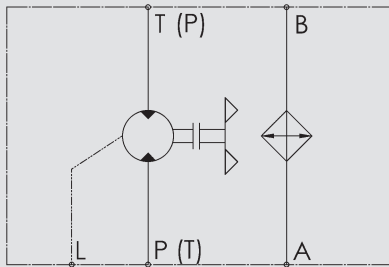




Air Cooler Mobile AC-LNH 8-14 with hydraulic motor

Symbol



General

The AC-LNH air cooler series is designed specifically for mobile hydraulic systems where high performance and efficiency are required and physical size must be kept to a minimum to allow easy installation.

Product Features

AC-LNH coolers use a combination of high performance, pressure-resistant cooling elements and hydraulic drive motors in order to ensure long, trouble-free operation of hydraulic systems in the mobile sector.

- Compact, efficient, high performance
- Cooling range 20 – 290 kW
- Hydraulic motors from 6.3 to 22 cm³/rev

Application Field

Transmission cooling and hydraulic systems in all mobile machines and vehicles, such as

- Mobile cranes
- Concrete mixers and pump trucks
- Road paving machines
- Construction machines (excavators, wheel loaders)
- Agricultural machines
- Municipal machines

Operation Data

Fluids	<ul style="list-style-type: none"> ● Oils (mineral oils, synthetic oils, high viscosity oils, biological oils, phosphate ester) ● Water glycol (cooling fluid)
Viscosity	2,000 mm ² /s (standard)
Temperature range	<ul style="list-style-type: none"> ● Minimum / maximum ambient temperature: -20 °C to +40 °C (standard) ● Maximum temperature of the medium: +130 °C <p>Please contact the technical sales department in the event of deviating temperatures.</p> <p>Notice! Fan at max. speed (max. volume of air) must be avoided when operating a cooler at a temperature difference between the medium inlet and the ambient temperature of greater than +50 °C. Quick changes in the temperature of the cooling element material can lead to a significant reduction in service life or to direct damage of the cooling element due to thermal shock. Please contact the technical sales department to receive information about controlled fan drives.</p>
Pressure resistance of the cooling element	<ul style="list-style-type: none"> ● Dynamic operating pressure: 16 bar ● Static operating pressure: 21 bar
Fan	<ul style="list-style-type: none"> ● Axial fan in suction version (standard) ● Axial fan in blowing version on request (Note: approx. 10 % less cooling capacity)
Motor*	<ul style="list-style-type: none"> ● Hydraulic motor ● Reversible with drain port ● Max. start-up pressure: 150 bar ● Max. drain pressure: 5 bar ● Max. operating pressure: 6.3/14 cm³/rev = 300 bar, 22 cm³/rev = 240 bar ● Operating fluid: Mineral oil to DIN 51524/25; DIN51511 ● Viscosity range: 12 – 750 mm²/s (recommended 12 – 100 mm²/s) ● Temperature range: up to +80 °C ● Filtration: ISO/DIS 4406, Class 19/17/14, β₁₀ ≥ 200 bar, Class 21/19/16, β₂₅ < 140 bar
Noise levels	<p>See Technical Data.</p> <p>The noise levels are only reference values as the acoustic properties of a room, connections and reflection have an effect on the noise level.</p>
Accessories	<ul style="list-style-type: none"> ● Integrated pressure bypass valve (IBP) or integrated thermal pressure bypass valve (IBT) (cannot be retrofitted, also see Options) ● Thermostats ● Air filter grid or air filter mat ● Vibration damper

* Calculation of the required oil flow for the hydraulic motor:

$$Q = \frac{V_g \times n}{10^3 \times \eta_{vol}} \quad [l/min]$$

V_g = motor displacement [cm³/rev]

n = fan speed [rpm]

η_{vol} = volumetric efficiency = 90 % at operating pressure of 150 bar

(Calculation also possible in simulation software KULI)

Options

Integrated pressure bypass valve (IBP) / integrated thermal pressure bypass valve (IBT)

This is a special-purpose channel integrated within the cooling element itself. When combined with a suitable pressure control valve (IBP) or combined thermal and pressure control valve (IBT), flow can bypass the cooler's main core when conditions demand. Typically the IBP valve assists during instances where high-viscosity fluid is present (during cold start ups) or when a sudden increase of fluid flow would cause a higher level of pressure drop across the cooler. The combined thermal and pressure bypass, or 'IBT', valve combines the above features together with mechanical thermal control regulation, allowing oil to bypass the radiator until a pre-fixed temperature is reached.

ATEX

The AC-LNH is also available for operation in gas and dust explosive areas.

