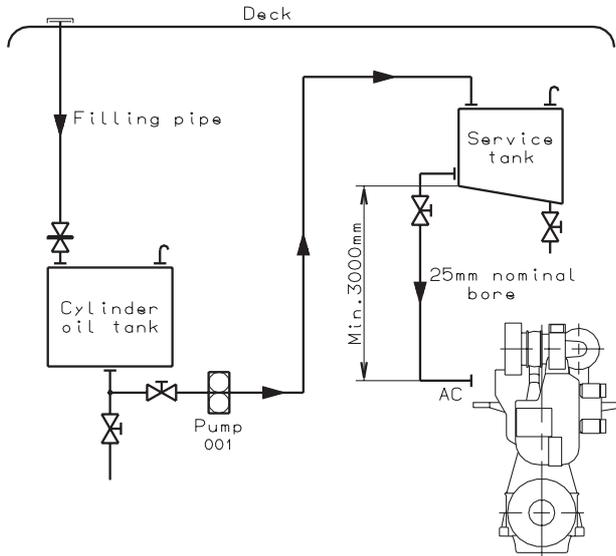


### 6.04 Cylinder Lubricating Oil System



The letters refer to "List of flanges"

178 07 46-5.0

Fig. 6.04.01: Cylinder lubricating oil pipes

The cylinder lubricators are supplied with oil from a gravity-feed cylinder oil service tank, and they are equipped with built-in floats, which keep the oil level constant in the lubricators, Fig. 6.04.01.

The size of the cylinder oil service tank depends on the owner's and yard's requirements, and it is normally dimensioned for minimum two days' consumption.

#### Cylinder Oils

Cylinder oils should, preferably, be of the SAE 50 viscosity grade.

Modern high rated two-stroke engines have a relatively great demand for the detergency in the cylinder oil. Due to the traditional link between high detergency and high TBN in cylinder oils, we recommend the use of a TBN 70 cylinder oil in combination

with all fuel types within our guiding specification regardless of the sulphur content.

Consequently, TBN 70 cylinder oil should also be used on testbed and at seatrial. However, cylinder oils with higher alkalinity, such as TBN 80, may be beneficial, especially in combination with high sulphur fuels.

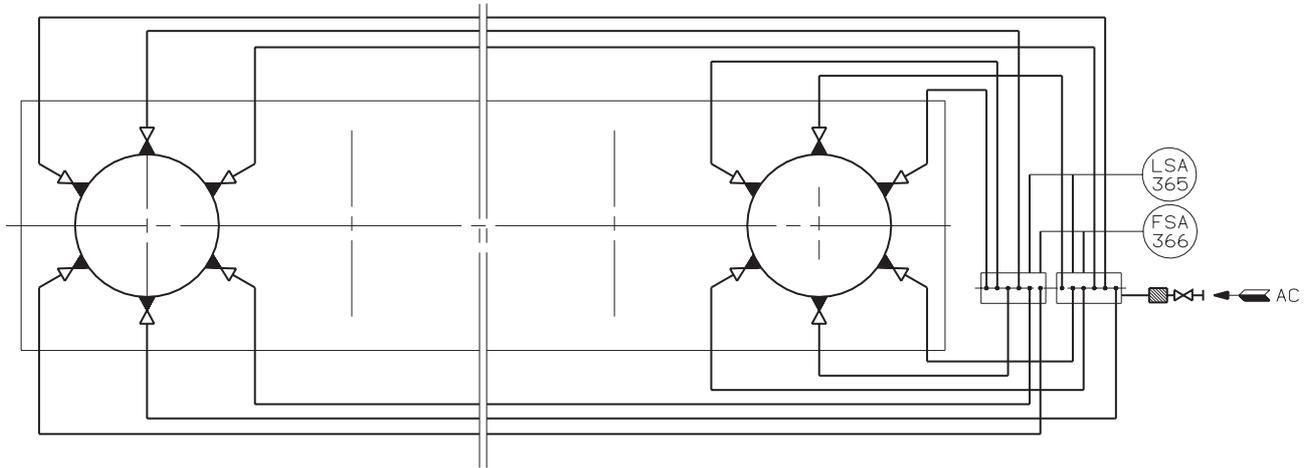
The cylinder oils listed below have all given satisfactory service during heavy fuel operation in MAN B&W engine installations:

