Hoval Thermalia® comfort

Brine/water-water/water heat pump

- Brine/water-water/water heat pump in compact design with high energy efficiency for indoor installation. Extremely low-noise with triple-mounted construction
- Stable framework of galvanised sheet steel; with removable, powder-coated, sound-insulated side panels, colour brown red (RAL 3011)
- Sound-insulated plastic hood, colour flame red (RAL 3000)
- Safety valve incl. hose installed at the side of the heating
- Comprising a spiral (Scroll) compressor
- Electronic expansion valve
- Plate heat exchanger system of stainless steel
- Electronic starting current limiter with rotary field/phase monitoring.
- Speed-controlled, highly efficient heating and brine pump
- 3-way switch ball valve for heating and hot water
- Integrated brine pressure monitoring
- Brine pressure gauge and pressure valve incl. hose
- Brine expansion vessel 18 litres
  Hydraulic connections with flexible hoses, removable to the left, right or top:
  comfort (6-13): 1″ 2x 1 m top, 1″ 2x 1.5 m bottom
  comfort (17): 1 ¼″ 2x 1.52 m top, 2x 1 m bottom
  comfort H (7,10): 1″ 1x 1 m resp. 1x 0.85 m top, 2x 1.75 m bottom
- Sound-insulating floor mat
- Refrigerant
  Thermalia® comfort (6-17) with R410A
  Thermalia® comfort H (7,10) with R134a
- Heat pump wired ready
- Temperatures and pressures of brine and refrigeration circuit available
- TopTronic® E controller installed

TopTronic® E controller

Control panel

- Colour touchscreen 4.3 inch
- Heat generator blocking switch for interrupting operation
- Fault signalling lamp

TopTronic® E control module

- Simple, intuitive operating concept
- Display of the most important operating statuses
- Configurable start screen
- Operating mode selection
- Configurable day and week programmes
- Operation of all connected Hoval CAN bus modules
- Commissioning wizard
- Service and maintenance function
- Fault message management
- Analysis function
- Weather display (with online HovalConnect)
- Adaptation of the heating strategy based on the weather forecast (with online HovalConnect)

Seal of approval FWS
The Thermalia® comfort (6-17), comfort H (7,10) series are certified by the seal of approval of the authorisation commission of Switzerland.

The built-in high-efficiency pumps fulfil the Ecodesign requirements of 2015 with an EEI of ≤ 0.23.

Model range

Thermalia® comfort Type	Water/water 35 °C	Water/water 55 °C	Brine/water 35 °C	Brine/water 55 °C	Refrigerant	Max. flow °C	Heat output B0W35 kW	Heat output W10W35 kW
(6)	A+++	A+++	A++	A+	R410A	62	5.8	7.1
(8)	A+++	A+++	A+++	A++	R410A	62	7.6	9.6
(10)	A+++	A+++	A+++	A++	R410A	62	10.6	12.7
(13)	A+++	A+++	A+++	A++	R410A	62	13.4	17.5
(17)	A+++	A+++	A+++	A++	R410A	62	17.2	22.3
H (7)	A+++	A+++	A+++	A++	R134a	67	6.5	9.1
H (10)	A+++	A+++	A+++	A++	R134a	67	9.1	12.8

Energy efficiency class of the compound system with control.

TopTronic® E basic module heat generator (TTE-WEZ)

- Control functions integrated for
  - 1 heating/cooling circuit with mixer
  - 1 heating/cooling circuit without mixer
  - 1 hot water loading circuit
  - bivalent and cascade management
- Outdoor sensor
- Immersion sensor (calorifier sensor)
- Contact sensor (flow temperature sensor)
- Rast-5 basic plug set

Options for TopTronic® E controller

- Can be expanded by max. 1 module expansion:
  - module expansion heating circuit or
  - module expansion heat accounting or
  - module expansion universal
- Can be networked with a total of up to 16 controller modules:
  - heating circuit/hot water module
  - solar module
  - buffer module
  - measuring module

Number of modules that can be additionally installed in the heat generator:

- 1 module expansion and 1 controller module **or**
- 2 controller modules

The supplementary plug set must be ordered in order to use expanded controller functions.

Further information about the TopTronic® E see “Controls”

Electrical connections
Electrical connection selectable between lateral (left/right) or top

Delivery
Heat pump on pallet, plastic hood and floor plate separately packed. Hose sleeves, clamps and sensor set included separately

Option

- Drive motor for 3-way switch ball valve with flexible hose 1″
- internet connection

Brine/water-water/water heat pump

Energy efficiency class
see Description

Brine/water-water/water heat pump with hermetic spiral (scroll) compressor for indoor installation with flexible connection pipes and built-in Hoval TopTronic® E control

Control functions integrated for
- 1 heating circuit with mixer
- 1 heating circuit without mixer
- 1 hot water loading circuit
- bivalent and cascade management

• Can be optionally expanded by max. 1 module expansion:
- module expansion heating circuit or
- module expansion universal
- module expansion heat accounting

• Can be optionally networked with a total of up to 16 controller modules (incl. solar module)

Delivery
• Compact device internally wired ready for installation
• Heat pump on pallet, plastic hood and floor plate separately packed
• Hose sleeves, clamps and sensor set included separately
• Flexible hoses (removable to the left, right or top)

Hoval Thermalia® comfort
Refrigerant R410A
Flow temperature max. 62 °C

Thermalia® comfort Type	Heat output with B0W35 kW	Heat output with W10W35 kW	Part No.
(6)	5.8	7.1	7014 715
(8)	7.6	9.6	7014 716
(10)	10.6	12.7	7014 717
(13)	13.4	17.5	7014 718
(17)	17.2	22.3	7014 719

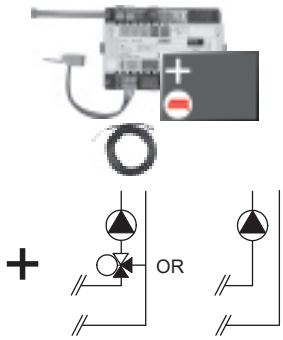
Hoval Thermalia® comfort H
Refrigerant R134a
Flow temperature max. 67 °C

Thermalia® comfort Type	Heat output with B0W35 kW	Heat output with W10W35 kW	Part No.
(7)	6.5	9.1	7014 721
(10)	9.1	12.8	7014 722

Suitable plate heat exchanger
see chapter “plate heat exchanger for Hoval Thermalia®”

TopTronic® E module expansions
for TopTronic® E basic module heat generator

Part No.



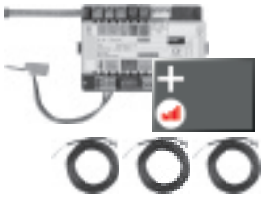
TopTronic® E module expansion heating circuit TTE-FE HK — 6034 576

Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:
- 1 heating circuit without mixer or
- 1 heating circuit with mixer

incl. fitting accessories
1x contact sensor ALF/2P/4/T L = 4.0 m

Can be installed in:
Boiler control, wall housing, control panel

Notice
The supplementary plug set may have to be ordered to implement functions differing from the standard!



TopTronic® E module expansion heating circuit incl. energy balancing TTE-FE HK-EBZ — 6037 062

Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:
- 1 heating/cooling circuit w/o mixer or
- 1 heating/cooling circuit with mixer

in each case incl. energy balancing

incl. fitting accessories
3x contact sensor ALF/2P/4/T L = 4.0 m

Can be installed in:
Boiler control, wall housing, control panel

Notice
The flow rate sensor set must be ordered as well.

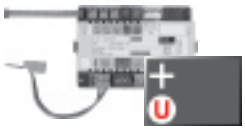
Flow rate sensor sets

Plastic housing

Size	Connection	Flow rate l/min	
DN 8	G ¾″	0.9-15	6038 526
DN 10	G ¾″	1.8-32	6038 507
DN 15	G 1″	3.5-50	6038 508
DN 20	G 1¼″	5-85	6038 509
DN 25	G 1½″	9-150	6038 510

Brass housing

Size	Connection	Flow rate l/min	
DN 10	G 1″	2-40	6042 949
DN 32	G 1½″	14-240	6042 950



TopTronic® E module expansion Universal TTE-FE UNI — 6034 575

Expansion to the inputs and outputs of a controller module (basic module heat generator, heating circuit/domestic hot water module, solar module, buffer module) for implementing various functions

incl. fitting accessories

Can be installed in:
Boiler control, wall housing, control panel

Notice
Refer to the Hoval System Technology to find which functions and hydraulic arrangements can be implemented.

Further information
see “Controls” - “Hoval TopTronic® E module expansions” chapter

Accessories for TopTronic® E

		Part No.
	**Supplementary plug set**	
	for basic module heat generator (TTE-WEZ)	6034 499
	for controller modules and module expansion	6034 503
	TTE-FE HK	
	**TopTronic® E controller modules**	
	TTE-HK/WW TopTronic® E heating circuit/ hot water module	6034 571
	TTE-SOL TopTronic® E solar module	6037 058
	TTE-PS TopTronic® E buffer module	6037 057
	TTE-MWA TopTronic® E measuring module	6034 574
	**TopTronic® E room control modules**	
	TTE-RBM TopTronic® E room control modules	
	easy white	6037 071
	comfort white	6037 069
	comfort black	6037 070
	**Enhanced language package TopTronic® E**	6039 253
	one SD card required per control module Consisting of the following languages: HU, CS, SL, RO, PL, TR, ES, HR, SR, JA, DA	
	**HovalConnect**	
	HovalConnect LAN	6049 496
	HovalConnect WLAN	6049 498
HovalConnect available from mid-2020 Up to that point, TopTronic® E online is delivered.	**TopTronic® E interface modules**	
	GLT module 0-10 V	6034 578
	HovalConnect Modbus	6049 501
	HovalConnect KNX	6049 593
	**TopTronic® E wall casing**	
	WG-190 Wall casing small	6035 563
	WG-360 Wall casing medium	6035 564
	WG-360 BM Wall casing medium with control module cut-out	6035 565
	WG-510 Wall casing large	6035 566
	WG-510 BM Wall casing large with control module cut-out	6038 533
	**TopTronic® E sensors**	
	AF/2P/K Outdoor sensor	2055 889
	TF/2P/5/6T Immersion sensor, L = 5.0 m	2055 888
	ALF/2P/4/T Contact sensor, L = 4.0 m	2056 775
	TF/1.1P/2.5S/6T Collector sensor, L = 2.5 m	2056 776
	**System housing**	
	System housing 182 mm	6038 551
	System housing 254 mm	6038 552
	Bivalent switch	2061 826

Outdoor sensor, immersion sensor and contact sensor supplied with the heat pump.

Further information
see “Controls”

Accessories

	Part No.
 **Protective pipe immersion sleeve SB 280 ½″** brass nickel-plated PN10, 280 mm	2018 837

Accessories for water heating

 **Hot water set** SW25-32-10-1MB for Thermalia® comfort (6-17), comfort H (7,10) Consisting of: Motor drive LRA 230A for integrated switching valve and flexible connecting hose 1″	6026 251
 **System water protection filter** Type: FGM050-200 For horizontal installation in return for filtration of heating and cooling water, with high filtration capacity for corrosion particles and dirt without significant pressure loss. Consisting of: - Filter head and bowl in brass - Magnetic insert (nickel-neodymium) - 2 pressure gauges - Very large filter surface made of stainless steel - Filter fineness 200 µm - With drain valve - Connections Rp2″: Internal thread with integrated shut-off valves and union connection (outlet) Max. flow rate: (Δp<0.1 bar): 7.2 m³/h Weight: 6.9 kg Water temperature: max. 90 °C	2076 375

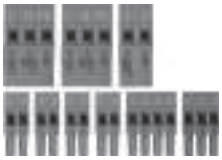
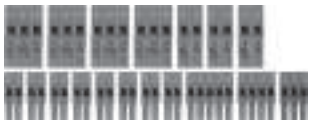
Notice:
Fulfills the function of sludge separator and strainer

Further strainers
see “Various system components”

El. continuous-flow heater available on request

Screw-in electrical heating inset
for plants with energy buffer storage tank as emergency heating.

Type	Heat output [kW]	Installation depth [mm]	Part No.
EP 2.5	2.35	390	6049 557
EP 3.5	3.6	500	6049 558
EP 5	4.9	620	6049 559
EP 7.5	7.5	850	6049 560

	Part No.
 **Expansion connector set** for the automatic heat pump ECR461. Use for additional function: - Flow monitor - Crankcase bottom heating (included in the scope of delivery for Belaria® twin A, twin AR, dual AR) - Condensation drain heating - Heat quantity metering Plugs: - 1x 230V digital input - 2x 230V outputs - 4x low-voltage inputs - 1x ratio. Input	6032 509
 **Universal connector set** for automatic heat pump ECR461 Plugs: - 3x 230V digital input - 4x 230V outputs - 6x low-voltage inputs - 2x low-voltage outputs - 1x ratio. input - 1x electr. expansion valve *Necessary at boiler room temperatures < 10 °C*	6032 510
 **Crankcase heater** for Belaria® twin I, twin IR, Thermalia® comfort, Thermalia® twin for compressor protection For Belaria® twin I, twin IR 2 pieces are necessary!	6019 718
 **Instantaneous water heater kit DN 50** from ready electrical box for electrical protection incl. assembly fittings. for combination with all screw-in heating inset EP. Screw-in heaters must be ordered separately.	6044 070

		Part No.
	**Freeze protection concentrate PowerCool DC 924-PXL** on basis propylene glycol completely mixable with water with corrosion protection Frost protection: -20 °C with 40 % mixture ratio Content plastic container: 10 kg	2009 987
	**Float ball flow switch** area of application 300-3000 l/h, 0-80 °C, nominal pressure 10 bar connection Rp 1½" installed length 335 mm bistable reed contact as normally open contact	2040 707
	**Float ball flow switch** area of application 600-6000 l/h, 0-80 °C, nominal pressure 10 bar connection Rp 1½" installed length 335 mm bistable reed contact as normally open contact	2040 708
	**Ground water pump kit SB-GWP** for Thermalia® comfort (6-17), comfort H (7,10) Contactor for actuation of a 3-phase ground water pump. Ready to connect without thermal overload protection	6025 513
	**Bypass valve DN 32 (1¼")** for the installation in a HA group DN 32 Setting range 0.6-1.5 bar Max. flow rate: 1.5 m³/h with self-sealing screw connection for mounting between flow and return ball valve	6014 849

	Part No.
 **Brine filling station in compact design DN 25** with shut-off valves, filter and EPS insulation. Application temperatures -20°C to +60°C Frost protection max. 50 % Connections DN 25 G 1″, kvs 12.5 Max. operating pressure 1.0 MPa (10 bar) Dirt screen integrated	6037 537
 **Brine filling station in compact design DN 32** with shut-off valves, filter and EPS insulation. Application temperatures -20°C to +60°C Frost protection max. 50 % Connections DN 32 G 1¼″, kvs 22 Max. operating pressure 1.0 MPa (10 bar) Dirt screen integrated	6033 364
 **Immersion sensor TF/2P/2.5/6T, L = 2.5 m** for TopTronic® E controller modules/ module expansions with exception of basic module district heating/fresh water or basic module district heating com, cable length: 2.5 m without plug sensor sleeve diameter: 6 x 50 mm, dewpoint-proof, sensor may already be included in scope of delivery of heat generator/controller module/module expansion, operating temperature: -20…105 °C, index of protection: IP67	2056 789

Services

Commissioning

Commissioning by works service or Hoval trained authorised serviceman/company is condition for warranty.

