

HVAC Induction Brazing Machine

Flame-free, repeatable brazing of copper tubes, brass fittings, distributors and compressor connections

15-45 kW

DW-HF high frequency power range

30-80 kHz

oscillation frequency

5-20 s

approx. per joint in HLQ documented cases

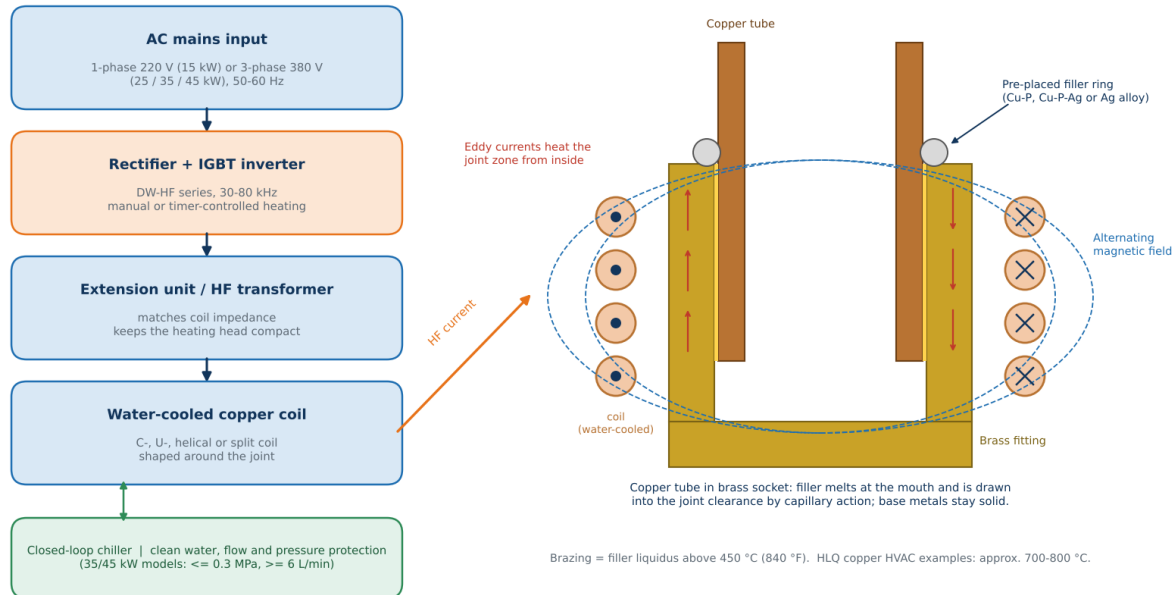
700-800 °C

typical copper HVAC brazing temperature

HVAC Induction Brazing: Working Principle

HLQ Induction Equipment

Electrical energy -> high-frequency current -> alternating magnetic field -> eddy-current heat in the joint -> filler flows by capillary action



dw-inductionheater.com | Schematic for illustration; final coil, power and cycle are confirmed by sample testing.

Quick answer. An HVAC induction brazing machine heats a copper or brass tube joint with a water-cooled coil until the brazing filler melts and is drawn into the joint by capillary action. No flame, no gas bottles, and the same power and time every cycle.

Built for air-conditioner, heat-pump and refrigeration manufacturers who want to move from open-torch brazing to a controlled, repeatable process on the production line or in the field.

Why HVAC manufacturers switch to induction

Refrigeration piping is brazed because a brazed joint is strong, leak-free and withstands the high and low temperatures and pressures of the refrigerant circuit. Induction makes that joint repeatable: heat is generated inside the joint itself, only where the filler must flow.

■ No open flame

No combustion at the joint and no gas storage at the station.

■ Localized heat

Less distortion, discoloration and wasted energy around the joint.

■ Automation ready

Integrates with fixtures, PLC control and robotic HVAC lines.

■ Repeatable cycle

Digital power and timer control replace operator torch skill.

■ Less oxidation

Short heating time means better appearance and less post-cleaning.

