

Technical Service Bulletin Number
--

TSB140030



Technical Service Bulletin

Subject

ISX15 and QSX15 Early Life Oil Consumption Caused by Vertical Liner Lobing

Issue

A vertical lobing pattern located on the inside diameter of the cylinder liner has been linked to early life internal oil consumption and/or frequent regen/aftertreatment fault codes. This lobing pattern prevents the piston rings from conforming to the liner, allowing oil to by-pass, resulting in elevated internal oil consumption and the formation of carbon deposits. Most of these early life complaints will surface at less than 120,000 miles [2000 hrs] on the engine.

Suspect used liners may show visual evidence of the 13 equally spaced vertical lobing pattern, as seen in Figures 1 and 2.

In many cases, if one liner is identified with lobing, additional liners in the same engine also have the condition.

In most all cases, the pistons will have heavy carbon packing on the top lands. If these pistons are reduced diameter top land pistons with low rings (Reference TSB150069), the carbon can be cleaned and pistons reused. If they are **not** reduced diameter top land pistons, replacing the pistons with the new reduced diameter top land piston is recommended.

Figure 1 is a worst-case example that shows a cylinder liner at 33,000 miles and 635 Miles per Quart (MPQ) oil consumption. Carbon packing has started on all pistons but bore polish in all liners has **not** become an issue yet.