For commissioning and other services please contact your Hoval sales office.

Thermalia® comfort (6-17) with R410A

Type			(6)	(8)	(10)	(13)	(17)
Seasonal coefficient of performance moderate climate (brine) 35 °C /55 °C		SCOP	4.4/3.2	4.6/3.3	5.0/3.5	5.0/3.7	5.0/3.7
Max. performance data heating in acc. with EN 14511							
• Heat output B0W35		kW [1]	5.83	7.56	10.58	13.36	17.18
• Power consumption B0W35		kW [1]	1.31	1.66	2.20	2.78	3.64
• Coefficient of performance B0W35		COP	4.45	4.55	4.81	4.81	4.72
• Heat output W10W35		kW [1]	7.11	9.63	12.71	17.52	22.34
• Power consumption W10W35		kW [1]	1.31	1.64	2.09	2.79	3.80
• Coefficient of performance W10W35		COP	5.43	5.87	6.08	6.28	5.88
• Operating weight	approx.	kg	140	150	160	170	180
• Compressor type				1 x spiral (scroll), hermetic			
• Refrigerant filling R410A		kg	1.3	1.6	1.85	2.12	2.4
• Condenser/evaporator				Plate heat exchanger			
Material				Stainless steel V4A, AISI 316, 1.4401			
Piping connections with flex. connecting hose		G	1″	1″	1″	1″	1″
Nominal volume flow and resistance brine/water heat pump							
• *Heating* (ΔT = 5 K)		m³/h	1.01	1.30	1.82	2.30	2.96
ΔP Pressure drop condenser		kPa	6.2	6.7	8.3	9.2	10.2
Residual overpressure		kPa	69	68	57	67	62
• *Heat source* (ΔT = 3.5 K)		m³/h	1.26	1.65	2.34	2.96	3.78
ΔP Pressure drop evaporator (glycol)		kPa	11.3	12.9	16.5	20.4	16.2
Residual overpressure		kPa	60	63	55	94	98
Nominal volume flow and resistance water/water heat pump							
• *Heating* (ΔT = 5 K)		m³/h	1.23	1.66	2.19	3.02	3.85
ΔP Pressure drop condenser		kPa	9.2	10.9	11.9	15.8	14.1
Residual overpressure		kPa	62	55	45	59	52
• *Heat source* (ΔT = 5 K) [5]		m³/h	1.0	1.38	1.83	2.54	2.84
ΔP Pressure drop evaporator		kPa	9.3	10.6	13.5	16.7	13.2
Residual overpressure		kPa	68	72	80	108	110
• Operating pressure max.							
- Water side		bar			6		
- Brine side		bar			6		
Operating limit values							
• *Ranges of application for heating and see diagrams.*							
• *Ranges of application for heating and hot water see diagrams*							
• Installation place operation [4]	min./max.	°C			5/35		
Storage	min./max.	°C			-15/50		
Electrical data [3]							
Voltage		V			3 x 400		
Frequency		Hz			50		
Voltage range		V			380-420		
Operating pressure compressor Imax		A	4.8	6.2	7.4	9.7	13.0
Starting current with starting current limiter [2]		A	9.6	12.4	14.8	19.4	26.0
Principal current (external protection) with brine systems		A	13	13	13	13	16
		Type	C,D,K	C,D,K	C,D,K	C,D,K	C,D,K
Principal current (external protection) with ground water systems		A	13	13	13	13	16
		Type	C,D,K	C,D,K	C,D,K	C,D,K	C,D,K
Control current (external protection)		A	13	13	13	13	13
		Type	B,C,D,K,Z	B,C,D,K,Z	B,C,D,K,Z	B,C,D,K,Z	B,C,D,K,Z

[1] kW = Standard values according to EN 14511; Values for B0W35 with 25 % monopolypropylene
[2] Effective value
[3] Values for electrical data apply for supply voltage of 3 x 400 V
[4] <10 °C Crankcase heater is necessary
[5] ΔT in accordance with regional regulations. The temperature difference is adjustable from 3 to 6 kelvin.
The pump regulates the volumetric current to the set temperature difference.

Thermalia® comfort H (7,10) with R134a

Type			H (7)	H (10)
Seasonal coefficient of performance moderate climate 35 °C /55 °C		SCOP	4.7/3.5	4.9/3.7
Max. performance data heating in acc. with EN 14511				
• Heat output B0W35		kW [1]	6.5	9.1
• Power consumption B0W35		kW [1]	1.4	2.0
• Coefficient of performance B0W35		COP	4.50	4.6
• Heat output W10W35		kW [1]	9.1	12.8
• Power consumption W10W35		kW [1]	1.6	2.1
• Coefficient of performance W10W35		COP	5.90	6.0
• Operating weight	approx.	kg	160	180
• Compressor type			1 x spiral (scroll), hermetic	
• Refrigerant filling R134a		kg	2.75	3.4
• Condenser/evaporator			Plate heat exchanger	
Material			Stainless steel V4A, AISI 316, 1.4401	
Piping connections with flex. connecting hose		G	1″	1″
Nominal volume flow and resistance brine/water heat pump				
• *Heating* (ΔT = 5 K)		m³/h	1.14	1.61
ΔP Pressure drop condenser		kPa	6.0	7.0
Residual overpressure		kPa	69	63
• *Heat source (ΔT = 3.5 K)*		m³/h	1,47	2,07
ΔP Pressure drop evaporator		kPa	12,5	16,2
Residual overpressure		kPa	59	60
Nominal volume flow and resistance water/water heat pump				
• *Heating* (ΔT = 5 K)		m³/h	1.6	2.25
ΔP Pressure drop condenser		kPa	13.0	14.0
Residual overpressure		kPa	57	41
• *Heat source* (ΔT = 5 K) [5]		m³/h	1.34	1.89
ΔP Pressure drop evaporator		kPa	7.49	9.7
Residual overpressure		kPa	68	70
• Operating pressure max.				
- Water side		bar	6	
- Brine side		bar	6	
Operating limit values				
• *Ranges of application for heating see diagrams.*				
• *Ranges of application for heating and hot water see diagrams*				
• Installation place operation [4]	min./max.	°C	5/35	
Storage	min./max.	°C	-15/50	
Electrical data [3]				
Voltage		V	3 x 400	
Frequency		Hz	50	
Voltage range		V	380-420	
Operating pressure compressor Imax		A	6.8	10.1
Starting current with starting current limiter [2]		A	13.6	20.2
Principal current (external protection) with brine systems		A	13	13
		Type	C,D,K	C,D,K
Principal current (external protection) with ground water systems		A	13	13
		Type	C,D,K	C,D,K
Control current (external protection)		A	13	13
		Type	B,C,D,K,Z	B,C,D,K,Z

[1] kW = standard values according to EN 14511; values for B0W35 with 25 % monopolypropylene
[2] Effective value
[3] Values for electrical data apply for supply voltage of 3 x 400 V
[4] <10 °C crankcase heater is necessary
[5] ΔT in accordance with regional regulations. The temperature difference is adjustable from 3 to 6 kelvin.
The pump regulates the volumetric current to the set temperature difference.

Thermalia® comfort (6-17), comfort H (7,10)

Sound emission
The effective sound pressure level [1] in the installation room is dependent on different factors like room size, absorptive capacity, reflection, free sound spreading etc.

Therefore it is important that the installation room lies, if possible, outside the noise-sensitive range and is supplied with sound-absorbing doors.

Ducts and pipes must be fixed to walls and ceiling in a way that no structure-borne sound is being transmitted to the system.

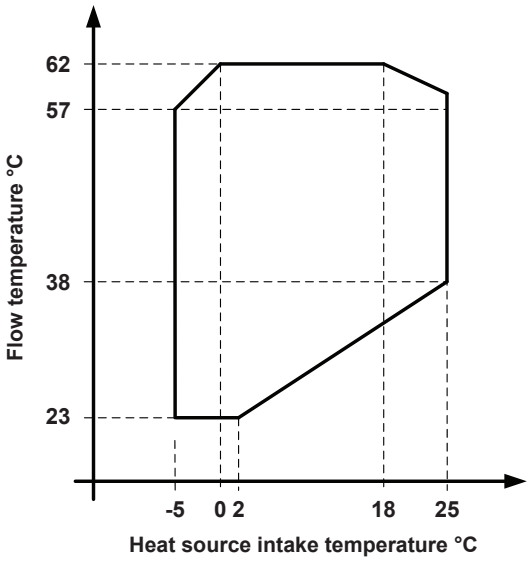
Thermalia® comfort (6-17) Thermalia® comfort H	(6)	(8)	(10) (7)	(13)	(17) (10)
Sound power level dB(A)	45	46	46	49	50
Sound pressure level dB(A) [1]	35	35	36	37	38

[1] Sound pressure level, distance 1 m
(in standard room with approx. 5-6 dB(A) sound absorption)

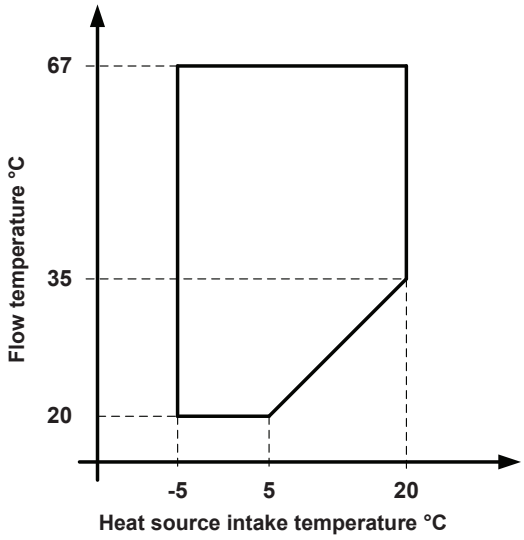
Diagrams range of application

Heating and hot water

Thermalia® comfort (6-17)



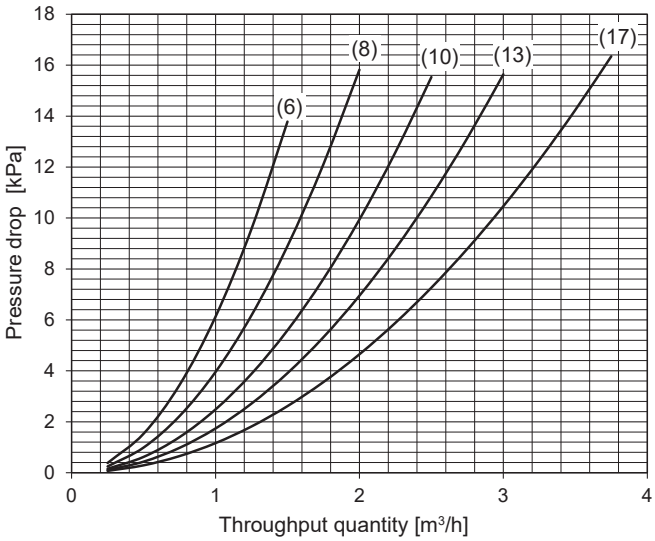
Thermalia® comfort H (7,10)



Thermalia® comfort (6-17)

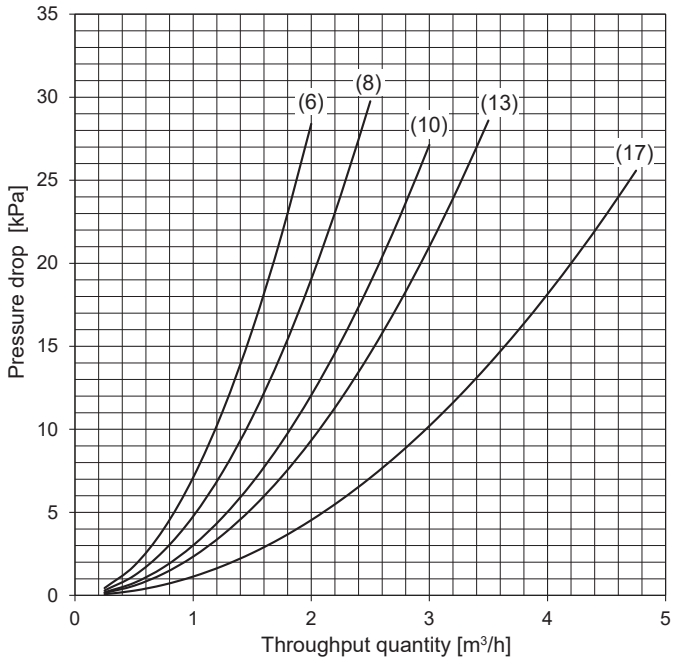
Heating

Pressure drop condenser with water



Heat source

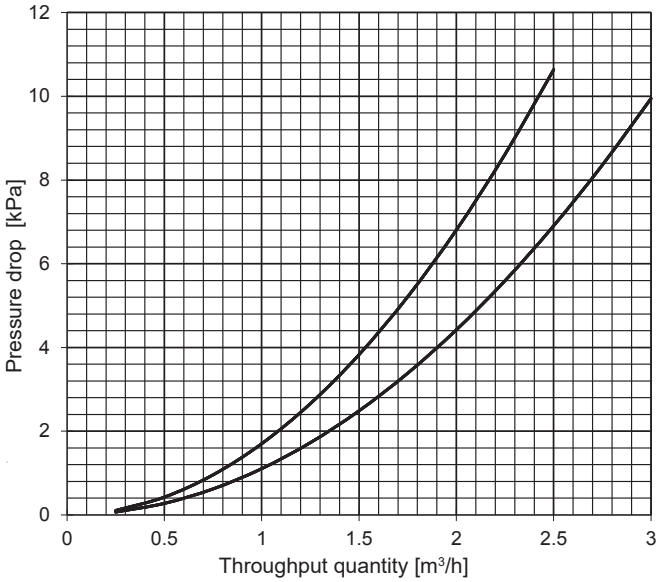
Pressure drop evaporator with ethylene glycol 25 % (Antifrogen N)



