



Airsock unit coolers THOR-A

Standard coolers with Cu tubing



HELPMAN

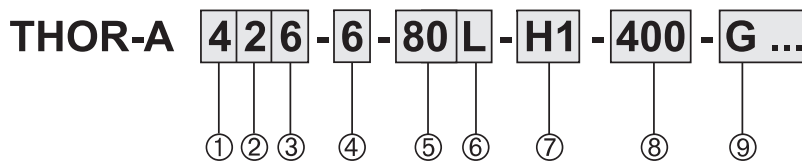




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Model indication



| Pos. | Reference | Options |
|------|-------------------|---|
| 1 | Cooler module | 1 - 4 |
| 2 | Number of fans | 1 - 3 |
| 3 | Tube rows | 4 or 6 tube rows in air direction |
| 4 | Fin spacing | 4, 6 and 7 mm |
| 5 | Ext. pressure | 40, 60, 80, 100, 120 Pa |
| 6 | Fan speed | L, H (1000/1500 rpm) |
| 7 | Circuiting design | 2H, H1, H2 ... |
| 8 | Current | 400 = 230/400/50/3 230 = 230/50/1 |
| 9 | Options | For a full survey of all available options see page 4 |

Eurovent

Within Europe, a wide variety of published data on capacities are in use, generally depending on national standards. Most in use by the leading manufacturers are national and international standards like DIN, ENV, NEN-EN and ASHRAE.

Due to this, customers have not been able to make objective product comparisons, since data published on capacities were based on DT_1 , DTM, dry or wet conditions, with or without certification, etc.

To meet the European requirements on EN standards, the European Refrigeration Industry embodied by Eurovent has set standards to guarantee an independent certification procedure for forced convection air cooled condensers based on NEN-EN 327 and unit air coolers based on NEN-EN 328. Being an active member of Eurovent, the capacities of the Alfa Laval commercial cooler programme, as given in the technical documentation, are based on NEN-EN 328 (evaporating temperature $t_0 = -8\text{ }^\circ\text{C}$, 8 K temperature difference between air-on temperature and evaporating temperature (DT_1)).

In order to enable air cooler selection for operating conditions, technical documentation should also give capacities for humid/frosted conditions. According to Eurovent these 'frosted conditions' are to be calculated by multiplying 'dry capacities' with a factor 1.15. These data can be found in the capacity tables, in the columns marked "frosted".

Capacities

Frosted conditions

- Lightly frosted coil.
- Relative humidity 85 %.
- Suction gas superheating 62% of the temperature difference (DT_1), with a minimum of 3.5 K.
- Refrigerant liquid temperature $30\text{ }^\circ\text{C}$

Evaporating temperature t_0

Evaporating temperature t_0 is the saturated temperature according to the pressure at the suction outlet of the cooler.

Dry conditions

Cooling capacity where no condensation or ice build-up occurs on the coil (100% sensible cooling). This condition is used by Eurovent to standardise capacity ratings but should not be used when selecting coolers. For cooler selection use the columns marked "frosted".





General Information

For air sock application Alfa Laval has developed a special air sock cooler range. These THOR-A coolers are fitted with an airsock ring and fan motors capable of supplying the extra external pressure that is required for the proper functioning of airsocks. THOR-A ranges to 78 models with 1 to 3 fans. Application area: evaporating temperatures of +5 down to -15 °C using either halogen refrigerants, CO₂ or secondary refrigerants.

Capacities (Eurovent SC 2) 4 up to 46 kW.

Air sock diameters 450 up to 730 mm.

Air sock selection

For a correct selection and dimensioning of air sock systems to be used in combination with THOR-A coolers, you will have to consult your air sock supplier.

Other THOR models

THOR

The THOR series is a wide and flexible range of industrial air coolers fitted with blow-through or draw-through fans. These models have been highly standardised in construction and dimensions, while maintaining flexibility in fin spacings, coil construction and circuiting design.

THOR-D

Low silhouette dual discharge air coolers.

THOR-F

Air cooler models THOR-F have been optimized for the refrigerated storage of agricultural products. These cooler models are characterised by an optimised capacity / air volume ratio and a relatively low profile.

All THOR, THOR-D, THOR-F and THOR-A models are also available with stainless steel tubing (TYR range).

Two-Year Guarantee

Because Alfa Laval has the fullest confidence in the product quality, a two-year full guarantee is given.

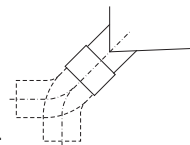
Product Configuration

- Finned coil
 - 4 coil block modules
 - 4 or 6 tube rows deep
 - Cu ripple fin tubing \varnothing 5/8" (smooth tubing for brine)
 - Tube pitch 50 x 50 mm square
 - Corrugated Alu-fins
 - Fin spacings 4, 6 and 7 mm.
- 1-3 Fans, drawing through the coil, available in a range of different executions.
 - Air sock diameters \varnothing 450 mm up to \varnothing 730 mm.
 - Fan motors protection class IP55.

- Corrosion resistant casing material:
 - Aluminium/Sendzimir, white epoxy coated (RAL 9003).

- Hinged, enclosed endcovers.

- Hinged driptray.
 - Drain(s) 32 mm PVC connection, freely adjustable into either horizontal or vertical position.



