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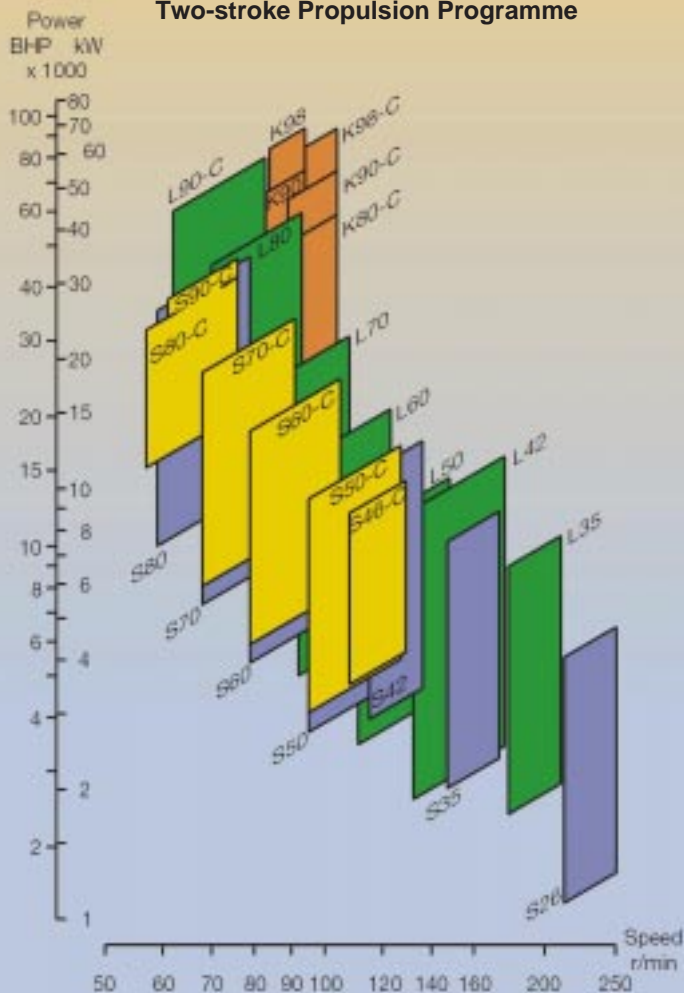
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*Separate engine programme booklet is available for engines for stationary application.*

# MAN B&W Diesel Two-stroke Propulsion Programme



## Layout Diagram

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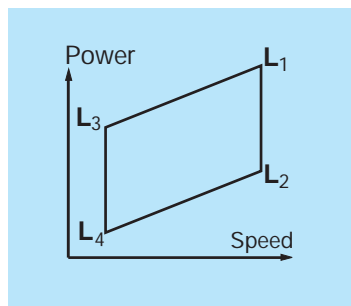
The layout diagram applicable for the MC engines is defined by the power and speed combinations  $L_1$  -  $L_2$  -  $L_3$  and  $L_4$ , with  $L_1$  indicating the Nominal Maximum Continuous Rating.

Any combination of speed and power within the layout diagram may be used for selecting the Specified MCR and the Optimising point.

The optimising point "O" has to be the specified MCR "M" for the types: S46MC-C, S42MC, L42MC, S35MC, L35MC and S26MC.

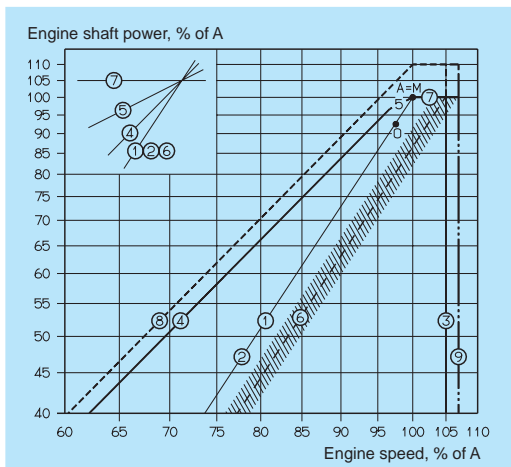
If the compact engines: S70MC-C, S60MC-C and S50MC-C are without VIT fuel pumps they also have to be optimised at the specified MCR power "O" = "M".

The power is stated in kW and in metric horsepower (1 BHP = 75 kpm/s).



## Load Diagram

The load diagram defines the power and speed limits for continuous as well as overload operation of an installed engine having an optimising point "O" and a specified MCR point "M" that confirm the ship's specification.



- "A" 100% reference point
- "M" Specified MCR
- "O" Optimising point
- Line 1 Propeller curve through optimising point, for engine layout
- Line 2 Propeller curve, fouled hull and heavy weather – heavy running
- Line 3 Speed limit
- Line 4 Torque/limit
- Line 5 Mean effective pressure limit
- Line 6 Propeller curve, clean hull and calm weather – light running, for propeller layout
- Line 7 Power limit for continuous running
- Line 8 Overload limit
- Line 9 Speed limit at sea trial

Point "M" to be located on line 7 (normally in point "A")

Point "A" is a 100% speed and power reference point of the load diagram, and is defined as the point on the propeller curve (line 1) through the optimising point "O", having the specified MCR power.

The service points of the installed engine incorporate the engine power required for ship propulsion and shaft generator, if installed.

#### **Limits for continuous operation**

The continuous service range is limited by lines 4, 5, 7 and 3.

#### **Limits for overload operation**

The area between lines 4, 5, 7 and the heavy dashed line 8 is available for overload running for limited periods only (1 hour per 12 hours).

## **Emission Control**

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All MC engines in this folder comply with the IMO speed dependent  $\text{NO}_x$  emission limitations, measured according to the ISO 8178 test cycles E2/E3 for Heavy Duty Diesel Engines.

## **Specific Fuel Oil Consumption (SFOC)**

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The figures given in this folder represent the values obtained when the engine and turbocharger are matched with a view to obtaining the lowest possible SFOC values and fulfilling the IMO  $\text{NO}_x$  emission limitations.

The SFOC figures are given with a tolerance of 5% and are based on the use of a fuel with a lower calorific value of 42,700 kJ/kg (10,200 kcal/kg) at ISO conditions:

- 1,000 mbar ambient air pressure
- 25 °C ambient air temperature
- 25 °C cooling water temperature

SFOC and  $\text{NO}_x$  are interrelated parameters, so an engine offered without fulfilling the IMO  $\text{NO}_x$  limitations is subject to a tolerance of only 3% of the SFOC.

## Coagency of SFOC and Exhaust Gas Data

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On the S70MC-C, S70MC, S60MC-C, S60MC, L60MC, S50MC-C, S50MC and L50MC type engines, the matching of the engine and the turbocharging system can be modified, thus increasing the exhaust gas temperature from 235° to 255°C.

This modification will lead to a 7-8% reduction in the exhaust gas amount and involve a SFOC penalty of up to 2 g/BHP.

## Dry masses

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The masses are stated for the standard engines with MAN B&W turbocharger(s), a standard turning wheel and can vary up to 10% depending on the design and options chosen such as moment compensators, tuning wheel, etc.

The minimum lengths  $L_{min}$  are stated from the aft end of the crankshaft to the fore end of the engine footprint.

## MC-GI Dual Fuel Gas Engines

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All two-stroke engines with cylinder diameter 500 mm or larger can be delivered as dual fuel engines with high pressure gas injectors. The performance data are the same as for the diesel version stated in this folder.

For further information, please contact MAN B&W Diesel A/S in Copenhagen, Denmark.

Layout points		L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>
Speed mep	r/min	94	94	84	84
	bar	18.2	14.6	18.2	14.6
	kW	BHP	kW	kW	kW
6 K98MC	34 320	46 680	27 480	30 660	24 540
7 K98MC	40 040	54 460	32 060	35 770	28 630
8 K98MC	45 760	62 240	36 640	40 880	32 720
9 K98MC	51 480	70 020	41 220	45 990	36 810
10 K98MC	57 200	77 800	45 800	51 100	40 900
11 K98MC	62 920	85 580	50 380	56 210	44 990
12 K98MC	68 640	93 360	54 960	61 320	49 080

**Specific Fuel Oil Consumption (SFOC)**

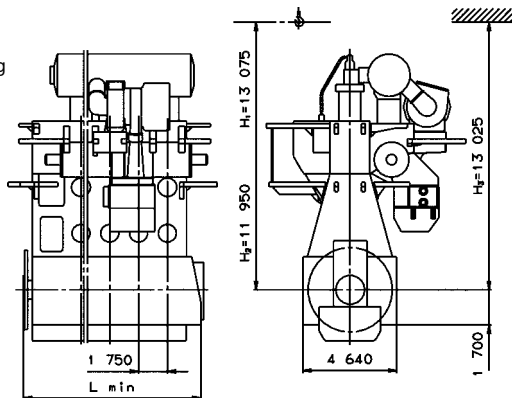
g/kWh	171	162	171	162
g/BHP	126	119	126	119

Lubricating oil consumption: approximately 19 kg/cyl. 24 h

Cylinder oil consumption: 0.9 - 1.4 g/kWh ~ 0.65 - 1.0 g/BHP

Cyl. No.	6	7	8	9	10	11	12
L <sub>min</sub> mm	12 865	14 615	17 605	19 355	21 105	22 855	24 605
Dry mass ton*	1 152	1 318	1 528	1 678	1 856	2 006	2 157

\* The mass can vary up to 10% depending on the design and options chosen.

H<sub>1</sub>: Vertical liftH<sub>2</sub>: Tilted liftH<sub>3</sub>: With electrical double jib crane

**K98MC-C****Bore: 980 mm, Stroke: 2 400 mm**

Layout points	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>
<b>Speed</b> r/min	104	104	94	94
<b>mep</b> bar	18.2	14.6	18.2	14.6
	<b>kW</b>	<b>BHP</b>	<b>kW</b>	<b>kW</b>
6 K98MC-C	<b>34 260</b>	<b>46 560</b>	27 420	30 960
7 K98MC-C	<b>39 970</b>	<b>54 320</b>	31 990	36 120
8 K98MC-C	<b>45 680</b>	<b>62 080</b>	36 560	41 280
9 K98MC-C	<b>51 390</b>	<b>69 840</b>	41 130	46 440
10 K98MC-C	<b>57 100</b>	<b>77 600</b>	45 700	51 600
11 K98MC-C	<b>62 810</b>	<b>85 360</b>	50 270	56 760
12 K98MC-C	<b>68 520</b>	<b>93 120</b>	54 840	61 920

**Specific Fuel Oil Consumption (SFOC)**

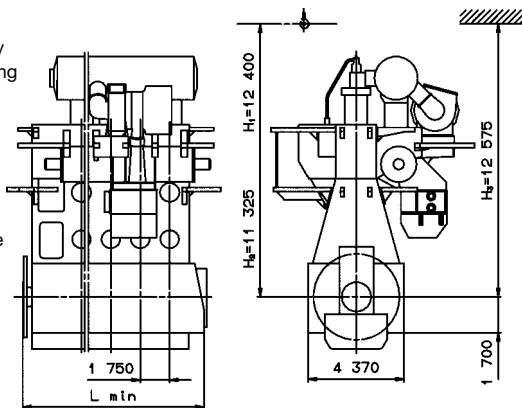
g/kWh	171	162	171	162
g/BHP	126	119	126	119

Lubricating oil consumption: approximately 18 kg/cyl. 24 h

Cylinder oil consumption: 0.9 - 1.4 g/kWh ~ 0.65 - 1.0 g/BHP

Cyl. No.	6	7	8	9	10	11	12
L <sub>min</sub> mm	12 865	14 615	17 605	19 355	21 105	22 855	24 605
Dry mass ton*	1 100	1 265	1 472	1 621	1 797	1 946	2 095

\* The mass can vary up to 10% depending on the design and options chosen.

H<sub>1</sub>: Vertical liftH<sub>2</sub>: Tilted liftH<sub>3</sub>: With electrical double jib crane



Bore: 900 mm, Stroke: 3 188 mm

S90MC-C

Layout points	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>
Speed r/min	76	76	61	61
mep bar	19.0	15.2	19.0	15.2
	kW	BHP	kW	kW
6 S90MC-C	29 340	39 900	23 520	23 580
7 S90MC-C	34 230	46 550	27 440	27 510
			21 980	

### Specific Fuel Oil Consumption (SFOC)

g/kWh	167	160	167	160
g/BHP h	123	118	123	118
Lubricating oil consumption: approximately 15 kg/cyl. 24 h				
Cylinder oil consumption: 1.1 - 1.6 g/kWh ~ 0.8 - 1.2 g/BHP h				

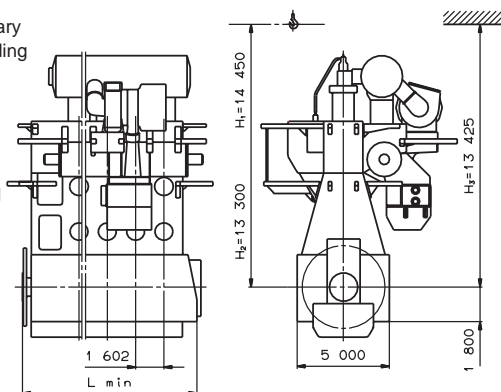
Cyl. No.	6	7		
L <sub>min</sub> mm	12 802	13 524		
Dry mass ton*	1 093	1 297		

\* The mass can vary up to 10% depending on the design and options chosen.

H<sub>1</sub>: Vertical lift

H<sub>2</sub>: Tilted lift

H<sub>3</sub>: With electrical double jib crane



Layout points	L <sub>1</sub>		L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>
<b>Speed</b> r/min	83		83	62	62
<b>mep</b> bar	19.0		12.2	19.0	12.2
	<b>kW</b>	<b>BHP</b>	<b>kW</b>	<b>kW</b>	<b>kW</b>
6 L90MC-C	<b>29 340</b>	<b>39 900</b>	18 780	21 900	14 040
7 L90MC-C	<b>34 230</b>	<b>46 550</b>	21 910	25 550	16 380
8 L90MC-C	<b>39 120</b>	<b>53 200</b>	25 040	29 200	18 720
9 L90MC-C	<b>44 010</b>	<b>59 850</b>	28 170	32 850	21 060
10 L90MC-C	<b>48 900</b>	<b>66 500</b>	31 300	36 500	23 400
11 L90MC-C	<b>53 790</b>	<b>73 150</b>	34 430	40 150	25 740
12 L90MC-C	<b>58 680</b>	<b>79 800</b>	37 560	43 800	28 080

## Specific Fuel Oil Consumption (SFOC)

<b>g/kWh</b>	167	155	167	155
<b>g/BHP</b>	123	114	123	114
Lubricating oil consumption: approximately 14 kg/cyl. 24 h				
Cylinder oil consumption: 0.9 - 1.4 g/kWh ~ 0.65 - 1.0 g/BHP				

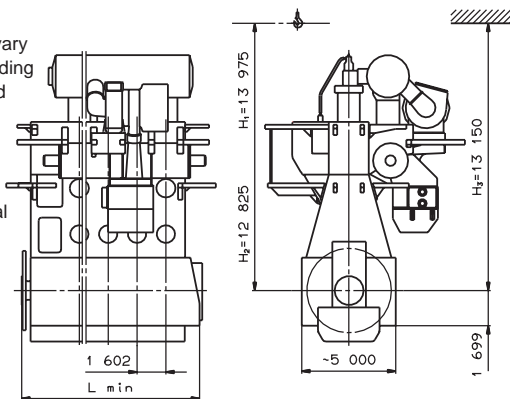
Cyl. No.	6	7	8	9	10	11	12
L <sub>min</sub> mm	12 400	15 502	17 104	18 706	20 308	21 910	23 512
Dry mass ton*	1 077	1 279	1 446	1 589	1 734	1 877	2 038

\* The mass can vary up to 10% depending on the design and options chosen.

