

# MARINE POWER SOLUTIONS

EDITION 2022 (MAY)



**MEETING TOMORROW'S STANDARDS  
WITH TODAY'S SOLUTIONS**

**CATERPILLAR®**

## **FRONT COVER:**

Tug Valor, San Francisco, CA

Built in 2007. Repowered with two Cat 3516E engines in 2020.

Vessel Owner: Crowley Maritime

Caterpillar follows a policy of continuous product improvement. For this reason, some material and specifications in the Caterpillar Marine Solutions Guide could change without notice.

For more Information about Caterpillar Marine and current products, as well as legacy products, please visit:  
**[www.cat.com/marine](http://www.cat.com/marine)**

**For Cat® Dealers:** Please reference TMI Web for the most current information.

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# CAT® C4.4 THE NEW WAY

## ELECTRONIC CONTROL SYSTEM



- Simple installation and easy repowers thanks to the new single circuit cooling options.
- Full genset or streamlined options, providing more ways to reduce costs while meeting your specific requirements.
- Enjoy the benefits of having a single service provider to maintain all engine equipment on your vessel.
- Meets EU Stage V and China Stage II.



**CAT**®

See page 60 for technical data.

# MARINE POWER SOLUTIONS

## Innovating a Sustainable Generation of Cat® Marine Products & Services

### Helping You Navigate the Energy Transition

Cat Marine products set the standard for quality, performance and reliability. That's been true for decades and will never change. What is changing – rapidly – is the escalating need for alternative fuel solutions and sustainable power sources that minimize fuel usage, decrease your vessel's environmental impact and lower total cost of ownership.

That's why Caterpillar is focused on innovating alternative fuel-powered solutions, and electric and hybrid systems for reducing carbon emissions, all without sacrificing power. Plus, state-of-the-art supervisory controls will integrate system components for suitable performance and efficient plug-and-play-simplicity.

**All from one source: Caterpillar Marine.**

**Caterpillar Marine** offers diesel solutions, as well as (future) alternative-fuel and power options like methanol, electric and hybrid, to support our customers' energy transition.



## **Delivering Services that Extend the Value**

We've also developed leading-edge services to wrap around our products, complemented by a suite of digital tools that deliver actionable insights about engine health and performance. Customer Value Agreements (CVAs), re-power solutions, emissions upgrade kits and other offerings help improve availability and uptime, lower cost and simplify ownership so you can focus on your business.

### **Cat Marine Power Outputs**

**Main Propulsion: 209 bkW (284 mhp)–6,000 bkW (8,158 mhp)**

**Generator Sets: 10 ekW (10 kvA)–5,200 ekW (6,500 kvA)**

## **Working Together – Caterpillar and Cat Dealers on the Journey**

Our teams remain committed to providing the level of performance and premium support you've come to expect from Caterpillar Marine. Regardless of where your vessel is constructed or delivered, if it's powered by traditional or alternative fuel sources and whether it's operating in fixed locations or navigating through territories around the world, expertly skilled Cat dealers are there for you. With over 80 years of experience and 500+ service locations shore-to-shore, you can count on them for engine expertise, parts availability and at-the-dock service efficiency.



**Reach out to your local Cat dealer to learn more about today's power solutions, as well as our strategy to lead decarbonization efforts in the marine industry.**

# YOUR SOLUTIONS PROVIDER IN SUCCESS

## Hassle-Free Ownership

With over 500 locations, Caterpillar and your Cat dealers are dedicated to making sure you get the most from your engine with outstanding service and support.

## Hassle-Free Maintenance

Manage the lifecycle needs of your engine and experience valuable outcomes such as: increased uptime, reduced emissions and lower maintenance costs.

## Peace of Mind Through Digital Solutions

Whether you're running one vessel or an entire fleet, Caterpillar has the technologies you need to get timely, accurate data from your engines.

## Expert Dealer Support

Your CVA offers resources for maintenance planning, repairs, rebuilds and upgrades, with diagnostic and troubleshooting support as well as expert dealer advice and training options.



# Sustaining Our Efforts for a Better Tomorrow

## Innovating and Integrating.

### Driven to help you achieve operational success.

At Caterpillar, we've been supporting our customers solve big problems for nearly a century – innovating, integrating and tailoring solutions that help build a better world. Your needs for the energy transition are no exception. Whether you're striving to reduce carbon and fuel costs, increase fuel flexibility, move toward electrification or operate more efficiently and safely, you can count on us to help you achieve your goals.

Here are just three examples of how we're putting our experience to work to take on decarbonization challenges on the water:



### **Lowering your carbon footprint – through fuel flexibility**

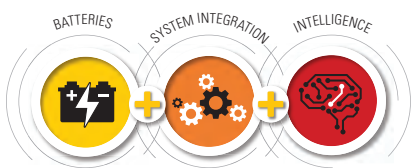
- Immediate carbon emission reduction through use of renewables and biofuels
- Investment in alternative fuel research
- Emissions upgrade solutions for existing fleets



### **Powering reduced emissions – with efficiency and reliability**

- Flexible and configurable for ease of installation
- Designed to benefit uptime, time between overhauls and total cost of ownership
- Integral Caterpillar control system for simple diagnostics and service





## **Providing hybrid flexibility – that integrates conventional and low-carbon power**

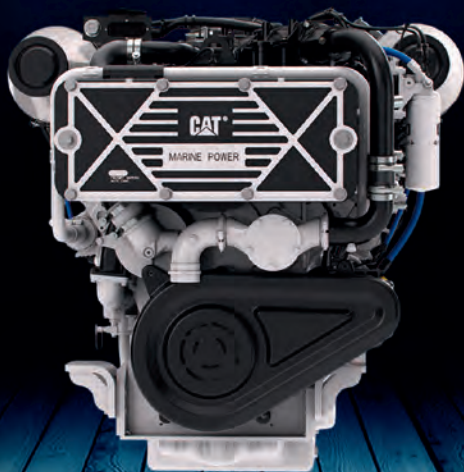
- Hybrid solutions integrate engines, generator sets and energy storage
- Intelligent controls enable seamless use of onboard power sources
- Scalable options to support a wide range of propulsion and power generation applications

## **Together, we can power the future**

Let's work together to advance sustainable energy and achieve your ESG goals. Contact us to start a deeper conversation about the challenges you're facing and the Caterpillar solutions – existing and in development – that can help you address them.

# "B" THE FIRST WITH THE MOST

2025 MHP CAT® C32B MARINE ENGINE



See page 25 for technical data.

# Cat® High-Speed and Medium-Speed Solutions



# Cat Propulsion Engines



Caterpillar Marine offers a complete range of conventional and electronic propulsion solutions spanning across commercial and leisure applications. With power ranging from 209 kW (284 mhp) to 6,000 kW (8,158 mhp), there are Cat high-speed and medium-speed propulsion solutions for you.



Whatever the application, and whatever the solution, our products are renowned for not only reliability, durability and efficiency, but also for design and manufacturing innovation. They deliver the advanced control that vessel operators need to maximize power and efficiency, and the enhanced monitoring that ensures peace of mind. By leveraging our ACERT™ and Cat Common Rail technologies, our electronic engines are designed to meet all the varying global emission standards.



We're built to keep you working – or having fun – on the water.

# C7.1

## PROPULSION ENGINE (High Performance Applications)

### RATINGS AND FUEL CONSUMPTION

	mhp	bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
<b>E</b>	406	400	298	2900	21.8	227	II	T3R	RCD	C-II
<b>E</b>	456	450	336	2900	24.4	228	II	T3R	RCD	C-II
<b>E</b>	507	500	373	2900	27.3	232	II	T3R	RCD	C-II

### SPECIFICATIONS

In-line 6, 4-Stroke-Cycle Diesel		
<b>Aspiration</b>	TA	
<b>Bore x Stroke</b>	4.13 x 5.31 in	105 x 135 mm
<b>Displacement</b>	428 cu in	7.01 liter
<b>Rotation (from flywheel end)</b>	Counterclockwise	
<b>Engine dry weight (approx)</b>	1676 lb	760 kg

### DIMENSIONS

	LE	H	WE
<b>min.</b>	43.1 in/1095 mm	34.5 in/876 mm	31.4 in/798 mm
<b>max.</b>	43.1 in/1095 mm	34.5 in/876 mm	31.4 in/798 mm

# C7.1

Electronic Control System

## PROPULSION ENGINE (Commercial Applications)

### RATINGS AND FUEL CONSUMPTION

	mhp	bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
<b>B</b>	284	280	209	2300	14.9	226	II	T3C	RCD	C-II
<b>C</b>	355	350	261	2500	18.3	222	II	T3C	RCD	C-II
<b>D</b>	406	400	298	2600	20.3	223	II	T3C	RCD	C-II
<b>D</b>	431	425	317	2700	22.9	226	II	T3C	RCD	C-II

### SPECIFICATIONS

In-line 6, 4-Stroke-Cycle Diesel		
Aspiration	TA	
Bore x Stroke	4.13 x 5.31 in	105 x 135 mm
Displacement	428 cu in	7.01 liter
Rotation (from flywheel end)	Counterclockwise	
Engine dry weight (approx)	1676 lb	760 kg

### DIMENSIONS

	LE	H	WE
<b>min.</b>	43.1 in/1095 mm	34.5 in/876 mm	31.4 in/798 mm
<b>max.</b>	43.1 in/1095 mm	34.5 in/876 mm	31.4 in/798 mm

# C9.3

## PROPULSION ENGINE

### RATINGS AND FUEL CONSUMPTION

	mhp	bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
<b>B</b>	381	375	280	1800	19.3	219.1	II	T3C	RCD	C-II
<b>C</b>	421	416	310	2100	21.5	220.4	II	T3C	RCD	C-II
<b>D</b>	483	476	355	2300	24.9	222.3	II	T3C	RCD	C-II

### SPECIFICATIONS

In-line 6, 4-Stroke-Cycle Diesel		
<b>Aspiration</b>	TA	
<b>Bore x Stroke</b>	4.53 x 5.87 in	115 x 149 mm
<b>Displacement</b>	568 cu in	9.3 liter
<b>Rotation (from flywheel end)</b>	Counterclockwise	
<b>Engine dry weight (approx)</b>	2083 - 2474 lb	945 - 1122 kg

### DIMENSIONS

	LE	H	WE
<b>min.</b>	57.2 in/1452 mm	43.0 in/1093 mm	38.5 in/978 mm
<b>max.</b>	57.2 in/1452 mm	43.0 in/1093 mm	38.5 in/978 mm

# C12

Electronic Control System

## PROPULSION ENGINE

### RATINGS AND FUEL CONSUMPTION

	mhp	bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
<b>A</b>	345	340	254	1800	16.6	208.3	II	NC	NC	NC
<b>B</b>	390	385	287	1800	18.6	205.7	II	NC	NC	NC
<b>C</b>	460	454	339	2100	22.0	205.9	II	NC	NC	NC
<b>C</b>	497	490	366	2300	24.0	208.8	I	NC	NC	NC
<b>D</b>	578	570	425	2300	27.9	208.8	I	NC	NC	NC
<b>E</b>	609	600	448	2300	29.3	208.1	I	NC	NC	NC
<b>E</b>	669	660	492	2300	34.1	220.0	II	NC	NC	NC
<b>E</b>	715	705	526	2300	36.5	220.3	II	NC	NC	NC

### SPECIFICATIONS

In-line 6, 4-Stroke-Cycle Diesel		
<b>Aspiration</b>	TA	
<b>Bore x Stroke</b>	5.1 x 5.9 in	130 x 150 mm
<b>Displacement</b>	732 cu in	12 liter
<b>Rotation (from flywheel end)</b>	Counterclockwise	
<b>Engine dry weight (approx)</b>	2588 lb	1174 kg

### DIMENSIONS

	LE	H	WE
<b>min.</b>	62.0 in/1574 mm	39.5 in/1005 mm	38.1 in/969 mm
<b>max.</b>	62.0 in/1574 mm	39.5 in/1005 mm	38.1 in/969 mm



# 3406C

Mechanical Control System

## PROPULSION ENGINE

### RATINGS AND FUEL CONSUMPTION

	mhp	bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
<b>A</b>	370	365	272	1800	17.8	208.0	NC	NC	NC	NC
<b>B</b>	406	400	298	1800	19.5	208.0	NC	NC	NC	NC

### SPECIFICATIONS

In-line 6, 4-Stroke-Cycle Diesel		
<b>Aspiration</b>	TA	
<b>Bore x Stroke</b>	5.4 x 6.5 in	137.2 x 165.1 mm
<b>Displacement</b>	891 cu in	14.6 liter
<b>Rotation (from flywheel end)</b>	Counterclockwise	
<b>Engine dry weight (approx)</b>	2921 lb	1325 kg

### DIMENSIONS

	LE	H	WE
<b>min.</b>	57.3 in/1454.2 mm	50.3 in/1278.5 mm	36.0 in/913.5 mm
<b>max.</b>	57.3 in/1454.2 mm	50.3 in/1278.5 mm	36.0 in/913.5 mm

# C18

## PROPULSION ENGINE (Commercial Applications)

### RATINGS AND FUEL CONSUMPTION

#### IMO II

	mhp	bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
<b>A</b>	460	454	339	1800	22.6	212.1	II	NC	NC	C-I
<b>A</b>	485	479	357	1800	23.7	211.3	II	NC	NC	C-I
<b>A</b>	608	600	447	1800	30.0	213.1	II	NC	NC	C-I
<b>B</b>	560	553	412	2100	28.7	221.3	II	NC	NC	C-I
<b>B</b>	680	670	500	2100	35.2	223.8	II	NC	NC	C-I
<b>C</b>	725	715	533	2100	37.6	223.9	II	NC	NC	C-I
<b>D<sup>2</sup></b>	885	873	651	2200	45.0	219.3	II	NC	NC	NC

#### U.S. EPA Tier 3 and IMO II

	mhp	bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
<b>A</b>	475	469	350	1800	24.5	222.0	II	T3C	RCD	C-II
<b>A</b>	608	600	447	1800	30.7	218.5	II	T3C	RCD	C-II
<b>B<sup>1</sup></b>	680	670	500	1800-2100	34.7	223.6	II	T3C	RCD	C-II
<b>C<sup>1</sup></b>	725	715	533	1800-2100	37.2	221.7	II	T3C	RCD	C-II
<b>D</b>	814	803	599	2100	41.8	221.6	II	T3C	RCD	C-II

<sup>1</sup> Wide Operating Speed Range (WOSR)

Heat Exchanger (32°C Sea Water Temp), Keel Cooled (52°C SCAC Temp)

(continued)

<sup>2</sup> Sea Water Aftercooled

# C18

Electronic Control System

## PROPULSION ENGINE (Commercial Applications)

(continued)

### EU Stage V

	mhp	bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
<b>A</b>	591	583	435	1800	29.0	214.5	NC	NC	EUV	NC
<b>B<sup>1</sup></b>	680	670	500	1800-2100	34.1	219.7	NC	NC	EUV	NC
<b>D</b>	814	803	599	2100	40.8	223.3	NC	NC	EUV	NC

<sup>1</sup> Wide Operating Speed Range (WOSR)

Heat Exchanger (32°C Sea Water Temp), Keel Cooled (52°C SCAC Temp)

## SPECIFICATIONS

In-line 6, 4-Stroke-Cycle Diesel		
<b>Aspiration</b>	TA, TTA	
<b>Bore x Stroke</b>	5.7 x 7.2 in	145 x 183 mm
<b>Displacement</b>	1106 cu in	18.1 liter
<b>Rotation (from flywheel end)</b>	Counterclockwise	
<b>Engine dry weight (approx)</b>	4000 - 4299 lb	1814 - 1950 kg

## DIMENSIONS

	LE	H	WE
<b>min.</b>	73.0 in/1854 mm	47.2 in/1198 mm	44.6 in/1134 mm
<b>max.</b>	76.0 in/1931 mm	51.2 in/1300 mm	47.4 in/1204 mm

# C18

Electronic Control System

## PROPULSION ENGINE (High Performance Applications)

### RATINGS AND FUEL CONSUMPTION

U.S. EPA Tier 3 and IMO II

	mhp	bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
<b>E</b>	1015	1001	747	2300	53.8	228.9	II	T3R	RCD	C-I
<b>E</b>	1150	1136	847	2300	58.6	219.8	II	T3R	RCD	C-I

### SPECIFICATIONS

In-line 6, 4-Stroke-Cycle Diesel		
<b>Aspiration</b>	TA, TTA	
<b>Bore x Stroke</b>	5.7 x 7.2 in	145 x 183 mm
<b>Displacement</b>	1106 cu in	18.1 liter
<b>Rotation (from flywheel end)</b>	Counterclockwise	
<b>Engine dry weight (approx)</b>	4000 - 4299 lb	1814 - 1950 kg

### DIMENSIONS

	LE	H	WE
<b>min.</b>	73.0 in/1854 mm	47.2 in/1198 mm	44.6 in/1134 mm
<b>max.</b>	76.0 in/1931 mm	51.2 in/1300 mm	47.4 in/1204 mm

# C32

## PROPULSION ENGINE (Commercial Applications)

### RATINGS AND FUEL CONSUMPTION

#### IMO II/IMO III

	mhp	bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
<b>A<sup>1</sup></b>	669	660	492	1600-1800	32.3	208.4	II	NC	IW*	C-I
<b>A<sup>1</sup></b>	760	750	559	1600-1800	36.2	205.8	II	NC	IW*	C-I
<b>A<sup>1</sup></b>	760	750	559	1600-1800	37.5	213.2	II/III	NC	NC	NC
<b>A<sup>1</sup></b>	862	850	634	1600-1800	41.0	205.3	II	NC	IW*	C-I
<b>A</b>	964	950	709	1600	45.2	202.7	II	NC	IW*	C-I
<b>A<sup>1</sup></b>	1014	1000	746	1600-1800	48.1	204.9	II	NC	IW*	C-I
<b>A<sup>1</sup></b>	1014	1000	746	1600-1800	49.8	212.1	II/III	NC	NC	NC
<b>B<sup>1</sup></b>	1217	1200	895	1800-2000	59.3	210.5	II	NC	IW*	C-I
<b>B<sup>1</sup></b>	1217	1200	895	1800-2000	59.3	210.5	II/III	NC	NC	NC
<b>B</b>	1319	1300	970	2100	64.1	211.2	II	NC	IW*	C-I
<b>B</b>	1319	1300	970	2100	64.6	211.4	II/III	NC	NC	NC
<b>C</b>	1319	1300	970	1800	62.5	204.6	II	NC	IW*	NC
<b>C<sup>3</sup></b>	1319	1300	970	1800	62.5	204.5	II/III	NC	NC	NC
<b>C<sup>1</sup></b>	1470	1450	1081	2000-2300	77.2	226.8	II	NC	IW*	C-I
<b>C<sup>1</sup></b>	1470	1450	1081	2000-2300	76.8	225.6	II/III	NC	NC	NC
<b>D<sup>1,2</sup></b>	1622	1600	1193	2000-2300	82.0	218.2	II	NC	IW*	C-I

<sup>1</sup> Wide Operating Speed Range (WOSR)

Heat Exchanger (32°C Sea Water Temp), Keel Cooled (52°C SCAC Temp)

<sup>2</sup> Sea Water Aftercooled

<sup>3</sup> Contact your local dealer for availability on U.S. EPA Tier 4 Final and IMO III ratings.

