TECHNICAL BULLETIN

TB NO. 1021
REV. 1

SUBJECT: Break-In Procedures for Superior Engines

PROBLEMS: Pistons, Rings & Liner Scuffing

INTRODUCTION

You've just spent 300 to 500 man-hours overhauling your engine, and operations wants it back on-line at full rated speed and load. You comply, but during your first periodic bore scope inspection, you note scuffing on the liners. Some might appear to be smooth or "healed over". The cause in most cases can be attributed to improper break-in.

New or honed liners are sensitive to piston speed, ring pressure and piston thrust which directly relate to RPM and load. Lube oil and jacket water temperatures are also major factors to maintain proper piston to liner clearances. The pistons are oil cooled and the liners are water cooled. The inlet temperatures should be maintained to within 20°F. During the normal start-up of cold engines, it is easy to scuff pistons and liners if the load is applied too fast because the cold water will restrict the normal expansion of the liners.

RECOMMENDATION

"Start-Up & Break-In Procedures"

1. Initial start-up requires short periods of operation (5-15 minutes) and shutdown to perform bearing and bushing housing temperature checks, inspection and testing of shutdown devices, checking ignition timing, etc.

2. The engine should be operated for 15 to 30 minutes to reach normal operating temperatures and the initial loading of the unit should be controlled at 50% rated horsepower at 600 RPM for one (1) hour; increased to 50% at 650 RPM for one (1) hour; increased to 700 RPM for one (1) hour, etc. After each hour, the speed should be increased at 50 RPM increments until you reach the maximum of 900 RPM. During this period of time, constant monitoring of the temperatures, pressures and control system is required. Log data should be recorded.

TECHNICAL SERVICE DEPT.
300 West First
Alice, Texas 78332 USA
361.668.8311
800.723.6396
fax 361.668.3906
www.endyn.com

3. After completion of the 50% rated horsepower @900 RPM for one (1) hour, the unit should be shutdown for re-torque of specific components, hot valve lash adjustments, hot coupling and crankshaft distortion readings, repair of leaks, etc.

4. Re-start and load the unit to 75% rated horsepower at the various speeds for the same one (1) hour time periods. Then slowly increase the load to 100% at the various speeds for the same time periods. A minimum of twenty (20) hours of operations @ lower speed and load ranges is required prior to full loading @ 900 RPM.

   EnDyn recommends performing this break-in procedure on a test stand (water brake dynomometer) when possible.

   Related Technical Bulletins:
   - TB NO. 1003: Cylinder Liner Installation
   - TB NO. 1007: Maintenance Programs for Superior Engines

For further information concerning break-in procedures or **EnDyn's** overhaul and field service, please contact **EnDyn's** Technical Service Department or your local authorized **Power**Parts® Distributor.

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