- Refrigerant distribution optimised to refrigerant applied.
- Refrigerant connections on right hand side (fan side view)
- Fitted with schrader valve on the suction connection for testing purposes.
- Sufficient room for fitting the expansion valve inside.
- Suitable for dry expansion or pumped system.
- Stickers indicate fan direction and refrigerant in/out.
- Delivery in mounting position. Coolers are mounted on wooden beams. Installation can take place with use of a forklift.
- Design pressure 33 bar (H(C)FC) or 6 bar (brine). Higher design pressures on request. Each heat exchanger is leak tested with dry air and finally supplied with a nitrogen pre-charge.





Options

Defrost systems

- Hot gas coil in driptray
- Electric defrost
- Water defrost

Electric defrost for air coolers with pumped refrigerant circulation or in glycol execution on special request only.

G1
E1, E4
W

Driptray insulation

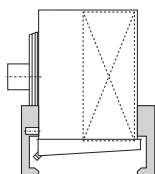
- Styropore 10 mm + cladding **I 2**
not in combination with electric defrost
- Foamglass 25 mm + cladding **I 3**


Refrigerant connections

Left hand side, fan side view **L**

Mounting feet

For floor mounting, coolers can be equipped with hot dip galvanized steel mounting feet. The positioning of these is the same as the suspension brackets for ceiling mounting. **MF**


Isolating switch (mounted)

ISM

Secondary refrigerant

Air coolers for secondary refrigerant application can be selected with our selection software. Extra information on request.

Stainless steel 304 casing

SSC

Suction hood

SH

Fan motors 400/60/3 or 230/60/1

 Non-standard executions *(on request only)*
Higher capacities
Special fan motors:

- Dual fan speed motors
- Variable fan speed motors
- EC fans
- Alternative electrical supply 460/60/3

Built in heater coil sections

Driptray Insulation (I)

For specific operational conditions the air coolers can be fitted with driptray insulation.

Insulation of the driptray is recommended for air coolers with hot gas defrosting used at a room temperature below -5 °C. For areas with high relative humidity it may also be necessary to insulate other parts of the casing.

At extra cost this driptray insulation can be combined with the usual epoxy coating.

Note : When selecting driptray insulation the overall height "B" of the coolers (see page 12) increases by the thickness of the insulation material applied.

Selection Example DT₁

| | |
|----------------------------|-----------|
| Refrigerant | R-404A dx |
| Selected fin spacing | 6 or 7 mm |
| Required external pressure | 80 Pa |
| Fan speed | 1500 rpm |
| Required cooling capacity | 15 kW |
| Air-on temperature | +6 °C |
| Evaporating temperature | 0 °C |

- 1) $DT_1 = +6 - 0 = 6$ K
- 2) Correction factor $DT_1 / R-404A : 1.28$
- 3) Multiply required capacity with correction factor : $15 \times 1.28 = 19.2$ kW.
- 4) Cooler models can be selected in columns 'capacity / ext. press. 80 Pa' on page 8 with a nominal capacity of 19.2 kW.

For the above mentioned conditions the following models can be selected :

- THOR-A 324-6, nom.cap. 18.3 kW.
- THOR-A 326-6, nom.cap. 24.4 kW.
- THOR-A 424-6, nom.cap. 22.3 kW.
- THOR-A 424-7, nom.cap. 20.9 kW.

Depending on parameters such as *air flow*, *number of fans* and *dimensions* (see tables) a final cooler model selection can take place.

Capacity values as given in the tables are nominal capacities.

| Standard condition SC | Air on temp. °C | Evaporating temperature °C | Factor dry/frosted |
|-----------------------|-----------------|----------------------------|--------------------|
| SC1 | 10 | 0 | 1.35 |
| SC2 | 0 | -8 | 1.15 |
| SC3 | -18 | -25 | 1.05 |
| SC4 | -25 | -31 | 1.01 |

SC 2 : Nominal capacity for cooling design.

Air-on temperature is the air temperature at the intake side of the coil block.

Correction factors

| DT ₁ K | Evaporating temperature °C | | | | |
|-----------------------------|----------------------------|------|------|-------------|------|
| | +5 | 0 | -5 | -8 | -10 |
| R-404A dx | | | | | |
| 6 | 1.22 | 1.28 | 1.33 | | 1.38 |
| 7 | 1.02 | 1.07 | 1.13 | | 1.18 |
| 8 | 0.87 | 0.92 | 0.97 | 1.00 | 1.03 |
| 9 | 0.76 | 0.81 | 0.86 | | 0.91 |
| R-134a dx | | | | | |
| 6 | 1.28 | 1.37 | 1.45 | | 1.53 |
| 7 | 1.07 | 1.15 | 1.23 | | 1.31 |
| 8 | 0.92 | 0.99 | 1.06 | | 1.14 |
| 9 | 0.80 | 0.87 | 0.93 | | 1.01 |
| R-22 dx | | | | | |
| 6 | 1.28 | 1.34 | 1.40 | | 1.45 |
| 7 | 1.08 | 1.13 | 1.19 | | 1.24 |
| 8 | 0.92 | 0.97 | 1.03 | | 1.08 |
| 9 | 0.80 | 0.85 | 0.90 | | 0.96 |
| R-404A pumped system | | | | | |
| 6 | 1.00 | 1.07 | 1.13 | | 1.19 |
| 7 | 0.82 | 0.88 | 0.94 | | 1.00 |
| 8 | 0.70 | 0.75 | 0.80 | | 0.85 |
| 9 | 0.60 | 0.65 | 0.69 | | 0.74 |
| R-22 pumped system | | | | | |
| 6 | 1.13 | 1.21 | 1.28 | | 1.34 |
| 7 | 0.92 | 0.98 | 1.05 | | 1.10 |
| 8 | 0.76 | 0.82 | 0.88 | | 0.93 |
| 9 | 0.64 | 0.70 | 0.75 | | 0.80 |

Correction factors for other refrigerants, alternative fin materials, coatings and optional coil block configurations on request.

