4)

Full load

6.5 (1.7)

7.3 (1.9)

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## Alternator details

**Design:** Cummins Onan brushless, revolving field, 4-pole alternator; rigidly coupled to engine and permanently aligned

**Voltage regulator:** Solid state, circuit board encapsulated for corrosion protection

**Exciter system:** Brushless with 8-pole stator mounted in endbell; rotating rectifier assemblies are encapsulated for protection from adverse environments

**Stator:** Skewed stator and 2/3 pitch windings minimize field heating and voltage harmonics; resin-coated for corrosion protection

**Rotor:** Dynamically balanced assembly; direct-coupled to engine by flexible drive discs; supported by pre-lubricated, maintenance-free ball bearing

**Cooling:** Direct drive centrifugal blower

**Insulation system:** Class H per NEMA MG1-1.65 and BS 5000

## Generator set performance

**Operating environment:** Generator sets are durability tested at maximum ambient air temperature: 50° C (122° F); raw water temperature 37.8° C (100° F)

**Frequency regulation:** Isochronous

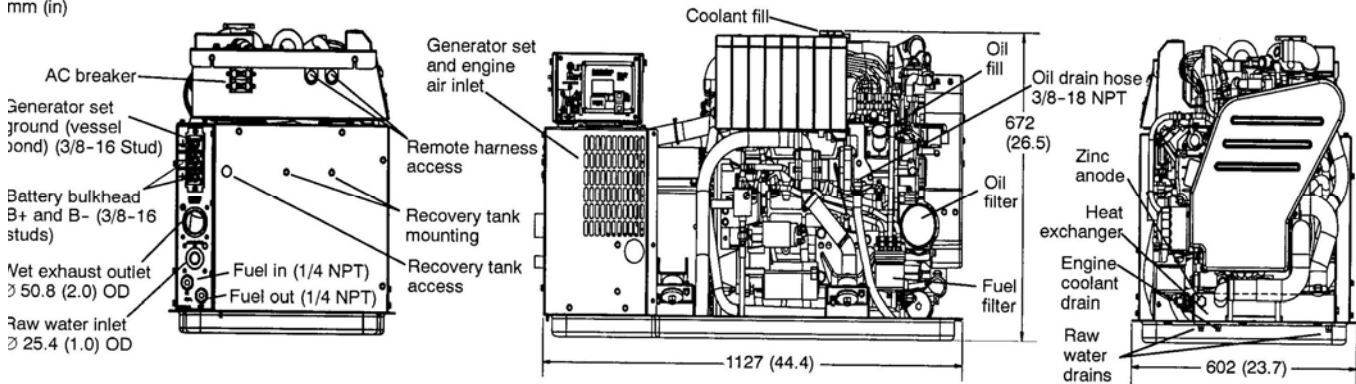
**Random frequency variation:** Will not exceed +/-0.5% of its mean value for constant loads from no load to full load

**Voltage regulation:** No load to rated load +/-1%

**Random voltage variation:** Will not exceed +/-0.5% of its mean value for constant loads from no load to full load

## Basic dimensions

mm (in)



**Note:** This outline drawing is provided for general reference only and is not intended for design or installation. For more information see Operation and Installation manuals or obtain drawing 500-4944 and wiring diagram from your distributor/dealer.

## Options

- Cummins Onan Digital Display - graphical LCD set-mounted display for generator set operating parameters, diagnostics, and pre-alarm indication in text format
- SAE J-1939 CAN data link for monitoring generator set status and diagnostics for engine and alternator
- SmartCraft Networked™ data link for monitoring generator set status and diagnostics for engine and alternator (display available through Cummins MerCruiser Diesel)
- Low coolant level shutdown
- Keel cooling with wet exhaust
- Keel cooling with dry exhaust, up or down orientation
- 12 V DC electric system with battery charging, isolated DC
- 3 phase, 125° C broad range alternator with a variety of voltages
- 24 V DC electric system with battery charging, negative ground or isolated DC
- Dry exhaust system, up or down orientation
- Sound shield housing
- Front power take-off (PTO) for full engine output with clutch, flexible coupling and SAE B flange pump mounting for 2 and 4 bolt mounting; (12 or 24 V DC clutch)
- Remote shutdown harness for fire extinguisher connection
- Engine end interface connections
- Engine end wet exhaust outlet



