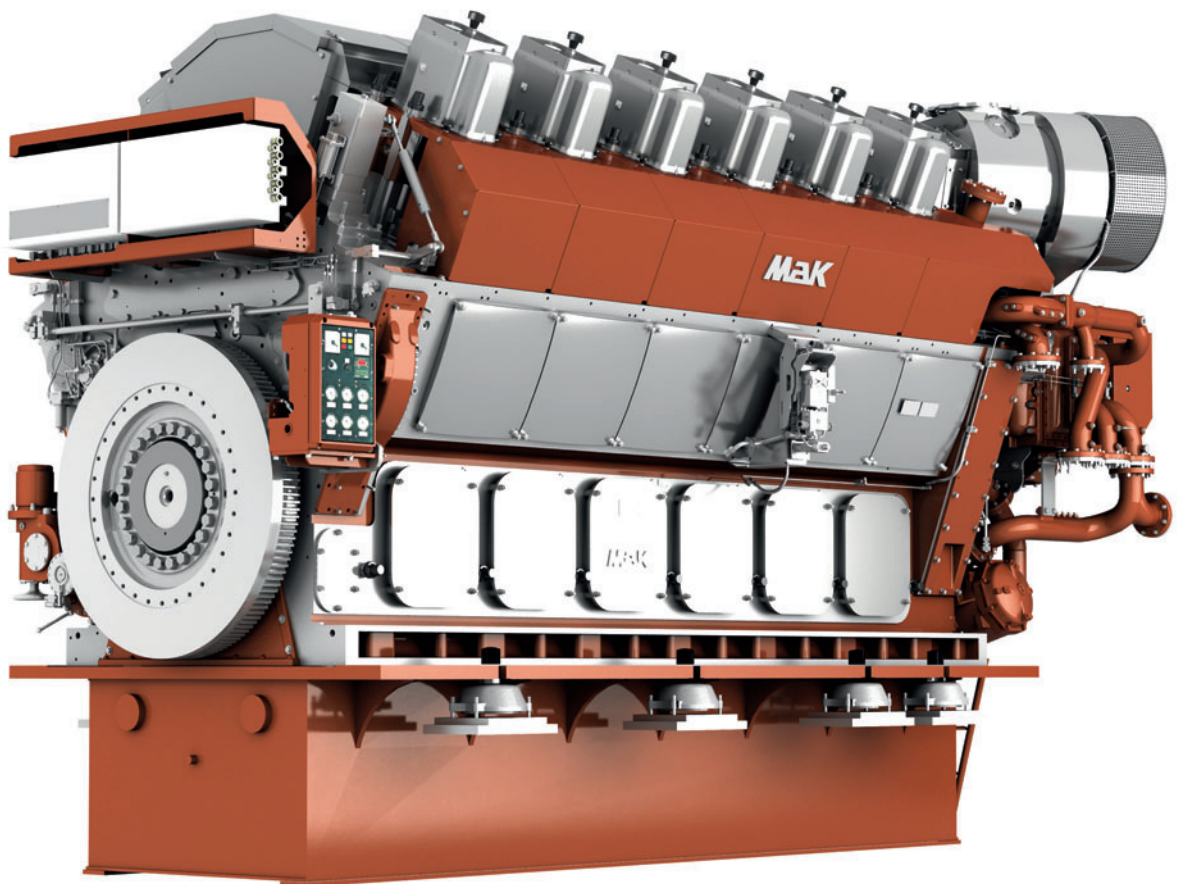


VM 32 E

Efficiency and Performance
New Product Development
with Modular Design

12 • 16 Cylinder



VM 32 E • Power Output 6,720 – 8,960 kW

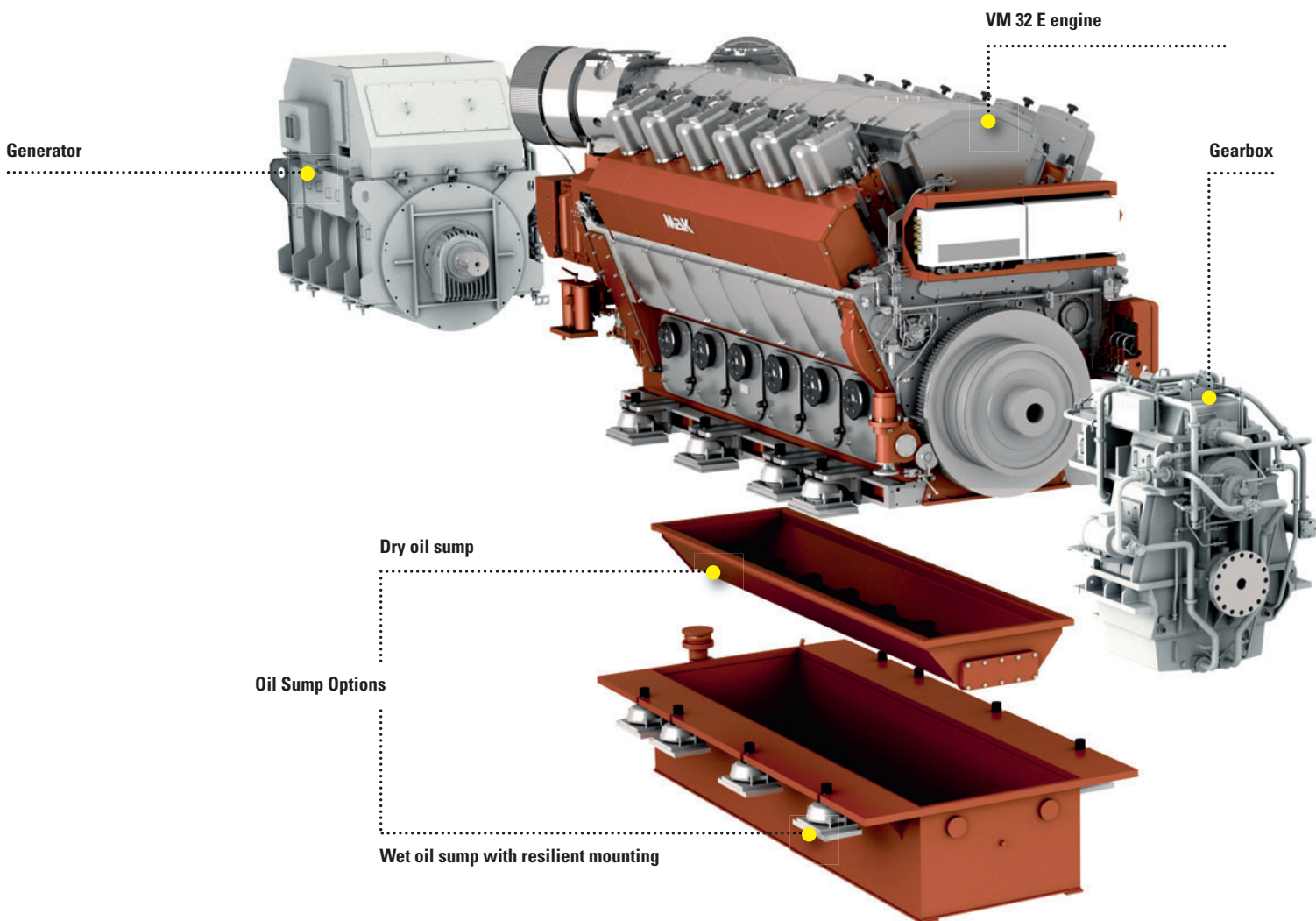
The new VM 32 E engine is designed for our offshore customers seeking the greatest reliability and durability in combination with stability at high power output.

The VM 32 E engine extends the output range of our recently announced M 32 E inline engine above 5 MW and stands out with the same superior serviceability and long maintenance intervals. Additional properties of the VM 32 E are a power output of 560 kW/cylinder, 100% PTO capability and a large portfolio of application-driven options. The VM 32 E is available as a generator set with a new “flexibly-mounted engine on base frame” design and a wet oil sump solution with resilient mounting for both propulsion engines and generator set applications

without base frame. An optional Part Load Optimization Kit (PLK) for constant speed applications reduces fuel consumption at part load for customers who often operate in DP2/DP3 mode.

