



# TECHNO NEWS

MES TECHNOSERVICE CO., LTD.

TECHNICAL DEPARTMENT / DIESEL PRODUCT GROUP

<b>Recommendation for periodical maintenance of Governor and Remote control system (supplementation)</b>		<b>No.071</b>	
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		<b>CHECKED</b>	
		<b>PREPARED</b>	<b>H. Miyake</b>
<b>ENGINE TYPE</b>	<b>BMS2000II, MAG200II</b>	<b>DATE</b>	<b>2010/12/3</b>

As for safe navigation of the vessels, periodical maintenance is important for Governor and remote control system. In this regard, BMS news has been issued from Mitsui Zosen System Research Inc. We hereby inform you of the news, and would recommend maintaining the maneuvering system based on this technical information to aim further safety navigation.

**PRIORITY**

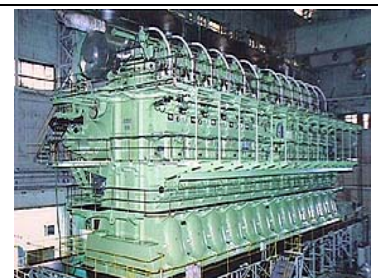
<b>IMMEDIATELY</b> <input type="checkbox"/>	<b>EARLIEST CHANCE</b> <input type="checkbox"/>	<b>DRY DOCK</b> <input type="checkbox"/>
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25 Nov. 2010

**BMS-NEWS NO.010-03**

**Recommendation for the periodic maintenance for the  
BMS and the Governor (supplementation)**

**Target systems**

**Remote control system : BMS-2000II**

**Governor : MAG-200II**

**Main Diesel Engine : MAN B&W DIESEL ENGINE**

We are pleased to inform you that we at Mitsui Zosen Systems Research Inc. started our production and delivery of the Bridge Maneuvering System BMS2000II and the Governor (GOV.) MAG-200II from 2004 and we have since received very positive feedback on their performance.

After a very successful 5 years of production, we would like to announce that the guidance for their periodical maintenances has been amended to recommend you well-planned maintenance.

Recently, the customers have put a premium on the BMS and the GOV. and we would like to ask that you consider making plans for the periodical inspections and maintenances in accordance with the guidance.



## Details of the Maintenance

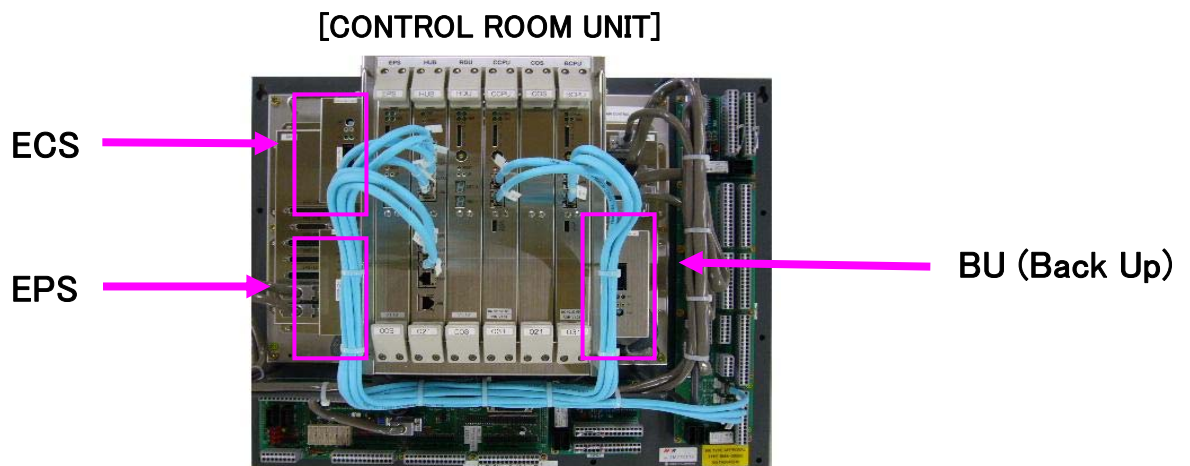
Please refer to the details of each parts replacement stated in the guidance as below:

### 1. CONTROL ROOM UNIT

#### 1) PWR(POWER) UNIT AVR (Automatic Voltage Regulator)

The Power units AVRs for the ECS, BU and EPS systems are installed at the Control Room Unit to supply DC5V power to controlling PCBs in each system.

