

Industrial shock coolers THOR-T, TYR-T

Blast coolers & freezers for tunnel applications



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Code description

THOR-T	3	4	6	7	H1/6	400	-	*
1	2	3	4	5	6	7		8

1 Industrial shock cooler
(THOR-T=Cu/Aluminium tubing,
TYR-T=Stainless steel/aluminium tubing)

2 Cooler module (3 or 4)

3 Number of fans (2, 4, 6 or 8)

4 Tube rows in air direction (4, 6 or 8)

5 Fin spacing (7 or 10 mm)

6 Circuiting design (2H, H1, H2 ...)

7 Fan power supply (400=230/400/50/3, 230=230/50/1)

8 Options

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.



THOR-F & TYR-F
Air coolers that 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.



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

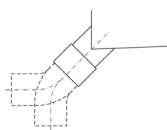
General information & application

Industrial shock coolers Helpman THOR-T have been specifically designed for application in cooling and freezing tunnels. Shock-cooling is a process by which a product, mostly meat, is cooled quickly but not too deeply. The principle of shock-cooling is that the surface of the meat product is cooled until just below the freezing point, so that the surface becomes vapour-tight. This has the purpose of limiting the weight (moisture) loss of the product to a minimum. The product may not be cooled too deeply however, since otherwise the structure of the underlying tissue is damaged, resulting in a decline of the quality of the meat. For shock-coolers, it is important that the total surface of the product that is to be cooled be fully exposed to the cold air flowing from the cooler. For this reason, all models are characterised by an elevated external pressure (120 Pa).

Evaporating temperature	+5 to -40 °C
Refrigerants	all HFO/HFC, brine, CO ₂ ammonia R-717 (TYR-T only)
Capacities (SC2)	10.8 up to 128.1 KW
Air volume	11,800 up to 66,400 m ³ /h

Standard configuration

- Finned coil
 - 2 coil block modules
 - 4, 6 or 8 tube rows deep
 - THOR-T Cu ripple fin tubing \varnothing 5/8" (smooth tubing for brine)
 - TYR-T stainless steel tubing \varnothing 16 mm
 - Tube pitch 50x50 mm square
 - Corrugated aluminium fins
 - Fin spacings 7 or 10 mm
- 2, 4, 6 or 8 fans, blowing through the coil, with elevated external pressure (120 Pa). Diameters \varnothing 508 mm or \varnothing 560 mm. Fan motor protection class IP55.
- Corrosion-resistant casing material: Aluminium/Sendzimir, white epoxy coated (RAL 9003).
- Hinged, enclosed end covers.
- 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 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-T only: DX-coolers for halogen refrigerants are fitted with Cu-distributor.
- Stickers indicate fan direction and refrigerant in/out.
- Delivery in mounting position. All models are fitted with mounting feet.



- 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 driptray (G1, G2)
 - Hot gas connected (G1C, G2C)
 - Hot gas coil in driptray connected to suction header, without non-return valve.*
 - Water defrost (W)
 - Electric defrost (E1, E2, E4)
 - Electric defrost for air coolers with pumped refrigerant circulation or in glycol execution on special request only.*
- Driptray 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)
- Fan ring heater 230 V (FRH)



Fan ring heater incl. mounting gear		
Cooler model	Fan diameter mm	Ring heater power W
3	508	500
4	560	500

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

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.

