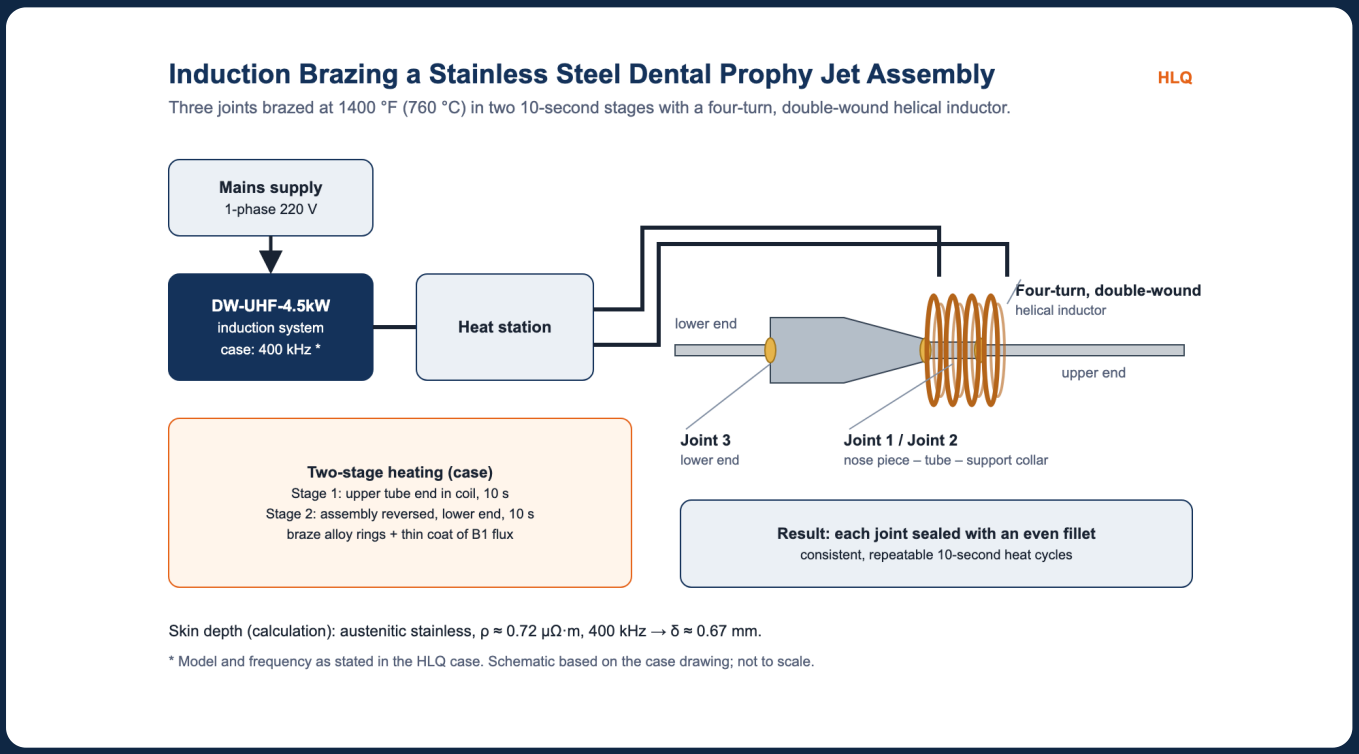
HLQ

INDUCTION HEATING EQUIPMENT

# Induction Brazing Stainless Steel Tools

Three joints on a stainless steel dental prophy jet assembly brazed at 1400 °F (760 °C) in two 10-second stages – consistent, repeatable joints, each sealed with an even fillet.

