

APT INDUSTRIAL CHILLER

INDUSTRIAL COOLING
REFERENCE DOCUMENT

<https://applied-chiller.com/>



5HP Air Cooled Chiller for Laser Cutting Machine Cooling

Industrial Cooling Reference for Fiber Laser
Equipment

AIR COOLED

5HP REFERENCE

LASER COOLING

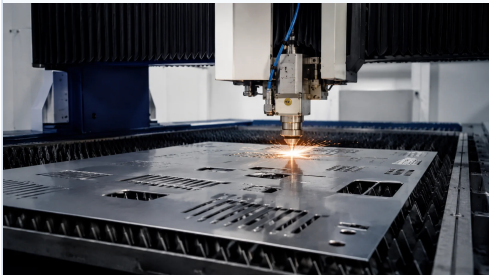
CLOSED-LOOP WATER

CASE REFERENCE

Project Snapshot

5HP air cooled chiller direction for a laser cutting machine cooling project.

APPLICATION Laser Cutting Machine Cooling	INDUSTRY Sheet Metal Fabrication Workshop
COOLING TARGET Laser source, cutting head, and optical cooling circuit	CHILLER DIRECTION 5HP Air Cooled Industrial Chiller
REVIEW FOCUS Laser power, water cleanliness, temperature stability, flow rate, pump pressure, alarm interface	



5HP AIR COOLED CHILLER REFERENCE

ENGINEERING REVIEW

Engineering Matrix

ENGINEERING ITEM	WHY IT MATTERS	DATA TO CONFIRM
Laser Power	Laser output level strongly affects total cooling demand.	Rated laser power and expected operating duty.
Water Temperature	Precision laser performance depends on stable coolant temperature.	Required outlet temperature and acceptable fluctuation.
Water Cleanliness	Clean water quality helps protect laser source and optical loop reliability.	Required water standard, filtration review, and maintenance practice.
Flow Rate	The cooling loop must receive enough circulation for heat removal.	Required L/min or m3/h through the laser equipment circuit.
Pump Pressure	Pump head must overcome hose length, filters, and equipment resistance.	Actual pressure drop in the machine-side water circuit.
Alarm Interface	Signal integration may be needed for interlock and machine protection.	Alarm output, dry contact, or controller communication requirement.
Ambient / Ventilation	Air cooled condenser margin depends on workshop ambient condition.	Workshop ambient, airflow clearance, and hot-air recirculation risk.

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

COOLING CHALLENGE

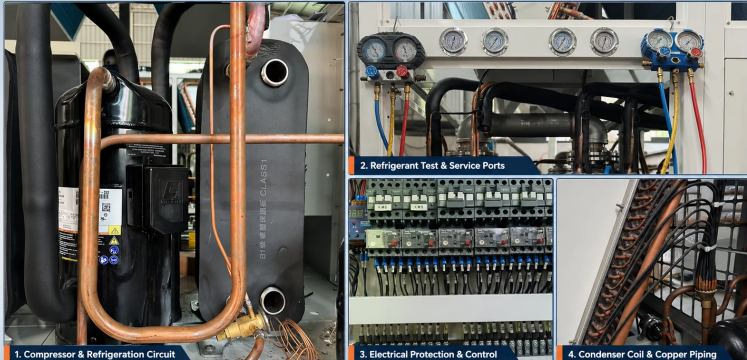
Process Review

- Laser source and cutting head cooling require stable outlet water temperature.
- Closed-loop cooling water must stay clean to protect precision laser components.
- Independent workshop installation often favors an air cooled chiller direction.
- Flow rate and pump pressure must match the real laser equipment loop resistance.

RECOMMENDED DIRECTION

A 5HP air cooled industrial chiller was considered as the preliminary direction for this laser cutting machine cooling project. Final sizing should be confirmed by laser power, target water temperature, flow rate, pump pressure, water cleanliness, ambient temperature, and signal interface requirement.

5HP Air Cooled Chiller Configuration

Industrial Chiller Internal Detail View  1. Compressor & Refrigeration Circuit 2. Refrigerant Test & Service Ports 3. Electrical Protection & Control 4. Condenser Coil & Copper Piping Components shown for engineering reference. Final configuration depends on project requirements.	01 Air Cooled Condenser Independent heat rejection direction without cooling tower dependency.
INDUSTRIAL CHILLER INTERNAL DETAIL VIEW	02 Laser Source Cooling Stable closed-loop water for laser source and cutting head protection.
	03 Pump and Water Circuit Project-reviewed circulation through the laser equipment cooling loop.
	04 Temperature Control Controller logic supports outlet temperature stability and alarm protection.

COOLING METHOD Air cooled condenser	CAPACITY DIRECTION 5HP reference	TYPICAL APPLICATION Fiber laser source / cutting head / optics cooling	COOLING CIRCUIT Closed-loop process water
OUTLET TEMP. Project-defined, often 18-25 C	PUMP SELECTION By required flow and head	POWER SUPPLY 380-460V, 50/60Hz by destination	FINAL REVIEW Laser power / flow / pump head / water quality / ambient

Final component selection should be confirmed according to actual laser power, target water temperature, flow rate, pump head, water cleanliness, ambient condition, and signal interface requirement.

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