Thermalia® comfort H (7,10)

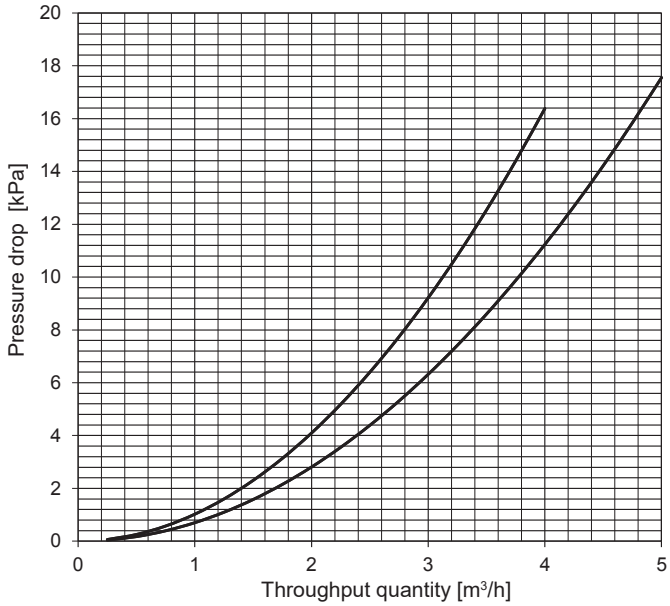
Heating

Pressure drop condenser with water



Heat source

Pressure drop evaporator with ethylene glycol 25 % (Antifrogen N)



Refrigeration capacity

$$Q_0 = Q - P$$

Q_0 = Refrigeration capacity (kW)
Q = Heat output (kW)
P = Power consumption compressor (kW)
Δt_2 = Temperature difference heat source supply/discharge (K)
C = 0.86
c_p = 0.89 (specific heat)
γ = 1.05 (specific weight, density)

Volume flow evaporator

$$V = \frac{Q_0 \cdot c}{\Delta t_2 \cdot c_p \cdot \gamma} \quad (m^3/h)$$

Δp (kPa) = Pressure drop with frost protection (1 kPa = 0.1 mWC)
Δp = f x ΔP f

		Ethylene glycol % (Antifrogen N)
0.97	≙	20 %
1	≙	25 %
1.03	≙	30 %

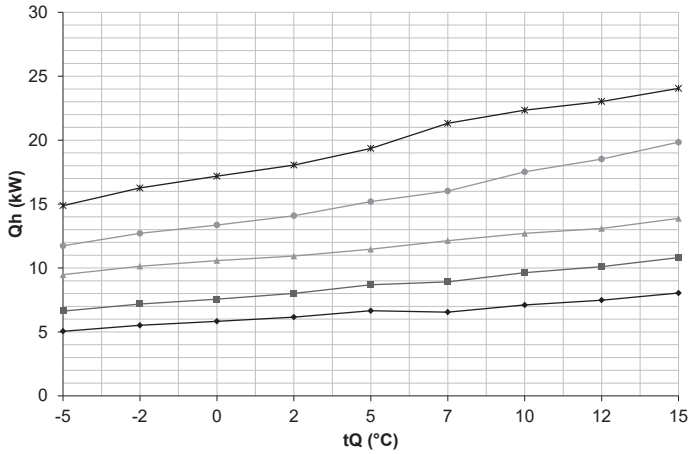
Δp_w (kPa) = Pressure drop with water (1 kPa = 0.1 mWC)
Δp_w = ΔP x 0.89

Performance data - heating

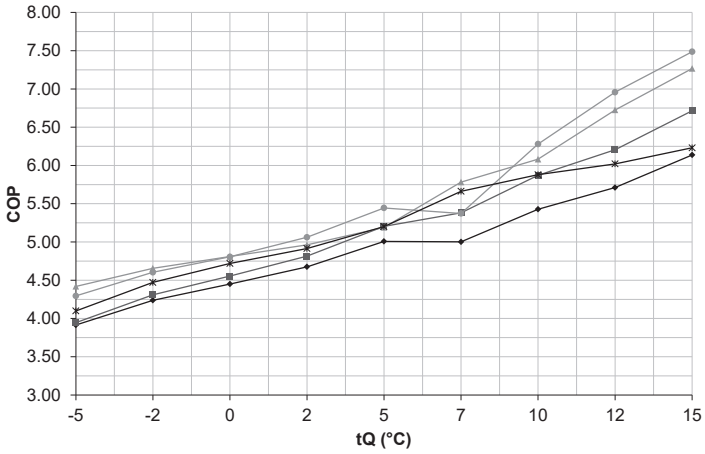
Maximum heat output

Thermalia® comfort (6-17)

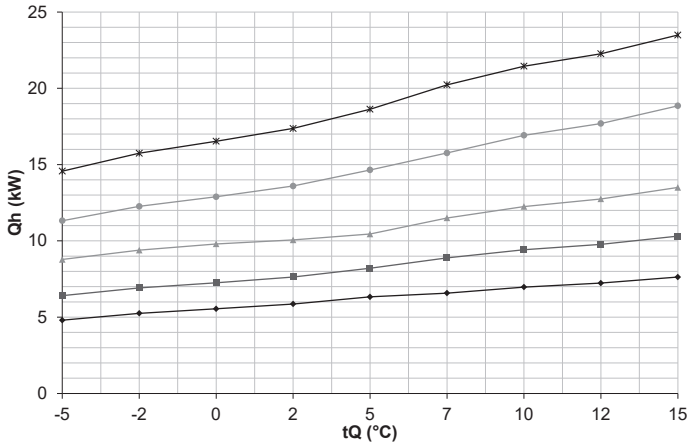
Heat output - t_{VL} 35 °C



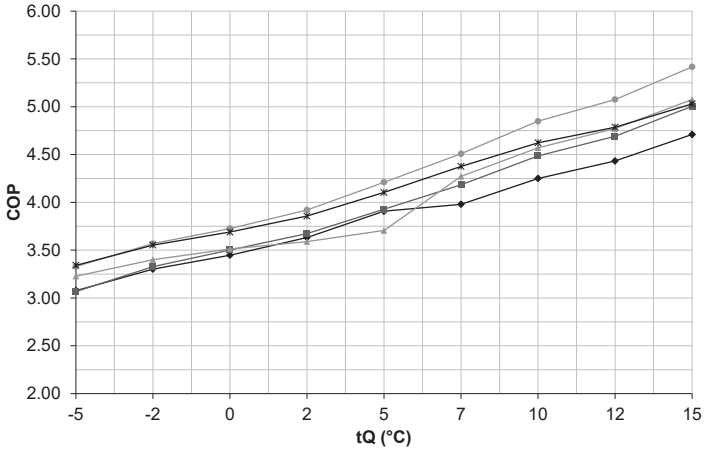
Output rating - t_{VL} 35 °C



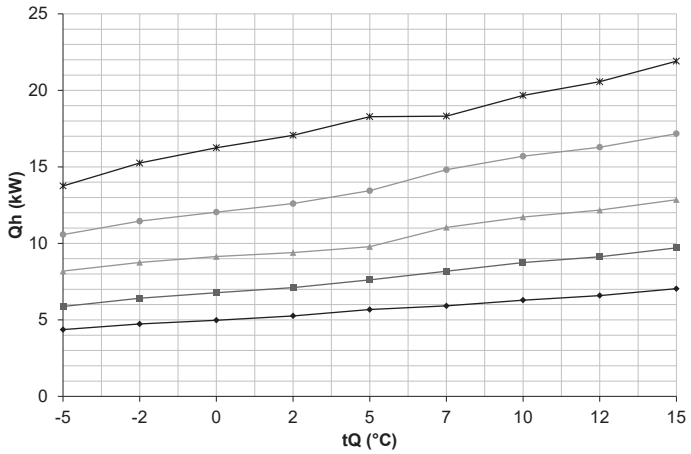
Heat output - t_{VL} 45 °C



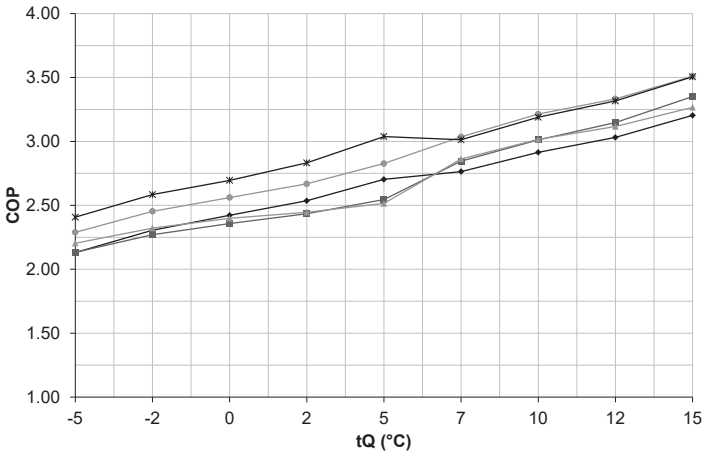
Output rating - t_{VL} 45 °C



Heat output - t_{VL} 62 °C



Output rating - t_{VL} 62 °C



tVL = heating flow temperature (°C)
tQ = source temperature (°C)
Qh = heat output at full load (kW), measured in accordance with standard EN 14511
COP = Coefficient of Performance for the overall unit in accordance with standard EN 14511

- Thermalia® comfort (6)
- Thermalia® comfort (8)
- Thermalia® comfort (10)
- Thermalia® comfort (13)
- Thermalia® comfort (17)

Performance data - heating
Thermalia® comfort (6-17)