The VM 32 E has an improved power to weight ratio, is the best solution for engine rooms that occupy fewer frames and is SCR ready for the new Cat® SCR System to fulfill IMO III exhaust gas emissions.

Please find further information about our IMO III solutions in our Cat SCR System leaflet.



■ Power Take Off (PTO)

For more complex engine room layouts, we offer a 100% PTO option. On the 12 M 32 E we offer 6,720 kW and on the 16 M 32 E 8,960 kW of power take of on the counter flywheel side.

Generator and propulsion systems driven by the same engine offer significantly higher flexibility with a fewer number of engines.

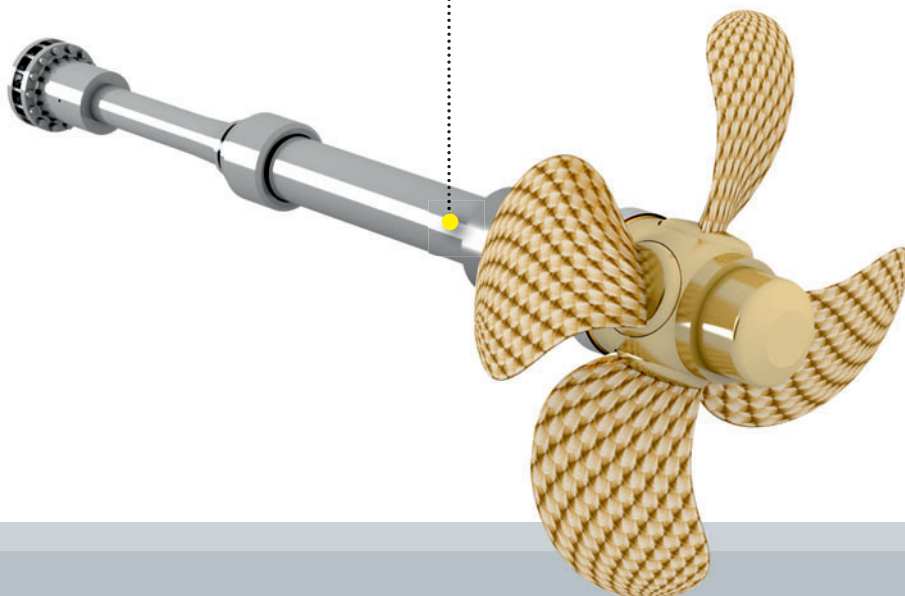
Benefits:

- **Reliable and durable engine**
- **12 M 32 E power uprated to 6,720 kW**
- **16 M 32 E power uprated to 8,960 kW**
- **Improved power to weight ratio**
- **Available as generator set with new base frame design**
- **Available as propulsion engine with dry or wet oil sump**
- **100% PTO capability available**
- **Part Load Optimization Kit (PLK) for low load operation available (optional)**
- **Simple and efficient engine concept with reliable mechanical injection system and maintenance friendly turbocharger**



