APN: SF-1003

Camshaft Gear

Objective: Heating a camshaft gear with a bore size of 1.630" to shrink fit over a steel shaft that has a diameter of 1.632". A temperature of 500^{0}F is required for the gear to expand 0.002" in order to slip over the shaft. Production is presently done at a rate of 15-20 gears per 24 hour shift by heating the gear on a hot plate. The hot plate heating cycle lasts for approximately 45 minutes. The customer would like to explore the options available in terms of heating times and machine size.

Material: Steel Camshaft Gear measuring 7" in diameter, 1" thick, with a bore size of 1.630".

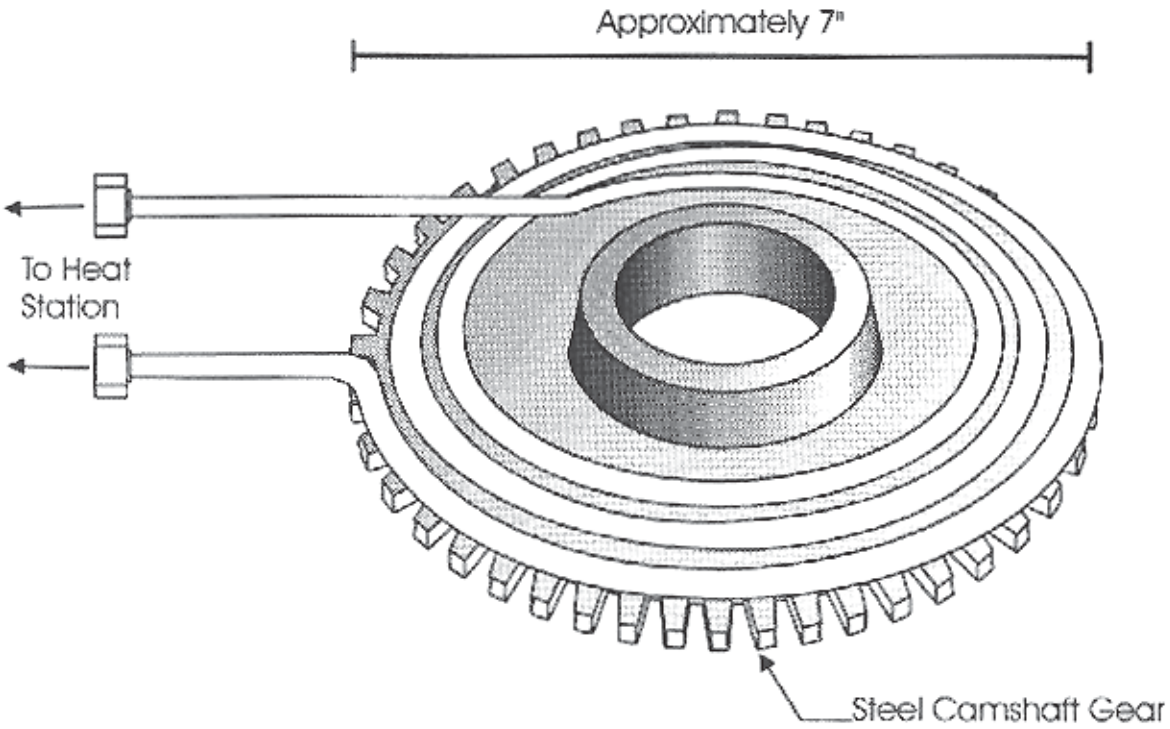
Temperature: 500^{0}F

Application: A unique three (3) turn helical coil along with the various Ameritherm solid state induction power supplies were used to achieve the following results:

- 500^{0}F was reached in three (3) minutes while using the Ameritherm XP 5, 5 kW output solid state induction power supply.
- 500^{0}F was reached in five (5), eight (8), and ten (10) minutes using the Ameritherm Nova 3, 3 kW output solid state induction power supply.
- Even heating was observed as a result of the unique three (3) turn helical induction coil.

Equipment: Ameritherm SP 3 and Ameritherm XP 5, 3 kW and 5 kW output solid state induction power supplies respectively, including remote heat stations and a unique three turn helical coil made from 3/16" copper tubing and having a 4.4" inside diameter.

Frequency: 162 kHz


Approximately 7"
To Heat
Station
Steel Camshaft Gear