

**HLQ**

INDUCTION HEATING EQUIPMENT

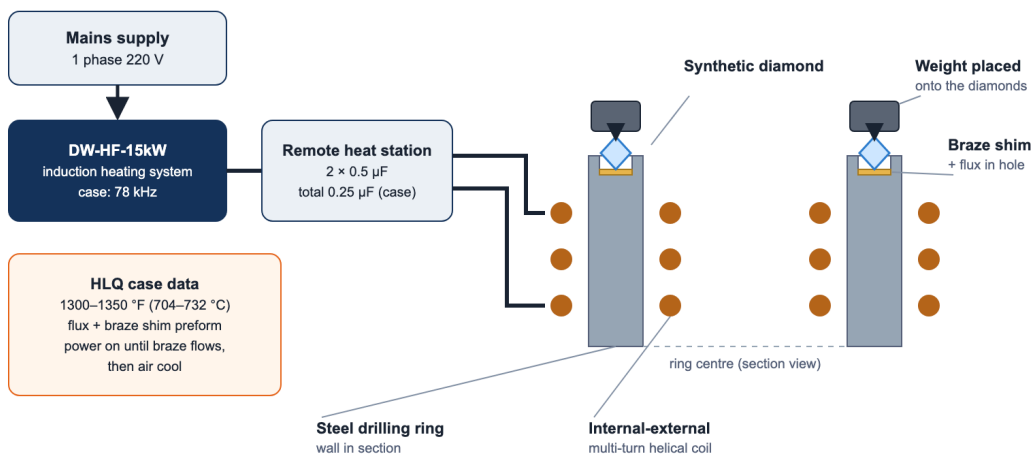
Brazing Diamond Tools With Induction

Synthetic diamond inserts brazed into a steel drilling ring with a DW-HF-15kW at 78 kHz: an internal-external helical coil heats the ring, the braze shims flow, and ring warping is reduced compared with furnace heating.

Induction Brazing Diamond Inserts – Working Principle

HLQ

An internal-external helical coil heats the steel ring; braze shims in the counter-bored holes melt and bond the diamonds.



Result: reduced ring warping compared with furnace heating; shorter cycle (less ramp-up and cooldown).

Schematic, not to scale. Data from the HLQ "high frequency induction brazing diamond inserts" case.

704–732 °C

1300–1350 °F

78 kHz

DW-HF-15kW

Less warping

vs furnace heating

Shorter cycle

less ramp-up / cooldown

01 The HLQ diamond insert brazing case

Objective: induction brazing of diamond inserts to a steel drilling ring. Brazing of diamond to metal substrates relies on a chemical reaction rather than only capillary action and a diffusion bond.

Item	Case data
Materials	Steel ring and synthetic diamond inserts; braze shim preform; flux
Temperature	1300–1350 °F (704–732 °C)
Frequency	78 kHz
Equipment	DW-HF-15kW induction heating system; remote heat station with two 0.5 µF capacitors (total 0.25 µF)
Coil	Multi-turn, internal-external helical coil designed for the application
Process	Initial tests on the ring alone set the tuning; flux applied, braze shims inserted into counter-bored holes, then the diamonds; part loaded into the coil and weight placed onto the diamonds; power on until the braze flows; air cool to room temperature
Results	Reduced ring warping compared with furnace heating; decreased cycle time due to reduced ramp-up and cooldown times