© Rentis GmbH

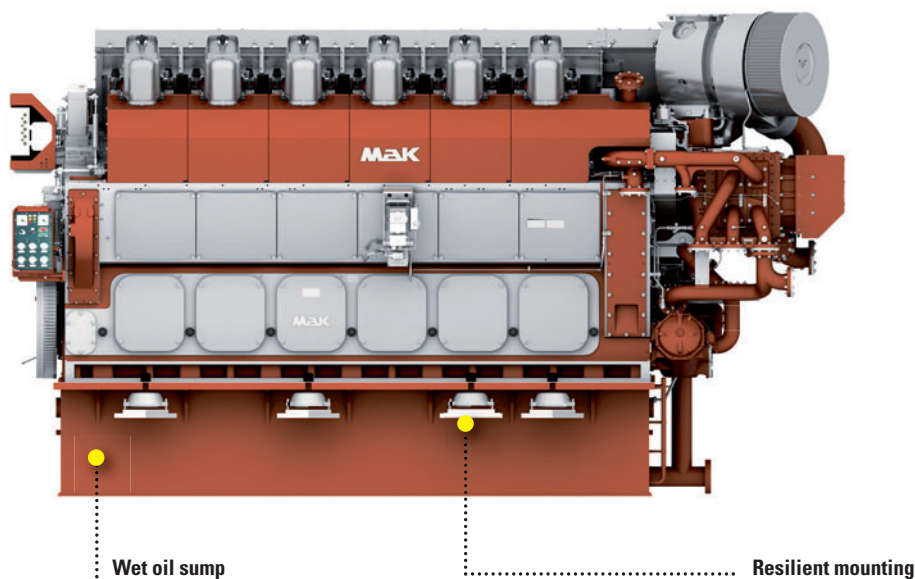
Caterpillar Propulsion product



Please find more information about Caterpillar Propulsion products on our website www.catpropulsion.com

VM 32 E • Wet Oil Sump Design with Resilient Mounting

Propulsion and Diesel Electric Application



Wet oil sump with resilient mounting

We developed a wet oil lubricating system to reduce wet engine weight, engine height, and make the installation of the engine as simple as possible. State of the art marine lube oil systems include a dry lube oil pan, a mechanical lube oil supply pump, and a lube oil storage tank below the engine. With our wet oil lubrication system, we offer a solution with a reduced scope of supply but without disadvantages.

The dry oil pan and lube oil storage tank are housed in the wet lube oil pan. The installation is easier and the height of the engine and lube oil system as well as the lube oil volume itself is reduced. The resilient mounting of the wet oil pan concept reduces transfer of engine vibration into the ship and last but not least helps the crew sleep well during their off shift while the engine is running.

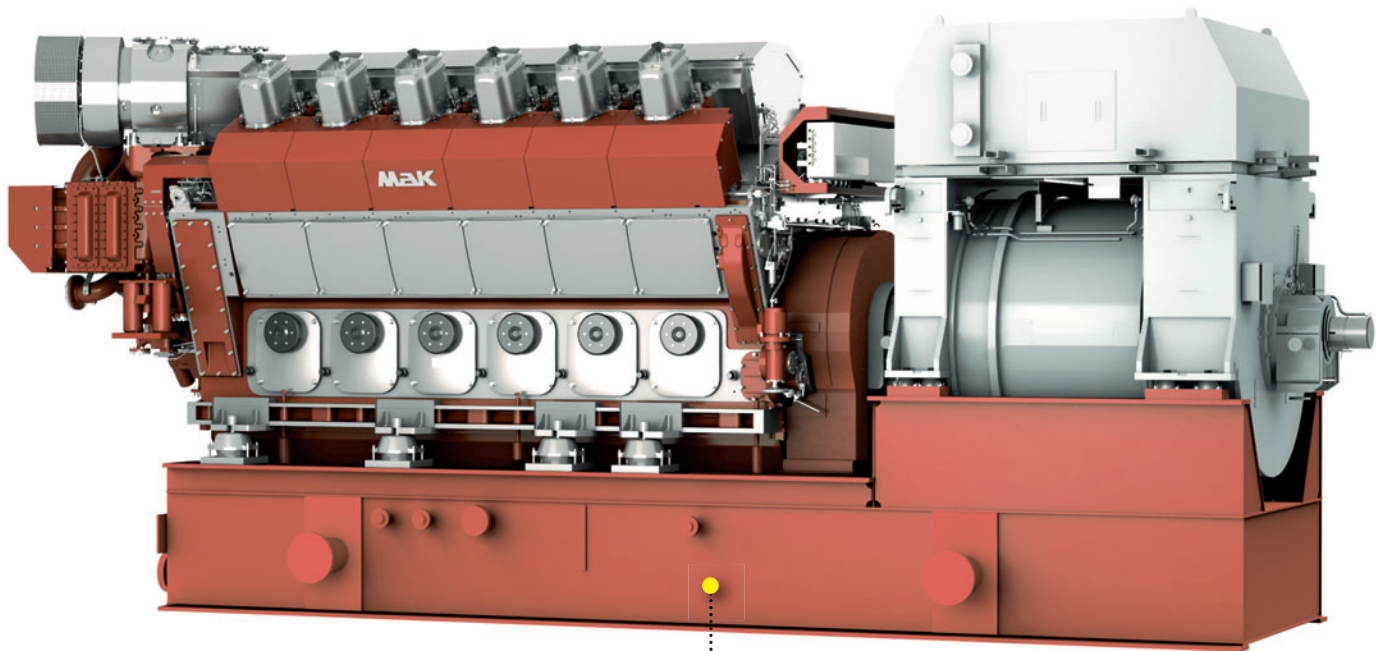
Benefits:

- Simple installation
- Reduced height
- Fewer components
- About 30 % reduced lube oil volume
- Proven combination of wet oil sump and resilient mounting



VM 32 E • Resiliently Mounted Engine on Base Frame

Generator Set Application



••• New base frame design

Flexibly mounted engine on base frame

To make the generator set installation as easy as possible, and to reduce height, weight and dampen vibration from the engine, Caterpillar Motoren developed a new base frame. In this design the engine is resiliently mounted on the base frame with conical mounts. The base frame itself is reduced in weight and height to make transport and handling during the installation phase easier. Last but not least the ship's weight and design will benefit from

the lower weight and the smaller dimensions of its entire life-time, especially on smaller ship application. The generator is mounted on non-resilient adjustable spacers which is the most economical way to establish a perfect mounting plane and allows an easy realignment of the generator if the conical mounts of the engine set during their lifetime. As with the wet oil sump, the reduced vibration levels will help the crew sleep well during their off shift while the engine is running.

Benefits:

- Transport and handling simplified
- Quick and easy installation
- Minimal transfer of engine vibration to the ship and generator
- Crew friendly
- Extended generator set lifetime
- Reduced height
- Reduced weight
- Easy realignment of generator



VM 32 E • Part Load Optimization

Specific fuel oil consumption – VM 32 E – IMO II – with 560 kW/cyl. at 720 and 750 rpm

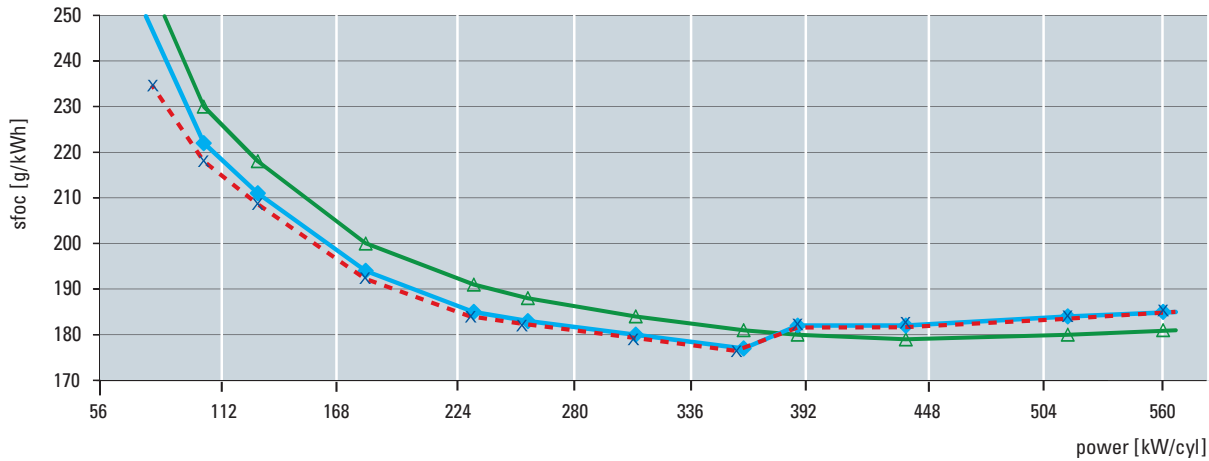
ISO 3046/1 and LCV 42,7 MJ/kg, 5 % tolerance

per engine driven lube oil pump

power	100%	85%	75%	50%	25%
add. sfoc const. speed	1.0%	1.2%	1.3%	2.0%	4.0%
add. sfoc. prop. curve	1.0%	1.1%	1.2%	1.4%	2.0%

per engine driven cooling water pump

power	100%	85%	75%	50%	25%
add. sfoc const. speed	0.4%	0.47%	0.53%	0.8%	1.6%
add. sfoc. prop. curve	0.4%	0.4%	0.4%	0.4%	0.4%



