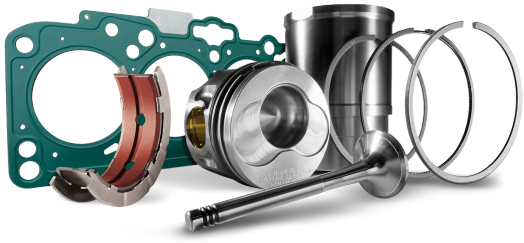


SERVICE ENGINEERING BULLETIN

SB2106.1

Liner flange cracking

Liner flange fractures are extremely serious but may go unnoticed if the liner body stays in position. However, if the liner body is pulled down the cylinder the engine could be completely ruined.

Cylinder liners are made from centrifugally cast iron; their main quality is wear resistance. Liners may fracture if dropped or crushed; this usually appears as a crack running down the liner.

Cracks lengthways down the cylinder liner occur when fitting the liner in the cylinder block or when fitting the cylinder head. Careful handling and storage helps to prevent these cracks forming.

Cracks that start under a liner flange form when the flange flexes and pulls the liner material apart.

The causes of this type of fault are:

- The cylinder block recess out of square (Fig. A)
- Dirt trapped between the flange and its recess (Fig. B)
- Incorrect location of the cylinder head gasket or using the wrong gasket (Fig. C)
- Leaving a sharp corner or burrs of machining on the cylinder block (Fig. D)

Faults (Fig A, B, C & D) form cracks when tightening the cylinder head and forcing the gasket down on the liner flange.

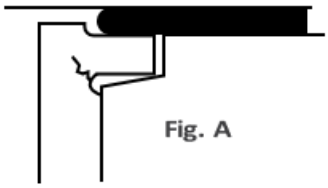


Fig. A

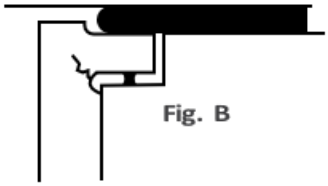


Fig. B

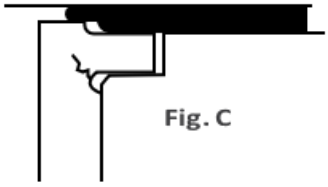


Fig. C

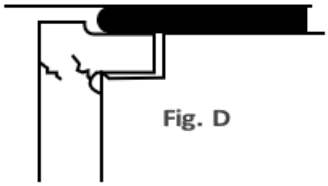
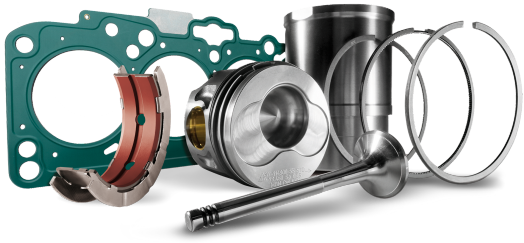


Fig. D



Liner flange cracking

Place a rigid plate between the press and the liner when using a press to push the liner into position. If the plate bows, it imposes a bursting stress on the liner. (Fig. E)

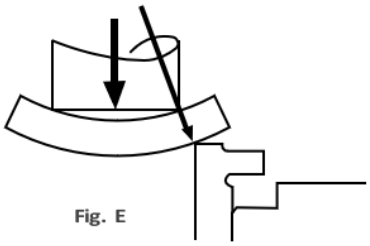


Fig. E

Do not use excessive pressure after pushing the liner fully home in its recess as that could shear off part of the liner flange. (Fig. F)

If using lubrication to assist the fitting of a liner, lubricate the cylinder block but not the liner. Pushing the liner home will scrape the lubricant off the liner. The lubricant accumulates in the block recess and prevents the flange seating fully. The lubricant will dissipate and leave the flange unsupported and vulnerable to fracture.

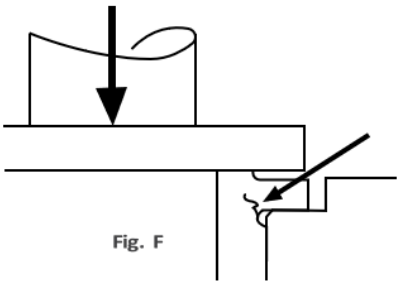


Fig. F

When installed correctly a cylinder liner becomes an integral part of the cylinder block.