Each AVR is equipped with an electrolytic capacitor. The capacitor's deterioration could cause unstable power supply to the system and it may result in a system malfunction. The life-cycle of the electrolytic capacitor is approximately 10 years and replacement every 7 or 8 years is recommended.



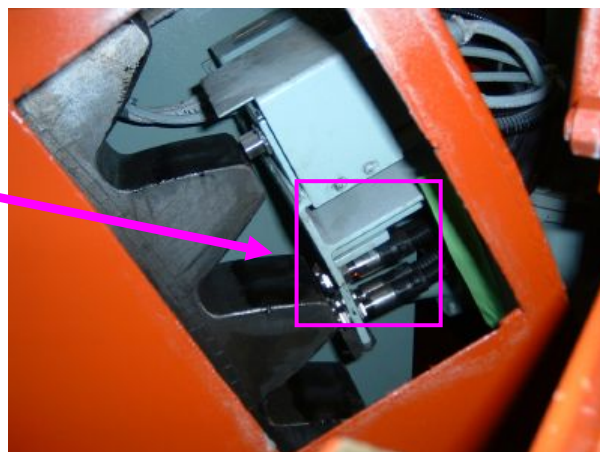
#### 2) PICK-UP SENSOR

A total of four pick-up sensors for detecting the M/E revolution are installed, which are counted as two pairs of pick-up sensors. One pair is used for the control of the BMS and the Governor and the other pair is for the EPS, Engine protecting system. Previously we have issued BMS-NEWs No.005-01 informing that the Age deterioration due to vibration or other factors such as wear may cause the barge-in of the tar constituent which the Flywheel will be tarred with, and it will affect the internal transistor circuit which could lead to the pick-up sensor abnormality, and burrs on the Flywheel teeth could cause damage to the pick-up sensors.

May we remind you to clean the sensor head which grease from the Flywheel could adhere to, and we recommend that you have the sensors replaced every five years.

#### PICK UP SENSOR

Pick-up sensors





### 3) P.C.B. "EGIO"(Contact Relay for Solenoid Valve)

The EGIO PCB is equipped with some replays which send the signal to the solenoid valves in the pneumatic system for remotely controlling the M/E start-up and stop. A malfunction of the replay contacts could result in the M/E start failure and replacement every 10 years is recommended.

### 4) P.C.B."PEIO" (Contact Relay for Solenoid Valve)

The PEIO PCB is equipped with some replays which send the electrical signal to activate the EST solenoid valve for cutting the fuel supply. A malfunction of the replay contacts could result in the M/E stop failure and replacement every 10 years is recommended.

