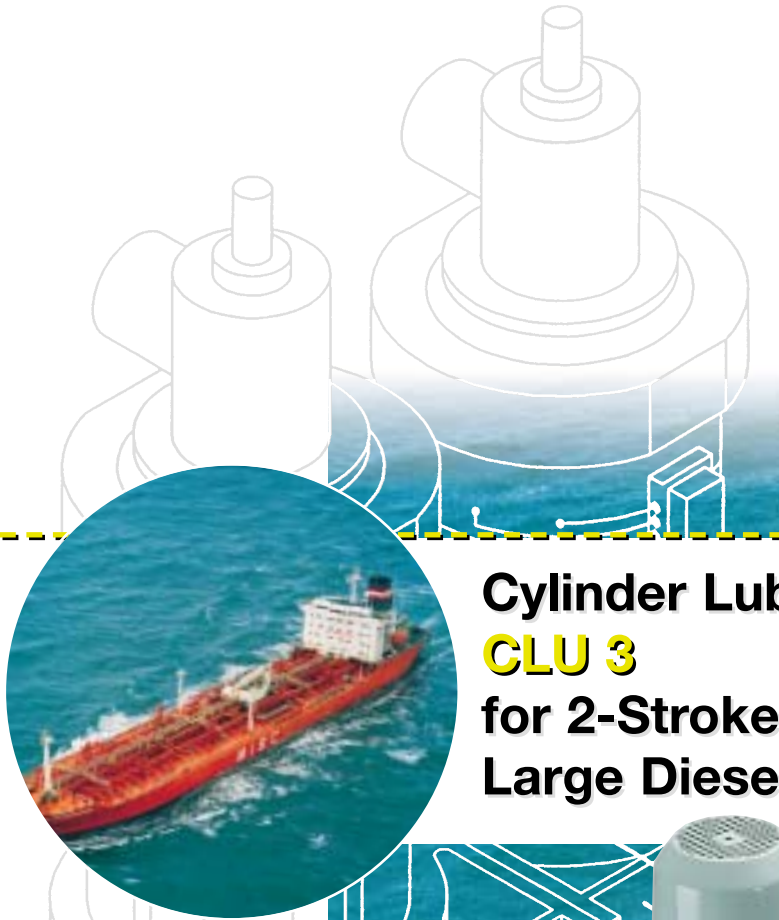
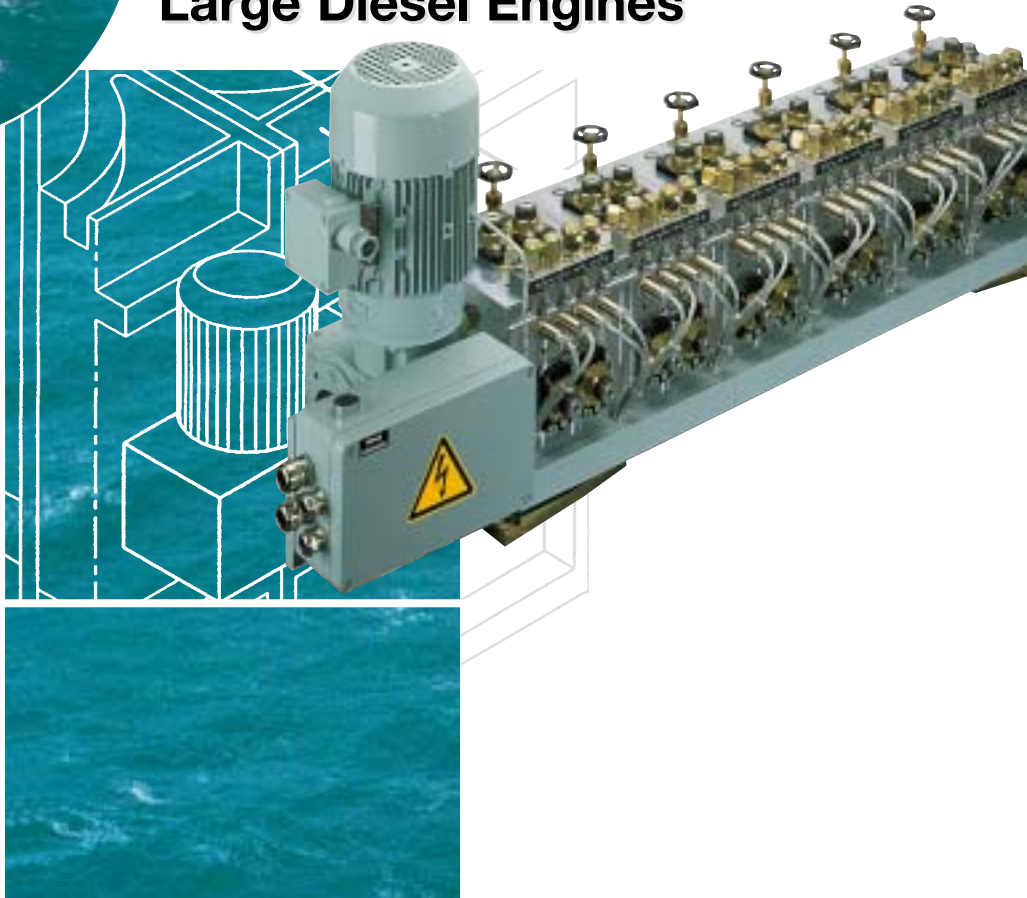