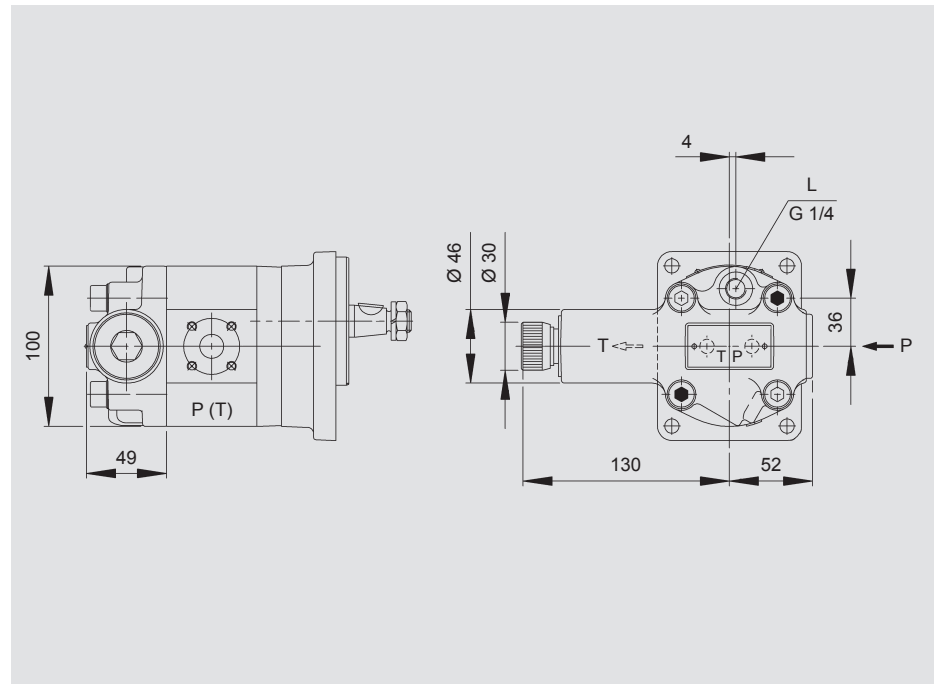
Corrosion protection CPL

The CPL version (Corrosion Protection Level) is suitable for aggressive ambient conditions, such as industrial atmospheres, high humidity or high salt content, which place great demands on the corrosion resistance and robustness of the materials used.

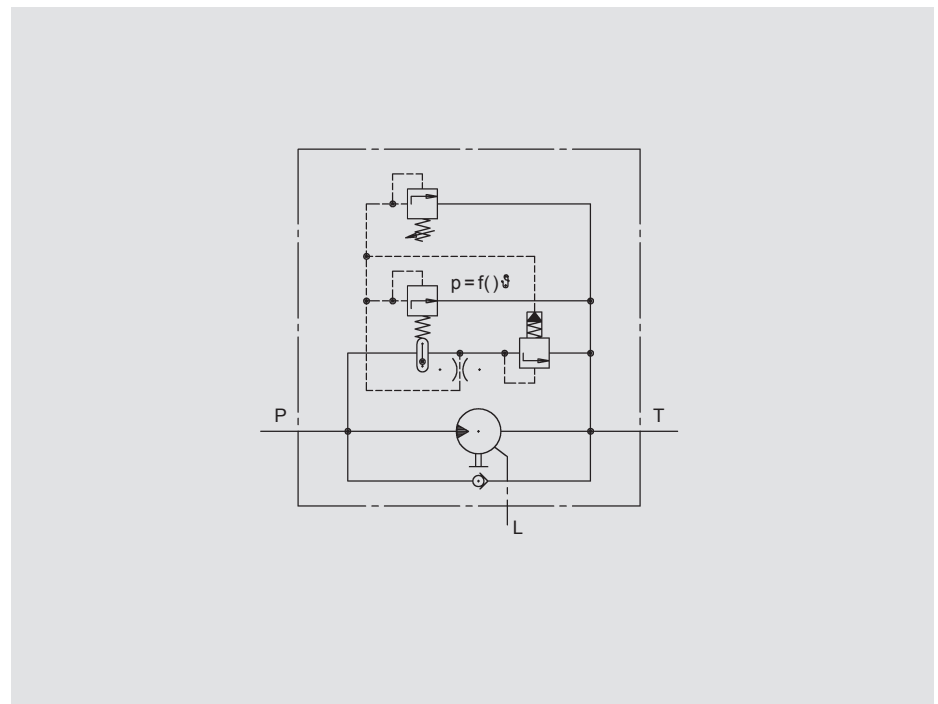
Thermal bypass hydraulic motor / variable speed

The thermal valve is a pilot-operated pressure relief valve with temperature-dependent pressure control and is mounted on the hydraulic motor in place of the end cover plate. The pressure setting of the valve automatically changes depending on the temperature of the oil driving the motor, thus controlling the motor speed. In addition to the actual temperature-controlled pressure setting, a maximum pressure relief and a recharging valve are fitted as a bypass check valve. The switching temperature values can be set from +40 °C to +70 °C and the pressure can be controlled up to +100 °C. Please contact our sales department for further information. All our hydraulic motors can be equipped with a thermal bypass. The minimum oil pressure at which the valve starts to work is 8 bar. This must be taken into consideration for the rest of the motor operating pressure range.

Thermal bypass dimensions

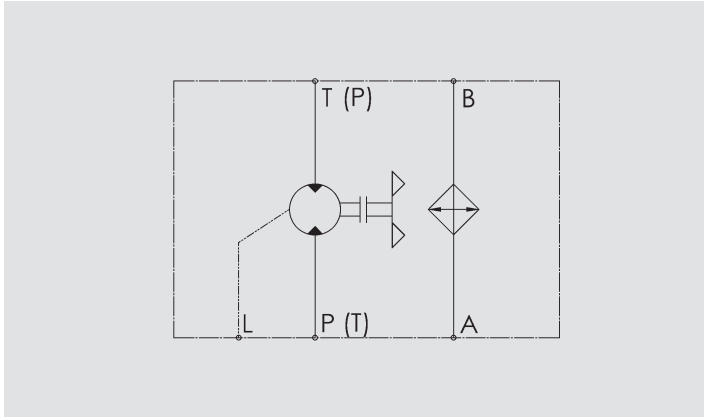
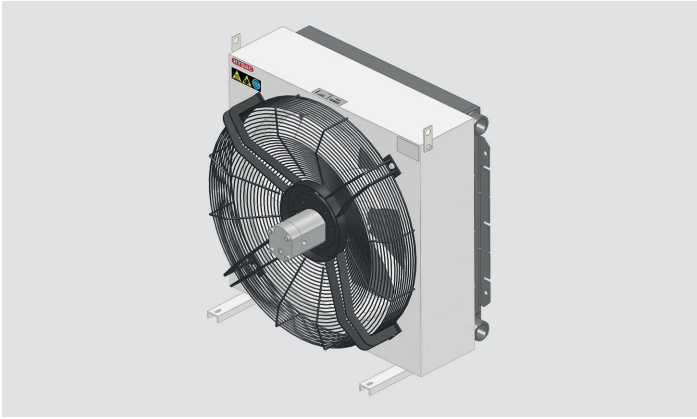


