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|  | GROUP Engine | MODEL All Models |
| | NUMBER PS539 | DATE March 2018 |
|   | | |
| SUBJECT: ENGINE COMPONENT RE-USE GUIDELINES | | |

In general, parts and components removed during engine repairs should be considered serviceable, and should be thoroughly cleaned and transferred to the new engine.

- If the part condition is determined not to be serviceable, then a detailed description of the exact defect per part replaced, along with supporting measurements where applicable, are required to be documented on the repair order and in the claim notes to explain why the part could not be thoroughly cleaned and transferred to the new engine.
- Gaskets, seals, and torque-to-yield bolts should always be replaced. Check Service Information to see if torque-to-yield bolts are applied per specific VIN being repaired.

Kia SPPM section 7.8.5 (see attached for reference only - SPPM will reflect latest status) provides a Remanufactured Engine Repair/Replacement Reference Chart with guidelines for specific part replacement during engine repairs.

Parts not specifically called out in SPPM section 7.8.5, or otherwise damaged and properly documented on the repair order are not to be considered for replacement. Failure to follow listed procedures may result in the warranty claim not being eligible for reimbursement.

★ NOTICE

Thoroughly clean metal debris from all parts being transferred from the damaged engine unless determined to require replacement after inspection.

Specific Guidelines for Engine Repairs that Apply:

- If the failed engine suffered catastrophic damage (e.g. piston disintegrated, valves broken, rod through the block, seized engine / large particles/metal debris in the oil pan) do not re-use the original intake manifold or oil pump/BSM; replace the intake manifold and the oil pump/BSM with a new one. Refer to ENG084.
- For GDI engines, some high pressure fuel system components require replacement if removed, including: high pressure fuel pump bolts, fuel pipe, delivery pipe mounting bolts, injector retaining clip, injector O-ring, injector combustion seal ring, injector backup ring & injector washer seal. Refer to ENG083.

- If equipped, the turbo and oil feed line should be replaced if metal debris are found inside of either component or it is determined that there is evidence of significant lack of maintenance or oil starvation.
- Hydraulic Lash Adjusters (HLA), Oil Control Valves (OCV), and Continuously Variable Valve Timing (CVVT) assemblies should always be replaced if the engine's lubrication system has been contaminated with metal debris.
- For timing chain tensioners re-use or replace instructions, refer to the applicable Service Information on KGIS.
- If a short block is being installed, verify that all ladder frame bolts are installed, and inspect the original cylinder head closely to determine whether cylinder head replacement is required. If the original cylinder head will be used, ensure that it is thoroughly inspected, including for the flatness specification, and that it is cleaned thoroughly so that all oil passages are unobstructed.
- If cylinder head replacement is required, re-use parts removed from the original head to the new head (if any cannot be transferred, supporting documentation will be required as outlined above). Always check and if necessary, adjust valve clearance per the Service Information on KGIS as well as document the measurements in the RO and also inspect the new cylinder head oil gallery ports for any missing check balls.

Warranty Claim Considerations:

Prior Work Authorization (PWA) from the DPSM is required if a reman assembly is not available from Kia and a new engine assembly is required (see SPPM section 7.9 for details).

The Causal Part number must be the part that caused the failure to occur. Refer to the hard copy of the RO for specific notes stating the cause of failure. Uses of the examples below (engine related) are intended to assist the dealers in making a determination as to the correct causal part failure.

| CONDITION | CAUSAL PART |
|---------------------------------|---------------------------|
| Low/No compression | Piston Rings |
| High oil consumption | Valve stem seals |
| Noise- Crankshaft (end play) | Crankshaft |
| Noise- Connecting rod/ bearing | Connecting rod or bearing |
| Noise- Valve train damage | Valve, keeper, spring |
| Noise- Piston slap | Pistons |
| Noise- Crankshaft main bearings | Crank main bearings |
| Low/no oil pressure | Oil pump |
| Overheated- water pump | Water pump |
| Overheated- head gasket | Head gasket |
| Overheated- other gasket/seal | List root cause part |
| Oil starvation | List root cause part |

Kia SPPM Section 7.8.5 Kia Reman Engine Repair/Replacement Reference Chart

| CONDITION | DAMAGED PARTS | Assembly |
|---|--|---|
| (1a) Engine Lower End Noise | Damaged parts as needed <ul style="list-style-type: none"> • Cylinder block • Piston/Rings • Connecting rod • Crankshaft • Bearings (Connecting rod /main) Cylinder head and valvetrain components are required to be inspected for re-use; detailed description of the defect or malfunction is required for each component replaced. | Short block Techline PWA required |
| (1b) Engine Lower End Noise | Damaged parts as needed <ul style="list-style-type: none"> • Cylinder block • Piston/Rings • Connecting rod • Crankshaft • Bearings (Connecting rod /main) | Long block Techline PWA required |
| (2a) Oil consumption/ over heat condition | Damaged parts as needed <ul style="list-style-type: none"> • Cylinder block • Piston/Rings Cylinder head and valvetrain components are required to be inspected for re-use; detailed description of the defect or malfunction is required for each component replaced. | Short block Techline PWA required |
| (2b) Oil consumption/ over heat condition | Damaged parts as needed <ul style="list-style-type: none"> • Cylinder block • Piston/Rings • Cylinder head warpage or fracture | Long block Techline PWA required |
| (2c) Oil consumption/ over heat condition | Damaged parts as needed <ul style="list-style-type: none"> • Cylinder head warpage or fracture • Valve stem seals • Valve guides • Other valvetrain parts Cylinder head and valvetrain components are required to be inspected for re-use; detailed description of the defect or malfunction is required for each component replaced. | Cylinder head overhaul or replacement DPSM PWA may be required |
| (3) Engine Catastrophic failure | Damaged parts as needed <ul style="list-style-type: none"> • Piston/Rings • Bearings (Connecting rod /main) • Crankshaft • Cylinder block damaged beyond repair • Cylinder head damaged beyond repair- Requires replacement Cylinder head and valvetrain components are required to be inspected for re-use; detailed description of the defect or malfunction is required for each component replaced. | Long block or short block and cylinder head Techline PWA required |