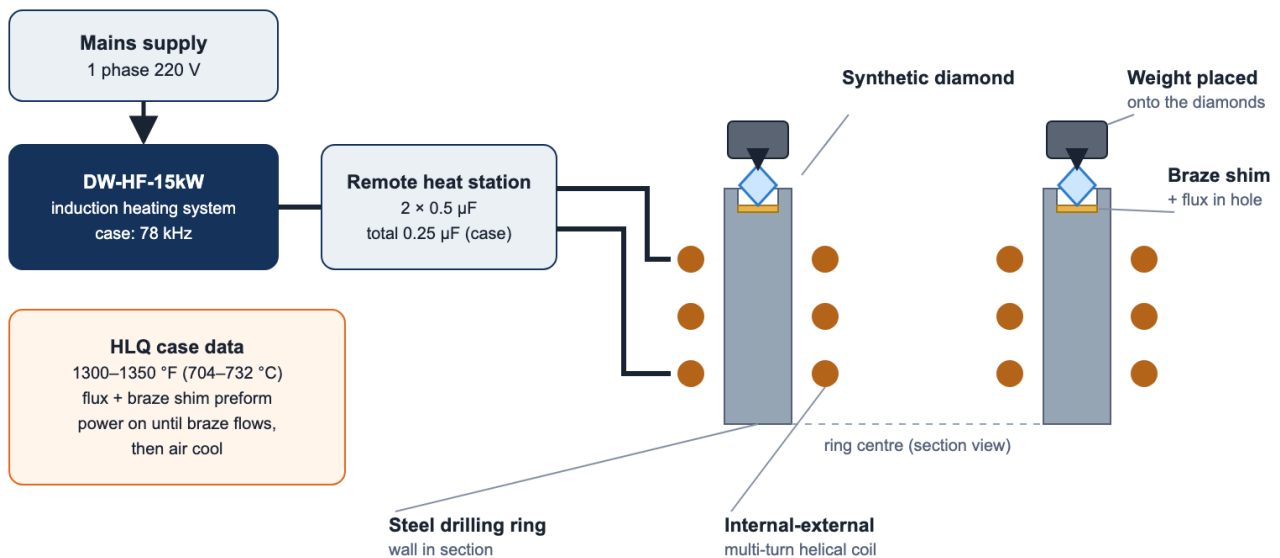
Induction brazing of saw blade segments with a hairpin coil, and a tool part heated in a loop coil (original HLQ page images).

02 How it works

Induction Brazing Diamond Inserts – Working Principle

HLQ

An internal-external helical coil heats the steel ring; braze shims in the counter-bored holes melt and bond the diamonds.



Result: reduced ring warping compared with furnace heating; shorter cycle (less ramp-up and cooldown).

Schematic, not to scale. Data from the HLQ "high frequency induction brazing diamond inserts" case.

Coil turns inside and outside the ring heat the ring wall. The braze shims in the counter-bored holes melt under the diamonds, which are held down by a weight. When the braze flows, power is switched off and the part air cools.

03 HLQ diamond and carbide tool brazing cases

HLQ Diamond and Carbide Tool Brazing Cases

Published HLQ tool brazing data: brazing temperature, frequency, time and equipment.

Diamond inserts to steel drilling ring

braze shim preform + flux

704–732 °C

760 °C

760 °C

frequency · time · equipment

78 kHz · until braze flows
DW-HF-15kW

250 kHz · 5 s per tip
DW-UHF-20kW

300 kHz · time not stated
DW-UHF-30kW

0 °C250 °C500 °C750 °C1000 °C

Diamond case result: reduced ring warping vs furnace heating · Carbide cases: localized heat, each tip brazed

without affecting previous brazes; precise placement; power consumed only during the heat cycle

Highlighted: diamond inserts (this page). °C converted from the °F values: 1300–1350 °F, 1400 °F.

Sources: HLQ "brazing diamond inserts", "brazing carbide tips to steel" and "brazing carbide tool tips" cases.

Case	Temperature	Frequency	Time	Equipment
Diamond inserts to steel drilling ring	1300–1350 °F (704–732 °C)	78 kHz	until braze flows	DW-HF-15kW
Carbide tip to 4140 circular cutter	1400 °F (760 °C)	250 kHz	5 s per tip	DW-UHF-20kW
Carbide blocks to steel meat cutter impeller	1400 °F (760 °C)	300 kHz	–	DW-UHF-30kW