Capacities R-404A

n = 1000 rpm

| Cooler model | Nominal capacity* | | | |
|-------------------------|-------------------|------------------------------|-------------------|------------------------------|
| | ext. press. 40 Pa | | ext. press. 60 Pa | |
| THOR-A | kW | air flow (m ³ /h) | kW | air flow (m ³ /h) |
| Fin spacing 4 mm | | | | |
| 214-4-* L | 5.5 | 2740 | | |
| 216-4-* L | 7.0 | 2710 | | |
| 224-4-* L | 11.0 | 5480 | | |
| 226-4-* L | 13.6 | 5420 | | |
| 234-4-* L | 16.2 | 8220 | | |
| 236-4-* L | 20.9 | 8140 | | |
| Fin spacing 6 mm | | | | |
| 314-6-* L | 6.7 | 4300 | 6.2 | 3760 |
| 316-6-* L | 8.7 | 4250 | 8.0 | 3710 |
| 324-6-* L | 13.5 | 8610 | 12.4 | 7520 |
| 326-6-* L | 17.5 | 8510 | 16.1 | 7430 |
| 334-6-* L | 19.8 | 12910 | 18.3 | 11280 |
| 336-6-* L | 26.8 | 12770 | 24.5 | 11150 |
| 414-6-* L | 8.5 | 5550 | 8.2 | 5200 |
| 416-6-* L | 11.3 | 5480 | 10.8 | 5140 |
| 424-6-* L | 17.1 | 11100 | 16.5 | 10420 |
| 426-6-* L | 22.6 | 10970 | 21.7 | 10300 |
| 434-6-* L | 25.7 | 16650 | 24.8 | 15630 |
| 436-6-* L | 33.7 | 16470 | 32.4 | 15450 |
| Fin spacing 7 mm | | | | |
| 214-7-* L | 4.3 | 2860 | | |
| 216-7-* L | 5.7 | 2820 | | |
| 224-7-* L | 8.6 | 5720 | | |
| 226-7-* L | 11.3 | 5650 | | |
| 234-7-* L | 12.7 | 8580 | | |
| 236-7-* L | 17.1 | 8480 | | |
| 314-7-* L | 6.2 | 4370 | 5.7 | 3810 |
| 316-7-* L | 8.2 | 4320 | 7.5 | 3770 |
| 324-7-* L | 12.4 | 8730 | 11.4 | 7620 |
| 326-7-* L | 16.4 | 8630 | 15.1 | 7540 |
| 334-7-* L | 18.3 | 13100 | 17.0 | 11440 |
| 336-7-* L | 24.9 | 12950 | 22.8 | 11300 |
| 414-7-* L | 7.9 | 5620 | 7.6 | 5280 |
| 416-7-* L | 10.5 | 5560 | 10.1 | 5220 |
| 424-7-* L | 15.8 | 11250 | 15.2 | 10560 |
| 426-7-* L | 21.0 | 11130 | 20.2 | 10440 |
| 434-7-* L | 23.6 | 16880 | 22.7 | 15840 |
| 436-7-* L | 31.6 | 16690 | 30.4 | 15670 |

