

MITSUI SERVICE NOTE



MITSUI ENGINEERING & SHIPBUILDING CO., LTD.
DIESEL TECHNICAL INVESTIGATION GROUP.

for MITSUI—MAN B & W engines, Slide type fuel valve atomizer		NO.170	
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		ASSIST CHIEF	M. Kotake
		STAFF	
ENGINE TYPE	All engine types	DATE	2009-08-07

The slide type fuel valve was introduced on K90MC in 2000. Currently, the slide type fuel valve is applied on the large bore engines as standard and the small bore engines as an option.

Since the atomizer of slide type fuel valve requires the heat / corrosion resistance and the fatigue resistance, the heat resistance Ni-alloy material (mono-HIP type) was applied to the atomizer.

However, as a very rare case, we have experienced the breakage of atomizer.

Recently, we have developed the new type atomizer (HIP-compound type) as the purpose to increase the fatigue resistance.

In this connection, we inform you of the caution in use of atomizer for slide type fuel valve and the details of new type (HIP-compound type) atomizer in this SERVICE NOTE.

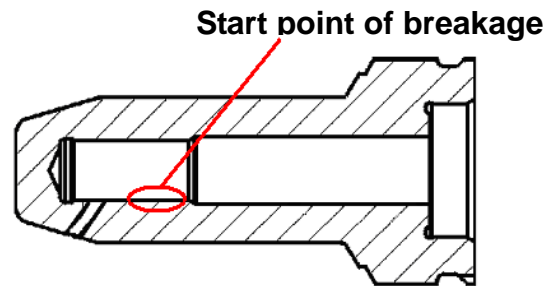
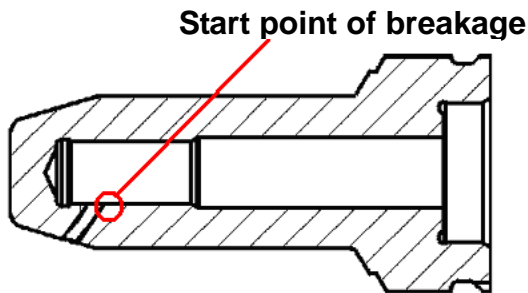
1. Breakage of atomizer

1) Damaged condition

We have experienced two kinds of the breakage trouble of atomizer for slide type fuel valve as shown in the sketch below.

a) Breakage which was originated from the corner of injection hole.

b) Breakage which was originated from the sliding surface.



2) Cause of breakage

a) Breakage which was originated from the corner of injection hole

Lifetime of conventional type atomizer is 8,000 hours, if exceeds this, the atomizer is to be replaced with new one.

However, the broken atomizer has been used over than 8,000 hours operation.

b) Breakage which was originated from the sliding surface

Our investigation revealed that the breakage was caused by scratch on the sliding surface which was most probably happened during the maintenance of atomizer or due to the seizure at the pressure test.

