

# Injecting life into alloy steel – a component journey

## AUTOMOTIVE DIESEL INJECTORS

Injector part failure due to wear is a costly hazard, leading to potential damage to other areas of the engine. The diesel injectors shown in this example are used in trucks, and each truck can have between 6-12 injectors. As part of the manufacturing process, the part must go through various thermal processing stages to enable it to perform to the required standard in service.



The injector begins life either as an alloy steel forging or steel bar.

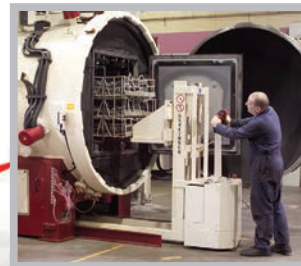


The injector is rough machined to within tight tolerance of its final size, adding fuel ports and passageways.

Controlled gas nitriding gives the part very high surface hardness with minimum distortion, providing excellent wear and corrosion resistance.



The part is thermal deburred to remove any burrs in the passageways and to activate the surface by neutralising the chromium, which helps accelerate the diffusion of nitrogen into the surface during the nitriding cycle, ensuring a uniform case depth.



To obtain the correct core structure prior to nitriding, the part is hardened and tempered, to provide the necessary toughness and impact resistant properties.



Due to the nitriding process, minimal finishing operations are needed. The part undergoes finish grinding and lapping to its final size.



End application – truck engine

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