H<sub>1</sub>: Vertical lift

H<sub>2</sub>: Tilted lift

H<sub>3</sub>: With electrical double jib crane



Layout points	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>
<b>Speed</b> r/min	94	94	71	71
<b>mep</b> bar	18.0	11.5	18.0	11.5
	<b>kW</b>	<b>BHP</b>	<b>kW</b>	<b>kW</b>
4 K90MC	18 280	24 880	11 720	13 720
5 K90MC	22 850	31 100	14 650	17 150
6 K90MC	27 420	37 320	17 580	20 580
7 K90MC	31 990	43 540	20 510	24 010
8 K90MC	36 560	49 760	23 440	27 440
9 K90MC	41 130	55 980	26 370	30 870
10 K90MC	45 700	62 200	29 300	34 300
11 K90MC	50 270	68 420	32 230	37 730
12 K90MC	54 840	74 640	35 160	41 160

## Specific Fuel Oil Consumption (SFOC)

g/kWh	171	159	171	159
g/BHP	126	117	126	117

Lubricating oil consumption: approximately 15 kg/cyl. 24 h

Cylinder oil consumption: 0.9 - 1.4 g/kWh ~ 0.65 - 1.0 g/BHP

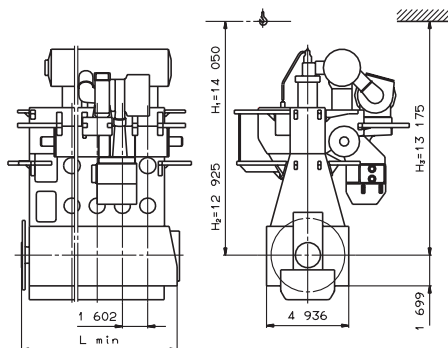
Cyl. No.	4	5	6	7	8	9	10	11	12
L <sub>min</sub> mm	9 176	10 778	12 380	13 982	17 084	18 686	20 288	21 890	23 492
Dry mass ton*	787	931	1 074	1 272	1 411	1 553	1 700	1 840	1 980

\* The mass can vary up to 10% depending on the design and options chosen.

H<sub>1</sub>: Vertical lift

H<sub>2</sub>: Tilted lift

H<sub>3</sub>: With electrical double jib crane



Layout points	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>
<b>Speed</b> r/min	104	104	89	89
<b>mep</b> bar	18.0	14.4	18.0	14.4
	<b>kW</b>	<b>BHP</b>	<b>kW</b>	<b>kW</b>
6 K90MC-C	<b>27 360</b>	<b>37 260</b>	21 900	23 280
7 K90MC-C	<b>31 920</b>	<b>43 470</b>	25 550	27 160
8 K90MC-C	<b>36 480</b>	<b>49 680</b>	29 200	31 040
9 K90MC-C	<b>41 040</b>	<b>55 890</b>	32 850	34 920
10 K90MC-C	<b>45 600</b>	<b>62 100</b>	36 500	38 800
11 K90MC-C	<b>50 160</b>	<b>68 310</b>	40 150	42 680
12 K90MC-C	<b>54 720</b>	<b>74 520</b>	43 800	46 560

### Specific Fuel Oil Consumption (SFOC)

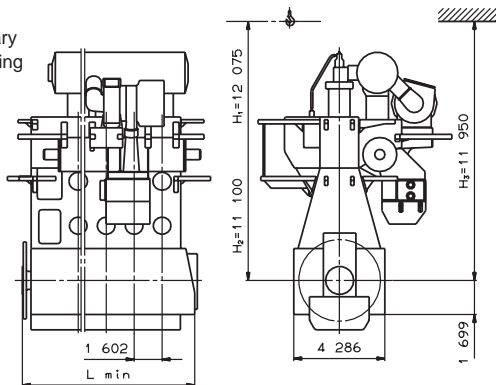
<b>g/kWh</b>	171	165	171	165
<b>g/BHP</b>	126	121	126	121

Lubricating oil consumption: approximately 15 kg/cyl. 24 h  
 Cylinder oil consumption: 0.9 - 1.4 g/kWh ~ 0.65 - 1.0 g/BHP

Cyl. No.	6	7	8	9	10	11	12
L <sub>min</sub> mm	12 447	14 049	15 651	18 403	20 005	21 607	23 209
Dry mass ton*	986	1 106	1 253	1 415	1 561	1 686	1 826

\* The mass can vary up to 10% depending on the design and options chosen.

H<sub>1</sub>: Vertical lift  
 H<sub>2</sub>: Tilted lift  
 H<sub>3</sub>: With electrical double jib crane



Layout points	L <sub>1</sub>		L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>
<b>Speed</b> r/min	76		76	57	57
<b>mep</b> bar	19.0		12.2	19.0	12.2
	<b>kW</b>	<b>BHP</b>	<b>kW</b>	<b>kW</b>	<b>kW</b>
6 S80MC-C	<b>23 280</b>	<b>31 680</b>	14 880	17 460	11 160
7 S80MC-C	<b>27 160</b>	<b>36 960</b>	17 360	20 370	13 020
8 S80MC-C	<b>31 040</b>	<b>42 240</b>	19 840	23 280	14 880

**Specific Fuel Oil Consumption (SFOC)**

<b>g/kWh</b>	167	155	167	155
<b>g/BHPph</b>	123	114	123	114
Lubricating oil consumption: approximately 13 kg/cyl. 24 h				
Cylinder oil consumption: 1.1 - 1.6 g/kWh ~ 0.8 - 1.2 g/BHPph				

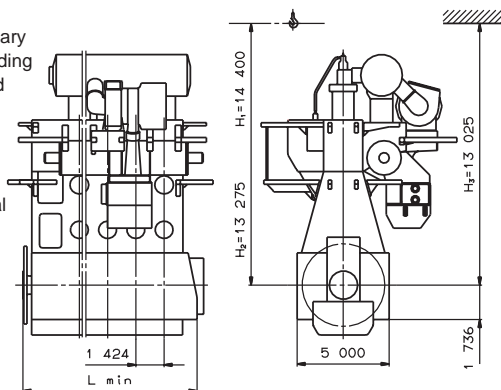
Cyl. No.	6	7	8
L <sub>min</sub> mm	10 899	12 323	13 747
Dry mass ton*	872	981	1088

\* The mass can vary up to 10% depending on the design and options chosen.

H<sub>1</sub>: Vertical lift

H<sub>2</sub>: Tilted lift

H<sub>3</sub>: With electrical double jib crane



Layout points	L <sub>1</sub>		L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>
Speed mep	r/min	79	79	59	59
	bar	19.0	12.2	19.0	12.2
	kW	BHP	kW	kW	kW
4 S80MC	15 360	20 880	9 840	11 480	7 360
5 S80MC	19 200	26 100	12 300	14 350	9 200
6 S80MC	23 040	31 320	14 760	17 220	11 040
7 S80MC	26 880	36 540	17 220	20 090	12 880
8 S80MC	30 720	41 760	19 680	22 960	14 720
9 S80MC	34 560	46 980	22 140	25 830	16 560

## Specific Fuel Oil Consumption (SFOC)

g/kWh	167	155	167	155
g/BHP	123	114	123	114

Lubricating oil consumption: approximately 13 kg/cyl. 24 h

Cylinder oil consumption: 1.1 - 1.6 g/kWh ~ 0.8 - 1.2 g/BHP

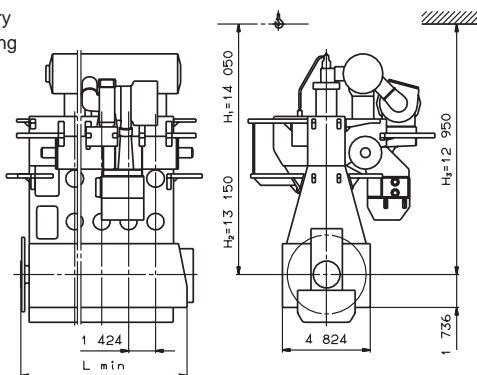
Cyl. No.	4	5	6	7	8	9
L <sub>min</sub> mm	8 051	9 475	10 899	12 323	13 747	16 331
Dry mass ton*	636	756	864	996	1 105	1 223

\* The mass can vary up to 10% depending on the design and options chosen.

H<sub>1</sub>: Vertical lift

H<sub>2</sub>: Tilted lift

H<sub>3</sub>: With electrical double jib crane



Layout points	L <sub>1</sub>		L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>
<b>Speed</b> r/min	93		93	70	70
<b>mep</b> bar	18.0		11.5	18.0	11.5
	kW		BHP	kW	kW
4 L80MC	14 560	19 760	9 320	10 960	7 000
5 L80MC	18 200	24 700	11 650	13 700	8 750
6 L80MC	21 840	29 640	13 980	16 440	10 500
7 L80MC	25 480	34 580	16 310	19 180	12 250
8 L80MC	29 120	39 520	18 640	21 920	14 000
9 L80MC	32 760	44 460	20 970	24 660	15 750
10 L80MC	36 400	49 400	23 300	27 400	17 500
11 L80MC	40 040	54 340	25 630	30 140	19 240
12 L80MC	43 680	59 280	27 960	32 880	21 000

**Specific Fuel Oil Consumption (SFOC)**

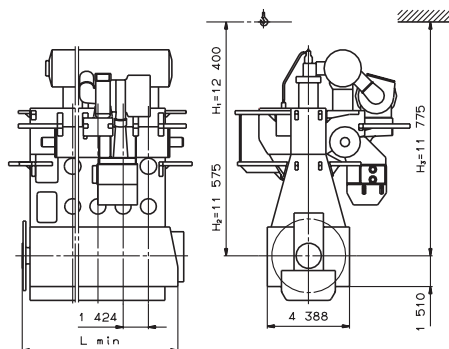
g/kWh	174	162	174	162
g/BHPph	128	119	128	119

Lubricating oil consumption: approximately 12 kg/cyl. 24 h

Cylinder oil consumption: 0.9 - 1.4 g/kWh ~ 0.65 - 1.0 g/BHPph

Cyl. No.	4	5	6	7	8	9	10	11	12
L <sub>min</sub> mm	8 386	9 810	11 234	12 658	14 082	16 786	18 210	19 634	21 058
Dry mass ton*	580	681	791	864	974	1 120	1 218	1 339	1 440

\* The mass can vary up to 10% depending on the design and options chosen.

H<sub>1</sub>: Vertical liftH<sub>2</sub>: Tilted liftH<sub>3</sub>: With electrical double jib crane

Layout points	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>
<b>Speed</b> r/min	104	104	89	89
<b>mep</b> bar	18.0	14.4	18.0	14.4
	<b>kW</b>	<b>BHP</b>	<b>kW</b>	<b>kW</b>
6 K80MC-C	<b>21 660</b>	<b>29 400</b>	17 340	18 540
7 K80MC-C	<b>25 270</b>	<b>34 300</b>	20 230	21 630
8 K80MC-C	<b>28 880</b>	<b>39 200</b>	23 120	24 720
9 K80MC-C	<b>32 490</b>	<b>44 100</b>	26 010	27 810
10 K80MC-C	<b>36 100</b>	<b>49 000</b>	28 900	30 900
11 K80MC-C	<b>39 710</b>	<b>53 900</b>	31 790	33 990
12 K80MC-C	<b>43 320</b>	<b>58 800</b>	34 680	37 080

## Specific Fuel Oil Consumption (SFOC)

g/kWh	171	165	171	165
g/BHP	126	121	126	121

Lubricating oil consumption: approximately 12 kg/cyl. 24 h  
 Cylinder oil consumption: 0.9 - 1.4 g/kWh ~ 0.65 - 1.0 g/BHP

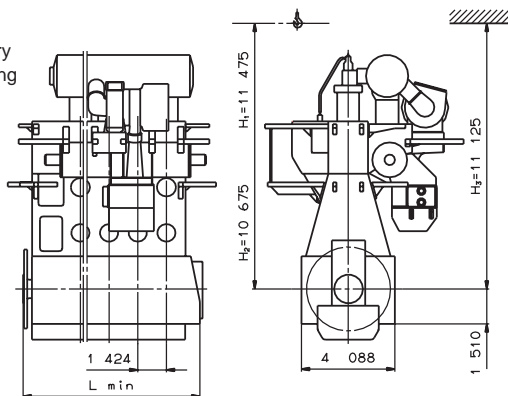
Cyl. No.	6	7	8	9	10	11	12
L <sub>min</sub> mm	11 104	12 528	13 952	16 526	17 950	19 374	20 798
Dry mass ton*	774	875	984	1 101	1 202	1 302	1 423

\* The mass can vary up to 10% depending on the design and options chosen.

H<sub>1</sub>: Vertical lift

H<sub>2</sub>: Tilted lift

H<sub>3</sub>: With electrical double jib crane





Layout points	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>
<b>Speed</b> r/min	91	91	68	68
<b>mep</b> bar	19.0	12.2	19.0	12.2
	<b>kW</b>	<b>BHP</b>	<b>kW</b>	<b>kW</b>
4 S70MC-C	<b>12 420</b>	<b>16 880</b>	7 940	5 960
5 S70MC-C	<b>15 525</b>	<b>21 100</b>	9 925	7 450
6 S70MC-C	<b>18 630</b>	<b>25 320</b>	11 910	8 940
7 S70MC-C	<b>21 735</b>	<b>29 540</b>	13 895	10 430
8 S70MC-C	<b>24 840</b>	<b>33 760</b>	15 880	11 920

**Specific Fuel Oil Consumption (SFOC)**

<b>g/kWh</b>	169	156	169	156
<b>g/BHP h</b>	124	115	124	115
Lubricating oil consumption: approximately 10 kg/cyl. 24 h				
Cylinder oil consumption: 1.1 - 1.6 g/kWh ~ 0.8 - 1.2 g/BHP h				

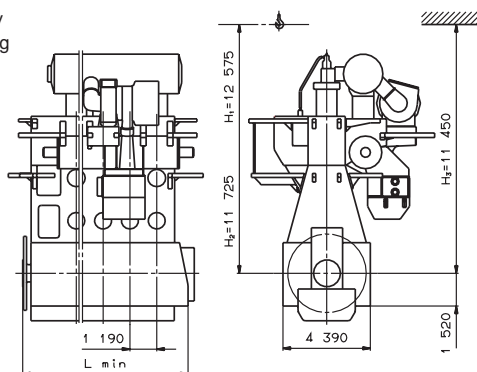
Cyl. No.	4	5	6	7	8
L <sub>min</sub> mm	6 591	7 781	8 971	10 161	11 351
Dry mass ton*	408	480	555	624	704

\* The mass can vary up to 10% depending on the design and options chosen.