* t₀ = -8 °C and DT₁ = 8 K, frosted

Technical data

n = 1000 rpm

| Cooler model THOR-A | Sound press. dB(A) | Coil surface m ² | Int. vol. dm ³ | Cooler weight kg | Dimensions (mm) | | | Fans | |
|-------------------------|-----------------------|--------------------------------|------------------------------|---------------------|-----------------|-------------|-------------------|----------------|--------|
| | | | | | length A | height B | air sock diameter | capacity kW | number |
| Fin spacing 4 mm | | | | | | | | | |
| 214-4* L | 53 | 46.0 | 12 | 71 | 1300 | 680 | 500 | 0.25 | 1 |
| 216-4* L | 53 | 68.9 | 19 | 81 | 1300 | 680 | 500 | 0.25 | 1 |
| 224-4* L | 56 | 91.9 | 20 | 112 | 2100 | 680 | 500 | 0.25 | 2 |
| 226-4* L | 56 | 137.9 | 30 | 133 | 2100 | 680 | 500 | 0.25 | 2 |
| 234-4* L | 58 | 137.9 | 28 | 153 | 2900 | 680 | 500 | 0.25 | 3 |
| 236-4* L | 58 | 206.8 | 42 | 185 | 2900 | 680 | 500 | 0.25 | 3 |
| Fin spacing 6 mm | | | | | | | | | |
| 314-6* L | 56 | 41.7 | 17 | 89 | 1300 | 880 | 555 | 0.25 | 1 |
| 316-6* L | 56 | 62.5 | 25 | 102 | 1300 | 880 | 555 | 0.25 | 1 |
| 324-6* L | 59 | 83.3 | 27 | 144 | 2100 | 880 | 555 | 0.25 | 2 |
| 326-6* L | 59 | 125.0 | 40 | 170 | 2100 | 880 | 555 | 0.25 | 2 |
| 334-6* L | 61 | 125.0 | 37 | 198 | 2900 | 880 | 555 | 0.25 | 3 |
| 336-6* L | 61 | 187.5 | 56 | 238 | 2900 | 880 | 555 | 0.25 | 3 |
| 414-6* L | 58 | 52.1 | 19 | 102 | 1500 | 880 | 730 | 0.45 | 1 |
| 416-6* L | 58 | 78.1 | 29 | 118 | 1500 | 880 | 730 | 0.45 | 1 |
| 424-6* L | 61 | 104.1 | 32 | 166 | 2500 | 880 | 730 | 0.45 | 2 |
| 426-6* L | 61 | 156.2 | 48 | 199 | 2500 | 880 | 730 | 0.45 | 2 |
| 434-6* L | 63 | 156.2 | 45 | 230 | 3500 | 880 | 730 | 0.45 | 3 |
| 436-6* L | 63 | 234.3 | 67 | 280 | 3500 | 880 | 730 | 0.45 | 3 |
| Fin spacing 7 mm | | | | | | | | | |
| 214-7* L | 53 | 27.0 | 12 | 69 | 1300 | 680 | 500 | 0.25 | 1 |
| 216-7* L | 53 | 40.6 | 19 | 78 | 1300 | 680 | 500 | 0.25 | 1 |
| 224-7* L | 56 | 54.1 | 20 | 108 | 2100 | 680 | 500 | 0.25 | 2 |
| 226-7* L | 56 | 81.1 | 30 | 127 | 2100 | 680 | 500 | 0.25 | 2 |
| 234-7* L | 58 | 81.1 | 28 | 147 | 2900 | 680 | 500 | 0.25 | 3 |
| 236-7* L | 58 | 121.7 | 42 | 176 | 2900 | 680 | 500 | 0.25 | 3 |
| 314-7* L | 56 | 36.1 | 17 | 88 | 1300 | 880 | 555 | 0.25 | 1 |
| 316-7* L | 56 | 54.1 | 25 | 101 | 1300 | 880 | 555 | 0.25 | 1 |
| 324-7* L | 59 | 72.1 | 27 | 142 | 2100 | 880 | 555 | 0.25 | 2 |
| 326-7* L | 59 | 108.2 | 40 | 168 | 2100 | 880 | 555 | 0.25 | 2 |
| 334-7* L | 61 | 108.2 | 37 | 196 | 2900 | 880 | 555 | 0.25 | 3 |
| 336-7* L | 61 | 162.2 | 56 | 234 | 2900 | 880 | 555 | 0.25 | 3 |
| 414-7* L | 58 | 45.1 | 19 | 101 | 1500 | 880 | 730 | 0.45 | 1 |
| 416-7* L | 58 | 67.6 | 29 | 117 | 1500 | 880 | 730 | 0.45 | 1 |
| 424-7* L | 61 | 90.1 | 32 | 164 | 2500 | 880 | 730 | 0.45 | 2 |
| 426-7* L | 61 | 135.2 | 48 | 196 | 2500 | 880 | 730 | 0.45 | 2 |
| 434-7* L | 63 | 135.2 | 45 | 227 | 3500 | 880 | 730 | 0.45 | 3 |
| 436-7* L | 63 | 202.8 | 67 | 275 | 3500 | 880 | 730 | 0.45 | 3 |

