Improved Performance by Changing to HJ Non-Return Injection Valves

FOR INFORMATION

RELEVANT TO: All operators without HJ SIP valves:
Cylinder oil injection valves of good design, quality and condition are key to utilizing the full potential of the cylinder lubrication system.

Challenge:
The total lubrication system contains both lubricators and injection valves working in unison. Both components serve a specific purpose to ensure good cylinder lubrication and to reach a low cylinder oil consumption. To achieve this, attention must be paid to both of these essential components. The whole system is only as good as its weakest part and injection valves are often overlooked when considering the lubrication system.

Solution:
This Service Letter describes the benefits of the HJ non-return injection valves compared to standard non-return injection valve. With HJ non-return injection valves optimum design and quality is ensured. Replacing the injection valves also ensures new valves in optimum operating condition. All this allows the user to get more value from their cylinder lubrication system.

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Hans Jensen Lubricators A/S
Head Office
Smedevaenget 1-3
DK-9560 Hadsund
Denmark
Tel: +45 9857 1911

Hans Jensen Lubricators
China
DI Asia Base Business Services Ltd.
3/F, #139 Ruijin Rd.(No.1)
Shanghai 200020, China
Tel: +86 21 6289 6661

Hans Jensen Lubricators
Singapore Pte. Ltd.
15 Jalan Kilang Barat
Frontech Centre 06-07
Singapore 159357
Tel: +65 6274 1911

hjl@hjlubri.dk, service@hjlubri.dk, technicalsupport@hjlubri.dk
www.hjlubri.com, www.360.hjlubri.dk

1 Introduction

The injection valves serve to transport the cylinder oil through the liner and into the piston ring pack. In the case that the Hans Jensen's Swirl Injection Principle (HJ SIP) technology is used, the oil is also distributed onto the liner wall. In Figure 2 an overview of how well the different valves distribute the cylinder oil is shown. The design, quality and condition of the injection valves determine the effectiveness of the valves and thereby their ability to distribute the cylinder oil satisfactory. This distribution is important to ensure a good cylinder condition and the possibility to minimise the cylinder oil consumption. The HJ non-return injection valves do not require any machining of the cylinder liner and are a drop-in replacements to the existing valves.

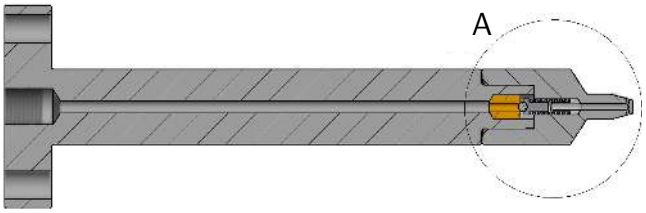

Figure 1: The HJ non-return injection valve.

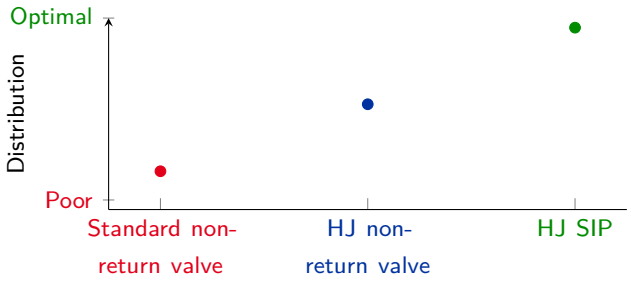

Figure 2: Cylinder oil injection valve types overview.

2 The HJ non-return injection valve

Apart from the excellent production quality of all HJ products, there a three areas where the HJ design provides a better solution: The dead volume between the non-return valve and the nozzle, the nozzle diameter and the opening pressure. The following paragraphs will go into details regarding these areas.

Dead volume The dead volume after the non-return valve is minimised in the HJ non-return injection valve. When the cylinder oil passes the non-return valve it is exposed to the gasses in the cylinder and starts to degrade, even before coming into contact with the liner and piston rings. Minimising this volume ensures that the cylinder oil is as fresh as possible, when it is introduced to the engine components.

Nozzle diameter The nozzle diameter in the HJ non-return valve is smaller. This results in faster oil flow through the nozzle, ensuring the oil does not simply run down the liner wall below the valve, but is actually delivered into the piston ring pack during injection.

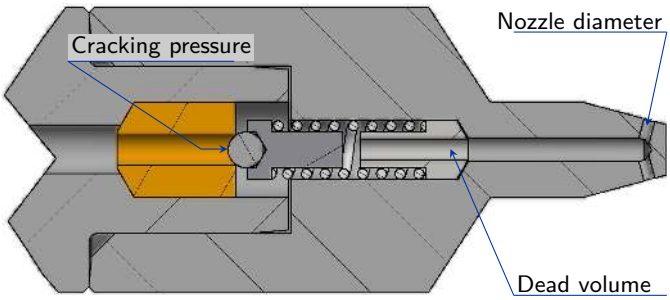

Figure 3: Detail A of Figure 1, showing the nozzle.

Opening pressure The cracking pressure of the non-return valve in the nozzle is increased. This means a higher opening pressure of the valve and ensures a stiffer hydraulic system, which allow more precise timing and faster oil flow through the nozzle during valve activation.

General maintenance Finally, the valves already installed, may be worn to a degree that they do not function optimally anymore. All essential components should be regularly maintained or replaced. This includes the cylinder oil injection valves. The installation of a new cylinder lubrication system is an opportune moment to replace the injection valves as well. The valves may also be replaced at a later date. However, the full benefits of a new lubrication system will not be achievable, if the injection valves are in poor condition.