H<sub>1</sub>: Vertical lift

H<sub>2</sub>: Tilted lift

H<sub>3</sub>: With electrical double jib crane



Layout points	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>
<b>Speed</b> r/min	91	91	68	68
<b>mep</b> bar	18.0	11.5	18.0	11.5
	<b>kW</b>	<b>BHP</b>	<b>kW</b>	<b>kW</b>
4 S70MC	<b>11 240</b>	<b>15 280</b>	7 200	8 440
5 S70MC	<b>14 050</b>	<b>19 100</b>	9 000	10 550
6 S70MC	<b>16 860</b>	<b>22 920</b>	10 800	12 660
7 S70MC	<b>19 670</b>	<b>26 740</b>	12 600	14 770
8 S70MC	<b>22 480</b>	<b>30 560</b>	14 400	16 880

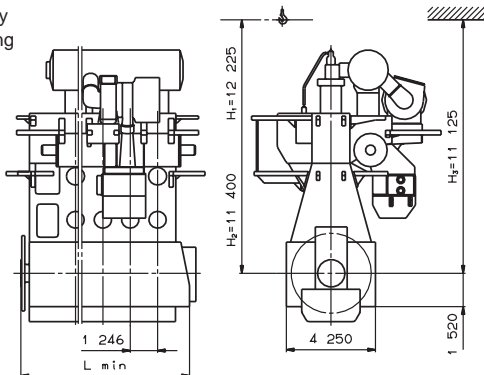
### Specific Fuel Oil Consumption (SFOC)

g/kWh	169	156	169	156
g/BHP	124	115	124	115
Lubricating oil consumption: approximately 9 kg/cyl. 24 h				
Cylinder oil consumption: 1.1 - 1.6 g/kWh ~ 0.8 - 1.2 g/BHP				

Cyl. No.	4	5	6	7	8
L <sub>min</sub> mm	7 177	8 423	9 669	10 915	12 161
Dry mass ton*	413	492	562	648	722

\* The mass can vary up to 10% depending on the design and options chosen.

H<sub>1</sub>: Vertical lift  
H<sub>2</sub>: Tilted lift  
H<sub>3</sub>: With electrical double jib crane



Layout points	L <sub>1</sub>		L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>
<b>Speed</b> r/min	108		108	81	81
<b>mep</b> bar	18.0		11.5	18.0	11.5
	<b>kW</b>	<b>BHP</b>	<b>kW</b>	<b>kW</b>	<b>kW</b>
4 L70MC	<b>11 320</b>	<b>15 380</b>	7 240	8 480	5 420
5 L70MC	<b>14 150</b>	<b>19 225</b>	9 050	10 600	6 775
6 L70MC	<b>16 980</b>	<b>23 070</b>	10 860	12 720	8 130
7 L70MC	<b>19 810</b>	<b>26 915</b>	12 670	14 840	9 485
8 L70MC	<b>22 640</b>	<b>30 760</b>	14 480	16 960	10 840

**Specific Fuel Oil Consumption (SFOC)**

<b>g/kWh</b>	174	162	174	162
<b>g/BHP</b>	128	119	128	119
Lubricating oil consumption: approximately 9 kg/cyl. 24 h				
Cylinder oil consumption: 0.9 - 1.4 g/kWh ~ 0.65 - 1.0 g/BHP				

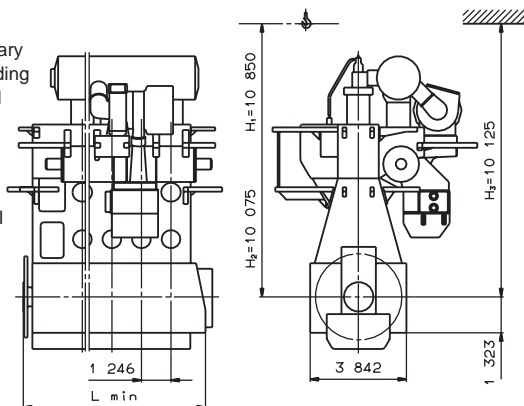
Cyl. No.	4	5	6	7	8
L <sub>min</sub> mm	7 008	8 254	9 500	10 746	11 992
Dry mass ton*	383	448	525	592	667

\* The mass can vary up to 10% depending on the design and options chosen.

H<sub>1</sub>: Vertical lift

H<sub>2</sub>: Tilted lift

H<sub>3</sub>: With electrical double jib crane



Layout points	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>
<b>Speed</b> r/min	105	105	79	79
<b>mep</b> bar	19.0	12.2	19.0	12.2
	<b>kW</b>	<b>BHP</b>	<b>kW</b>	<b>kW</b>
4 S60MC-C	<b>9 020</b>	<b>12 280</b>	5 780	6 760
5 S60MC-C	<b>11 275</b>	<b>15 350</b>	7 225	8 450
6 S60MC-C	<b>13 530</b>	<b>18 420</b>	8 670	10 140
7 S60MC-C	<b>15 785</b>	<b>21 490</b>	10 115	11 830
8 S60MC-C	<b>18 040</b>	<b>24 560</b>	11 560	13 520

## Specific Fuel Oil Consumption (SFOC)

g/kWh	170	158	170	158
g/BHP/h	125	116	125	116

Lubricating oil consumption: approximately 7 kg/cyl. 24 h

Cylinder oil consumption: 1.1 - 1.6 g/kWh ~ 0.8 - 1.2 g/BHP/h

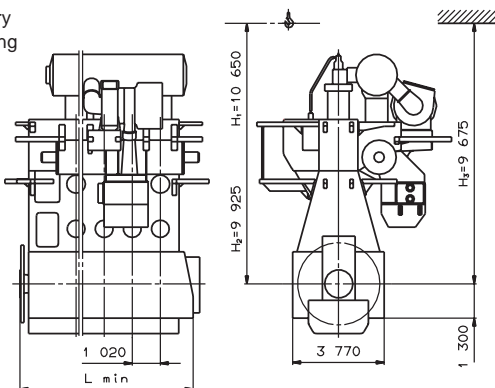
Cyl. No.	4	5	6	7	8
L <sub>min</sub> mm	5 648	6 668	7 688	8 708	9 728
Dry mass ton*	263	314	358	410	467

\* The mass can vary up to 10% depending on the design and options chosen.

H<sub>1</sub>: Vertical lift

H<sub>2</sub>: Tilted lift

H<sub>3</sub>: With electrical double jib crane



Layout points	L <sub>1</sub>		L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>
Speed r/min	105		105	79	79
mep bar	18.0		11.5	18.0	11.5
	kW	BHP	kW	kW	kW
4 S60MC	8 160	11 120	5 240	6 120	3 920
5 S60MC	10 200	13 900	6 550	7 650	4 900
6 S60MC	12 240	16 680	7 860	9 180	5 880
7 S60MC	14 280	19 460	9 170	10 710	6 860
8 S60MC	16 320	22 240	10 480	12 240	7 840

## Specific Fuel Oil Consumption (SFOC)

g/kWh	170	158	170	158
g/BHP h	125	116	125	116
Lubricating oil consumption: approximately 7 kg/cyl. 24 h				
Cylinder oil consumption: 1.1 - 1.6 g/kWh ~ 0.8 - 1.2 g/BHP h				

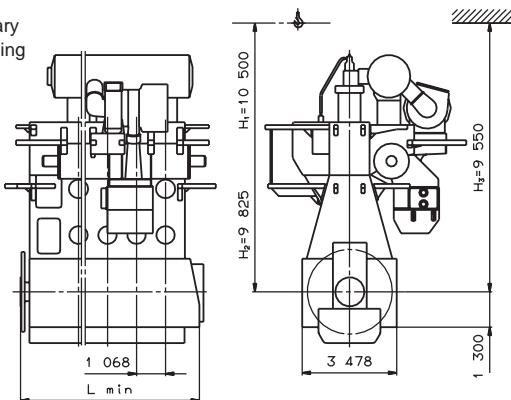
Cyl. No.	4	5	6	7	8
L <sub>min</sub> mm	6 116	7 184	8 252	9 320	10 388
Dry mass ton*	273	319	371	422	470

\* The mass can vary up to 10% depending on the design and options chosen.

H<sub>1</sub>: Vertical lift

H<sub>2</sub>: Tilted lift

H<sub>3</sub>: With electrical double jib crane



Layout points	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>
<b>Speed</b> r/min	123	123	92	92
<b>mep</b> bar	17.0	10.9	17.0	10.9
	<b>kW</b>	<b>BHP</b>	<b>kW</b>	<b>kW</b>
4 L60MC	<b>7 680</b>	<b>10 400</b>	4 920	5 760
5 L60MC	<b>9 600</b>	<b>13 000</b>	6 150	7 200
6 L60MC	<b>11 520</b>	<b>15 600</b>	7 380	8 640
7 L60MC	<b>13 440</b>	<b>18 200</b>	8 610	10 080
8 L60MC	<b>15 360</b>	<b>20 800</b>	9 840	11 520

## Specific Fuel Oil Consumption (SFOC)

<b>g/kWh</b>	171	159	171	159
<b>g/BHP</b>	126	117	126	117
Lubricating oil consumption: approximately 6 kg/cyl. 24 h				
Cylinder oil consumption: 0.9 - 1.4 g/kWh ~ 0.65 - 1.0 g/BHP				

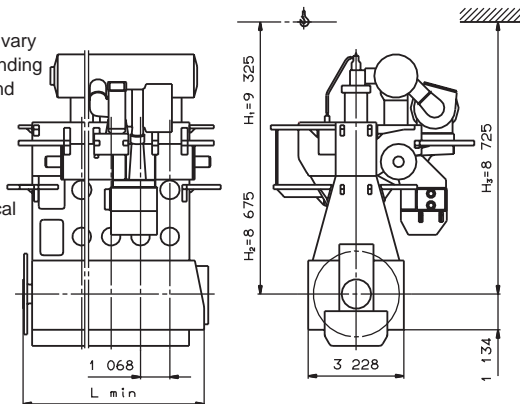
Cyl. No.	4	5	6	7	8
L <sub>min</sub> mm	5 956	7 024	8 092	9 160	10 228
Dry mass ton*	270	318	343	407	451

\* The mass can vary up to 10% depending on the design and options chosen.

H<sub>1</sub>: Vertical lift

H<sub>2</sub>: Tilted lift

H<sub>3</sub>: With electrical double jib crane



Layout points	L <sub>1</sub>		L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>
<b>Speed</b> r/min	127		127	95	95
<b>mep</b> bar	19.0		12.2	19.0	12.2
	<b>kW</b>	<b>BHP</b>	<b>kW</b>	<b>kW</b>	<b>kW</b>
4 S50MC-C	<b>6 320</b>	<b>8 580</b>	4 040	4 740	3 040
5 S50MC-C	<b>7 900</b>	<b>10 725</b>	5 050	5 925	3 800
6 S50MC-C	<b>9 480</b>	<b>12 870</b>	6 060	7 110	4 560
7 S50MC-C	<b>11 060</b>	<b>15 015</b>	7 070	8 295	5 320
8 S50MC-C	<b>12 640</b>	<b>17 160</b>	8 080	9 480	6 080

**Specific Fuel Oil Consumption (SFOC)**

<b>g/kWh</b>	171	159	171	159
<b>g/BHP</b>	126	117	126	117

Lubricating oil consumption: approximately 5 kg/cyl. 24 h  
Cylinder oil consumption: 1.1 - 1.6 g/kWh ~ 0.8 - 1.2 g/BHP

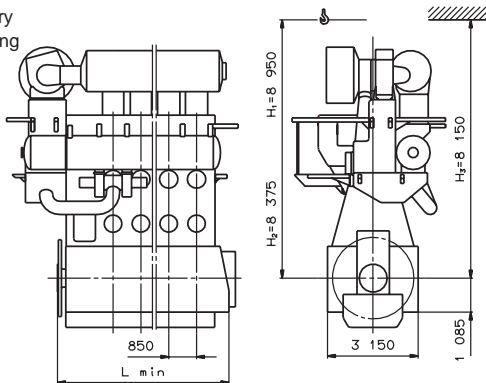
Cyl. No.	4	5	6	7	8
L <sub>min</sub> mm	4 739	5 589	6 439	7 289	8 139
Dry mass ton*	155	181	207	238	273

\* The mass can vary up to 10% depending on the design and options chosen.

H<sub>1</sub>: Vertical lift

H<sub>2</sub>: Tilted lift

H<sub>3</sub>: With electrical double jib crane



Layout points	L <sub>1</sub>		L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>
Speed mep	r/min	127	127	95	95
	bar	18.0	11.5	18.0	11.5
	kW	BHP	kW	kW	kW
4 S50MC	5 720	7 760	3 640	4 280	2 760
5 S50MC	7 150	9 700	4 550	5 350	3 450
6 S50MC	8 580	11 640	5 460	6 420	4 140
7 S50MC	10 010	13 580	6 370	7 490	4 830
8 S50MC	11 440	15 520	7 280	8 560	5 520

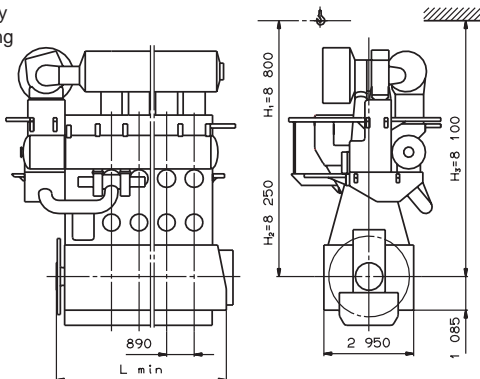
## Specific Fuel Oil Consumption (SFOC)

g/kWh	171	159	171	159
g/BHP	126	117	126	117
Lubricating oil consumption: approximately 5 kg/cyl. 24 h				
Cylinder oil consumption: 1.1 - 1.6 g/kWh ~ 0.8 - 1.2 g/BHP				

Cyl. No.	4	5	6	7	8
L <sub>min</sub> mm	5 730	6 620	7 510	8 400	9 290
Dry mass ton*	171	195	225	255	288

\* The mass can vary up to 10% depending on the design and options chosen.

H<sub>1</sub>: Vertical lift  
H<sub>2</sub>: Tilted lift  
H<sub>3</sub>: With electrical double jib crane





Layout points	L <sub>1</sub>		L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>
<b>Speed</b> r/min <b>mep</b> bar	148		148	111	111
	17.0		10.9	17.0	10.9
	<b>kW</b>	<b>BHP</b>	<b>kW</b>	<b>kW</b>	<b>kW</b>
4 L50MC	<b>5 320</b>	<i>7 240</i>	3 400	4 000	2 560
5 L50MC	<b>6 650</b>	<i>9 050</i>	4 250	5 000	3 200
6 L50MC	<b>7 980</b>	<i>10 860</i>	5 100	6 000	3 840
7 L50MC	<b>9 310</b>	<i>12 670</i>	5 950	7 000	4 480
8 L50MC	<b>10 640</b>	<i>14 480</i>	6 800	8 000	5 120

**Specific Fuel Oil Consumption (SFOC)**

g/kWh	173	160	173	160
g/BHP <sub>h</sub>	127	118	127	118
Lubricating oil consumption: approximately 4 kg/cyl. 24 h				
Cylinder oil consumption: 0.9 - 1.4 g/kWh ~ 0.65 - 1.0 g/BHP <sub>h</sub>				

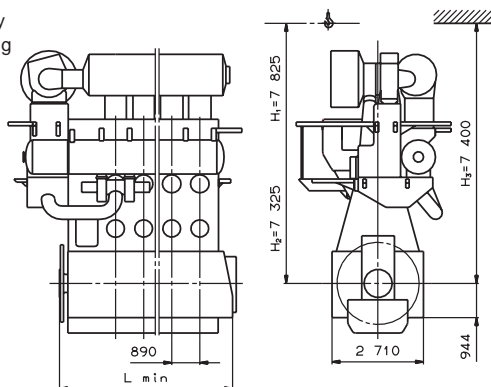
Cyl. No.	4	5	6	7	8
L <sub>min</sub> mm	5 615	6 505	7 395	8 285	9 175
Dry mass ton*	163	188	215	249	276

\* The mass can vary up to 10% depending on the design and options chosen.