■ One supply, many joints

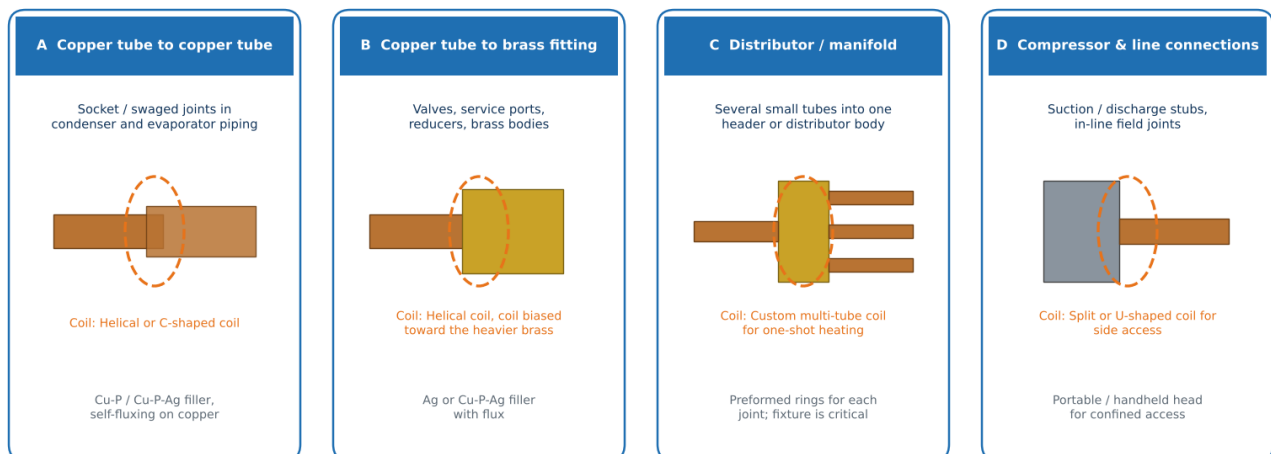
Change the coil and recipe to braze different tube sizes.

Where it is used

HVAC Induction Brazing: Application Case Map

HLQ Induction Equipment

Typical copper and brass joints in air-conditioning and refrigeration assemblies, with the coil style usually matched to each



HLQ documented copper-tube HVAC reference data (application examples, not guaranteed cycle times):

Reference power 6-15 kW (small copper-tube joints) Heating time approx. 5-20 s per joint Process temperature approx. 700-800 °C

Larger distributors and brass-heavy or multi-joint assemblies need more power, a custom coil and sample testing before production.

dw-inductionheater.com | Schematic for illustration; final coil, power and cycle are confirmed by sample testing.

HVAC joint	Typical parts	Usual coil
Copper tube to copper tube	Condenser and evaporator piping, socket joints	Helical or C-shaped
Copper tube to brass fitting	Valves, service ports, brass bodies	Helical, biased to the heavier part
Distributor / manifold	Several small tubes into one header	Custom multi-tube coil
Compressor connections	Inlet and outlet tubing	Split or U-shaped for side access
Heat exchangers	Tube ends, heating elements	Custom coil

DW-HF high frequency models for HVAC brazing

All four models are water-cooled IGBT induction heaters with a separate extension (transformer) unit and manual or timer-controlled heating. Values below are as published on each HLQ model page; "not listed" means the page does not state it.

Parameter	DW-HF-15kW	DW-HF-25kW-B	DW-HF-35kW	DW-HF-45kW
Oscillation power	15 kVA	25 kVA	35 kVA	45 kVA
Input power	1-phase 220 V, 50/60 Hz	3-phase 380 V, 50-60 Hz	3 × 380 V, 50-60 Hz	3 × 380 V, 50-60 Hz
Max. input power	Not listed	Not listed	35 kVA	50 kVA
Frequency	30-80 kHz	30-80 kHz	30-80 kHz	30-80 kHz
Oscillating current	Not listed	Not listed	10-70 A	15-90 A
Duty cycle	80% at 30 °C	80% at 30 °C	100% at 30 °C	100% at 30 °C
Cooling water	Water cooling	Water cooling	≤ 0.3 MPa, ≥ 6 L/min	≤ 0.3 MPa, ≥ 6 L/min
Main unit (mm)	495 × 240 × 485	550 × 240 × 485	550 × 240 × 485	550 × 240 × 535
Extension unit (mm)	Not listed	340 × 205 × 340	470 × 265 × 440	470 × 265 × 440
Weight (approx.)	45 kg	55 kg	70 kg	75 kg
Cable length	2-6 m	2 m standard	> 2 m	2 m