2. Caution at the maintenance and pressure test for slide type fuel valve

1) Lifetime of conventional type (mono HIP type) atomizer

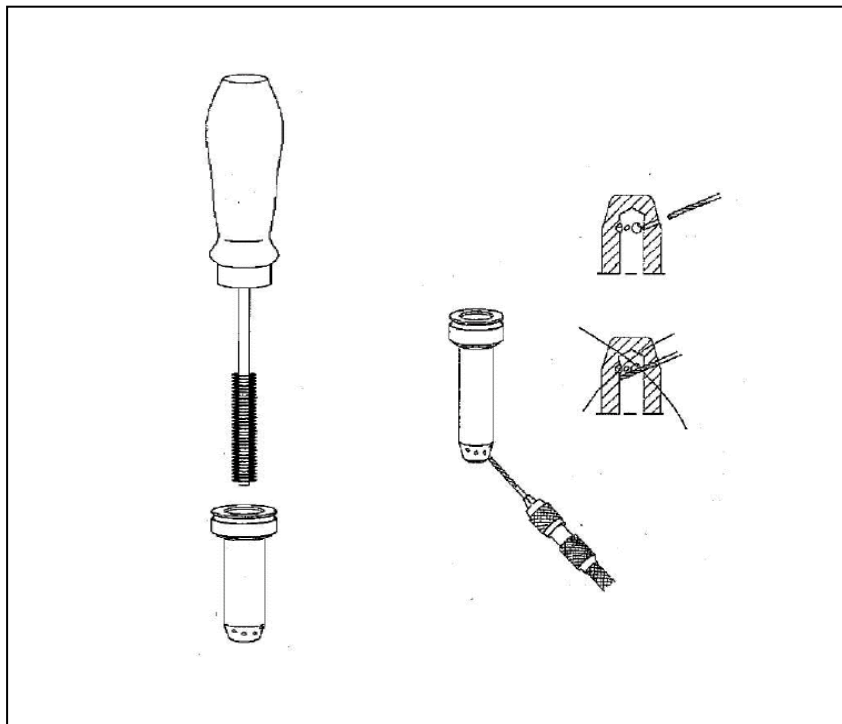
Lifetime of atomizer is 8,000 hours.

In order to maintain the good function and prevent the damage, the atomizer is to be replaced with new one at 8,000 hours.

2) Special attention during the maintenance of atomizer

During the cleaning of atomizer, we would like to call your attention to the following.

- i. Sliding surface (central bore) of atomizer should be cleaned by special brass brush to avoid scratching on the sliding surface.
- ii. Spray holes should be cleaned by gas oil and special drill supplied. During this operation, be very careful not to push the drill too far to avoid scratching on the sliding surface (central bore).



3) Special attention during the pressure test

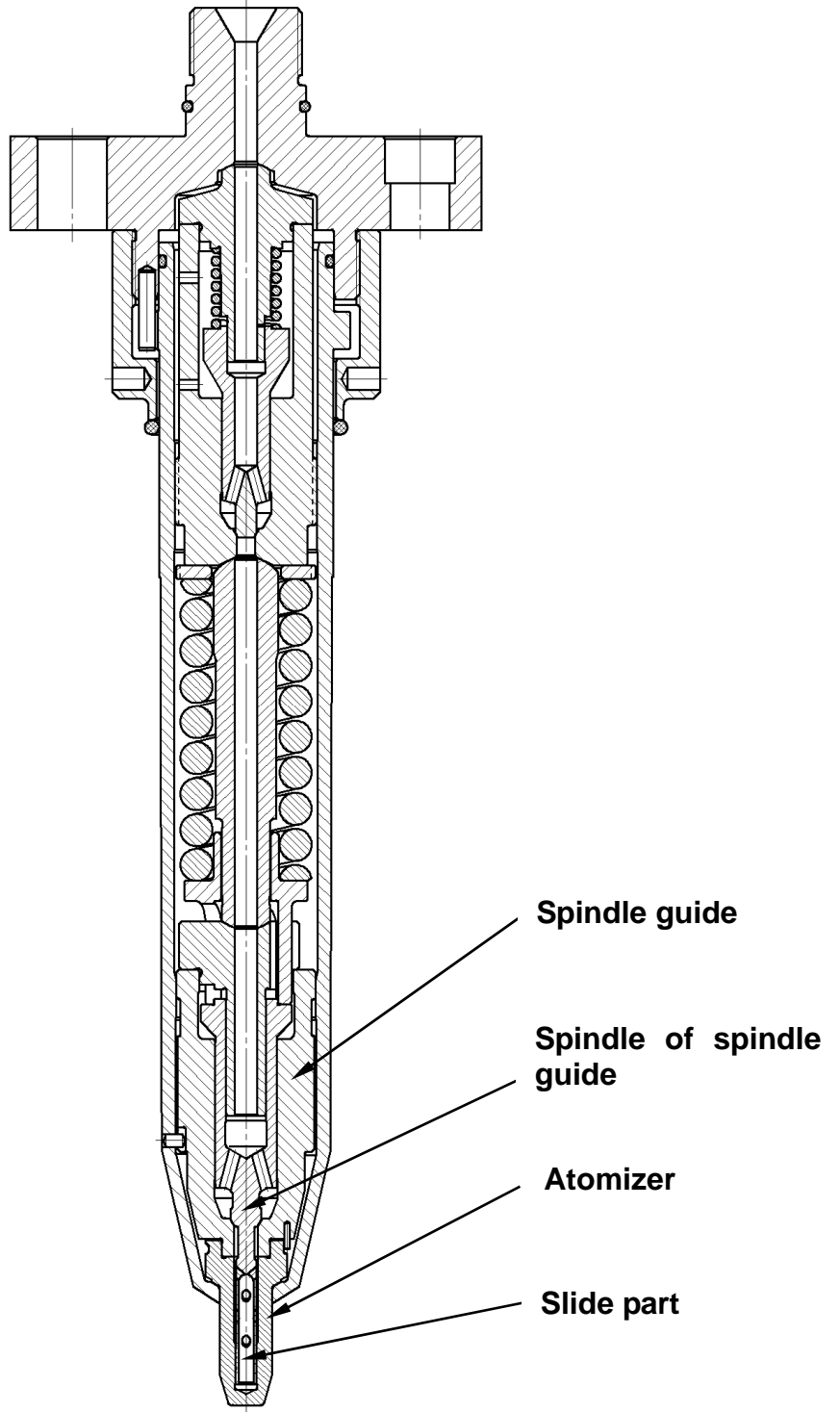
Atomization test may lead to damage (seizure) at the sliding part of spindle guide and atomizer because it makes the spindle oscillate, with a small lift and a very high frequency due to a rapid oil pressure drop at atomization. Accordingly, do not attempt to carry out the atomization test.

