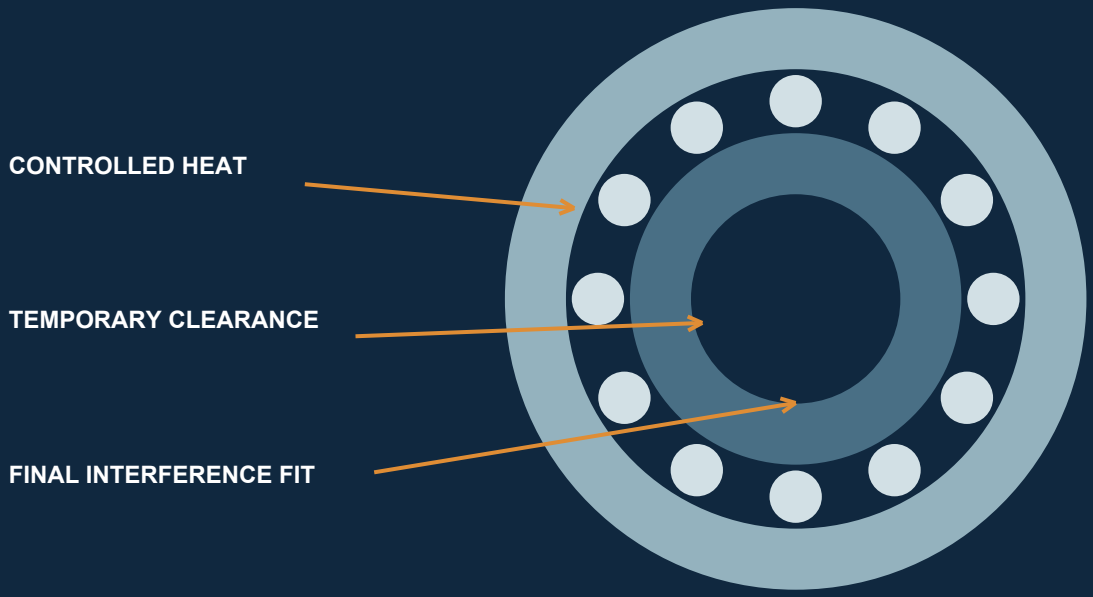
HLQ Induction Equipment Co.,Ltd

CONTROLLED THERMAL MOUNTING

INDUCTION SHRINK FITTING

BEARINGS

Expand the ring. Protect the bearing.
Build a repeatable mounting process.



Generic bearing concept. Coil geometry and bearing construction vary.

BEARING FIRST

Temperature, cage, seal and grease limits

PROCESS VALIDATION

Coil, ring temperature and residual magnetism

Application references do not replace bearing-manufacturer mounting instructions.

01 / PUBLISHED APPLICATION

A bearing-mounting reference

The legacy page describes a steel roller-bearing assembly heated in a multi-turn coil.



Original page: bearing within a helical coil.
The bearing axis is transverse to the coil axis.



Original page: three bearing-and-shaft assemblies.
Photos are retained with their existing watermark.

Published item	Reference and interpretation
Workpiece size	1-3.5 in. (25.4-88.9 mm); bore versus outside diameter is not identified.
Coil / operating point	Multi-turn helical coil; 180 kHz reported for the case.
Legacy temperature / time	300-350 deg F in 30-60 s. These are historical observations, not a standard bearing recipe.
Equipment discrepancy	HLQ page: DW-UHF-6kW. Matching Ameritherm/Ambrell note: 2 kW. Test attribution needs verification.

Important qualification
The historical temperature is approximately 149-177 deg C, above common hot-mounting guidance for standard rolling bearings. Bearing designation, heat stabilization, seals, cage and lubricant are not recorded. Do not copy this temperature into a production recipe.

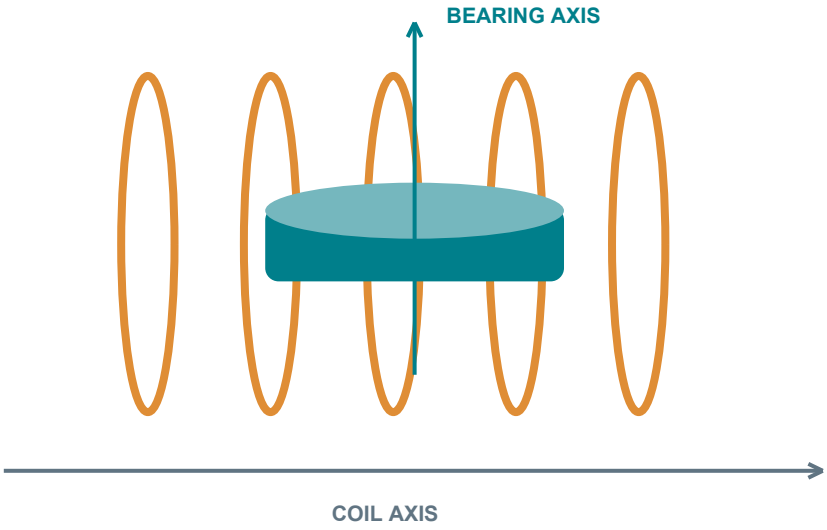
02 / WORKING PRINCIPLE

From magnetic field to bore growth

Induced currents generate heat in conductive rings. Expansion temporarily increases assembly clearance.