H<sub>1</sub>: Vertical lift

H<sub>2</sub>: Tilted lift

H<sub>3</sub>: With electrical double jib crane



Layout points	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>
<b>Speed</b> r/min	129	129	108	108
<b>mep</b> bar	19.0	15.2	19.0	15.2
	<b>kW</b>	<b>BHP</b>	<b>kW</b>	<b>kW</b>
4 S46MC-C	<b>5 240</b>	<b>7 140</b>	4 200	4 400
5 S46MC-C	<b>6 550</b>	<b>8 925</b>	5 250	5 500
6 S46MC-C	<b>7 860</b>	<b>10 710</b>	6 300	6 600
7 S46MC-C	<b>9 170</b>	<b>12 495</b>	7 350	7 700
8 S46MC-C	<b>10 480</b>	<b>14 280</b>	8 400	8 800

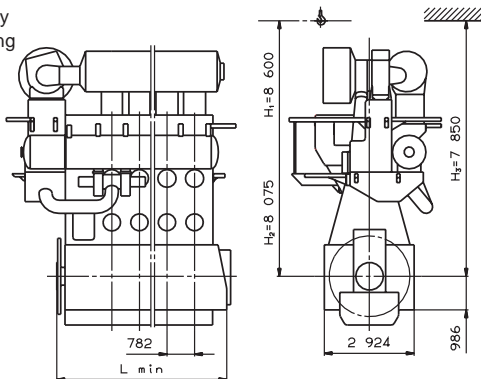
## Specific Fuel Oil Consumption (SFOC)

<b>g/kWh</b>	174	169	174	169
<b>g/BHP h</b>	128	124	128	124
Lubricating oil consumption: approximately 4 kg/cyl. 24 h				
Cylinder oil consumption: 1.1 - 1.6 g/kWh ~ 0.8 - 1.2 g/BHP h				

Cyl. No.	4	5	6	7	8
<b>L<sub>min</sub></b> mm	4 357	5 139	5 921	6 703	7 485
<b>Dry mass</b> ton*	133	153	171	197	217

\* The mass can vary up to 10% depending on the design and options chosen.

H<sub>1</sub>: Vertical lift  
H<sub>2</sub>: Tilted lift  
H<sub>3</sub>: With electrical double jib crane



Layout points		L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>
Speed mep	r/min	136	136	115	115
	bar	19.5	15.6	19.5	15.6
		kW	BHP	kW	kW
4 S42MC		4 320	5 880	3 460	3 660
5 S42MC		5 400	7 350	4 325	4 575
6 S42MC		6 480	8 820	5 190	5 490
7 S42MC		7 560	10 290	6 055	6 405
8 S42MC		8 640	11 760	6 920	7 320
9 S42MC		9 720	13 230	7 785	8 235
10 S42MC		10 800	14 700	8 650	9 150
11 S42MC		11 880	16 170	9 515	10 065
12 S42MC		12 960	17 640	10 380	10 980

## Specific Fuel Oil Consumption (SFOC)

g/kWh	177	171	177	171
g/BHPph	130	126	130	126

Lubricating oil consumption: approximately 3 kg/cyl. 24 h

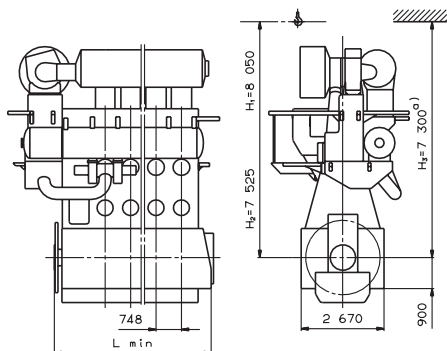
Cylinder oil consumption: 1.1 - 1.6 g/kWh ~ 0.8 - 1.2 g/BHPph

Cyl. No.	4	5	6	7	8	9	10	11	12
L <sub>min</sub> mm	4 240	4 988	5 736	6 484	7 232	7 980	9 476	10 224	10 972
Dry mass ton*	109	125	143	160	176	195	232	249	269

\* The mass can vary up to 10% depending on the design and options chosen.

H<sub>1</sub>: Vertical liftH<sub>2</sub>: Tilted liftH<sub>3</sub>: With electrical double jib crane

a) Min. 7 325 for turbocharger NA57/T9



Layout points	L <sub>1</sub>		L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>
<b>Speed</b> r/min	176		176	132	132
<b>mep</b> bar	18.0		11.5	18.0	11.5
	<b>kW</b>	<b>BHP</b>	<b>kW</b>	<b>kW</b>	<b>kW</b>
4 L42MC	3 980	5 420	2 540	2 980	1 920
5 L42MC	4 975	6 775	3 175	3 725	2 400
6 L42MC	5 970	8 130	3 810	4 470	2 880
7 L42MC	6 965	9 485	4 445	5 215	3 360
8 L42MC	7 960	10 840	5 080	5 960	3 840
9 L42MC	8 955	12 195	5 715	6 705	4 320
10 L42MC	9 950	13 550	6 350	7 450	4 800
11 L42MC	10 945	14 905	6 985	8 195	5 280
12 L42MC	11 940	16 260	7 620	8 940	5 760

## Specific Fuel Oil Consumption (SFOC)

<b>g/kWh</b>	177	165	177	165
<b>g/BHP</b>	130	121	130	121

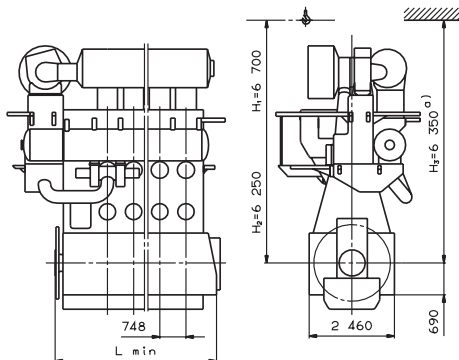
Lubricating oil consumption: approximately 3 kg/cyl. 24 h  
 Cylinder oil consumption: 0.9 - 1.4 g/kWh ~ 0.65 - 1.0 g/BHP

Cyl. No.	4	5	6	7	8	9	10	11	12
L <sub>min</sub> mm	4 661	5 409	6 157	6 905	7 653	8 401	9 897	10 645	11 393
Dry mass ton*	95	110	125	143	158	176	210	229	244

\* The mass can vary up to 10% depending on the design and options chosen.

H<sub>1</sub>: Vertical lift  
 H<sub>2</sub>: Tilted lift  
 H<sub>3</sub>: With electrical double jib crane

a) Min. 6 450 for turbocharger NA48/S



Layout points		L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>
Speed mep	r/min	173	173	147	147
	bar	19.1	15.3	19.1	15.3
		kW	BHP	kW	kW
		2 960	4 040	2 380	2 520
4 S35MC		3 700	5 050	2 975	3 150
5 S35MC		4 440	6 060	3 570	3 780
6 S35MC		5 180	7 070	4 165	4 410
7 S35MC		5 920	8 080	4 760	5 040
8 S35MC		6 660	9 090	5 355	5 670
9 S35MC		7 400	10 100	5 950	6 300
10 S35MC		8 140	11 110	6 545	6 930
11 S35MC		8 880	12 120	7 140	7 560
12 S35MC					6 060

## Specific Fuel Oil Consumption (SFOC)

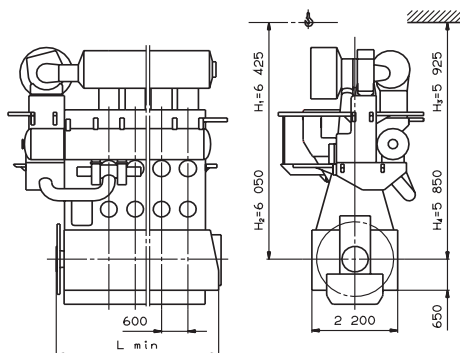
g/kWh	178	173	178	173
g/BHPph	131	127	131	127

Lubricating oil consumption: approximately 2 kg/cyl. 24 h

Cylinder oil consumption: 1.1 - 1.6 g/kWh ~ 0.8 - 1.2 g/BHPph

Cyl. No.	4	5	6	7	8	9	10	11	12
L <sub>min</sub> mm	3 480	4 080	4 680	5 280	5 880	6 480	7 080	8 280	8 880
Dry mass ton*	57	65	75	84	93	103	122	132	141

\* The mass can vary up to 10% depending on the design and options chosen.

H<sub>1</sub>: Vertical liftH<sub>2</sub>: Tilted liftH<sub>3</sub>: With electrical double jib crane

Layout points	L <sub>1</sub>		L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>
<b>Speed</b> r/min	210		210	178	178
<b>mep</b> bar	18.4		14.7	18.4	14.7
	<b>kW</b>	<b>BHP</b>	<b>kW</b>	<b>kW</b>	<b>kW</b>
4 L35MC	2 600	3 520	2 080	2 200	1 760
5 L35MC	3 250	4 400	2 600	2 750	2 200
6 L35MC	3 900	5 280	3 120	3 300	2 640
7 L35MC	4 550	6 160	3 640	3 850	3 080
8 L35MC	5 200	7 040	4 160	4 400	3 520
9 L35MC	5 850	7 920	4 680	4 950	3 960
10 L35MC	6 500	8 800	5 200	5 500	4 400
11 L35MC	7 150	9 680	5 720	6 050	4 840
12 L35MC	7 800	10 560	6 240	6 600	5 280

## Specific Fuel Oil Consumption (SFOC)

<b>g/kWh</b>	177	171	177	171
<b>g/BHP</b>	130	126	130	126

Lubricating oil consumption: approximately 2 kg/cyl. 24 h

Cylinder oil consumption: 0.9 - 1.4 g/kWh ~ 0.65 - 1.0 g/BHP

Cyl. No.	4	5	6	7	8	9	10	11	12
L <sub>min</sub> mm	3 445	4 045	4 645	5 245	5 845	6 445	7 645	8 245	8 845
Dry mass ton*	50	58	67	75	83	92	108	118	126

\* The mass can vary up to 10% depending on the design and options chosen.

H<sub>1</sub>: Vertical lift

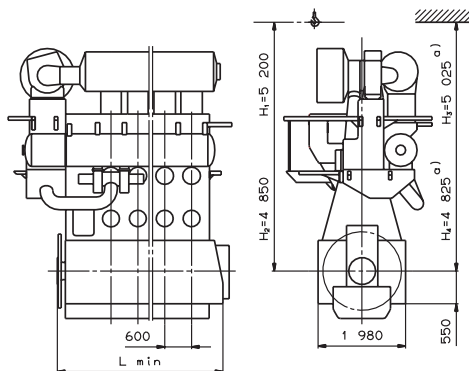
H<sub>2</sub>: Tilted lift

H<sub>3</sub>: With electrical double jib crane

H<sub>4</sub>: With manual

double jib crane

a) Min. 5 100 for turbocharger NA40/S



Layout points		L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>
Speed mep	r/min	250	250	212	212
	bar	18.5	14.8	18.5	14.8
		kW	BHP	kW	kW
4 S26MC		1 600	2 180	1 280	1 360
5 S26MC		2 000	2 725	1 600	1 700
6 S26MC		2 400	3 270	1 920	2 040
7 S26MC		2 800	3 815	2 240	2 380
8 S26MC		3 200	4 360	2 560	2 720
9 S26MC		3 600	4 905	2 880	3 060
10 S26MC		4 000	5 450	3 200	3 400
11 S26MC		4 400	5 995	3 520	3 740
12 S26MC		4 800	6 540	3 840	4 080

## Specific Fuel Oil Consumption (SFOC)

g/kWh	179	174	179	174
g/BHPph	132	128	132	128

Lubricating oil consumption: approximately 1.5 kg/cyl. 24 h  
Cylinder oil consumption: 1.1 - 1.6 g/kWh ~ 0.8 - 1.2 g/BHPph

Cyl. No.	4	5	6	7	8	9	10	11	12
L <sub>min</sub> mm	2 975	3 465	3 955	4 445	4 935	5 425	6 405	6 895	7 385
Dry mass ton*	32	37	42	48	53	58	68	74	79

\* The mass can vary up to 10% depending on the design and options chosen.

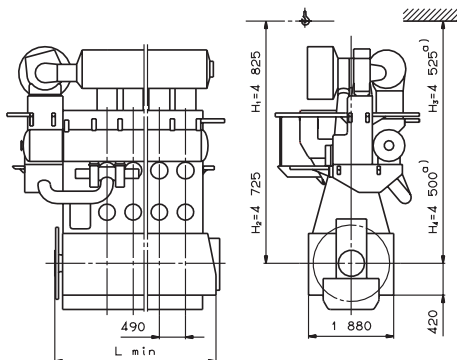
H<sub>1</sub>: Vertical lift

H<sub>2</sub>: Tilted lift

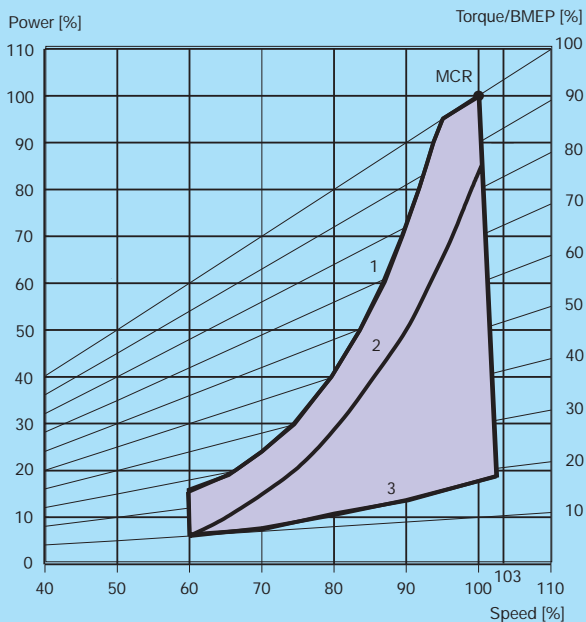
H<sub>3</sub>: With electrical double jib crane

H<sub>4</sub>: With manual double jib crane

a) Min. 4 675 for turbocharger NA34/S



# Engine Power Ranges of Four-stroke Marine Propulsion Engines



- 1 Load limit
- 2 Recommended combinator curve
- 3 Zero thrust curve
- Operating range

MCR = maximum continuous rating (fuel stop power)

*Marine propulsion engine with Controllable Pitch Propeller*

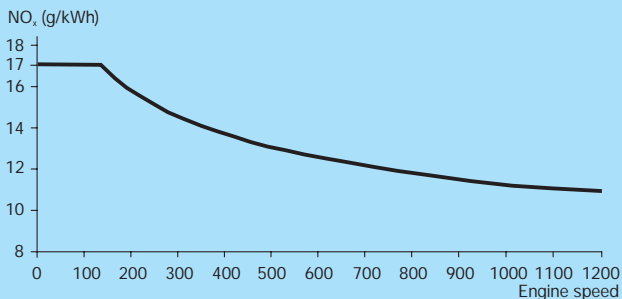


## Emission Control

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All four-stroke engines in this folder can be delivered so as to comply with the IMO speed dependent  $\text{NO}_x$  limit, measured according to the ISO 8178 test cycles E2/E3 for Heavy Duty Diesel Engines. The  $\text{NO}_x$  emissions from a given engine will vary according to the engine load and the optimising power.