If the injection test is executed with the operation air pressure over the value mentioned below, it becomes an atomization test.

+ On a vessel equipped with “NIT156” type pressure test stand :
Above 0.4MPa(4.0bar)

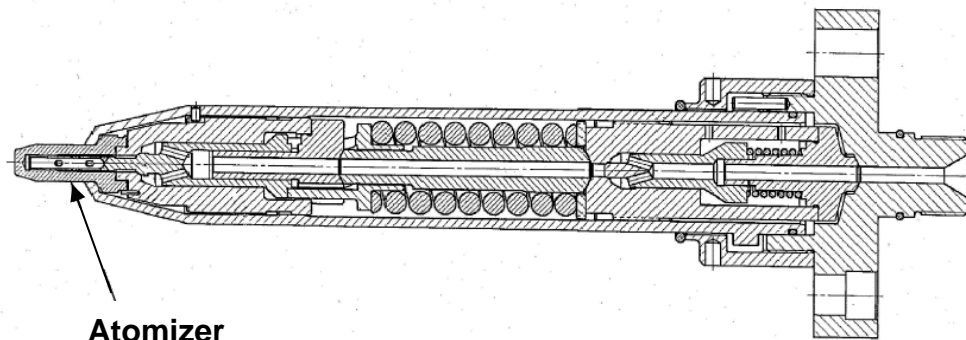
+ On a vessel equipped with “NIT678” type pressure test stand :
Above 0.6Mpa(6.0bar)