Technical data

					Dimensions			Fans (ext. pressure 120 Pa)		
					Length	Width	Height	Cap.	Nr	Sound press
Cooler model	Air flow m ³ /h	Coil surface m ²	Int. vol. dm ³	Weight Kg	mm	mm	mm	kW		dB(A)
Fin spacing 7 mm										
324-7	12200	72.2	34	194	1320	1055	1830	550	2	66
326-7	12000	108.2	50	223	1320	1055	1830	550	2	66
328-7	11800	144.4	66	251	1320	1055	1830	550	2	66
344-7	24400	144.4	54	312	2120	1055	1830	550	4	69
346-7	24000	216.3	80	370	2120	1055	1830	550	4	69
348-7	23600	288.4	108	427	2120	1055	1830	550	4	69
364-7	36600	216.3	74	431	2920	1055	1830	550	6	71
366-7	36000	324.5	112	515	2920	1055	1830	550	6	71
368-7	35400	432.6	148	602	2920	1055	1830	550	6	71
384-7	48800	288.4	94	550	3720	1055	1830	550	8	72
386-7	48000	432.6	142	663	3720	1055	1830	550	8	72
388-7	47200	576.8	190	774	3720	1055	1830	550	8	72
424-7	16000	90.2	38	223	1520	1140	1830	1200	2	68
426-7	15900	135.2	58	257	1520	1140	1830	1200	2	68
428-7	15800	180.4	76	293	1520	1140	1830	1200	2	68
444-7	32000	180.4	64	361	2520	1140	1830	1200	4	71
446-7	31800	270.4	96	431	2520	1140	1830	1200	4	71
448-7	31600	360.6	128	502	2520	1140	1830	1200	4	71
464-7	48000	270.4	90	500	3520	1140	1830	1200	6	73
466-7	47700	405.6	134	606	3520	1140	1830	1200	6	73
468-7	47400	540.8	180	711	3520	1140	1830	1200	6	73
484-7	64000	360.5	116	638	4520	1140	1830	1200	8	74
486-7	63600	540.8	172	779	4520	1140	1830	1200	8	74
488-7	63200	721.1	230	920	4520	1140	1830	1200	8	74

Technical data

Cooler model	Air flow m³/h	Coil surface m²	Int. vol. dm³	Weight Kg	Dimensions			Fans (ext. pressure 120 Pa)		
					Length	Width	Height	Cap.	Nr	Sound press
					mm	mm	mm	kW		dB(A)
Fin spacing 10 mm										
324-10	12700	52	34	189	1320	1055	1830	550	2	66
326-10	12500	77.9	50	213	1320	1055	1830	550	2	66
328-10	12300	103.8	66	240	1320	1055	1830	550	2	66
344-10	25400	103.8	54	301	2120	1055	1830	550	4	69
346-10	25000	155.8	80	352	2120	1055	1830	550	4	69
348-10	24600	207.7	108	403	2120	1055	1830	550	4	69
364-10	38100	155.8	74	414	2920	1055	1830	550	6	71
366-10	37500	233.6	112	488	2920	1055	1830	550	6	71
368-10	36900	311.6	148	565	2920	1055	1830	550	6	71
384-10	50800	207.7	94	526	3720	1055	1830	550	8	72
386-10	50000	311.6	142	627	3720	1055	1830	550	8	72
388-10	49200	415.4	190	728	3720	1055	1830	550	8	72
424-10	16600	64.9	38	213	1520	1140	1830	1200	2	68
426-10	16500	97.4	58	246	1520	1140	1830	1200	2	68
428-10	16400	129.8	76	277	1520	1140	1830	1200	2	68
444-10	33200	129.8	64	345	2520	1140	1830	1200	4	71
446-10	33000	194.7	96	409	2520	1140	1830	1200	4	71
448-10	32800	259.6	128	473	2520	1140	1830	1200	4	71
464-10	49800	194.6	90	477	3520	1140	1830	1200	6	73
466-10	49500	292	134	572	3520	1140	1830	1200	6	73
468-10	49200	389.4	180	667	3520	1140	1830	1200	6	73
484-10	66400	259.6	116	609	4520	1140	1830	1200	8	74
486-10	66000	389.4	172	735	4520	1140	1830	1200	8	74
488-10	65600	519.2	230	862	4520	1140	1830	1200	8	74

Fans

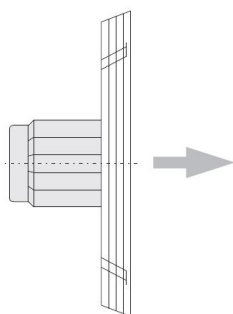
Execution

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.



Elevated external pressure

All fans for THOR-T and TYR-T air coolers are characterised by an elevated external pressure (120 Pa).