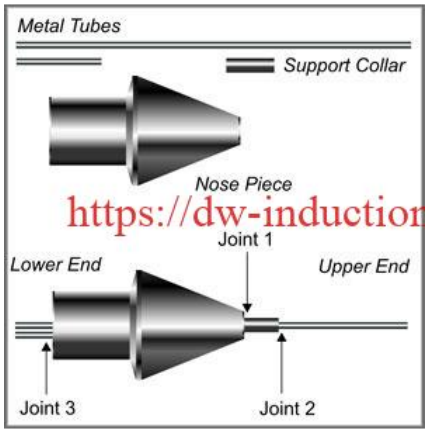



| 1400 °F | 2 × 10 s | 3 joints | B1 flux |
|---|---|---|---|
| (760 °C) | two-stage cycle | per assembly | braze alloy rings |

## 01 The HLQ dental prophy jet case

Research objective: braze three joints on a dental prophy jet assembly with induction heating, to improve yield consistency and reduce cycle time.

| Item | Case data |
|---|---|
| Parts | Stainless steel prophy nose piece, two tubes, tube support collar |
| Filler and flux | Braze alloy rings; B1 flux |
| Temperature | 1400 °F (760 °C) |
| Equipment (as stated) | DW-UHF-4.5kW induction heating power supply; specially designed inductor |
| Frequency (as stated) | 400 kHz |
| Coil | Four-turn, double-wound helical inductor |
| Process | Two stages: upper tube end 10 s, then assembly reversed and lower end 10 s |
| After brazing | Bathed in hot water to remove flux, blown dry with hot air |
| Result | Consistent, repeatable results with 10-second heat cycles; each joint sealed with an even fillet |



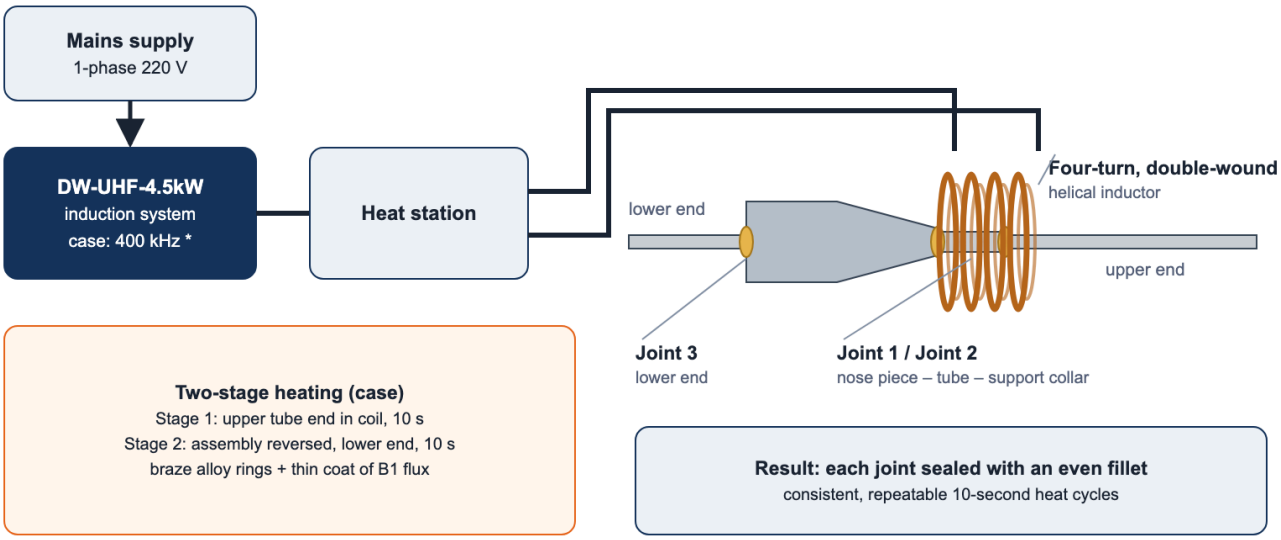

Metal tubes, support collar, nose piece and joints 1–3 (original HLQ drawing).

# 02 How it works

## Induction Brazing a Stainless Steel Dental Prophy Jet Assembly

HLQ

Three joints brazed at 1400 °F (760 °C) in two 10-second stages with a four-turn, double-wound helical inductor.




**Two-stage heating (case)**
Stage 1: upper tube end in coil, 10 s
Stage 2: assembly reversed, lower end, 10 s
braze alloy rings + thin coat of B1 flux

**Result: each joint sealed with an even fillet**
consistent, repeatable 10-second heat cycles

Skin depth (calculation): austenitic stainless, $\rho \approx 0.72\ \mu\Omega\cdot m$, 400 kHz → $\delta \approx 0.67$ mm.

