



TECHNO NEWS

MES TECHNOSERVICE CO., LTD.

TECHNICAL DEPARTMENT / DIESEL ENGINE SERVICE DIVISION

Periodical Maintenance of Alpha lubricator system		No.068	
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ENGINE TYPE	Main engines with Alpha lubricator system	DATE	May 18th, 2010
<p>The adoption/retrofitting of the Alpha lubricator system have been taking place since 2002, and to date we have had very positive service experience of the system and cylinder condition.</p> <p>We would now like to inform you of the maintenance guidance for the Alpha lubricator system to maintain optimal function.</p> <p>Therefore, we highly recommend you to inspect / maintain the Alpha lubricator system periodically according to the guide found below, since they are vital to keeping good cylinder condition of the engine in the future.</p> <p>Also, please refer to our Techno news (TN067) regarding the details of up-grade / modification for the Alpha lubricator system, as some new modifications/improvements have been developed.</p>			
PRIORITY			
IMMEDIATELY <input type="checkbox"/>	EARLIEST CHANCE <input type="checkbox"/>	DRY DOCK <input checked="" type="checkbox"/>	

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Maintenance item and schedule

Maintenance item and schedule are proposed according to the following list for safe operation.

	Parts name	Inspection item	Maintenance schedule (years)							
			As required	2.5	5	7.5	10	12.5	15	
1	Alpha Lubricator system	General inspection ^{*1}		○	○	○	○	○	○	
2	Power box	Replacement of UPS					○			
		Replacement of battery ^{*2}	Made by APC	○	○	○	○	○	○	
			Made by PHOENIX		○		○		○	
	Replacement of AVR				○			○		
3	ALCU	Inspection of terminal on main board			○		○		○	
		Replacement of Circuit board	MCU board				○			
			BCU board				○			
SBU board					○					
4	Cylinder lubricator	Replacement of accumulator			○		○		○	
		Replacement of solenoid valve			○		○		○	
		Replacement of motion sensor					○			
		Overhaul of lubricator (replacement of O-ring)					○			
		Replacement of PCB in intermediate box					○			
5	Rotary encoder	Replacement of rotary encoder					○			
		Replacement of oil seal for driving shaft					○			
		Replacement of PCB in intermediate box					○			
6	Pick-up sensor	Replacement of pick-up sensor			○		○		○	
7	Booster pump unit	Clean-up and replacement of oil filter	Ordinary paper filter		○	○	○	○	○	○
			Gauze wire type	○						
		Maintenance of gear pump			○		○		○	
		Inspect and replacement of coupling spider ^{*3}		○	○	○	○	○	○	
		Replacement of pump motor bearing					○			
8	Radiator	Clean-up the radiator fin	○							
		Replacement of fan motor bearing					○			

***1: Please refer to the next section about the work scope.**

***2: The maintenance period of UPS battery differs depending on each UPS maker.**

***3: To be applied only for booster pump unit equipped with coupling spider.**

Maintenance details

We would like to introduce the maintenance details mentioned in the “Maintenance item and schedule” as below.

1. Alpha Lubricator system

A) General inspection

We recommend carrying out the following inspection by our service engineer every 2.5 years to confirm the reliability / function / performance of the Alpha lubricator system.

And, our service engineer can also judge by port inspection if present cylinder oil dosage is acceptable or not.

- | | |
|---|---|
| 1) Alarm list check and inspection | 5) Pick-up and Encoder check (include timing check) |
| 2) System functional test | 6) Load transmitter check |
| 3) Parameter check | 7) Port Inspection |
| 4) Booster Pump unit check (including filter check) | |

2. Power box

A) Battery

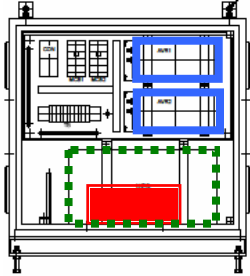
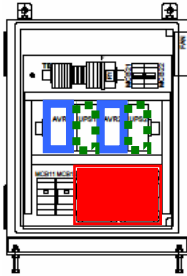
The maintenance period and procedure of battery differs depending on battery maker APC or PHOENIX.