- ▲— VM 32 E standard
- ◆— VM 32 E with PLK constant speed
- - × - - VM 32 E with PLK variable speed

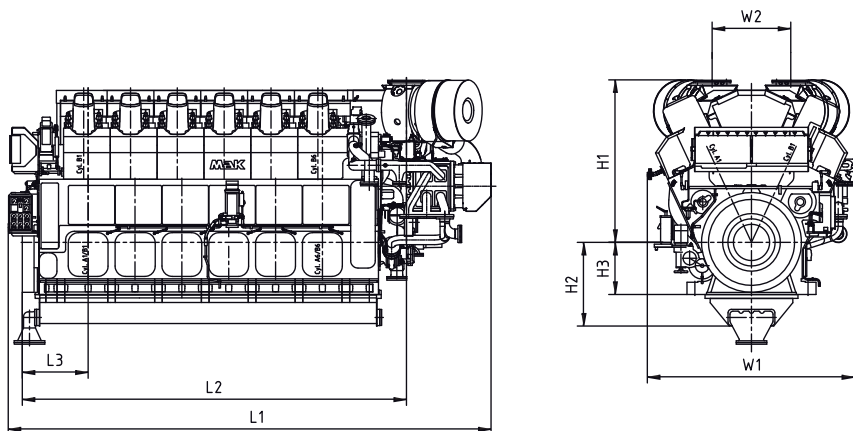
- Up to 10 g/kWh fuel savings in the 10-70% load range for offshore applications.
- 3 x 33% load step capability for diesel-electric drive.
- Better load capability for propulsion engines.
- Smoke reduction.

Up to 10 g/kWh fuel savings, 3 x 33% load step capability and reduced smoke emissions are the benefits of the Part Load Optimization Kits (PLK) for constant and variable speed operation. They are attractive for all customers operating their prime movers mainly between 10% and 70% load. Both Part Load Kits include our proven Flexible Camshaft Technology, special turbocharger matching and an intelligent control software logically connected to the Large Engine Safety System (LESS).

		VM 32 E Standard	VM 32 E Part Load Optimization constant speed	VM 32 E Part Load Optimization variable speed
Maximum continuous rating per ISO 3046/1	kW/cyl.	560	560	560
Speed	rpm	720/750	720/750	720/750
Brake mean effective pressure (BMEP)	bar	25.2/24.2	25.2/24.2	25.2/24.2
Specific fuel oil consumption				
n = const	75 %	g/kWh	180	182
	50 %	g/kWh	188	183
	35 %	g/kWh	200	194
	25 %	g/kWh	218	211

VM 32 E • Technical Data

■ Propulsion and diesel electric application • Turbocharger at free end

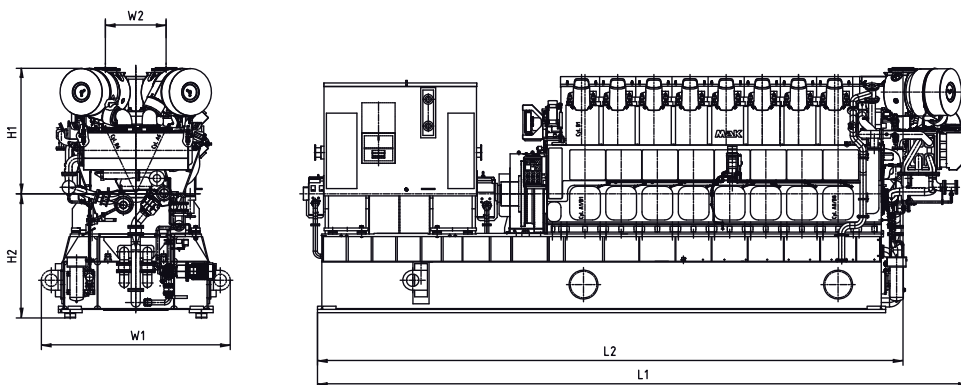


Removal of cylinder liner in transverse direction Y1 = 2,836 mm.