* Model and frequency as stated in the HLQ case. Schematic based on the case drawing; not to scale.

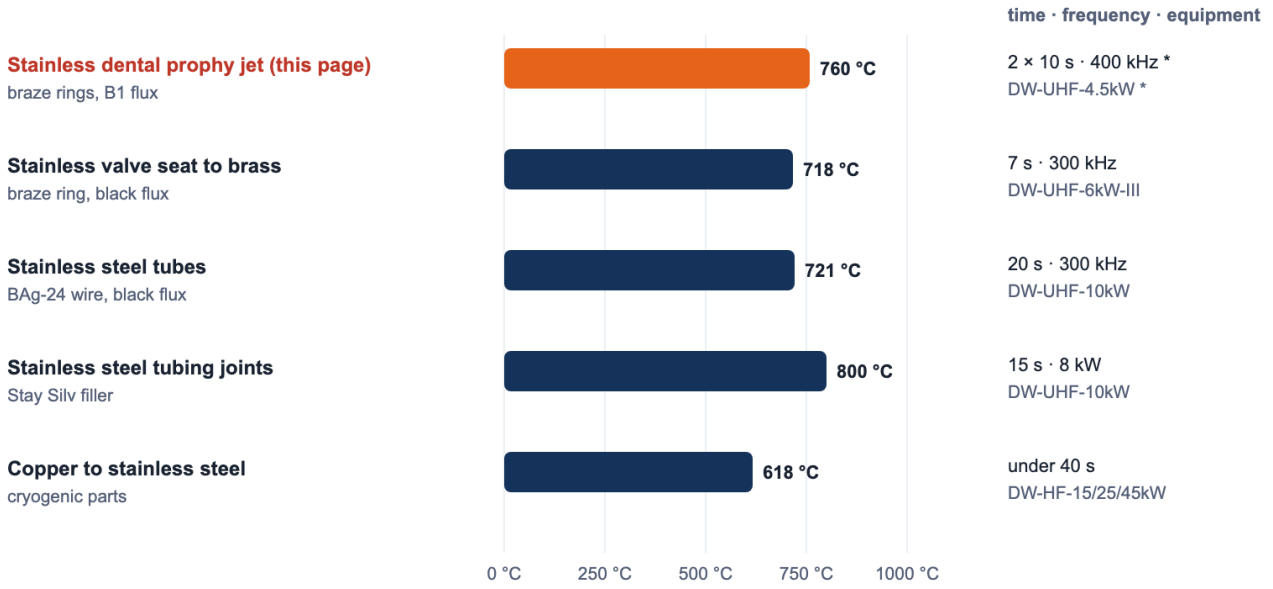
The double-wound helical inductor heats one end of the assembly at a time. The braze alloy rings melt at the joints and form even fillets; the B1 flux protects the stainless steel in open air and is washed off in hot water afterwards.

# 03 HLQ stainless steel brazing cases

## HLQ Stainless Steel Brazing Cases

HLQ

Published HLQ stainless steel brazing data: brazing temperature, heating time and equipment. This page is highlighted.




°C converted from the °F values in each case. * As stated in the case.

Sources: HLQ stainless tools, stainless-to-brass, stainless tubes, stainless tubing and copper-to-stainless brazing case pages.