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/1500 rpm

Fan motor W	Motor voltage* V	Electric capacity		Adj values overload relays A			Cable inlet
		nom. kW	abs. kW**	0 °C	-20 °C	-40 °C	
550	230/400/3	0.55	0.70	1.7	1.8	2.0	2 x M20 x 1.5
550	230/1	0.55	0.70	5.5	6.0	6.2	2 x M20 x 1.5
1200	230/400/3	1.20	1.20	3.0	3.2	3.4	2 x M20 x 1.5

* Motor windings 230 V.

** 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.

Defrost Systems

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

Recommended Defrost System						
Air in Temperature °C	+5	0	-5	-15	-25	-35
Hotgas defrost						
G 1						
G 2						
G 2 + I						
Electric Defrost						
E1						
E1 + I3						
E2						
E2 + I3						
E4						

Temperatures may vary depending on operating conditions.

Electric Defrost (E)

Stainless steel heater elements placed in additional tubes between the evaporator tubes. The elements for the drip tray are fitted to the bottom of the inner tray.

Both coil and drip tray 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 drip tray 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.

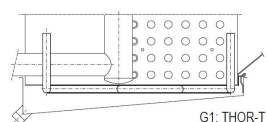
- E1** Air on temperature down to -25 °C.
Electric stainless steel defrost elements in the drip tray. For use in combination with for example hot gas defrost in the coil block.
- E1 + I3** Air on temperature down to -35 °C.
E1, additionally equipped with an insulated double drip tray. Recommended for general use in the low-temperature region.
- E2** Air on temperature down to -25 °C.
Electric stainless steel defrost elements in the coil block and drip tray. Recommended for general use.
- E2 + I3** Air on temperature down to -35 °C.
E2, additionally equipped with an insulated double drip tray. Recommended for general use in the low-temperature region.
- E4** Air on temperature down to -5 °C.
Electric stainless steel defrost elements in the coil block and drip tray, low duty.

Hot Gas Defrost (G)

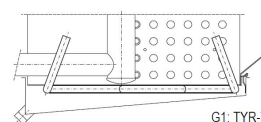
The drip tray can be fitted with a defrost coil (G) to bring it rapidly up to temperature by means of hot gas.

The following G-system is available:

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



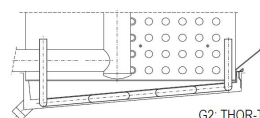
G1: THOR-T



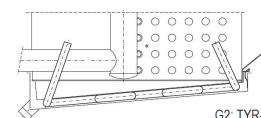
G1: TYR-T

- G2** Air on temperature down to -25 °C.
Defrost coil in the drip tray.

- G2 + I** Air on temperature down to -35 °C.
G2, additionally equipped with an insulated double drip tray.



