

Braze a carbide sleeve to a steel shank for a plug gauge

Objective Braze a carbide sleeve to a steel 'T' shank

Material 2.0" (51mm) OD carbide sleeve, 1.0" (25.5mm) high braze joint, 1.5" (38 mm) steel 'T' , 50% silver braze ring

Temperature 1292 °F (700 °C)

Frequency 257 kHz

Equipment

- Ambrell 2 kW induction heating system, equipped with a remote workhead containing two 0.66 μ F capacitors for a total of 1.32 μ F.
- An induction heating coil designed and developed specifically for this application.

Process A pancake/helical combination coil is used to heat the assembly. The coil design allows easy loading and unloading of the parts without having to rotate them.

A few minutes after the start of the heat cycle the heat pattern normalizes and becomes very uniform. For better joint quality a chamfered groove is machined in the steel shank to locate and seat the braze ring. The braze alloy flows into the joint creating a strong, aesthetic bond. The amount of braze alloy heated each cycle is controlled well by the braze ring.

Results/Benefits Induction heating provides:

- Hands-free brazing which requires no special operator skills for manufacturing
- Precise, even heat is applied and is divided equally between the shank and the carbide. This provides an even flow of the braze alloy as the parts reach brazing temperatures.

A plug gauge is a hardened, cylindrical instrument used to inspect the size of a hole.



The heat pattern on the assembly illustrates even distribution of heat.



A combination pancake/helical coil is used for easy loading and unloading of the part.



Final brazed assembly.