\* EU Stage IIIA certification > 300 bkW will not be available after December 2019. Contact your local dealer for availability.

(continued)

# C32

## PROPULSION ENGINE (Commercial Applications)

(continued)

### RATINGS AND FUEL CONSUMPTION

#### U.S. EPA Tier 3 and IMO II

	mhp	bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
<b>A<sup>1</sup></b>	760	750	559	1600-1800	37.5	213.2	II	T3C	IW*	NC
<b>A<sup>1</sup></b>	811	800	597	1600-1800	40.3	214.6	II	T3C	IW*	C-I

\* EU Stage IIIA certification > 300 bkW will not be available after December 2019. Contact your local dealer for availability.

#### U.S. EPA Tier 4 Final and IMO III and EU Stage V

	mhp	bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
<b>A<sup>1</sup></b>	1014	1000	746	1600-1800	49.6	210.9	III	T4C	EUV	NC
<b>B<sup>1</sup></b>	1217	1200	895	1800-2100	59.1	209.8	III	T4C	EUV	NC
<b>C<sup>1</sup></b>	1319	1300	970	1800-2100	64.3	210.7	III	T4C	EUV	NC
<b>C<sup>1</sup></b>	1470	1450	1081	2050-2150	73.4	215.6	III	T4C	IW*	NC

<sup>1</sup> Wide Operating Speed Range (WOSR)

Heat Exchanger (32°C Sea Water Temp), Keel Cooled (52°C SCAC Temp)

(continued)

# C32

## PROPULSION ENGINE (Commercial Applications)

(continued)

### SPECIFICATIONS

Vee 12, 4-Stroke-Cycle Diesel		
<b>Aspiration</b>	TTA	
<b>Bore x Stroke</b>	5.71 x 6.38 in	145 x 162 mm
<b>Displacement</b>	1659 cu in	32.1 liter
<b>Rotation (from flywheel end)</b>	Counterclockwise	
<b>Engine dry weight (approx)</b>	6950 - 7160 lb	3152 - 3248 kg

### DIMENSIONS

	LE	H	WE
<b>min.</b>	83.5 in/2121 mm	60.9 in/1547 mm	60.17 in/1528 mm
<b>max.</b>	89.9 in/2284 mm	62.5 in/1587 mm	60.17 in/1528 mm

# C32

## PROPULSION ENGINE (High Performance Applications)

### RATINGS AND FUEL CONSUMPTION

#### U.S. EPA Tier 3 and IMO II/III

	mhp	bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
<b>D</b>	1622	1600	1193	2300	86.3	229.7	II	T3R	RCD	C-I
<b>D</b>	1622	1600	1193	2300	86.3	229.7	II/III	NC	NC	NC
<b>E</b>	1724	1700	1268	2300	91.2	228.4	II	T3R	RCD	C-I
<b>E</b>	1825	1800	1342	2300	95.4	225.7	II	T3R	RCD	C-I
<b>E</b>	1925	1900	1418	2300	100.9	226.1	II	T3R	RCD	C-I

China II certification expected mid-2022. Contact your local dealer for availability.

### SPECIFICATIONS

Vee 12, 4-Stroke-Cycle Diesel		
<b>Aspiration</b>	TTA	
<b>Bore x Stroke</b>	5.71 x 6.38 in	145 x 162 mm
<b>Displacement</b>	1959 cu in	32.1 liter
<b>Rotation (from flywheel end)</b>	Counterclockwise	
<b>Engine dry weight (approx)</b>	6780 lb	3075 kg

### DIMENSIONS

	LE	H	WE
<b>min.</b>	82.9 in/2106 mm	56.9 in/1445 mm	58.3 in/1482 mm
<b>max.</b>	82.9 in/2106 mm	56.9 in/1445 mm	58.3 in/1482 mm



# C32B

ADEM VI (A6 ECM)

## PROPULSION ENGINE (High Performance Applications)

### RATINGS AND FUEL CONSUMPTION

U.S. EPA Tier 3 and IMO II/III

	mhp	bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
<b>E</b>	2025	2000	1491	2300	106.0	227.0	II	T3R	RCD	NC

China II certification expected mid-2022. Contact your local dealer for availability.

### SPECIFICATIONS

Vee 12, 4-Stroke-Cycle Diesel		
<b>Aspiration</b>	TA	TA
<b>Bore x Stroke</b>	5.71 x 6.38 in	145 x 162 mm
<b>Displacement</b>	1959 cu in	32.1 liter
<b>Rotation (from flywheel end)</b>	CCW	CCW
<b>Engine dry weight (approx)</b>	6934 lb	3145 kg

### DIMENSIONS

	LE	H	WE
<b>min.</b>	82.9 in/2106 mm	59.9 in/1445 mm	57.8 in/1469 mm
<b>max.</b>	82.9 in/2106 mm	59.9 in/1445 mm	57.8 in/1469 mm

# 3512C

## PROPULSION ENGINE

Electronic Control System

### RATINGS AND FUEL CONSUMPTION

	mhp	bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
<b>A</b>	1298	1280	954	1600	61.3	204.0	II	NC	NC	C-I
<b>A</b>	1318	1300	969	1200	64.3	210.6	II	NC	NC	C-I
<b>A</b>	1420	1400	1044	1600	66.6	202.5	II	NC	NC	C-I
<b>A</b>	1520	1500	1119	1800	70.3	200.1	II	NC	NC	C-I
<b>A'</b>	1521	1500	1118	1200	71.5	203.0	II	NC	NC	C-I
<b>A'</b>	1699	1675	1249	1600	79.7	202.6	II	NC	NC	C-I
<b>A'</b>	1836	1810	1350	1600	84.7	207.1	II	NC	NC	C-I/II
<b>B</b>	1378	1360	1014	1600	64.8	203.0	II	NC	NC	C-I
<b>B</b>	1420	1400	1044	1200	69.1	210.1	II	NC	NC	C-I
<b>B</b>	1521	1500	1119	1600	71.1	201.9	II	NC	NC	C-I
<b>B</b>	1597	1575	1174	1800	73.8	199.9	II	NC	NC	C-I
<b>B'</b>	1622	1600	1193	1200	76.2	202.8	II	NC	NC	C-I
<b>B'</b>	1774	1749	1305	1600	82.5	200.7	II	NC	NC	C-I
<b>B'</b>	1938	1911	1425	1600	89.0	208.5	II	NC	NC	C-I/II
<b>B'</b>	2282	2250	1678	1800	111.0	209.9	II	NC	NC	C-II
<b>C</b>	1429	1410	1051	1600	67.0	202.4	II	NC	NC	C-I
<b>C</b>	1521	1500	1118	1200	74.1	210.3	II	NC	NC	C-I
<b>C</b>	1622	1600	1193	1600	70.4	201.7	II	NC	NC	C-I
<b>C</b>	1673	1650	1230	1600	78.3	204.8	NC	NC	NC	C-I/II
<b>C</b>	1673	1650	1230	1800	77.2	199.6	II	NC	NC	C-I/II
<b>C'</b>	1723	1700	1267	1200	83.4	204.0	II	NC	NC	C-I
<b>C'</b>	1876	1850	1379	1600	86.4	199.0	II	NC	NC	C-I
<b>C'</b>	2040	2012	1500	1600	93.7	208.8	II	NC	NC	C-I
<b>C'</b>	2400	2365	1765	1800	116.5	214.5	II	NC	NC	C-I/II
<b>D'</b>	2587	2551	1903	1800	124.4	207.7	II	NC	NC	C-I

<sup>1</sup> High displacement engine (HD)

China Stage I Certification available via DTO only after July 1, 2022

(continued)

# 3512C

## PROPULSION ENGINE

Electronic Control System

(continued)

### SPECIFICATIONS

Vee 12, 4-Stroke-Cycle Diesel		
<b>Aspiration</b>	TTA	
<b>Bore x Stroke</b>	6.69 x 7.48 in	170 x 190 mm
<b>Bore x Stroke<sup>1</sup></b>	6.69 x 8.46 in	170 x 215 mm
<b>Displacement</b>	3161 cu in	51.8 liter
<b>Displacement<sup>1</sup></b>	3574 cu in	58.6 liter
<b>Rotation (from flywheel end)</b>	Counterclockwise or clockwise	
<b>Engine dry weight (approx)</b>	14,400 - 16,340 lb	6532 - 7411 kg

<sup>1</sup> High displacement engine (HD)

### DIMENSIONS

	LE	H	WE
<b>min.</b>	102.0 in/2590 mm	75.0 in/1904 mm	80.2 in/2037 mm
<b>max.</b>	105.1 in/2669 mm	88.3 in/2242 mm	87.9 in/2232 mm

### RATINGS AND FUEL CONSUMPTION

#### U.S. EPA Tier 4 Final and IMO II/III Ratings

	mhp	bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
<b>A</b>	1360	1341	1000	1600	63.0	200.2	II/III	T4C	EUV	NC
<b>A</b>	1523	1502	1120	1600	70.0	198.4	II/III	T4C	EUV	NC
<b>A</b>	1523	1502	1120	1800	73.4	208.0	II/III	T4C	NC	NC
<b>A</b>	1724	1700	1268	1600	78.8	197.5	II/III	T4C	EUV	NC
<b>A</b>	1835	1810	1350	1600	84.0	197.7	II/III	T4C	EUV	NC
<b>A</b>	2028	2000	1491	1600	93.1	198.2	II/III	T4C	NC	NC
<b>A</b>	2282	2250	1678	1800	105.7	199.9	II/III	T4C	NC	NC
<b>B</b>	1598	1576	1175	1800	76.4	206.4	II/III	T4C	NC	NC
<b>B</b>	2142	2112	1575	1600	98.5	198.6	II/III	T4C	NC	NC
<b>B</b>	2408	2375	1771	1800	111.3	199.6	II/III	T4C	NC	NC
<b>C</b>	1673	1650	1230	1800	79.6	205.4	II/III	T4C	NC	NC
<b>C</b>	2244	2213	1650	1600	103.4	199.0	II/III	T4C	NC	NC
<b>C</b>	2585	2549	1901	1800	119.7	199.9	II/III	T4C	NC	NC

All high displacement engines (HD).

Contact dealer for availability.

All ratings can be configured as an IMO II engine without aftertreatment.

(continued)

# 3512E

Electronic Control System

## PROPULSION ENGINE

(continued)

### SPECIFICATIONS

Vee 12, 4-Stroke-Cycle Diesel		
<b>Aspiration</b>	TTA	
<b>Bore x Stroke</b>	6.69 x 8.46 in	170 x 215 mm
<b>Displacement</b>	3574 cu in	58.6 liter
<b>Rotation (from flywheel end)</b>	Counterclockwise	
<b>Engine dry weight (approx)</b>	16,508 lb	7488 kg

### DIMENSIONS

	LE	H	WE
<b>min.</b>	104.2 in/2624 mm	87.5 in/2222.6 mm	80.2 in/2037 mm
<b>max.</b>	104.2 in/2624 mm	87.5 in/2222.6 mm	80.2 in/2037 mm

# 3516C

Electronic Control System

## PROPULSION ENGINE

### RATINGS AND FUEL CONSUMPTION

	mhp	bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
<b>A</b>	2028	2000	1491	1600	96.3	202.8	II	NC	NC	NC
<b>A'</b>	2162	2132	1590	1600	100.3	2203.0	NC	NC	NC	C-I/II
<b>A'</b>	2292	2260	1685	1600	107.5	202.4	II	NC	NC	NC
<b>A'</b>	2482	2448	1825	1600	113.2	206.9	II	NC	NC	NC
<b>B</b>	2130	2100	1566	1600	100.4	201.8	II	NC	NC	NC
<b>B'</b>	2271	2240	1670	1600	104.9	202.1	NC	NC	NC	C-I/II
<b>B'</b>	2407	2375	1771	1600	112.0	200.8	II	NC	NC	NC
<b>B'</b>	2611	2575	1920	1600	118.6	206.7	II	NC	NC	C-I/II
<b>B'</b>	3046	3005	2240	1800	148.3	210.3	II	NC	NC	NC
<b>C</b>	2231	2200	1640	1600	104.5	201.9	II	NC	NC	NC
<b>C'</b>	2380	2347	1750	1600	110.4	203.1	NC	NC	NC	C-I/II
<b>C'</b>	2534	2500	1864	1600	117.0	199.3	II	NC	NC	NC
<b>C'</b>	2712	2675	1995	1600	125.0	201.6	NC	NC	NC	C-I/II
<b>C'</b>	2720	2682	2000	1600	123.4	198.5	II	NC	NC	NC
<b>C'</b>	3196	3150	2350	1800	154.7	200.9	II	NC	NC	NC
<b>D'</b>	2855	2816	2100	1600	114.9	199.0	II	NC	NC	NC
<b>D'</b>	3434	3385	2525	1800	165.0	207.6	II	NC	NC	NC

<sup>1</sup> High displacement engine (HD)

China Stage I Certification available via DTO only after July 1, 2022

(continued)

# 3516C

Electronic Control System

## PROPULSION ENGINE

(continued)

### SPECIFICATIONS

Vee 16, 4-Stroke-Cycle Diesel		
<b>Aspiration</b>	TTA	
<b>Bore x Stroke</b>	6.69 x 7.48 in	170 x 190 mm
<b>Bore x Stroke<sup>1</sup></b>	6.69 x 8.46 in	170 x 215 mm
<b>Displacement</b>	4211 cu in	69 liter
<b>Displacement<sup>1</sup></b>	4765 cu in	78 liter
<b>Rotation (from flywheel end)</b>	Counterclockwise or clockwise	
<b>Engine dry weight (approx)</b>	17,550 - 19,025 lb	7964 - 8629 kg

<sup>1</sup> High displacement engine (HD)

### DIMENSIONS

	LE	H	WE
<b>min.</b>	143.1 in/3637 mm	77.4 in/1967 mm	80.2 in/2037 mm
<b>max.</b>	148.0 in/3761 mm	84.6 in/2150 mm	84.3 in/2142 mm

# 3516E

## PROPULSION ENGINE

Electronic Control System

### RATINGS AND FUEL CONSUMPTION

#### U.S. EPA Tier 4 Final and IMO II/III Ratings

	mhp	bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
<b>A</b>	2536	2501	1865	1600	118.4	201.5	II/III	T4C	NC	NC
<b>A</b>	2720	2682	2000	1600	126.7	201.2	II/III	T4C	NC	NC
<b>A</b>	3046	3004	2240	1800	145.4	206.1	II/III	T4C	NC	NC
<b>B</b>	2855	2816	2100	1600	133.2	201.4	II/III	T4C	NC	NC
<b>B</b>	3195	3151	2350	1800	151.2	204.3	II/III	T4C	NC	NC
<b>C</b>	2991	2950	2200	1600	139.9	202.0	II/III	T4C	NC	NC
<b>C*</b>	3433	3386	2525	1800	162.2	203.4	II/III	T4C	NC	NC
<b>D</b>	3549	3500	2610	1800	167.2	206.2	III	T4C	NC	NC

All ratings are high displacement.

All ratings, except 2610 bkW, can be configured as an IMO II engine without aftertreatment.

\* D-rated duty cycle engine when configured with IMO II capability.

