# Troubleshooting Engine Mechanical Problems

| Problem | Cause | Solution |
|---|---|---|
| Connecting rod bearing noise | • Insufficient oil supply | • Inspect for low oil level and low oil pressure |
| | • Carbon build-up on piston | • Remove carbon from piston crown |
| | • Bearing clearance excessive or bearing missing | • Measure clearance, repair as necessary |
| | • Crankshaft connecting rod journal out-of-round | • Measure journal dimensions, repair or replace as necessary |
| | • Misaligned connecting rod or cap | • Repair as necessary |
| | • Connecting rod bolts tightened improperly | • Tighten bolts with specified torque |
| Piston noise | • Piston-to-cylinder wall clearance excessive (scuffed piston) | • Measure clearance and examine piston |
| | • Cylinder walls excessively tapered or out-of-round | • Measure cylinder wall dimensions, rebore cylinder |
| | • Piston ring broken | • Replace all rings on piston |
| | • Loose or seized piston pin | • Measure piston-to-pin clearance, repair as necessary |
| | • Connecting rods misaligned | • Measure rod alignment, straighten or replace |
| | • Piston ring side clearance excessively loose or tight | • Measure ring side clearance, repair as necessary |
| | • Carbon build-up on piston is excessive | • Remove carbon from piston |
| Valve actuating component noise | • Insufficient oil supply | • Check for:<br>(a) Low oil level<br>(b) Low oil pressure<br>(c) Wrong hydraulic tappets<br>(d) Restricted oil gallery<br>(e) Excessive tappet to bore clearance |
| | • Rocker arms or pivots worn | • Replace worn rocker arms or pivots |
| | • Foreign objects or chips in hydraulic tappets | • Clean tappets |
| | • Excessive tappet leak-down | • Replace valve tappet |
| | • Tappet face worn | • Replace tappet; inspect corresponding cam lobe for wear |
| | • Broken or cocked valve springs | • Properly seat cocked springs; replace broken springs |
| | • Stem-to-guide clearance excessive | • Measure stem-to-guide clearance, repair as required |
| | • Valve bent | • Replace valve |
| | • Loose rocker arms | • Check and repair as necessary |
| | • Valve seat runout excessive | • Regrind valve seat/valves |
| | • Missing valve lock | • Install valve lock |
| | • Excessive engine oil | • Correct oil level |