Indications acc. to EN 14511

Type			(6)			(8)			(10)			(13)			(17)	
tVL		tQ	Qh	P		Qh	P		Qh	P		Qh	P		Qh	P	
°C		°C	kW	kW	COP	kW	kW	COP	kW	kW	COP	kW	kW	COP	kW	kW	COP
30	Brine	-5	5.1	1.2	4.28	6.7	1.5	4.34	9.7	2.0	4.97	11.9	2.5	4.73	15.0	3.4	4.42
		-2	5.6	1.2	4.65	7.3	1.5	4.75	10.4	2.0	5.24	12.9	2.5	5.07	16.4	3.4	4.87
		0	5.9	1.2	4.90	7.7	1.5	5.03	10.8	2.0	5.41	13.5	2.6	5.29	17.4	3.4	5.18
		2	6.3	1.2	5.14	8.1	1.5	5.33	11.2	2.0	5.60	14.3	2.6	5.58	18.3	3.4	5.38
		5	6.8	1.2	5.49	8.9	1.5	5.78	11.8	2.0	5.89	15.4	2.6	6.00	19.6	3.4	5.68
	Water	7	6.5	1.2	5.47	8.9	1.5	5.95	12.4	1.9	6.49	16.1	2.7	5.97	21.7	3.5	6.23
		10	7.2	1.2	5.96	9.7	1.5	6.52	12.9	1.9	6.79	17.7	2.6	6.93	22.6	3.5	6.43
		12	7.6	1.2	6.29	10.2	1.5	6.92	13.2	1.7	7.75	18.8	2.4	7.87	23.3	3.5	6.56
		15	8.2	1.2	6.78	11.0	1.5	7.52	14.0	1.7	8.44	20.2	2.4	8.50	24.2	3.6	6.75
35	Brine	-5	5.1	1.3	3.91	6.6	1.7	3.95	9.5	2.1	4.42	11.7	2.7	4.29	14.9	3.6	4.10
		-2	5.5	1.3	4.24	7.2	1.7	4.31	10.1	2.2	4.66	12.7	2.8	4.60	16.3	3.6	4.47
		0	5.8	1.3	4.45	7.6	1.7	4.55	10.6	2.2	4.81	13.4	2.8	4.81	17.2	3.6	4.72
		2	6.2	1.3	4.68	8.0	1.7	4.81	10.9	2.2	4.96	14.1	2.8	5.06	18.0	3.7	4.92
		5	6.7	1.3	5.01	8.7	1.7	5.20	11.5	2.2	5.19	15.2	2.8	5.44	19.4	3.7	5.20
	Water	7	6.6	1.3	5.00	8.9	1.7	5.38	12.1	2.1	5.78	16.0	3.0	5.37	21.3	3.8	5.66
		10	7.1	1.3	5.43	9.6	1.6	5.87	12.7	2.1	6.08	17.5	2.8	6.28	22.3	3.8	5.88
		12	7.5	1.3	5.71	10.1	1.6	6.21	13.1	1.9	6.73	18.5	2.7	6.96	23.0	3.8	6.02
		15	8.0	1.3	6.14	10.8	1.6	6.71	13.9	1.9	7.27	19.8	2.7	7.49	24.1	3.9	6.23
40	Brine	-5	4.9	1.4	3.46	6.5	1.9	3.46	9.1	2.4	3.75	11.5	3.1	3.76	14.7	4.0	3.69
		-2	5.4	1.4	3.72	7.1	1.9	3.76	9.8	2.5	3.95	12.5	3.1	4.03	16.0	4.0	3.97
		0	5.7	1.5	3.90	7.4	1.9	3.97	10.2	2.5	4.08	13.1	3.1	4.21	16.9	4.1	4.15
		2	6.0	1.5	4.10	7.8	1.9	4.18	10.5	2.5	4.19	13.8	3.1	4.43	17.7	4.1	4.33
		5	6.5	1.5	4.40	8.5	1.9	4.49	11.0	2.5	4.36	14.9	3.1	4.76	19.0	4.1	4.60
	Water	7	6.6	1.5	4.43	8.9	1.9	4.71	11.8	2.4	4.93	15.9	3.2	4.91	20.8	4.2	4.95
		10	7.0	1.5	4.77	9.5	1.9	5.09	12.5	2.4	5.23	17.2	3.1	5.48	21.9	4.2	5.19
		12	7.4	1.5	5.00	9.9	1.9	5.36	12.9	2.3	5.60	18.1	3.1	5.89	22.6	4.2	5.34
		15	7.8	1.5	5.35	10.6	1.8	5.75	13.7	2.3	5.99	19.3	3.1	6.31	23.8	4.3	5.57
45	Brine	-5	4.8	1.6	3.08	6.4	2.1	3.07	8.8	2.7	3.23	11.3	3.4	3.33	14.6	4.4	3.34
		-2	5.3	1.6	3.30	6.9	2.1	3.33	9.4	2.8	3.40	12.3	3.4	3.57	15.7	4.4	3.55
		0	5.6	1.6	3.45	7.3	2.1	3.50	9.8	2.8	3.51	12.9	3.5	3.73	16.5	4.5	3.69
		2	5.9	1.6	3.63	7.6	2.1	3.67	10.1	2.8	3.59	13.6	3.5	3.92	17.4	4.5	3.86
		5	6.3	1.6	3.91	8.2	2.1	3.93	10.5	2.8	3.71	14.7	3.5	4.21	18.6	4.5	4.10
	Water	7	6.6	1.7	3.98	8.9	2.1	4.18	11.5	2.7	4.27	15.8	3.5	4.51	20.2	4.6	4.38
		10	7.0	1.6	4.25	9.4	2.1	4.49	12.3	2.7	4.57	16.9	3.5	4.85	21.5	4.6	4.62
		12	7.2	1.6	4.43	9.8	2.1	4.69	12.8	2.7	4.77	17.7	3.5	5.08	22.3	4.7	4.79
		15	7.6	1.6	4.71	10.3	2.1	5.00	13.5	2.7	5.08	18.9	3.5	5.42	23.5	4.7	5.03
50	Brine	-5	4.7	1.7	2.73	6.2	2.3	2.71	8.6	3.0	2.86	11.1	3.8	2.95	14.3	4.8	2.97
		-2	5.1	1.7	2.92	6.7	2.3	2.93	9.2	3.1	3.01	12.0	3.8	3.17	15.6	4.9	3.18
		0	5.4	1.8	3.04	7.1	2.3	3.07	9.6	3.1	3.11	12.6	3.8	3.30	16.4	5.0	3.32
		2	5.7	1.8	3.20	7.4	2.3	3.21	9.9	3.1	3.17	13.3	3.8	3.47	17.3	5.0	3.47
		5	6.2	1.8	3.44	8.0	2.3	3.42	10.3	3.1	3.27	14.3	3.9	3.71	18.6	5.0	3.69
	Water	7	6.4	1.8	3.54	8.6	2.4	3.63	11.4	3.0	3.74	15.5	3.9	3.97	19.6	5.1	3.83
		10	6.8	1.8	3.75	9.2	2.4	3.88	12.1	3.0	3.99	16.6	3.9	4.25	20.9	5.1	4.06
		12	7.1	1.8	3.90	9.5	2.4	4.05	12.6	3.0	4.15	17.3	3.9	4.43	21.7	5.2	4.20
		15	7.5	1.8	4.11	10.1	2.3	4.30	13.3	3.0	4.39	18.4	3.9	4.71	23.0	5.2	4.42
55	Brine	-5	4.5	1.9	2.44	5.9	2.5	2.40	8.4	3.3	2.55	10.9	4.1	2.64	14.0	5.3	2.66
		-2	4.9	1.9	2.60	6.5	2.5	2.59	9.0	3.4	2.69	11.8	4.2	2.83	15.4	5.4	2.87
		0	5.2	1.9	2.70	6.9	2.5	2.72	9.4	3.4	2.78	12.4	4.2	2.96	16.3	5.4	3.01
		2	5.5	1.9	2.84	7.2	2.6	2.83	9.7	3.4	2.83	13.0	4.2	3.09	17.2	5.5	3.15
		5	6.0	2.0	3.05	7.8	2.6	3.00	10.1	3.5	2.92	13.9	4.2	3.30	18.5	5.5	3.35
	Water	7	6.3	2.0	3.18	8.4	2.6	3.19	11.2	3.4	3.33	15.2	4.3	3.53	19.0	5.6	3.39
		10	6.7	2.0	3.35	8.9	2.6	3.40	11.9	3.4	3.52	16.2	4.3	3.76	20.3	5.7	3.59
		12	6.9	2.0	3.46	9.3	2.6	3.54	12.4	3.4	3.65	16.9	4.3	3.91	21.1	5.7	3.72
		15	7.3	2.0	3.63	9.9	2.6	3.75	13.1	3.4	3.85	17.9	4.3	4.14	22.4	5.7	3.92
62	Brine	-5	4.4	2.0	2.13	5.9	2.8	2.13	8.2	3.7	2.20	10.6	4.6	2.29	13.8	5.7	2.41
		-2	4.7	2.1	2.31	6.4	2.8	2.27	8.8	3.8	2.32	11.5	4.7	2.45	15.3	5.9	2.58
		0	5.0	2.1	2.42	6.8	2.9	2.36	9.1	3.8	2.40	12.0	4.7	2.56	16.3	6.0	2.70
		2	5.3	2.1	2.54	7.1	2.9	2.43	9.4	3.8	2.45	12.6	4.7	2.67	17.1	6.0	2.83
		5	5.7	2.1	2.70	7.6	3.0	2.54	9.8	3.9	2.52	13.4	4.8	2.83	18.3	6.0	3.04
	Water	7	5.9	2.1	2.76	8.2	2.9	2.85	11.0	3.9	2.86	14.8	4.9	3.04	18.3	6.1	3.01
		10	6.3	2.2	2.91	8.7	2.9	3.01	11.7	3.9	3.02	15.7	4.9	3.21	19.7	6.2	3.19
		12	6.6	2.2	3.03	9.1	2.9	3.15	12.2	3.9	3.12	16.3	4.9	3.33	20.6	6.2	3.32
		15	7.0	2.2	3.20	9.7	2.9	3.35	12.9	3.9	3.27	17.2	4.9	3.51	21.9	6.2	3.51

tVL = heating flow temperature (°C)
tQ = source temperature (°C)
Qh = heat output at full load (kW), measured in accordance with standard EN 14511
P = power consumption of the overall unit (kW)
COP = Coefficient of Performance for the overall unit in accordance with standard EN 14511

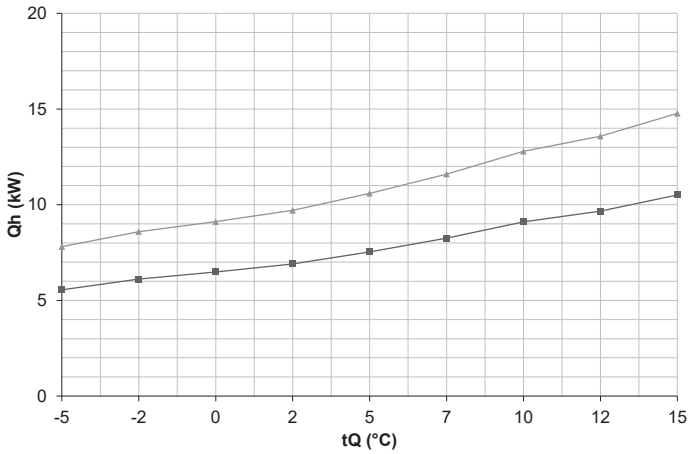
Observe daily power interruptions!
see “Engineering heat pumps general”

Performance data - heating

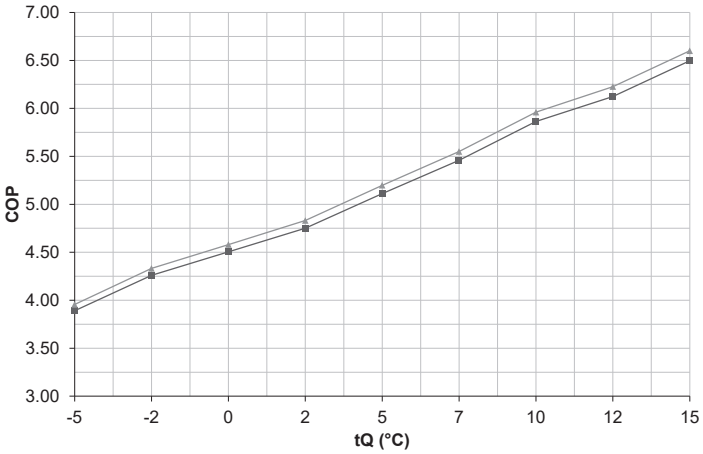
Maximum heat output

Thermalia® comfort H (7,10)

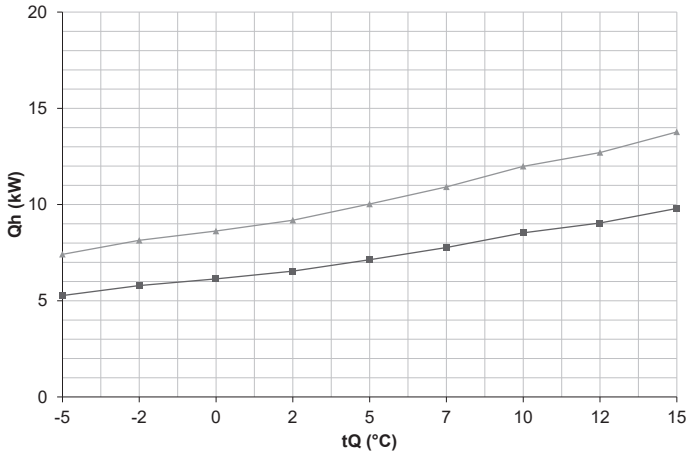
Heat output - t_{VL} 35 °C



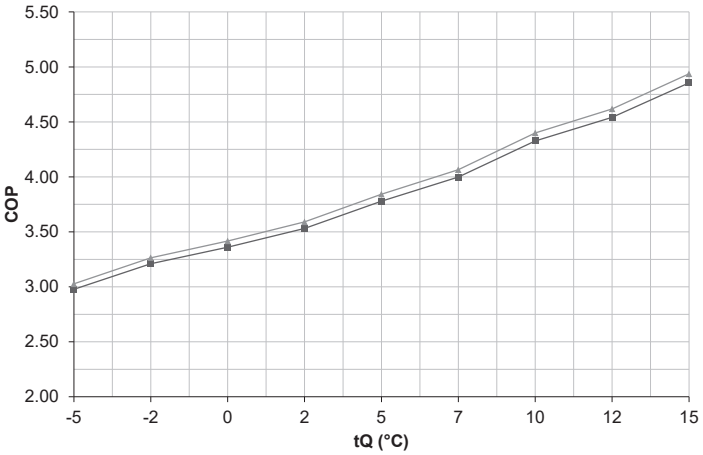
Output rating - t_{VL} 35 °C



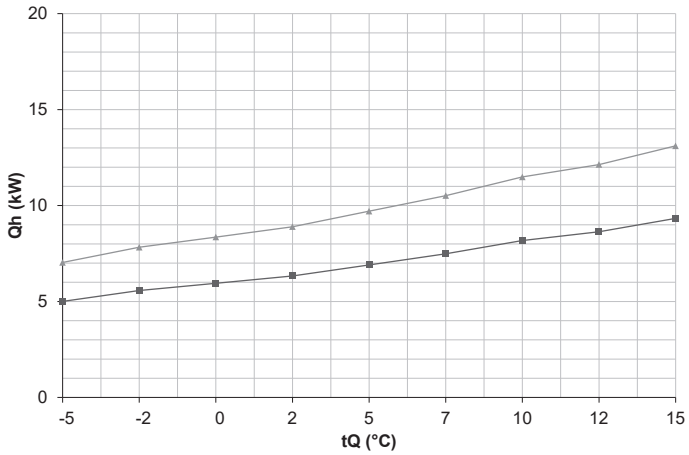
Heat output - t_{VL} 50 °C



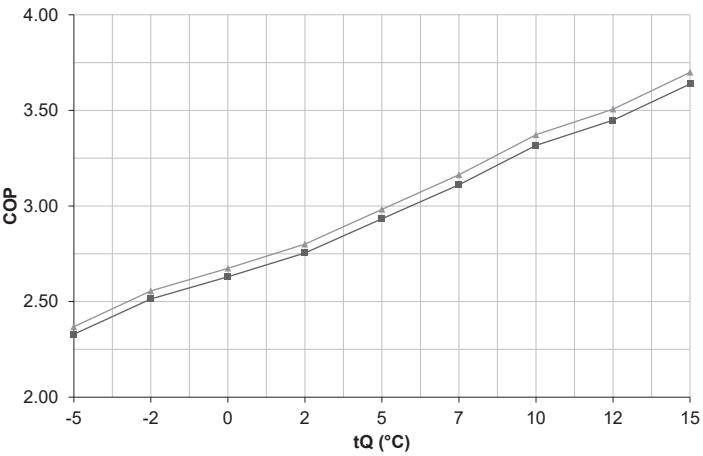
Output rating - t_{VL} 50 °C



Heat output - t_{VL} 65 °C



Output rating - t_{VL} 65 °C



tVL = heating flow temperature (°C)
tQ = source temperature (°C)
Qh = heat output at full load (kW), measured in accordance with standard EN 14511
COP = Coefficient of Performance for the overall unit in accordance with standard EN 14511

Thermalia® comfort H (7)
Thermalia® comfort H (10)

Performance data - heating
Thermalia® comfort H (7,10)