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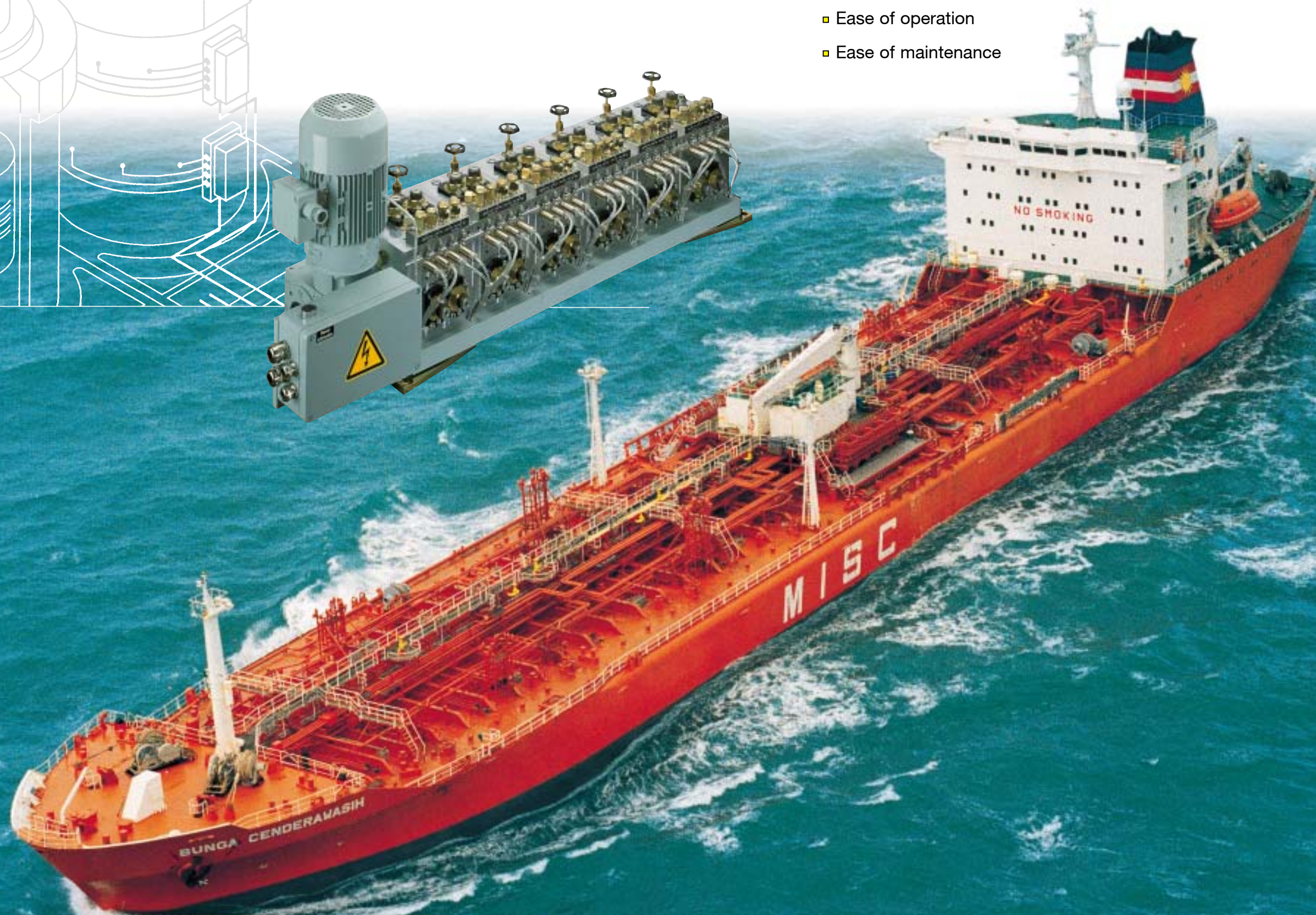
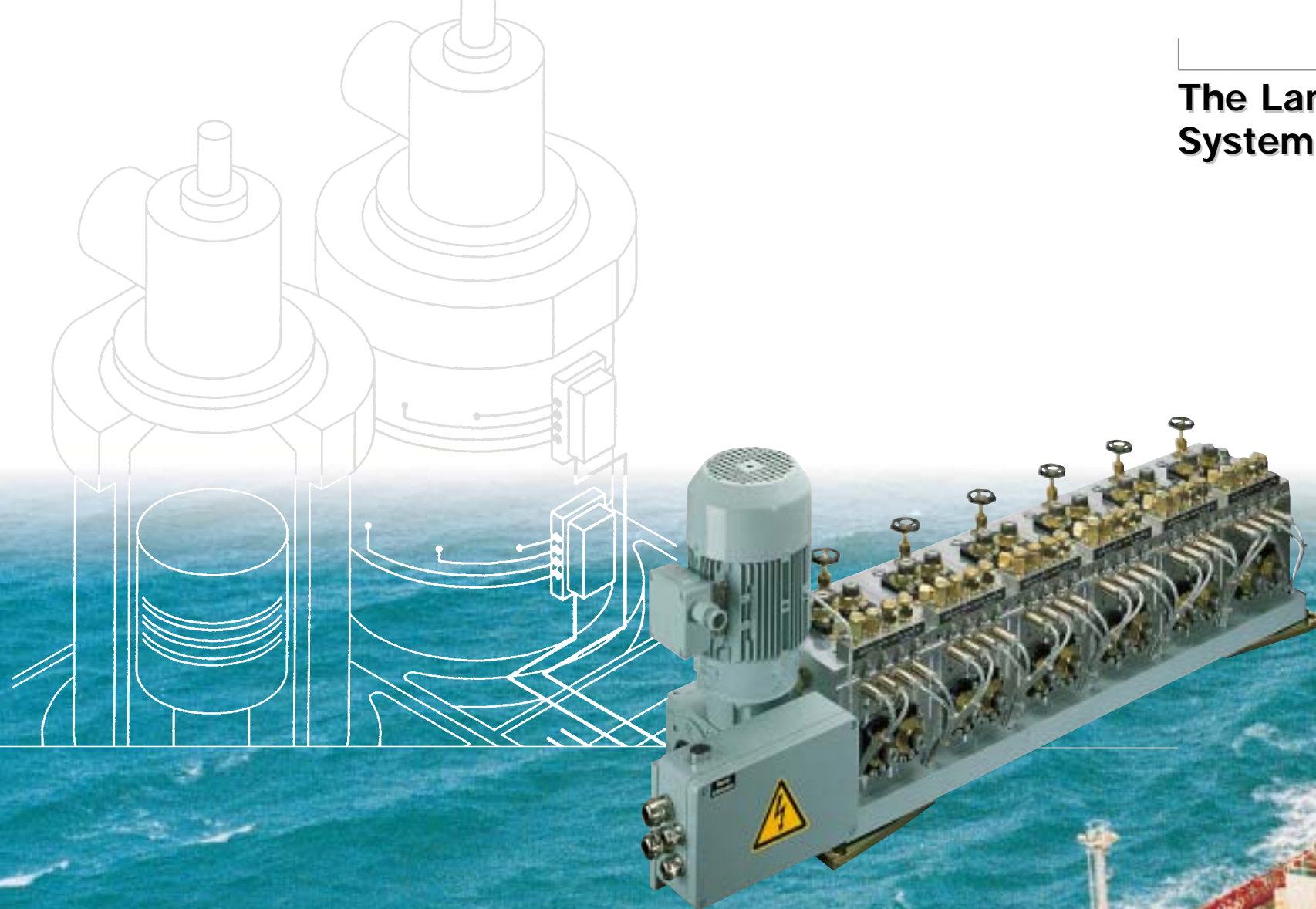


