

## Agricultural storage coolers THOR-F, TYR-F

Standard coolers with Cu or stainless steel tubing



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## Other THOR & TYR models

### THOR & TYR

Wide and flexible range of industrial air coolers fitted with blow-through or draw-through fans. All models have been highly standardised in construction and dimensions, while maintaining flexibility in fin spacings, coil construction and circuiting design.



### THOR-A & TYR-A

For airsock application Alfa LU-VE has developed a special airsock cooler range. These models 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. **Two-Year guarantee**



### THOR-D & TYR-D

Low silhouette dual discharge air coolers.



## Code description

<b>THOR-F</b>	<b>1 3 6 7</b>	<b>400</b>	<b>-</b>	<b>*</b>
1	2 3 4 5	6		7

- 1 Agricultural storage cooler  
(THOR-F=Cu/Aluminium tubing,  
TYR-F=Stainless steel/aluminium tubing)
- 2 Cooler module (1 or 2)
- 3 Number of fans (3 to 7)
- 4 Tube rows in air direction (6)
- 5 Fin spacing (7 mm)
- 6 Fan power supply (400=230/400/50/3, 230=230/50/1)
- 7 Options

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

## General information & application

The Helpman THOR-F and TYR-F air cooler series has been specifically designed for the refrigerated storage of agricultural produce. These coolers are characterised by an optimised capacity/air volume ratio and a relatively low profile. All models have been optimised for air temperatures around 0 °C and a small temperature difference to avoid product dehydration.

Evaporating temperature	+5 to -10 °C
Refrigerants	all HFO/HFC, brine, CO <sub>2</sub> ammonia R-717 (TYR-F only)
Capacities (SC2)	7 up to 57 kW
Air flow	5,100 up to 36,000 m <sup>3</sup> /h

## Standard configuration

- Finned coil
  - 2 coil block modules
  - 6 tube rows deep
  - THOR-F Cu ripple fin tubing ø 5/8" (smooth tubing for brine)
  - TYR-F stainless steel tubing ø 16 mm
  - Tube pitch 50x50 mm square
  - Corrugated aluminium fins
  - Fin spacings 7 mm
- 3-7 Fans, blowing through the coil. Diameters Ø 406 mm or Ø 457 mm. Enclosed design spray-tight fan motors, protection class IP55. Motors are equipped with a thermal safety device in the windings, connected to separate terminals in the box.
- Fans with elevated external pressure to ensure optimized air distribution.
- Corrosion-resistant casing material: Aluminium/Sendzimir, white epoxy coated (RAL 9003).
- Hinged, enclosed end covers.
- Hinged drip tray. 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 schröder valve on the suction connection for testing purposes (not for R-717).
- Sufficient room for fitting the expansion valve inside.
- Suitable for dry expansion or pumped system. TYR-F only: DX-coolers for halogen refrigerants are fitted with Cu-distributor.
- 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 (HFO/HFC) or 27 bar (ammonia) or 6 bar (brine). Higher design pressures on request. Each heat exchanger is leak tested with dry air and finally supplied with a nitrogen precharge.



## Options

- Defrost system
  - Hot gas coil in drip tray (G1)
  - Hot gas connected (G1C)
  - Hot gas coil in drip tray connected to suction header, without non-return valve.*
  - Water defrost (W)
  - Electric defrost (E1, E4)
  - Electric defrost for air coolers with pumped refrigerant circulation or in glycol execution on special request only.*
- Drip tray insulation
  - Styropore 10 mm + cladding (I2)
  - not in combination with electric defrost*
  - Foamglass 25 mm + cladding (I3)
- Refrigerant connections left (L/R) (fan side view)
- 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)
- Hinged fan plate (HN)

## Non-standard executions (on request only)

- Higher capacities
- Special fan motors
  - Dual fan speed motors
  - Variable fan speed motors
  - EC fans
  - Fan motors 254-280/440-480/60/3, 230/60/1 or 230-380/60/3
- Built in heater coil sections