### SPECIFICATIONS

Vee 16, 4-Stroke-Cycle Diesel		
<b>Aspiration</b>	TTA	
<b>Bore x Stroke</b>	6.69 x 8.46 in	170 x 215 mm
<b>Displacement</b>	4765 cu in	78 liter
<b>Rotation (from flywheel end)</b>	Counterclockwise	
<b>Engine dry weight (approx)</b>	21,164 lb	9600 kg

### DIMENSIONS

	LE	H	WE
<b>min.</b>	125.7 in/3192 mm	87.6 in/2225 mm	89.9 in/2284 mm
<b>max.</b>	125.7 in/3192 mm	87.6 in/2225 mm	89.9 in/2284 mm



# 3516E

Electronic Control System

**PROPULSION ENGINE** (High Performance Applications)

## RATINGS AND FUEL CONSUMPTION

U.S. EPA Tier 4 Final and IMO II/III Ratings

	mhp	bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
<b>D</b>	3807	3755	2800	1800	185,1	209,8	II	NC	NC	NC
<b>D</b>	4079	4023	3000	1800	200,6	212,2	II	NC	NC	NC

## SPECIFICATIONS

Vee 16, 4-Stroke-Cycle Diesel		
<b>Aspiration</b>	Sequential Turbocharged-Aftercooled	
<b>Bore x Stroke</b>	6.69 x 8.46 in	170 x 215 mm
<b>Displacement</b>	4765 cu in	78.1 liter
<b>Rotation (from flywheel end)</b>	Counterclockwise or clockwise	
<b>Engine dry weight (approx)</b>	24,250 lb	11,000 kg

## DIMENSIONS

	LE	H	WE
<b>min.</b>	177.8 in/4515 mm	97.6 in/2478 mm	72.6 in/1845 mm
<b>max.</b>	177.8 in/4515 mm	97.6 in/2478 mm	72.6 in/1845 mm

# C280-6

## PROPULSION ENGINE

### RATINGS AND FUEL CONSUMPTION

	mhp	bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
<b>CS</b>	2352	2320	1730	900	110	203.5	II	NC	NC	NC
<b>CS</b>	2515	2481	1850	1000	120	206.6	II	NC	NC	NC
<b>MC</b>	2583	2548	1900	900	121	204.0	II	NC	NC	NC
<b>MC</b>	2760	2722	2030	1000	131	205.4	II	NC	NC	NC

C280 fuel rate is at full load on the prop curve, BSFC is at full power condition.

### SPECIFICATIONS

In-line 6, 4-Stroke-Cycle Diesel		
<b>Aspiration</b>	TA	
<b>Bore x Stroke</b>	11.0 x 11.8 in	280 x 300 mm
<b>Displacement</b>	6773 cu in	111 liter
<b>Rotation (from flywheel end)</b>	Counterclockwise or clockwise	
<b>Engine dry weight (approx)</b>	34,496 lb	15,680 kg

### DIMENSIONS

	LE	H	WE
<b>min.</b>	158 in/4013 mm	108 in/2743 mm	71 in/1803 mm
<b>max.</b>	158 in/4013 mm	108 in/2743 mm	71 in/1803 mm

# C280-8

## PROPULSION ENGINE

### RATINGS AND FUEL CONSUMPTION

#### IMO II

	mhp	bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
<b>CS</b>	3127	3084	2300	900	151	209.9	II	NC	NC	NC
<b>CS</b>	3345	3299	2460	1000	170	221.0	II	NC	NC	NC
<b>MC</b>	3440	3393	2530	900	166	210.0	II	NC	NC	NC
<b>MC</b>	3684	3634	2710	1000	186	219.0	II	NC	NC	NC
<b>MC</b>	4078	4023	3000	1000	195	207.2	II	NC	NC	NC

#### IMO III

	mhp	bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
<b>CS</b>	3345	3299	2460	1000	152	197.5	III	T4C	NC	NC
<b>MC</b>	3684	3634	2710	1000	168	198.4	III	T4C	NC	NC

C280 fuel rate is at full load on the prop curve, BSFC is at full power condition.

### SPECIFICATIONS

In-line 8, 4-Stroke-Cycle Diesel		
<b>Aspiration</b>	TA	
<b>Bore x Stroke</b>	11.0 x 11.8 in	280 x 300 mm
<b>Displacement</b>	9031 cu in	148 liter
<b>Rotation (from flywheel end)</b>	Counterclockwise or clockwise	
<b>Engine dry weight (approx)</b>	41,800 lb	19,000 kg

### DIMENSIONS

	LE	H	WE
<b>min.</b>	195 in/4953 mm	104 in/2642 mm	71 in/1803 mm
<b>max.</b>	195 in/4953 mm	104 in/2642 mm	71 in/1803 mm

# C280-12

Electronic Control System

## PROPULSION ENGINE

### RATINGS AND FUEL CONSUMPTION

#### IMO II

	mhp	bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
<b>CS</b>	4704	4640	3460	900	208	193.8	II	NC	NC	NC
<b>CS</b>	5031	4962	3700	1000	239	206.6	II	NC	NC	NC
<b>MC</b>	5167	5096	3800	900	214	194.0	II	NC	NC	NC
<b>MC</b>	5520	5444	4060	1000	261	205.4	II	NC	NC	NC
<b>MC</b>	6118	6035	4500	1000	292	207.0	II	NC	NC	NC

#### IMO III

	mhp	bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
<b>CS</b>	5031	4962	3700	1000	233	201.1	III	T4C	NC	NC
<b>MC</b>	5520	5444	4060	1000	255	200.4	III	T4C	NC	NC

C280 fuel rate is at full load on the prop curve, BSFC is at full power condition.

### SPECIFICATIONS

Vee 12, 4-Stroke-Cycle Diesel		
<b>Aspiration</b>	TTA	
<b>Bore x Stroke</b>	11.0 x 11.8 in	280 x 300 mm
<b>Displacement</b>	13,546 cu in	222 liter
<b>Rotation (from flywheel end)</b>	Counterclockwise or clockwise	
<b>Engine dry weight (approx)</b>	57,276 lb	25,980 kg

### DIMENSIONS

	LE	H	WE
<b>min.</b>	182 in/4623 mm	134 in/3404 mm	80 in/2032 mm
<b>max.</b>	182 in/4623 mm	134 in/3404 mm	80 in/2032 mm

# C280-16

## PROPULSION ENGINE

### RATINGS AND FUEL CONSUMPTION

#### IMO II

	mhp	bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
<b>CS</b>	6255	6169	4600	900	302	209.9	II	NC	NC	NC
<b>CS</b>	6690	6598	4920	1000	340	220.6	II	NC	NC	NC
<b>MC</b>	6879	6785	5060	900	333	210.0	II	NC	NC	NC
<b>MC</b>	7369	7268	5420	1000	371	218.7	II	NC	NC	NC
<b>FCVR</b>	7682	7577	5650	1000	366	207.0	II	NC	NC	NC
<b>FCVR</b>	8158	8046	6000	1000	389	207.2	II	NC	NC	NC

#### IMO III

	mhp	bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
<b>CS</b>	6255	6169	4600	900	282	195.4	III	T4C	NC	NC

C280 fuel rate is at full load on the prop curve, BSFC is at full power condition.  
 Arrangements are available with front mounted turbochargers or rear mounted turbochargers  
 FMT requires remote mounted (Shipped Loose) heat exchanger for the Oil Cooler.  
 FMT duplex Oil filters are ship loose and require remote mounting and plumbing.  
 Single circuit cooling system is not available with FMT configuration.

### SPECIFICATIONS

Vee 16, 4-Stroke-Cycle Diesel		
<b>Aspiration</b>	TTA	
<b>Bore x Stroke</b>	11.0 x 11.8 in	280 x 300 mm
<b>Displacement</b>	18,062 cu in	296 liter
<b>Rotation (from flywheel end)</b>	Counterclockwise or clockwise	
<b>Engine dry weight (approx)</b>	68,343 lb	31,000 kg

### DIMENSIONS

	LE	H	WE
<b>min.</b>	224 in/5690 mm	134 in/3404 mm	80 in/2032 mm
<b>max.</b>	224 in/5690 mm	134 in/3404 mm	80 in/2032 mm

# DEP

## DIESEL ELECTRIC PROPULSION - 50 HZ

### RATINGS AND FUEL CONSUMPTION

	bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
<b>C4.4<sup>1</sup></b>	95.3	71.1	1500	5.3	258.6	II	T3C	EUV	NC
<b>C4.4<sup>1</sup></b>	116.4	86.8	1500	6.2	227.5	II	NC	EUV	C-II
<b>C4.4<sup>1</sup></b>	145.6	108.6	1500	7.4	217.9	II	NC	EUV	C-II
<b>C7.1</b>	146.5	109.3	1500	7.9	229.6	II/III	NC	EUV	C-II
<b>C7.1</b>	172.9	129	1500	9.2	227.5	II/III	NC	EUV	C-II
<b>C7.1</b>	219.8	164	1500	11.2	216.5	II/III	NC	NC	C-II
<b>C9.3</b>	292	218	1500	13.9	202.6	II	NC	NC	C-II
<b>C9.3</b>	282	210	1500	13.8	208.6	II/III	NC	NC	NC
<b>C9.3</b>	362	270	1500	17.2	202.6	II	NC	NC	C-II
<b>C9.3</b>	351	262	1500	17.4	211	II/III	NC	NC	NC
<b>C18</b>	404	301	1500	19.9	210.1	II	NC	NC	NC
<b>C18</b>	514	383	1500	25.2	209.1	II	NC	NC	NC
<b>C18<sup>2</sup></b>	514	383	1500	24.9	206.6	II/III	NC	NC	NC
<b>C18</b>	514	383	1500	23.7	198.9	NC	NC	EUV	NC
<b>C18</b>	587	438	1500	28.7	208.2	II	NC	NC	NC
<b>C18</b>	587	438	1500	28.2	204.8	II/III	NC	NC	NC
<b>C18</b>	617	460	1500	28.2	197.3	NC	NC	EUV	NC
<b>C18</b>	660	492	1500	32.3	208.6	II	NC	NC	NC
<b>C18</b>	660	492	1500	32.2	207.7	II/III	NC	NC	NC
<b>C32</b>	791	590	1500	37.9	203.8	II	NC	IW	C-I
<b>C32</b>	923	688	1500	44.0	203.0	II	NC	IW	C-I
<b>C32</b>	1172	874	1500	57.0 55.6	207.0 202.0	II III	NC	EUV	NC
<b>3512B</b>	1686	1257	1500	77.4	195.7	II	NC	NC	NC
<b>3512C</b>	1826	1362	1500	84.7	197.5	II	NC	NC	NC

<sup>1</sup> C4.4 electronic.

<sup>2</sup> Only available via DTO. Fuel sulfur restrictions apply.

(continued)

# DEP

## DIESEL ELECTRIC PROPULSION - 50 HZ

(continued)

### RATINGS AND FUEL CONSUMPTION

	bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
<b>3512E<sup>3</sup></b>	1694	1263	1500	77	194	II/III	NC	NC	NC
<b>3516C</b>	2303	1717	1500	110.3	203.9	II	NC	NC	C-I
<b>3516C</b>	2600	1940	1500	122.6	200.8	II	NC	NC	C-I
<b>3516E<sup>3</sup></b>	2301	1716	1500	106	197.5	II/III	NC	NC	NC
<b>3516E<sup>3</sup></b>	2598	1937	1500	120	197	II/III	NC	NC	NC
<b>C280-6</b>	2481	1850	1000	118.9	193.6	II	NC	NC	NC
<b>C280-6</b>	2722	2030	1000	129.0	197.0	II	NC	NC	NC
<b>C280-8</b>	3299	2460	1000	170.0	220.6	II	NC	NC	NC
<b>C280-8</b>	3634	2710	1000	186.0	218.7	II	NC	NC	NC
<b>C280-12</b>	4962	3700	1000	239.0	206.6	II	NC	NC	NC
<b>C280-12</b>	5445	4060	1000	261.0	205.4	II	NC	NC	NC
<b>C280-16</b>	6598	4920	1000	307.0	197.9	II	NC	NC	NC
<b>C280-16</b>	7268	5420	1000	340.0	199.7	II	NC	NC	NC

C280 fuel rate at rated power, BSFC is at full power condition.

<sup>3</sup>High displacement engine (HD)

# DEP

## DIESEL ELECTRIC PROPULSION - 60 HZ

### RATINGS AND FUEL CONSUMPTION

	bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
<b>C4.4<sup>1</sup></b>	95.3	71.1	1800	5.5	247.0	II	T3C	EUV	NC
<b>C4.4<sup>1</sup></b>	109.2	81.5	1800	5.9	231.3	II	NC	EUV	C-II
<b>C4.4<sup>1</sup></b>	145.6	108.6	1800	7.5	220.3	II	NC	EUV	C-II
<b>C4.4<sup>1</sup></b>	172.9	129	1800	8.3	204.5	II	NC	EUV	C-II
<b>C7.1</b>	172.9	129	1800	9.5	233.6	II/III	NC	EUV	C-II
<b>C7.1</b>	219.7	163.9	1800	11.3	219.4	II/III	NC	NC	C-II
<b>C7.1</b>	256.4	191.3	1800	13.2	219.5	II/III	NC	NC	C-II
<b>C7.1</b>	293.0	218.6	1800	14.9	216.4	II/III	NC	NC	C-II
<b>C9.3</b>	369	275	1800	18.6	215.1	II	T3C	NC	C-II
<b>C9.3</b>	363	271	1800	18.5	216.8	II/III	NC	NC	NC
<b>C9.3</b>	436	325	1800	21.8	212.8	II	T3C	NC	C-II
<b>C18</b>	499	372	1800	25.4	217.0	II	NC	NC	C-I
<b>C18</b>	624	465	1800	32.8	224.0	II	T3C	NC	C-II
<b>C18</b>	624	465	1800	31.1	215.1	NC	NC	EUV	NC
<b>C18</b>	803	599	1800	40.9	217.0	II	T3C	NC	NC
<b>C18</b>	803	599	1800	41.2	218.3	II/III	T3C	NC	NC
<b>C18</b>	803	599	1800	39.2	210.6	NC	NC	EUV	NC
<b>C32</b>	916	683	1800	45.3	210.8	II	NC	CC2	C-I
<b>C32</b>	1047	781	1800	57.8	210.4	II	NC	NC	C-I
<b>C32</b>	1333	994	1800	64.9	207.2	II	NC	IW	C-I
<b>C32</b>	1333	994	1800	64.0	204.4	III	T4C	EUV	NC
<b>3512C</b>	1920	1431	1800	91.9	204.0	II	NC	IW	C-I
<b>3512C</b>	2183	1628	1800	110.2	215.1	II	NC	IW	C-I
<b>3512C</b>	2400	1790	1800	119.7	212.4	II	NC	IW	C-I
<b>3512E<sup>2</sup></b>	2188	1632	1800	104.0	202.4	II/III	T4C	NC	NC
<b>3512E<sup>2</sup></b>	2400	1789	1800	113.2	200.9	II/III	T4C	NC	NC

<sup>1</sup> C4.4 electronic    <sup>2</sup> High displacement engine (HD)

(continued)



# DEP

## DIESEL ELECTRIC PROPULSION - 60 HZ

(continued)

### RATINGS AND FUEL CONSUMPTION

	bhp	bkW	rpm	U.S. g/h	g/bkW-hr	U.S. EPA	IMO	EU	China
<b>3516C</b>	2575	1920	1800	120.6	202.0	NC	II	NC	C-I
<b>3516C</b>	2809	2095	1800	132.0	200.2	NC	II	NC	C-I
<b>3516C</b>	2984	2225	1800	140.6	200.1	NC	II	NC	C-I
<b>3516C</b>	3151	2350	1800	148.9	201.4	NC	II	NC	C-I
<b>3516E<sup>2</sup></b>	2576	1921	1800	122.7	202.9	T4C	II/III	NC	NC
<b>3516E<sup>2</sup></b>	2823	2105	1800	135.1	203.7	T4C	II/III	NC	NC
<b>3516E<sup>2</sup></b>	3175	2368	1800	152.4	204.3	T4C	II/III	NC	NC
<b>C280-6</b>	2320	1730	900	102.0	197.7	NC	II	NC	NC
<b>C280-6</b>	2548	1900	900	118.0	193.6	NC	II	NC	NC
<b>C280-8</b>	3084	2300	900	142.0	197.7	T4C	III	NC	NC
<b>C280-8</b>	3084	2300	900	144.0	199.5	NC	II	NC	NC
<b>C280-8</b>	3393	2530	900	154.0	193.6	T4C	III	NC	NC
<b>C280-8</b>	3393	2530	900	156.0	197.0	NC	II	NC	NC
<b>C280-12</b>	4640	3460	900	216.0	199.6	T4C	III	NC	NC
<b>C280-12</b>	4640	3460	900	205.0	188.7	NC	II	NC	NC
<b>C280-12</b>	5096	3800	900	237.0	198.3	T4C	III	NC	NC
<b>C280-12</b>	5096	3800	900	237.0	199.0	NC	II	NC	NC
<b>C280-16</b>	6169	4600	900	279.0	192.6	T4C	III	NC	NC
<b>C280-16</b>	6169	4600	900	304.7	202.0	NC	II	NC	NC
<b>C280-16</b>	6786	5060	900	312.0	197.0	T4C	III	NC	NC
<b>C280-16</b>	6786	5060	900	318.0	200.8	NC	II	NC	NC

<sup>2</sup> High displacement engine (HD)

C280 fuel rate at rated power, BSFC is at full power condition.