Changes possible without prior notice

Air sock unit coolers

THOR-A

Capacities R-404A

n = 1500 rpm

| Cooler model | Nominal capacity* | | | | | | | | | |
|-------------------------|-------------------|------------------------------|-------------------|------------------------------|-------------------|------------------------------|--------------------|------------------------------|--------------------|------------------------------|
| | ext. press. 40 Pa | | ext. press. 60 Pa | | ext. press. 80 Pa | | ext. press. 100 Pa | | ext. press. 120 Pa | |
| THOR-A | kW | air flow (m ³ /h) | kW | air flow (m ³ /h) | kW | air flow (m ³ /h) | kW | air flow (m ³ /h) | kW | air flow (m ³ /h) |
| Fin spacing 4 mm | | | | | | | | | | |
| 116-4* H | 7.3 | 3280 | 7.0 | 3080 | 6.4 | 2670 | | | | |
| 126-4* H | 14.5 | 6570 | 14.0 | 6160 | 12.7 | 5340 | | | | |
| 136-4* H | 22.0 | 9860 | 21.2 | 9240 | 19.4 | 8010 | | | | |
| 214-4* H | 7.3 | 4580 | 7.1 | 4380 | 6.8 | 3980 | | | | |
| 216-4* H | 9.5 | 4540 | 9.3 | 4340 | 8.8 | 3940 | | | | |
| 224-4* H | 14.6 | 9170 | 14.2 | 8770 | 13.6 | 7980 | | | | |
| 226-4* H | 19.0 | 9070 | 18.5 | 8680 | 17.4 | 7890 | | | | |
| 234-4* H | 21.8 | 13750 | 21.3 | 13160 | 20.2 | 11960 | | | | |
| 236-4* H | 28.6 | 13610 | 27.9 | 13020 | 26.4 | 11830 | | | | |
| Fin spacing 6 mm | | | | | | | | | | |
| 314-6* H | 9.1 | 7510 | 8.9 | 7170 | 8.7 | 6830 | 8.4 | 6420 | 8.1 | 6010 |
| 316-6* H | 12.3 | 7430 | 11.9 | 7090 | 11.6 | 6750 | 11.2 | 6350 | 10.7 | 5940 |
| 324-6* H | 18.3 | 15040 | 17.9 | 14350 | 17.4 | 13670 | 16.9 | 12850 | 16.3 | 12030 |
| 326-6* H | 24.5 | 14860 | 23.9 | 14190 | 23.2 | 13510 | 22.4 | 12700 | 21.5 | 11890 |
| 334-6* H | 27.2 | 22550 | 26.5 | 21530 | 25.8 | 20500 | 25.0 | 19270 | 24.1 | 18040 |
| 336-6* H | 37.1 | 22300 | 36.2 | 21280 | 35.2 | 20270 | 34.0 | 19050 | 32.8 | 17840 |
| 414-6* H | 11.1 | 9400 | 10.8 | 8890 | 10.6 | 8550 | 10.4 | 8200 | 10.3 | 7950 |
| 416-6* H | 15.5 | 9290 | 15.1 | 8780 | 14.7 | 8450 | 14.4 | 8110 | 14.1 | 7850 |
| 424-6* H | 22.3 | 18800 | 21.7 | 17780 | 21.3 | 17100 | 20.9 | 16410 | 20.6 | 15900 |
| 426-6* H | 31.1 | 18580 | 30.1 | 17570 | 29.5 | 16900 | 28.8 | 16220 | 28.2 | 15710 |
| 434-6* H | 34.4 | 28200 | 33.4 | 26660 | 32.7 | 25640 | 32.0 | 24610 | 31.5 | 23840 |
| 436-6* H | 45.7 | 27880 | 44.2 | 26360 | 43.2 | 25350 | 42.1 | 24330 | 41.3 | 23570 |
| Fin spacing 7 mm | | | | | | | | | | |
| 116-7* H | 5.9 | 3420 | 5.6 | 3210 | 5.1 | 2780 | | | | |
| 126-7* H | 11.8 | 6850 | 11.4 | 6420 | 10.4 | 5560 | | | | |
| 136-7* H | 18.1 | 10270 | 17.4 | 9630 | 16.3 | 8350 | | | | |
| 214-7* H | 5.8 | 4780 | 5.6 | 4570 | 5.3 | 4150 | | | | |
| 216-7* H | 7.9 | 4720 | 7.6 | 4510 | 7.2 | 4100 | | | | |
| 224-7* H | 11.6 | 9560 | 11.3 | 9140 | 10.7 | 8310 | | | | |
| 226-7* H | 15.4 | 9450 | 15.0 | 9040 | 14.1 | 8220 | | | | |
| 234-7* H | 17.1 | 14340 | 16.6 | 13720 | 15.7 | 12470 | | | | |
| 236-7* H | 23.6 | 14180 | 23.0 | 13560 | 21.7 | 12330 | | | | |
| 314-7* H | 8.5 | 7620 | 8.3 | 7280 | 8.1 | 6930 | 7.8 | 6510 | 7.5 | 6100 |
| 316-7* H | 11.5 | 7540 | 11.1 | 7190 | 10.8 | 6850 | 10.4 | 6440 | 10.0 | 6030 |
| 324-7* H | 17.0 | 15250 | 16.6 | 14550 | 16.2 | 13860 | 15.6 | 13030 | 15.1 | 12200 |
| 326-7* H | 22.9 | 15070 | 22.3 | 14390 | 21.6 | 13700 | 20.8 | 12880 | 20.0 | 12060 |
| 334-7* H | 25.2 | 22870 | 24.5 | 21830 | 23.9 | 20790 | 23.0 | 19540 | 22.2 | 18300 |
| 336-7* H | 34.9 | 22610 | 34.0 | 21580 | 33.0 | 20550 | 31.9 | 19320 | 30.7 | 18080 |
| 414-7* H | 10.4 | 9530 | 10.1 | 9010 | 9.9 | 8670 | 9.7 | 8320 | 9.6 | 8060 |
| 416-7* H | 14.5 | 9420 | 14.1 | 8910 | 13.8 | 8570 | 13.4 | 8220 | 13.2 | 7970 |
| 424-7* H | 20.9 | 19060 | 20.3 | 18020 | 19.9 | 17330 | 19.5 | 16630 | 19.2 | 16110 |
| 426-7* H | 29.1 | 18850 | 28.2 | 17820 | 27.6 | 17140 | 26.9 | 16450 | 26.4 | 15940 |
| 434-7* H | 31.9 | 28580 | 30.9 | 27020 | 30.3 | 25990 | 29.6 | 24950 | 29.1 | 24170 |
| 436-7* H | 42.6 | 28260 | 42.1 | 26720 | 40.3 | 25700 | 39.5 | 24670 | 38.8 | 23900 |