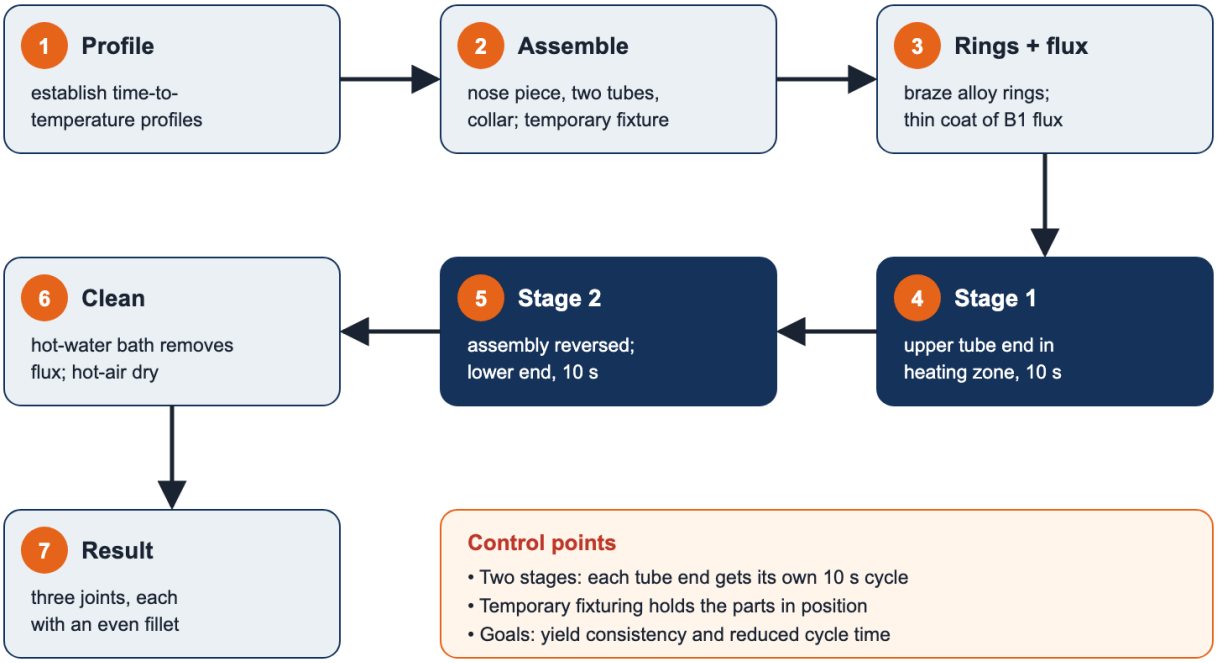
| Case | Temperature | Time | Equipment |
|---|---|---|---|
| **Stainless dental prophy jet (this case)** | **1400 °F (760 °C)** | **2 × 10 s** | **DW-UHF-4.5kW (as stated)** |
| Stainless valve seat to brass | 1325 °F (718 °C) | 7 s | DW-UHF-6kW-III, 300 kHz |
| Stainless steel tubes | 1330 °F (721 °C) | 20 s | DW-UHF-10kW, 300 kHz |