## 2. SPEED CONTROL DIAL (Potentiometer VRC)

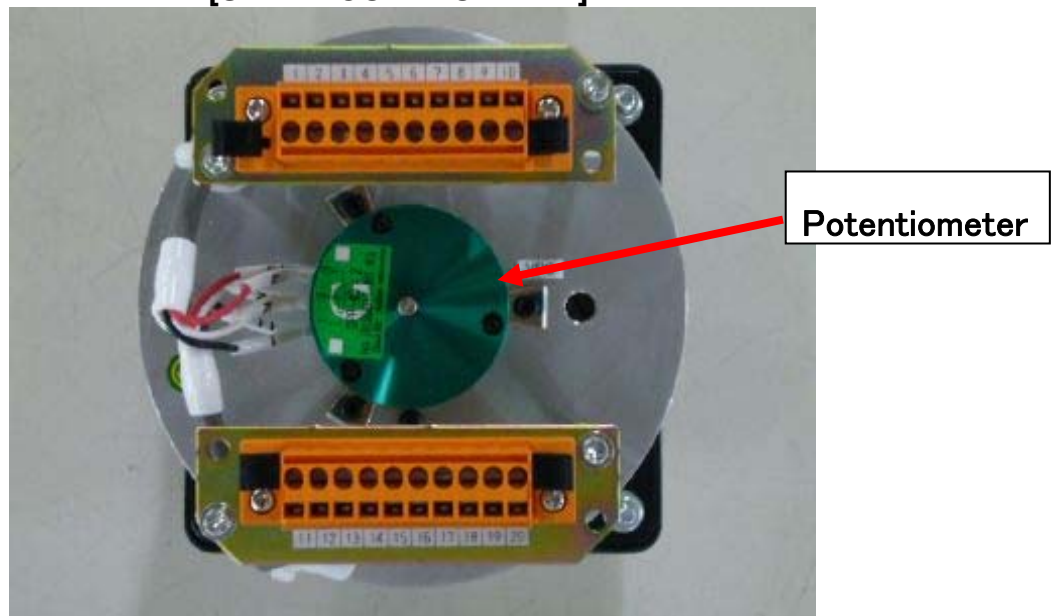
The Potentiometer installed in the Speed control dial sends the electrical signal between 0 and 10V which the M/E command rpm is converted to, and adjusts the M/E rpm.

A malfunction of the Potentiometer could result in the fluctuation of the M/E rpm under the C/R control, a failure of rpm adjustment, the M/E start failure or other serious trouble.

Replacement every 10 years is recommended.

For your information, a different type of potentiometer is applied respectively for BMS2000II and EMS200II.

[SPEED CONTROL DIAL]



## 3. POWER BOX (AVR) \* Optional

The AVR (Auto Voltage Regulator) is installed inside the Power Box to supply the stable controlling power DC24V to the Bridge Maneuvering System. The AVR is equipped with an electrolytic capacitor whose deterioration could cause unstable power supply and system malfunction.

The life-cycle of the electrolytic capacitor is approximately 10 years, and replacement every 7 or 8 years is recommended.

The Power Box is optionally supplied depending on the shipyard specification. Please clarify the shipyard and the ship number when you place an order.

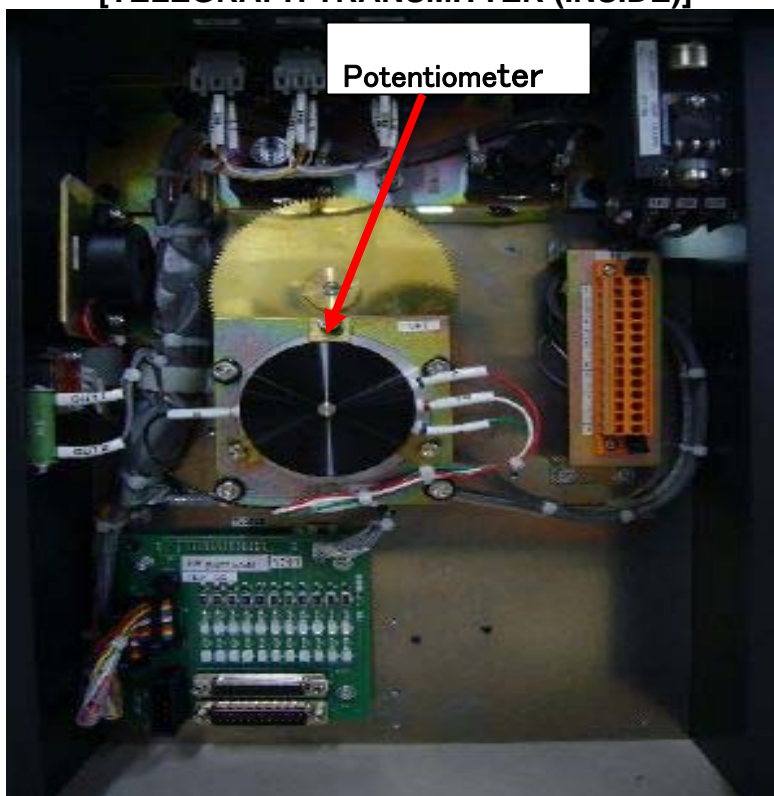


#### 4. TELEGRAPH TRANSMITTER (Potentiometer VRT)

The Potentiometer installed with the Main Telegraph Transmitter sends the electrical signal between plus 10V and minus 10V which the M/E command rpm is converted to, and adjusts the M/E rpm.