dw-inductionheater.com · sales@dw-inductionheater.com

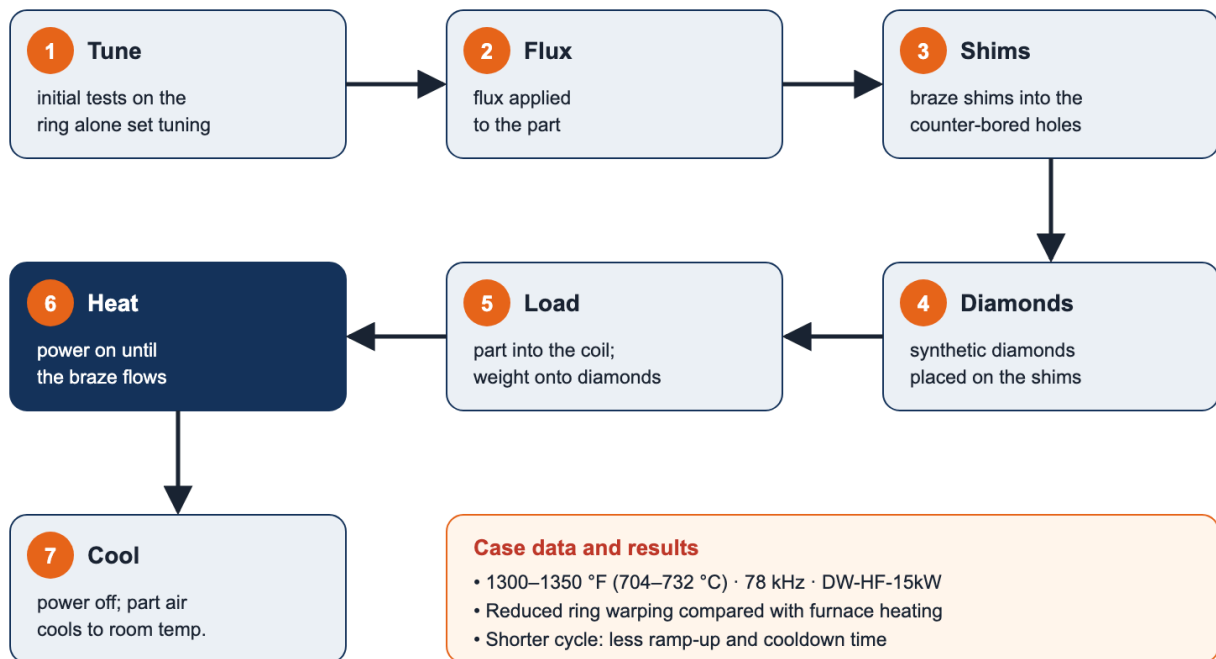
4

04 Process workflow and station layout

Diamond Insert Induction Brazing – Process Workflow

HLQ

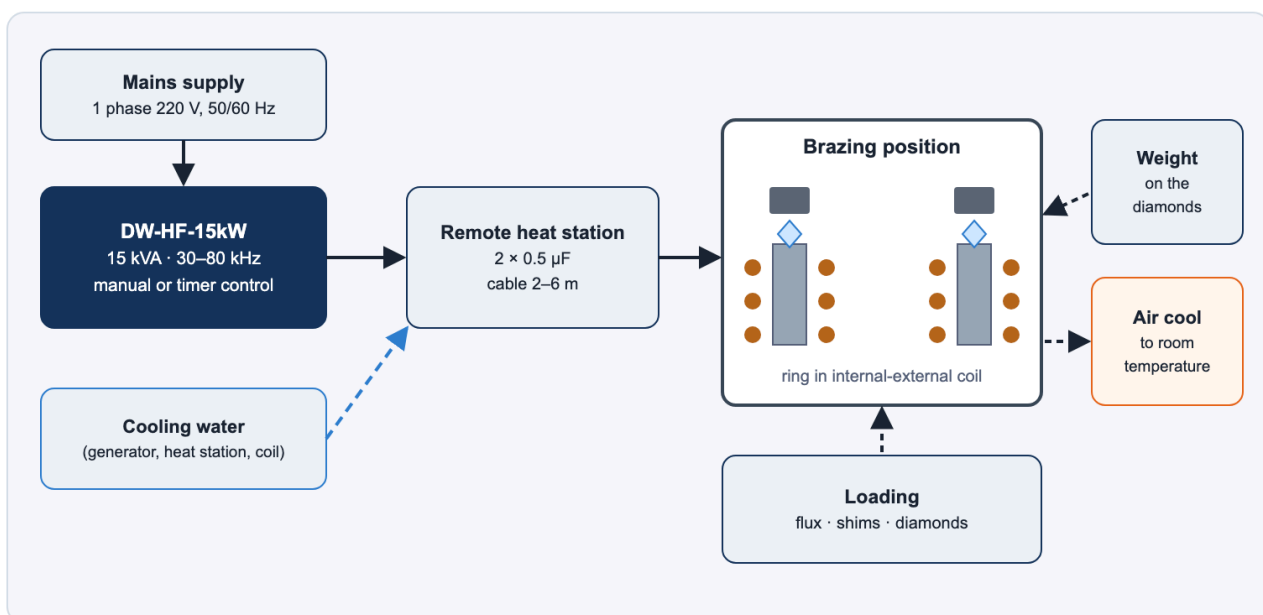
Sequence from the HLQ case: diamond inserts brazed to a steel drilling ring with a DW-HF-15kW.