## Technical data

Cooler model	Air flow m <sup>3</sup> /h	Coil surface m <sup>2</sup>	Int. vol. dm <sup>3</sup>	Weight Kg	Dimensions		Cap. kW	Fans		Sound press dB(A)
					Length A mm	Height B mm		Nr	Air throw m	
<b>THOR-F</b>										
THOR-F 136-7	12840	101.4	32	159	2920	580	250	3	20	62
THOR-F 146-7	17130	135.2	42	203	3720	580	250	4	20	63
THOR-F 156-7	21410	169.0	53	246	4520	580	250	5	20	64
THOR-F 166-7	25690	202.8	63	290	5320	580	250	6	20	65
THOR-F 176-7	29970	236.6	74	333	6120	580	250	7	20	66
THOR-F 236-7	15410	121.7	42	176	2920	680	250	3	24	65
THOR-F 246-7	20550	162.2	53	225	3720	680	250	4	24	66
THOR-F 256-7	25690	202.8	65	274	4520	680	250	5	24	67
THOR-F 266-7	30830	243.4	76	323	5320	680	250	6	24	68
THOR-F 276-7	35970	283.9	88	372	6120	680	250	7	24	69
<b>TYR-F</b>										
TYR-F 136-7	12840	101.4	32	159	2920	580	250	3	20	62
TYR-F 146-7	17130	135.2	42	203	3720	580	250	4	20	63
TYR-F 156-7	21410	169.0	53	246	4520	580	250	5	20	64
TYR-F 166-7	25690	202.8	63	290	5320	580	250	6	20	65
TYR-F 176-7	29970	236.6	74	333	6120	580	250	7	20	66
TYR-F 236-7	15410	121.7	42	176	2920	680	250	3	24	65
TYR-F 246-7	20550	162.2	53	225	3720	680	250	4	24	66
TYR-F 256-7	25690	202.8	65	274	4520	680	250	5	24	67
TYR-F 266-7	30830	243.4	76	323	5320	680	250	6	24	68
TYR-F 276-7	35970	283.9	88	372	6120	680	250	7	24	69

## Fans

### 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 IP55.

All motors 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.

## Air throw

Air throws as given in the tables are for ceiling mounted coolers at  $t=20\text{ }^{\circ}\text{C}$ , an unrestrained air flow in the cold room and a minimal air velocity of 0.25 m/s at air throw distance.

## Sound pressure dB(A)

Sound pressure 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 values overload relays A 0 °C	Cable inlet
		nom. kW	abs. kW**		
90	230/400/3	0.09	0.19	0.5	2 x M20 x 1.5
70	230/1	0.07	0.19	1.3	2 x M20 x 1.5
250	230/400/3	0.25	0.37	1.1	2 x M20 x 1.5
220	230/1	0.22	0.37	2.6	2 x M20 x 1.5

\* Motor windings 230 V.

\*\* These 230/50/1 motors are suitable for temperatures down to  $-20\text{ }^{\circ}\text{C}$  and are not provided with a thermal safety device in the windings.

## Defrost Systems

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

### 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.

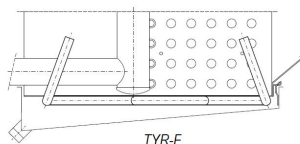
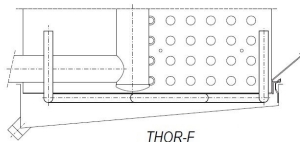
- E1 Air on temperature down to -25 °C.  
Electric stainless steel defrost elements in the driptray. For use in combination with for example hot gas defrost in the coil block.
- E4 Air on temperature down to -5 °C.  
Electric stainless steel defrost elements in the coil block and driptray, low duty.