Please note that this Potentiometer is equipped only for Main Telegraph Handle type and there are two types depending on the Handle type.

[TELEGRAPH TRANSMITTER (INSIDE)]





## 5. TELEGRAPH LOGGER (AVR)

The AVR (Auto Voltage Regulator) is installed inside the Telegraph Logger and supplies the power to the PCB which controls the Logger. The AVR is equipped with an electrolytic capacitor whose deterioration could cause unstable power supply, printing failure or malfunction of the Logger system.

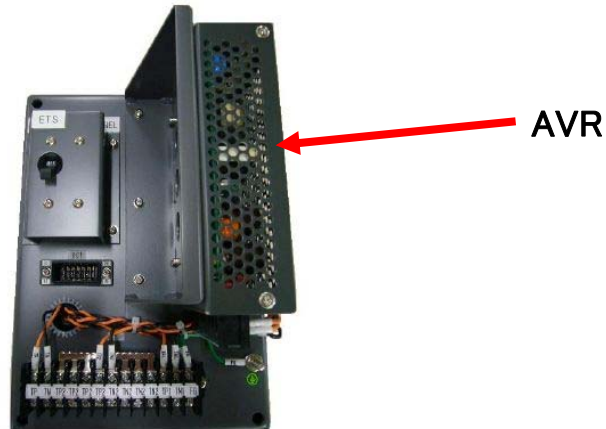
The life-cycle of the electrolytic capacitor is approximately 10 years and periodical maintenance every 7 or 8 years is recommended.

## 6. BRIDGE POWER SWITCH PANEL (AVR)

The AVR (Auto Voltage Regulator) is installed inside the Bridge Power Switch Panel and supplies the power to the controlling PCB of the Telegraph System. The AVR is equipped with an electrolytic capacitor whose deterioration could cause unstable power supply and malfunction of the Telegraph system.

The life-cycle of the electrolytic capacitor is approximately 10 year and periodical maintenance every 7 or 8 years is recommended.

### [BRIDGE POWER SWITCH PANEL]

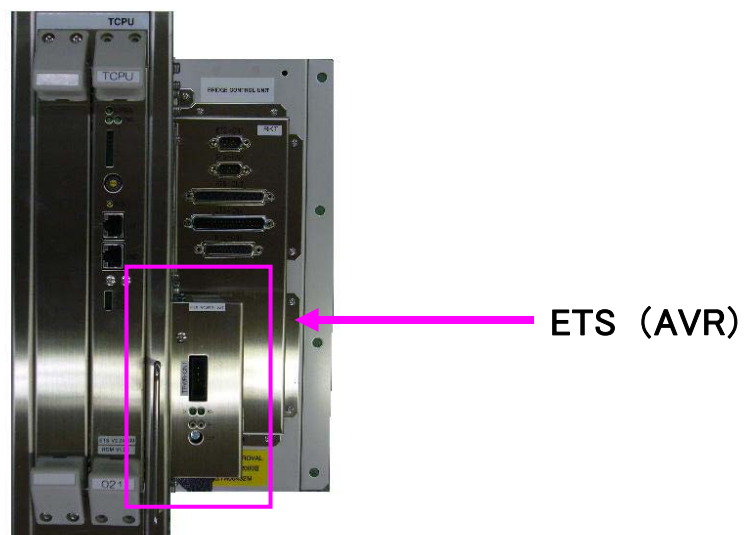


## 7. BRIDGE CONTROL UNIT (AVR)

The AVR (Auto Voltage Regulator) is installed inside the Bridge Control Unit and supplies the power to the PCB which controls the Bridge Maneuvering System. The AVR is equipped with an electrolytic capacitor whose deterioration could cause unstable power supply and a failure of maneuvering.