# Cat Generator Sets and Auxiliary Engines



With more than 80 years of marine power experience, we offer a wide array of generator sets spanning from 10 ekW (10 kVA) to 5200 ekW (6500 kVA). Cat marine generator sets and auxiliary engines combine proven design and manufacturing methods with the latest technology, such as advanced control for more power and efficiency, and enhanced monitoring that keeps you ahead of any issues that could potentially affect your uptime and productivity.

We're built to provide the power you work with and live by.

# C1.5

## GENERATOR SET

### RATINGS AND FUEL CONSUMPTION

Three Phase ekW@.8pf	Single Phase ekW@1.0pf	kVA	Hz	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
12.0		15.0	60	1800	1.2	268.2	NST	T3C	NST	NC
10.0		12.5	50	1500	1.0	264.1	NST	T3C	NST	NC
	12.0	12.0	60	1800	1.2	290.5	NST	T3C	NST	NC
	10.0	10.0	50	1500	1.0	290.5	NST	T3C	NST	NC

### SPECIFICATIONS

In-line 3, 4-Stroke-Cycle Diesel		
<b>Aspiration</b>	NA	
<b>Bore x Stroke</b>	3.31 x 3.5 in	84 x 90 mm
<b>Displacement</b>	91 cu in	1.5 liter
<b>Rotation (from flywheel end)</b>	Counterclockwise	
<b>Generator set weight (approx)</b>	703/908 lb	319/412 kg

### DIMENSIONS

	LE	H	WE
<b>Open</b>	40.8 in/1038 mm	27.1 in/689 mm	21.1 in/535 mm
<b>Enclosed</b>	43.1 in/1095 mm	27.9 in/711 mm	24 in/608 mm

## GENERATOR SET

### RATINGS AND FUEL CONSUMPTION

Three Phase ekW@.8pf	Single Phase ekW@1.0pf	kVA	Hz	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
18.0		22.5	60	1800	1.63	242.9	NST	T3C	NC	NC
25.0		31.25	60	1800	2.24	241.0	NST	T3C	NC	NC
15.0		18.75	50	1500	1.37	248.8	NST	T3C	NC	NC
20.0		25.0	50	1500	1.88	242.8	NST	T3C	NC	NC
	18.0	18.0	60	1800	1.63	242.9	NST	T3C	NC	NC
	25.0	25.0	60	1800	2.24	241.0	NST	T3C	NC	NC
	15.0	15.0	50	1500	1.37	248.8	NST	T3C	NC	NC
	20.0	20.0	50	1500	1.88	242.8	NST	T3C	NC	NC

### SPECIFICATIONS

In-line 4, 4-Stroke-Cycle Diesel		
Aspiration	NA, T	
Bore x Stroke	3.31 x 3.94 in	84 x 100 mm
Displacement	135 cu in	2.2 liter
Rotation (from flywheel end)	Counterclockwise	
Generator set weight (approx)	857/1027 lb	389/466 kg

### DIMENSIONS

	LE	H	WE
Open	47.9 in/1219 mm	32.8 in/835 mm	22.3 in/567 mm
Enclosed	50.7 in/1290 mm	31.0 in/775 mm	24.7 in/628 mm

# C4.4

## GENERATOR SET

### RATINGS AND FUEL CONSUMPTION

ekW@.8pf	kVA	Hz	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
38.0	47.5	50	1500	2.9	221.7	NST	NC	NC	NC
51.5	64.5	50	1500	3.9	220.0	NST	NC	NC	NC
69.0	86.0	50	1500	4.9	206.3	NST	NC	NC	NC
86.0	107.0	50	1500	6.5	219.6	NST	NC	NC	NC
44.0	55.0	60	1800	3.4	224.5	NST	NC	NC	NC
58.5	73.0	60	1800	4.2	208.6	NST	NC	NC	NC
76.0	95.0	60	1800	5.8	221.7	NST	NC	NC	NC
99.0	123.0	60	1800	7.3	214.2	NST	NC	NC	NC
36.0R	45.0	50	1500	2.9	234.0	NST	NC	NC	NC
49.0R	61.0	50	1500	3.9	231.2	NST	NC	NC	NC
65.0R	81.0	50	1500	4.9	219.0	NST	NC	NC	NC
82.0R	103.0	50	1500	6.5	230.3	NST	NC	NC	NC
42.0R	53.0	60	1800	3.4	235.2	NST	NC	NC	NC
56.0R	70.0	60	1800	4.5	233.5	NST	NC	NC	NC
72.0R	90.0	60	1800	5.8	234.0	NST	NC	NC	NC
95.0R	119.0	60	1800	7.3	223.3	NST	NC	NC	NC

R - Radiator cooled only.

Engine type approval available from ABS, BV, CCS, CRS, DNV, LR, RINA.

(continued)

# C4.4

## GENERATOR SET

*(continued)*

### SPECIFICATIONS

In-line 4, 4-Stroke-Cycle Diesel		
<b>Aspiration</b>	NA, T, TA	
<b>Bore x Stroke</b>	4.13 x 5.0 in	105 x 127 mm
<b>Displacement</b>	269 cu in	4.4 L
<b>Rotation (from flywheel end)</b>	Counterclockwise	
<b>Generator set weight (approx)</b>	1664 - 2372 lb	754 - 1076 kg

### DIMENSIONS

	LE	H	WE
<b>Open min.</b>	56.0 in/1422 mm	39.8 in/1010 mm	27.6 in/700 mm
<b>Open max.</b>	73.3 in/1861 mm	46.2 in/1174 mm	32.3 in/821 mm
<b>Enclosed</b>	68.9 in/1750 mm	47.8 in/1215 mm	39.4 in/1000 mm

# C4.4

## GENERATOR SET

### RATINGS AND FUEL CONSUMPTION

#### U.S. EPA Tier 3 & IMO II

ekW@.8pf	kVA	Hz	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
65	81	50	1500	5.3	264	NST	T3C	EUV	NC
80	100	50	1500	5.7	230	NST	T3C	EUV	C-II
99	124	50	1500	6.8	221	NST	T3C	EUV	C-II
65	81	60	1800	5.5	247	NST	T3C	EUV	NC
75	94	60	1800	5.3	227	NST	T3C	EUV	C-II
99	124	60	1800	6.7	219	NST	T3C	EUV	C-II
118	148	60	1800	7.9	215	NST	T3C	EUV	C-II
58R	73	50	1500	5.3	264	NST	T3C	EUV	NC
73R	91	50	1500	5.7	230	NST	T3C	EUV	C-II
88R	110	50	1500	6.8	221	NST	T3C	EUV	C-II
56R	64	60	1800	5.5	274	NST	T3C	EUV	NC
66R	83	60	1800	5.3	227	NST	T3C	EUV	C-II
90R	113	60	1800	6.7	219	NST	T3C	EUV	C-II
105R	131	60	1800	7.9	215	NST	T3C	EUV	C-II

Engine type approval available from ABS, BV, CCS, DNV, LR, NKK, PR, RINA.

(continued)

# C4.4

## GENERATOR SET

*(continued)*

### SPECIFICATIONS

In-line 4, 4-Stroke-Cycle Diesel		
<b>Aspiration</b>	T, TA	
<b>Bore x Stroke</b>	4.13 x 5.0 in	105 x 127 mm
<b>Displacement</b>	269 cu in	4.4 liter
<b>Rotation (from flywheel end)</b>	Counterclockwise	
<b>Generator set weight (approx)</b>	2736 - 3389 lb	1241 - 1537 kg

### DIMENSIONS

	LE	H	WE
<b>min.</b>	66.4 in/1687 mm	49 in/1245 mm	38.3 in/974 mm
<b>max.</b>	80.2 in/2037 mm	78.7 in/1999 mm	38.8 in/986 mm



# C7.1

Electronic Control System

## GENERATOR SET

### RATINGS AND FUEL CONSUMPTION

U.S. EPA Tier 3, IMO II & IMO II/III Switchable

ekW@.8pf	kVA	Hz	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
100	125	50	1500	7.9	229.6	NST	T3C	EUV	C-II
118	148	50	1500	9.2	227.5	NST	T3C	EUV	C-II
150	188	50	1500	11.2	216.5	II/III	T3C	NC	C-II
118	148	60	1800	9.5	233.6	NST	T3C	EUV	C-II
150	188	60	1800	11.3	219.4	II/III	T3C	NC	C-II
175	219	60	1800	13.2	219.5	II/III	T3C	NC	C-II
200	250	60	1800	14.9	216.4	II/III	T3C	NC	C-II
92R	115	50	1500	7.8	263.6	NST	T3C	EUV	C-II
111R	139	50	1500	9.3	251.3	NST	T3C	EUV	C-II
143R	179	50	1500	11.3	239.8	II/III	T3C	NC	C-II
106R	133	60	1800	9.1	254.2	NST	T3C	EUV	C-II
138R	173	60	1800	11.1	243.5	II/III	T3C	NC	C-II
163R	204	60	1800	12.7	231.5	II/III	T3C	NC	C-II

Engine type approval available from ABS, BV, DNV, LR, NKK, RINA, CRS, CCS.

All ratings subject to IMO can be configured as an IMO II engine without aftertreatment.

### SPECIFICATIONS

In-line 6, 4-Stroke-Cycle Diesel		
<b>Aspiration</b>	TA	
<b>Bore x Stroke</b>	4.13 x 5.3 in	105 x 135 mm
<b>Displacement</b>	433.3 cu in	7.01 liter
<b>Rotation (from flywheel end)</b>	Counterclockwise	
<b>Generator set weight (approx)</b>	3355 - 4718 lb	1522 - 2140 kg

### DIMENSIONS

	LE	H	WE
<b>min.</b>	76.3 in/1940 mm	49.7 in/1263 mm	37.6 in/956 mm
<b>max.</b>	102 in/2582 mm	62.3 in/1583 mm	39.0 in/993 mm

# C9.3

## GENERATOR SET

### RATINGS AND FUEL CONSUMPTION

ekW@.8pf	kVA	Hz	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
200	250	50	1500	13.6	203.0	II	NC	NC	C-II <sup>2</sup>
195	244	50	1500	13.7	208.8	II/III	NC	NC	NC
250	313	50	1500	17.0	202.3	II	NC	NC	C-II <sup>2</sup>
245	306	50	1500	17.4	211.0	II/III	NC	NC	NC
250	313	60	1800	18.2	216.4	II	T3C	NC	C-II <sup>2</sup>
250	313	60	1800	18.3	217.5	II/III	NC	NC	NC
300	375	60	1800	21.5	213.0	II	T3C	NC	C-II <sup>2</sup>
185R	231	50	1500	13.6	203.0	II	NC	NC	C-II <sup>2</sup>
180R	225	50	1500	13.7	208.8	II/III	NC	NC	NC
235R	294	50	1500	17.0	202.3	II	NC	NC	C-II <sup>2</sup>
230R	288	50	1500	17.4	211.0	II/III	NC	NC	NC
224R	280	60	1800	18.2	216.4	II	T3C	NC	C-II <sup>2</sup>
224R	280	60	1800	18.3	217.5	II/III	NC	NC	NC
274R	343	60	1800	21.5	213.0	II	T3C	NC	C-II <sup>2</sup>

<sup>2</sup> Only available via DTO.

(continued)

# C9.3

## GENERATOR SET

*(continued)*

### SPECIFICATIONS

In-line 6, 4-Stroke-Cycle Diesel		
<b>Aspiration</b>	TA	
<b>Bore x Stroke</b>	4.13 x 5.31 in	115 x 149 mm
<b>Displacement</b>	568 cu in	9.3 liter
<b>Rotation (from flywheel end)</b>	Counterclockwise	
<b>Generator set weight (approx)</b>	5219 lb	2367 kg

### DIMENSIONS

	LE	H	WE
<b>min.</b>	85.8 in/2179 mm	56.5 in/1436 mm	50.4 in/1260 mm
<b>max.</b>	85.8 in/2179 mm	56.5 in/1436 mm	50.4 in/1260 mm

## GENERATOR SET

### RATINGS AND FUEL CONSUMPTION

#### IMO II

ekW@.8pf	kVA	Hz	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
280	350	50	1500	19.9	209.5	II	NC	NC	NC
360	450	50	1500	25.2	209.0	II	NC	NC	C-I <sup>2</sup>
360 <sup>1</sup>	450	50	1500	24.9	206.6	II/III	NC	NC	NC
410	513	50	1500	28.7	208.0	II	NC	NC	C-I <sup>2</sup>
410	513	50	1500	28.2	204.8	II/III	NC	NC	NC
465	581	50	1500	32.3	209.0	II	NC	NC	C-I <sup>2</sup>
465	581	50	1500	32.2	207.7	II/III	NC	NC	NC
345	431	60	1800	25.4	217.0	II	NC	NC	C-I <sup>2</sup>
430	538	60	1800	31.5	215.0	II	NC	NC	C-I <sup>2</sup>
565	706	60	1800	40.4	214.0	II	NC	NC	C-I <sup>2</sup>
565	706	60	1800	41.1	218	II/III	NC	NC	NC
260R	325	50	1500	19.2	209.5	II	NC	NC	NC
335R	419	50	1500	25.2	209.0	II	NC	NC	C-I <sup>2</sup>
335R <sup>1</sup>	419	50	1500	24.9	206.6	II/III	NC	NC	NC
390R	486	50	1500	28.7	208.0	II	NC	NC	C-I <sup>2</sup>
390R	486	50	1500	28.2	204.8	II/III	NC	NC	NC
445R	556	50	1500	32.3	208.7	II	NC	NC	C-I <sup>2</sup>
445R	556	50	1500	32.2	207.7	II/III	NC	NC	NC
310R	388	60	1800	25.4	217.0	II	NC	NC	C-I <sup>2</sup>
395R	494	60	1800	31.5	215.0	II	NC	NC	C-I <sup>2</sup>
530R	663	60	1800	40.4	214.0	II	NC	NC	C-I <sup>2</sup>
530R	663	60	1800	41.1	218	II/III	NC	NC	NC

Generator set package includes SRMP generator.

<sup>1</sup> Only available via DTO. Fuel sulfur restrictions apply.

<sup>2</sup> Only available by DTO.

(continued)

# C18

## GENERATOR SET

(continued)

### RATINGS AND FUEL CONSUMPTION

#### U.S. EPA Tier 3 & IMO II

ekW@.8pf	kVA	Hz	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
430	538	60	1800	32.3	220.0	II	T3C	NC	C-I <sup>2</sup>
565	706	60	1800	40.1	212.7	II	T3C	NC	C-I <sup>2</sup>
565	706	60	1800	41.2	281.3	II/III	T3C	NC	NC
395R	594	60	1800	32.2	220.0	II	T3C	NC	C-I <sup>2</sup>
530R	663	60	1800	40.1	212.7	II	T3C	NC	C-I <sup>2</sup>
530R	663	60	1800	41.2	218.3	II/III	T3C	NC	NC

Generator set package includes SRMP generator.

<sup>2</sup> Only available by DTO.

## SPECIFICATIONS

In-line 6, 4-Stroke-Cycle Diesel		
<b>Aspiration</b>	TA, TTA	
<b>Bore x Stroke</b>	5.7 x 7.2 in	145 x 183 mm
<b>Displacement</b>	1106 cu in	
<b>Rotation (from flywheel end)</b>	Counterclockwise	
<b>Generator set weight (approx)</b>	8733 - 9974 lb	3961 - 4524 kg

## DIMENSIONS

	LE	H	WE
<b>min.</b>	119.7 in/3040 mm	66.3 in/1684 mm	60.9 in/1547 mm
<b>max.</b>	119.7 in/3040 mm	66.3 in/1684 mm	60.9 in/1547 mm

# C32

## GENERATOR SET

### RATINGS AND FUEL CONSUMPTION

#### IMO II/IMO III

ekW@.8pf	kVA	Hz	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
550	688	50	1500	37.9	203.8	II	NC	IW*	C-I
830	1038	50	1500	57.0	207.0	II	NC	IW*	NC
830	1038	50	1500	57.8	210.3	II/III	NC	NC	NC
730	913	60	1800	51.8	210.4	II	NC	IW*	C-I
730	913	60	1800	TBD	TBD	II/III	NC	NC	NC
940	1175	60	1800	64.9	207.2	II	NC	IW*	C-I
940	1175	60	1800	65.0	207.9	II/III	NC	NC	NC
525R	656	50	1500	37.9	203.8	II	NC	IW*	C-I
795R	994	50	1500	57.0	207.0	II	NC	IW*	NC
795R	994	50	1500	57.8	210.3	II/III	NC	NC	NC
675R	844	60	1800	51.8	210.4	II	NC	IW*	C-I
675R	844	60	1800	TBD	TBD	II/III	NC	NC	NC
880R	1100	60	1800	64.9	207.2	II	NC	IW*	C-I
880R	1100	60	1800	65.0	207.9	II/III	NC	NC	NC

Heat Exchanger (32°C Sea Water Temp), Keel Cooled (52°C SCAC Temp).