Thermal bypass symbol



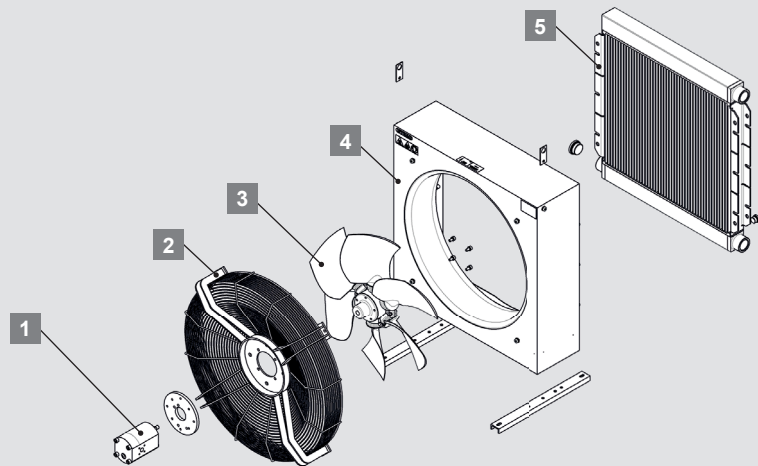
Design

AC-LNH 8-9

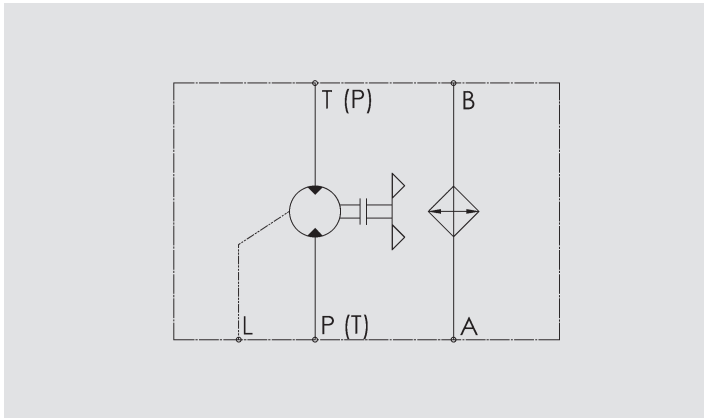


Air cooler with

- 1 Hydraulic motor
- 2 Finger guard
- 3 Axial fan
- 4 Fan housing
- 5 Heat exchanger

