YANMAR SERVICE NEWS

Subject	MET18 Turbocharger LO Leakage	No.: 16-2-G-08-012-O Aug. 2016

Engine Model	6EY18(A)L(W)	Use	Marine Aux. Engines, Industrial
		Engine Nos.	

In the 6EY18 engines, LO leaked from the joint face of the MET18 turbocharger exhaust casing and the center cartridge.

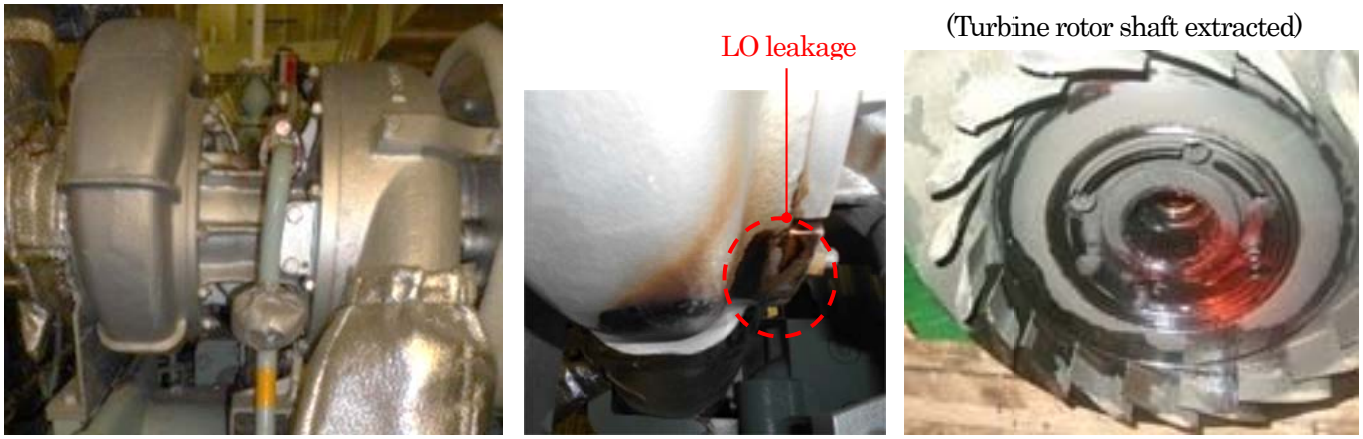


Photo 1. LO Leakage

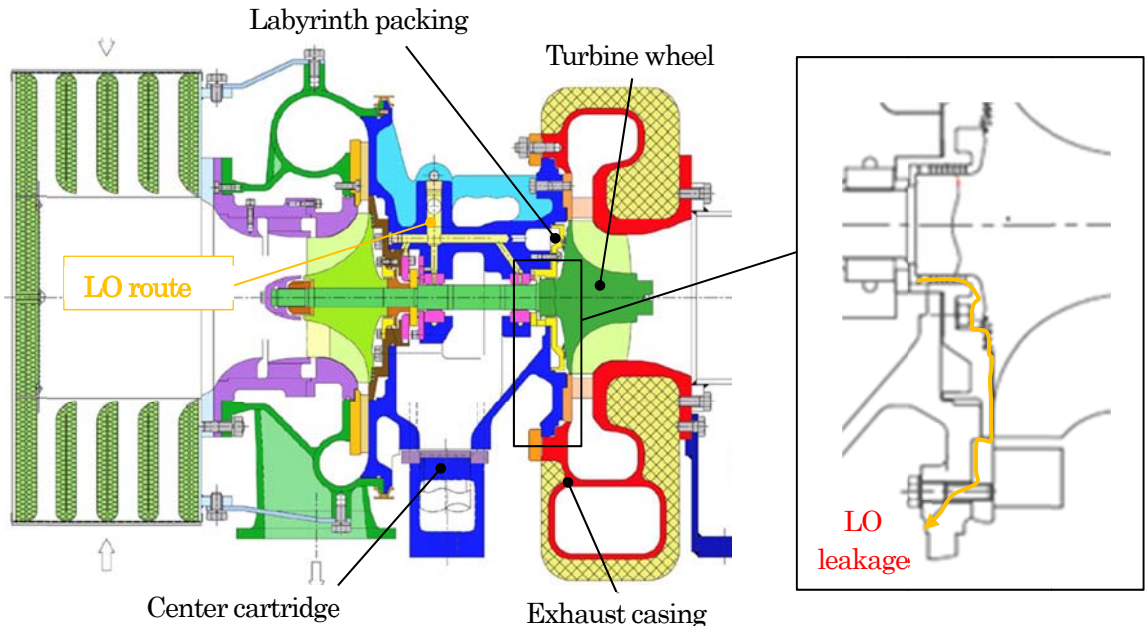


Fig.1 MET18 Turbocharger Section

ヤンマー株式会社 エンジン事業本部 特機エンジン統括部 品質保証部	YANMAR CO.,LTD. Power Solution Business Large Power Products Management Division Quality Assurance Division	Approved	Checked	Prepared

Upon inspection, we found that lube oil leaked from the turbine-side rotor shaft seal,(labyrinth packing).

Photo 2. Interior of Turbocharger

We checked that the labyrinth packing LO return hole was clogged with carbonized lube oil. This caused lube oil to be trapped inside and to overflow from the labyrinth groove.

We noted that lube oil seemed to have leaked more heavily downward. This suggests that lube oil continued to leak while the engine was being stopped, too. This is because of the draft effect of the exhaust pipe of the engine being stopped.

