

APT INDUSTRIAL CHILLER

INDUSTRIAL COOLING
REFERENCE DOCUMENT

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3HP Compact Air Cooled Chiller for CNC Spindle Cooling

Industrial Cooling Reference for Precision Machine
Tool Cooling

COMPACT CHILLER

3HP REFERENCE

CNC SPINDLE

MACHINE COOLING

CASE REFERENCE

Project Snapshot

3HP compact air cooled chiller direction for a CNC spindle cooling project.

APPLICATION CNC Spindle Cooling	INDUSTRY Precision Machining Workshop
COOLING TARGET CNC spindle and machine-side coolant loop temperature control	CHILLER DIRECTION 3HP Compact Air Cooled Industrial Chiller
REVIEW FOCUS Spindle power, heat load, target coolant temperature, flow rate, pump pressure, coolant quality, installation space	



3HP COMPACT CHILLER REFERENCE

ENGINEERING REVIEW

Engineering Matrix

ENGINEERING ITEM	WHY IT MATTERS	DATA TO CONFIRM
Spindle Power	Machine spindle power is a core reference for cooling load review.	Rated spindle power and machining duty cycle.
Heat Load	Actual thermal load determines whether 3HP is suitable as reference direction.	Continuous and peak spindle cooling demand.
Target Coolant Temperature	Coolant setpoint affects machining stability and spindle protection.	Required outlet temperature and acceptable fluctuation.
Flow Rate	Enough circulation must be maintained through the spindle loop.	Required L/min or m3/h through the machine-side circuit.
Pump Pressure	Pump head must overcome hose length, spindle loop resistance, and filters.	Pressure drop through the actual cooling circuit.
Coolant Quality	Clean coolant supports stable spindle cooling and reduced maintenance risk.	Water quality, filtration, and contamination review.
Installation Space	Compact cabinet selection depends on available machine-side placement space.	Length, width, height, and airflow clearance.

Reference direction only. Final engineering review should be completed before quotation and final model confirmation.

COOLING CHALLENGE

Process Review

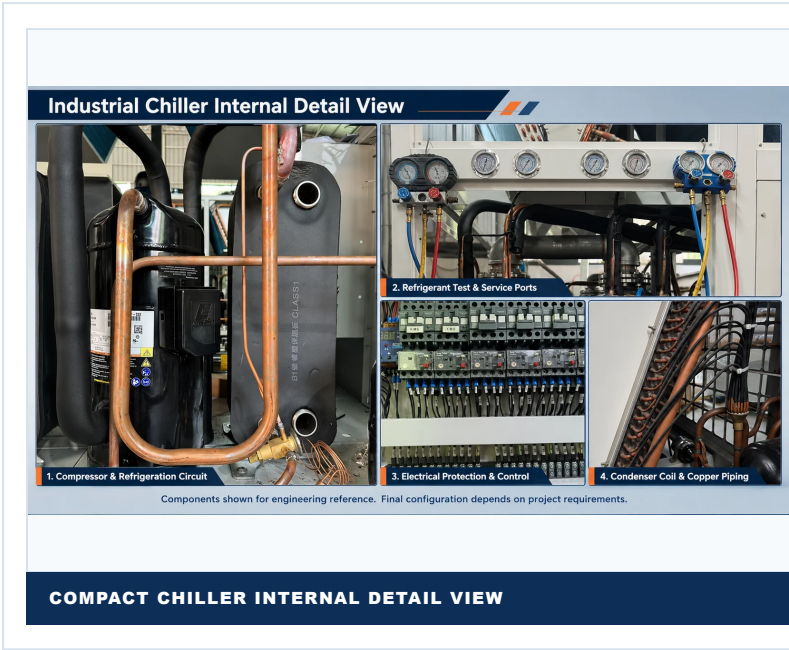
- CNC spindle cooling requires stable coolant temperature for precision machining continuity.
- Compact installation space may limit cabinet footprint and airflow arrangement.
- Flow rate and pump pressure must match the real machine-side spindle loop resistance.
- Coolant cleanliness affects long-term spindle cooling reliability and maintenance review.

RECOMMENDED DIRECTION

A 3HP compact air cooled industrial chiller was considered as the preliminary direction for this CNC spindle cooling project. Final sizing should be confirmed by spindle power, actual heat load, target coolant temperature, flow rate, pump pressure, coolant quality, and available installation space.

3HP Compact Chiller Configuration

Main configuration points for a CNC spindle cooling reference project.



- 01

Compact Air Cooled Design

Small-footprint cabinet direction suits machine-side precision cooling support.
- 02

Spindle Cooling Loop

Closed-loop coolant direction supports CNC spindle temperature stability.
- 03

Pump and Flow Review

Flow and pressure direction follow actual spindle circuit resistance.
- 04

Temperature Stability

Controller logic supports precision coolant temperature management.

TECHNICAL REFERENCE

COOLING METHOD Air cooled condenser	CAPACITY DIRECTION 3HP reference	TYPICAL APPLICATION CNC spindle / machine tool / precision loop cooling	COOLING CIRCUIT Closed-loop process water
OUTLET TEMP. Project-defined, often 18-25 C	PUMP SELECTION By required flow and head	POWER SUPPLY 220-460V, 50/60Hz by destination	FINAL REVIEW Spindle power / load / flow / pump head / space

Review Note

Final component selection should be confirmed according to actual spindle power, heat load, target coolant temperature, flow rate, pump head, coolant quality, and available installation space.

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