Standard model without sound shield shown

## Accessories

- Cummins Onan Digital Display - graphical LCD remote display for generator set operating parameters, diagnostics, and pre-alarm indication in text format
- Basic remote panel with start/stop switch with run (green) and control status (amber) lamps
- Remote start/stop switch with dual lamps and mating harness for panel installation
- 12 or 24 V isolated ground conversion kit, no battery charging
- Y adapter harness for dual remote stations
- Remote station harness pigtail
- Remote panel wire harness - 15 ft, 25 ft, 45 ft, 75 ft, 100 ft or 150 ft
- Line circuit breakers for field conversion of frequency or AC voltage output
- Remote fuel filter/water separator assembly
- Fuel supply and return hose barb connectors
- Dry exhaust muffler, flexible exhaust stainless steel tube assembly
- Siphon break kit
- Wet exhaust hose and stainless steel elbow
- Battery
- Bulk head battery terminal boots
- Low coolant level shutdown switch
- Front or rear exhaust outlet kit
- Dry exhaust fitting
- Marine mufflers, water separator, and resonator dual silencers
- Front power take-off (PTO) for full engine output with clutch, flexible coupling and SAE B flange pump mounting for 2 and 4 bolt mounting: (12 or 24 V DC clutch), additional sound shield front panel or belt guard is required
- Sound shield housing
- Cruise kit - maintenance parts - fuel filters, oil filters, raw water pump impellers, zinc pencils, alternator belt and plastic container
- Keel cooling conversion for wet or dry exhaust



Cummins Onan Digital Display



Cummins Onan Cruise Kit

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## Standards and testing

National Marine Manufacturers Association (NMMA) members produce every conceivable product used by recreational boaters. NMMA provides a wide variety of programs and services including technical expertise, standards monitoring, government relations advocacy and industry statistics.

The American Boat and Yacht Council (ABYC) develops standards and recommended practices for designing, constructing, equipping and maintaining small pleasure and commercial craft.

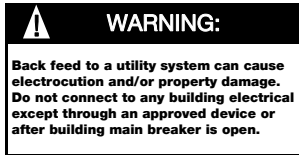
This generator set was designed and manufactured in facilities certified to ISO 9001.

Lloyd's Register states that Cummins Onan Marine Generators have been successfully tested in accordance with the relevant requirements of the Lloyd's Register Type Approval System for Marine, offshore and industrial applications.



## Warranty policy

The Cummins Onan express, written limited warranty covers virtually everything except routine maintenance for the first two years you own your marine generator set, and covers parts and labor on major power train and generator set parts during the third through fifth years.



## After sale support

### Largest distributor/dealer support network

Cummins Onan generator sets are supported by the largest and best trained worldwide certified distributor/dealer network in the industry. This network of knowledgeable Cummins Onan distributor/dealers will help you select and install the right generator set and accessories to meet the requirements of your specific application. This same network offers a complete selection of commonly used generator set maintenance parts, accessories and products plus manuals and specification sheets. Plus, they can answer your questions regarding proper operation, maintenance schedules and more.

**Manuals:** Operation, installation and parts manuals ship with the generator set. To obtain additional copies or other manuals for this model, see your Cummins Onan distributor/dealer and request the following manual numbers: Operation (981-0181), Installation (981-0648), Parts (981-0288), Service (981-0543).

To easily locate the nearest Cummins Onan distributor/dealer in your area, or for more information, contact us at 1-800-888-6626 (or 763-574-5000), or visit [www.cumminsonan.com](http://www.cumminsonan.com).

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## Contact your distributor/dealer for more information

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