The life-cycle of the electrolytic capacitor is approximately 10 year and periodical maintenance every 7 or 8 years is recommended.

### [BRIDGE CONTROL UNIT]





## 8. GOVERNOR ACTUATOR (ENGINE SIDE)

### 1) Governor Motor

After a long period of use, the internal parts of the Motor bearing wear and deteriorate, and the grease degrades which could cause damage to the motor shaft and the bearing. It may result in the malfunction of the Governor Motor and replacement every 7 or 8 years is recommended.

For your information, the Governor Motor is sealed-up and no greasing from outside is impossible.

There are four types of the Motors depending on the Main Engine size.

Main Engine	Motor type
~50MC	0.4KW
60MC~70MC	0.8KW
80MC~90MC	2.4KW
98MC~	2.6KW

### 2) Reduction Gear

After a long period of use, the Cyclo-gear wear and deteriorate, and the grease degrades which could cause damage to the Cyclo-gear. Worn gears may cause a backlash which could interfere with the correct control of the Governor. Replacement every 7 or 8 years is recommended simultaneously with the Governor Motor.

There are four types as same as the motor, depending on the Main Engine type.

Main Engine	Reduction Gear type
~50MC	0.4KW
60MC~70MC	0.8KW
80MC~90MC	2.4KW
98MC~	2.6KW

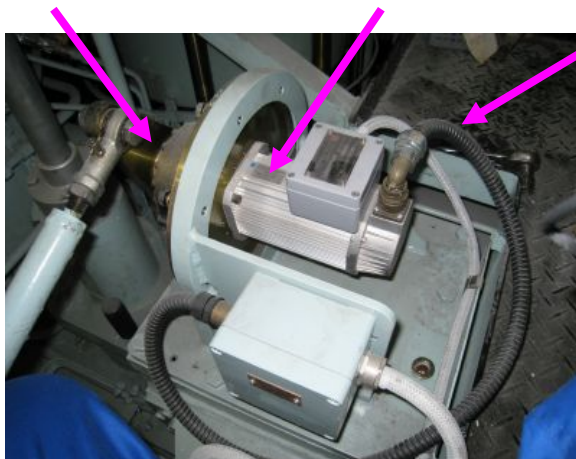
### 3) Resolver cable

The Resolver Cable is connected with the ABS sensor installed in the Governor Motor, and is an important connector cable which informs the Servo Amp. of the Governor position. The governor won't be able to be controlled remotely if disconnection or loose connection of this cable occurs. Replacement every 7 or 8 years is recommended together with the Motor and the Reduction Gear.

Reduction Gear

Governor Motor

Resolver cable



\*The photo is showing the Actuator MOTOR and REDUCTION GEAR for the M/E 50MCC



## 9. SERVO UNIT \* Optional

### 1) COOLING FAN

There are 2 cooling fans installed on the front cover for the servo unit, which keep the unit inside cool. If these cooling fans stop operating, the temperature inside the unit will increase which may cause the malfunction of the servo driver. Replacement every 5 years is recommended.

### 2) AIR FILTER

The Air Filter is attached to the air hatch in the side of the Servo Unit. Cleaning and visual check every 6 months along with a yearly replacement is recommended.

[SERVO UNIT]



COOLING FAN (2PCS)

AIR FILTER (2PCS)

## 10. SERVO DRIVER (SERVO AMP)

### 1) COOLING FAN

The Servo driver for Large Main Engine with the Cylinder dia. 80, 90 or 98 is equipped with cooling fans. A halt of these fans could cause the rise of temperature and in the worst case the Servo Amp could be damaged. Replacement every 5 years is recommended.

### 2) BATTERY CIRCUIT BOARD (BTT-06)

The Servo Driver is equipped with a non-charging type of lithium battery to memorize the Home position of the Governor Actuator Unit. As the lithium battery weakens over time, a loss of the power supply AC220V could cause the loss of the Home position of the Actuator which could, in turn, cause the malfunction of the Governor. Replacement every 5 years is recommended.

