

## Methods of Onboard Test on Automatic Control of Lubricating Oil System for Smaller Ships

### 1. Scope

This Japanese Industrial Standard specifies the methods of onboard test on automatic control of lubricating oil system for smaller ships.

### 2. Test Items

Tests of the following systems shall be carried out.

- (1) Remote control system of lubricating oil pump.
- (2) Automatic changing system of lubricating oil pumps.
- (3) Automatic temperature regulating system of lubricating oil.
- (4) Purifying system of lubricating oil.
- (5) Low pressure alarm system of lubricating oil.
- (6) Level alarm system of lubricating oil tank.
- (7) Remote level indicating system of lubricating oil sump tank.

### 3. Preparations for tests

Before tests, following preparations shall be carried out.

- (1) Detectors of automatic control system shall be properly arranged.  
If any instruments other than onboard ones are used, their accuracy shall be checked.
- (2) Voltage and frequency of power supply used for tests shall be designed values.
- (3) The condition of piping, opening or closing of each valve and measuring instruments, etc., shall be as designed.
- (4) Test oil shall be of ordinary use and oil volume shall be proper.

### 4. Testing Method

**4.1 Testing Method of Remote Control System of Lubricating Oil Pump** The test shall be carried out as follows.

- (1) By starting and stopping the pump by remote on-off push button, operation of the pump shall be checked.
- (2) Lightening of the running pilot lamp of the pump, usually installed in a control room, shall be checked.

#### 4.2 Testing Method of Automatic Changing System of Lubricating Oil Pumps

**4.2.1 Test of Automatic Changing by Pressure Switch** The test shall be carried out as follows.

- (1) By supplying electric power to No. 1 and 2 pumps lightening of the power supply pilot lamp shall be checked.
- (2) Pressure switch shall be set to designed pressure.
- (3) By starting No. 1 pump and changing to automatic control, the running pilot lamp, ampere meter and delivery pressure of the pump shall be checked.
- (4) After steady delivery pressure of pump, by adjusting the pressure regulating valve, decreasing gradually the delivery pressure, operation of the pressure switch, automatic starting of No. 2 pump and automatic stopping of No. 1 pump shall be checked. At this time, lightening of the running pilot lamp, ampere meter and delivery pressure of No. 2 pump shall be checked.
- (5) The delivery pressure of No. 1 pump, measured immediately before automatic start of No. 2 pump, shall be checked to correspond with set value of pressure switch.
- (6) By starting No. 2 pump, changing to No. 1 pump shall be carried out in a similar way as above (3) ~ (5).

**4.2.2 Test of Automatic Changing by Power Failure** The test shall be carried out as follows.

- (1) By supplying electric power to No. 1 and No. 2 pumps, lightening of the power supply pilot lamp shall be checked.

- (2) By starting No. 1 pump and changing to automatic control, the running pilot lamp, ampere meter and delivery pressure shall be checked.
- (3) By stopping No. 1 pump with cutting off the power supply, automatic start of No. 2 pump, lightening of the running pilot lamp, ampere meter and delivery pressure of the pump shall be checked.
- (4) By starting No. 2 pump, changing to No. 1 pump shall be carried out in a similar way as above (2), (3).

**4.2.3. Test of Automatic Starting System for Main Engine Driven Lubricating Oil Pump** The test shall be carried out as follows.

- (1) Lubricating oil pressure of main engine shall be higher than set pressure for starting the electric pump.
- (2) By decreasing gradually the delivery pressure of the pump attached to the main engine, or of the test system, operation of the pressure switch and automatic start of the electric pump shall be checked.
- (3) When the electric pump starts automatically, the measured pressure of the lubricating oil at the main engine or at the test system shall be checked to correspond with the set value of the pressure switch.

**4.3 Testing Method of Automatic Temperature Regulating System of Lubricating Oil** The test shall be carried out as follows.

- (1) When the main engine and auxiliary machineries are in operation, lubricating oil temperature shall be checked by thermometer to be within setting value.
- (2) Automatically regulating temperature of the lubricating oil purifying system shall be checked by thermometer to be controlled within designed temperature.

**4.4 Testing Method of the Purifying System of Lubricating Oil** The test shall be carried out as follows.

- (1) The onboard test of centrifugal type purifier shall conform to JIS F 6602.
- (2) Flow of lubricating oil through side flow type strainer or back washing strainer shall be checked by pressure difference measured between their inlet and outlet.

**4.5 Testing method of Low Pressure Alarm System of Lubricating Oil** By reducing the pressure to a set value through adjusting the pressure regulating valve during operation or through adjusting the test system, operation of alarm and lightening of alarm pilot lamp shall be checked.

**4.6 Test Method of Lubricating Oil Level Alarm System** By artificially raising or lowering lubricating oil tank level or by manually moving the float, operation of the float switch and alarm and lightening of alarm pilot lamp shall be checked.

**4.7 Testing Method of Remote Level Indicating System of Lubricating Oil Sump Tank**

**4.7.1 Electric Type** The test shall be carried out as follows.

- (1) By artificially moving the float, levels indicated by remote level indicating system shall be checked.
- (2) Indicated level shall be checked to correspond with actual level within practically allowable difference.

**4.7.2 Air Purging Type** The test shall be carried out as follows.

- (1) Height between purging pipe lower end and tank bottom shall be checked.
- (2) By air purging, indicated level shall be checked to correspond with actual level taking into consideration of specific weight difference of the lubricating oil within practically allowable difference.
- (3) Indicated level difference caused by the lubricating oil specific weight shall be corrected.

#### Reference Standard:

JIS F 6602 — Method of Onboard Test for Oil Purifier of Sludge Automatic Discharge Type for Smaller Ships