Cylinder Lubrication System
CLU 3
for 2-Stroke Crosshead
Large Diesel Engines

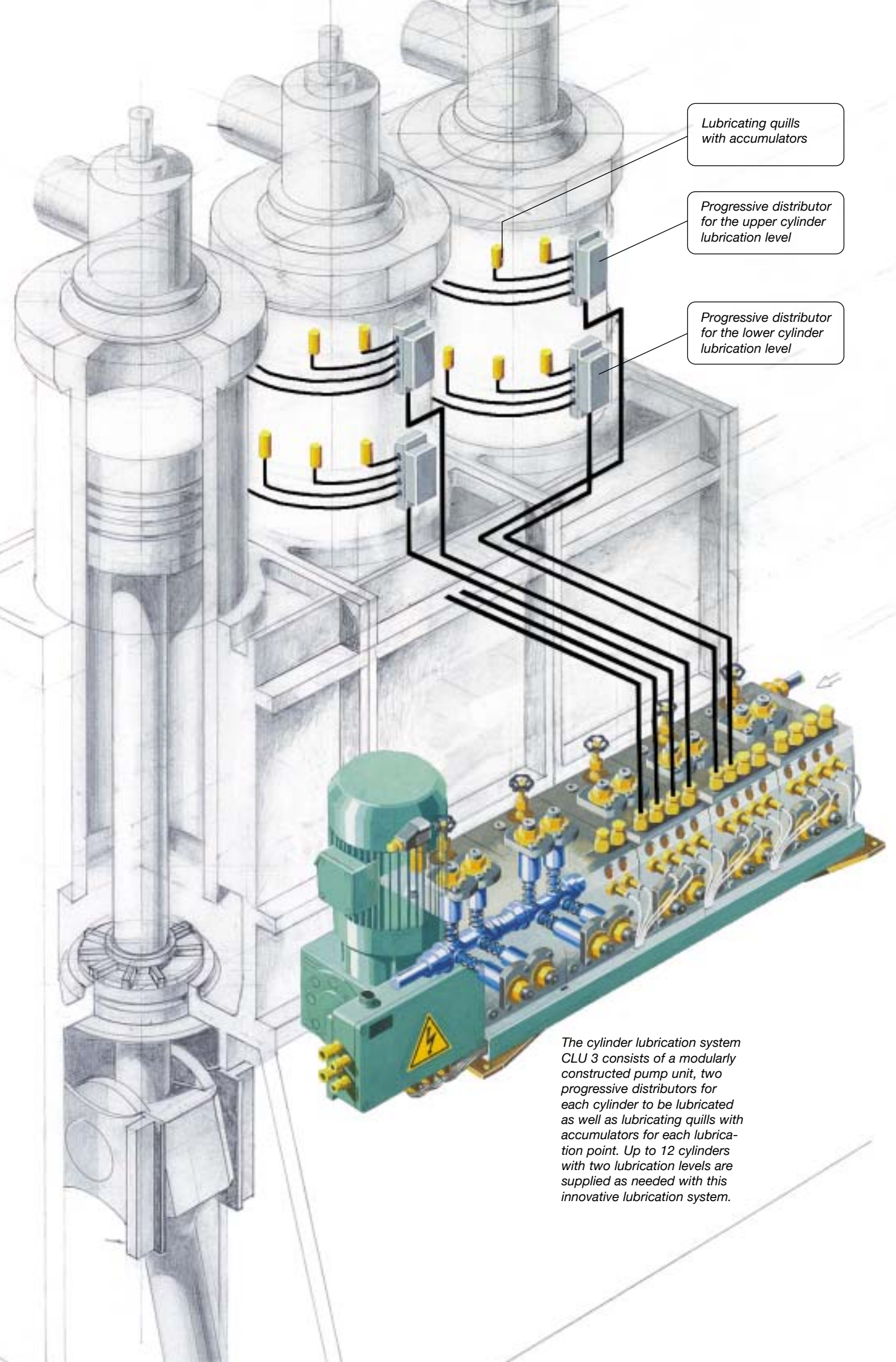


The Large Diesel Engine Cylinder Lubrication System CLU 3 - excels due to its:

- Economical efficiency
- Operating reliability
- Ease of operation
- Ease of maintenance



The Economic Cylinder Lubrication System



The cylinder lubrication system CLU 3 consists of a modularly constructed pump unit, two progressive distributors for each cylinder to be lubricated as well as lubricating quills with accumulators for each lubrication point. Up to 12 cylinders with two lubrication levels are supplied as needed with this innovative lubrication system.

OPTIMUM ECONOMIC EFFICIENCY

- through simple adaption to diesel engines with various number of cylinders and power outputs
- through a wide range of applications (It is suited for lubricating cylinders with a power output ranging from 1,000 to 6,000 kW for specific amounts of lubricating oil up to 3g/kWh.)

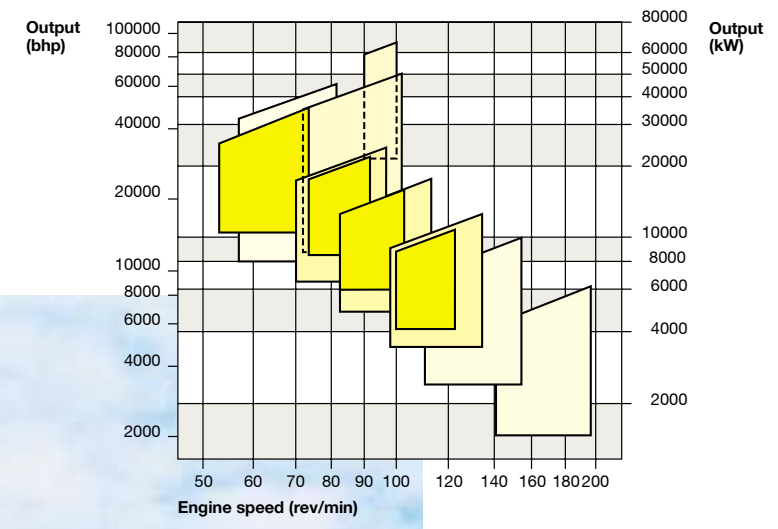
- through an assembly procedure which is quick and easy

(The compact pump unit has everything including drive, oil supply and hot water connections as well as pre-wired sensors; it can be fastened to the diesel engine in a horizontal or vertical position, the pump modules one each for two cylinders – are simply flanged onto each other. In comparison to conventional lubrication pumps, this reduces assembly costs by up to 50% depending on the number of cylinders.)

- through an attractive cost-benefit ratio

(It offers more and costs less than conventional systems offering similar performance.)

Photo: DMR-Sulzer 7RTA72U



The load-dependent cylinder lubrication system CLU 3 has been approved for all Wärtsilä NSD 2-stroke large diesel engines of the RTA series with the remote control system DENIS 6.

The Reliable, Simple to Operate and Easy to Service Cylinder Lubrication System

HIGH OPERATING RELIABILITY

- through pressure sealed pump modules for supply pressures up to 2 bar (Mechanical level control valves are thus not necessary.)
- through defined settings for the delivery volume of the pump elements in six stages which prevents incorrect settings
- through a load-dependent electrically controlled pump drive (If there is a disturbance in the frequency control, the remote control system automatically sets the nominal electric motor speed.)
- through large dimensioned bore holes and pipe cross sections

- through slide controlled pump elements (This slide controlled pump element was developed for measuring highly viscous lubricants.)
- through tempered piston bore holes for pump elements and progressive distributors with high resistance to wear
- through hydraulically controlled progressive distributors (These distribute performe the lubricating oil evenly.)
- through only very few moving components (To supply, for example, 16 lubrication points on one cylinder, only 10 pistons are in motion.)
- through integrated safety valves (These protect the parts of the system against overpressure if the pipes are blocked.)