\* EU Stage IIIA and CCNR II certification > 300 kW will not be available after December 2019.  
Contact your local dealer for availability.

(continued)

# C32

## GENERATOR SET

*(continued)*

### RATINGS AND FUEL CONSUMPTION

#### U.S. EPA Tier 4 Final and IMO III

ekW@.8pf	kVA	Hz	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
830	1038	50	1500	63.3	202.1	III	NC	IW*	NC
940	1175	60	1800	70.8	204.3	III	T4C	IW*	NC
795R	994	50	1500	63.3	202.1	III	NC	IW*	NC
880R	844	60	1800	70.8	204.3	III	T4C	IW*	NC

Heat Exchanger (32°C Sea Water Temp), Keel Cooled (52°C SCAC Temp)

\* EU Stage IIIA and CCNR II certification > 300 kW will not be available after December 2019.  
Contact your local dealer for availability.

### SPECIFICATIONS

Vee 12, 4-Stroke-Cycle Diesel		
Aspiration	TTA	
Bore x Stroke	5.7 x 6.4 in	145 x 162 mm
Displacement	1959 cu in	32.1 liter
Rotation (from flywheel end)	Counterclockwise	
Generator set weight (approx)	15,721 lb	7131 kg

### DIMENSIONS

	LE	H	WE
min.	168.2 in/4271 mm	65.6 in/1667 mm	
max.	175.3 in/4452 mm	65.6 in/1667 mm	

# C280-6

## GENERATOR SET

### RATINGS AND FUEL CONSUMPTION

ekW@.8pf	kVA	Hz	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
1650	2063	60	900	102	197.7	II	NC	NC	NC
1820	2275	60	900	118	193.6	II	NC	NC	NC
1760	2200	50	1000	119	199.5	II	NC	NC	NC
1940	2425	50	1000	129	197.0	II	NC	NC	NC

### SPECIFICATIONS

In-line 6, 4-Stroke-Cycle Diesel		
<b>Aspiration</b>	TA	
<b>Bore x Stroke</b>	11.0 x 11.8 in	280 x 300 mm
<b>Displacement</b>	6773 cu in	111 liter
<b>Rotation (from flywheel end)</b>	Counterclockwise	
<b>Engine dry weight (approx)</b>	34,500 lb	15,680 kg
<b>Generator weight (approx)</b>	18,000 lb	8165 kg

### DIMENSIONS

	LE	LG	H	WE
<b>min.</b>	145 in/3691 mm	280.3 in/7120 mm	154.9 in/3934 mm	77.2 in/1961 mm
<b>max.</b>	145 in/3691 mm	280.3 in/7120 mm	154.9 in/3934 mm	77.2 in/1961 mm



# C280-8

## GENERATOR SET

### RATINGS AND FUEL CONSUMPTION

#### IMO II

ekW@.8pf	kVA	Hz	rpm	U.S. g/h	g/bkW-hr	IMO	U.S EPA	EU	China
2200	2750	60	900	144	197.7	II	NC	NC	NC
2420	3025	60	900	156	197.0	II	NC	NC	NC
2350	2938	50	1000	170	220.6	II	NC	NC	NC
2600	3250	50	1000	186	218.7	II	NC	NC	NC

#### IMO III

ekW@.8pf	kVA	Hz	rpm	U.S. g/h	g/bkW-hr	IMO	U.S EPA	EU	China
2200	2750	60	900	142	197.7	III	T4C	NC	NC
2420	3025	60	900	153	193.6	III	T4C	NC	NC

### SPECIFICATIONS

In-line 8, 4-Stroke-Cycle Diesel		
Aspiration	TA	
Bore x Stroke	11.0 x 11.8 in	280 x 300 mm
Displacement	9031 cu in	148 liter
Rotation (from flywheel end)	Counterclockwise	
Engine dry weight (approx)	41,800 lb	19,000 kg
Generator weight (approx)	25,000 lb	11,340 kg

### DIMENSIONS

	LE	LG	H	WE
min.	178 in/4511 mm	316.5 in/8040 mm	155.0 in/3937 mm	77.2 in/1961 mm
max.	178 in/4511 mm	316.5 in/8040 mm	155.0 in/3937 mm	77.2 in/1961 mm

# C280-12

Electronic Control System

## GENERATOR SET

### RATINGS AND FUEL CONSUMPTION

#### IMO II

ekW@.8pf	kVA	Hz	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
3300	4125	60	900	205	188.7	II	NC	NC	NC
3640	4550	60	900	237	199.0	II	NC	NC	NC
3520	4400	50	1000	239	206.6	II	NC	NC	NC
3880	4850	50	1000	261	205.4	II	NC	NC	NC

#### IMO III

ekW@.8pf	kVA	Hz	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
3300	4125	60	900	216	199.6	III	T4C	NC	NC
3640	4550	60	900	236	198.3	III	T4C	NC	NC

### SPECIFICATIONS

Vee 12, 4-Stroke-Cycle Diesel		
Aspiration	TA	
Bore x Stroke	11.0 x 11.8 in	280 x 300 mm
Displacement	13546 cu in	222 liter
Rotation (from flywheel end)	Counterclockwise	
Engine dry weight (approx)	57,276 lb	25,980 kg
Generator weight (approx)	33,000 lb	14,790 kg

### DIMENSIONS

	LE	LG	H	WE
min.	161 in/4087 mm	316.5 in/8040 mm	160.8 in/4085 mm	78.7 in/2000 mm
max.	161 in/4087 mm	316.5 in/8040 mm	160.8 in/4085 mm	78.7 in/2000 mm

# C280-16

## GENERATOR SET

### RATINGS AND FUEL CONSUMPTION

#### IMO II

ekW@.8pf	kVA	Hz	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
4400	5500	60	900	304.7	202.0	II	NC	NC	NC
4840	6050	60	900	318.0	200.8	II	NC	NC	NC
4700	5875	50	1000	307.0	197.9	II	NC	NC	NC
5200	6500	50	1000	340.0	199.7	II	NC	NC	NC

#### IMO III

ekW@.8pf	kVA	Hz	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
4400	5500	60	900	278	192.6	III	T4C	NC	NC
4840	6050	60	900	312	197.0	III	T4C	NC	NC

### SPECIFICATIONS

Vee 16, 4-Stroke-Cycle Diesel		
Aspiration	TA	
Bore x Stroke	11.0 x 11.8 in	280 x 300 mm
Displacement	18,062 cu in	222 liter
Rotation (from flywheel end)	Counterclockwise	
Engine dry weight (approx)	68,343 lb	31,000 kg
Generator weight (approx)	40,000 lb	18,145 kg

### DIMENSIONS

	LE	LG	H	WE
min.	197 in/5007 mm	366.7 in/9314 mm	164.1 in/4167 mm	78.3 in/1990 mm
max.	197 in/5007 mm	366.7 in/9314 mm	164.1 in/4167 mm	78.3 in/1990 mm

# C4.4

## GENERATOR SET ENGINE / AUXILIARY

### RATINGS AND FUEL CONSUMPTION

bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
95.3	71.1	1500	5.3	247	NST	T3C	EUV	NC
116.4	86.8	1500	5.7	233	NST	T3C	EUV	C-II
145.6	108.6	1500	6.8	221	NST	T3C	EUV	C-II
95.3	71.1	1800	5.5	247	NST	T3C	EUV	NC
109.3	81.5	1800	5.3	229	NST	T3C	EUV	C-II
145.6	108.6	1800	6.7	219	NST	T3C	EUV	C-II
173.0	129.0	1800	7.9	217	NST	T3C	EUV	C-II

### SPECIFICATIONS

#### In-line 4, 4-Stroke-Cycle Diesel

<b>Aspiration</b>	T, TA	
<b>Bore x Stroke</b>	4.13 x 5.0 in	105 x 127 mm
<b>Displacement</b>	269 cu in	4.4 liter
<b>Rotation (from flywheel end)</b>	Counterclockwise	
<b>Engine dry weight (approx)</b>	1200 - 1278 lb	545 - 580 kg

### DIMENSIONS

	LE	H	WE
<b>min.</b>	33.7 in/856 mm	40.9 in/1038 mm	30.6 in/778 mm
<b>max.</b>	33.7 in/856 mm	40.9 in/1038 mm	32.0 in/814 mm

# C7.1

## VARIABLE SPEED AUXILIARY ENGINE

### RATINGS AND FUEL CONSUMPTION

#### Variable Speed Auxiliary

bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
280	208	2300	14.9	226.0	II	T3C	NC	NC

### SPECIFICATIONS

#### In-line 6, 4-Stroke-Cycle Diesel

<b>Aspiration</b>	TA	
<b>Bore x Stroke</b>	4.13 x 5.31 in	105 x 135 mm
<b>Displacement</b>	428 cu in	7.01 liter
<b>Rotation (from flywheel end)</b>	Counterclockwise	
<b>Engine dry weight (approx)</b>	1676 lb	760 kg

### DIMENSIONS

	LE	H	WE
<b>min.</b>	43.1 in/1095 mm	34.5 in/876 mm	31.4 in/798 mm
<b>max.</b>	43.1 in/1095 mm	34.5 in/876 mm	31.4 in/798 mm

## GENERATOR SET ENGINE / AUXILIARY

### RATINGS AND FUEL CONSUMPTION

#### Variable Speed Auxiliary

bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
249.4	186	2400	14.6	250	II	T3C	NC	NC
199.8	149	2400	12.6	271	II	T3C	NC	NC
172.9	129	2400	11.3	280	II	T3C	EUV	NC

#### Constant Speed Auxiliary

bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
146.2	109.3	1500	7.9	229.6	NST	T3C	EUV	C-II
172.9	129.0	1500	9.2	227.5	NST	T3C	EUV	C-II
219.9	164.0	1500	11.2	216.5	II	T3C	NC	C-II
172.9	129.0	1800	9.5	233.6	NST	T3C	EUV	C-II
219.9	164.0	1800	11.3	219.4	II	T3C	NC	C-II
256.5	191.3	1800	13.2	219.5	II	T3C	NC	C-II
292.3	218.0	1800	14.9	216.4	II	T3C	NC	C-II

(continued)

## GENERATOR SET ENGINE / AUXILIARY

(continued)

### SPECIFICATIONS

#### In-line 6, 4-Stroke-Cycle Diesel

<b>Aspiration</b>	TA	
<b>Bore x Stroke</b>	4.13 x 5.31 in	105 x 135 mm
<b>Displacement</b>	428 cu in	7.01 liter
<b>Rotation (from flywheel end)</b>	Counterclockwise	
<b>Engine dry weight (approx)</b>	1512 - 1653 lb	686 - 750 kg

### DIMENSIONS

	LE	H	WE
<b>min.</b>	43.8 in/1112 mm	41.6 in/1056 mm	32.2 in/817 mm
<b>max.</b>	43.8 in/1112 mm	41.6 in/1056 mm	32.6 in/829 mm

# C9.3

## GENERATOR SET ENGINE/AUXILIARY

### RATINGS AND FUEL CONSUMPTION

#### Constant Speed

bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
292	218	1500	13.9	202.6	II	NC	NC	C-II
282	210	1500	13.8	208.6	II/III	NC	NC	NC
362	270	1500	17.2	202.2	II	NC	NC	C-II
351	262	1500	17.4	211	II/III	NC	NC	NC
369	275	1800	18.6	215.1	II	T3C	NC	C-II
363	271	1800	18.5	216.8	II/III	NC	NC	NC
436	325	1800	21.8	212.8	II	T3C	NC	C-II

#### Variable Speed Auxiliary

bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
375	280	1800	19.3	219.1	II	T3C	NC	

<sup>1</sup> Contact your local dealer for details on availability on IMO III ratings. Power may vary slightly from IMO II rating.

### SPECIFICATIONS

In-line 6, 4-Stroke-Cycle Diesel		
Aspiration	TA	
Bore x Stroke	4.53 x 5.87 in	115 x 149 mm
Displacement	568 cu in	9.3 liter
Rotation (from flywheel end)	Counterclockwise	
Engine dry weight (approx)	2083 - 2474 lb	945 - 1122 kg

### DIMENSIONS

	LE	H	WE
min.	57.2 in/1452 mm	43.0 in/1093 mm	38.5 in/978 mm
max.	57.2 in/1452 mm	43.0 in/1093 mm	38.5 in/978 mm



## GENERATOR SET ENGINE/AUXILIARY

### RATINGS AND FUEL CONSUMPTION

#### IMO II

bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
404	301	1500	19.9	210.0	II	NC	NC	NC
514	383	1500	25.2	209.0	II	NC	NC	C-I
514 <sup>1</sup>	383	1500	24.9	206.6	II/III	NC	NC	NC
587	438	1500	28.7	208.0	II	NC	NC	C-I
587	438	1500	28.2	204.8	II/III	NC	NC	NC
660	492	1500	32.3	209.0	II	NC	NC	C-I
660	492	1500	32.2	207.7	II/III	NC	NC	NC
499	372	1800	25.4	217.0	II	NC	NC	C-I
624	465	1800	31.5	215.0	II	NC	NC	C-I
803	599	1800	40.4	214	II	NC	NC	C-I
803	599	1800	41.1	218	II/III	NC	NC	NC

#### U.S. EPA Tier 3 & IMO II

bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
624	465	1800	32.2	220.2	II	T3C	NC	C-I
803	599	1800	40.1	212.7	II	T3C	NC	C-I
803	599	1800	41.2	218.3	II/III	T3C	NC	NC

<sup>1</sup> Only available via DTO. Fuel sulfur restrictions apply.

#### EU Stage V

bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
514	383	1500	23.7	198.9	NC	NC	EUV	NC
617	460	1500	28.2	197.3	NC	NC	EUV	NC
624	465	1800	31.1	215.1	NC	NC	EUV	NC
803	599	1800	39.2	210.6	NC	NC	EUV	NC

(continued)

# C18

## GENERATOR SET ENGINE/AUXILIARY

(continued)

### SPECIFICATIONS

In-line 6, 4-Stroke-Cycle Diesel		
<b>Aspiration</b>	TA, TTA	
<b>Bore x Stroke</b>	5.7 x 7.2 in	145 x 183 mm
<b>Displacement</b>	1106 cu in	
<b>Rotation (from flywheel end)</b>	Counterclockwise	
<b>Generator set weight (approx)</b>	4299 lb	1950 kg

### DIMENSIONS

	LE	H	WE
<b>min.</b>	73.0 in/1854 mm	51.2 in/1300 mm	44.6 in/1134 mm
<b>max.</b>	73.0 in/1854 mm	51.2 in/1300 mm	44.6 in/1134 mm

# C32

## GENERATOR SET ENGINE/AUXILIARY

### RATINGS AND FUEL CONSUMPTION

#### IMO II/IMO III

bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
791	590	1500	37.9	203.8	II	NC	IW*	C-I
923	688	1500	44.0	203.0	II	NC	IW*	C-I
1172	874	1500	57.0	207.0	II	NC	IW*	NC
1172	874	1500	57.9	210.3	II/III	NC	NC	NC
916	683	1800	45.3	210.8	II	NC	IW*	C-I
1047	781	1800	51.8	210.4	II	NC	IW*	C-I
1047	781	1800	TBD	TBD	II/III	NC	NC	NC
1333	994	1800	64.9	207.2	II	NC	IW*	C-I
1333	994	1800	65.1	207.9	II/III	NC	NC	NC

#### U.S. EPA Tier 4 Final & IMO III

bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
1172	874	1500	55.6	202.1	III	NC	EUV	NC
1332	994	1800	64.0	204.4	III	T4C	EUV	NC

### SPECIFICATIONS

#### Vee 12, 4-Stroke-Cycle Diesel

<b>Aspiration</b>	TTA	
<b>Bore x Stroke</b>	5.7 x 6.4 in	145 x 162 mm
<b>Displacement</b>	1959 cu in	32.1 liter
<b>Rotation (from flywheel end)</b>	Counterclockwise	
<b>Engine dry weight (approx)</b>	6950 - 7160 lb	3152 - 3248 kg

### DIMENSIONS

	LE	H	WE
<b>min.</b>	83.5 in/2121 mm	60.9 in/1547 mm	60.2 in/1528 mm
<b>max.</b>	89.9 in/2284 mm	62.5 in/1587 mm	60.2 in/1528 mm

# 3500 SERIES

Electronic Control System

## AUXILIARY/DIESEL ELECTRIC PROPULSION

### RATINGS AND FUEL CONSUMPTION

#### DEP - 50 HZ

	bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
<b>3512B</b>	1686	1257	1500	77.4	195.7	II	NC	NC	NC
<b>3512C</b>	1826	1362	1500	84.7	197.5	II	NC	NC	NC
<b>3516C</b>	2303	1717	1500	110.3	203.9	II	NC	NC	NC
<b>3516C</b>	2602	1940	1500	122.6	200.8	II	NC	NC	NC

#### DEP - 60 HZ

	bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
<b>3512C</b>	1920	1431	1800	91.9	204.0	II	NC	C-I	NC
<b>3512C</b>	2183	1628	1800	110.2	215.1	II	NC	C-I	NC
<b>3512C</b>	2394	1786	1800	119.7	212.4	II	NC	C-I	NC
<b>3516C</b>	2575	1920	1800	120.4	201.7	II	NC	C-I	NC
<b>3516C</b>	3151	2350	1800	148.9	201.4	II	NC	C-I	NC
<b>3512E<sup>2</sup></b>	2188	1632	1800	104.0	202.4	III	T4C	NC	NC
<b>3512E<sup>2</sup></b>	2400	1789	1800	113.2	200.9	III	T4C	NC	NC
<b>3516E<sup>2</sup></b>	2576	1921	1800	122.7	202.9	III	T4C	NC	NC
<b>3516E<sup>2</sup></b>	2822	2105	1800	135.1	203.7	III	T4C	NC	NC
<b>3516E<sup>2</sup></b>	3176	2368	1800	152.4	204.3	III	T4C	NC	NC
<b>3516E<sup>2,3</sup></b>	3004	2240	1800	*	*	II/III	NC	NC	NC

\* Contact your local dealer for technical specifications.