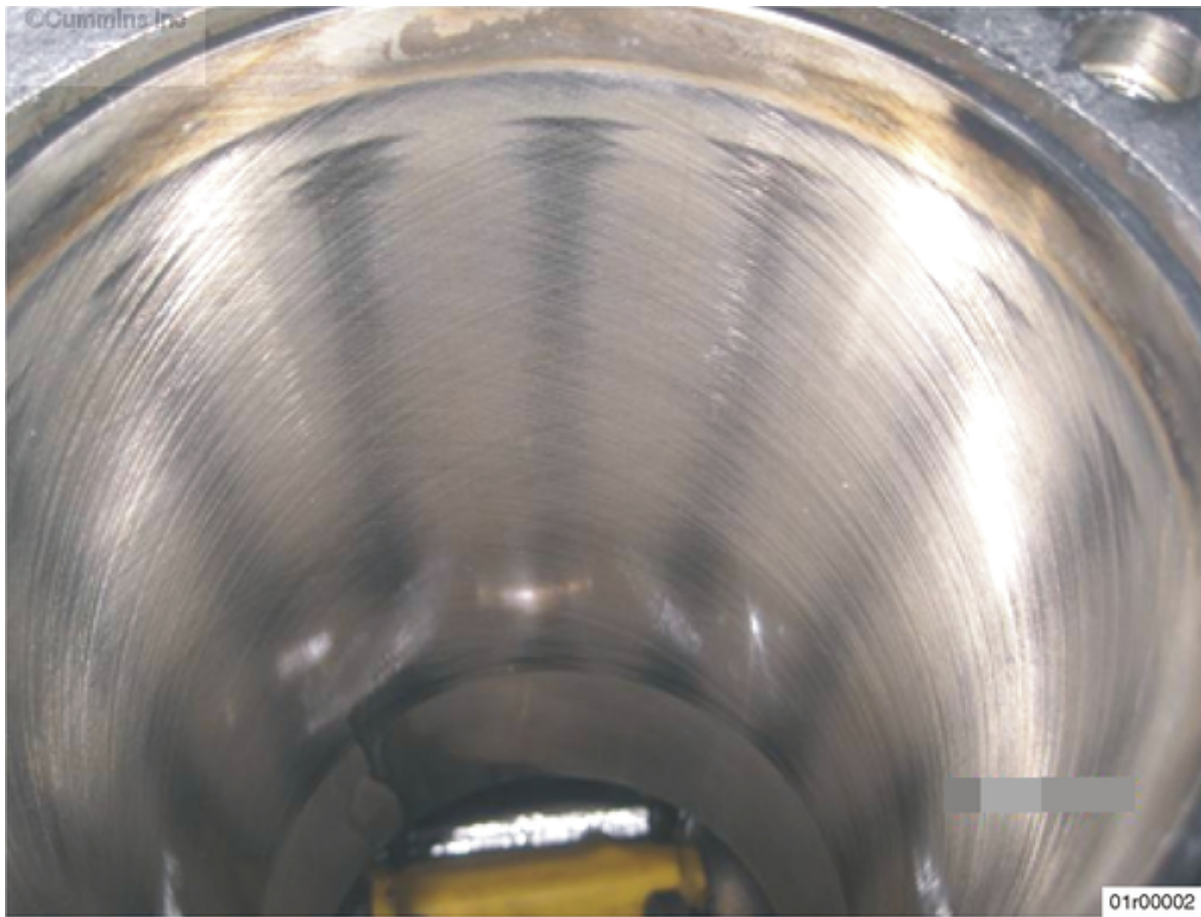


Figure 1: Cylinder Liner with Obvious Evidence of Lobing

Figure 2 shows a mild case of liner lobing that can be challenging to identify visually. This engine had 119,000 miles and an oil consumption complaint of 460 Miles per Quart (MPQ). It also experienced carbon packing on all pistons, which resulted in bore polish in the other liners. This is an example of an engine that likely had a small, unnoticed oil consumption issue early in life, but was **not** identified by the customer until the resulting carbon packing polished the liners.

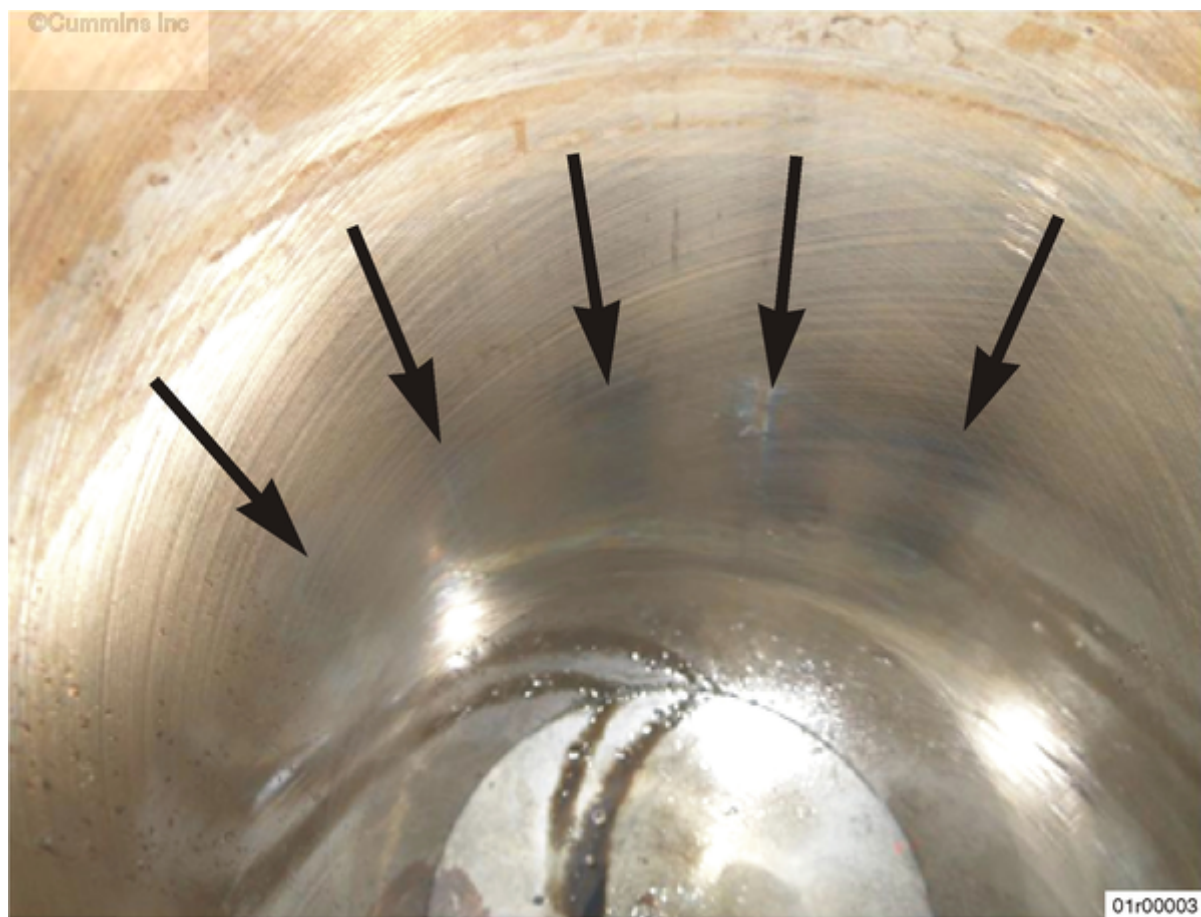


Figure 2: Cylinder Liner with Subtle Evidence of Lobing

Table 1: Liner Part Numbers Affected	
Liner Outside Diameter (OD)	Cylinder Liner and Kit Part Numbers
150mm / 5.906 in	4311632
	2882464
	4101507
152mm / 5.984 in	3685235