Indications acc. to EN 14511

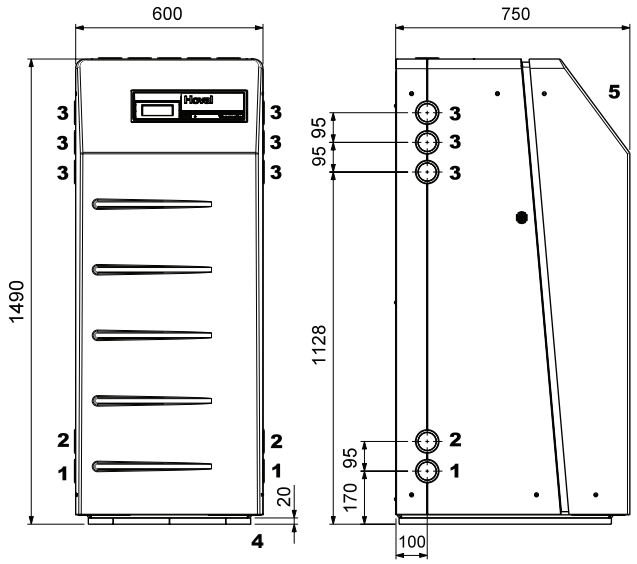
Type tVL °C		tQ °C	H (7) Qh kW	H (7) P kW	H (7) COP	H (10) Qh kW	H (10) P kW	H (10) COP
30	Brine	-5	5.6	1.4	4.16	7.9	1.9	4.23
		-2	6.2	1.4	4.58	8.7	1.9	4.65
		0	6.6	1.4	4.86	9.2	1.9	4.94
		2	7.0	1.4	5.13	9.8	1.9	5.21
		5	7.6	1.4	5.53	10.7	1.9	5.62
	Water	7	8.4	1.4	5.92	11.8	2.0	6.02
		10	9.3	1.5	6.33	13.0	2.0	6.44
		12	9.8	1.5	6.59	13.8	2.1	6.70
		15	-	-	-	-	-	-
35	Brine	-5	5.6	1.4	3.89	7.8	2.0	3.96
		-2	6.1	1.4	4.26	8.6	2.0	4.33
		0	6.5	1.4	4.50	9.1	2.0	4.58
		2	6.9	1.5	4.75	9.7	2.0	4.83
		5	7.5	1.5	5.11	10.6	2.0	5.20
	Water	7	8.3	1.5	5.46	11.6	2.1	5.55
		10	9.1	1.6	5.86	12.8	2.1	5.96
		12	9.7	1.6	6.12	13.6	2.2	6.23
		15	10.5	1.6	6.50	14.8	2.2	6.60
40	Brine	-5	5.5	1.5	3.54	7.7	2.1	3.60
		-2	6.0	1.6	3.85	8.4	2.2	3.91
		0	6.3	1.6	4.05	8.9	2.2	4.12
		2	6.8	1.6	4.26	9.5	2.2	4.33
		5	7.4	1.6	4.58	10.4	2.2	4.65
	Water	7	8.1	1.7	4.86	11.3	2.3	4.94
		10	8.9	1.7	5.26	12.5	2.3	5.35
		12	9.4	1.7	5.52	13.2	2.4	5.61
		15	10.2	1.7	5.89	14.4	2.4	5.99
45	Brine	-5	5.4	1.7	3.24	7.5	2.3	3.37
		-2	5.9	1.7	3.49	8.2	2.3	3.55
		0	6.2	1.7	3.66	8.7	2.3	3.72
		2	6.6	1.7	3.85	9.3	2.4	3.91
		5	7.2	1.7	4.13	10.1	2.4	4.20
	Water	7	7.9	1.8	4.36	11.1	2.5	4.43
		10	8.7	1.8	4.75	12.2	2.5	4.81
		12	9.2	1.8	5.00	12.9	2.5	5.08
		15	10.0	1.9	5.37	14.0	2.6	5.45
50	Brine	-5	5.3	1.8	2.98	7.4	2.4	3.03
		-2	5.8	1.8	3.21	8.1	2.5	3.26
		0	6.1	1.8	3.36	8.6	2.5	3.42
		2	6.5	1.9	3.53	9.2	2.6	3.59
		5	7.1	1.9	3.78	10.0	2.6	3.84
	Water	7	7.8	1.9	4.00	10.9	2.7	4.07
		10	8.5	2.0	4.33	12.0	2.7	4.40
		12	9.0	2.0	4.54	12.7	2.8	4.62
		15	9.8	2.0	4.86	13.8	2.8	4.94
55	Brine	-5	5.2	1.9	2.75	7.3	2.6	2.79
		-2	5.7	1.9	2.96	8.0	2.7	3.01
		0	6.1	2.0	3.10	8.5	2.7	3.15
		2	6.5	2.0	3.26	9.1	2.7	3.31
		5	7.1	2.0	3.48	9.9	2.8	3.54
	Water	7	7.7	2.1	3.68	10.8	2.9	3.75
		10	8.4	2.1	3.97	11.8	2.9	4.01
		12	8.9	2.1	4.15	12.5	3.0	4.22
		15	9.6	2.2	4.42	13.5	3.0	4.49
62	Brine	-5	5.1	2.1	2.44	7.1	2.9	2.48
		-2	5.6	2.1	2.64	7.9	2.9	2.68
		0	6.0	2.2	2.76	8.4	3.0	2.80
		2	6.4	2.2	2.89	9.0	3.0	2.94
		5	7.0	2.3	3.08	9.8	3.1	3.13
	Water	7	7.5	2.3	3.27	10.6	3.2	3.32
		10	8.2	2.4	3.49	11.6	3.3	3.55
		12	8.7	2.4	3.64	12.2	3.3	3.70
		15	9.4	2.4	3.85	13.2	3.4	3.91
65	Brine	-5	5.0	2.1	2.33	7.0	3.0	2.37
		-2	5.6	2.2	2.51	7.8	3.1	2.56
		0	5.9	2.3	2.63	8.4	3.1	2.67
		2	6.3	2.3	2.75	8.9	3.2	2.80
		5	6.9	2.4	2.93	9.7	3.3	2.98
	Water	7	7.5	2.4	3.11	10.5	3.3	3.16
		10	8.2	2.5	3.32	11.5	3.4	3.37
		12	8.6	2.5	3.45	12.1	3.5	3.51
		15	9.3	2.6	3.64	13.1	3.5	3.70
		25	-	-	-	-	-	-

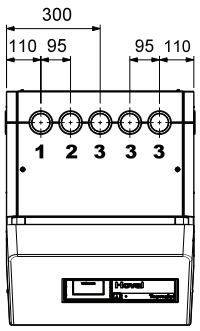
tVL = heating flow temperature (°C)
tQ = source temperature (°C)
Qh = heat output at full load (kW), measured in accordance with standard EN 14511
P = power consumption of the overall unit (kW)
COP = Coefficient of Performance for the overall unit in accordance with standard EN 14511

Observe daily power interruptions!
see “Engineering heat pumps general”

Thermalia® comfort (6-17) and comfort H (7,10)

(Dimensions in mm)





1 Heat source - outlet R1″ (selectable lateral or above)
2 Heat source - inlet R1″ (selectable lateral or above)
3 Openings freely selectable for:
- heating flow R1″
- heating return R1″
- hot water R1″ (left or above)
- electrical connection

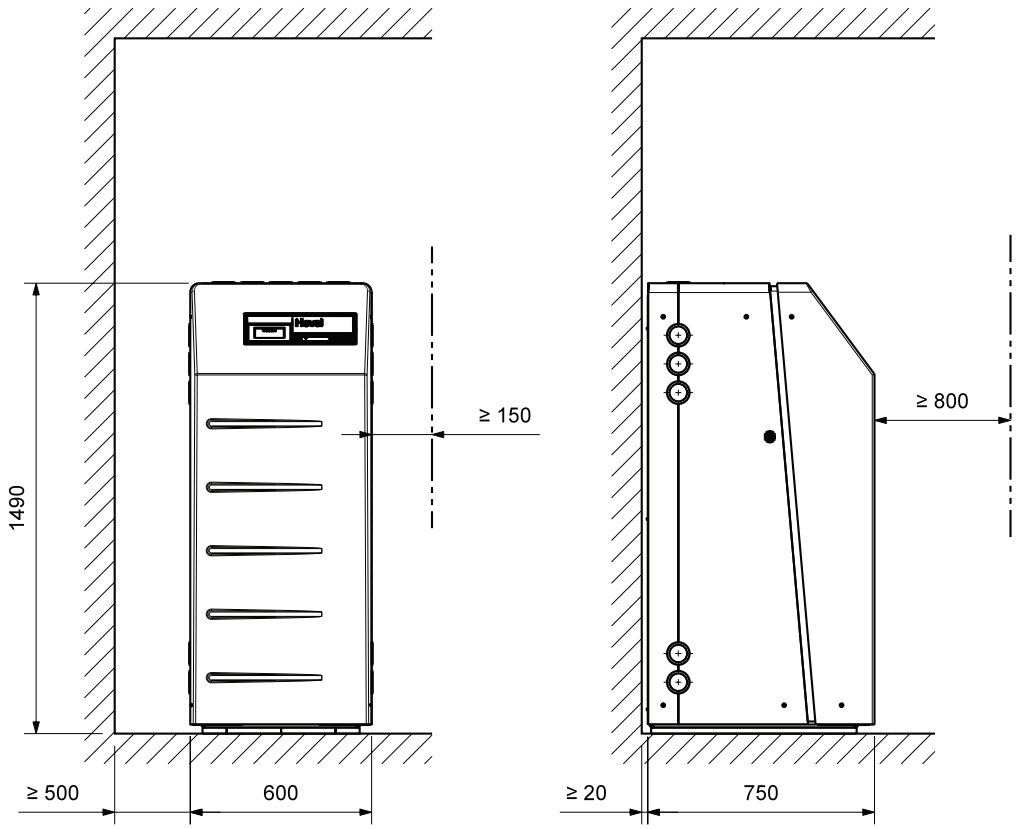
4 Vibration damping
5 Control panel

The 4 flexible hoses 1″ can be extracted from the heat pump by at least 30 cm

Required space

Required wall distance in mm for operation and maintenance
(Dimensions in mm)

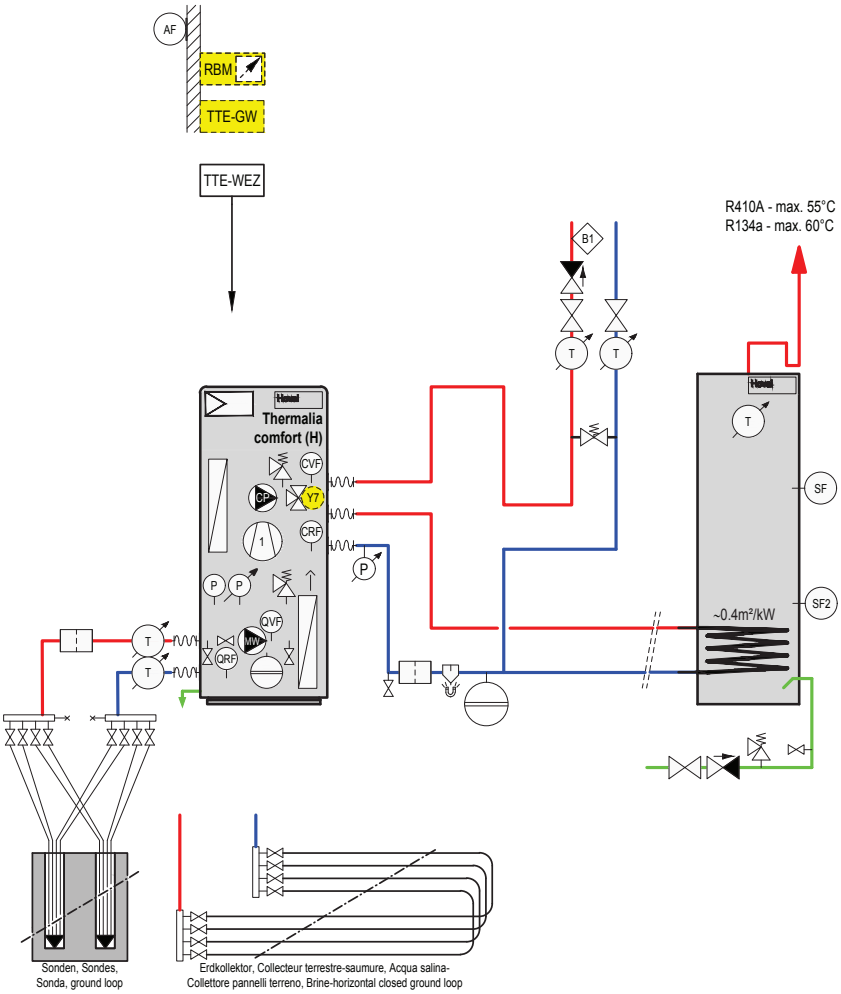
front	rear	right or left side
min. 800	min. 20	min. 500



Thermalia® comfort (6-17), comfort H (7,10)

Brine/water-water/water heat pump with
- earth probes
- calorifier
- 1 direct circuit

Hydraulic schematic BBBAE020



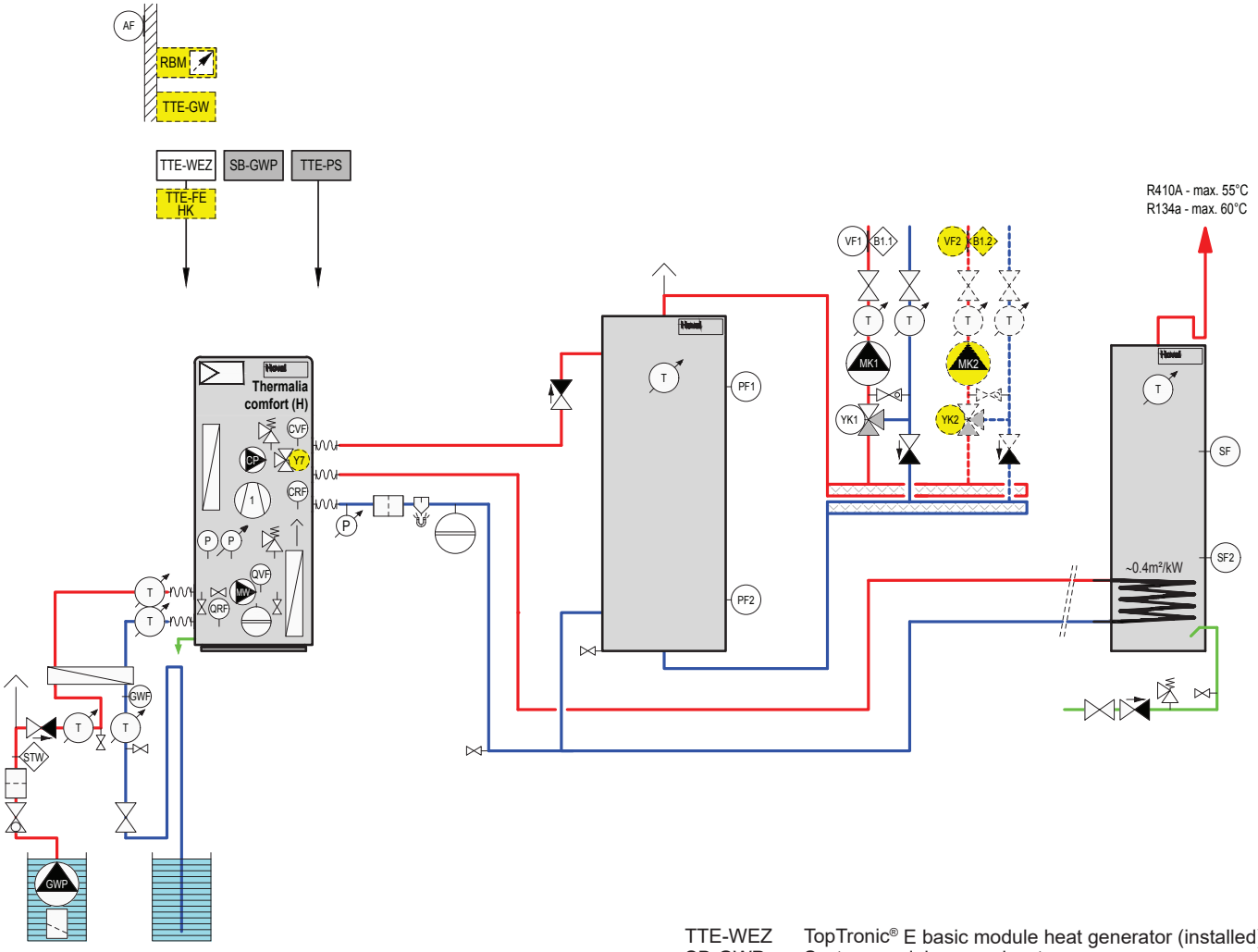
Important notices
- The example schematics merely show the basic principle and do not contain all information required for installation. Installation must be carried out according to the conditions on-site, dimensioning and local regulations.
- Shut-off devices to the safety equipment (pressure expansion tank, safety valve, etc.) must be secured against unintentional closing!
- Install sacks to prevent single-pipe gravity circulation!