* t₀ = -8 C and DT₁ = 8 K, frosted

Changes possible without prior notice

Air sock unit coolers

THOR-A

Technical data

n = 1500 rpm

| Cooler model THOR-A | Sound press. dB(A) | Coil surface m ² | Int. vol. dm ³ | Cooler weight kg | Dimensions (mm) | | | Fans | |
|-------------------------|-----------------------|--------------------------------|------------------------------|---------------------|-----------------|-------------|-------------------|----------------|--------|
| | | | | | length A | height B | air sock diameter | capacity kW | number |
| Fin spacing 4 mm | | | | | | | | | |
| 116-4* H | 57 | 57.5 | 11 | 74 | 1300 | 580 | 450 | 0.25 | 1 |
| 126-4* H | 60 | 114.9 | 21 | 120 | 2100 | 580 | 450 | 0.25 | 2 |
| 136-4* H | 62 | 172.4 | 32 | 165 | 2900 | 580 | 450 | 0.25 | 3 |
| 214-4* H | 60 | 46.0 | 12 | 71 | 1300 | 680 | 500 | 0.25 | 1 |
| 216-4* H | 60 | 68.9 | 19 | 81 | 1300 | 680 | 500 | 0.25 | 1 |
| 224-4* H | 63 | 91.9 | 20 | 112 | 2100 | 680 | 500 | 0.25 | 2 |
| 226-4* H | 63 | 137.9 | 30 | 133 | 2100 | 680 | 500 | 0.25 | 2 |
| 234-4* H | 65 | 137.9 | 28 | 153 | 2900 | 680 | 500 | 0.25 | 3 |
| 236-4* H | 65 | 206.8 | 42 | 185 | 2900 | 680 | 500 | 0.25 | 3 |
| Fin spacing 6 mm | | | | | | | | | |
| 314-6* H | 63 | 41.7 | 17 | 89 | 1300 | 880 | 555 | 0.55 | 1 |
| 316-6* H | 63 | 62.5 | 25 | 102 | 1300 | 880 | 555 | 0.55 | 1 |
| 324-6* H | 66 | 83.3 | 27 | 144 | 2100 | 880 | 555 | 0.55 | 2 |
| 326-6* H | 66 | 125.0 | 40 | 170 | 2100 | 880 | 555 | 0.55 | 2 |
| 334-6* H | 68 | 125.0 | 37 | 198 | 2900 | 880 | 555 | 0.55 | 3 |
| 336-6* H | 68 | 187.5 | 56 | 238 | 2900 | 880 | 555 | 0.55 | 3 |
| 414-6* H | 65 | 52.1 | 19 | 102 | 1500 | 880 | 730 | 1.20 | 1 |
| 416-6* H | 65 | 78.1 | 29 | 118 | 1500 | 880 | 730 | 1.20 | 1 |
| 424-6* H | 68 | 104.1 | 32 | 166 | 2500 | 880 | 730 | 1.20 | 2 |
| 426-6* H | 68 | 156.2 | 48 | 199 | 2500 | 880 | 730 | 1.20 | 2 |
| 434-6* H | 70 | 156.2 | 45 | 230 | 3500 | 880 | 730 | 1.20 | 3 |
| 436-6* H | 70 | 234.3 | 67 | 280 | 3500 | 880 | 730 | 1.20 | 3 |
| Fin spacing 7 mm | | | | | | | | | |
| 116-7* H | 57 | 33.8 | 11 | 72 | 1300 | 580 | 450 | 0.25 | 1 |
| 126-7* H | 60 | 67.6 | 21 | 116 | 2100 | 580 | 450 | 0.25 | 2 |
| 136-7* H | 62 | 101.4 | 32 | 159 | 2900 | 580 | 450 | 0.25 | 3 |
| 214-7* H | 60 | 27.0 | 12 | 69 | 1300 | 680 | 500 | 0.25 | 1 |
| 216-7* H | 60 | 40.6 | 19 | 78 | 1300 | 680 | 500 | 0.25 | 1 |
| 224-7* H | 63 | 54.1 | 20 | 108 | 2100 | 680 | 500 | 0.25 | 2 |
| 226-7* H | 63 | 81.1 | 30 | 127 | 2100 | 680 | 500 | 0.25 | 2 |
| 234-7* H | 65 | 81.1 | 28 | 147 | 2900 | 680 | 500 | 0.25 | 3 |
| 236-7* H | 65 | 121.7 | 42 | 176 | 2900 | 680 | 500 | 0.25 | 3 |
| 314-7* H | 63 | 36.1 | 17 | 88 | 1300 | 880 | 555 | 0.55 | 1 |
| 316-7* H | 63 | 54.1 | 25 | 101 | 1300 | 880 | 555 | 0.55 | 1 |
| 324-7* H | 66 | 72.1 | 27 | 142 | 2100 | 880 | 555 | 0.55 | 2 |
| 326-7* H | 66 | 108.2 | 40 | 168 | 2100 | 880 | 555 | 0.55 | 2 |
| 334-7* H | 68 | 108.2 | 37 | 196 | 2900 | 880 | 555 | 0.55 | 3 |
| 336-7* H | 68 | 162.2 | 56 | 234 | 2900 | 880 | 555 | 0.55 | 3 |
| 414-7* H | 65 | 45.1 | 19 | 101 | 1500 | 880 | 730 | 1.20 | 1 |
| 416-7* H | 65 | 67.6 | 29 | 117 | 1500 | 880 | 730 | 1.20 | 1 |
| 424-7* H | 68 | 90.1 | 32 | 164 | 2500 | 880 | 730 | 1.20 | 2 |
| 426-7* H | 68 | 135.2 | 48 | 196 | 2500 | 880 | 730 | 1.20 | 2 |
| 434-7* H | 70 | 135.2 | 45 | 227 | 3500 | 880 | 730 | 1.20 | 3 |
| 436-7* H | 70 | 202.8 | 67 | 275 | 3500 | 880 | 730 | 1.20 | 3 |

Changes possible without prior notice



Fans

For THOR-A coolers there is a choice of 8 different fan capacities and either 1000 or 1500 rpm fan speeds. Fans are suitable for external pressures ranging from 40 up to 120 Pa.

Execution

Fans are executed with balanced aluminium or polyamide fan blades, fitted with robust electrolytically galvanized and epoxy coated fan guards according to DIN 31001. Fans are mounted in vibration dampers.