▼ The lubrication pump unit type PC can be adapted precisely to the lubrication task determined by the number and size of the cylinders as well as the engine load. This is achieved on the one hand by controlling the electric motor speed and on the other hand by flanging pump modules onto each other.

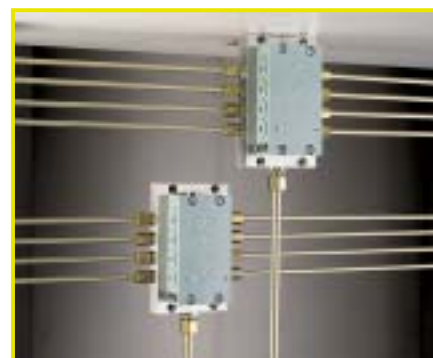
► The oil is supplied to a max. of 16 lubrication points of a cylinder with only two progressive distributors – one for the upper and one for the lower cylinder lubrication level.



The pump unit is supplied with oil from an elevated tank via a central supply.



Pre-lubrication at the press of a button



Pump element with slide control. The possible delivery volumes are precisely defined.



The contamination of the oil supply filter is also monitored with the level indicator switch.



Reliable monitoring (optic/electric) of the oil supply. Even if only one lubrication point is blocked, a fault signal is issued.



To ensure lubrication even in arctic temperatures, the lubrication pump can be connected to the main oil system of the diesel engine.

Every pump module consists of an aluminium block casing each with two vertical and two horizontal pump elements. The pump elements are driven by an eccentric shaft. The modules joined together by screws make for a compact "self-supporting" pump unit.

SIMPLE OPERATION

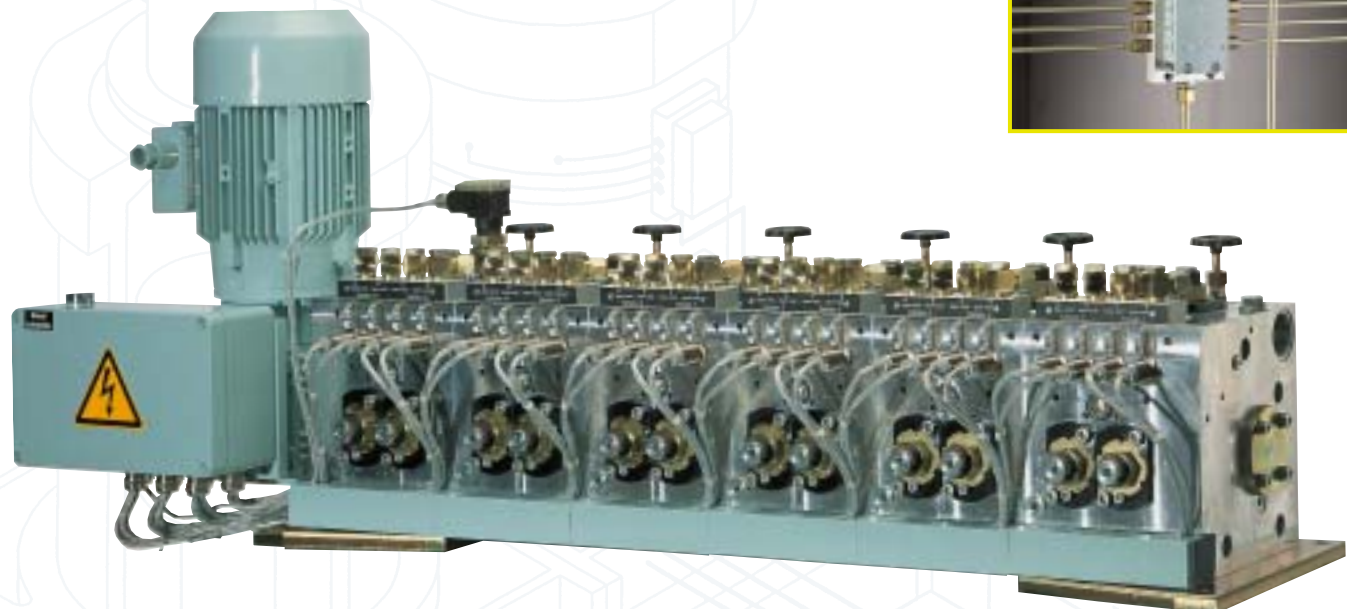
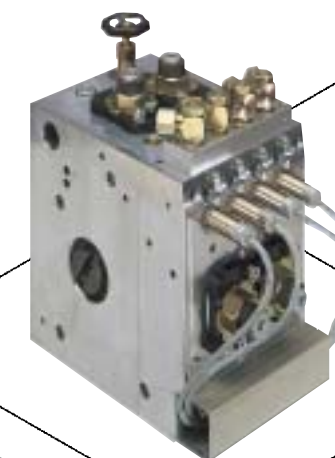
- through central setting of the oil delivery per cylinder lubricating level
- through pre-lubrication of all cylinders at the press of a button (Instead of pre-lubricating each cylinder individually with the use of cranks, pressing an electrical push-button is all that is needed.)
- through a shutoff valve integrated into every pump module (allows an oil change from running-in oil to normal oil quickly and easily)