TTE-WEZ	TopTronic® E basic module heat generator (installed)
B1	Flow temperature guard (if required)
AF	Outdoor sensor
SF	Calorifier sensor
SF2	Calorifier sensor 2
Option	
RBM	TopTronic® E room control module
TTE-GW	TopTronic® E Gateway
Y7	Switching valve

Thermalia® comfort (6-17), comfort H (7,10)

Brine/water-water/water heat pump with
- water/water - indirect utilisation
- energy buffer storage tank
- calorifier
- 1-... mixer circuit(s)

Hydraulic schematic BBBAE070



TTE-WEZ	TopTronic® E basic module heat generator (installed)
SB-GWP	System module ground water pump
TTE-PS	TopTronic® E buffer module
VF1	Flow temperature sensor 1
B1.1	Flow temperature guard (if required)
MK1	Pump mixer circuit 1
YK1	Actuator mixer 1
AF	Outdoor sensor
SF	Calorifier sensor
PF1	Buffer sensor 1
PF2	Buffer sensor 2
GWF	Frost controller
STW	Flow controller
GWP	Ground water pump

Option

RBM	TopTronic® E room control module
TTE-GW	TopTronic® E Gateway
TTE-FE HK	TopTronic® E module expansion heating circuit
VF2	Flow temperature sensor 2
B1.2	Flow temperature guard (if required)
MK2	Pump mixer circuit 2
YK2	Actuator mixer 2

Important notices
- The example schematics merely show the basic principle and do not contain all information required for installation. Installation must be carried out according to the conditions on-site, dimensioning and local regulations.
- Shut-off devices to the safety equipment (pressure expansion tank, safety valve, etc.) must be secured against unintentional closing!
- Install sacks to prevent single-pipe gravity circulation!

Hoval Thermalia® twin
Hoval Thermalia® twin H
Brine/water-water/water heat pump

- Brine/water-water/water heat pump with two output stages for indoor installation
- Compact unit with high energy efficiency
- Extremely low-noise with triple-mounted construction
- Stable framework of galvanised sheet steel; with removable, powder-coated, sound-insulated side panels, colour brown red (RAL 3011)
- Sound-insulated plastic hood, colour flame red (RAL 3000)
- Temperatures and pressures of brine and refrigeration circuit available
- 2 spiral (scroll) compressors
- Electronic expansion valve
- Plate heat exchanger system of stainless steel
- Electronic starting current limiter with rotary field/phase monitoring for each compressor
- Integrated brine pressure monitoring
- Hydraulic connections to the rear
- 4 flexible hoses incl. 90° bend (included separately)
  Thermalia® twin (20,26): 1½″ 4x 1 m
  Thermalia® twin (35,42): 2″ 4x 1 m
  Thermalia® twin H (13-22): 1½″ 4x 0.965 m
- Sound-insulating floor mat
- Refrigerant
  Thermalia® twin (20-42) with R410A
  Thermalia® twin H (13-22) with R134a
- Heat pump wired ready
- TopTronic® E controller installed

TopTronic® E controller

Control panel
- Colour touchscreen 4.3 inch
- Heat generator blocking switch for interrupting operation
- Fault signalling lamp

TopTronic® E control module
- Simple, intuitive operating concept
- Display of the most important operating statuses
- Configurable start screen
- Operating mode selection
- Configurable day and week programmes
- Operation of all connected Hoval CAN bus modules
- Commissioning wizard
- Service and maintenance function
- Fault message management
- Analysis function
- Weather display (with online HovalConnect)
- Adaptation of the heating strategy based on the weather forecast (with online HovalConnect)

TopTronic® E basic module heat generator (TTE-WEZ)
- Control functions integrated for
  - 1 heating/cooling circuit with mixer
  - 1 heating/cooling circuit without mixer
  - 1 hot water loading circuit
  - bivalent and cascade management
- Outdoor sensor
- Immersion sensor (calorifier sensor)
- Contact sensor (flow temperature sensor)
- Rast-5 basic plug set

Seal of approval FWS
The Thermalia® twin (20-42) and twin H (13-22) series are certified by the seal of approval of the authorisation commission of Switzerland.

Model range

Thermalia® twin Type	Water/water 35 °C	Water/water 55 °C	Brine/water 35 °C	Brine/water 55 °C	Refrigerant	max. flow °C	Heat output B0W35 kW	Heat output W10W35 kW
(20)	A+++	A+++	A+++	A++	R410A	62	20.4	27.3
(26)	A+++	A+++	A+++	A++	R410A	62	26.2	35.1
(36)	A+++	A+++	A+++	A+++	R410A	62	35.3	46.4
(42)	A+++	A+++	A+++	A++	R410A	62	42.0	55.4
H (13)	A+++	A+++	A+++	A++	R134a	67	12.3	17.0
H (19)	A+++	A+++	A+++	A++	R134a	67	18.0	24.7
H (22)	A+++	A+++	A+++	A++	R134a	67	20.9	28.8

Energy efficiency class of the compound system with control.

Options for TopTronic® E controller
- Can be expanded by max. 1 module expansion:
  - module expansion heating circuit or
  - module expansion heat accounting or
  - module expansion universal
- Can be networked with a total of up to 16 controller modules:
  - heating circuit/hot water module
  - solar module
  - buffer module
  - measuring module

Number of modules that can be additionally installed in the heat generator:
- 1 module expansion and 1 controller module **or**
- 2 controller modules

The supplementary plug set must be ordered in order to use expanded controller functions.

Further information about the TopTronic® E see “Controls”

Electrical connections
- Connection to the rear

Delivery
- Heat pump on pallet, plastic hood and floor plate separately packed
- Flexible hoses included
- Sensor set separately packed

Option
- Internet connection

Brine/water-water/water heat pump

Notice
Suitable heat source and charging pumps:

Hoval system pump set SPS-I with interface for pump control
Type 0-10 V or PWM1

Premium pump Stratos
with IF module Stratos Ext. Off (0-10 V)

See brochure “Accessories” - chapter “Circulating pumps”

Energy efficiency class
see Description

Brine/water-water/water heat pump with 2 hermetic spiral (scroll) compressors for indoor installation with flexible connection pipes and built-in Hoval TopTronic® E control

Control functions integrated for
- 1 heating circuit with mixer
- 1 heating circuit without mixer
- 1 hot water loading circuit
- bivalent and cascade management

- Can be optionally expanded by max. 1 module expansion:
  - module expansion heating circuit or
  - module expansion universal
  - module expansion heat accounting
- Can be optionally networked with a total of up to 16 controller modules (incl. solar module)

Delivery
- Compact device internally wired ready for installation
- Heat pump on pallet, plastic hood and sound-insulating floor mat separately packed.
- Flexible hoses included
- Sensor set separately packed

Hoval Thermalia® twin
Refrigerant R410A
Flow temperature max. 62 °C

Thermalia® twin Type	Heat output B0W35 kW	Heat output W10W35 kW	Part No.
(20)	20.4	27.3	7014 725
(26)	26.2	35.1	7014 726
(36)	35.3	46.4	7014 727
(42)	42.0	55.4	7014 728

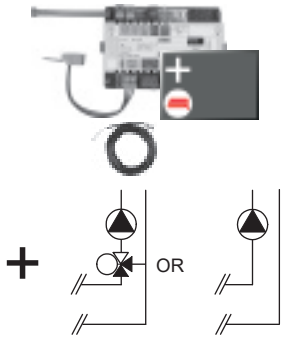
Hoval Thermalia® twin H
Refrigerant R134a
Flow temperature max. 67 °C

Thermalia® twin Type	Heat output B0W35 kW	Heat output W10W35 kW	Part No.
(13)	12.3	17.0	7014 729
(19)	18.0	24.7	7014 730
(22)	20.9	28.8	7014 731

TopTronic® E module expansions

for TopTronic® E basic module heat generator

Part No.



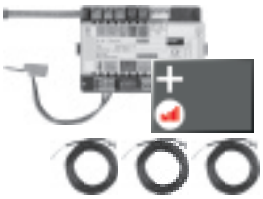
TopTronic® E module expansion heating circuit TTE-FE HK
Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:
- 1 heating circuit without mixer or
- 1 heating circuit with mixer

incl. fitting accessories
1x contact sensor ALF/2P/4/T L = 4.0 m

Can be installed in:
Boiler control, wall housing, control panel

6034 576

Notice
The supplementary plug set may have to be ordered to implement functions differing from the standard!



TopTronic® E module expansion heating circuit incl. energy balancing TTE-FE HK-EBZ
Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions:
- 1 heating/cooling circuit w/o mixer or
- 1 heating/cooling circuit with mixer

in each case incl. energy balancing

incl. fitting accessories
3x contact sensor ALF/2P/4/T L = 4.0 m

Can be installed in:
Boiler control, wall housing, control panel

6037 062

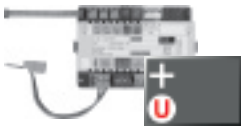
Notice
The flow rate sensor set must be ordered as well.

Flow rate sensor sets
Plastic housing

Size	Connection	Flow rate l/min	
DN 8	G ¾″	0.9-15	6038 526
DN 10	G ¾″	1.8-32	6038 507
DN 15	G 1″	3.5-50	6038 508
DN 20	G 1¼″	5-85	6038 509
DN 25	G 1½″	9-150	6038 510

Brass housing

Size	Connection	Flow rate l/min	
DN 10	G 1″	2-40	6042 949
DN 32	G 1½″	14-240	6042 950



TopTronic® E module expansion Universal TTE-FE UNI
Expansion to the inputs and outputs of a controller module (basic module heat generator, heating circuit/domestic hot water module, solar module, buffer module) for implementing various functions

incl. fitting accessories

Can be installed in:
Boiler control, wall housing, control panel

6034 575

Notice
Refer to the Hoval System Technology to find which functions and hydraulic arrangements can be implemented.

Further information
see “Controls” - “Hoval TopTronic® E module expansions” chapter

Accessories for TopTronic® E

		Part No.
	**Supplementary plug set**	
	for basic module heat generator (TTE-WEZ)	6034 499
	for controller modules and module expansion	6034 503
	TTE-FE HK	
	**TopTronic® E controller modules**	
	TTE-HK/WW TopTronic® E heating circuit/ hot water module	6034 571
	TTE-SOL TopTronic® E solar module	6037 058
	TTE-PS TopTronic® E buffer module	6037 057
	TTE-MWA TopTronic® E measuring module	6034 574
	**TopTronic® E room control modules**	
	TTE-RBM TopTronic® E room control modules	
	easy white	6037 071
	comfort white	6037 069
	comfort black	6037 070
	**Enhanced language package TopTronic® E**	6039 253
	one SD card required per control module Consisting of the following languages: HU, CS, SL, RO, PL, TR, ES, HR, SR, JA, DA	
	**HovalConnect**	
	HovalConnect LAN	6049 496
	HovalConnect WLAN	6049 498
HovalConnect available from mid-2020 Up to that point, TopTronic® E online is delivered.	**TopTronic® E interface modules**	
	GLT module 0-10 V	6034 578
	HovalConnect Modbus	6049 501
	HovalConnect KNX	6049 593
	**TopTronic® E wall casing**	6035 563
	WG-190 Wall casing small	6035 564
	WG-360 Wall casing medium	6035 565
	WG-360 BM Wall casing medium with control module cut-out	6035 566
	WG-510 Wall casing large	6038 533
	WG-510 BM Wall casing large with control module cut-out	
	**TopTronic® E sensors**	2055 889
	AF/2P/K Outdoor sensor	2055 888
	TF/2P/5/6T Immersion sensor, L = 5.0 m	2056 775
	ALF/2P/4/T Contact sensor, L = 4.0 m	2056 776
	TF/1.1P/2.5S/6T Collector sensor, L = 2.5 m	
	**System housing**	6038 551
	System housing 182 mm	6038 552
	System housing 254 mm	
	Bivalent switch	2061 826

Outdoor sensor, immersion sensor and contact sensor supplied with the heat pump.

Further information
see “Controls”

Accessories

	Part No.

Protective pipe immersion sleeve
SB 280 ½″
brass nickel-plated
PN10, 280 mm

2018 837

Switching ball valve VBI60...L
DN 25-50, PN 16, 120 °C
- Three-way ball valve made of brass with threaded connection
- incl. seals and screw connections

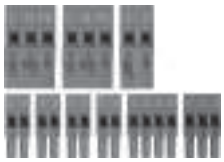
DN	Connection	kvs m³/h	
25	Rp 1″	9	6052 444
32	Rp 1¼″	13	6052 445
40	Rp 1½″	25	6052 446
50	Rp 2″	37	6052 447

Suitable motor drive

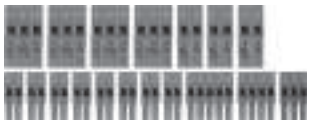
Type	Voltage	Control signal	Actuator run time	
GLB341.9E	230 V / 50/60 Hz	2-/3-point	150 s	2070 331

Screw-in electrical heating inset
for plants with technical storage tank
as emergency heating.

Type	Heat output [kW]	Installation depth [mm]	
EP 2.5	2.35	390	6049 557
EP 3.5	3.6	500	6049 558
EP 5	4.9	620	6049 559
EP 7.5	7.5	850	6049 560



Expansion connector set 6032 509
for the automatic heat pump ECR461.
Use for additional function:
- Flow monitor
- Crankcase bottom heating
(included in the scope of delivery
for Belaria® twin A, twin AR, dual AR)
- Condensation drain heating
- Heat quantity metering
Plugs:
- 1x 230V digital input
- 2x 230V outputs
- 4x low-voltage inputs
- 1x ratio. Input



Universal connector set 6032 510
for automatic heat pump ECR461
Plugs:
- 3x 230V digital input
- 4x 230V outputs
- 6x low-voltage inputs
- 2x low-voltage outputs
- 1x ratio. input
- 1x electr. expansion valve

Part No.

