



# Heat Treatments

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## Induction Hardening

## HTL Fact Sheet 12

Induction hardening is a process where the heat energy is induced into the part electromagnetically by passing high frequency AC current through a coil that is in close proximity to the work. The heated area is then quickly quenched using a water based spray quenchant. Because the heating and quenching is very rapid and localised, this minimises the exposure of the surface to air so generally a protective atmosphere is not needed. The depth that the heating or hardening penetrates into the part is related to the frequency of the AC current used, which can be varied.

Most commonly at Heat Treatments we induction harden the surface of cylindrical components, pins, shafts, axles and the like but there are many other configurations possible, especially when quantities justify the construction of a specialised coil. We have successfully induction hardened sprockets, drive dogs, ratchet pawls, cam lobes, splines etc.

### ▶ Advantages of Induction Hardening

- Ability to localise hardening to specific areas.
- Less distortion than alternatives such as carburising.
- Heavy case depths achievable, 1-10mm common.
- Cheap/economical especially with parts of mass >10Kg.
- Fast process - quick turnaround.



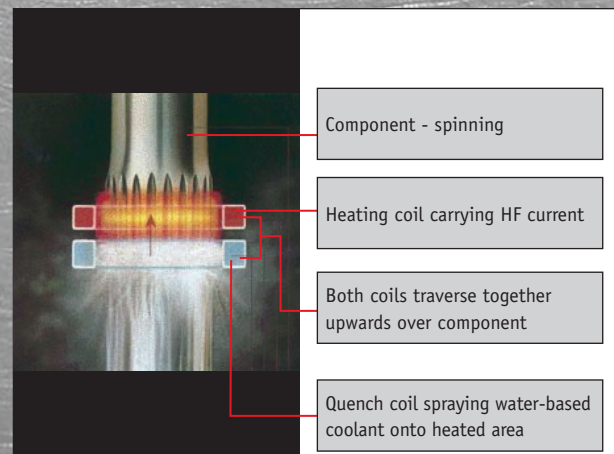
CNC Twin Spindle Induction Hardener

### ▶ Commonly Processed Materials

1045 - 1060, 4140, 4340, P20, 2767

### ▶ Maximum Sizes

Raydyne Number One	Raydyne Number Two	Twin Spindle
10 mm - 75 mm diameter	75 mm - 240 mm diameter	10 mm - 75 mm diameter
1,100 mm travel	1,800 mm length	1,000 mm length



### ▶ Turnaround Times

Typically 2 days, however a faster turnaround can be arranged for urgent work.