

Action code: **WHEN CONVENIENT**

Cylinder and System Oils

MAN B&W Low-Speed Two-Stroke Engines

SL2018-663/JUSV

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Concerns

Owners and operators of MAN B&W two-stroke marine diesel engines. Type: MC/MC-C, ME/ME-C, GI and LGI

Summary

Lubrication strategy:

- Use low-BN cylinder oils for ultra- to low-sulphur fuels
- Use high-BN cylinder oils for high-sulphur fuels

Dear Sir or Madam

This service letter provides a general overview of how to choose cylinder oil. It includes lists of the major international cylinder and system oil brands currently available in the market. It also includes information on cylinder oils with 140 BN and oils which have passed the ACOM testing.

For more specific lubrication guidelines, please refer to the most recent lubrication guideline available for your specific engine type, e.g. service letters and circular letters. Service letters are available on: www.marine.man-es.com/two-stroke/service-letters

For questions or inquiries regarding the content in this service letter, contact our Operation Department at: leo@man-es.com

Yours faithfully



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Fuels

Table 1 lists fuel abbreviations.

Fuel	Abbreviation	Fuels with...
Distillate marine fuels	DM	As specified in ISO 8217 (e.g. DMA, DMB). The latest edition is recommended.
Residual marine fuels	RM	As specified in ISO 8217 (e.g. RMD80, RMG380). The latest edition is recommended.
Ultra-low-sulphur fuel oil	ULSFO (0.10% S, DM or RM)	max. 0.10% S, DM and RM types
Very-low-sulphur fuel oil	VLSFO (0.50% S, DM or RM)	max. 0.50% S, DM and RM types
Low-sulphur fuel oil	LSFO (1.00% S, DM or RM)	max. 1.00% S, DM and RM types
High-sulphur heavy fuel oil	HSHFO	Sulphur content above 1.00%, DM and RM types, mainly RM.

Table 1: Abbreviations used for fuels. The nomenclature is confirmed by ISO and CIMAC.

Cylinder Lubrication strategy

The general lubrication strategy is to match the cylinder oil with the fuel. Table 2 gives a general overview of cylinder oils. When operating on liquid natural gas (LNG), ethane or methanol, the same cylinder oil is used as for ULSFO to LSFO operation. For specific lubrication guidelines, please refer to the most recent lubrication guideline for your specific engine type, e.g. service letters and circular letters. Service letters are publicly available. Circular letters are only distributed to customers that have the specific engine type/s dealt with in the specific circular letter.

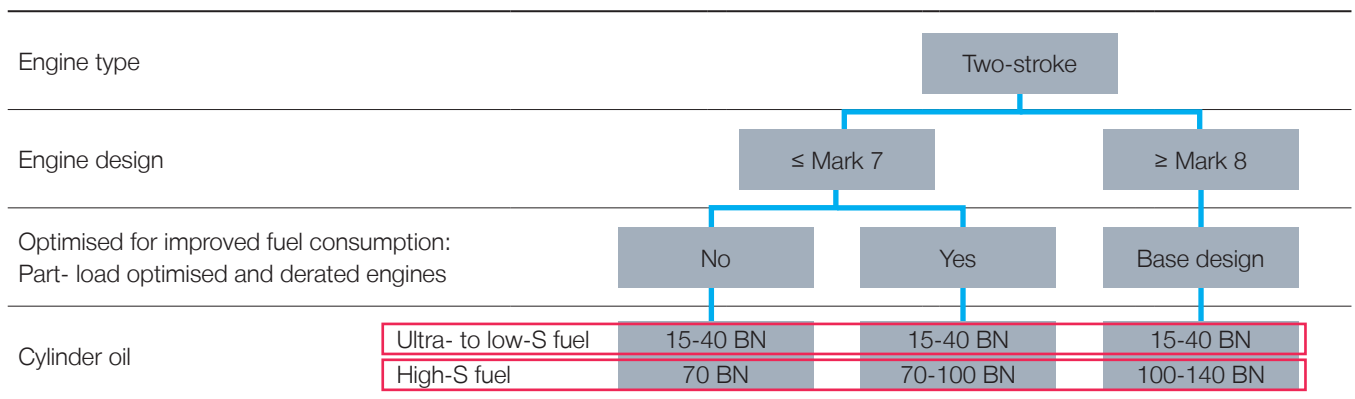


Table 2: General overview of cylinder oils

Cylinder oils and system oils

Tables 3, 4 and 5 list major international cylinder oil and system oil brands tested in service with acceptable results, and which have passed the No Objection Letter (NOL) testing procedure with acceptable results. Do not consider these lists to be complete, as other cylinder and system oils, with NOLs from MAN Energy Solutions, can be equally suitable. Further information can be obtained by contacting MAN Energy Solutions in Copenhagen.