AC power supply → Matched coil → Ring heating → Bore expansion

TRANSVERSE ORIENTATION / CONCEPTUAL SIDE VIEW



PERPENDICULAR AXES

This orientation reflects the published case, not a universal coil arrangement. Ring-to-ring temperature differences, positioning and transfer access must be checked on the actual bearing.

ILLUSTRATIVE WORKCELL LAYOUT

Clean + measure → Heat + verify → Mount at shaft → Cool + inspect

Place the mounting fixture close to the heater. A short, clear transfer path preserves useful clearance. Keep sensors, coil leads and any specified cooling services outside the handling route.

Temperature feedback and residual-magnetism verification are process requirements to specify. Automatic control, logging and automatic demagnetization are not documented for the legacy DW-UHF-6kW configuration.

03 / TEMPERATURE BOUNDARIES

Choose temperature by bearing

The lowest applicable material, cage, seal, lubricant and manufacturer limit governs the recipe.

Bearing condition	Selection rule
Open rolling bearing	SKF general guidance: do not exceed 120 deg C. Confirm the exact designation and mounting manual.
Sealed or shielded bearing	SKF does not recommend above 80 deg C; any exception must remain within the specified seal and grease limits.
Polymer cage / special grease	Check the component-specific limit. Steel-ring capability alone is insufficient.
Special heat-stabilized ring	Use only the temperature approved for that exact ring or bearing construction.

ENGINEERING RELEASE PATH

1. Identify the complete bearing designation and construction.
2. Establish the approved maximum temperature and ring differential.
3. Calculate growth from the actual fit and transfer allowance.
4. If growth requires excessive heat, revise the method or fit review.
5. Validate temperature, seating and final bearing condition.

Do not increase temperature simply because a bearing will not slide.
Check shaft and bore tolerances, initial shaft temperature, alignment and transfer delay. Consider a manufacturer-approved alternative, including controlled shaft cooling where permitted.

Reference: SKF, Hot mounting, Rolling bearings catalogue, section B.8. The exact bearing-manufacturer instructions take precedence over the general examples above.

04 / CALCULATION EXAMPLE

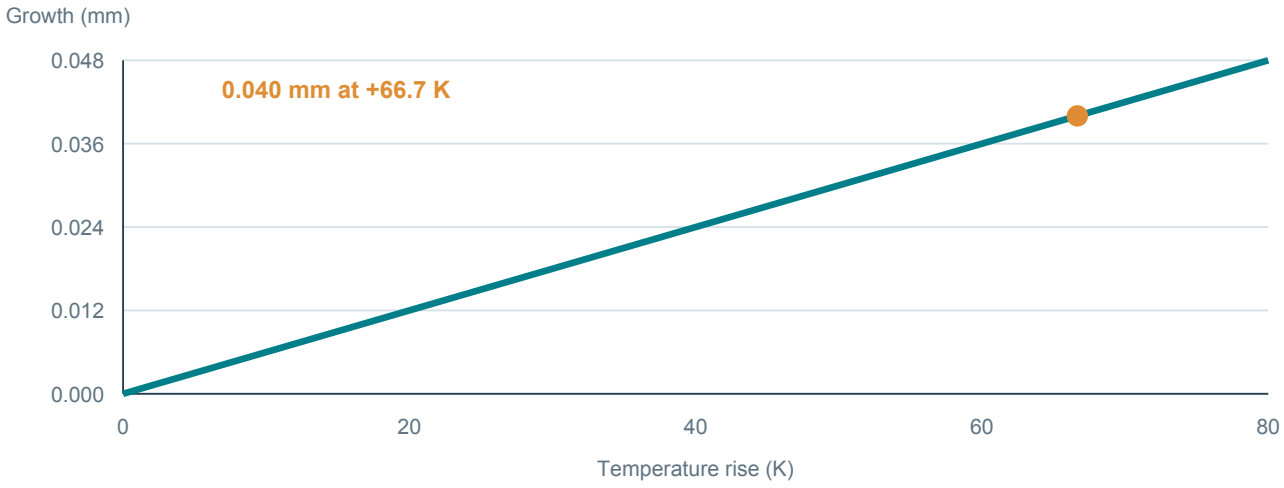
Estimate the required expansion

A free-ring approximation is useful for screening. It does not model the full bearing assembly or ring gradients.

Diameter growth: delta d = alpha x d x delta T
Required growth: diametral interference + temporary assembly clearance

Illustrative input	Value
Cold bore / shaft diameter	50.000 mm / 50.025 mm
Diametral interference	0.025 mm
Temporary clearance allowance	0.015 mm
Assumed steel expansion coefficient	0.000012 per K (screening assumption)
Calculated growth / temperature rise	0.040 mm / 66.7 K
Illustrative initial / ring temperature	20 deg C / approximately 86.7 deg C

CALCULATED FREE-BORE GROWTH / 50 mm BORE



Calculated, not measured. Assumes uniform ring temperature, a shaft remaining at 20 deg C, no constraint and no transfer loss. A sealed bearing limited to 80 deg C would fail this illustrative thermal check; revise the assembly method instead of exceeding its limit.