Necessary at boiler room temperatures < 10 °C

Crankcase heater — 6019 718
for Belaria® twin I, twin IR,
Thermalia® comfort, Thermalia® twin
for compressor protection
For Belaria® twin I, twin IR
2 pieces are necessary!

Instantaneous water heater kit DN 50 — 6044 070
from ready electrical box
for electrical protection incl.
assembly fittings.
for combination with all screw-in
heating inset EP.
Screw-in heaters must be
ordered separately.

System water protection filter
FGM025...050 - 200
For horizontal installation in return for filtration of heating and cooling water, with high filtration capacity for corrosion particles and dirt without significant pressure loss.
Consisting of:
- Filter head and bowl in brass
- Magnetic insert (nickel-neodymium)
- 2 pressure gauges
- Very large filter surface made of stainless steel
- Filter fineness 200 µm
- With drain valve
- Connections Rp 1″ and Rp 2″:
Internal thread with integrated shut-off valves and union connection (outlet)
- Water temperature: max. 90 °C

Notice:
Fulfills the function of sludge separator and strainer

FF050 - 200
Casing and cover made of cast iron GGG-50
Cover with clip lock
- Filter strainer insert made of stainless steel
- Cover seal made of NBR
- 2 magnetic insert (nickel-neodymium)
- 2 pressure gauges
- Very large filter surface in stainless steel
- Filter fineness 200 µm
- With filling and drain valve
- Connections flange DN 50

Type	Connection	Volume flow [m³/h] at Δp <0.1 bar pressure loss	Part No.
FGM025	Rp 1″	5.5	2076 374
FGM025	Rp 2″	7.2	2076 375
FF050	DN 50	18.0	2076 376

Further strainers
see “Various system components”

	Part No.
 **Safety group SG15-¾″** Retaining bar incl. safety valve, pressure gauge, air vent and connection fittings for expansion chambers	2015 354
 **Expansion chamber** Reflex NG 25 for systems up to approx. 20 kW Operating pressure: up to 6 bar Pre-pressure: 1.5 bar Ø 280 mm, H = 490 mm	242 791

Ground water accessories

Float ball flow switch
nominal pressure 10 bar
installed length 335 mm
bistable reed contact as
contact open, if there is no flow

Area of application l/h	°C	Connection	Part No.
1500-15000	0-80	Rp 2″	2040 709

Ground water pump kit SB-GWP — 6041 092
for Thermalia® twin (20-42),
twin H (13-22)
Contactor for actuation of a 3-phase
ground water pump.
Ready to connect without thermal
overload protection

	Part No.
 **Brine filling station in compact design DN 25** with shut-off valves, filter and EPS insulation. Application temperatures -20°C to +60°C Frost protection max. 50 % Connections DN 25 G 1″, kvs 12.5 Max. operating pressure 1.0 MPa (10 bar) Dirt screen integrated	6037 537
 **Brine filling station in compact design DN 32** with shut-off valves, filter and EPS insulation. Application temperatures -20°C to +60°C Frost protection max. 50 % Connections DN 32 G 1¼″, kvs 22 Max. operating pressure 1.0 MPa (10 bar) Dirt screen integrated	6033 364
 **Immersion sensor TF/2P/2.5/6T, L = 2.5 m** for TopTronic® E controller modules/ module expansions with exception of basic module district heating/fresh water or basic module district heating com, cable length: 2.5 m without plug sensor sleeve diameter: 6 x 50 mm, dewpoint-proof, sensor may already be included in scope of delivery of heat generator/controller module/module expansion, operating temperature: -20…105 °C, index of protection: IP67	2056 789
 **Freeze protection concentrate PowerCool DC 924-PXL** on basis propylene glycol completely mixable with water with corrosion protection Frost protection: -20 °C with 40 % mixture ratio Content plastic container: 10 kg	2009 987

Services

Commissioning

Commissioning by works service or Hoval trained authorised serviceman/company is condition for warranty.

For commissioning and other services please contact your Hoval sales office.

Thermalia® twin (20-42) with R410A and Thermalia® twin H (13-22) with R134a

Type		(20)	(26)	(36)	(42)	H (13)	H (19)	H (22)
Seasonal coefficient of performance moderate climate (brine) 35 °C /55 °C	SCOP	5.2/3.6	5.2/3.6	5.4/3.9	5.3/3.6	4.7/3.4	4.6/3.5	4.9/3.5
Max. performance data heating in acc. with EN 14511								
• Heat output B0W35	kW [1]	20.4	26.2	35.3	42.0	12.3	18.0	20.9
• Power consumption B0W35	kW [1]	4.2	5.5	7.1	8.8	2.7	4.1	4.6
• Performance B0W35	COP	4.89	4.79	4.96	4.76	4.48	4.42	4.58
• Heat output W10W35	kW [1]	27.3	35.1	46.4	55.4	17.0	24.7	28.8
• Power consumption W10W35	kW [1]	4.2	5.5	7.2	9.1	3.0	4.4	4.9
• Performance W10W35	COP	6.59	6.40	6.41	6.06	5.76	5.61	5.89
• Operating weight	approx. kg	280	286	298	310	273	283	293
• Compressor type				2 x spiral (scroll). hermetic				
• Refrigerant filling R410A	kg	6.5	7.1	8.2	9.0	-	-	-
Refrigerant filling R134a	kg	-	-	-	-	4.8	5.9	6.5
• Condenser/evaporator				Plate heat exchanger				
Material				Stainless steel V4A, AISI 316, 1.4401				
Connections	R	1½″	1½″	2″	2″	2″	2″	2″
Piping connections with flex. connecting hose	Rp	1½″	1½″	2″	2″	2″	2″	2″
Nominal volume flow and resistance brine/water heat pump								
• *Heating (Δt = 7K)*	m³/h	2.5	3.3	4.4	5.2	1.6	2.3	2.7
ΔP Pressure drop condenser	kPa	5.3	7.3	5.0	5.3	1.6	2.0	2.3
• *Heat source (Δt = 3.5K)*	m³/h	5.0	6.3	8.1	10.2	3.3	4.7	5.6
ΔP Pressure drop evaporator	kPa	12	13	14	14	4.0	5.0	6.0
Nominal volume flow and resistance water/water heat pump								
• *Heating (Δt = 7K)*	m³/h	3.4	4.3	5.7	6.8	2.2	3.2	3.8
ΔP Pressure drop condenser	kPa	9.8	12.5	8.5	9.0	3.1	3.9	4.4
• *Heat source (Δt = 5K)* [5]	m³/h	4.0	5.0	6.8	8.0	2.6	3.7	4.4
ΔP Pressure drop evaporator	kPa	5.0	5.5	6.5	6.0	2.4	3.0	3.6
• Operating pressure max.								
- Water side	bar				6			
- Brine side	bar				6			
• Operating limit values - *see diagram range of application*								
• Installation place operation [4] min./max.	°C				5/35			
Storage min./max.	°C				-15/50			
Electrical data [3]								
Voltage	V				3 x 400			
Frequency	Hz				50			
Voltage range	V				380-420			
• Operating pressure compressor Imax		13.1	16.9	24.0	29.3	9.4	13.3	15.8
• Starting current with starting current limiter [2]		25.4	32.7	44.5	55.1	21.7	27.1	37.4
• Principal current (external protection)		16	20	32	32	16	16	20
with brine systems	Type	C,D,K	C,D,K	C,D,K	C,D,K	C,D,K	C,D,K	C,D,K
• Principal current (external protection)		20	25	32	40	16	20	25
with ground water systems		C,D,K	C,D,K	C,D,K	C,D,K	C,D,K	C,D,K	C,D,K
• Control current (external protection)		13	13	13	13	13	13	13
	Type	B,C,D,K,Z	B,C,D,K,Z	B,C,D,K,Z	B,C,D,K,Z	B,C,D,K,Z	B,C,D,K,Z	B,C,D,K,Z

[1] kW = standard values according to EN 14511; values for B0W35 with 25 % ethylene glycol (Antifrogen N)
[2] Effective value, operating current compressor 1 + starting current with starting current limiter
[3] Values for electrical data apply for supply voltage of 3 x 400 V
[4] <10 °C crankcase heater necessary
[5] ΔT in accordance with regional regulations. The temperature difference is adjustable from 3 to 6 kelvin.
The pump regulates the volumetric current to the set temperature difference.

Thermalia® twin (20-42), twin H (13-22)

Sound emission

The effective sound pressure level [1] in the installation room is dependent on different factors like room size, absorptive capacity, reflection, free sound spreading etc.

Therefore it is important that the installation room lies, if possible, outside the noise-sensitive range and is supplied with sound-absorbing doors.

Ducts and pipes must be fixed to walls and ceiling in a way that no structure-borne sound is being transmitted to the system.

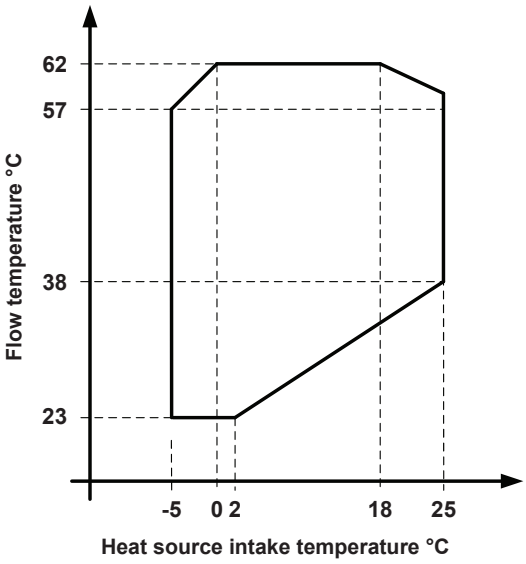
Thermalia® twin		(20)		(26)		(36)		(42)	
Thermalia® twin H		(13)		(19)		(22)			
Stage		1	2	1	2	1	2	1	2
Sound power level dB(A)	dB(A)	47	50	49	51	52	55	53	56
Sound pressure level dB(A) [1]	dB(A)	35	38	37	39	40	43	41	44

[1] Sound pressure level, distance 1 m (in standard room with approx. 5-6 dB(A) sound absorption)

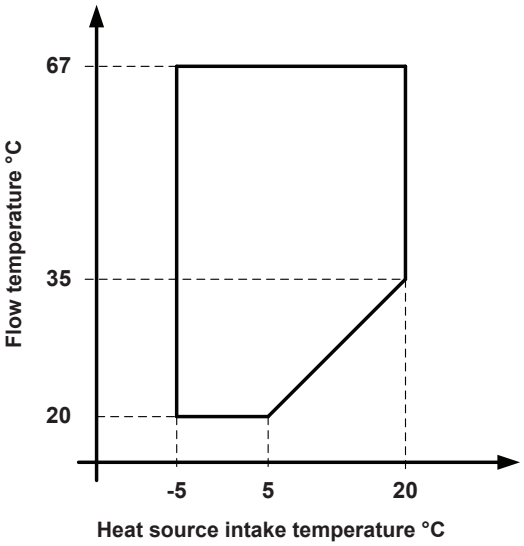
Diagrams range of application

Heating and hot water

Thermalia® twin (20-42)

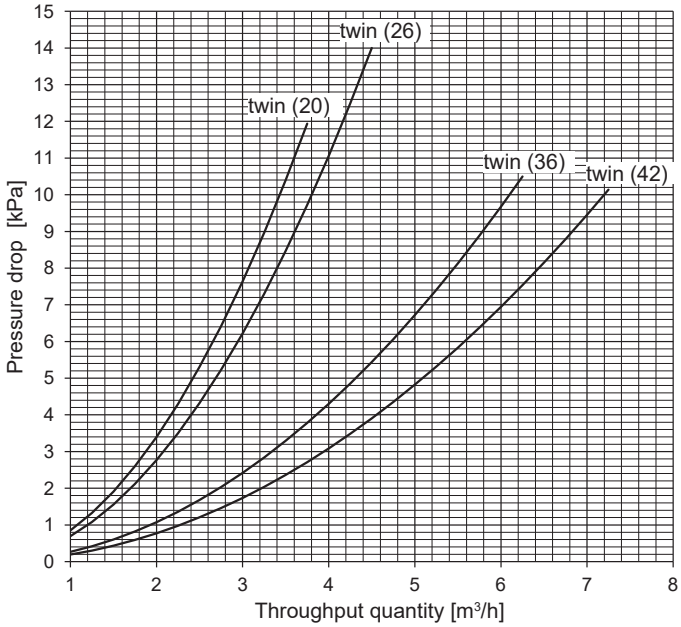


Thermalia® twin H (13-22)



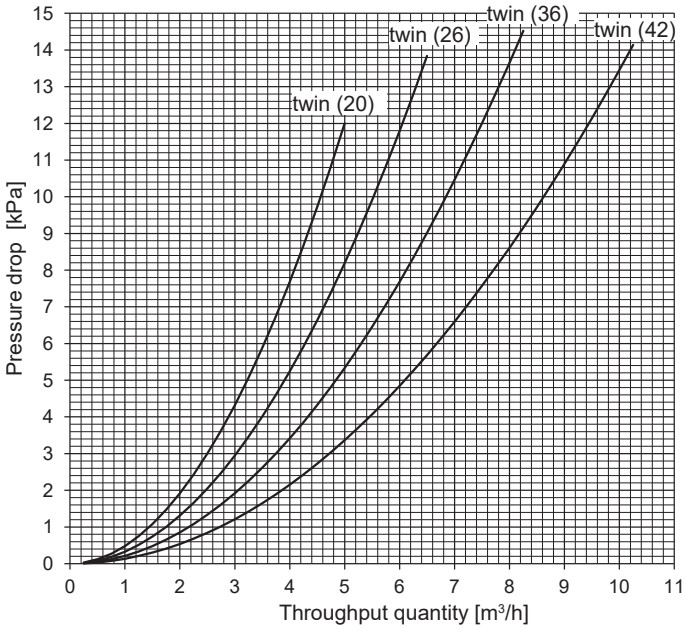
Thermalia® twin (20-42)
Heating

Pressure drop condenser with water



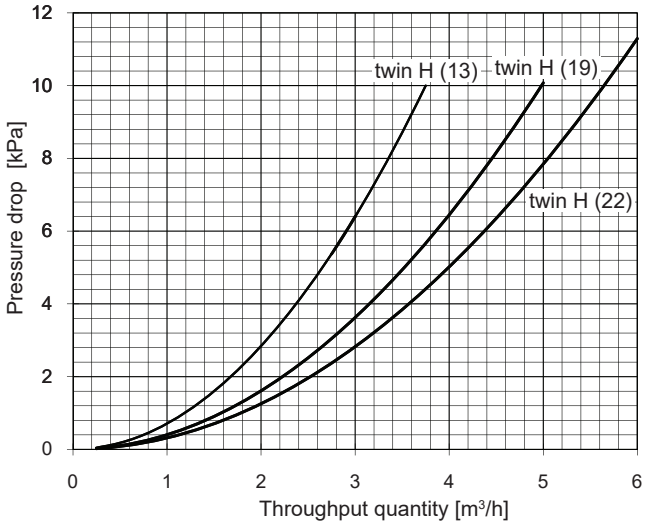
Heat source

Pressure drop evaporator
with ethylene glycol 25% (Antifrogen N)