EASE OF MAINTENANCE

- through modular technology (Defective components can be replaced quickly and easily – some can even be replaced during operation.)
- through fewer components (Only one pump unit is required for the entire cylinder lubrication system.)
- through measuring connectors (allow simple oil consumption check for each pump module or pump element)

RELIABLE AND EASY MONITORING

- through the level indicator switch which monitors the oil supply level
- through electric sensors on all pump elements (100% feed rate monitoring. Each pump element has a safety valve which interrupts the flow of oil if pressure exceeds 80 bar. This is displayed by a ball which sinks to the bottom of a gauge glass. In addition to this optical display, a fault signal is activated by a 2-wire NAMUR type sensor or a 3-wire NPN type sensor with LED.)
- through concentration of checks (Only one optical flow check per lubrication – level instead of maximum – eight needs to be observed.)



CERTIFICATE

DIN EN ISO 9001:2000



hereby certifies that the company

VOGEL®

WILLY VOGEL AKTIENGESELLSCHAFT

business field:
Development, manufacturing and sales of centralized
lubrication systems and Spandau pumps

location:
Motzener Straße 35/37 * D-12277 Berlin
Industriestraße 4 * D-68766 Hockenheim

has implemented and effectively applies a quality management system according to the standard (1200) mentioned above. Evidence of conformity was found during the certification audit and documented in audit report no. Z-40394139. This certificate is only valid in connection with the successful performance of the surveillance audits. The company fulfills the requirements of Directive TS 136/2002, Directive 90/269/EEC and Annex XII of the BSI/DZG relating to the approval subject groups.

22 -Elektronische Unterbaugruppen

Date of the first
certification:
This certificate is
valid until:

01.11.2004

07.10.2005

CERTIFICATION SERVICES DIVISION
Bulvarul, 06.10.2004

Date of the last
certification:
Certification
registration no.:

06.10.2003

50295-05-00

(duplicate)

Accredited by the Federal Institute for
Metrication (BIPM) under the
European Cooperation for
Certification of Conformity
(CECOC) scheme.



Reg. No.: 02A-ZC-A0009-01

02204-03 Certification Services GmbH - Hockenheimstraße 10 - D-70372 Stuttgart

CERTIFICATE

DIN EN ISO 14001



hereby certifies that the company

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has implemented and effectively applies an environmental management system according to the standard (1200) mentioned above. The conformity was inspected during the certification audit documented in audit report no. Z-40394139. This certificate is only valid in connection with the successful performance of the surveillance audits.

Date of the first
certification:
This certificate is
valid until:

29.03.2004

07.10.2005

CERTIFICATION SERVICES DIVISION
Bulvarul, 06.10.2004

Date of the last
certification:
Certification
registration no.:

06.10.2003

17000302

0491386

Accredited by TGA
of the German Accreditation Council
(DAK-GL) under the
European Cooperation for
Certification of Conformity
(CECOC) scheme.



Reg. No.: TGA-Z04-05-04-08

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