G2: THOR-T



G2: TYR-T

Water Defrost

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

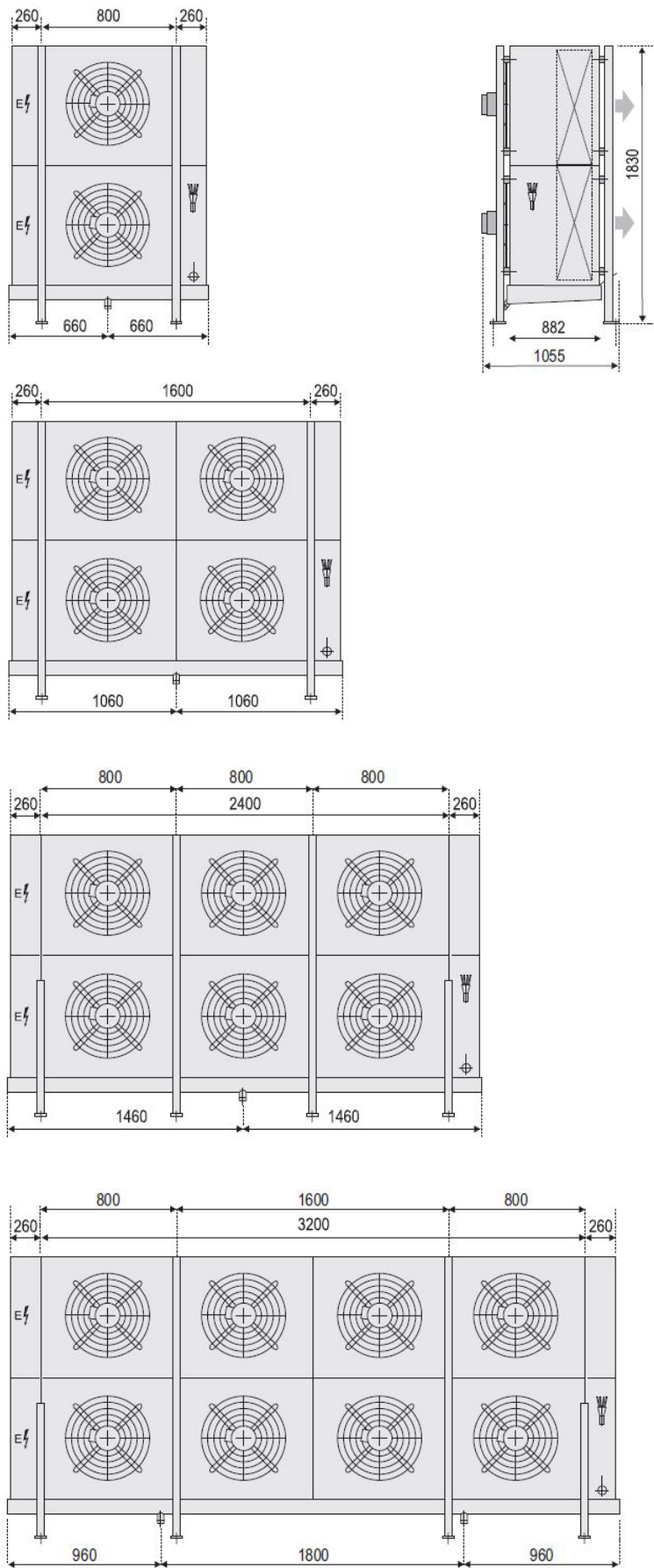
Defrost power kW

Cooler model THOR-T TYR-T	Element article number	E1		E2		E4	
		number of element	cap. kW	number of element	cap. kW	number of element	cap. kW
324	33.03.21	2	2.1	10 + 2	12.7	8 + 1	9.5
326	33.03.21	2	2.1	14 + 2	17.0	10 + 1	11.7
328	33.03.21	2	2.1	20 + 2	23.3	14 + 2	17.0
344	33.03.31	2	4.0	10 + 2	24.2	8 + 1	18.2
346	33.03.31	2	4.0	14 + 2	32.3	10 + 1	22.2
348	33.03.31	2	4.0	20 + 2	44.4	14 + 2	32.3
364	33.03.39	2	6.0	10 + 2	35.8	8 + 1	26.8
366	33.03.39	2	6.0	14 + 2	47.7	10 + 1	32.8
368	33.03.39	2	6.0	20 + 2	65.6	14 + 2	47.7
384	33.03.45	2	7.9	10 + 2	47.3	8 + 1	35.5
386	33.03.45	2	7.9	14 + 2	63.0	10 + 1	43.3
388	33.03.45	2	7.9	20 + 2	86.7	14 + 2	63.0
424	33.03.24	2	2.4	10 + 2	14.6	8 + 1	11.0
426	33.03.24	2	2.4	14 + 2	19.5	10 + 1	13.4
428	33.03.24	2	2.4	20 + 2	26.8	14 + 2	19.5
444	33.03.36	2	4.9	10 + 2	29.5	8 + 1	22.1
446	33.03.36	2	4.9	14 + 2	39.4	10 + 1	27.1
448	33.03.36	2	4.9	20 + 2	54.1	14 + 2	39.4
464	33.03.43	2	7.4	10 + 2	44.4	8 + 1	33.3
466	33.03.43	2	7.4	14 + 2	59.2	10 + 1	40.7
468	33.03.43	2	7.4	20 + 2	81.4	14 + 2	59.2
484	33.03.52	4	9.8	20 + 4	58.8	16 + 2	44.1
486	33.03.52	4	9.8	28 + 4	78.4	20 + 2	53.9
488	33.03.52	4	9.8	40 + 4	107.8	28 + 4	78.4

All cooler models with an electric defrost system are fitted with 2 connection boxes.