SFOC and  $\text{NO}_x$  are interrelated parameters, and an engine offered with both a guaranteed SFOC and the IMO  $\text{NO}_x$  limitation will be subject to a tolerance of 5% on the specific fuel oil consumption.



## General Definition of Diesel Engine Ratings

(acc. to ISO 3046-1:1995)

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P = Continuous rating

### ISO reference conditions

Air temperature:	298 K (25 °C)
Air pressure:	1 bar
Cooling water temperature upstream of charge-air cooler:	298 K (25 °C)

The fuel consumption rates are based on ISO reference conditions and a lower calorific value of the fuel of 42,700 kJ/kg without engine driven pumps.

## Main Marine Engines

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MCR = Maximum Continuous Rating  
(fuel stop power)

Blocking of the output for engines, driving a generator, at 110% of the rated output. Overload >100% may only be run for a short time for recovery and prevent a frequency drop in case of load application.

### Reference conditions

Air temperature:	318 K (45 °C)
Air pressure:	1 bar
Cooling water temperature upstream of charge-air cooler:	305 K (32 °C)

## Marine Auxiliary Engines

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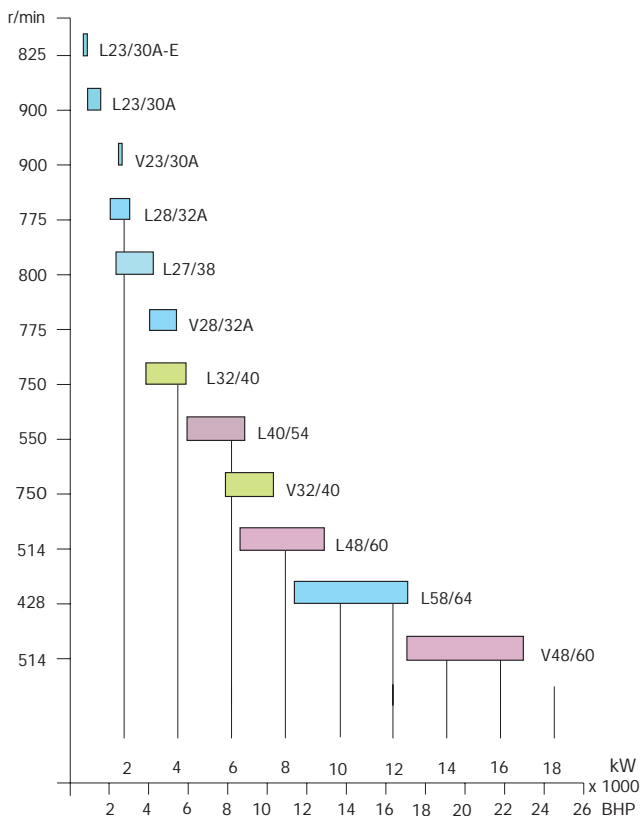
P = Continuous rating

Blocking of the output, at 110% of the rated output. Overload > 100% may only be run for a short time for recovery and prevent a frequency drop in case of load application.

### Reference conditions

Air temperature:	318 K (45 °C)
Air pressure:	1 bar
Cooling water temperature upstream of charge-air cooler:	305 K (32 °C)

# The MAN B&W Diesel Four-stroke Marine Propulsion Programme



<b>Speed</b>	r/min	428		400	
<b>mep</b>	bar	23.0		23.0	
<b>C<sub>m</sub></b>	m/s	9.1		8.5	
		<b>kW</b>	<b>BHP</b>	<b>kW</b>	<b>BHP</b>
6 L58/64		<b>8 340</b>	11 340	<b>7 800</b>	10 620
7 L58/64		<b>9 730</b>	13 230	<b>9 100</b>	12 390
8 L58/64		<b>11 120</b>	15 120	<b>10 400</b>	14 160
9 L58/64		<b>12 510</b>	17 010	<b>11 700</b>	15 930

## Specific Fuel Oil Consumption (to ISO conditions)

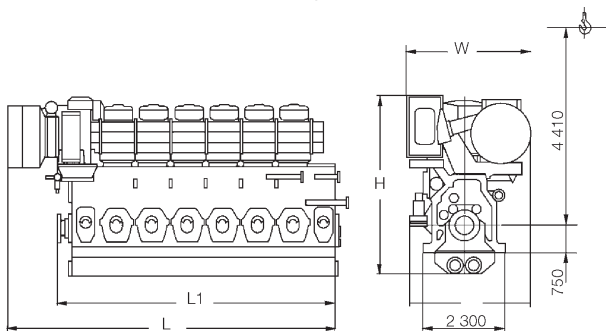
	100% MCR		85% MCR	
L58/64	177 g/kWh	130 g/BHP <sub>h</sub>	176 g/kWh	129 g/BHP <sub>h</sub>

Specific Lube Oil Consumption: 1.0 g/kWh - 0.7 g/BHP<sub>h</sub>

	<b>6L58/64</b>	<b>7L58/64</b>	<b>8L58/64</b>	<b>9L58/64</b>
<b>L/L<sub>1</sub></b> mm	9 190/7 810	10 600/8 810	11 600/9 810	12 600/10 810
<b>W</b> mm	3 550	3 550	3 550	3 550
<b>H</b> mm	5 140	5 140	5 140	5 140
<b>Mass</b> ton*	154	177	198	217

\* The masses are stated for the engines without turning wheel

Minimum centreline distance for twin engine installation: 3 750 mm



**Bore: 480 mm, Stroke: 600 mm**

**L+V48/60**

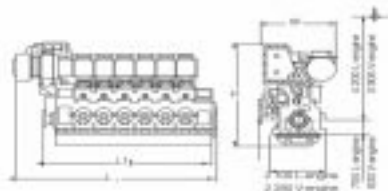
<b>Speed</b> r/min	514 or 500	
<b>mep</b> bar	22.6 or 23.2	
<b>C<sub>m</sub></b> m/s	10.3 or 10.0	
	<b>kW</b>	<b>BHP</b>
6 L48/60	<b>6 300</b>	8 580
7 L48/60	<b>7 350</b>	10 010
8 L48/60	<b>8 400</b>	11 440
9 L48/60	<b>9 450</b>	12 870

<b>Speed</b> r/min	514 or 500	
<b>mep</b> bar	22.6 or 23.2	
<b>C<sub>m</sub></b> m/s	10.3 or 10.0	
	<b>kW</b>	<b>BHP</b>
12 V48/60	<b>12 600</b>	17 160
14 V48/60	<b>14 700</b>	20 020
16 V48/60	<b>16 800</b>	22 880

### Specific Fuel Oil Consumption (to ISO conditions)

	100% MCR		85% MCR	
L48/60	181 g/kWh	133 g/BHP <sub>h</sub>	180 g/kWh	132 g/BHP <sub>h</sub>
V48/60	180 g/kWh	132 g/BHP <sub>h</sub>	179 g/kWh	131 g/BHP <sub>h</sub>
Specific Lube Oil Consumption: 1.0 g/kWh – 0.7 g/BHP <sub>h</sub>				

	6L48/60	7L48/60	8L48/60	9L48/60
<b>L/L<sub>1</sub></b> mm	8090/6720	9120/7540	9835/8360	10655/9180
<b>W</b> mm	3130	3390	3265	3265
<b>H</b> mm	5010	5010	5010	5010
<b>Mass</b> ton*	108	122	136	149
	12V48/60	14V48/60	16V48/60	
<b>L/L<sub>1</sub></b> mm	9670/7980	10985/8980	11985/9980	
<b>W</b> mm	5515	5515	5515	
<b>H</b> mm	4910	4950	4950	
<b>Mass</b> ton*	190	218	242	



The masses are  
tated for the  
ngines without  
urning wheel.

Minimum centreline  
istance for twin  
ngine installation:  
400 mm L-engine  
800 mm V-engine

<b>Speed</b>	r/min	550		514		500	
<b>mep</b>	bar	23.1		24.8		24.8	
<b>C<sub>m</sub></b>	m/s	9.9		9.2		9.0	
		<b>kW</b>	<b>BHP</b>	<b>kW</b>	<b>BHP</b>	<b>kW</b>	<b>BHP</b>
6 L40/54		<b>4 320</b>	5 880	<b>4 320</b>	5 880	<b>4 200</b>	5 700
7 L40/54		<b>5 040</b>	6 860	<b>5 040</b>	6 860	<b>4 900</b>	6 650
8 L40/54		<b>5 760</b>	7 840	<b>5 760</b>	7 840	<b>5 600</b>	7 600
9 L40/54		<b>6 480</b>	8 820	<b>6 480</b>	8 820	<b>6 300</b>	8 550

## Specific Fuel Oil Consumption (to ISO conditions)

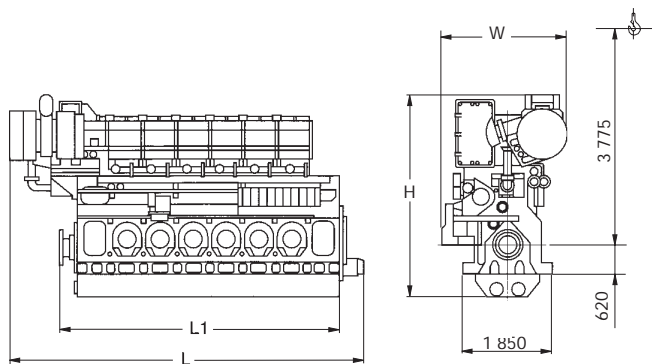
	100% MCR		85% MCR	
L40/54	183 g/kWh	135 g/BHP <sub>h</sub>	181 g/kWh	133 g/BHP <sub>h</sub>

Specific Lube Oil Consumption: 1.0 g/kWh - 0.7 g/BHP<sub>h</sub>

	<b>6L40/54</b>	<b>7L40/54</b>	<b>8L40/54</b>	<b>9L40/54</b>
<b>L/L<sub>1</sub></b> mm	7 520/5 910	8 600/6 610	9 155/7 310	10 000/8 010
<b>W</b> mm	2 600	2 750	2 815	2 815
<b>H</b> mm	4 345	4 380	4 380	4 380
<b>Mass</b> ton*	70	80	89	97

\* The masses are stated for the engines without turning wheel.

Minimum centreline distance for twin engine installation: 2 800 mm.



Bore: 320 mm, Stroke: 400 mm

L+V32/40

Speed r/min	750	720	Speed r/min	750	720
mep bar	23.9	24.9	mep bar	23.9	24.9
C <sub>m</sub> m/s	10.0	9.6	C <sub>m</sub> m/s	10.0	9.6
	kW	BHP		kW	BHP
6 L32/40	2 880	3 930	12V32/40	5 760	7 860
7 L32/40	3 360	4 585	14V32/40	6 720	9 170
8 L32/40	3 840	5 240	16V32/40	7 680	10 480
9 L32/40	4 320	5 895			

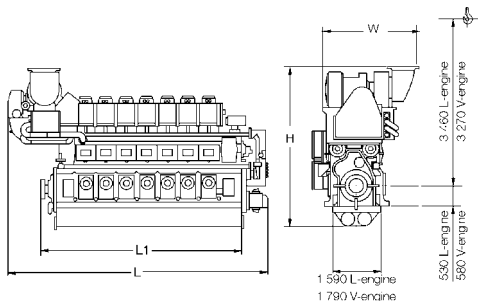
### Specific Fuel Oil Consumption (to ISO conditions)

	100% MCR		85% MCR	
L32/40	185 g/kWh	136 g/BHP <sub>h</sub>	183 g/kWh	135 g/BHP <sub>h</sub>
V32/40	184 g/kWh	135 g/BHP <sub>h</sub>	182 g/kWh	134 g/BHP <sub>h</sub>
Specific Lube Oil Consumption: 1.0 g/kWh – 0.7 g/BHP				

	6L32/40	7L32/40	8L32/40	9L32/40
L/L <sub>1</sub> mm	5 940/4 480	6 470/5 010	7 010/5 540	7 675/6 070
W mm	2 740	2 740	2 900	2 900
H mm	4 055	4 055	4 325	4 325
Mass ton*	38	43	47	52
	12V32/40	14V32/40	16V32/40	
L/L <sub>1</sub> mm	6 880/5 110	7 510/5 740	8 365/6 370	
W mm	3 140	3 140	3 730	
H mm	4 100	4 100	4 230	
Mass ton*	63	70	79	

\* The masses are stated for the engines without turning wheel

Minimum centreline distance for twin engine installation:  
2 500 mm L-engine  
4 000 mm V-engine



<b>Speed</b> r/min	775	
<b>mep</b> bar	19.3	
<b>C<sub>m</sub></b> m/s	8.3	
	<b>kW</b>	<b>BHP</b>
6 L28/32A	1 470	2 000
7 L28/32A	1 715	2 330
8 L28/32A	1 960	2 665
9 L28/32A	2 205	3 000

<b>Speed</b> r/min	775	
<b>mep</b> bar	19.3	
<b>C<sub>m</sub></b> m/s	8.3	
	<b>kW</b>	<b>BHP</b>
12 V28/32A	2 940	4 000
16 V28/32A	3 920	5 330

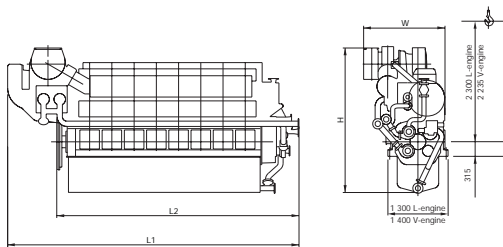
## Specific Fuel Oil Consumption (to ISO conditions)

	100% MCR		85% MCR	
L28/32A	192 g/kWh	141 g/BHP	191 g/kWh	140 g/BHP
V28/32A	193 g/kWh	142 g/BHP	192 g/kWh	141 g/BHP

Specific Lube Oil Consumption: 1.0 g/kWh – 0.7 g/BHP

	6L28/32A	7L28/32A	8L28/32A	9L28/32A
<b>L/L<sub>1</sub></b> mm	5 330 / 4 340	5 810 / 4 750	6 290 / 5 230	6 770 / 5 780
<b>W</b> mm	1 732	1 732	1 732	1 844
<b>H</b> mm	3 186	3 186	3 186	3 242
<b>Mass</b> ton	19.0	21.0	23.5	26.5
	12V28/32A	16V28/32A		
<b>L/L<sub>1</sub></b> mm	5 560 / 4 870	6 680 / 5 890		
<b>W</b> mm	2 015	2 015		
<b>H</b> mm	3 032	3 092		
<b>Mass</b> ton	29.5	37.0		

Minimum centreline  
distance for twin  
engine installation:  
2 000 mm L-engine  
2 500 mm V-engine





**Bore: 270 mm, Stroke: 380 mm**

# L27/38

<b>Speed</b>	r/min	800		750		720	
<b>mep</b>	bar	23.5		23.5		23.0	
<b>C<sub>m</sub></b>	m/s	10.1		9.5		9.1	
		<b>kW</b>	<b>BHP</b>	<b>kW</b>	<b>BHP</b>	<b>kW</b>	<b>BHP</b>
6 L27/38		<b>2 040</b>	2 775	<b>1 920</b>	2 610	<b>1 800</b>	2 450
7 L27/38		<b>2 380</b>	3 235	<b>2 240</b>	3 045	<b>2 100</b>	2 855
8 L27/38		<b>2 720</b>	3 700	<b>2 560</b>	3 480	<b>2 400</b>	3 265
9 L27/38		<b>3 060</b>	4 160	<b>2 880</b>	3 915	<b>2 700</b>	3 670