# 04 Process workflow and cell layout

## Dental Prophy Jet Induction Brazing – Process Workflow

HLQ

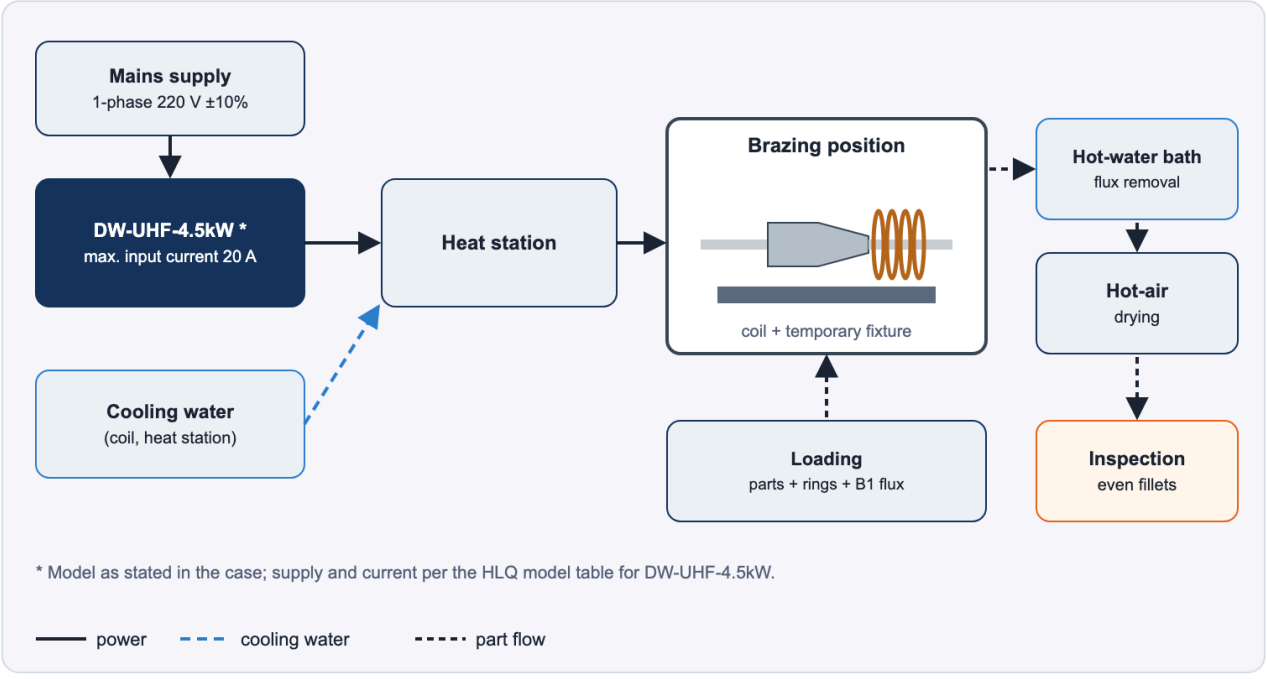
Two-stage sequence from the HLQ stainless steel tools case (DW-UHF-4.5kW, four-turn double-wound helical inductor).




## Dental Prophy Jet Brazing Cell – Typical Layout

HLQ

Schematic, not to scale. Induction supply and heat station, coil with fixture, hot-water flux removal and hot-air drying.



# 05 DW-UHF series

| Model | Power | Max. input current | Frequency | Supply |
|---|---|---|---|---|
| **DW-UHF-4.5KW** | **4.5 kW** | **20 A** | **1.1–2.0 MHz** | **1-ph 220 V** |
| DW-UHF-6.0KW | 6.0 kW | 28 A | 300–1100 kHz | 1-ph 220 V |
| DW-UHF-10KW | 10 kW | 15 A | 100–500 kHz | 3-ph 380 V |
| DW-UHF-20KW | 20 kW | 30 A | 50–250 kHz | 3-ph 380 V |

HLQ model table, 100% duty cycle. The case states DW-UHF-4.5kW at 400 kHz; 400 kHz lies outside the 1.1–2.0 MHz range listed for this model.

## Stainless brazing jobs (HLQ cases)

| Job | Power supply | Frequency | Time |
|---|---|---|---|
| Dental prophy jet (3 joints) | DW-UHF-4.5kW (as stated) | 400 kHz (as stated) | 2 × 10 s |
| Stainless valve seat to brass | DW-UHF-6kW-III | 300 kHz | 7 s |
| Stainless tubes | DW-UHF-10kW | 300 kHz | 20 s |

## 06 Frequently asked questions

**What was brazed?**

Three joints on a stainless steel dental prophy jet assembly: nose piece, two tubes and a support collar.

**Which filler and flux?**

Braze alloy rings and B1 flux.

**What temperature?**

1400 °F (760 °C).

**How long?**

Two 10-second stages: upper end first, then the reversed lower end.

**Which coil?**

A four-turn, double-wound helical inductor.

**How is flux removed?**

The assembly is bathed in hot water and blown dry with hot air.

**What do I send for a quote?**

Assembly drawing, materials, filler and flux, number of joints and output.

### Why choose HLQ

**Consistent yield**
Repeatable joints.

**Short cycles**
10-second stages.

**Even fillets**
Every joint sealed.

**Custom coils**
Double-wound helical.

**Medical parts**
Small stainless assemblies.

**Compact**
Single-phase DW-UHF.

# Request a brazing test

Send us the assembly, materials, filler and flux, and the number of joints. 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

- Assembly drawing and materials
- Number and position of joints
- Filler and flux
- Cycle time and parts per hour
- Available supply and cooling water