

# Service News

At this time, we would like to explain misfire.



## Misfire

### 【Miss Fire】

Misfire (no fire, no ignition) is one of the troubles when we use boiler, waste oil incinerator. Moreover, this is the important problem because the essential purpose of the boiler, waste oil incinerator cannot be executed unless this problem is solved

### 【Ignition】

First of all, we would like to explain the ignition mechanism of Miura boiler, waste oil incinerator before giving the cause of misfire.

#### (1) Fuel Oil

After passing the impurities in A.F.O (C.F.O) supplied from the tank through a filter, A.F.O (C.F.O) is supplied into the oil pump. After increasing the oil pressure with the oil pump, the oil is atomized and sprayed from the nozzle tip at the tip of the burner by operating the solenoid valve.

#### (2) Air Supply and Discharge

The air is sent into the combustion room with the fan and discharged from the chimney. For some models, the wind volume at ignition is adjusted with the damper to increase the ignition performance. For waste oil incinerator, the air is supplied and discharged with the ejector under negative pressure in the combustion room.

#### (3) Ignition System,

High voltage produced by a ignition transformer is conducted to the ignition code - plug cap in due order, and then ignite by spark at the tip of the spark rod.

#### (4) Detecting Device

The flame is detected with the flame eye (CDS cell).

### 【Cause of Misfire】

Some troubles with the ignition mechanism gives rise to the cause of misfire. Therefore, the troubles are classified as below;

1. Fuel System Trouble
2. Air Supply and Discharge Trouble

3. Ignition System Trouble
4. Detecting Device Trouble
5. Control Equipment Trouble

We would like to explain 1-4 because the above mentioned 5 is depending on the model.

## 【1. Fuel Oil System】

### \*Nozzle Tip

The nozzle tip turns the oil sent in high pressure by the distributor in the tip, atomizes and sprays the oil from the tip of the tip. Clean the small groove in the distributor periodically because the oil is not sprayed normally if the sludge is accumulated in the groove. At this time, keep from cleaning the distributor with the wire brush. If the distributor is injured or the groove is deformed, the combustion inferior may be caused. Clean the distributor with the nylon brush after soaking it in oil.

### \*Solenoid Valve

Note that do not splash water and oil on the coil during the burner maintenance and each working around the burner to prevent the destruction by air. Carry out the boiler overhaul and maintenance periodically, and replace the valve immediately if the valve body has flaw. Clean the strainer mesh equipped with the MSD type solenoid valve used for the pilot burner usually.

### \*Oil Pump

Note that the oil pump capacity may decline under the condition of the gradual pressure decreasing, or pressure decreasing even after the pressure adjustment. (The misfire may be caused if the regular oil pressure is ensured.) Clean the FGS・GFH type oil pump periodically, because FGS・GFH type has a strainer in the oil pump cover.

### \*Strainer

Clean the strainer diligently. The strainer clogging may cause not only misfire, but also early damage of the nozzle tip, solenoid valve and oil pump.

## 【2. Air Supply and Discharge System】

### \*Blower

In case of the control box equipped with the blower ammeter, check the current value at ignition. This is the standard at checking whether the wind volume is proper or not at misfire.

### \*Damper

Check the no damage on the coupling which connects the damper to the torque motor. Moreover, check the damper opening and operation at ignition. This is the standard of the wind volume.

### \*Combustion room

At dock, check the combustion room. In case of the soot adhesion, carry out the cleaning.

### \*\*Caution for HV (Hot Water Boiler)

For HV also, carry out the water washing, cleaning in the combustion room. If the soot adheres

to the space among the water tubes, it is difficult to remove the soot by cleaning. Clean the space among the water tubes with the tools such as the thin and soft spatula. Moreover, removing the outside casing and cleaning from the water tube outside is necessary if the soot adhesion is serious.

**\*\*Caution for VWS•VWH•VWN (Steam Boiler)**

Overhaul the wind box and carry out the cleaning. At this time, clean not only the water tube surface in the combustion room, but also from the combustion gas outlet (see the outside water tube from the combustion room) to the combustion gas flue pipes at the space between the inside and outside water tubes with the high pressure cleaner. In case of serious soot adhesion, overhaul the chimney stand and carry out the cleaning from the chimney stand.

**\*\*Caution for HTB (Thermal Oil Boiler)**

Overhaul the wind box and carry out the cleaning. At this time, overhaul the cleaning hole around the wind box and clean the boiler inside. This is depending on the boiler model, the boiler normally has 6-8 parts of the cleaning hole.

**\*\*Caution for Waste Oil Incinerator**

The waste oil incinerator is equipped with the ejector in the chimney. If the unburned cloths, vinyl, and sludge adhere to the ejector, the pressure in the combustion room may be not negative.

### **【3. Ignition System】**

**\*Ignition Rod**

Using makes the tip of the ignition rod is round gradually. Then, there are some differences in the tip dimension and the normal spark cannot be carried out. Shave the tip with the file and adjust the dimension. Moreover, crack and carbon sludge adheres to the insulator cause the leak.

**\*Plug Cap•Ignition Cord**

Crack of the plug cap and ignition cord causes the leak. Replace the inferior parts immediately. Moreover, the spark cannot be carried out if the ignition cord and plug cap cannot be connected tightly.

**\*Ignition Transformer**

Do not splash water and oil on the parts during burner maintenance or the other working. Moreover, capacity decreasing causes the spark capacity decreasing. Then, replace the ignition transformer.

### **【4.Sensor】**

**\*Flame Eye (CdS Cell)**

Check the flame from the sight glass equipped with the burner for Miura equipment. If the misfire alarm sounds to warn you even if the flame is confirmed, the flame eye (CdS cell ) may be bad. Moreover, note that CdS cell is not abnormal, then the sensor performance decreasing may be caused by dirt around the installation place (especially dirt of the glass on the lower insert hole).

【Final】

Misfire is caused by the parts operation error, dirt•clogging on the each place by the deterioration year by year. Almost of them can be prevented by the daily maintenance and parts replacement, therefore, carry out maintenance after reading the instructions thoroughly.

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