Diamond Tool Brazing Station – Typical Layout

HLQ

Schematic, not to scale. DW-HF-15kW with remote heat station, ring coil, weight on the diamonds and cooling water.



DW-HF-15kW data: 15 kVA, 1-phase 220 V, 30–80 kHz, 80% duty at 30 °C, 495 × 240 × 485 mm, 45 kg. Case: 2 × 0.5 μF (total 0.25 μF).

— power / handling - - - cooling water

05 Equipment used in HLQ tool brazing cases

Model	Power	Frequency	Supply	HLQ case
DW-HF-15kW	15 kVA	30–80 kHz	1-ph 220 V	Diamond inserts, 78 kHz
DW-UHF-20kW	20 kW	50–250 kHz	3-ph 380 V	Carbide tips, 250 kHz
DW-UHF-30kW	30 kW	50–200 kHz	3-ph 380 V	Carbide blocks, 300 kHz (as stated)

HLQ model table data. The carbide impeller case states 300 kHz, above the 200 kHz upper limit listed for DW-UHF-30kW.

DW-HF-15kW

Parameter	Specification
Rated output	15 kVA
Input	1-phase 220 V, 50/60 Hz
Oscillation frequency	30–80 kHz
Duty cycle	80% at 30 °C
Host size / weight	495 × 240 × 485 mm / 45 kg
Cable length	2–6 m
Cooling	Water cooling
Control	Manual or timer-controlled heating

06 Frequently asked questions

What was brazed?

Synthetic diamond inserts to a steel drilling ring.

Which filler and flux?

Braze shim preforms in counter-bored holes, with flux.

What temperature and frequency?

1300–1350 °F (704–732 °C) at 78 kHz.

Which equipment?

A DW-HF-15kW with a remote heat station (two 0.5 µF capacitors, total 0.25 µF).

Which coil?

A multi-turn, internal-external helical coil designed for the ring.

Why induction instead of a furnace?

Reduced ring warping and shorter cycles from less ramp-up and cooldown.

What do I send for a quote?

Tool drawing, substrate and insert materials, filler and flux, and required output.

Why choose HLQ

Less warping

Than furnace heating.

Shorter cycle

No long ramp-up.

Custom coils

Internal-external helical.

Tool experience

Diamond and carbide.

Single phase

DW-HF-15kW, 220 V.

Timer control

Repeatable batches.

Request a diamond tool brazing test

Send us the tool, the diamond or carbide inserts, and the filler and flux. We will propose the coil, fixture and power supply.

Email

sales@dw-inductionheater.com

Tel / WhatsApp / Telegram

+86 131 5596 5571

Website

dw-inductionheater.com

Factory address

Jiangbei Village, Wusha Area, Chang'an Town,
Dongguan City, Guangdong Province, China
523859

Please include in your inquiry

- Tool type and drawing
- Substrate and insert materials
- Filler and flux
- Cycle time and parts per hour
- Available supply and cooling water