Slide type fuel valve

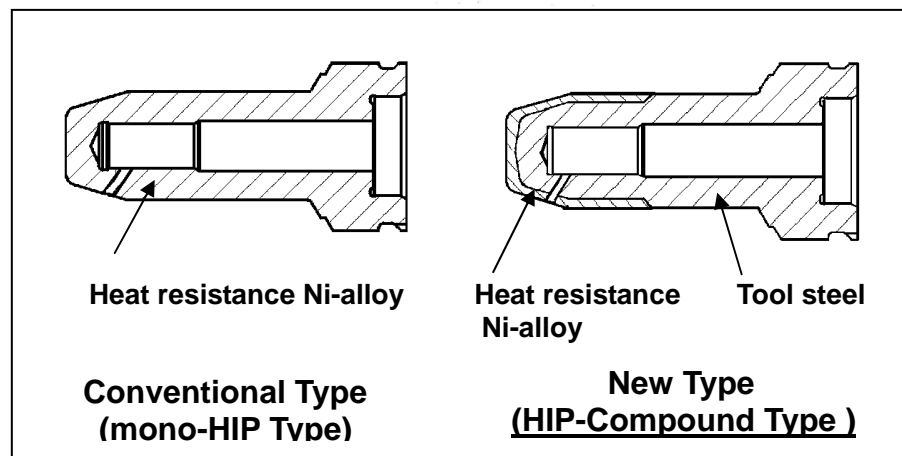


3. New type (HIP compound type) atomizer

As the purpose to increase the fatigue resistance, the HIP compound type atomizer, which is made by very strong tool steel with covered by high temperature resistant Ni-alloy, has been developed.



Atomizer



4. Lifetime of HIP compound type atomizer

It is possible to extend the lifetime of HIP-compound type atomizer from 8,000 hours to 16,000 hours, since the fatigue resistance is improved.

However, the condition of burning at the tip of atomizer is influenced by the operating condition and the property of used fuel oil, etc., and the lifetime of atomizer should be judged by the actual condition of burning.

The TBO (time between overhaul) for the slide type fuel valve is 8,000 hours, at which time the condition of atomizer for burning should be carefully inspected. The time for replacement of HIP-compound type atomizer can be extended to 16,000 hours if the clear sign of burning is not observed at 8,000 hours.

If any sign of burning is observed on the atomizer at 8,000 operating hours, please contact to any offices of MES TECHNOSERVICE, in order to judge if the atomizer can be further used till 16,000 hours.


5. Method of distinction between conventional type (mono-HIP type) and new type (HIP-compound type) atomizer

There is a difference of the designation number between the conventional type and the new type atomizer.

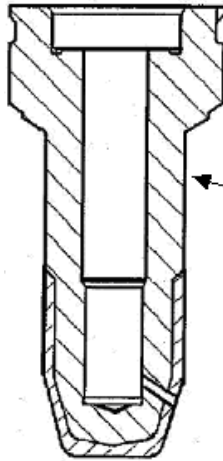
So, it can be judged by the designation number as mentioned below.

(Example of the designation number)

+ Conventional type (mono-HIP Type) :  K90MC-C O-94 1031

+ New type (HIP-Compound Type) :  K90MC-C O-94 1031 C

“C” is added for
HIP-compound type



Designation number is stamped around this area.

Production number is stamped on atomizer manufactured after 2009.

Moreover, the type of atomizer can be judged by magnet, because the mono-HIP type is made by non-magnetized material but the core part of HIP compound type is made by the magnetized material (tool steel).

For any questions and purchase order for HIP-compound type atomizer, please contact to the below-mentioned MES TECHNOSERVICE CO., LTD.

MES TECHNOSERVICE CO., LTD. Head Office (Tamano)
TEL No. : +81 863 23 2581
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MES TECHNOSERVICE CO., LTD. Tokyo Office
TEL No. : +81 3 5626 7268
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MES TECHNOSERVICE CO., LTD. Kobe Office
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FAX No. : +81 78 331 5062

MES TECHNOSERVICE CO., LTD. Nagoya Office
TEL No. : +81 52 654 9461
FAX No. : +81 52 654 8381

MITSUZOSEN TECHNOSERVICE SINGAPORE PTE. LTD. (MTS)
TEL No. : +65 6777 1677
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TEL No. : +852 2610 1282
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