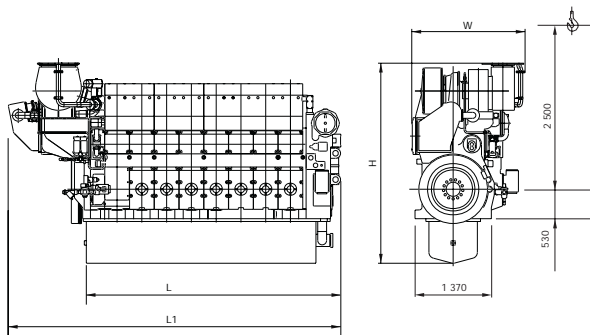
## Specific Fuel Oil Consumption (to ISO conditions)

	100% MCR		85% MCR	
L27/38	188 g/kWh	138 g/BHP <sub>h</sub>	186 g/kWh	137 g/BHP <sub>h</sub>

Specific Lube Oil Consumption: 1.0 g/kWh - 0.7 g/BHP<sub>h</sub>

	<b>6L27/38</b>	<b>7L27/38</b>	<b>8L27/38</b>	<b>9L27/38</b>
<b>L/L<sub>1</sub></b> mm	5 070/3 930	5 515/4 380	5 960/4 830	6 405/5 275
<b>W</b> mm	2 035	2 090	2 090	2 090
<b>H</b> mm	3 595	3 595	3 565	3 565
<b>Mass</b> ton	30,0	33,5	37,0	40,5

Minimum centreline distance for twin engine installation: 2 500 mm



<b>Speed</b> r/min	825	900
<b>mep</b> bar	16.3	17.9
<b>C<sub>m</sub></b> m/s	8.25	9.0
	<b>kW</b> <b>BHP</b>	<b>kW</b> <b>BHP</b>
6 L23/30A-E	800 1 090	
6 L23/30A		960 1 300
8 L23/30A		1 280 1 740

<b>Speed</b> r/min	900
<b>mep</b> bar	17.9
<b>C<sub>m</sub></b> m/s	9.0
	<b>kW</b> <b>BHP</b>
12 V23/30A	1 920 2 610

## Specific Fuel Oil Consumption (to ISO conditions)

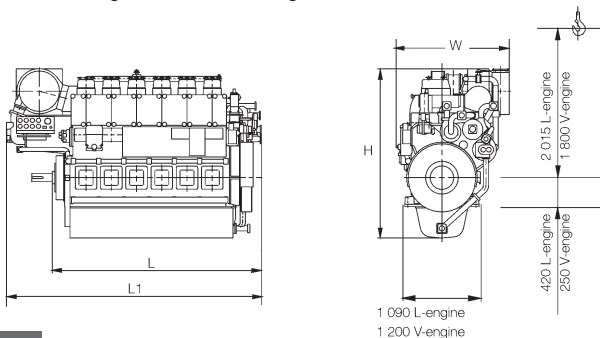
	100% MCR		85% MCR	
L23/30A-E	192 g/kWh	141 g/BHP	191 g/kWh	140 g/BHP
L23/30A	194 g/kWh	143 g/BHP	193 g/kWh	142 g/BHP
V23/30A	195 g/kWh	144 g/BHP	194 g/kWh	143 g/BHP

Lube Oil Consumption: 1.0 g/kWh – 0.7 g/BHP

	6L23/30A-E	6L23/30A	8L23/30A	12V23/30A
<b>L<sub>1</sub>/L</b> mm	3 737/3 062	3 737/3 062	4 477/3 802	4 670/3 830
<b>W</b> mm	1 628	1 628	1 628	1 757
<b>H</b> mm	2 467	2 467	2 467	2 615
<b>Mass</b> ton	11.5	11.5	14	17.5

Minimum centreline distance for twin engine installation:

1 900 mm L-engine, 2 100 mm V-engine



Bore: 320 mm, Stroke: 400 mm

L+V32/40DG

Dual Fuel Engines

Speed	r/min	750	720	Speed	r/min	750	720		
mep	bar	19.9	19.9	mep	bar	19.9	19.9		
C <sub>m</sub>	m/s	10.0	9.6	C <sub>m</sub>	m/s	10.0	9.6		
	kW	BHP	kW	BHP		kW	BHP	kW	BHP
6L32/40DG	2 400	3 270	2 310	3 150	12V32/40DG	4 800	6 540	4 620	6 300
7L32/40DG	2 800	3 815	2 695	3 675	14V32/40DG	5 600	7 630	5 390	7 350
8L32/40DG	3 200	4 360	3 080	4 200	16V32/40DG	6 400	8 720	6 160	8 400
9L32/40DG	3 600	4 905	3 465	4 725	18V32/40DG	7 200	9 810	6 930	9 450

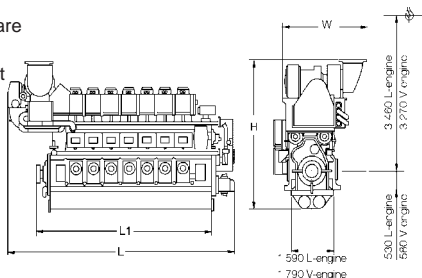
The engine ratings given in the table are valid for natural gas with a methane number of 80-100. Energy consumption tolerance +5%

### Specific Fuel Oil Consumption (to ISO conditions)

Specific energy Consumption	8 460 kJ/kWh
Pilot fuel consumption per hour	0.8 kg/cyl.
Fuel Consumption in Diesel	L32/40DG 195 g/kWh 143 g/BHP
Fuel Operation 100% P	V32/40DG 194 g/kWh 142 g/BHP
Lub Oil Consumption in Dual-fuel operation	1.0 g/kWh 0.7 g/BHP
Specific Lube Oil Consumption in Dual Fuel Operation: 1.0 g/kWh - 0.7 g/BHP	

	6L32/40DG	7L32/40DG	8L32/40DG	9L32/40DG
L/L <sub>1</sub> mm	5 940/4 480	6 470/5 010	7 010/5 540	7 675/6 070
W mm	2 740	2 740	2 900	2 900
H mm	4 055	4 055	4 325	4 325
Mass ton*	39	44	49	53
	12V32/40DG	14V32/40DG	16V32/40DG	18V32/40DG
L/L <sub>1</sub> mm	6 880/5 110	7 510/5 740	8 365/6 370	9 075/7 000
W mm	3 140	3 140	3 730	3 730
H mm	4 100	4 100	4 230	4 230
Mass ton*	66	72	81	89

\* The masses are stated for the engines without turning wheel



## **Definition of dual-fuel engine ratings** (acc. to ISO 3046-1: 1995) without overload

Air temperature 298 K (25 °C)

Air pressure 1 bar

Cooling water temperature  
upstream of charge-air cooler 298 K(25 °C)

Power factor = 0.8

Energy consumption tolerance +5 %

# PC4.2B

Bore: 570 mm, Stroke: 660 mm

<b>Speed</b>	r/min	430	400	
<b>mep</b>	bar	22.0	22.3	
<b>C<sub>m</sub></b>	m/s	9.5	8.8	
	<b>kW</b>	<b>BHP</b>	<b>kW</b>	<b>BHP</b>
18PC4.2B	<b>23 850</b>	32 400	<b>22 500</b>	30 600

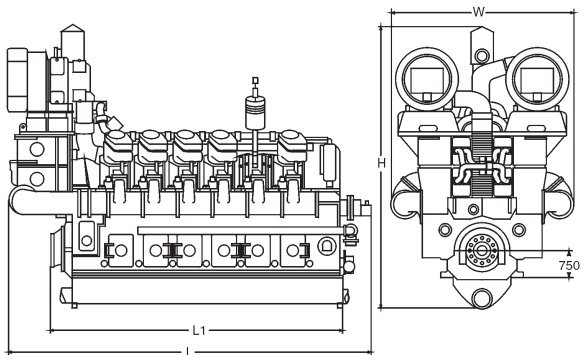
## Specific Fuel Oil Consumption (to ISO conditions)

	100% MCR		—	
PC4.2B	185 g/kWh	136 g/BHP <sub>h</sub>	—	—

Specific Lube Oil Consumption: 1.0 g/kWh - 0.7 g/BHP<sub>h</sub>

	<b>18PC4.2B</b>	—	—	—
<b>L/L<sub>1</sub></b>	mm	13 370/11 088	—	—
<b>W</b>	mm	5 170	—	—
<b>H</b>	mm	7 465	—	—
<b>Mass</b>	ton*	330	—	—

\* The masses are stated for the engines without turning wheel



**Bore: 400 mm, Stroke: 500 mm**

**PC2.6B**

<b>Speed</b>	r/min	600
<b>mep</b>	bar	23.9
<b>C<sub>m</sub></b>	m/s	10.0
	<b>kW</b>	<b>BHP</b>
12PC2.6B	<b>9 000</b>	12 240
16PC2.6B	<b>12 000</b>	16 320

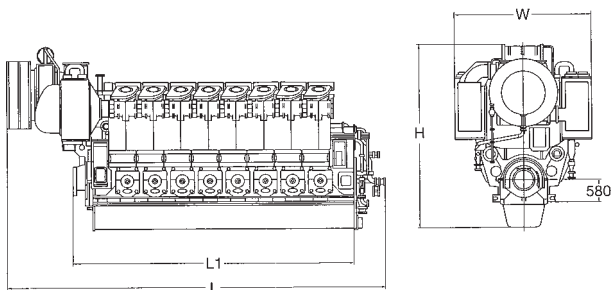
**Specific Fuel Oil Consumption (to ISO conditions)**

	<b>100% MCR</b>	
PC2.6B	184 g/kWh	135 g/BHP <sub>h</sub>

Specific Lube Oil Consumption: 1.0 g/kWh - 0.7 g/BHP<sub>h</sub>

	<b>12PC2.6B</b>	<b>16PC2.6B</b>	—	—
<b>L/L<sub>1</sub></b> mm	8 520/5 460	10 000/6 940	—	—
<b>W</b> mm	3 580	3 580	—	—
<b>H</b> mm	4 770	4 770	—	—
<b>Mass</b> ton*	100	120	—	—

\* The masses are stated for the engines without turning wheel



<b>Speed</b>	r/min	1 000		900	
<b>mep</b>	bar	20.4		21.3	
<b>C<sub>m</sub></b>	m/s	11.0		9.9	
		<b>kW</b>	<b>BHP</b>	<b>kW</b>	<b>BHP</b>
12PA6B		<b>4 140</b>	5 630	<b>3 900</b>	5 300
16PA6B		<b>5 520</b>	7 510	<b>5 200</b>	7 070

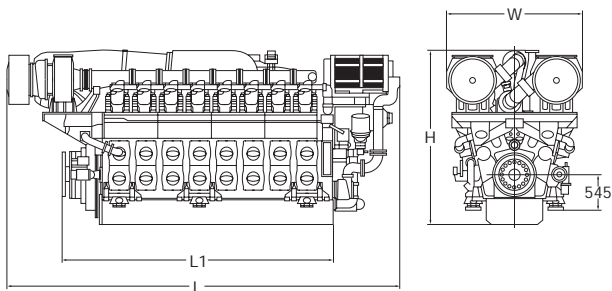
## Specific Fuel Oil Consumption (to ISO conditions)

	100% MCR		100% MCR	
PA6B	197 g/kWh	145 g/BHP	193 g/kWh	142 g/BHP

Specific Lube Oil Consumption: 1.0 g/kWh - 0.7 g/BHP

	<b>12PA6B</b>	<b>16PA6B</b>	—	—
<b>L/L<sub>1</sub></b>	mm	5 860/3 790	6 780/4 710	—
<b>W</b>	mm	2 340	2 340	—
<b>H</b>	mm	2 940	2 940	—
<b>Mass</b>	ton*	26	34	—

\* The masses are stated for the engines without turning wheel



# MAN B&W Controllable Pitch Propeller

The standard propeller programme basically comprises two types:

## Type VBS

- features propeller blade pitch setting by a hydraulic servo piston integrated in the propeller hub.

## Type VB

- features propeller blade pitch setting by a hydraulic servo piston integrated in the Alpha reduction gearbox.

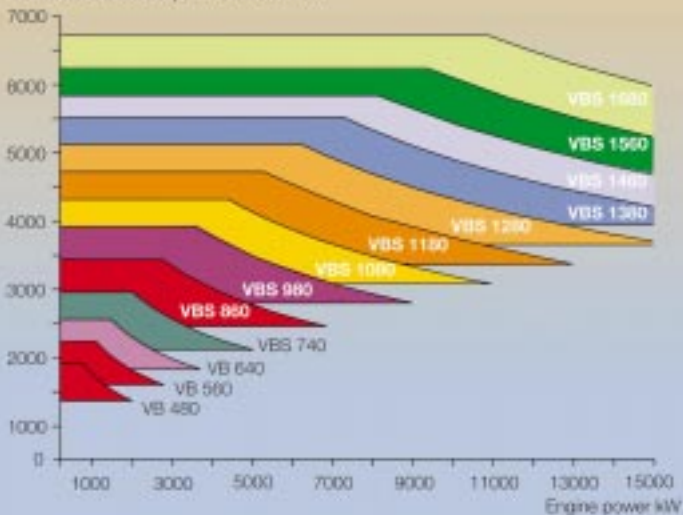
The figures stated after VBS or VB indicate the propeller hub diameter.

Standard blade/hub materials are Ni-Al-bronze.

Stainless steel is available as an option.

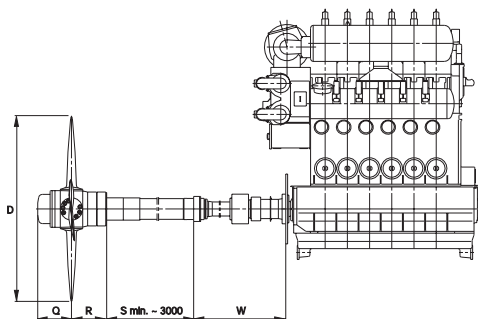
The propellers are available up to the highest ice classes.

Controllable Pitch Propeller diameter mm





# MAN B&W Two-stroke Propulsion System



Type	Cyl.	kW	Prop. speed r/min	D mm	Hub VBS mm	Q mm	R mm	W <sub>min</sub> mm	Prop. mass ton*
S60MC-C	4	9 020	105	5 850	1 460	1 100	1 170	2 676	35.2
	5	11 275	105	6 150	1 560	1 175	1 257	2 919	43.5
	6	13 530	105	6 450	1 680	1 278	1 338	2 976	53.3

S60MC	4	8 160	105	5 650	1 460	1 100	1 170	2 676	34.1
	5	10 200	105	6 000	1 560	1 175	1 242	2 676	39.2
	6	12 240	105	6 300	1 680	1 278	1 333	2 919	47.9
	7	14 280	105	6 550	1 680	1 278	1 338	2 976	54.0

L60MC	4	7 680	123	5 200	1 380	1 030	1 131	2 651	29.5
	5	9 600	123	5 500	1 460	1 100	1 170	2 676	34.5
	6	11 520	123	5 750	1 560	1 175	1 242	2 676	39.5
	7	13 440	123	5 950	1 560	1 175	1 257	2 919	44.2
	8	15 360	123	6 150	1 680	1 278	1 338	2 976	53.2

S50MC-C	4	6 320	127	4 900	1 280	975	1 035	2 200	24.0
	5	7 900	127	5 200	1 380	1 050	1 095	2 270	29.1
	6	9 480	127	5 450	1 380	1 050	1 095	2 350	32.1
	7	11 060	127	5 650	1 460	1 110	1 155	2 350	35.5
	8	12 640	127	5 850	1 560	1 190	1 225	2 350	39.9

\* The masses are stated for 3,000 mm stern tube and 6,000 mm propeller shaft.