<sup>2</sup> High displacement engine (HD).

<sup>3</sup> Only available via DTO.

(continued)

# 3500 SERIES

Electronic Control System

## AUXILIARY/DIESEL ELECTRIC PROPULSION

(continued)

### RATINGS AND FUEL CONSUMPTION

#### Auxiliary - IMO II & III/U.S. EPA T4F

	bhp	bkW	rpm	ekW*	IMO	U.S. EPA	EU	China
<b>3512C</b>	1920	1432	1800	1360	II	NC	NC	NC
<b>3512C<sup>1</sup></b>	2183	1628	1800	1550	II	NC	NC	NC
<b>3512C<sup>1</sup></b>	2394	1786	1800	1700	II	NC	NC	NC
<b>3516C<sup>1</sup></b>	3151	2350	1800	2250	II	NC	NC	NC
<b>3512E<sup>1</sup></b>	2188	1632	1800	1550	II/III	T4C	NC	NC
<b>3512E<sup>1</sup></b>	2400	1789	1800	1700	II/III	T4C	NC	NC
<b>3516E<sup>1</sup></b>	2576	1921	1800	1825	II/III	T4C	NC	NC
<b>3516E<sup>1</sup></b>	2822	2105	1800	2000	II/III	T4C	NC	NC
<b>3516E<sup>1</sup></b>	3176	2368	1800	2250	II/III	T4C	NC	NC
<b>3512E<sup>1</sup></b>	1694	1263	1500	1200	II/III	NC	NC	NC
<b>3516E<sup>1</sup></b>	2301	1716	1500	1630	II/III	NC	NC	NC
<b>3516E<sup>1</sup></b>	2595	1937	1500	1840	II/III	NC	NC	NC

<sup>1</sup> Ratings are high displacement (HD).

\* ekW is based on a 95% generator efficiency.

Contact dealer for design-to-order generator set solutions.

(continued)

# 3500 SERIES

Electronic Control System

## AUXILIARY/DIESEL ELECTRIC PROPULSION

(continued)

### RATINGS AND FUEL CONSUMPTION

#### Variable Speed DEP

	bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
<b>3512C<sup>2</sup></b>		1425	1600	*	*	II	NC	NC	NC
<b>3512C<sup>2</sup></b>		1729	1800	*	*	II	NC	NC	NC
<b>3512C<sup>2</sup></b>		1765	1800	*	*	II	NC	NC	NC
<b>3516C<sup>2</sup></b>		1771	1600	*	*	II	NC	NC	NC
<b>3516C<sup>2</sup></b>		1910	1800	*	*	II	NC	NC	NC
<b>3516C<sup>2</sup></b>		2240	1800	*	*	II	NC	NC	NC
<b>3516C<sup>2</sup></b>	3151	2350	1800	*	*	II	NC	NC	NC
<b>3512E<sup>1,2</sup></b>	1700	1268	1600	*	*	II/III	T4C	NC	NC
<b>3512E<sup>1,2</sup></b>	1810	1350	1600	*	*	II/III	T4C	NC	NC
<b>3512E<sup>1</sup></b>	2400	1789	1800	119.7	199.9	II/III	T4C	NC	NC
<b>3516E<sup>1</sup></b>	2576	1921	1800	122.7	202.9	II/III	T4C	NC	NC
<b>3516E<sup>1</sup></b>	3176	2368	1800	152.3	204.3	II/III	T4C	NC	NC

\* Contact your local dealer for technical specifications.

<sup>1</sup> High displacement engine (HD).

<sup>2</sup> Only available via DTO.

(continued)

# 3500E SERIES

Electronic Control System

## AUXILIARY/DIESEL ELECTRIC PROPULSION

(continued)

### SPECIFICATIONS

Vee 12, Vee 16, 4-Stroke-Cycle Diesel			
<b>Aspiration</b>		TA	
<b>Bore x Stroke</b>		6.7 x 8.5 in	170 x 215 mm
<b>Displacement</b>	<b>3512E</b>	3576 cu in	58.6 liter
	<b>3516E</b>	4766 cu in	78.1 liter
<b>Engine dry weight (approx)</b>	<b>3512E</b>	19,103 lb	8665 kg
	<b>3516E</b>	22,408 lb	10,164 kg

### DIMENSIONS

		LE	H	WE
<b>3512E</b>	<b>min.</b>	127.2 in/3232 mm	86.8 in/2205 mm	85.0 in/2160 mm
	<b>max.</b>	127.2 in/3232 mm	86.8 in/2205 mm	85.0 in/2160 mm
<b>3516E</b>	<b>min.</b>	148.5 in/3773 mm	87.6 in/2224 mm	89.9 in/2284 mm
	<b>max.</b>	148.5 in/3773 mm	87.6 in/2224 mm	89.9 in/2284 mm

# C280 SERIES

## AUXILIARY

### RATINGS AND FUEL CONSUMPTION

	bhp	bkW	rpm	U.S. g/h	g/bkW-hr	IMO	U.S. EPA	EU	China
<b>C280-6</b>	2320	1730	900	102.0	197.7	II	NC	NC	NC
<b>C280-6</b>	2481	1850	1000	119.0	199.5	II	NC	NC	NC
<b>C280-6</b>	2548	1900	900	118.0	193.6	II	NC	NC	NC
<b>C280-6</b>	2722	2030	1000	129.0	197.0	II	NC	NC	NC
<b>C280-8</b>	3084	2300	900	142.0	142.4	III	T4C	NC	NC
<b>C280-8</b>	3084	2300	900	144.0	199.5	II	NC	NC	NC
<b>C280-8</b>	3299	2460	1000	170.0	197.0	II	NC	NC	NC
<b>C280-8</b>	3393	2530	900	153.0	193.6	III	T4C	NC	NC
<b>C280-8</b>	3393	2530	900	156.0	197.0	II	NC	NC	NC
<b>C280-8</b>	3634	2710	1000	186.0	218.7	II	NC	NC	NC
<b>C280-12</b>	4640	3460	900	216.0	199.6	III	T4C	NC	NC
<b>C280-12</b>	4640	3460	900	205.0	188.7	II	NC	NC	NC
<b>C280-12</b>	4962	3700	1000	239.0	199.0	II	NC	NC	NC
<b>C280-12</b>	5096	3800	900	236.0	198.3	III	T4C	NC	NC
<b>C280-12</b>	5096	3800	900	237.0	199.0	II	NC	NC	NC
<b>C280-12</b>	5444	4060	1000	261.0	205.4	II	NC	NC	NC
<b>C280-16</b>	6169	4600	900	278.0	192.6	III	T4C	NC	NC
<b>C280-16</b>	6169	4600	900	304.7	202.0	II	NC	NC	NC
<b>C280-16</b>	6598	4920	1000	307.0	197.9	II	NC	NC	NC
<b>C280-16</b>	6785	5060	900	312.0	197.0	III	T4C	NC	NC
<b>C280-16</b>	6785	5060	900	318.0	200.8	II	NC	NC	NC
<b>C280-16</b>	7268	5420	1000	340.0	199.7	II	NC	NC	NC

C280 fuel rate is at rated power, BSFC is at full power condition.

(continued)



# C280 SERIES

## AUXILIARY

(continued)

### SPECIFICATIONS

In-line 6, In-line 8, Vee 12, Vee 16, 4-Stroke-Cycle Diesel			
<b>Aspiration</b>		TA	
<b>Bore x Stroke</b>		11.0 x 11.8 in	280 x 300 mm
<b>Displacement</b>	<b>C280-6</b>	6773 cu in	111 liter
	<b>C280-8</b>	9031 cu in	148 liter
	<b>C280-12</b>	13,546 cu in	222 liter
	<b>C280-16</b>	18,062 cu in	296 liter
<b>Engine dry weight (approx)</b>	<b>C280-6</b>	34,496 lb	15,680 kg
	<b>C280-8</b>	41,800 lb	19,000 kg
	<b>C280-12</b>	57,276 lb	25,980 kg
	<b>C280-16</b>	62,832 lb	28,500 kg

### DIMENSIONS

		L	LE	H	WE
<b>C280-6</b>	<b>min.</b>	168 in/4276 mm	145 in/3691 mm	108 in/2733 mm	68 in/1722 mm
	<b>max.</b>	168 in/4276 mm	145 in/3691 mm	108 in/2733 mm	68 in/1722 mm
<b>C280-8</b>	<b>min.</b>	219 in/5561 mm	178 in/4511 mm	104 in/2641 mm	68 in/1722 mm
	<b>max.</b>	219 in/5561 mm	178 in/4511 mm	104 in/2641 mm	68 in/1722 mm
<b>C280-12</b>	<b>min.</b>	191 in/4861 mm	161 in/4087 mm	140 in/3550 mm	69 in/1741 mm
	<b>max.</b>	191 in/4861 mm	161 in/4087 mm	140 in/3550 mm	69 in/1741 mm
<b>C280-16</b>	<b>min.</b>	216 in/5482 mm	197 in/5007 mm	125 in/3171 mm	67 in/1704 mm
	<b>max.</b>	216 in/5482 mm	197 in/5007 mm	125 in/3171 mm	67 in/1704 mm

# Cat Controls and Displays

## Propulsion Control System

### MPC100 – Propulsion Control System for Conventional Drive Systems

MPC100 is a new Propulsion Control System solution for both single and twin propeller applications. By providing redundant control capability it is integrating both primary and secondary (back-up) control ability of engine and marine transmission. Built in trolling valve control together with very flexible configuration allows MPC100 to be adopted to each installation as well as customized to high demands of each captain.

- Highly reliable with built in redundancy
- Simplified installation and configuration
- Safety and quality compliance (CE, USCG, ABYC, IACS)
- Supporting both 12 and 24 VDC powered applications
- Highly configurable for multiple powertrain configurations using Cat Electronic Technician (ET)
- Supporting all Cat electronically controlled propulsion engines from Cat C7.1 – C280.
- Compatible with all major marine transmissions
- Up to 8 command stations
- Built in control of the engine, transmission incl. trolling valve
- Mode selector incl. worm up, trolling, advanced trolling, slow vessel and cruising mode with possibility to adapt modes of operation

- Synchronization mode allowing user to operate twin propeller boats using single lever
- Optional back-up control capability
- Configurable shaft brake control
- Engine start interlocks



## Displays

### Cat Marine Displays (CMD)

The Cat Marine Display (CMD) provides the operator with easy-to-read, high resolution graphics to monitor all vessel operations. The configurable screen allows for full user customization and visual simplicity. All electronics are environmentally sealed for increased durability and safety and are built to perform reliably in extreme conditions.



The CMD is available with a 5", 8" or 13" screen size. While CMD5 offers more compact size and front and rear waterproof IP 66 rating, as well as appreciated tactile feel of the navigation keys.

New CMD8 and CMD13 Gen II displays offer appealing design and easy to use touch screen navigations. Additional features include multiple graphic skin options, configurable splash and monitoring screens, embedded manuals, Modbus, and IT camera support.

## **Propulsion, Auxiliary Engine and Genset Control Panels**

Cat Control Panels provide complete propulsion engine and generator set control and monitoring from local and remote locations, including engine start/stop capability, alarm and protection, user and integration interfaces. System modularity allows expansion of remote monitoring, input/output capabilities and programmable relays.

### **Control Panels – Marine Propulsion Engines**

#### **C7.1 - C32**

##### **Remote Analogue Panel**

For remote monitoring of engine basic parameters (available with C7.1 only).

##### **MECP IB**

The MECP IB is an inexpensive, basic control panel that can be mounted directly on the engine. For non MCS approved installations.

#### **C9.3-3500 (C280)\***

*\* See dealer for availability.*

##### **MECP II/LECP II**

The MECP II/LECP II is MCS type-approved for manned and un-manned engine rooms. It provides local throttle control, a color display, advanced diagnostics, and integration possibilities. This Engine control panel is enhanced by built in connectivity solution allowing easy onboarding and access to variety of CUSTOMER VALUE AGREEMENTS (CVAs) offerings.

##### **MECP IIIB/LECP III**

The MECP IIIB has all the features of the MECP II and has additional I/O, supports more expansion modules, and has extra space for customer options. This engine control and integration panel is enhanced by built in connectivity solution allowing easy onboarding and access to variety of CUSTOMER VALUE AGREEMENTS (CVAs) offerings.

## Control Panels – Marine Generator Set and Auxiliary Engines

### C4.4 - C7.1

#### **MGGP 200**

*(for electronically controlled engines only)*

The MGGP 200 is a basic gauge panel providing basic instrumentation of engine parameters, as well as alarm indication and engine start/stop buttons.

#### **MCS3**

The MCS3 MCS type-approved panel provides generator and engine monitoring for manned and un-manned engine rooms.

It includes MODbus and CANbus (J1939) interfaces (on electronically controlled engines only), AC monitoring, and optional load share control for multiple genset installations.

Multi-position – left, right, rear, plus power – remote mountable.

### C4.4 - C32

#### **EMCP 4.2B**

*(for electronically controlled engines only)*

The EMCP 4.2B non MCS type-approved panel provides generator and engine monitoring.

#### **MGCP II**

The MGCP II is MCS type-approved for manned and un-manned engine rooms. It provides local throttle control, a color display and advanced diagnostics and communications. This generator control and integration panel is enhanced by built in connectivity solution allowing easy onboarding and access to variety of CUSTOMER VALUE AGREEMENTS (CVAs) offerings.

## **C9.3 - 3500 (C280)\***

*\* See dealer for availability.*

### **MGCP IIIB/LECP III**

The MGCP II is MCS type-approved for manned and un-manned engine rooms. It provides local throttle control, a color display and advanced diagnostics and communications. This generator control and integration panel is enhanced by built in connectivity solution allowing easy onboarding and access to variety of CUSTOMER VALUE AGREEMENTS (CVAs) offerings.

### **L2**

The L2 includes a CMPD as the main operator interface. It also has switches for engine protection override, prelube override, torque limit and manual speed control.

## **Accessories**

### **RTD Module**

The RTD Module monitors 8 RTD temperature sensors. It is generally used on a generator.

### **Thermocouple Module**

The TC Module monitors 20 thermocouple temperature sensors. It is generally used on an engine.

### **Remote Panel 220E (MECP/MGCP II and III only)**

The RP 220E can remotely monitor and start/stop two engines or gensets. Multiple RPs can be installed on a ship.

### **Remote Panel 410E (MECP/MGCP II and III only)**

The RP 410E can remotely monitor and start/stop eight engines or gensets and four IP cameras. Multiple RPs can be installed on a ship.

### **Remote I/O 410 Module (MECP/MGCP II and III only)**

The RIO 410 provides additional switch and sensor inputs for the control panel, as well as relay outputs. Up to four RIOs can be used with the IIIB panels, one with the II panels.

### **Relay Module (MECP/MGCP III only)**

The ARM provides 14 programmable relays. It can be connected to the Local Control Panel or to an RP.

### **Power Analyzer Module (MGCP II and III only)**

The PAM provides generator power information, such as phase voltage, current, power factor, Total Harmonic Distortion (THD), etc.

### **MSDU – Emergency Shutdown Module**

Basic shutdown unit available as an option with C4.4 and C7.1 electronically controlled engine.



# Cat Selective Catalytic Reduction (SCR)

## A simple technical solution can help you meet today's stringent maritime emission standards.

The easy-to-install Cat SCR System is an exhaust gas aftertreatment solution compliant with U.S. Environmental Protection Agency (EPA) Tier 4 Final and International Maritime Organization (IMO) III emission standards. It is a sustainable solution to reduce NO<sub>x</sub> emissions without sacrificing Caterpillar's marine engine efficiency, as well as maintain the durability and reliability that our customers expect. Regional initiatives from environmentally friendly governments are already in effect with incentives benefitting ship owners who invest in NO<sub>x</sub> emissions reduction technology. Caterpillar has evaluated multiple solutions, and the conclusion has been that SCR is the optimal solution to meet U.S. EPA Tier 4 and IMO III requirements. SCR allows for the lowest total cost of ownership when compared to other solutions, such as EGR.

### Features and Benefits

- Designed for NO<sub>x</sub> emissions reduction in line with U.S. EPA Tier 4 Final and IMO III requirements
- Compact package and flexible mounting configurations
- A fully integrated and certified solution, all available from the engine OEM
- Available for new vessel construction and retrofit/repower projects
- Easy to install with minimum impact to vessel design
- Common control and monitoring system for reliable and safe operation
- Global dealer network for installation and service in any location

## Clean Emission Module (CEM)

Caterpillar designed the SCR System for Cat marine applications with a compact and easy to install Clean Emission Module (CEM). You will benefit from an optimally matched system with minimum impact to vessel design. Thus, we offer several different CEM configurations to suit all markets and vessel types.