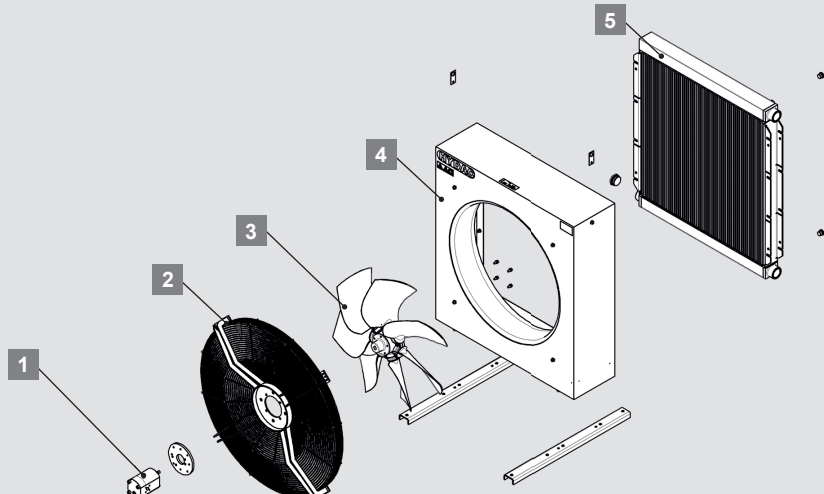


AC-LNH 10-11



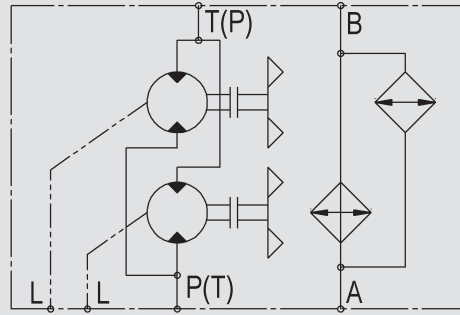
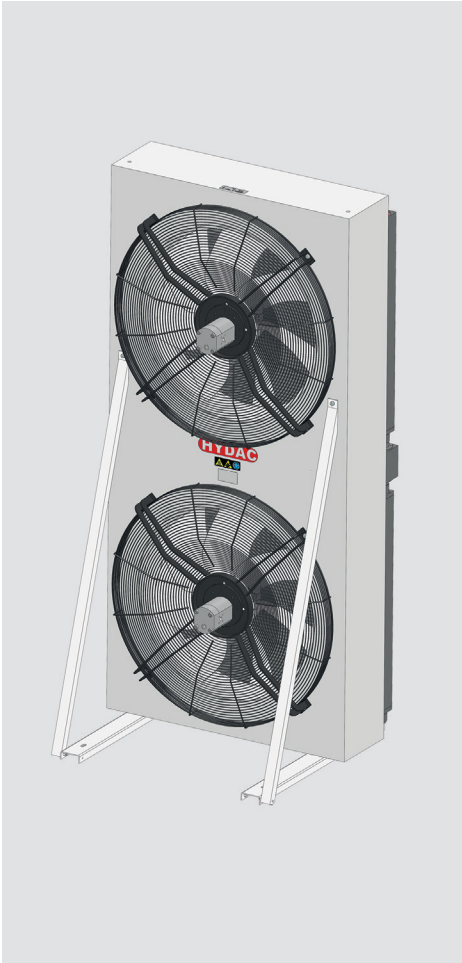
Air cooler with

- 1 Hydraulic motor
- 2 Finger guard
- 3 Axial fan
- 4 Fan housing
- 5 Heat exchanger



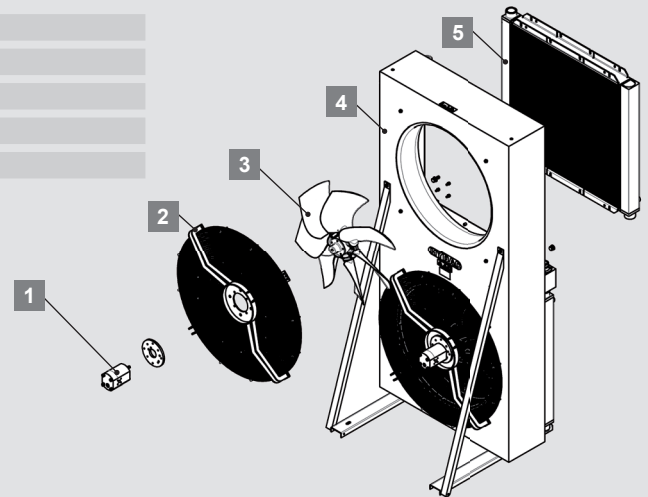
Design

AC-LNH 12-14



Air cooler with

- 1 Hydraulic motor
- 2 Finger guard
- 3 Axial fan
- 4 Fan housing
- 5 Heat exchanger



Technical Data

Type of cooler	P/N	Motor displacement [cm ³ /rev]	Operating speed range [rpm]	Fluid flow rate [l/min] ¹⁾	Air flow rate [m ³ /h] ¹⁾	Continuous motor operating pressure [bar]	Required pressure for max. speed [bar] ²⁾	Required motor oil flow at 1,500 rpm [l/min]	Noise level (at 1 m distance) [dB(A)]	Volume [l] ³⁾	Weight [kg] ⁴⁾
AC-LNH8	3903313	6.3	1,000 – 2,800	350	7,900	250	270	10.5	69	6	64
	3904781	14.0	1,000 – 2,800	350	7,900	250	120	23.0	69	6	64
	3904783	22.0	1,000 – 2,800	350	7,900	150	80	36.6	69	6	64
AC-LNH9	3903356	14.0	1,000 – 2,200	350	11,500	250	120	23.0	71	11	90
	3904830	22.0	1,000 – 2,200	350	11,500	150	80	36.6	71	11	90
AC-LNH10	3903358	14.0	1,000 – 1,800	540	18,600	250	210	23.0	77	14	120
	3904831	22.0	1,000 – 1,800	540	18,600	150	140	36.6	77	14	120
AC-LNH11	3903359	14.0	1,000 – 1,500	540	24,500	250	270	23.0	81	18	143
	3904832	22.0	1,000 – 1,500	540	24,500	150	180	36.6	81	18	143
AC-LNH12	3975153	14.0	1,000 – 1,800	840	18,600	250	210	23.0	77	28	270
	3975154	22.0	1,000 – 1,800	840	18,600	150	140	36.6	77	28	270
AC-LNH14	3975235	14.0	1,000 – 1,500	840	24,500	250	270	23.0	81	35	265
	3975236	22.0	1,000 – 1,500	840	24,500	150	180	36.6	81	35	265