Company	Cylinder oil SAE 50/TBN 70
Elf-Lub.	Talusia HR 70
BP	CLO 50-M
Castrol	S/DZ70 cyl.
Chevron	Delo Cyloil Special
Exxon	Exxmar X 70
Fina	Vegano 570
Mobil	Mobilgard 570
Shell	Alexia 50
Texaco	Taro Special

Also other brands have been used with satisfactory results.

#### Cylinder Lubrication

Each cylinder liner has a number of lubricating orifices (quills), through which the cylinder oil is introduced into the cylinders, see Fig. 6.04.02. The oil is delivered into the cylinder via non-return valves, when the piston rings pass the lubricating orifices, during the upward stroke.



The letters refer to “List of flanges”  
The piping is delivered with and fitted onto the engine

One lubricator for 4S35MC  
Two lubricators for 5, 6, 7, 8 and 9S35MC

178 38 05-7.0

Fig. 6.04.02: Cylinder lubricating oil pipes

### Cylinder Lubricators

The cylinder lubricator(s) are mounted on the fore end of the engine. The lubricator(s) have a built-in capability for adjustment of the oil quantity. They are of the “Sight Feed Lubricator” type and are provided with a sight glass for each lubricating point.

The lubricators are fitted with:

- Electrical heating coils
- Low flow and low level alarms.

The lubricator will, in the basic “Speed Dependent” design (4 42 111), pump a fixed amount of oil to the cylinders for each engine revolution.

Mainly for plants with controllable pitch propeller, the lubricators can, alternatively, be fitted with a

system which controls the dosage in proportion to the mean effective pressure (mep), option: 4 42 113.

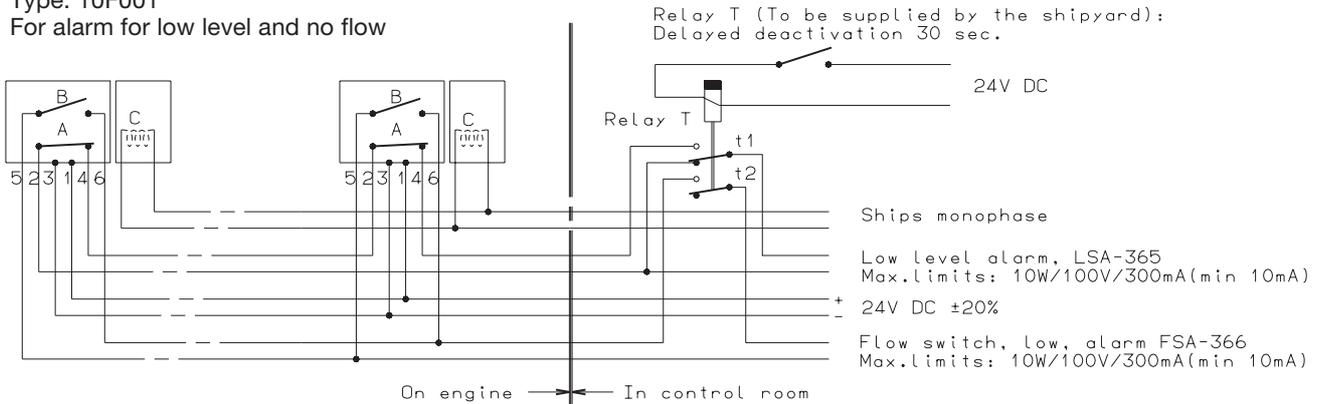
The “speed can be dependent” as well as the “mep dependent” lubricator can be equipped with a “Load Change Dependent” system option: 4 42 120, such that the cylinder feed oil rate is automatically increased during starting, manoeuvring and, preferably, during sudden load changes, see Fig. 6.04.04.