05 / EQUIPMENT AND APPLICATIONS

Select the complete heating system

Rated kW alone does not determine bearing suitability, heat uniformity or the mounting window.

Selection route	When it merits evaluation	Evidence needed
DW-UHF-6kW legacy listing	A reference label for the small-bearing case. Not a verified production recommendation.	Machine identity, measured ring profile, coil and duty-cycle test.
Dedicated bearing heater	Routine thermal mounting of complete rolling bearings.	Approved bearing range, temperature control, demagnetization performance.
Custom ring-heating system	Separable rings, unusual access or production integration.	Part-specific coil, thermal limits, handling and acceptance test.

PROCESS-DEVELOPMENT INPUTS

Input group	Required details
Bearing and fit	Designation, bore, outside diameter, width, mass, cage, seals, grease, shaft fit and shoulder.
Thermal and production	Approved temperature, permissible ring differential, starting conditions, transfer time and hourly output.
Installation	Available voltage, input current, protection, services, handling clearances and space.

APPLICATION CANDIDATES / NOT ADDITIONAL TEST RESULTS

Application	Bearing-specific evaluation
Electric-motor or pump rebuild	Confirm replacement designation, fit and lubricant condition.
Gearbox shaft assembly	Protect internal clearance; verify shoulder seating and axial retention.
Production bearing installation	Qualify each size family, coil position and transfer recipe.

The page provides no verified voltage, cooling-flow value, mass capacity, temperature accuracy or automatic demagnetization specification for the legacy configuration. Do not infer these from the model name.

HLQ engineering capabilities
Power-supply selection, custom induction coils, thermal process development, cooling-system matching and automation integration. Define the bearing-specific acceptance test with the selected configuration.

06 / PROCESS CONTROL

Protect the fit and the bearing

Release the process by measured results, including conditions after the bearing has cooled.

1. Verify designation and OEM heating limits
2. Clean and measure shaft, bearing and shoulder
3. Set coil position, sensors and handling fixture
4. Heat with an approved ramp and stop condition
5. Verify residual magnetism / demagnetize as required
6. Transfer, seat and retain against the shoulder
7. Cool; inspect clearance, rotation and seating

Symptom	Likely checks and response
Bearing stops before shoulder	Check transfer loss, fit and alignment. Never force through rolling elements.
Uneven temperature	Check coil position, ring-to-ring gradient, sensor attachment and ramp.
Noise or tight rotation after cooling	Check clearance/preload, seating, contamination and possible thermal damage.
Residual magnetism	Measure with suitable equipment; use a validated demagnetization step if required.

Acceptance record
Part designation and fit measurements; temperature trace and maximum ring differential; transfer time; residual-magnetism result; final seating, clearance/preload and functional inspection.

07 / QUESTIONS AND REFERENCES

Ten practical answers

A concise reference for production, maintenance and purchasing teams.

01. What does induction shrink fitting do?
It heats a conductive ring to create temporary clearance for an interference-fit assembly.

02. Is 150-175 deg C a standard bearing setting?
No. It is a legacy case value and exceeds common limits for standard rolling bearings.

03. What limits apply to sealed bearings?
Use the exact bearing, seal and grease instructions; SKF general guidance discourages above 80 deg C.

04. Is 1-3.5 in. the supported bore range?
The page does not identify whether that diameter is bore or outside diameter.

05. Does 180 kHz suit every bearing?
No. It is a reported case operating point, not a universal frequency.

06. Does the page prove a 6 kW test?
No. Its 6 kW label conflicts with a matching external 2 kW application note.

07. Does the heater automatically demagnetize?
That function is not documented for the legacy configuration and must be verified.

08. Can one coil cover different bearings?
Possibly within a validated family; qualify temperature distribution for each geometry.

09. Is 30-60 seconds the total cycle time?
No. The report concerns heating; transfer, seating, cooling and inspection add time.

10. Can a hot bearing be hammered into place?
Do not strike the bearing or transmit mounting force through its rolling elements.

SOURCE NOTES AND DOCUMENT STATUS

1. HLQ product page: dw-inductionheater.com/product/induction-shrink-fitting-bearings (original photographs and legacy listing).

2. Ameritherm / Ambrell, Shrink Fitting of Bearings, 2006: ambrell.com/hubfs/Ambrell_PDFs/AppNotes/shrinkfitting_22.pdf (2 kW source discrepancy).

3. SKF, Hot mounting, Rolling bearings catalogue, B.8; and SKF Bearing Maintenance Handbook (bearing temperature and handling guidance).

Prepared 21 October 2026. Calculations and new diagrams are engineering illustrations. No additional customer case, certification or measured performance is implied.