Enclosed design spray-tight motors, protection class IP-55.

All motors, with the exception of the 0.18 kW, 230/50/1 motor, are equipped with a thermal safety device built in the windings, connected to separate terminals in the box.

This safety device can therefore be integrated into the control circuit. The electrical control should be arranged preferably with a manual reset device in order to prevent continuous on/off switching (tripping) of the motors. Cable inlet ranges from 7 up to 12 mm.

Sound pressure dB(A)

Sound pressure as given in the tables are sound pressure levels in dB(A) according to EN 13487 at 5 m distance in free field conditions. Values may deviate depending on situations at site. The table below gives calculated sound pressure corrections at various distances.

| Distance m | Correction dB(A) |
|---------------|---------------------|
| 1 | + 14 |
| 2 | + 8 |
| 3 | + 4 |
| 4 | + 2 |
| 5 | 0 |
| 10 | - 6 |
| 20 | -12 |
| 50 | -20 |

Fans 50 Hz

| Fan motor W | Motor voltage* V | Electric capacity | | Adj. value overloadrelays | | cable inlet |
|--------------------------------|------------------------|-------------------|---------------|---------------------------|-------------|-------------|
| | | nom. kW | abs. kW*** | 0 °C | A -20 °C | |
| Fan motors n = 1000 rpm | | | | | | |
| 250 | 230/400/3 | 0.25 | 0.33 | 1.2 | 1.3 | 2 x M20x1.5 |
| 180 | 230/1** | 0.18 | 0.35 | 2.4 | 2.5 | 2 x M20x1.5 |
| 450 | 230/400/3 | 0.45 | 0.45 | 2.0 | 2.1 | 2 x M20x1.5 |
| Fan motors n = 1500 rpm | | | | | | |
| 250 | 230/400/3 | 0.25 | 0.37 | 1.1 | 1.1 | 2 x M20x1.5 |
| 220 | 230/1 | 0.22 | 0.37 | 2.6 | 2.8 | 2 x M20x1.5 |
| 550 | 230/400/3 | 0.55 | 0.70 | 1.7 | 1.8 | 2 x M20x1.5 |
| 550 | 230/1 | 0.55 | 0.70 | 5.5 | 6.0 | 2 x M20x1.5 |
| 1200 | 230/400/3 | 1.20 | 1.20 | 3.0 | 3.2 | 2 x M20x1.5 |

* Motor windings 230 Volt.

** These 230/50/1 motors are suitable for temperatures down to -20 °C and are not provided with a thermal safety device in the windings.

*** Absorbed fan motor energy is measured in under laboratory conditions at ambient temperature 20 °C. These values may vary depending on local conditions.



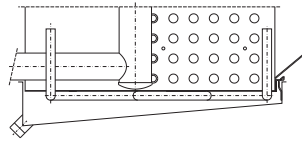
Defrost Systems

Several forced defrost systems are available. Each defrost system is optimised for specific applications and ambient conditions.

Hot Gas Defrost (G)

The driptray can be fitted with a defrost coil (G) to bring it rapidly up to temperature by means of hot gas. The following G-system is available :

- G1** *Air on temperature down to - 5 °C.*
Defrost coil under the coil block.



Water Defrost (W)

- W** Water defrost system.

Electric Defrost (E)

Stainless steel heater elements placed in additional tubes between the evaporator tubes. The elements for the driptray are fitted to the bottom of the inner tray. Both coil and driptray have the same elements.

Standard voltage per element 230 V.

Connection to 230 V / 1 phase or 400 V / 3 phase, connected in star with Zero-Wire.

Total defrost power is given for 400 V / 3 phase with Zero-Wire. All elements can be withdrawn at the refrigerant connection side. The driptray elements can be taken out after removal of the outer tray. The heater elements are pre-wired and are connected to one or more terminal boxes.

Depending on the ambient temperature and air humidity a number of E-executions are available.

- E1** *Air on temperature down to - 25 °C.*
Electric stainless steel defrost elements in the driptray.
For use in combination with for example hot gas defrost in the coil block.
- E4** *Air on temperature down to - 5 °C.*
Electric stainless steel defrost elements in the coil block and driptray, low duty.

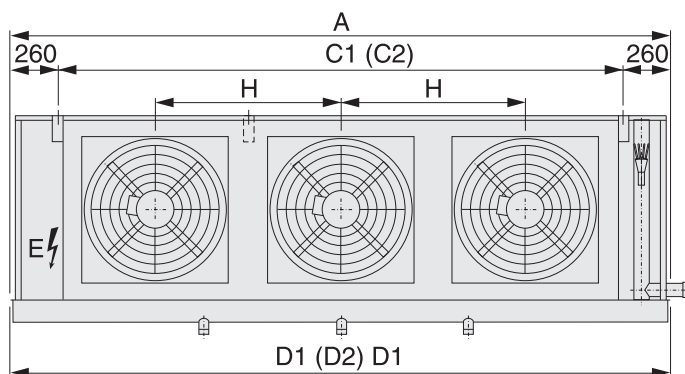
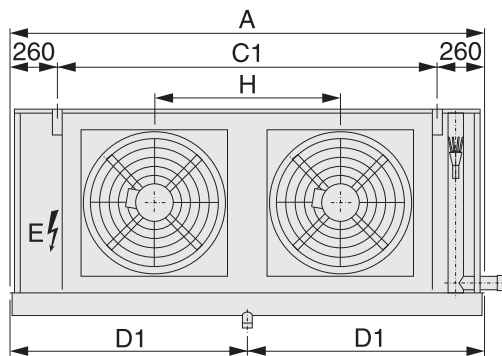
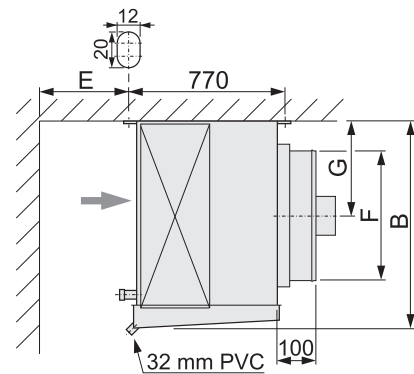
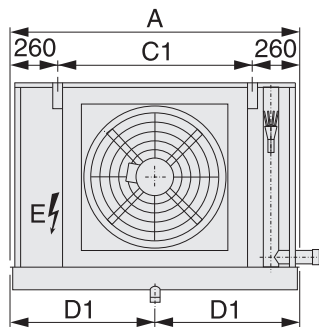
Defrost power