The signal for the “load change dependent” system comes from:

- *Alternative 1*  
a special control box, item: 4 42 620 normally used on plants with mechanical-hydraulic governor
- *Alternative 2*  
the electronic governor, if applied.

Type: 10F001

For alarm for low level and no flow



Low level switch “A” opens at low level  
 Low flow switch “B” closes at zero flow in one ball control glass.

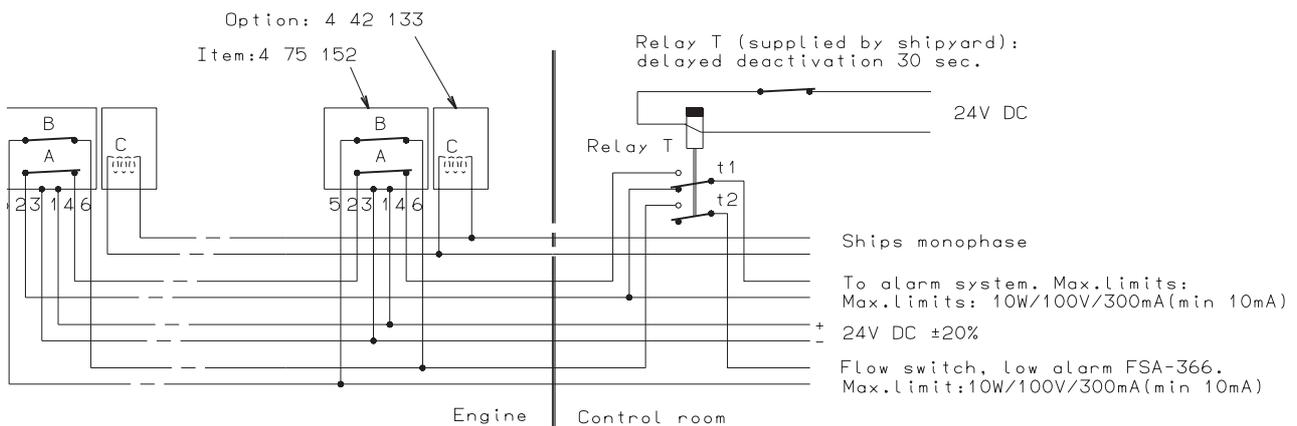
Fig 6.04.03a: Electrical diagram , cylinder lubricator

178 10 83-1.1

Type: 10F001

For alarm for low level and alarm and slow down for no flow

Required by: ABS, GL, RINA, RS and recommended by IACS



Low level switch “A” opens at low level  
 Low flow switch “B” closes at zero flow in one ball control glass.

Electrical “C” :

4S35MC: 1 lubricator, 24 glasses of	125 watt
5S35MC: 2 lubricators, 15 glasses of	2 x 75 watt
6S35MC: 2 lubricators, 18 glasses of	2 x 100 watt
7S35MC: 2 lubricators, 21 glasses of	2 x 125 watt
8S35MC: 2 lubricators, 24 glasses of	2 x 125 watt
9S35MC: 2 lubricators, 27 glasses of	2 x 125 watt
10S35MC: 4 lubricators, 15 glasses of	4 x 75 watt
11S35MC: 2 lubricators, 15 glasses of	2 x 75 watt
+ 2 lubricators, 18 glasses of	2 x 100 watt
12S35MC: 4 lubricators, 18 glasses of	4 x 100 watt

