Cylinder Head And Spacer Plate Gasket Failures On Certain Truck Engines {1100}

SMCS - 1100

Remanufactured Truck Engines
   C-15 (S/N: C2A1-UP)
   Truck Engine
      3406E (S/N: 1MM1-UP; 2WS1-UP; 6TS1-UP; 1LW1-UP)
   C-15 (S/N: EGH1-UP; 6NZ1-UP; 9NZ1-UP)
   C-16 (S/N: W1A1-UP; 7CZ1-UP)
   C-18 (S/N: CJP1-UP; MDP1-UP; MEPI-UP)
   C15 (S/N: KRA1-UP; TRB1-UP; JEP1-UP; SDP1-UP; BXS1-UP; MXS1-UP; NXS1-UP)
   C16 (S/N: G1D1-UP)

Improper repair procedures during engine overhaul can cause failure of the cylinder head gasket and/or spacer plate gasket. Improper repair procedures cause loss of load on the cylinder head and related components. Insufficient load can result in head gasket failure, liner flange cracks, and spacer plate gasket oil leaks. Parts warranty will be debited if improper repair procedures are conducted during the repair process of the cylinder head to block joint.

The illustrations that follow are examples of frequently seen failures due to improper procedures. Instances where improper procedures are used are not a material deficiency problem.
Illustration 1

Illustration 1 shows examples of material removal from the spacer plate gasket. This failure is caused by gasket movement and/or loss of load from improper installation.

Illustration 2

Illustration 2 shows examples of bead and outer dust seal separation. This failure is caused by gasket movement and/or loss of load from improper installation.
Illustration 3 shows examples of compression ring failure. This failure is caused by gasket movement and/or loss of load from improper installation.
Illustration 4 shows examples of compression ring failure. This failure is caused by gasket movement and/or loss of load from improper installation.

Each failure is ultimately caused by a loss of load on the gasket. Loss of load can be caused by the following:
• Improper bolt torque
• Liner seat corrosion
• Surface finish out of tolerance issues on the block surface
• Cylinder head surface flatness
• Cylinder head surface finish tolerance issues
• Liner projection out of tolerance

In each instance, regardless of the root cause, the failure mode, and resulting damage to the head gasket is the same. Care should be taken when making repairs to this joint and determining exact root cause.

Refer to Reuse And Salvage Guidelines, SEBF9390 and Reuse And Salvage Guidelines, SEBF8301 for proper identification of the root cause of head gasket failure. Parts warranty will be debited if improper repair procedures are conducted during the repair process of the cylinder head to block joint.

Illustration 5 shows examples of a spacer plate cleaned with a wire wheel. Wire wheel use can cause an uneven contact surface during installation between the spacer plate and gasket leading to gasket failure.

Refer to the publications below during overhaul and installation of the cylinder head for the correct procedures to be used.

• Reuse And Salvage Guidelines, SEBF9390, "Visual Inspection of Liner Seats for 3400, C15, C16, and C18 Series Engines"
• Reuse And Salvage Guidelines, SEBF9008, "Procedure for Reconditioning Cylinder Blocks on 3400 and C-Series Engines"