### 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

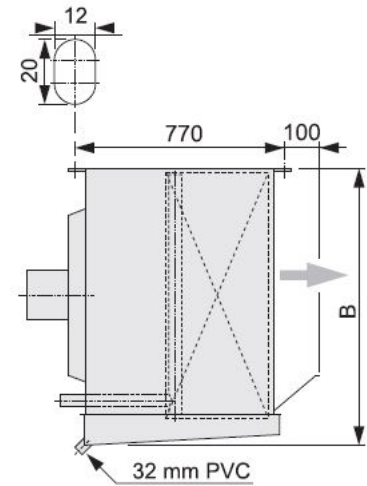
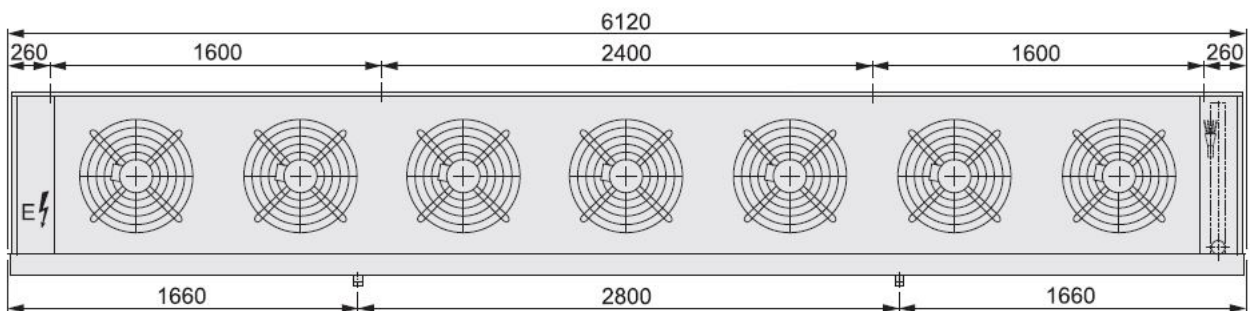
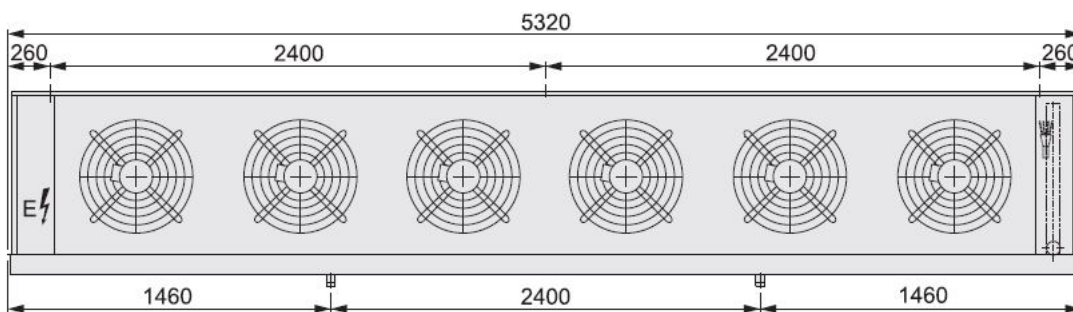
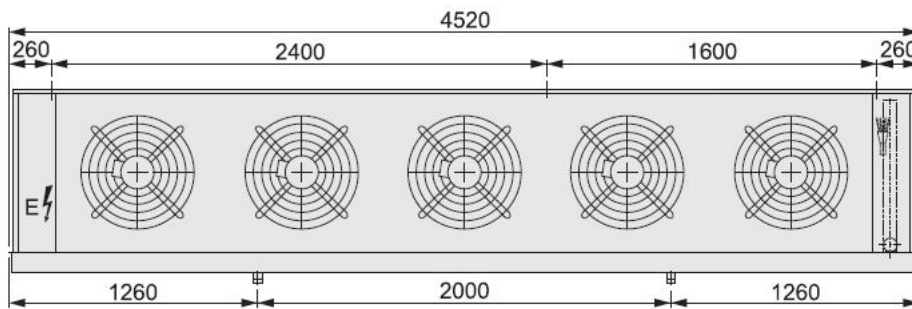
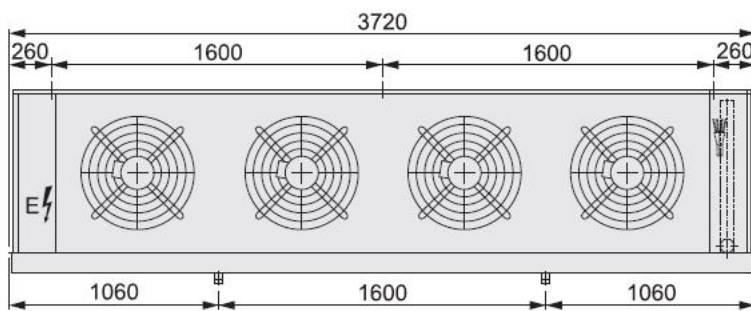
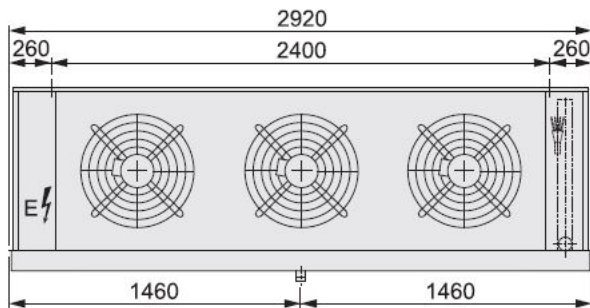
- W Water defrost system for defrosting in the temperature range to -20 °C.

## Defrost power

Cooler model	Element article number	E1		E4		cap. kW
		number of elements	cap. kW	number of elements coil	tray	
136	33.03.39	2	6.0	3	1	11.9
146	33.03.45	2	7.9	3	1	15.8
156	33.03.52	4	9.8	6	2	19.6
166	33.03.58	4	11.7	6	2	23.4
176	33.03.63	4	13.6	6	2	27.3
236	33.03.39	2	6.0	4	1	14.9
246	33.03.45	2	7.9	4	1	19.7
256	33.03.52	4	9.8	8	2	24.5
266	33.03.58	4	11.7	8	2	29.3
276	33.03.63	4	13.6	8	2	34.1

## Dimensions

Cooler model	Dimension B (mm)
THOR-F / TYR-F 1**	580
THOR-F / TYR-F 2**	680



**Alfa LU-VE in brief**

Alfa LU-VE is a leading global provider of specialized products and engineered solutions.

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

We help our customers to cool products such as oil, water, chemicals, beverages, foodstuffs and pharmaceuticals. Our worldwide organization works closely with customers to help them stay ahead.

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