Cylinder oils

We recommend using cylinder oils with the following main properties:

- Kinematic viscosity:
 - min. 18.5 cSt at 100°C
 - max. 21.9 cSt at 100°C
- Viscosity Index (VI): min. 95
- High detergency. Keeping ring grooves, ring-lands and piston rings clean is important to ensure free movements of the rings
- Alkalinity or base number (BN) in accordance with the engine requirement, e.g. corrosive level and fuel sulphur content.

Company	Cylinder oil 140 BN	Cylinder oil 100 BN	Cylinder oil 70 – 85 BN	Cylinder oil 15 – 40 BN
Aegean		Alfacylo 100 HS	Alfacylo 570 (70BN)	Alfacylo 525 DF (25BN) Alfacylo 540 LS (40BN)
Castrol	Cyltech 140	Cyltech 100	Cyltech 70 (70BN)	Cyltech ACT (16BN) Cyltech 40SX (40BN)
Chevron	Taro Special HT Ultra	Taro Special HT 100	Taro Special HT 70 (70BN)	Taro Special HT LF (25BN) Taro Special HT LS (40BN)
ExxonMobil	Mobilgard 5145 (145BN)	Mobilgard 5100	Mobilgard 570 (70BN)	Mobilgard 525 (25BN)
Gulf Oil Marine	GulfSea Cylcare 50140X	GulfSea Cylcare 50100	GulfSea Cylcare EHP 5070 (70BN) Gulfsea Cylcare 5085 (85BN)	GulfSea Cylcare ECA 50 (17BN) GulfSea Cylcare DCA 5040H (40BN)
JXTG Nippon Oil & Energy Corp.		Marine C1005	Marine C705 (70BN)	JX C225 (25BN) Marine C405 (40BN)
Lukoil		Navigo 100 MCL	Navigo 70 MCL AW (70BN)	Navigo MCL Ultra (20BN) Navigo MCL Extra (40BN)
Shell	Shell Alexia 140	Shell Alexia S6	Shell Alexia 50 (70BN) Shell Alexia S5 (80BN)	Shell Alexia S3 (25BN)
Sinopec	Sinopec Marine Cylinder Oil 50140	Sinopec Marine Cylinder Oil 50100	Sinopec Marine Cylinder Oil 5070S (70BN)	Sinopec Marine Cylinder Oil 5025 (25BN) Sinopec Marine Cylinder Oil 5040 (40BN)
SK Lubricants	SK Supermar Cyl 140	SK Supermar Cyl 100	SK Supermar Cyl 70 plus (70BN)	SK Supermar Cyl 25 (25BN) SK Supermar Cyl 40 (40BN)
TOTAL	Talusia HR 140	Talusia Universal 100 Talusia Optima	Talusia HR 70 (70BN)	Talusia LS 25 (25BN) Talusia LS 40 (40 BN)

Table 3: Examples of major international cylinder oil brands which have a No Objection Letter from MAN Energy Solutions.

Cylinder oils for ACOM

The automated cylinder oil mixing (ACOM) is a cylinder oil delivery system which automatically mixes to two fully formulated cylinder oils to the optimum BN depending on the sulphur in the fuel. Several lube oil suppliers are testing and have finished the testing of their oils in the ACOM system. Table 4 lists the companies that have finished the testing.

Company	High-BN cylinder oil	Low-BN cylinder oil
Castrol	Cyltech 140 (140BN)	Cyltech ACT (16BN)
Chevron	Taro Special HT Ultra (140BN) Taro Special HT 100 (100BN)	Taro Special HT LF (25BN)
Gulf Oil Marine	GulfSea Cylcare 50140X (140BN) GulfSea Cylcare 50100X (100BN)	GulfSea Cylcare ECA 50 (17BN)
Shell	Shell Alexia 140 (140BN) Shell Alexia S6 (100BN)	Shell Alexia S3 (25BN)
TOTAL	Talusia HR 140 (140BN)	Talusia LS 25 (25BN)

Table 4: Cylinder oil which have passed ACOM testing.

System oils

We recommend the use of system oils (circulating oil) with the following main properties:

- SAE 30 viscosity grade
- BN level 5-10
- High corrosion protection
- Good anti-oxidant properties
- High detergency and dispersancy.

Company	System oil
Aegean	Alfasys 305
Castrol	CDX 30
Chevron	Veritas 800 Marine 30
ExxonMobil	Mobilgard 300C
GulfOil Marine	GulfSea Superbear 3006
SK Lubricants	SK Supermar AS
JX Nippon Oil & Energy	Marine S30
Lukoil	Navigo 6 CO
Shell	Shell Melina S 30
Sinopec	System Oil 3005
TOTAL	Atlanta Marine D3005

Table 5: Examples of major international system oil brands which have a No Objection Letter from MAN Energy Solutions.