¹⁾ Max. flow rate at fan speed of 1,500 rpm

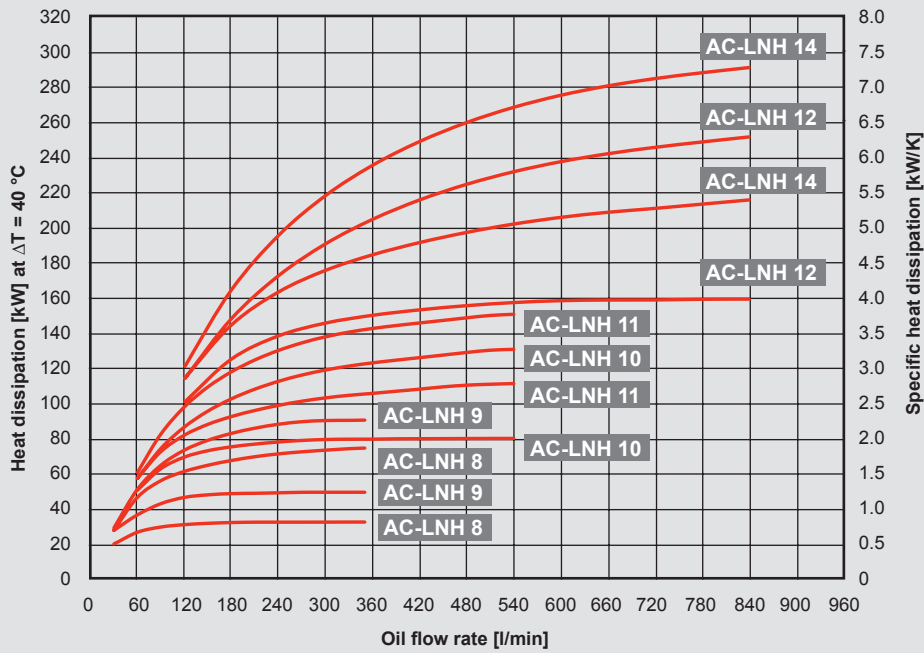
²⁾ At viscosity 34 mm²/s

³⁾ Fluid in cooling element (AC-LNH 12-14: both radiators combined)

⁴⁾ Unfilled

Cooling Capacity and Pressure Difference Δp

Mineral oil



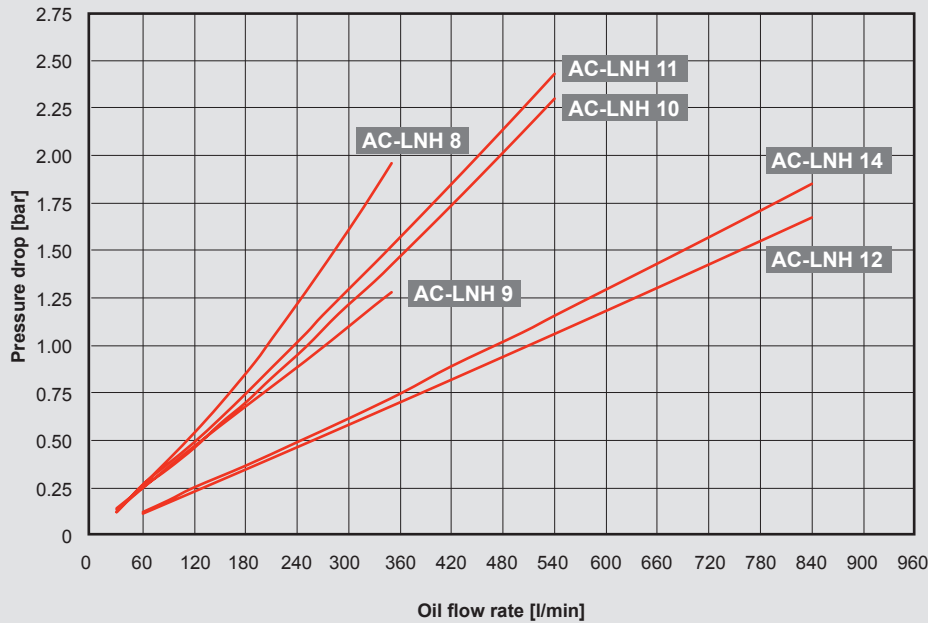
Tolerance: $\pm 5\%$

Cooling capacity:

Dependent on the oil flow rate and the temperature difference ΔT between oil inlet and air inlet.

Note:

The values are measured at $\Delta T = +40^\circ\text{C}$. For smaller ΔT values, the values can change. You can also use our cooler calculation software for designing. Please contact our technical sales department.



Measured at $30\text{ mm}^2/\text{s}$
Tolerance: $\pm 5\%$

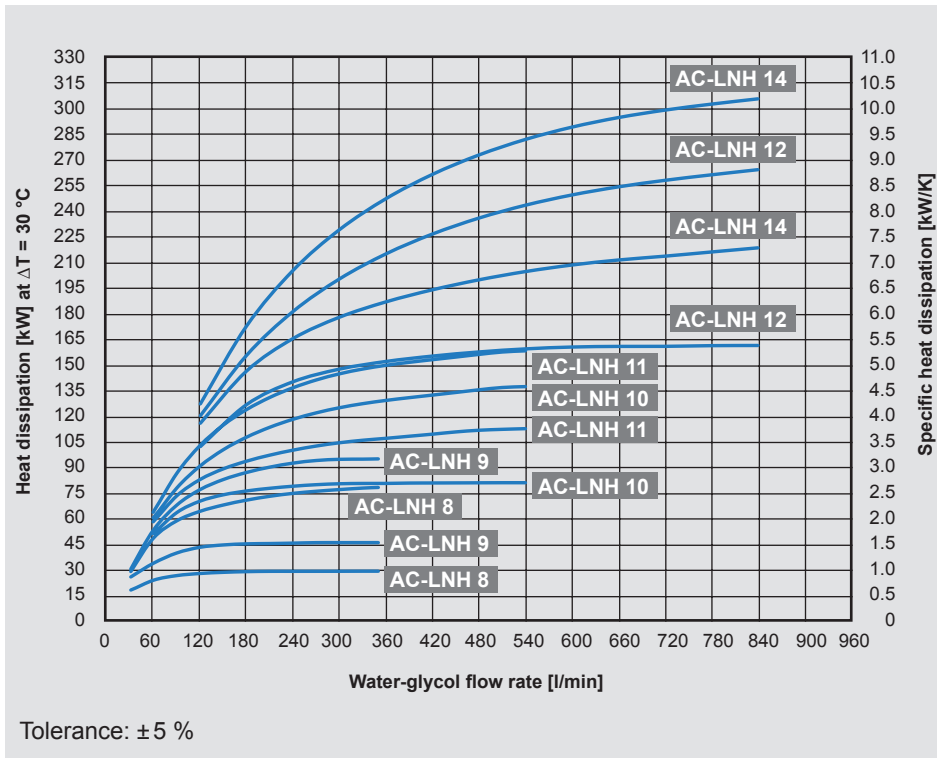
Pressure difference Δp

For other viscosities, the pressure drop must be multiplied by the conversion factor K:

Viscosity (mm^2/s)	10	15	22	30	46	68	100	150
Factor K	0.35	0.5	0.75	1.0	1.4	1.9	2.5	3.5

Cooling Capacity and Pressure Difference Δp

Water glycol (60/40)

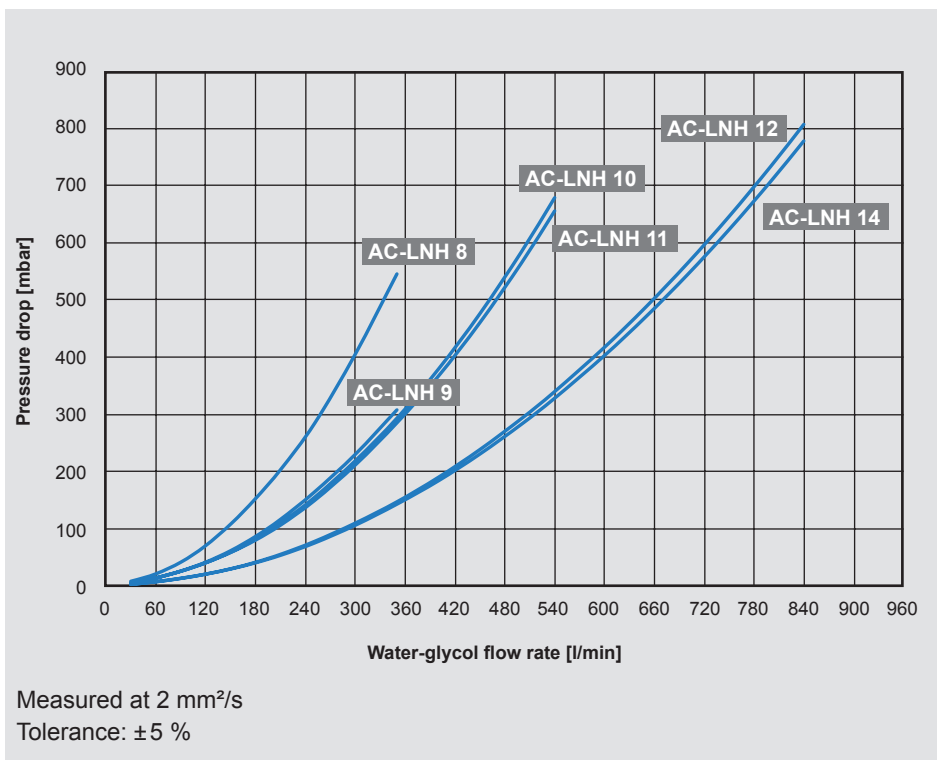


Cooling capacity:

Dependent on the water-glycol flow rate and the temperature difference ΔT between w/g inlet and air inlet.

Note:

The values are measured at $\Delta T = +30^\circ\text{C}$. For smaller ΔT values, the values can change. Please contact the technical sales department for designs with a temperature difference ΔT under $+10^\circ\text{C}$.



Pressure difference Δp

Model Code

AC-LNH 8 - 1.0 - H6.3TB - 1 - S - AITF60

Cooler type

AC-LNH = Air cooler (oil/water-glycol mix)

Size

8 - 14 = Size

Revision

Motor voltage

H6.3 = 6.3 cm³/r

H14 = 14 cm³/r

H22 = 22 cm³/r

H..TB = Hydraulic motor with thermal bypass

Colour

1 = RAL 9002 (standard)

Other colours on request.

Air flow direction

S = Suction (standard)

D = Blowing (on request)

Accessories

IBP = Heat exchanger with integrated pressure bypass valve (cannot be retrofitted)