Minimum engine center spacing: 3,500 mm (two engines side by side).

(Dimensions in mm)									
Engine	L1	L2	L3	H1	H2	H3	W1	W2	Weight (t)
12 M 32 E	6,956	5,535	949	2,319	1,205	750	2,985	1,133	65.0
16 M 32 E	8,328	6,885	949	2,319	1,205	750	2,985	1,133	82.0

■ Generator set application • Turbocharger at free end



Removal of cylinder liner in transverse direction Y1 = 5,156 mm.

Reduced removal height with special tools only.

Minimum engine center spacing: 3,500 mm (two gensets side by side).

Prime mover and generator are always flexibly coupled.

(Dimensions in mm)							
Engine	L1	L2	H1	H2	W1	W2	Dry Weight* (t)
12 M 32 E	10,703	9,484	2,319	2,320	3,526	1,133	120.0
16 M 32 E	12,149	10,930	2,319	2,320	3,526	1,133	140.0

* depending on generator weight

The Power You Need.

The Cat® and MaK brands of Caterpillar Marine offer premier high- and medium-speed propulsion, auxiliary, and generator set solutions, as well as optional dual fuel, diesel-electric, and hybrid system configurations. With the launch of Caterpillar Propulsion our comprehensive and evolving product line gives customers one source for the most extensive engine power range available, complete propulsion systems, controllable pitch propellers, transverse and azimuth thrusters, and controls. Cat and MaK products and technologies are proven reliable and are built to last in all marine applications, demonstrating superior productivity and the lowest lifecycle cost.

The Cat Global Dealer Network, more than 2,200 global service locations strong, ensures that you'll have local expertise, highly-trained technicians, rapid parts delivery, and the proper equipment and services to keep you working – anytime, anywhere.

Construction, term, or repower financing through Cat Financial helps you make Cat and MaK power a reality. With our knowledge of customer needs, local markets, and legal and regulatory requirements, we've been providing tailored financing solutions and exceeding expectations since our start in 1986.

For more information and to find your local dealer, please visit our website: www.cat.com/marine
Visit Cat Financial at: www.finance.cat.com/power

Caterpillar Marine

Europe, Africa, Middle East

Caterpillar Marine
A Division of
Caterpillar Motoren GmbH & Co.KG
Neumühlen 9
22763 Hamburg
Germany

Phone: +49 40 2380 3000
Telefax: +49 40 2380 3535

Americas

MaK Americas Inc.
3450 Executive Way
Miramar Park of Commerce
Miramar, FL. 33025/USA

Phone: +1 954 885 3200
Telefax: +1 954 885 3131

Asia Pacific

**Caterpillar Marine Trading
(Shanghai) Co., Ltd.**
25/F, Caterpillar Marine Center
1319, Yan'an West Road
200050 Shanghai/P. R. China

Phone: +86 21 6226 2200
Telefax: +86 21 6226 4500

**Caterpillar Marine Asia
Pacific Pte Ltd**
No. 5 Tukang
Innovation Grove
Singapore 618304
Republic of Singapore

Phone: +65 68287 600
Telefax: +65 68287 625

Subject to change without notice.
Leaflet No. 268 · 10.15 · e · L+S · VM3
LEDM0100-01

© 2015 CAT, CATERPILLAR, their respective logos, MaK, "Caterpillar Yellow" and the "Power Edge" trade dress, as well as corporate and product identity used herein, are trademarks of Caterpillar and may not be used without permission.



Caterpillar Marine is committed to sustainability. This document is printed on PEFC certificated paper

The MaK logo, consisting of the letters 'MaK' in a bold, green, sans-serif font.