

TECH NOTES

ENGINE GASKET SURFACE CLEANING

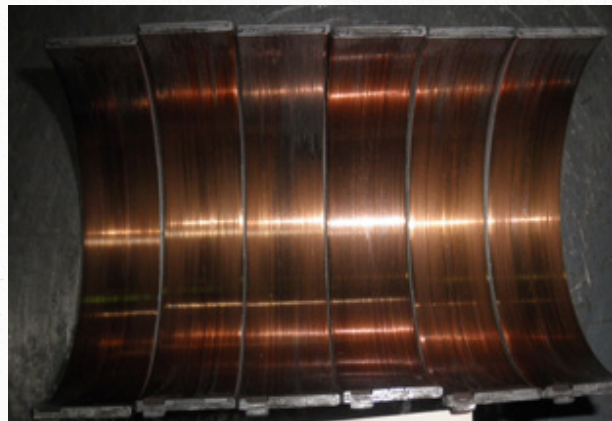
Oil contamination can be caused by using the incorrect products or techniques when installing an engine. This article outlines the procedures necessary for cleaning gasket sealing surfaces on all engines and the components to be re-used on those engines.

OE manufacturers have clearly documented the proper methods to be used in cleaning gasket surfaces during engine repairs. The use of Rotary Abrasive Devices, Rotary and Hand Wire Brushes, Sandpaper and Emery cloth products are all prohibited. Use of these tools and products on any engine gasket surface, regardless of the base material being worked on, can cause damage and leave material and abrasives that will contaminate the internal engine components. **DAMAGE TO YOUR ENGINE RESULTING FROM ABRASIVE DISC CLEANING OR OIL CONTAMINATION IS NOT COVERED UNDER THE LIMITED WARRANTY.**

Glass bead, aluminum oxide or other blast cabinet media should not be used to clean engine components that are being reused. Rocker covers, oil pan, timing covers and intake manifolds for example, if cleaned in this manner, will retain particles of the media. That abrasive media will be released into the engine and will cause internal damage and engine failure.



BUFFED ENGINE
GASKET SURFACE



BEARINGS SEVERELY DAMAGED FROM
ABRASIVE MATERIAL

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Sample Warning from Ford:

WARNING

UNDER NO CIRCUMSTANCES ARE ANY ALUMINUM GASKET SURFACES TO BE CLEANED USING RAZOR BLADES, ROTARY ABRASIVE DEVICES INCLUDING ROLOC AND 3M BRANDED SCOTCHBRITE PRODUCTS, ROTARY WIRE BRUSHES, SINGLE HANDLED WIRE BRUSHES, HAND ABRASIVE SUCH AS SANDPAPER OR EMERY CLOTH, OR ANY CARBON STEEL BLADE.

THESE TOOLS ARE PROVEN TO CUT AND DAMAGE ALUMINUM AND WILL DISRUPT THE POLISHED FINISH. ABRASIVE PARTICLES ARE ALSO SUSCEPTIBLE TO ENTERING THE ENGINE CAVITIES AND MAY CAUSE INTERNAL ENGINE DAMAGE.

THE ONLY TOOLS ACCEPTABLE ARE PLASTIC AND WOOD SCRAPERS COMBINED WITH USE OF MOTORCRAFT METAL SURFACE CLEANER, F4AZ-19A536-RA, OR EQUIVALENT SOLVENT.

Sample From General Motors: TSB 00-06-01-012D

NOTICE

Do not use abrasive pad/bristle devices to clean the gasket surfaces of engine components. Abrasive pads should not be used for the following reasons:

- Abrasive pads will produce fine grit that the oil filter will not be able to remove from the oil. THIS GRIT IS ABRASIVE AND HAS BEEN KNOWN TO CAUSE INTERNAL ENGINE DAMAGE. Abrasive pads can easily remove enough material to round cylinder head surfaces. This has been known to affect the gasket's ability to seal, especially in the narrow seal areas between the combustion chambers and coolant jackets.
- Abrasive pads, wire and abrasive rubber finger wheels can also remove enough metal to affect cylinder head, block, oil pan rail, and intake manifold runner flatness, which can cause coolant and oil leaks and air leaks. It takes about 15 seconds to remove 0.203 mm (0.008 in) of metal with an abrasive pad.
- Abrasive pads, Abrasive rubber fingers wheels & wire wheels with high speeds grinders produce air bourn debris that can travel throughout the shop contaminating other work being performed outside of the immediate work area.

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When cleaning engine gasket sealing surfaces and/or cleaning parts from an engine that are to be reused, surface conditioning disks (typically constructed of woven fiber or molded bristles) that contain abrasives, such as a high amount of Aluminum Oxide, should NOT be used.

The use of such surface conditioning disks dislodges Aluminum Oxide (from the disk) and metal particles, which can lead to premature engine bearing failure.

The presence of Aluminum Oxide in engine oil has been shown to cause premature engine bearing failure. In some cases, this failure occurs in as little as 2,200 km (1,000 mi) or less after the repair has been made.

Surface conditioning disks may grind the component material and imbed it into the disk. This can result when more aggressive grinding of the gasket surface takes place.

AERA Technical Bulletin - The Use of “Surface Conditioning Disks”

The AERA Technical Committee offers the following information concerning the use of “Surface Conditioning Disks”. When cleaning engine gasket sealing surfaces, and/or cleaning parts from an engine which are to be reused, **DO NOT** use surface conditioning disks (typically constructed of woven fiber or molded bristles) which contain abrasives, such as a high amount of Aluminum Oxide. Those disks are **NOT** recommended for cleaning internal engine components!

The use of such surface conditioning discs dislodges Aluminum Oxide (from the disk) and metal particles, which can lead to premature engine bearing failure. The presence of Aluminum Oxide in engine oil has been shown to cause premature engine bearing failure. In some cases, this failure occurs in as little as 1,000 miles (2,200 km) or less after the repair has been made.

Surface conditioning discs may grind the component material and imbed it into the disc. This can result when more aggressive grinding of the gasket surface takes place.

NOTE: Do not use abrasive pad/bristle devices to clean the gasket surfaces of engine components. Abrasive pads should not be used for the following reasons:

Abrasive pads will produce fine grit that the oil filter will not be able to remove from the oil. **THIS GRIT IS ABRASIVE AND HAS BEEN KNOWN TO CAUSE INTERNAL ENGINE DAMAGE.** Abrasive pads can easily remove enough material to round cylinder head surfaces. This has been known to affect the gasket’s ability to seal, especially in the narrow seal areas between the combustion chambers and coolant jackets.

Abrasive pads can also remove enough metal to affect cylinder head, block, oil pan rail, and intake manifold runner flatness, which can cause coolant and oil leaks. It takes about 15 seconds to remove .203 mm (.008 in) of metal with an abrasive pad.

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It is suggested a plastic gasket scraper or wood scraper be used to clean gasket surfaces. Do not gouge or scrape the combustion chamber surfaces. Do not gouge or scratch any engine-sealing surface during the cleaning process.

The appearance of the gasket surface is not critical - the feel is. There is a possibility that there will be some indentations from the gasket left in the cylinder head after all the gasket material is removed. The new gasket will fill these small indentations when it is installed.

THE TYPE OF PRODUCTS PICTURED AND SIMILAR ITEMS SHOULD NOT BE USED TO CLEAN AND PREPARE ENGINE GASKET SEALING SURFACES.