Type	Cyl.	kW	Prop. speed r/min	D mm	Hub VBS mm	Q mm	R mm	W <sub>min</sub> mm	Prop. mass ton*
S50MC	4	5 720	127	4 800	1 280	975	1 010	2 140	22.4
	5	7 150	127	5 050	1 280	975	1 035	2 200	24.4
	6	8 580	127	5 300	1 380	1 095	1 095	2 270	30.4
	7	10 010	127	5 500	1 460	1 110	1 140	2 350	35.1
	8	11 440	127	5 700	1 460	1 110	1 140	2 350	36.3

L50MC	4	5 320	148	4 350	1 180	900	940	2 140	18.3
	5	6 650	148	4 600	1 180	900	940	2 160	20.7
	6	7 980	148	4 850	1 280	975	1 035	2 200	25.5
	7	9 310	148	5 050	1 380	1 050	1 095	2 270	29.4
	8	10 640	148	5 200	1 380	1 050	1 095	2 270	30.6

S46MC-C	4	5 240	129	4 700	1 180	900	940	2 160	19.7
	5	6 550	129	4 950	1 280	975	1 035	2 200	22.2
	6	7 860	129	5 200	1 380	1 050	1 095	2 270	27.8
	7	9 170	129	5 400	1 380	1 050	1 095	2 270	29.5
	8	10 480	129	5 600	1 460	1 100	1 140	2 350	33.6

S42MC	4	4 320	136	4 350	1 080	821	945	2 170	16.5
	5	5 400	136	4 600	1 180	855	996	2 265	20.1
	6	6 480	136	4 850	1 280	957	1 075	2 511	24.4
	7	7 560	136	5 050	1 280	957	1 075	2 511	27.5
	8	8 640	136	5 200	1 380	1 030	1 131	2 676	30.5
	9	9 720	136	5 350	1 380	1 030	1 131	2 676	32.7
	10	10 800	136	5 500	1 460	1 100	1 170	2 676	36.0
	11	11 880	136	5 650	1 460	1 100	1 185	2 595	38.4
	12	12 960	136	5 750	1 560	1 175	1 257	2 595	42.4

L42MC	4	3 980	176	3 750	980	746	805	2 040	12.0
	5	4 975	176	4 000	1 080	825	880	2 140	15.2
	6	5 970	176	4 200	1 180	900	940	2 140	16.4
	7	6 965	176	4 350	1 180	900	940	2 160	22.7
	8	7 960	176	4 500	1 280	975	1 035	2 200	23.1
	9	8 955	176	4 600	1 280	975	1 035	2 200	23.6
	10	9 950	176	4 700	1 280	975	1 035	2 200	26.2
	11	10 945	176	4 800	1 380	1 050	1 095	2 270	29.9
	12	11 940	176	4 900	1 380	1 050	1 095	2 270	30.5

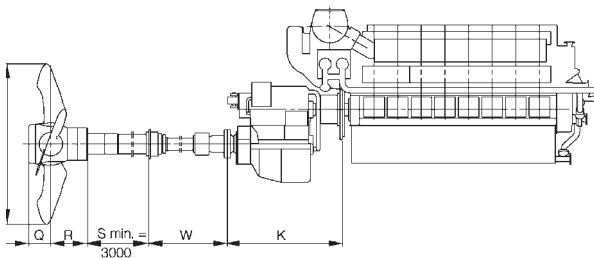
Type	Cyl.	kW	Prop. speed r/min	D mm	Hub VBS mm	Q mm	R mm	W <sub>min</sub> mm	Prop. mass ton*
S35MC	4	2 960	173	3 550	860	653	742	2 000	9.6
	5	3 700	173	3 750	980	746	807	2 040	12.5
	6	4 440	173	3 950	980	746	807	2 170	14.0
	7	5 180	173	4 100	1 080	821	945	2 170	16.6
	8	5 920	173	4 250	1 080	821	945	2 265	18.5
	9	6 660	173	4 350	1 180	885	996	2 265	20.4
	10	7 400	173	4 450	1 180	885	996	2 265	21.1
	11	8 140	173	4 550	1 280	957	1 075	2 511	24.8
	12	8 880	173	4 650	1 280	957	1 075	2 676	27.4

L35MC	4	2 600	210	3 150	860	655	735	1 970	9.1
	5	3 250	210	3 300	860	655	735	2 000	9.5
	6	3 900	210	3 450	980	746	785	2 000	10.3
	7	4 550	210	3 600	980	746	785	2 040	11.8
	8	5 200	210	3 700	980	746	805	2 040	12.3
	9	5 850	210	3 800	1 080	825	880	2 140	13.9
	10	6 500	210	3 900	1 080	825	880	2 140	14.7
	11	7 150	210	4 000	1 180	900	940	2 140	16.5
	12	7 800	210	4 100	1 180	900	940	2 140	17.2

S26MC	4	1 600	250	2 600	740	569	655	1 940	5.5
	5	2 000	250	2 750	740	569	655	1 940	6.4
	6	2 400	250	2 850	740	569	655	1 940	7.2
	7	2 800	250	2 950	860	655	735	1 970	8.5
	8	3 200	250	3 050	860	655	735	1 970	9.3

\* The masses are stated for 3,000 mm stern tube and 6,000 mm propeller shaft.

# MAN B&W Four-stroke Propulsion System



Type	Cyl.	kW	Prop. speed r/min	D mm	Hub VBS mm	Q mm	R mm	W <sub>min</sub> mm	K mm	Gear mass ton	Prop. mass ton**
L58/64	6	8 340	170	4 500	1 280	975	1 115	2 200	*	*	23.9
	6	8 340	130	5 100	1 280	975	1 115	2 350	*	*	28.2
	6	8 340	90	6 100	1 560	1 190	1 305	2 550	*	*	40.3
	7	9 730	170	4 650	1 280	975	1 115	2 200	*	*	27.1
	7	9 730	130	5 300	1 380	1 050	1 175	2 350	*	*	32.2
	7	9 730	90	6 300	1 560	1 190	1 305	2 570	*	*	45.4
	8	11 120	170	4 800	1 380	1 050	1 175	2 270	*	*	30.8
	8	11 120	130	5 500	1 460	1 110	1 220	2 350	*	*	35.9
	8	11 120	90	6 500	1 680	1 280	1 380	2 570	*	*	52.2
	9	12 510	170	4 950	1 380	1 050	1 175	2 350	*	*	31.9
	9	12 510	130	5 650	1 560	1 190	1 305	2 550	*	*	41.2
	9	12 510	90	6 700	1 680	1 280	1 380	2 570	*	*	55.4

L48/60	6	6 300	180	4 100	1 080	825	880	2 140	*	*	16.6
	6	6 300	140	4 600	1 180	900	1 020	2 160	*	*	20.4
	6	6 300	100	5 450	1 380	1 050	1 175	2 270	*	*	29.9
	7	7 350	180	4 250	1 180	900	940	2 140	*	*	20.3
	7	7 350	140	4 800	1 280	975	1 115	2 200	*	*	25.4
	7	7 350	100	5 650	1 380	1 050	1 175	2 350	*	*	32.5
	8	8 400	180	4 400	1 280	975	1 115	2 200	*	*	24.1
	8	8 400	140	4 950	1 280	975	1 175	2 200	*	*	27.6
	8	8 400	100	5 800	1 460	1 110	1 220	2 350	*	*	35.2
	9	9 450	180	4 550	1 280	975	1 115	2 200	*	*	25.7
	9	9 450	140	5 100	1 380	1 050	1 175	2 270	*	*	30.8
	9	9 450	100	6 000	1 560	1 190	1 350	2 550	*	*	40.6

\* To be decided case by case

Type	Cyl.	kW	Prop. speed r/min	D mm	Hub VBS mm	Q mm	R mm	W <sub>min</sub> mm	K mm	Gear mass ton	Prop. mass ton**
L40/54	6	4 320	190	3 650	980	746	805	2 040	*	*	11.9
	6	4 320	150	4 100	1 080	825	880	2 140	*	*	15.6
	6	4 320	110	4 800	1 180	825	880	2 140	*	*	19.0
	7	5 040	190	3 800	980	746	805	2 040	*	*	12.9
	7	5 040	150	4 250	1 080	825	880	2 140	*	*	16.2
	7	5 040	110	4 950	1 280	975	1 115	2 200	*	*	23.0
	8	5 760	190	3 950	1 080	825	880	2 140	*	*	15.9
	8	5 760	150	4 400	1 180	900	940	2 160	*	*	18.9
	8	5 760	110	5 100	1 280	975	1 115	2 200	*	*	25.2
	9	6 480	190	4 050	1 080	825	880	2 140	*	*	16.5
	9	6 480	150	4 550	1 180	900	1 020	2 160	*	*	20.3
	9	6 480	110	5 250	1 280	975	1 115	2 350	*	*	27.4

V32/40	12	5 760	200	3 850	1 080	821	880	2 040	*	*	15.3
	12	5 760	160	4 300	1 080	821	945	2 170	*	*	17.0
	12	5 760	120	4 950	1 280	957	1 075	2 511	*	*	23.5
	14	6 720	200	4 000	1 080	821	945	2 170	*	*	16.6
	14	6 720	160	4 500	1 180	885	996	2 170	*	*	20.2
	14	6 720	120	5 150	1 280	957	1 075	2 511	*	*	25.7
	16	7 680	200	4 150	1 180	885	996	2 170	*	*	19.0
	16	7 680	160	4 650	1 180	885	996	2 265	*	*	22.2
	16	7 680	120	5 350	1 380	1 030	1 131	2 651	*	*	29.2

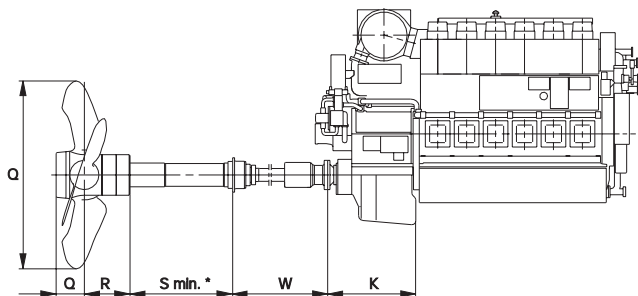
L32/40	6	2 880	200	3 250	860	655	735	1 970	*	*	8.8
	6	2 880	160	3 600	860	655	735	2 000	*	*	9.9
	6	2 880	120	4 150	980	746	805	2 040	*	*	12.4
	7	3 360	200	3 350	860	655	735	2 000	*	*	9.7
	7	3 360	160	3 750	980	746	785	2 000	*	*	11.8
	7	3 360	120	4 300	1 080	825	875	2 040	*	*	14.5
	8	3 840	200	3 500	860	655	735	2 000	*	*	10.4
	8	3 840	160	3 900	980	746	805	2 040	*	*	12.6
	8	3 840	120	4 450	1 080	825	880	2 140	*	*	16.4
	9	4 320	200	3 600	980	746	785	2 000	*	*	12.2
	9	4 320	160	4 000	980	746	805	2 040	*	*	13.2
	9	4 320	120	4 600	1 080	825	880	2 140	*	*	17.2

\*\* S<sub>min</sub> and propeller mass are based on 4,000 mm propeller shaft and 2,000 mm stern tube for 28/32, 27/30, – and 6,000 mm propeller shaft and 3,000 mm stern tube for the other types.

Type	Cyl.	kW	Prop. speed r/min	D mm	Hub VBS mm	Q mm	R mm	W <sub>min</sub> mm	K mm	Gear mass ton	Prop. mass ton**
L27/38	6	2 040	287	2 550	740	569	660	1 550	1 833	7.5	4.5
	6	2 040	224	2 850	740	569	660	1 550	1 833	7.7	5.0
	6	2 040	180	3 150	740	569	660	1 550	1 833	8.4	5.5
	6	2 040	144	3 500	860	655	740	1 750	1 833	9.0	7.0
	7	2 380	287	2 600	740	569	660	1 550	1 833	7.5	4.7
	7	2 380	224	2 950	740	569	660	1 550	1 833	7.7	5.5
	7	2 380	180	3 300	860	655	740	1 750	1 833	8.4	7.1
	7	2 380	144	3 650	860	655	740	1 750	1 833	9.0	7.5
	8	2 720	287	2 700	740	569	660	1 625	1 833	7.5	5.3
	8	2 720	224	3 050	860	665	720	1 625	1 833	7.7	6.7
	8	2 720	180	3 400	860	665	740	1 750	1 833	8.4	7.2
	8	2 720	144	3 800	980	746	783	1 750	1 833	9.0	9.2
	9	3 060	287	2 750	740	569	660	1 625	1 833	7.5	5.8
	9	3 060	224	3 150	860	665	720	1 750	1 833	7.7	7.4
	9	3 060	180	3 500	860	665	740	1 750	1 833	8.4	7.9
	9	3 060	144	3 900	980	746	783	1 750	1 833	9.0	9.8

#### Hub VB

V28/32A	12	2 940	248	3 050	860	445	745	1 350	2 174	8.1	7.1
	12	2 940	201	3 400	860	445	745	1 350	2 174	8.1	7.9
	12	2 940	171	3 700	980	584	820	1 600	2 174	8.1	8.6
	12	2 940	151	3 950	980	584	820	1 600	2 626	13.4	8.9
	16	3 920	248	3 250	860	445	745	1 350	2 242	8.1	8.1
	16	3 920	231	3 350	860	445	745	1 350	2 626	11.6	8.2
	16	3 920	191	3 750	980	584	820	1 600	2 626	11.6	10.0
	16	3 920	151	4 250	1 080	600	855	1 600	2 626	13.4	13.2



Type	Cyl.	kW	Prop. speed r/min	D mm	Hub VB mm	Q mm	R mm	W <sub>min</sub> mm	K mm	Gear mass ton	Prop. mass ton**
L28/32A	6	1 470	252	2 600	640	360	595	900	1 789	3.8	3.9
	6	1 470	201	2 850	740	415	655	1 200	2 142	6.0	5.1
	6	1 470	161	3 200	860	445	745	1 350	2 277	8.1	6.1
	6	1 470	141	3 500	860	445	745	1 350	2 277	8.1	7.2
	7	1 715	252	2 650	740	415	655	1 200	2 142	6.0	4.5
	7	1 715	201	3 000	860	445	745	1 350	2 142	6.0	5.8
	7	1 715	161	3 300	860	445	745	1 350	2 277	8.1	7.1
	7	1 715	141	3 600	980	584	820	1 600	2 277	8.1	8.3
	8	1 960	252	2 800	740	415	655	1 200	2 142	6.0	5.4
	8	1 960	201	3 100	860	445	745	1 350	2 277	8.1	6.5
	8	1 960	161	3 450	860	445	745	1 350	2 277	8.1	7.3
	8	1 960	141	3 750	980	584	820	1 600	2 277	8.1	8.4
	9	2 205	248	2 850	740	415	655	1 200	2 259	8.1	5.5
	9	2 205	201	3 200	860	445	745	1 350	2 259	8.1	7.1
	9	2 205	161	3 550	980	584	745	1 350	2 259	8.1	8.3
	9	2 205	141	3 850	980	584	820	1 600	2 259	8.1	8.6

V23/30A	12	1 920	292	2 550	640	360	595	900	2 126	6.0	3.8
	12	1 920	233	2 900	740	415	655	1 200	2 126	6.0	5.3
	12	1 920	187	3 250	860	445	745	1 350	2 261	8.1	7.1
	12	1 920	164	3 450	860	584	820	1 600	2 261	8.1	8.5

L23/30A	6	960	292	2 250	560	293	553	900	1 077	3.5	2.7
	6	960	233	2 450	640	360	595	900	1 077	3.5	3.4
	6	960	207	2 600	640	360	595	900	1 077	3.5	3.5
	6	960	173	2 850	740	445	655	1 200	1 662	6.1	4.4
	8	1 280	292	2 350	640	415	595	900	1 325	3.9	3.4
	8	1 280	233	2 600	640	415	655	1 200	1 325	3.9	3.8
	8	1 280	207	2 800	740	415	655	1 200	1 325	3.9	4.5
	8	1 280	173	3 100	860	445	745	1 350	1 662	6.1	6.1

L23/30A-E	6	800	268	2 200	560	293	553	900	1 077	3.5	2.7
	6	800	214	2 450	640	360	595	900	1 077	3.5	3.4
	6	800	190	2 600	640	360	595	900	1 077	3.5	3.5
	6	800	159	2 850	740	415	655	1 200	1 662	6.1	4.4

\*\* S<sub>min</sub> and propeller mass are based on 4,000 mm propeller shaft and 2,000 mm stern tube for 28/32, 27/30, – and 6,000 mm propeller shaft and 3,000 mm stern tube for the other types.