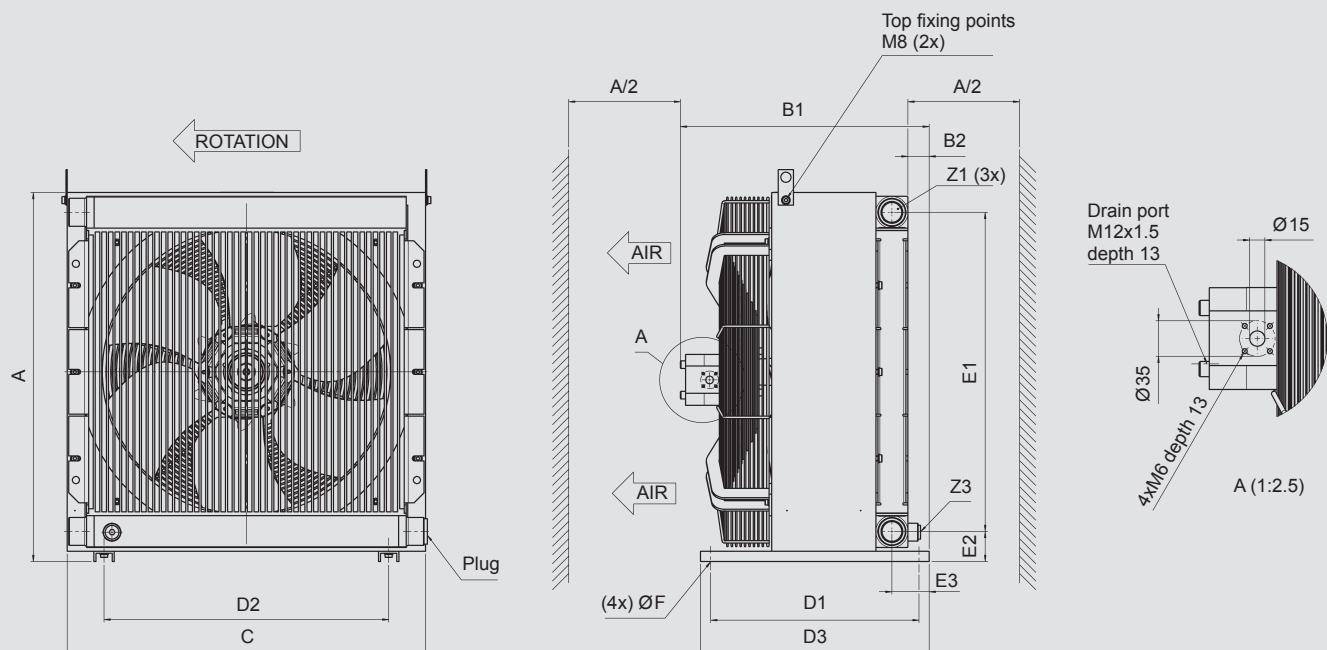
IBT = Heat exchanger with integrated thermal pressure bypass valve (cannot be retrofitted)

AITF = Thermostat (fixed)

For other accessories, e.g. rubber buffer as vibration damper, air filter grid or air filter mat, please see Air Cooler Accessories brochure.

Dimensions

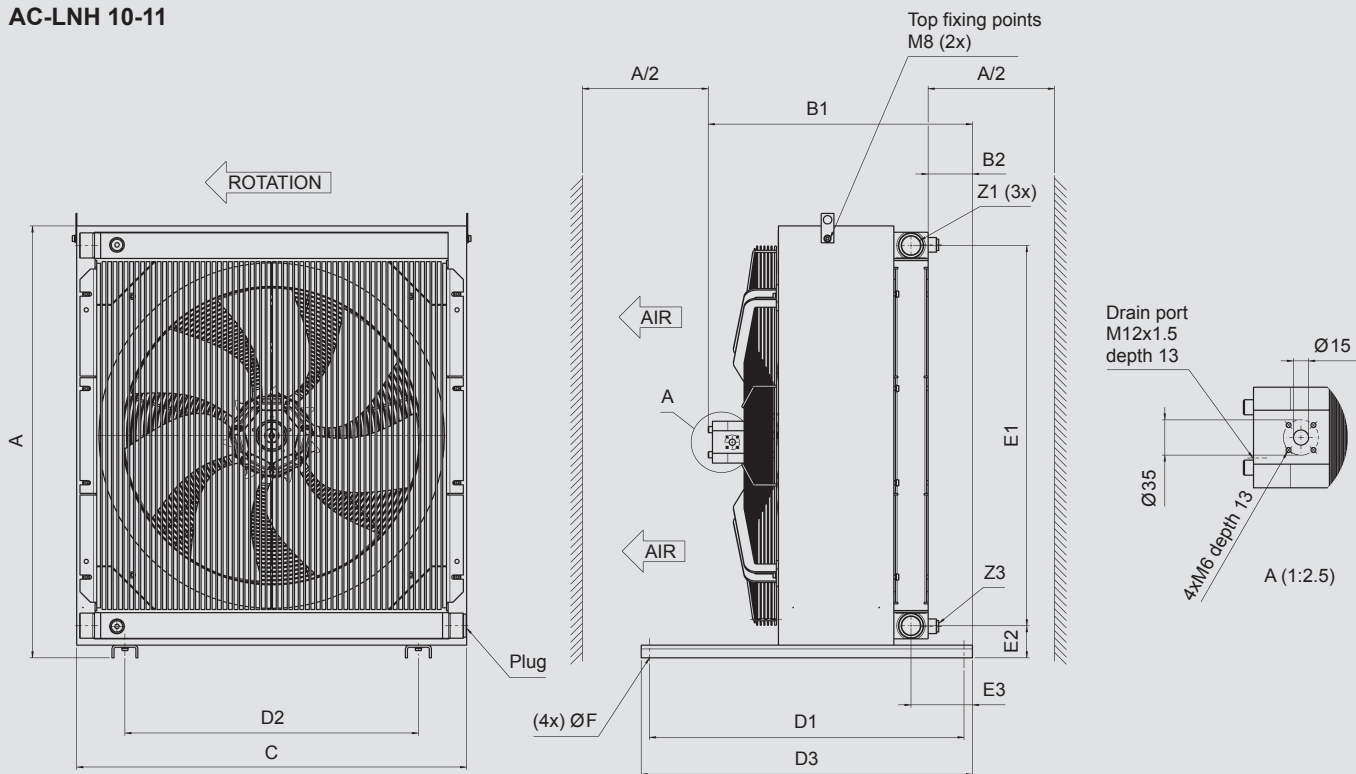
AC-LNH 8-9



[mm]	A ±5	B1 ±10 6.3 cc	B1 ±10 14 cc	B1 ±10 22 cc	B2 ±5	C ±5	D1 ±5	D2 ±5	D3 ±5	E1 ±5	E2 ±5	E3 ±5	F Ø/slot	Z1	Z3
AC-LNH8	725	471	485	495	42	705	410	560	450	627	59	74	9x20	G1¼"	M22x1.5
AC-LNH9	880	—	639	649	107	790	750	700	790	757	77	148	Ø12	G1½"	M22x1.5

