



## **Piston Pins - Press Fit in Con- Rod - Fitting Precautions**

Engine manufacturers widely use press fit type piston pins and engine rebuilders are very familiar with the process to replace them. However, occasionally, some technicians may heat the connecting rod small end to fit the pin and then cool it by quenching the parts in oil or water.

### **NEVER QUENCH THE PISTON/CONNECTING ROD**

Tests show this practice softens and then rehardens the small ends to such an extent that they become brittle and may lead to connecting rod failures. The connecting rod small end expands and when cool the correct interference fit (0.001" ~ 0.0015" / 0.02 ~ 0.04 mm) between the pin and connecting rod is lost. This interference fit between pin and connecting rod is required to ensure that the pin does not loosen when at normal operating temperature.

The correct method of fitting press fit piston pins is to heat the small end of the connecting rod to 250°/300°C. Ideally, this is by using one of the proprietary devices manufactured especially for this type of piston pin anchorage. If such equipment is unavailable, it is possible to use a hot plate or gas torch but take extreme care to ensure uniform heating.

As a guide to temperature control, observe a small area of the rod polished bright with emery cloth. It will become:

- Straw coloured at 250°C
- Purple at 280°C
- Bright blue at 300°C.

A dark blue to gunmetal colour indicates temperatures in excess of 300°C. This may lead to softening and permanent enlargement of the con rod's small end.

Allow the assembly to cool naturally after fitting the piston pin. When cool it is essential to lubricate the piston/pin assembly copiously, preferably by immersion in warm oil. Lack of lubrication of the piston/pin assembly is a prime cause of piston seizure during initial start-up after engine overhaul.

When overhauling an engine with pressed-in pins, consider its age. Pay close attention to the diameter and general condition of the small end of the connecting rod when an engine is having a second or third rebuild. Fit new connecting rods if there is a reduced interference caused by replacement of the piston pins several times previously.