### **Engine Power Ranges of Holeby Marine GenSets**

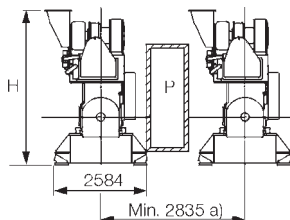
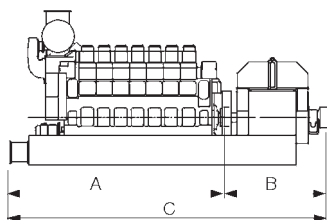
The stated engine outputs are the Continuous Rating  
Overload corresponds to 110% Continuous Service Rating,  
(However 105% for L32/40) and may be permitted for a  
limited period of one hour every 12 hours

#### **Reference conditions:**

Ambient temperature:	318 K = 45 °C
Ambient pressure:	1,000 mbar
Seawater cooling temperature upstream of charge air cooler:	305 K = 32 °C



	720 r/min Eng.kW	60Hz Gen.kW	750 r/min Eng.kW	50 Hz Gen.kW
5L32/40	2 400	<b>2 290</b>	2 400	<b>2 290</b>
6L32/40	2 880	<b>2 750</b>	2 880	<b>2 750</b>
7L32/40	3 360	<b>3 210</b>	3 360	<b>3 210</b>
8L32/40	3 840	<b>3 670</b>	3 840	<b>3 670</b>
9L32/40	4 320	<b>4 125</b>	4 320	<b>4 125</b>



		5L32/40	6L32/40	7L32/40	8L32/40	9L32/40
A	mm	5 810	6 340	6 870	7 400	7 930
B*	mm	3 415	3 415	3 415	3 635	3 635
C*	mm	9 225	9 755	10 285	11 035	11 565
H	mm	4 857	4 510	4 510	4 780	4 780
Mass Engine	ton**	54	60	64	70	73
Mass GenSets	ton***	67	75	79	87	91

P: Free passage between the engines, 600 mm width and 2 000 mm height.

a) ~Min. distance between centre of engines : 2835 mm without gallery  
~(3 220 mm with gallery)

\* Depending on alternator make

\*\* Engine and engine baseframe

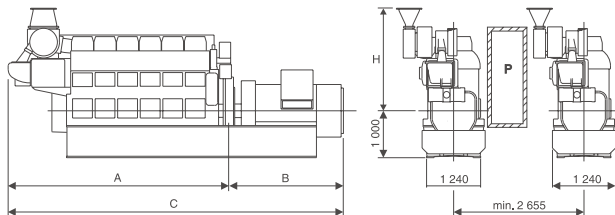
\*\*\* Mass, including a standard alternator

All dimensions and masses are approximately, and subject to change without notice.

# L28/32H GenSets

Bore: 280 mm, Stroke: 320 mm

	720 r/min Eng.kW	60Hz Gen.kW	750 r/min Eng.kW	50 Hz Gen.kW
5L28/32H	1 050	1 000	1 100	1 045
6L28/32H	1 260	1 200	1 320	1 255
7L28/32H	1 470	1 400	1 540	1 465
8L28/32H	1 680	1 600	1 760	1 670
9L28/32H	1 890	1 800	1 980	1 880



		5L28/32H	6L28/32H	7L28/32H	8L28/32H	9L28/32H
A	mm	4 140	4 620	5 100	5 580	6 060
B*	mm	2 400	2 510	2 680	2 770	2 690
C*	mm	6 540	7 130	7 780	8 350	8 750
H	mm	3 185	3 185	3 375	3 375	3 535
Mass Engine	ton**	18.2	20.8	22.6	24.9	27.8
Mass GenSets	ton***	25.5	28.7	32.8	36.3	39.2

P: Free passage between the engines, 600 mm width and 2 000 mm height.

a) 2 655 mm without gallery. With gallery min. 2 850 mm

\* Depending on alternator make

\*\* Engine and engine baseframe

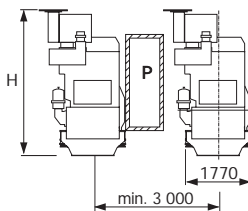
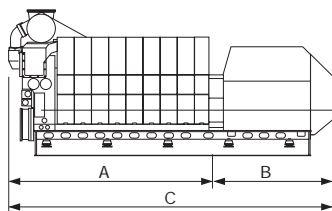
\*\*\* Mass included a standard alternator

All dimensions and masses are approximately, and subject to change without notice.

**Bore: 270 mm, Stroke: 380 mm**

# GenSets L27/38

	720 r/min Eng.kW	60Hz Gen.kW	750 r/min Eng.kW	50 Hz Gen.kW
5L27/38	1 500	<b>1 425</b>	1 600	<b>1 520</b>
6L27/38	1 800	<b>1 710</b>	1 920	<b>1 825</b>
7L27/38	2 100	<b>1 995</b>	2 240	<b>2 130</b>
8L27/38	2 400	<b>2 280</b>	2 560	<b>2 430</b>
9L27/38	2 700	<b>2 565</b>	2 880	<b>2 735</b>



		5L27/38	6L27/38	7L27/38	8L27/38	9L27/38
A	mm	4 331	4 776	5 221	5 666	6 111
B*	mm	2 486	2 766	2 766	2 986	2 986
C*	mm	6 817	7 542	7 987	8 652	9 097
H	mm	3 645	3 645	3 637	3 637	3 797
Mass Engine	ton**	31.3	35.4	39.1	43.8	47.3
Mass GenSets	ton***	42.1	46.9	51.6	57.8	61.8

P: Free passage between the engines, 600 mm width and 2 000 mm height

\* Depending on alternator make

\*\* Engine and engine baseframe

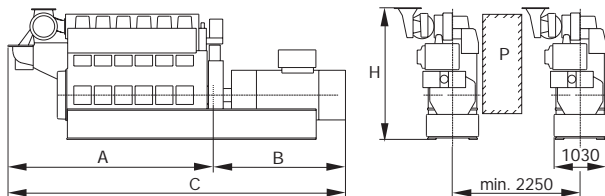
\*\*\* Mass included a standard alternator

All dimensions and masses are approximately, and subject to change without notice.

# L23/30H GenSets

Bore: 225 mm, Stroke: 300 mm

	720 r/min Eng.kW	60Hz Gen.kW	750 r/min Eng.kW	50 Hz Gen.kW	900 r/min Eng.kW	60 Hz Gen.kW
5L23/30H	650	<b>615</b>	675	<b>645</b>		
6L23/30H	780	<b>740</b>	810	<b>770</b>	960	<b>910</b>
7L23/30H	910	<b>865</b>	945	<b>900</b>	1 120	<b>1 060</b>
8L23/30H	1 040	<b>990</b>	1 080	<b>1 025</b>	1 280	<b>1 215</b>



		5L23/30H	6L23/30H	6L23/30H	7L23/30H	7L23/30H
	r/min	720/750	720/750	900	720/750	900
A	mm	3 350	3 720	3 720	4 090	4 090
B*	mm	2 155	2 385	2 325	2 270	2 270
C*	mm	5 505	6 105	6 045	6 360	6 360
H	mm	2 383	2 383	2 815	2 815	2 815
Mass Engine	ton**	12.2	12.9	12.9	14.3	14.3
Mass GenSets	ton***	16.8	18.7	18.7	19.2	19.2

		8L23/30H	8L23/30H		
	r/min	720/750	900		
A	mm	4 460	4 460		
B*	mm	2 380	2 355		
C*	mm	6 840	6 815		
H	mm	2 815	2 815		
Mass Engine	ton**	15.8	15.8		
Mass GenSets	ton***	23.7	23.7		

P: Free passage between the engines, 600 mm width and 2000 mm height.

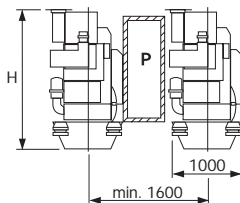
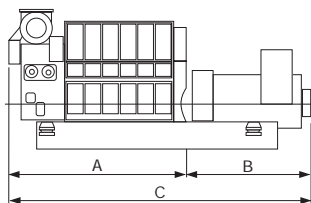
\* Depending on alternator make

\*\* Engine and engine baseframe

\*\*\* Mass included a standard alternator

All dimensions and masses are approximately, and subject to change without notice.

	1 200 r/min Eng.kW	60Hz Gen.kW	1 000 r/min Eng.kW	50 Hz Gen.kW
5L16/24	500	<b>475</b>	450	<b>430</b>
6L16/24	600	<b>570</b>	540	<b>515</b>
7L16/24	700	<b>665</b>	630	<b>600</b>
8L16/24	800	<b>760</b>	720	<b>680</b>
9L16/24	900	<b>855</b>	810	<b>770</b>



		5L16/24	6L16/24	7L16/24	8L16/24	9L16/24
A	mm	2 745	3 020	3 295	3 570	3 845
B*	mm	1 399	1 489	1 584	1 679	1 679
C*	mm	4 145	4 509	4 880	5 250	5 525
H	mm	2 175	2 175	2 215	2 215	2 315
Mass Engine	ton**	6.5	7.6	8.2	8.6	9.4
Mass GenSets	ton***	9.5	10.5	11.4	12.4	13.1

P: Free passage between the engines, 600 mm width and 2000 mm height.

\* Depending on alternator make

\*\* Engine and engine baseframe

\*\*\* Mass included a standard alternator

All dimensions and masses are approximaely, and subject to change without notice.

## Standard Rating values Diesel generating sets

Type	Cyl.	$\eta$ Gene- rator	50 Hz					60Hz				
			P Diesel		n	P Generator		P Diesel		n	P Generator	
			kW	bhp	r/min	kVA	kW	kW	bhp	r/min	kVA	kW
L32/40	6	96.5	2 880	3 930	750	3 475	2 780	2 880	3 930	720	3 475	2 780
	7	96.5	3 360	4 585	750	4 050	3 240	3 360	4 585	720	4 050	3 240
	8	96.5	3 840	5 240	750	4 630	3 705	3 840	5 240	720	4 630	3 705
	9	96.5	4 320	5 895	750	5 210	4 170	4 320	5 895	720	5 210	4 170
V32/40	12	97	5 760	7 860	750	6 980	5 585	5 760	7 860	720	6 980	5 585
	14	97	6 720	9 170	750	8 150	6 520	6 720	9 170	720	8 150	6 520
	16	97	7 680	10 480	750	9 310	7 450	7 680	10 480	720	9 310	7 450
L40/54	6	97	4 200	5 700	500	5 095	4 075	4 320	5 880	514	5 235	4 190
	7	97	4 900	6 650	500	5 945	4 755	5 040	6 860	514	6 110	4 890
	8	97	5 600	7 600	500	6 785	5 430	5 760	7 840	514	6 980	5 585
	9	97	6 300	8 550	500	7 635	6 110	6 480	8 820	514	7 855	6 285
L48/60	6	97.3	6 300	8 580	500	7 650	6 130	6 300	8 580	514	7 660	6 130
	7	97.3	7 350	10 010	500	8 935	7 150	7 350	10 010	514	8 935	7 150
	8	97.3	8 400	11 440	500	10 220	8 175	8 400	11 440	514	10 220	8 175
	9	97.3	9 450	12 870	500	11 495	9 195	9 450	12 870	514	11 495	9 195
V48/60	12	97.3	12 600	17 160	500	15 325	12 260	12 600	17 160	514	15 325	12 260
	14	97.3	14 700	20 020	500	17 880	14 305	14 700	20 020	514	17 880	14 305
	16	97.3	16 800	22 880	500	20 430	16 345	16 800	22 880	514	20 430	16 345
L58/64	6	97.3	8 340	11 340	428	10 145	8 115	7 800	10 620	400	9 485	7 590
	7	97.3	9 730	13 230	428	11 830	9 465	9 100	12 390	400	11 070	8 855
	8	97.3	11 120	15 120	428	13 525	10 820	10 400	14 160	400	12 650	10 120
	9	97.3	12 510	17 010	428	15 210	12 170	11 700	15 930	400	14 230	11 385

Type	Cyl.	$\eta$ Gene- rator	50 Hz					60Hz				
			P Diesel		n	P Generator		P Diesel		n	P Generator	
			kW	bhp		kVA	kW	kW	bhp		kVA	kW

### Dual-Fuel Engines

L32/40DG	6	96.5	2 400	3 270	750	2 895	2 315	2 310	3 150	720	2 785	2 230
	7	96.5	2 800	3 815	750	3 375	2 700	2 695	3 675	720	3 250	2 600
	8	96.5	3 200	4 360	750	3 860	3 090	3 080	4 200	720	3 710	2 970
	9	96.5	3 600	4 905	750	4 345	3 475	3 465	4 725	720	4 180	3 345

V32/40DG	12	97	4 800	6 540	750	5 820	4 655	4 620	6 300	720	5 600	4 480
	14	97	5 600	7 630	750	6 785	5 430	5 390	7 350	720	6 535	5 230
	16	97	6 400	8 720	750	7 760	6 210	6 160	8 400	720	7 470	5 975
	18	97	7 200	9 810	750	8 730	6 985	6 930	9 450	720	8 400	6 720

### Pielstick

PA6B	12	95	4 140	5 630	1 000	4 920	3 935	3 200	4 350	900	3 800	3 040
	16	95	5 520	7 510	1 000	6 550	5 245	5 200	7 070	900	6 175	4 940

PC2.6B	12	97	9 000	12 240	600	10 910	8 730	9 000	12 240	600	10 910	8 730
	16	97	12 000	16 320	600	14 550	11 640	12 000	16 320	600	14 550	11 640

PC4.2B	18	97.3	23 850	32 460	429	29 005	23 205	22 500	30 600	400	27 365	21 890
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# List of Licensees

Symbols used:

2: MAN B&W Diesel two-stroke licence

4: MAN B&W Diesel four-stroke licence

A: MAN B&W Diesel Alpha propulsion plant licence

H: MAN B&W Diesel Holey GenSet licence

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**Spain****Manises Diesel Engine Company, S.A. (2)**

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**USA****Coltec Industries Inc. (4)**

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