| Cooler type THOR-A | Elements article number | E1 | | E4 | |
|-----------------------|-------------------------|----------------|---------|----------------|---------|
| | | nr of elements | cap. kW | nr of elements | cap. kW |
| 116 | 33.03.21 | 2 | 2.1 | 3 + 1 | 4.2 |
| 126 | 33.03.31 | 2 | 4.0 | 3 + 1 | 8.1 |
| 136 | 33.03.39 | 2 | 6.0 | 3 + 1 | 11.9 |
| 214 | 33.03.21 | 2 | 2.1 | 3 + 1 | 4.2 |
| 216 | 33.03.21 | 2 | 2.1 | 4 + 1 | 5.3 |
| 224 | 33.03.31 | 2 | 4.0 | 3 + 1 | 8.1 |
| 226 | 33.03.31 | 2 | 4.0 | 4 + 1 | 10.1 |
| 234 | 33.03.39 | 2 | 6.0 | 3 + 1 | 11.9 |
| 236 | 33.03.39 | 2 | 6.0 | 4 + 1 | 14.9 |
| 314 | 33.03.21 | 2 | 2.1 | 4 + 1 | 5.3 |
| 316 | 33.03.21 | 2 | 2.1 | 5 + 1 | 6.4 |
| 324 | 33.03.31 | 2 | 4.0 | 4 + 1 | 10.1 |
| 326 | 33.03.31 | 2 | 4.0 | 5 + 1 | 12.1 |
| 334 | 33.03.39 | 2 | 6.0 | 4 + 1 | 14.9 |
| 336 | 33.03.39 | 2 | 6.0 | 5 + 1 | 17.9 |
| 414 | 33.03.24 | 2 | 2.4 | 4 + 1 | 6.1 |
| 416 | 33.03.24 | 2 | 2.4 | 5 + 1 | 7.3 |
| 424 | 33.03.36 | 2 | 4.9 | 4 + 1 | 12.1 |
| 426 | 33.03.36 | 2 | 4.9 | 5 + 1 | 14.6 |
| 434 | 33.03.43 | 2 | 7.4 | 4 + 1 | 18.5 |
| 436 | 33.03.43 | 2 | 7.4 | 5 + 1 | 22.2 |



Dimensions

| Cooler model | Dimensions (mm) | | | | | | | | | |
|--------------|-----------------|-----|------|------|------|------|-----|-----|-----|------|
| THOR-A | A | B | C1 | C2 | D1 | D2 | E | F | G | H |
| 11* | 1320 | 580 | 800 | | 660 | | 450 | 450 | 260 | |
| 12* | 2120 | 580 | 1600 | | 1060 | | 450 | 450 | 260 | 800 |
| 13* | 2920 | 580 | 2400 | | 1460 | | 450 | 450 | 260 | 800 |
| 21* | 1320 | 680 | 800 | | 660 | | 450 | 500 | 310 | |
| 22* | 2120 | 680 | 1600 | | 1060 | | 450 | 500 | 310 | 800 |
| 23* | 2920 | 680 | 2400 | | 1460 | | 450 | 500 | 310 | 800 |
| 31* | 1320 | 880 | 800 | | 660 | | 500 | 555 | 410 | |
| 32* | 2120 | 880 | 1600 | | 1060 | | 500 | 555 | 410 | 800 |
| 33* | 2920 | 880 | 2400 | | 1460 | | 500 | 555 | 410 | 800 |
| 41* | 1520 | 880 | 1000 | | 760 | | 600 | 730 | 410 | |
| 42* | 2520 | 880 | 2000 | | 1260 | | 600 | 730 | 410 | 1000 |
| 43* | 3520 | 880 | 1000 | 2000 | 1010 | 1500 | 600 | 730 | 410 | 1000 |



Changes possible without prior notice

Alfa Laval in brief

Alfa Laval is a leading global provider of specialized products and engineered solutions.

Our equipment, systems and services are dedicated to helping customers to optimize the performance of their processes. Time and time again.

We help our customers to heat, cool, separate and transport products such as oil, water, chemicals, beverages, foodstuffs, starch and pharmaceuticals.

Our worldwide organization works closely with customers in almost 100 countries to help them stay ahead.

How to contact Alfa Laval

Up-to-date Alfa Laval contact details for all countries are always available on our website at www.alfalaval.com