The background of these factors are as follows:

1.Clogging of Labyrinth Packing LO Return Hole

We checked that the labyrinth packing LO return hole was clogged with carbide in a very short time. This suggests that the sealing performance had lowered already. In usual cases, carbide would deposit and accumulate in this LO return hole according to time. It is necessary to remove carbide and clean the hole on a periodic overhaul timing, (every 2~3 years or every 8000 ~ 12000 hrs.)

The contributing factors for the LO return hole clogging in a short time are as follows:

① Insufficient Engine Cooling

In the case of insufficient engine cooling, following steps must be implemented as instructed in the operation manual. Check the status quo and implement the followings if necessary:

- Preparing for stopping the engine, interrupt the load and operate the engine at no load for about 10 minutes.
- Immediately after stopping the engine, operate the LO standby pump or electric LO priming pump for over 15 minutes.

② Improper LO Property

It is generally known that water content and pentane insoluble content in LO influence carbonization of LO. LO needs to be controlled to satisfy the control standard as instructed in the operation manual. Check the present status and use LO with appropriate properties if necessary.

Photo 3. Clogging of Labyrinth Packing LO Return Hole

2. Draft Effect after Stopping the Engine

As you will find in Photo 2, LO leaked downward. This suggests that LO continued to leak while the engine was being stopped, too. This tends to be caused when the engine was stopped and the pressure inside the exhaust pipe turned to negative pressure due to draft effect.

Mitsubishi Heavy Industries Marine Machinery & Engine Company, the manufacturer, as a result of examining the status above, has changed the design of the labyrinth packing: In order to prevent the sealing performance from lowering and to maintain the sealing capacity longer, the seal air hole was added to the labyrinth packing for sealing by pressurized air. (Applicable Engine No.7719～)

In this relation, if LO leaked in your turbocharger in a very short time, we recommend the improved labyrinth packing for your use.

Table 1. Part Number of Labyrinth Packing with Seal Air Hole

Part No.	Engine Model	Remarks
146623-19310	6EY18(A)L	Turbocharger Serial No.90000～
146623-19300		Turbocharger Serial No.80000～89999
146621-19310	6EY18AL(W)	Turbocharger Specs. “S” at the end for ID e.g. : FU1K23DCW111KJ35MS
146621-19300		Turbocharger Specs. No “S” at the end e.g. : FU1K23DCW111KJ35M

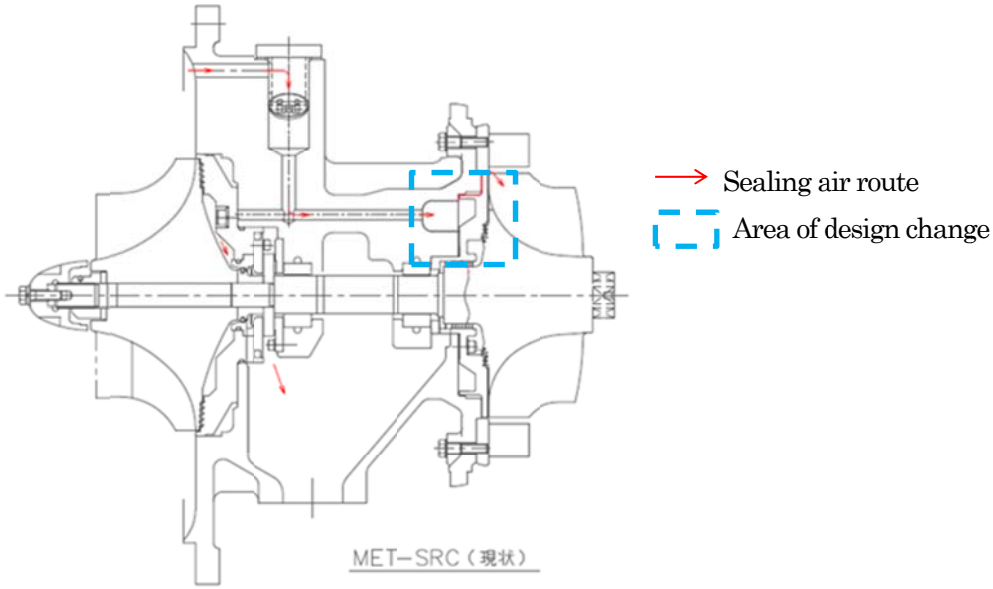
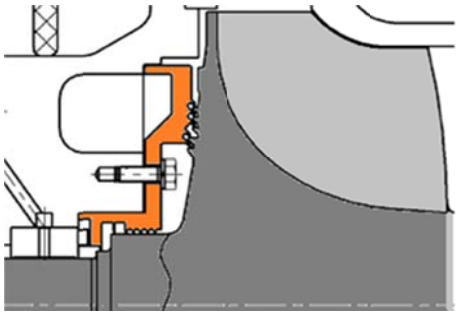
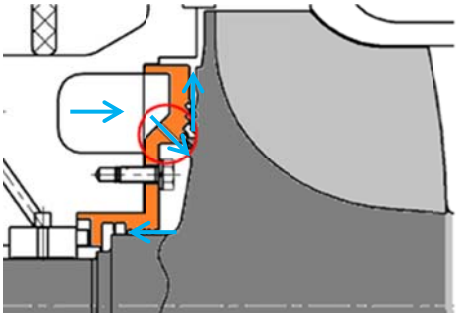


Fig.2 Sealing Air Route of MET18Turbocharger

Table.　Content of Labyrinth Packing Design Change

	Conventional type	Improved type
Design Change		 In order to improve sealing performance during operation, the seal air hole was added so that the air pressurized by ventilation while the engine is being stopped flowing to the labyrinth prevents generation of negative pressure.
Discrimination		 Addition of sealing air holes (4 positions)