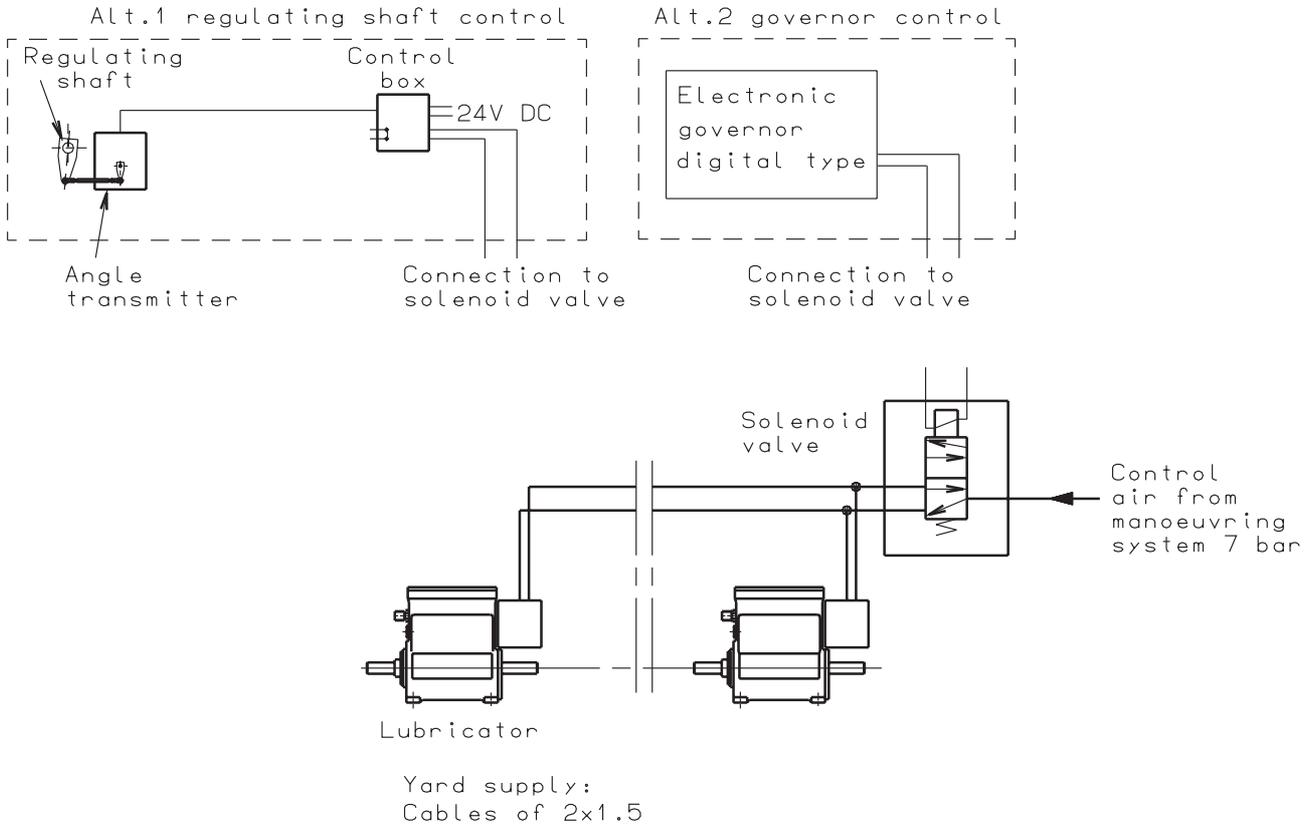
Both diagrams show the system in the following condition:  
 Electrical power ON  
 Stopped engine: no flow  
 Oil level high

All cables and cable connections to be yard’s supply.

Power supply according to ship’s monophase 110 V or 220 V.  
 Heater ensures oil temperature of approximately 40-50 °C.

178 36 47-5.0

Fig 6.04.03b: El. Diagram, cylinder lubricator



178 06 31-4.1

Fig. 6.04.04: Load change dependent lubrication

### Cylinder Oil Feed Rate (Dosage)

The following guideline for cylinder oil feed rate is based on service experience from other MC engine types, as well as today's fuel qualities and operating conditions.

The recommendations are valid for all plants, whether controllable pitch or fixed pitch propellers are used.

The nominal cylinder oil feed rate at nominal MCR is:

1.1–1.6 g/kWh  
0.8-1.2 g/BHPH

During the first operational period of about 1500 hours, it is recommended to use the upper feed rate.

The feed rate at part load is proportional to the

second power of the speed:  $Q_p = Q \times \left\{ \frac{n_p}{n} \right\}^2$