Recommended model by HVAC task

HVAC application	Material	HLQ recommended power	Suggested model
Small copper tube, below 10 mm OD	Copper to copper	5-10 kW	DW-HF-15kW
HVAC tube joints, 10-25 mm	Copper to copper or brass	10-25 kW	DW-HF-15kW / 25kW
Compressor tube brazing	Copper, brass, steel	15-30 kW	DW-HF-25kW / 35kW
HVAC distributor brazing	Copper tubes, brass fittings	15-35 kW	DW-HF-25kW / 35kW
Brass valve and fitting brazing	Brass to copper or steel	20-40 kW	DW-HF-35kW / 45kW
Larger distributors, multiple joints	Copper, brass	40-60 kW	DW-HF-45kW / 60kW

Very small, thin-wall tubes may suit higher frequencies than the 30-80 kHz DW-HF range; HLQ's Ultra High Frequency series covers those joints. Final power, frequency and coil are confirmed by sample testing on real parts.

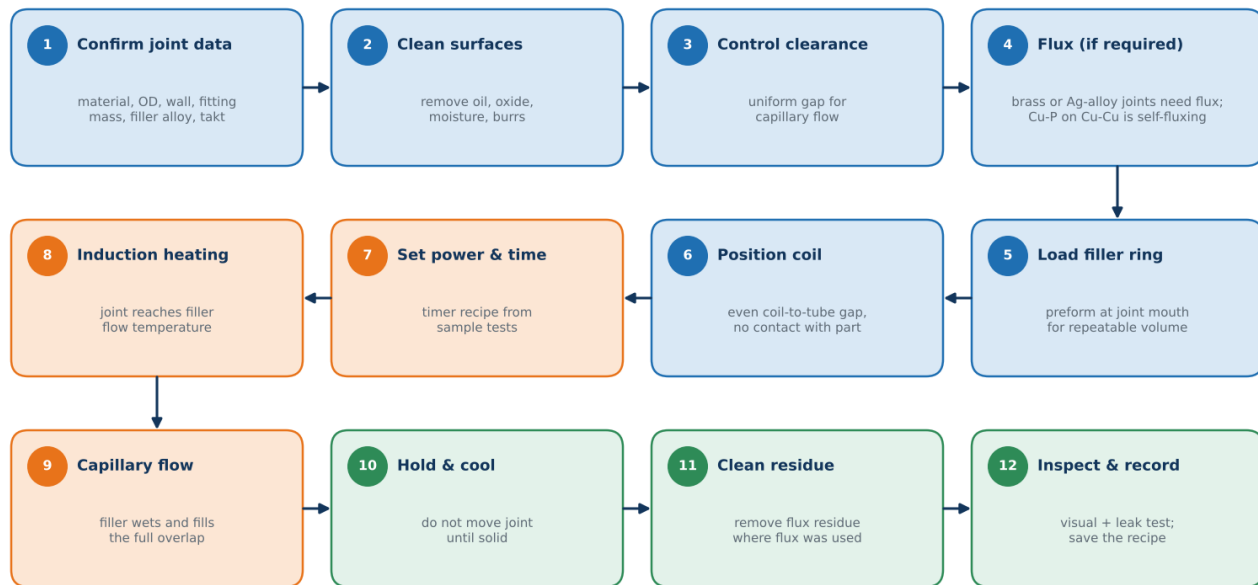
HLQ documented copper-tube HVAC data: about 6-15 kW for small copper-tube joints, approx. 5-20 s heating per joint, approx. 700-800 °C process temperature. These are application examples, not guaranteed cycle times.

A controlled process, joint after joint

HVAC Induction Brazing: Process Workflow

HLQ Induction Equipment

Twelve controlled steps from part preparation to leak test; blue = preparation, orange = heating cycle, green = quality control



Defect found? -> return to step 2-7 (cleaning, clearance, flux, coil position or recipe) before the next batch.

dw-inductionheater.com | Schematic for illustration; final coil, power and cycle are confirmed by sample testing.