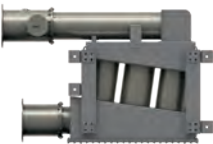


Cat C7.1 and C9.3 CEM Airless, IMO II/III switchable



Cat C18 double CEM with Y-Pipe Airless, IMO II/III switchable

Cat C18 CEM Airless, EU Stage V with DPF



Cat C18 and C32 CEM Air-Assist, U.S. EPA Tier 4 and IMO III U-Flow or Z-Flow configured



Cat 3500 series CEM Air-Assist, U.S. EPA Tier 4, IMO II/III switchable U-Flow or Z-Flow configured



Cat C32/3512 series EU Stage V, DPF



Cat C280 CEM Air-Assist, U.S. EPA Tier 4 and IMO II/III switchable vertical stack

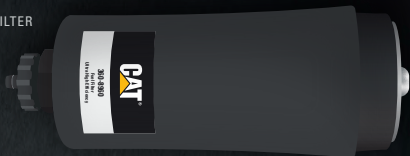


Examples: Dosing cabinet

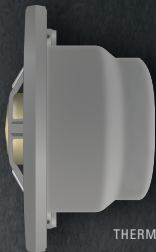
**Contact your local dealer for more information.**

*All pictures shown are for illustration purpose only. Product may vary due to product enhancement.*

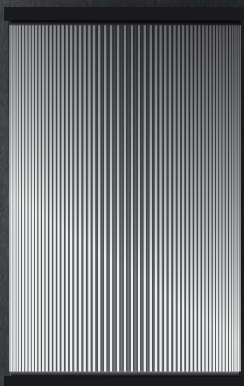
FUEL FILTER



THERMOSTAT



AIR FILTER



O-RING



SEA WATER  
PUMP IMPELLER



ALTERNATOR BELT

Cooling System & Filter Kits for  
C1.5, C2.2, C4.4, and C7.1 Engines

## MAINTENANCE MADE EASY.

Staying on top of planned maintenance keeps your Cat® Marine engine — and your vessel — running at peak performance. Here's an easy way to ensure you have exactly what you need, right when you need it, for key service intervals: Keep a Cat Marine Engine Planned Maintenance Kit on board.

\*\* Specific kit parts vary based on model and kit selected

For more information, please visit [cat.com/marinepmkits](http://cat.com/marinepmkits)

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**CATERPILLAR**®

# Cat Services



# Customer Value Agreements (CVA)

Caterpillar Marine and our global dealer network aim to deliver services to our customers to achieve:

- Higher uptime and minimize operating cost
- Integrate Service Solutions & offering to increase overall customer satisfaction

It is important to us that you enjoy valued services that support your engines' operations throughout your vessels' lifecycle while capitalizing on data driven insight into your engine operations and efficiency.

Through a CVA, we want to provide you with the flexibility in choosing the right services from a portfolio of offerings to meet your operational requirements at different stages of vessel life. A Cat CVA offers:

1. Hassle-Free Ownership
2. Hassle-Free Maintenance
3. Peace of Mind from Equipment Health Management
4. Security of Expert Dealer Support

With a full suite of services available, speak to your dealer to tailor a solution that best suits your needs. Pick up a brochure from your dealer to find out more about Cat CVAs or visit [cat.com/marineCVA](http://cat.com/marineCVA)



# Marine Digital Services

## Utilize your CVA to Identify Key Operational Opportunities with Data Richness from your Marine Digital Solution

Utilizing Cat Remote Fleet Vision (RFV) to view all engine data in a single location and stay alerted if there are potential issues with your equipment.

### Maximize the life & health of your equipment with Cat RFV

- Remote Monitoring data enables a deeper dive to your engine or fleet performance
- Trending & Data Visualization to help decipher equipment issues
- Standardized & Customized Reporting to summarize operational profiles
- Alerts & Notifications allowing all stakeholders to be aware of any current issues

Cat RFV gives you the data you need to identify and resolve problems quickly-often before they result in costly repairs and unscheduled downtime.

Reach out to your dealer or check out Cat RFV on how to learn more about this solution.



# Extended Service Coverage (ESC)

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From design and engineering to performance and support, Cat is the most reliable name in power. Extended Service Coverage (ESC) from Caterpillar increases this reliability as far out as you want to go – with complete confidence. We offer total coverage for new, used, overhauled and upgraded engines and generator sets, protecting your investment and your peace of mind; and because ESC is transferable, it may increase the resale value of your Cat powered vessel.

ESC protects against unexpected repair bills and rising parts and labor costs by providing 100% parts and labor reimbursement for covered components (less any applicable deductible), and our global service network ensures prompt, quality repairs by trained technicians. The broad range of coverage options – which can be customized to suit your individual needs – combined with simple pricing, provides confidence and peace of mind toward your engine's performance, today and tomorrow.

There are multiple options for both ESC coverage and Customer Value Agreements (CVAs). For more information, contact your local dealer or visit us at [cat.com/marineCVA](http://cat.com/marineCVA)



# Remanufactured Parts (Reman)

Remanufactured parts provide same-as-new performance and reliability at a fraction of the cost of new, with the same warranty as new parts. This means you achieve maximum engine productivity at a lower life cycle cost. Remanufacturing is also environmentally conscious, as it limits waste.

*Remanufacturing is a process that returns an end-of-life product core to specifications of the original product using a combination of reused, repaired, and new parts in a manufacturing environment.*



# Cat S•O•S<sup>SM</sup> Fluid Analysis

## Boost your bottom line with routine fluid analysis

What if you could save thousands of dollars in owning and operating costs every year just by doing a single service? With Cat S•O•S Services, you can. This routine check-up for your oil, coolant and fuel delivers valuable insights you can use to prevent unexpected failures and unplanned downtime.

All you have to do is provide the sample. Our fluid analysis experts do the rest – using proprietary processes, sophisticated chemistry and the latest technology to reveal excessive wear, contaminated fluids or other “unseen” issues. What’s more, you can enjoy greater value in your Customer Value Agreement (CVA) by including Cat S•O•S Services. Contact your dealer to learn more about Cat S•O•S Services and how you can incorporate the services into your CVA.



# EMD Medium-Speed Diesel and Dual Fuel Solutions



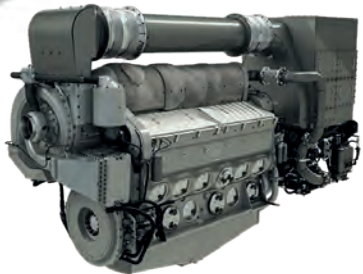
# EMD Propulsion and Dual Fuel Engines

## EMD E 23 & E 23B (710 Series) Marine Propulsion and Generator Set Engines

EMD Engines have been in the marine propulsion business since 1935. EMD brings two-cycle medium-speed engines to the Caterpillar Marine family, with over 78,000 engines delivered worldwide making it one of the largest medium-speed engine family in the world in operation around the world.

Built on the successful 710 Series, the current EMD product line consists of medium-speed two-cycle diesel and dual fuel engines models ranging in power, from 1,490 to 4,100 kW.

The E 23 (IMO II/U.S. EPA Tier 3) and E 23B (IMO III/ U.S. EPA Tier 4 Final) are available in 8, 12, 16 and 20 cylinder configurations with continuous power ratings from 1249 bkw (1675 hp) to 3729 bkw (5000 hp).



## **E 23B Specifications**

- U.S. EPA Tier 4 Final certified
- IMO III emissions compliant
- 200 rpm minimum idle speed
- 900 rpm maximum rated speed
- 230 mm bore x 279 mm stroke
- Welded 710 Series "G" Crankcase
- Turbocharged-aftercooled aspiration
- Electronically governed
- Available as clockwise or counterclockwise rotation
- Engine diagnostics and general alarm
- Programmable parameters

## **The EMD E 23 Series offers the following features:**

### **Performance Advantage**

- Performance of a high-speed engine, with the durability advantage of a medium-speed engine
- Best in-class transient response. Idle to full power in 10 seconds in fixed pitch propeller applications
- 200 rpm low idle speed improves fuel efficiency and operating range flexibility

### **Total Cost of Ownership Advantage**

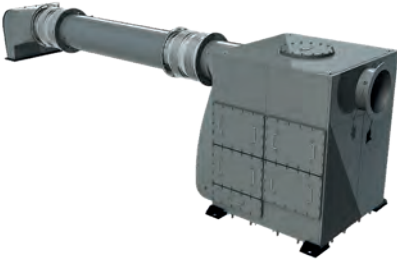
- 30,000 hour or greater overhaul interval with no midlife top end overhaul or oil change required
- Easy, non-invasive inspection of cylinder power assembly component for simple predictive maintenance
- Global dealer network for consistent service in any location

### **Emission Advantage**

- Integrated SCR to optimize NO<sub>x</sub> reduction, fuel efficiency, and compact footprint
- Closed crankcase ventilation system and valve stem seals for additional PM reduction
- U.S. EPA Marine Tier 4 Final certified / IMO III compliant

## Selective Catalytic Reduction (SCR) System

The EMD SCR system is co-designed by EMD and Caterpillar. The EMD SCR System has been developed especially for the EMD two cycle medium-speed engines to meet U.S. EPA Tier 4 Final and IMO III emission standards. Every component in the EMD SCR System is designed and manufactured to EMD product standards with highest quality and value.



## EMD Dual Fuel Options

### DIG – Direct Injected Gas (E 23B GD, E 23 GD)

Direct Injected Gas (DIG) technology uses a single injector that injects high pressure diesel, followed by high pressure gas to provide a minimum of 95% gas substitution. The engine operates on the diesel cycle, maintaining the same power and torque throughout the operating range. Based entirely on the diesel cycle, the EMD DIG™ solution represents one of the cleanest and most fuel efficient natural gas technologies. DIG meets IMO III or earlier emission standards.

## **Biodiesel and Renewable Diesel Fuels**

Progress Rail is committed to providing sustainable solutions for our new and existing customers. Biodiesel and Renewable Diesel (HVO, HDRD) are two fuels that provide great advantages for greenhouse gas (GHG) emission reduction in the near and medium term. EMD is committed to the operation and reliability of these fuels in the EMD engines – providing our customers economical and durable ways to reduce GHGs. EMD currently approves the usage of up to 20% Biodiesel blend (B20) and is testing additional blends of Biodiesel and Renewable Diesel fuel in many applications.

Consult your EMD Power Products Distributor or visit [https://www.progressrail.com/en/Segments/Engines/Marine\\_Stationary\\_Engines.html](https://www.progressrail.com/en/Segments/Engines/Marine_Stationary_Engines.html) for more information regarding Medium Speed Engines, Dual Fuel Solutions, Biodiesel and Renewable Diesel Fuels.

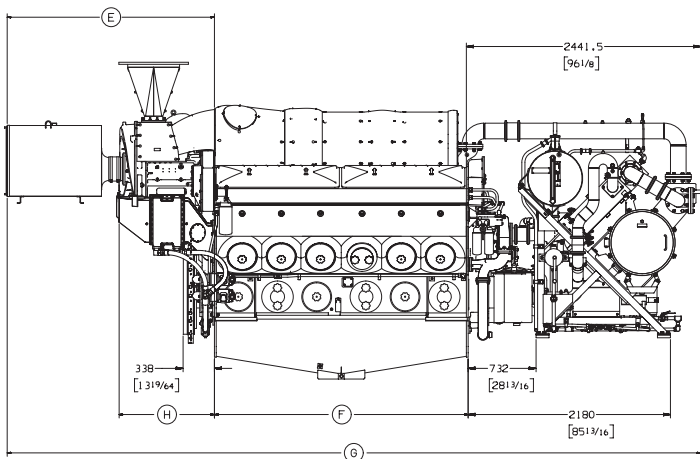
# E 23

## DIMENSIONS (mm) AND WEIGHTS (kg)

Type	A	B	C	D	E	F	G	H	Engine Weight	Acc. Rack Weights
<b>8 E 23</b>	3246	2573	479	2790	2134	1864	6202	929	13018	1723
<b>12 E 23</b>	3410	2764	632	2948	2240	2734	7178	1050	17690	1723
<b>16 E 23</b>	3410	2764	632	2948	2240	3715	8171	1050	20865	1723
<b>20 E 23</b>	3642	2966	835	3150	2240	4559	9015	1050	23949	1769

## DIMENSIONS (in) AND WEIGHTS (lb)

Type	A	B	C	D	E	F	G	H	Engine Weight	Acc. Rack Weights
<b>8 E 23</b>	127.8	101.3	18.9	109.9	84.0	73.4	244.2	36.6	28,700	3,799
<b>12 E 23</b>	134.3	108.8	24.9	116.1	88.2	107.6	282.6	41.3	39,000	3,799
<b>16 E 23</b>	134.3	108.8	24.9	116.1	88.2	146.3	321.7	41.3	45,999	3,799
<b>20 E 23</b>	143.4	116.8	32.9	124.0	88.2	179.5	354.9	41.3	52,799	3,900



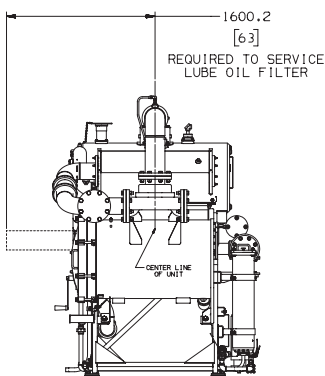
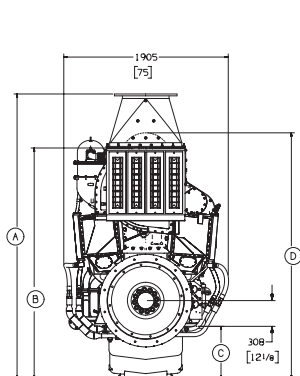
(shown with accessory rack, exhaust outlet adapter and EMD supplied air filter)



## TECHNICAL DATA

Model	Cylinders	Rating	bkW	bhp	rpm	g/bkW-hr	U.S. g/h	EPA	IMO
<b>8 E 23</b>	8	CS	1491	2000	900	201	93	T3	II
<b>12 E 23</b>	12	CS	2237	3000	900	198	138	T3	II
<b>16 E 23</b>	16	CS	2983	4000	900	196	182	T3	II
<b>20 E 23</b>	20	CS	3729	5000	900	209	236	T3	II
<b>8 E 23</b>	8	INT	1641	2200	900	200	103	T3	II
<b>12 E 23</b>	12	INT	2461	3300	900	197	152	T3	II
<b>16 E 23</b>	16	INT	3281	4400	900	195	201	T3	II
<b>20 E 23</b>	20	INT	4101	5500	900	210	261	T3	II

**Note:** EMD E 23 engines were formerly EMD 710 Series. INT equals Intermittent Service Rating. CS equals Continuous Service Rating. 750 rpm (50 Hz) and dual fuel options are available. Contact local dealer for detail.



*(shown with accessory rack)*

# E 23B

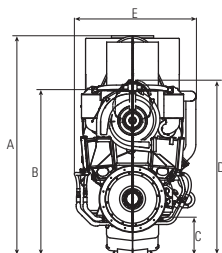
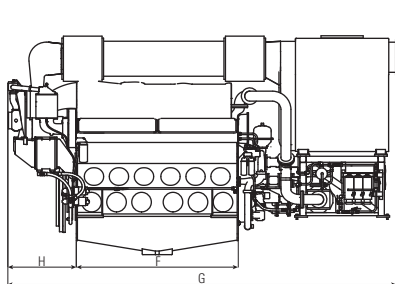
## DIMENSIONS (mm) AND WEIGHTS (kg)

Type	A	B	C	D	E	F	G	H	Engine Weight	Acc. Rack Weight
<b>8 E 23B</b>	3533	2573	479	2740	2034	1864	5572	1038	14808	3562
<b>12 E 23B</b>	3685	2764	632	2836	2034	2734	6591	1143	19608	3562
<b>16 E 23B</b>	3685	2764	632	2836	2034	3715	7548	1143	21339	3904

## DIMENSIONS (in) AND WEIGHTS (lb)

Type	A	B	C	D	E	F	G	H	Engine Weight	Acc. Rack Weight
<b>8 E 23B</b>	139.1	101.3	18.9	107.9	80.1	73.4	219.4	40.9	32646	7853
<b>12 E 23B</b>	145.1	108.8	24.9	111.7	80.1	107.6	259.5	45.0	43228	7853
<b>16 E 23B</b>	145.1	108.8	24.9	111.7	80.1	146.3	297.2	45.0	47044	8607

**Note:** Completely Integrated System



## TECHNICAL DATA

Model	Cylinders	Rating	bkW	bhp	rpm	EPA	IMO	EU
<b>8 E 23B</b>	8	CS	1491	2000	900	T4F	III	NC
<b>12 E 23B</b>	12	CS	2237	3000	900	T4F	III	NC
<b>16 E 23B</b>	16	CS	2983	4000	900	T4F	III	NC
<b>20 E 23B*</b>	20	CS	3729	5000	900	T4F	III	NC
<b>8 E 23B</b>	8	INT	1641	2200	900	T4F	III	NC
<b>12 E 23B</b>	12	INT	2461	3300	900	T4F	III	NC
<b>16 E 23B</b>	16	INT	3281	4400	900	T4F	III	NC
<b>20 E 23B*</b>	20	INT	4101	5500	900	T4F	III	NC

**Note:** INT equals Intermittent rating

\* Contact your local dealer for details

### E 23B Enhancements:

- U.S. EPA Tier 4 Final/IMO III
- Completely integrated SCR System – no need to worry about mounting or where to place it in the engine room
- Closed Crankcase
- High pressure lube oil system
- Mechanical oil filtration with centrifuge
- Next generation Accessory Rack

## Standard Equipment

- EMDEC/CAT ADEM Engine control module, including EUI injectors, wiring harness and sensors.
- Fuel pump, duplex spin-on primary filters/bypass, and manual priming pump.
- Single oil pump, cooler, strainer, centrifuge, self-cleaning filter, turbocharger primary and soakback filter
- Gear-driven HT and LT centrifugal coolant pumps and automatic thermostatic valves
- Single-stage scavenging air turbocharger with two (2) aftercoolers.
- Individual cylinder exhaust thermocouples and exhaust manifold thermal blankets (SOLAS)
- SCR Module, DEF dosing cabinet, DEF mixing tube, and flex connections
- Air start system

## Options

- Marine society certifications
- Alarm & Protection panels and remote displays
- Power takeoff (free end).
- Main bearing thermocouples
- Vibration isolation mounts
- Torsional Vibration Analysis.
- Custom color finish paint (cement gray standard).
- Engine-driven sea water pump
- Oil mist detection
- Water expansion tanks (HT & LT)
- Close-coupled intake air filter

## Rating Definitions and Conditions

**Continuous Service Rating** is suitable for continuous duty applications with no limit on operating hours at maximum load.