[SERVO UNIT]



BATTERY CIRCUIT BOARD



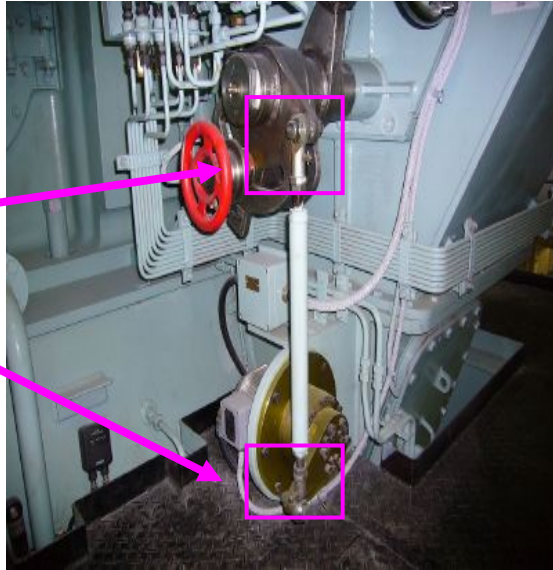


## 11. MAIN ENGINE

### 1) BALL JOINT for F.O Linkage (on GOV)

[ACTUATOR – Change-Over Clutch]

Ball Joint “M”



### 2) BALL JOINT for F.O Linkage (on fuel pump)

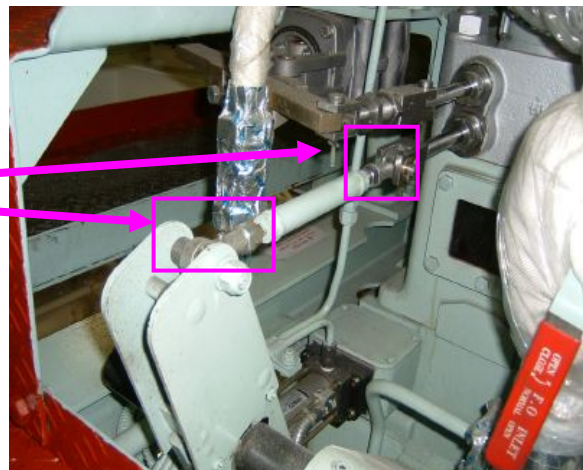
The Ball Joints are installed at the junction rods between the Governor Actuator and the Fuel regulating gear and at the top of the rods between the Fuel regulating gear and Fuel pumps.

After long-term usage, excessive wear of the Ball Joints could cause failure of correctly informing the Governor output which could result in Governor hunting or failure in increase and decrease of the M/E rpm. Please refer to the below recommendation for replacement.

- Ball Joint “M” (between the Governor and the Fuel regulating gear) Every 5 years
- Ball Joint “S” (between the Fuel regulating gear and the Fuel pump) Every 10 years

[PUMP MARK]

Ball Joint “S”

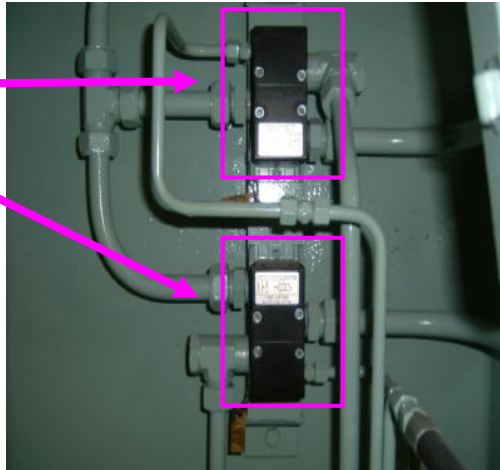




### 3) MECMAN VALVE

The Mecman Valves are pilot valves for activating the M/E starting air controlling pneumatic system. Replacement every 5 years of the complete unit is recommended.

MECMAN VALVE



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