Filler alloys for HVAC copper joints

Filler	Typical use	Note
Copper-phosphorus (Cu-P)	Copper-to-copper joints	Self-fluxing on copper; not for steel or nickel alloys
Cu-P-Ag, 15% silver	Standard for refrigeration service and repair	Better flow than low-silver grades
Cu-P-Ag, 5% silver	Lower-cost copper joints	Cheaper, does not perform as well as 15% Ag
Silver brazing alloy	Copper to brass, copper to steel, stainless	Used with a suitable flux

Common problems and quick fixes

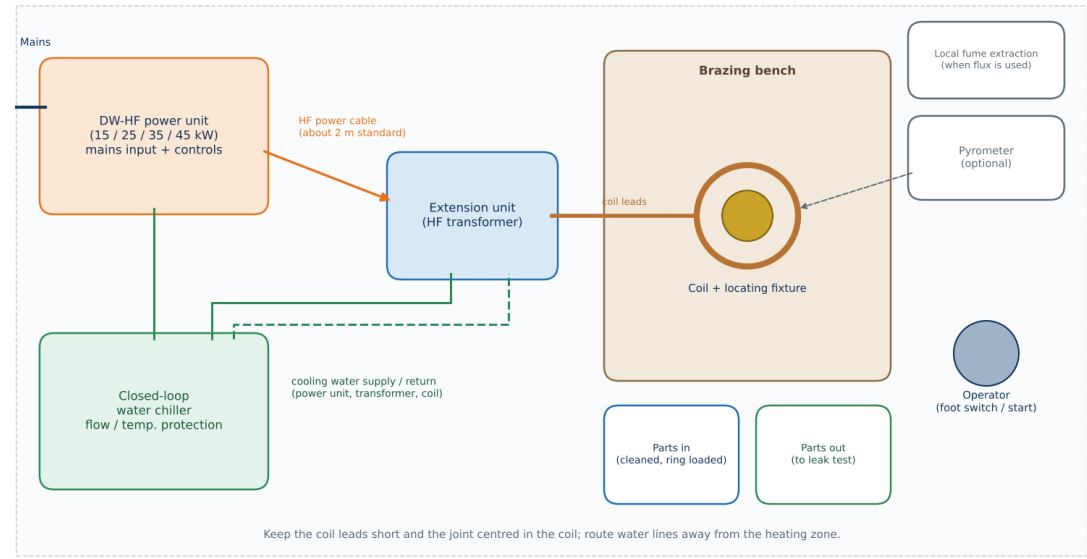
Problem	Likely cause	Fix
Filler does not flow	Low temperature, dirty joint, wrong filler or tight gap	More power or time, clean, verify filler and clearance
One part lags behind	Brass fitting heavier than the copper tube	Bias the coil toward the heavier part
Black joint or brass discoloration	Overheating, long cycle, wrong flux	Shorter cycle, temperature feedback, correct flux
Leak at test	Incomplete fill or movement during cooling	Hold fixture until solid; check cleaning and clearance
Coil overheats	Low water flow or blocked coil	Check flow, pressure and water quality

Planning the brazing station

HVAC Induction Brazing Station: Typical Layout (Top View)

HLQ Induction Equipment

Single manual / timer-controlled workstation built around a DW-HF power unit with separate extension (transformer) unit



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Induction vs torch brazing

Item	Induction brazing	Torch brazing
Heat control	Digital power and time	Manual flame adjustment
Repeatability	High with fixture and timer	Depends on operator skill
Safety	No open flame	Open flame and gas storage
Automation	Easy to integrate	More difficult
Initial cost	Higher machine investment	Lower equipment cost
Best use	Repeatable industrial brazing	Simple repair, low volume

Why HLQ

- Induction heating machines from 5 kW to 2000 kW, custom systems shipped to more than 60 countries.
- Custom induction coils for copper-to-copper, copper-to-brass, distributor and compressor joints.
- Manual, handheld, portable and automated configurations from one supplier.
- Engineering selection and sample testing before you commit to production.
- Export configuration: voltage, HMI language, cooling and safety design.

Send us your joint: tube material, OD and wall, fitting material, filler alloy, target cycle time, joints per hour, voltage and cooling conditions. HLQ engineers will recommend power, frequency, coil and control.

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