**Intermittent Rating** is suitable for continuous duty applications involving varying loads. Maximum engine power produced is limited by application guidelines, leaving a power reserve for intermittent operating conditions. Operating time at loads above the Continuous Service Rating is limited to one hour in 12 or 8% of total operating hours.

# GLOSSARY



# Emissions Standards

U.S. Environmental Protection Agency (EPA), Transport Canada, China Ministry of the Environment and the European Union have enacted programs to reduce emissions from all domestic diesel vessels. International vessels are subject to the requirements of the country where the vessel is registered (flagged) and if regulated, typically follow the requirements of the International Maritime Organization (IMO).

Caterpillar Marine has a key focus on emissions regulations to ensure that our marine engines meet global requirements.

We've long been a leader in solving environmental challenges, allowing customers to focus on business progress.

## U.S. EPA Standards

U.S. EPA applies for marine diesel engines installed in a variety of U.S. flagged recreational and workboat vessels.

### High Performance Applications:

**EPA Tier 3:** Cat C7.1, C18 & C32

### Commercial Applications:

**EPA Tier 3:** Cat C1.5, C2.2, C4.4, C7.1, C9.3, C15, C18, C32 (< 600 kW)

**EPA Tier 4:** Cat C32, 3500, C280 (> 600 kW)

## U.S. EPA Regulations

<b>NC</b>	Not U.S. EPA Marine Certified for use in the U.S. or Canada.
<b>T3C</b>	Meets U.S. EPA Marine Tier 3 Commercial standards.
<b>T3R</b>	Meets U.S. EPA Marine Tier 3 Recreational standards.
<b>T3CR</b>	Meets U.S. EPA Marine Tier 3 Commercial standards and U.S. EPA Marine Tier 3 Recreational standards.
<b>T4C</b>	Meets U.S. EPA Marine Tier 4 Final Commercial standards.
<b>Emergency</b>	Meets U.S. EPA Marine Tier 2 or Tier 3, as applicable, that otherwise must meet Tier 4 Final.

## Canada Regulations

As of January 1, 2016, Category 2 engines (7 to 30 l/cylinder) on Canadian flagged vessels must meet U.S. EPA requirements or have an equivalent certificate that has been provided by another country. Unless otherwise exempted, all other marine engines must meet IMO requirements for vessels constructed after January 1, 2016 (IMO III). Engines on vessels with keel laid in 2017 with combined propulsion power < 750 kW must meet IMO II and are exempt from IMO III: the IMO III exemption is subject to review by December 31, 2022.

## China Regulations

China Domestic Marine regulation (GB15097) went into effect in 2018 and vessels with Stage I engines must be put into use by July 2022. China Marine II is in effect after July 1, 2022. International vessels subject to the requirements of IMO and are not subject to China Domestic Marine regulations.

## Engine Certification Descriptions

**C-I/I** Engines meeting China inland water regulations.

## IMO Certification

Tier	Date	NO <sub>x</sub> Limit (g/kWh)		
		n < 130	130 ≤ n < 2000	n ≥ 2000
Tier I	2000	17.0	45 · n <sup>-0.2</sup>	9.8
Tier II	2011	14.4	44 · n <sup>-0.23</sup>	7.7
Tier III	2016*	3.4	9 · n <sup>-0.2</sup>	2.0

## IMO Certification

**IMO I** — Meet IMO emissions standards for the year 2000 as defined by Regulation 13 of Annex VI to the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the protocol of 1997. Applies to specific engines in vessels with a keel lay date from January 1, 2000 until December 31, 2010; other rules may apply.

**IMO II** — Emissions data measurement is consistent with the procedures described in the NO<sub>x</sub> Technical Code 2008. The engine exhaust emissions meet the International Maritime Organization's Regulation 13 of Revised Annex VI to the MARPOL Convention. Applies to engines greater than 130 kW on vessels flagged in countries party to the MARPOL Annex VI Convention and the vessel is constructed after December 31, 2010. IMO II typically applies outside of NO<sub>x</sub> Emissions Control Areas (NO<sub>x</sub> ECA). See IMO.org "status of conventions" for a current list of nations enforcing MARPOL Annex VI. Other rules may apply.

**IMO III** — Emissions data measurement is consistent with the procedures described in the NO<sub>x</sub> Technical Code 2008. The engine exhaust emissions meet the International Maritime Organization's Regulation 13 of Revised Annex VI to the MARPOL Convention. IMO III applies to NO<sub>x</sub> Emission Control Areas (NO<sub>x</sub> ECA) defined areas. Other rules may apply.

**NST** — Engines ≤ 130 kW are not subject to IMO regulations.



## EU Certification

### Commercial Craft Directive 2016/1628 (EU Stage V)

This directive is in effect and applies to all propulsion and auxiliary engines. Caterpillar has certified some engines with a rated power of greater than 560 kW to this standard. Most of these are to be used for inland waterway vessels. These engines also became effective by reciprocity agreement with CCNR Stage II, on July 1, 2007. (97/68 directive was repealed January 1, 2017 although 97/68 (IIIA) standards apply to marine engines until Stage V came into effect January 1, 2019 for < 300 kW and January 1, 2020 for  $\geq$  300 kW and all references to 97/68 are now references to EU 2016/1628 (Stage V)).

### Engine Certification Descriptions

- IW** Meets EU Stage IIIA or referred to as, Inland Waterway Commercial Craft Directive, meaning the same as Commercial Craft Directive 97/68/EC, now EU 2016/1628 (EU Stage IIIA). Some engine models and ratings will have (CCNR) or (EU Stage IIIA).
- NC** Not Certified for specific regulations.
- NST** Engines  $\leq$  19 kW are not subject to CCNR legislation.
- RCD** Recreational Craft Directive, meets 2013/53/EU. This directive is in effect and applies to all recreational engines used in the European Union areas.
- EUV** Engines meeting Stage V.

# Marine Rating Definition

## Propulsion Engines

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Rating definitions provide guidelines to help determine the appropriate rating for specific applications based on vessel operation. Cat marine propulsion engine rating applications for C9 through 3516E are based on load factor, time at full throttle, and operational hours per year.

Contact your local Cat dealer for assistance in determining the appropriate rating for your specific application.

### **A Rating (Unrestricted Continuous)**

**Typical applications:** For vessels operating at rated load and rated speed up to 100% of the time without interruption or load cycling (80% to 100% load factor).

Typical operation ranges from 5000 to 8000 hours per year.

#### **For C280-6, C280-8, C280-12 and C280-16**

#### **Engines Only:**

**Continuous Service (CS) Rating** is suitable for continuous duty applications, including dredges, for operation without interruption or load cycling.

### **B Rating (Heavy Duty)**

**Typical applications:** For vessels operating at rated load and rated speed up to 80% of the time with some load cycling (40% to 80% load factor).

Typical operation ranges from 3000 to 5000 hours per year.

### **C Rating (Maximum Continuous)**

**Typical applications:** For vessels operating at rated load and rated speed up to 50% of the time with cyclical load and speed (20% to 80% load factor).

Typical operation ranges from 2000 to 4000 hours per year.

## For C280-6, C280-8, C280-12, C280-16, and EMD E 23 Engines Only:

**Maximum Continuous (MC) Rating** or EMD Intermittent rating is generally used for vessel applications involving varying loads. The engine power actually produced is limited by application guidelines, leaving a power reserve for unusual operating conditions. Operating time at loads above the Continuous Service Rating for a given rpm is limited to one hour in 12 or 8.3% of total operating hours.

**FCVR – Fast Commercial Vessel Rating:** 85% of operating hours at rated speed, 15% of hours at less than 50% rated power. TBO approximately 20,000 - 25,000 hours. The propulsion system design should consider heavy ship condition, sea state, hull fouling and propulsion system power losses for proper match between engine and prop/jet.

### D Rating (Intermittent Duty)

**Typical applications:** For vessels operating at rated load and rated speed up to 16% of the time (up to 50% load factor). Typical operating ranges from 1000 to 3000 hours per year.

### E Rating (High Performance)

**Typical applications:** For vessels operating at rated load and rated speed up to 8% of the time (up to 30% load factor). Typical operation ranges from 250 to 1000 hours per year.

### DEP Ratings (Diesel Electric Propulsion, Electric Drive)

**Typical applications:** For vessels operating with generator sets that provide power to the propulsion systems. All ratings are Prime Ratings according to ISO 8528-1 for unlimited usage per year at a load factor of  $\leq 70\%$ . 10% overload capability is required for a maximum of 1 hour out of every 12 and a maximum of 25 hours total per year.

**Typical applications could include but are not limited to supply vessels, cruise vessels, research vessels, or any other ship using diesel electric drive systems.**

## Rating Conditions for 3500s and Smaller Engines

Ratings are based on SAE J1228 standard conditions of 29.61 in Hg (100 kPa) and 77°F (25°C). These ratings also apply at ISO3046-1:2002E, ISO8665, DIN6271-3, and BS5514 conditions of 29.61 in Hg (100 kPa), 81°F (27°C) and 60% relative humidity.

Caterpillar maintains ISO9001:2000 certified quality management systems for engine test facilities to assure accurate calibration of test equipment. Electronically controlled engines are set at the factory at the advertised power corrected to standard ambient conditions. The published fuel consumption rates are in accordance with ISO3046-1:2002E.

**Fuel consumption** is based on SAE J1995 with +/- 3% tolerance at rated power for fuel having an LHV of 18,390 Btu/lb (42,780 kJ/kg) when used at 84.2°F (29°C) and weighing 7.001 lbs/U.S. gal (838.9 g/liter). Additional ratings may be available for specific customer requirements. Consult your Cat representative for details.

## Rating Conditions for C280 Engines

Ratings are based on SAE J1349 standard conditions of 29.61 in Hg (100 kPa) and 77°F (25°C). These ratings also apply at ISO3046-1:2002E, ISO8665, DIN6271-3, and BS5514 standard reference conditions. Ratings also meet classification society maximum temperature requirements of 113°F (45°C) temperature to turbo and 90°F (32°C) seawater temperature without derate.

**Fuel consumption** is based on ISO3046/1 with +5% tolerance at rated power for fuel having an LHV of 18,390 Btu/lb (42,780 kJ/kg) and weighing 7.001 lbs/U.S. gal (838.9 g/liter). Includes engine mounted fresh water and lube oil pumps. BSFC without pumps, 2% less. Additional ratings may be available for specific customer requirements. Consult your Cat representative for details.

## Performance Data

Performance along a typical fixed pitch propeller curve with a 3.0 exponent.

Power rated in accordance with NMMA procedure as crankshaft power. For units equipped with Caterpillar supplied marine gears, reduce crankshaft power by 3% for propeller shaft power.

# Marine Rating Definition Generator Sets and Auxiliary Engines

Caterpillar has offered packaged power systems for over 70 years. We assure power and performance ratings, as advertised, through extensive factory testing.

Cat generator sets typically exceed NEMA and IEEE standards for load acceptance. All rotor designs have been type tested at 150% overspeed for two hours at 338°F (170°C) ambient temperature.

## Rating Definition

All Cat marine auxiliary engines and generator sets are rated for prime power for continuous electric service according to ISO 8528-1.

Hours per Year	Unlimited
Load Factor	< 70%
Overload Capacity	+ 10%
	maximum of 1 hour in 12
	maximum of 25 hours per year

## Rating Conditions

Ratings are based on SAE J3046 and J1349 standard conditions of 29.61 in. Hg (100 kPa) and 77°F (25°C). These ratings also apply at ISO8665, ISO3046-1:2002E, DIN6271-3, and BS5514 standard conditions of 29.61 in. Hg (100 kPa), 81°F (27°C), and 60% relative humidity.

Fuel rates are based on fuel oil of 35° API [60°F (16°C)] gravity having an LHV of 18,390 Btu/lb (42 780 kJ/kg) when used at 85°F (29°C) and weighing 7.001 lbs/U.S. gal. (838.9 g/liter).

Marine Auxiliary Engines are mainly used as generator set engines; however, they can be used for electrically driven pumps, winches, conveyors, thrusters, when it is specified. Engines can be radiator cooled or heat exchanger/keel cooled.

# Abbreviations

<b>bhp</b>	Brake Horsepower	<b>MCS</b>	Marine Control System
<b>bkW</b>	Brake Kilowatts	<b>mhp</b>	Metric Horsepower
<b>CEM</b>	Clean Emission Module	<b>NA</b>	Naturally Aspirated
<b>DEF</b>	Diesel Exhaust Fluid	<b>R</b>	Radiator Cooled
<b>DIN</b>	German Standards Organization	<b>SAE</b>	Society of Automotive Engineers
<b>DF</b>	Dual Fuel	<b>SCAC</b>	Separate Circuit Aftercooled
<b>ekW</b>	Electrical Kilowatts	<b>SCR</b>	Selective Catalytic Reduction
<b>EPA</b>	Environmental Protection Agency	<b>T</b>	Turbocharged
<b>EU</b>	European Union	<b>TA</b>	Turbocharged, Aftercooled
<b>EUI</b>	Electronic Unit Injection	<b>TSA</b>	Turbocharged, Supercharged, Aftercooled
<b>g/bkW-hr</b>	Grams per Brake Kilowatt Hour	<b>TTA</b>	Twin Turbo Aftercooled
<b>H</b>	Height of Engine	<b>U.S. g/h</b>	U.S. Gallons per Hour
<b>HE</b>	Heat Exchanger Cooled	<b>W</b>	Overall Width
<b>IMO</b>	International Maritime Organization	<b>WE</b>	Width of Engine
<b>ISO</b>	International Standards Organization		
<b>kVA</b>	Kilovolt-Ampere		
<b>L</b>	Overall Engine Length		
<b>LE</b>	Length of Engine from Front of Engine to Rear Face of Flywheel Housing		
<b>LG</b>	Length of Engine with Gear/Generator		

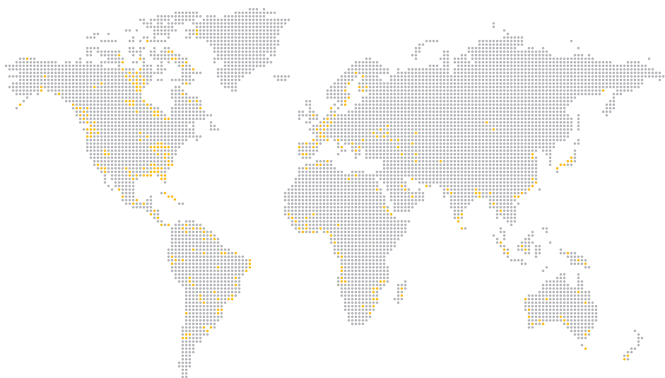
# Global Dealer Network

Caterpillar's global dealer network has broad capabilities and is the strongest in the world, ensuring customer access to complete solutions for your equipment needs. From people at the local branch to those at the corporate level – we offer global support at the local level. Service locations offer dealer personnel who know and understand their local market, their customers, and their customers' businesses.

Cat dealer field service capability is second to none. Your uptime is maximized with the fastest response time available, and qualified, experienced field service technicians with the expertise and equipment to quickly diagnose and fix problems. Our technicians know Cat products and solutions, and deliver the same world-class support to you – wherever and whenever you need it.



To find your nearest dealer, please visit:  
[https://www.cat.com/en\\_US/support/dealer-locator](https://www.cat.com/en_US/support/dealer-locator).



# Caterpillar Marine

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# Notes

# Notes

# Notes

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