Verification

The lobe pattern can be difficult to identify by viewing the liner bore with the naked eye. In some cases, once the piston is removed and the liner is cleaned, the pattern will be visible in the area of ring travel. The lobing tends to be most pronounced in the lower ring reversal area. Cleaning the liner and placing it on a white piece of paper has helped to see the pattern. Taking a photograph of the liner on a white piece of paper sometimes helps to see the pattern as well.

Resolution

Lobed liners are considered non-reusable and need to be replaced. If this lobing pattern is identified, inspect all six cylinders and replace cylinder liners as necessary.

The liner machining process was changed to eliminate the potential to produce this lobing pattern. Liners produced earlier than the date code listed below are suspect for the lobing condition and should be inspected.

The date code is formatted as Day, Year, and Shift. For example, "138 2 3" would translate to the 138th day of the year, the year 2012, and the third shift of the day. This code would be May 18th, 2012, Third Shift.

- Liners with an XPLZ marking that are produced after the date code 271 3 1 are **not** suspect for lobing.
- Liners with an ABDJV marking are **not** suspect for lobing.

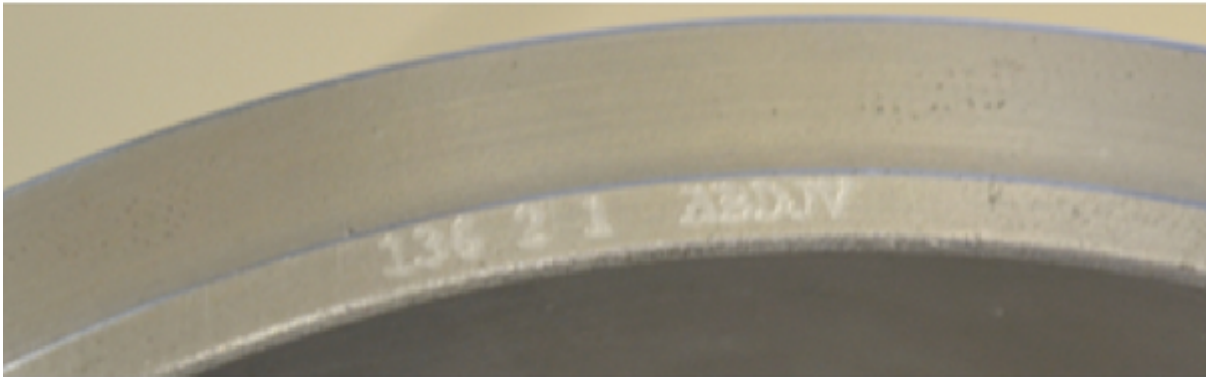
The liner information and date codes are etched on the liner in one of the locations shown in Figures 3 and 4. The location of the markings is **not** an indicator of the XPLZ or ABDJV marking, since they have been found in both locations.

©Cummins Inc



01r00004

Figure 3: (Photograph for reference only.) The date code in the photograph above is suspect for liner lobing and would require inspection. The date code is formatted as Day, Year, and Shift. "138 2 3" translates to the 138th day of the year, the year 2012, and the third shift of the day or May 18th, 2012, Third Shift.



01r00005

Figure 4: (Photograph for reference only.) The photograph above shows the ABDJV marking. This liner would not be suspect for liner lobing because of the ABDJV marking.

Warranty Statement

The information in this document has no effect on present warranty coverage or repair practices, nor does it authorize TRP or Campaign actions.

Document History

Date	Details
2014-3-6	Module Created
2014-4-17	Update TSB with new information
2016-3-14	Removed reference to TSB100982 and added reference to TSB150069.

Last Modified: 14-Mar-2016

Copyright © 2000-2010 Cummins Inc. All rights reserved.