The replacement period is influenced depending on surrounding temperature condition. If the battery is continuously used more than the recommended replacement period, the recharging efficiency of the battery will be reduced. In the worst case, there is a possibility that electric power will not be supplied in an emergency situation, and the alpha system can not be operated in order.

B) AVR (Automatic Voltage Regulator) and UPS (Uninterruptible Power Supply)

The maintenance period of AVR and UPS are different depending on each maker.

After the replacement, supply power, and please check the condition of HMI panel is normally working without any alarms.

	Made by APC / DENSEI	Made by PHOENIX	
Drawings			<div style="display: flex; flex-direction: column; align-items: center;"> <div style="display: flex; align-items: center; margin-bottom: 5px;"> AVR </div> <div style="display: flex; align-items: center; margin-bottom: 5px;"> Battery </div> <div style="display: flex; align-items: center;"> UPS </div> </div>
Battery	2.5 years	5 years	
AVR	7.5 years		
UPS	10 years		

3. Cylinder lubricator

A) Accumulator of cylinder lubricator

The standard type of accumulators was changed at certain time from the rechargeable type to complete sealed type for easy maintenance.

Depending on the surrounding temperature, the inner rubber (bladder) of the accumulator will deteriorate with age, and it will cause internal gas pressure decrease, thus impair the function of cylinder lubricator. Therefore, we recommend that both types of accumulator should be replaced with new ones every five years.



<Rechargeable type>



<Complete sealed type>

B) Solenoid valve of cylinder lubricator

The Alpha lubricator will malfunction because of the solenoid valves activation delay or poor oil seal condition, which is caused by sticking of internal spools or the wear of seat.

Thus, the solenoid valve is recommended to be replaced with new one every five years.

4. Rotary encoder

A) Rotary encoder

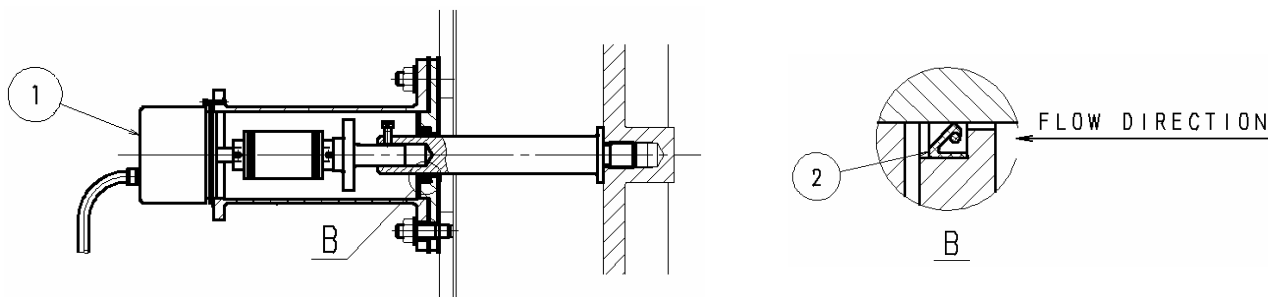
We recommend replacing the rotary encoder with a new one every ten years because of the aged deterioration of electronic elements in rotary encoder.

When replacing the rotary encoder, please note that it is necessary to carry out the timing adjustment. (Regarding the adjustment of the rotary encoder, please refer to Instruction 「Maintenance」 905-8 Angle encoder).

B) Oil seal on the driving shaft

On latest engines, the oil seal on the driving shaft is applied to prevent the oil leakage from end cover of crankcase to the rotary encoder housing as shown in the below drawing. We recommend replacing the oil seal with a new one every ten years.

For the engine which is not equipped with the oil seal, it is possible to prevent oil leakage problem by adopting the oil seal.



