



Such is the nature of today's diesel engine design - whether it be automotive, marine or industrial - that demands for increased power output, must be counterbalanced by considerations of compactness and lightness.

An increase in power output, of course, leads to an associated increase in heat generation. This extra heat must be quickly dispersed from around vital points on the cylinder head, the valve and the tip of the injector itself.

Now, with the introduction of cold-formed, copper, fuel injector sleeves, specifically developed for use with direct injection engines, many distinct benefits are obtained.

By utilising an independent sleeve, any build-up of the casting around the valves and injector housing is eliminated. The consequent decrease in mass helps to dissipate the heat, a process further accelerated by virtue of the sleeve material's high thermal conductivity characteristics.

Injector bore housings which have been cast as an integral part of the cylinder head frequently reveal serious inconsistencies in wall thickness owing to movement of the core during the casting operation. This may give rise to variations in temperature which substantially lower the life expectancy of both injector and valve.

The copper sleeve, on the other hand, is of uniform section, ensuring greatly enhanced heat transfer effectiveness. In addition, the reduced number of protuberances not only simplifies both coring and casting, but also improves coolant flow around the valve guides and seats.

In conjunction with the major engine manufacturers Wicksteeds developed a range of tools designed specially to expand fuel injector sleeves into cylinder heads.

We are pleased to have taken an active part in a development which aids not only the manufacture, but more important, the maintenance of the Diesel Engine.

## Typical Injector Sleeve Applications

The expanders are of the self-feeding parallel rolling type. Rotation of the mandrel in a clockwise direction causes the tool to increase in diameter and thereby expand the tube to form the seal. Anticlockwise rotation of the mandrel releases the tool when the expansion is completed.

When ordering, quote engine manufacturer's name and engine model number; alternatively, where new applications are proposed, we require a detailed drawing of the cylinder head and sleeve.

Tools as illustrated can be provided with Hexagon, round or square headed mandrels according to how customers prefer to drive them.