Dimensions

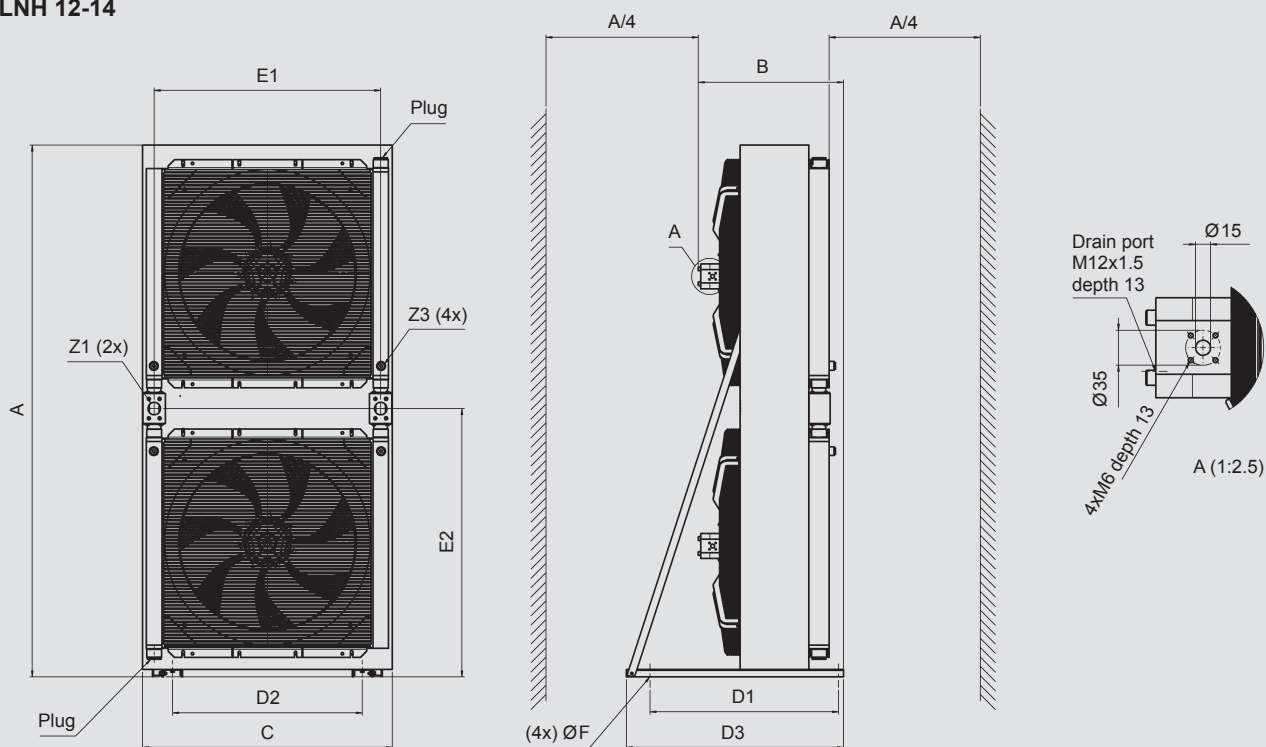
AC-LNH 10-11



[mm]	A ±5	B1 ±10 14 cc	B1 ±10 22 cc	B2 ±5	C ±5	D1 ±5	D2 ±5	D3 ±5	E1 ±5	E2 ±5	E3 ±5	F Ø/slot	Z1	Z3
AC-LNH10	1,030	626	636	106	930	750	700	790	907	77	147	Ø12	G1 ½"	M22x1.5
AC-LNH11	1,180	626	636	106	1,050	750	700	790	1,057	77	147	Ø12	G1 ½"	M22x1.5

Dimensions

AC-LNH 12-14



[mm]	A ±5	B ±10 14 cc	B ±10 22 cc	C ±5	D1 ±2	D2 ±2	D3 ±2	E1 ±5	E2 ±5	F Ø/slot	Z1	Z3
AC-LNH12	2,130	577	587	1,000	750	760	870	907	1,075	13x30	SAE G2"	M22x1.5
AC-LNH14	2,297	577	587	1,140	750	900	870	1,057	1,166	13x30	SAE G2"	M22x1.5

Note:

We recommend maintaining a minimum distance to ensure an unimpeded air inlet and air outlet. For sizes 8-11 this is half the height of the cooling element ($A/2$); for sizes 12-14 it is a quarter of the element height ($A/4$). Anything below the minimum distance can affect cooling capacity and noise emissions.

Note

The information in this brochure relates to the operating conditions and applications described.

For applications and operating conditions not described, please contact the relevant technical department.

Subject to technical modifications.



HYDAC COOLING GMBH

INTERNATIONAL

Industriegebiet
66280 Sulzbach/Saar
Germany

Tel.: +49 6897 509-01
Fax: +49 6897 509-454

E-mail: cooling@hydac.com
Internet: www.hydac.com

**HYDAC AG
Mezzovico Branch**

Via Sceresca, Zona Industriale 3
6805 Mezzovico
Switzerland

Tel.: +41 91 9355-700
Fax: +41 91 9355-701

E-mail: info@hydac.ch
Internet: www.hydac.com