① Rotary encoder

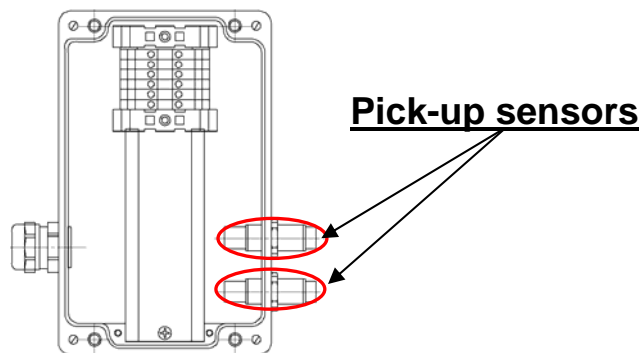
② Oil seal on the driving shaft

5. Pick-up sensor

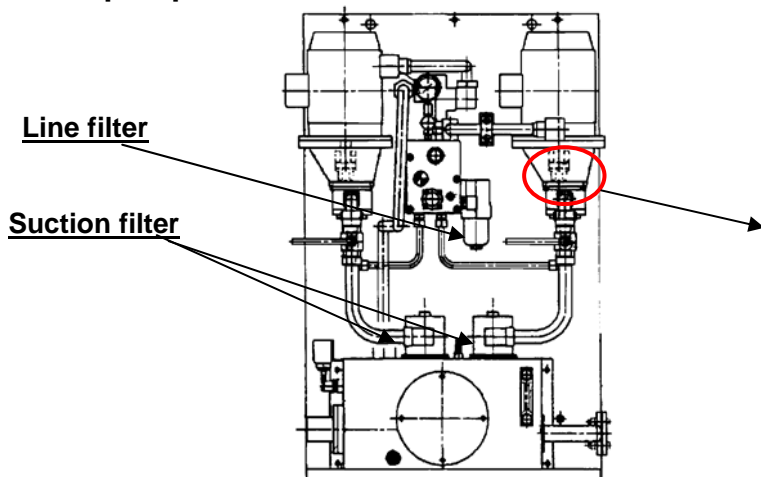
As a back-up trigger system for the rotary encoder, two tacho pick-up sensors are installed closely to the flywheel. If these sensors are dirty and deteriorated with age, rotary encoder's trigger signal will not be monitored by pick-up sensor and lose its back-up, thus BCU control will malfunction when MCU control has failed.

Therefore, we recommend replacing the pick-up sensors with new ones every five years.

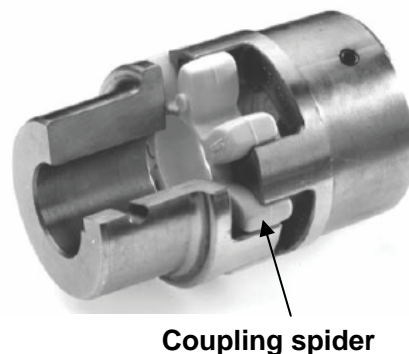
(Regarding adjustment of the pick-up sensors, please refer to the Instruction 「Maintenance」 905-7 Tacho pick-up).



6. Booster pump unit



Booster pump unit with gear coupling type



Coupling spider

A) Filter of booster pump

Two suction filters and one line filter are installed on booster pump. Please check and monitor the condition of each filter periodically about clogging and dirt condition of the filters by differential pressure indicator etc., and carry out the clean-up in accordance with maker's instruction.

If the filter condition does not improve even after cleaning, we recommend replacing them with new ones.

B) Maintenance of hydraulic pump

Replacement parts and procedure of the pumps differs depending on the maker of booster pump. However, we recommend overhauling the pump every five years to prevent the deterioration of pump performance / efficiency caused by oil leakage from the housing and sealing.

C) Replacement of the coupling spider

The coupling spider is fitted in the gear coupling between the motor and gear pump depending on each booster pump maker.

We recommend inspecting and replacing with new one every 2.5 years to prevent the damage of coupling due to the aged deterioration of the coupling spider, caused by the start and stop of the pump motor.

D) Replacement of the motor bearing

We recommend replacing the motor bearing with new one every ten years, taking the wear of the internal bearing into consideration by long time running.

7. Radiator

Please inspect the condition of the radiator fin, and carry out the clean-up if required.

We recommend replacing the motor bearing of the radiator fan with new one every ten years as same as the motor bearing on the booster pump.

Please contact MES Technoservice Co., Ltd. to place your order or inquiry regarding the maintenance of the Alpha lubricator system including the necessity of service engineer attendance.