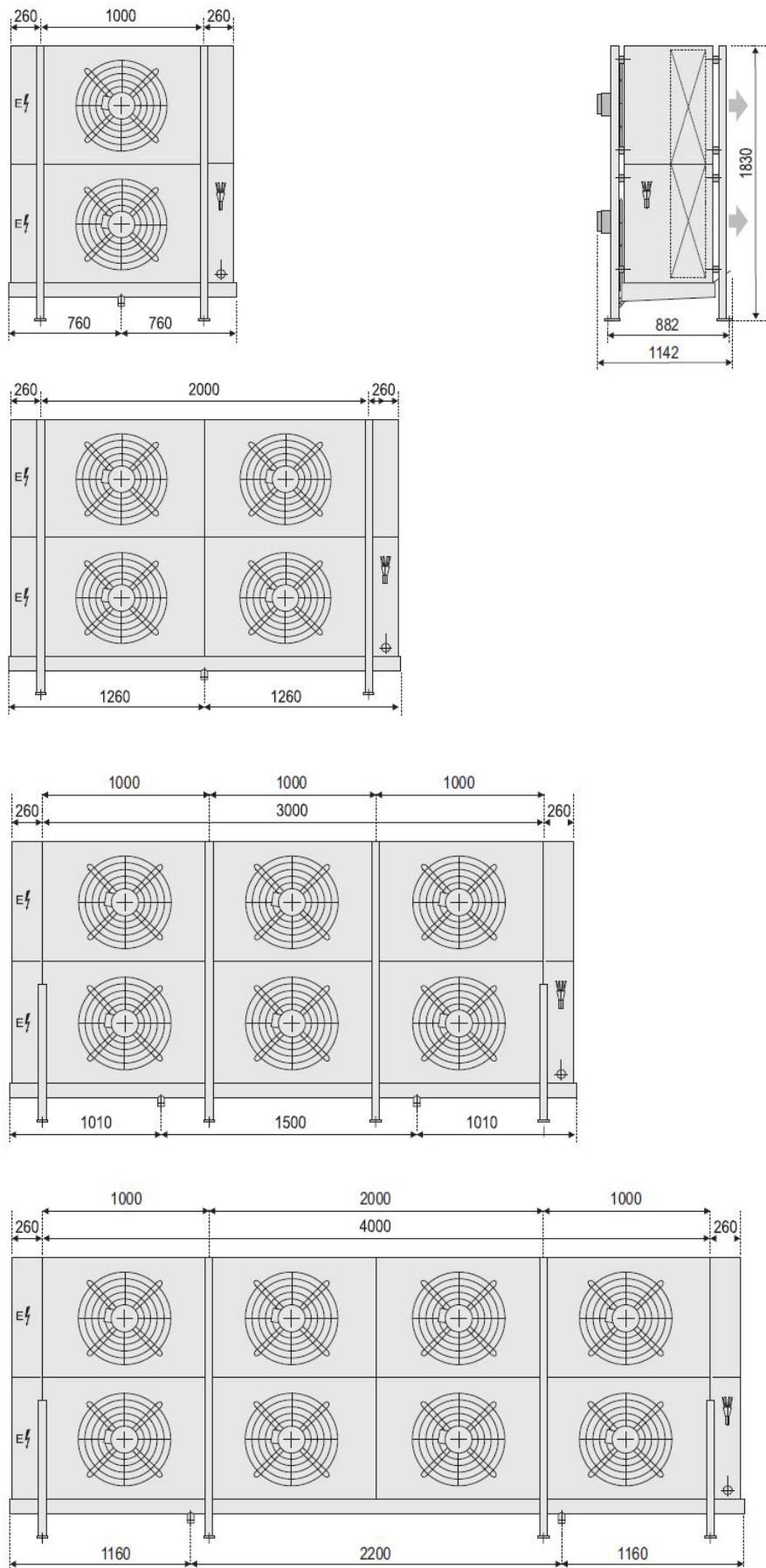
Dimensions

Dimensions models THOR-T & TYR-T 3**



Industrial shock coolers THOR-T, TYR-T

Dimensions models THOR-T & TYR-T 4**



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.

How to contact Alfa LU-VE

Up-to-date contact details are always available on our website at alfa.luvegroup.com.
You can also download product information and selection software.



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