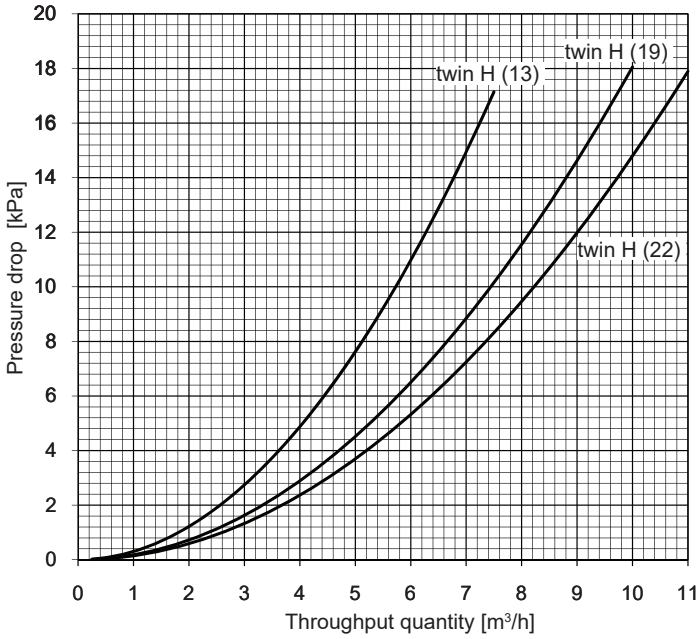
Thermalia® twin H (13-22)
Heating

Pressure drop condenser with water



Heat source

Pressure drop evaporator
with ethylene glycol 25% (Antifrogen N)



Refrigeration capacity

$$Q_0 = Q - P$$

Q_0 = Refrigeration capacity (kW)
Q = Heat output (kW)
P = Power consumption compressor (kW)
Δt_2 = Temperature difference heat source supply/discharge (K)
C = 0.86
c_p = 0.89 (specific heat)
γ = 1.05 (specific weight, density)

Volume flow evaporator

$$V = \frac{Q_0 \cdot c}{\Delta t_2 \cdot c_p \cdot \gamma} \quad (m^3/h)$$

Δp (kPa) = Pressure drop with frost protection (1 kPa = 0.1 mWC)
Δp = f x ΔP f

		Ethylene glycol % (Antifrogen N)
0.97	≙	20 %
1	≙	25 %
1.03	≙	30 %

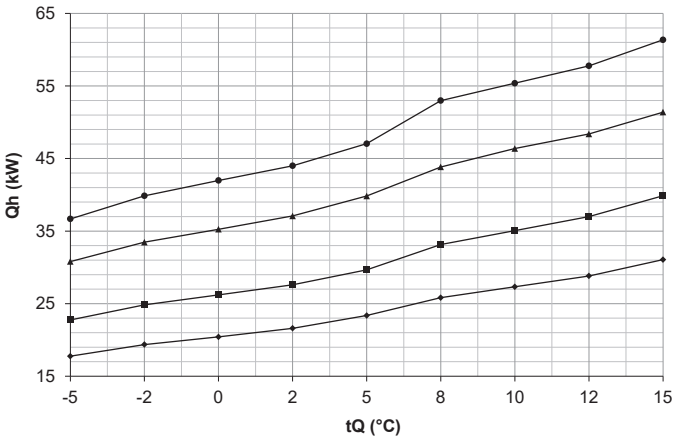
Δp_w (kPa) = Pressure drop with water (1 kPa = 0.1 mWC)
Δp_w = ΔP x 0.89

Performance data - heating

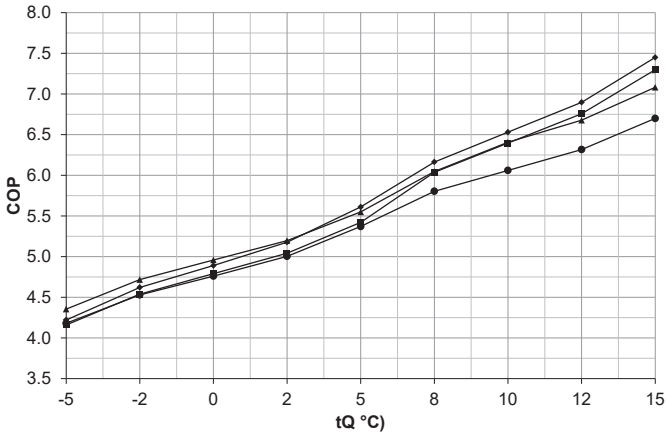
Maximum heat output

Thermalia® twin (20-42)

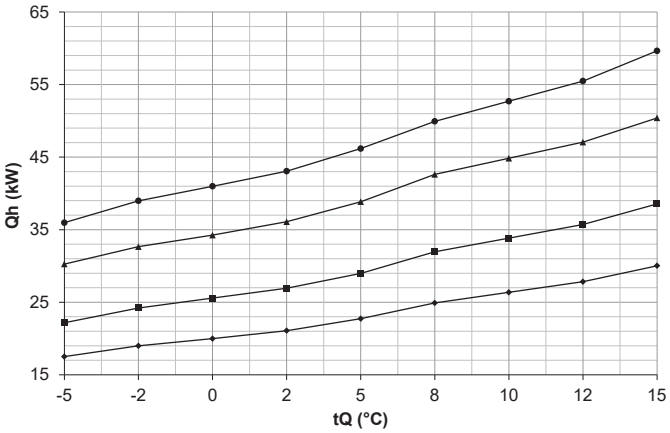
Heat output - t_{VL} 35 °C



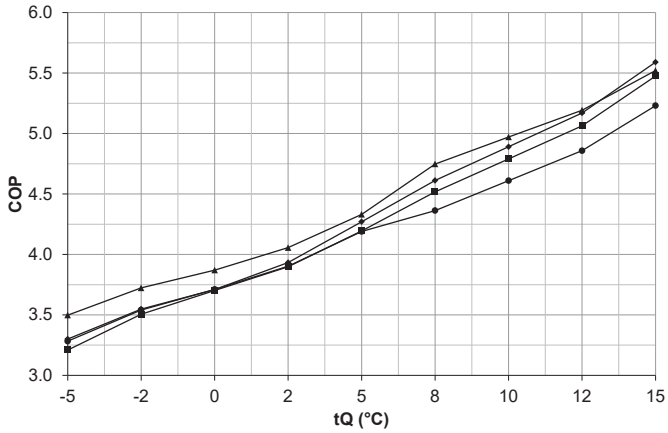
Output rating - t_{VL} 35 °C



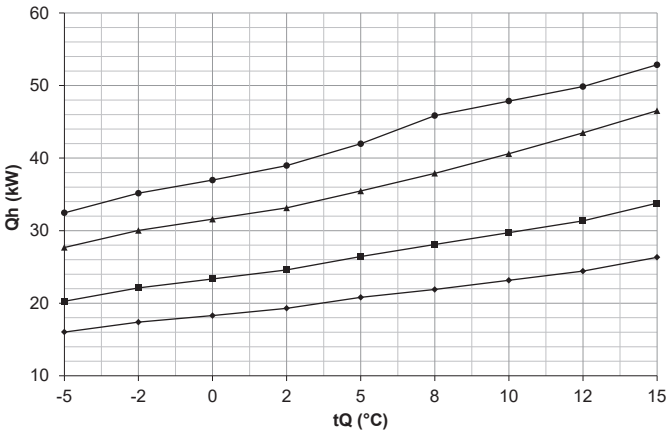
Heat output - t_{VL} 45 °C



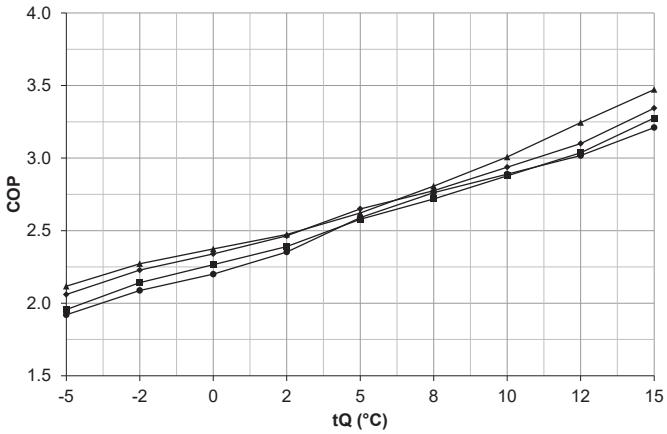
Output rating - t_{VL} 45 °C



Heat output - t_{VL} 60 °C



Output rating - t_{VL} 60 °C



tVL = heating flow temperature (°C)
tQ = source temperature (°C)
Qh = heat output at full load (kW), measured in accordance with standard EN 14511
COP = Coefficient of Performance for the overall unit in accordance with standard EN 14511

- Thermalia® twin (20)
- Thermalia® twin (26)
- Thermalia® twin (36)
- Thermalia® twin (42)

Performance data - heating
Thermalia® twin (20-42)

Indications acc. to EN14511

Type tVL °C		tQ °C	Qh kW	(20) P kW	COP	Qh kW	(26) P kW	COP	Qh kW	(36) P kW	COP	Qh kW	(42) P kW	COP
30	Brine	-5	18.1	3.7	4.85	23.3	4.9	4.77	31.4	6.3	4.96	36.8	7.9	4.68
		-2	19.8	3.7	5.32	25.4	4.9	5.22	34.2	6.3	5.42	40.3	7.9	5.11
		0	20.9	3.7	5.64	26.8	4.9	5.53	36.1	6.3	5.72	42.5	7.9	5.39
		2	22.0	3.7	5.97	28.2	4.8	5.84	38.0	6.3	6.03	44.8	7.9	5.68
		5	23.8	3.7	6.47	30.4	4.8	6.30	40.8	6.3	6.48	48.1	7.9	6.12
	Water	8	26.3	3.6	7.33	33.7	4.7	7.18	44.4	6.4	6.96	54.5	8.0	6.84
		10	27.8	3.6	7.76	35.7	4.7	7.61	47.2	6.4	7.43	56.7	8.0	7.10
		12	29.3	3.6	8.20	37.6	4.7	8.03	49.0	6.3	7.74	58.9	8.0	7.36
		15	31.6	3.6	8.85	40.5	4.7	8.67	51.9	6.3	8.21	62.2	8.0	7.74
35	Brine	-5	17.8	4.2	4.22	22.8	5.5	4.16	30.8	7.1	4.35	36.7	8.8	4.18
		-2	19.4	4.2	4.62	24.8	5.5	4.54	33.5	7.1	4.72	39.9	8.8	4.53
		0	20.4	4.2	4.89	26.2	5.5	4.79	35.3	7.1	4.96	42.0	8.8	4.76
		2	21.6	4.2	5.18	27.6	5.5	5.04	37.1	7.1	5.20	44.0	8.8	5.00
		5	23.4	4.2	5.61	29.7	5.5	5.42	39.8	7.2	5.55	47.0	8.8	5.37
	Water	8	25.8	4.2	6.16	33.1	5.5	6.04	43.8	7.3	6.05	53.0	9.1	5.80
		10	27.3	4.2	6.53	35.1	5.5	6.40	46.4	7.2	6.41	55.4	9.1	6.06
		12	28.8	4.2	6.90	37.0	5.5	6.76	48.4	7.2	6.68	57.8	9.1	6.32
		15	31.1	4.2	7.45	39.9	5.5	7.30	51.4	7.3	7.08	61.4	9.2	6.70
40	Brine	-5	17.6	4.8	3.71	22.5	6.2	3.63	30.5	7.9	3.88	36.3	9.9	3.68
		-2	19.2	4.8	4.02	24.5	6.2	3.96	33.1	7.9	4.17	39.4	9.9	3.98
		0	20.2	4.8	4.23	25.9	6.2	4.18	34.8	8.0	4.35	41.5	9.9	4.18
		2	21.3	4.8	4.48	27.3	6.2	4.40	36.6	8.0	4.56	43.5	9.9	4.39
		5	23.0	4.7	4.86	29.3	6.2	4.74	39.3	8.1	4.87	46.6	9.9	4.71
	Water	8	25.4	4.8	5.29	32.6	6.3	5.18	43.2	8.1	5.33	51.5	10.3	5.00
		10	26.8	4.8	5.61	34.5	6.3	5.49	45.6	8.1	5.61	54.0	10.3	5.25
		12	28.3	4.8	5.92	36.4	6.3	5.80	47.7	8.2	5.85	56.6	10.3	5.51
		15	30.5	4.8	6.40	39.2	6.3	6.27	50.9	8.2	6.21	60.5	10.3	5.88
45	Brine	-5	17.5	5.3	3.30	22.2	6.9	3.21	30.3	8.7	3.50	36.0	11.0	3.28
		-2	19.0	5.4	3.55	24.2	6.9	3.50	32.7	8.8	3.72	39.0	11.0	3.54
		0	20.0	5.4	3.71	25.6	6.9	3.70	34.3	8.9	3.87	41.0	11.0	3.71
		2	21.1	5.4	3.93	26.9	6.9	3.90	36.1	8.9	4.06	43.1	11.0	3.90
		5	22.7	5.3	4.27	29.0	6.9	4.19	38.9	9.0	4.33	46.2	11.0	4.19
	Water	8	24.9	5.4	4.61	32.0	7.1	4.52	42.6	9.0	4.75	49.9	11.4	4.36
		10	26.4	5.4	4.89	33.8	7.1	4.79	44.8	9.0	4.97	52.7	11.4	4.61
		12	27.8	5.4	5.17	35.7	7.1	5.06	47.1	9.1	5.19	55.5	11.4	4.86
		15	30.0	5.4	5.59	38.5	7.0	5.48	50.4	9.1	5.52	59.6	11.4	5.23
50	Brine	-5	17.0	6.0	2.84	21.8	7.8	2.78	29.6	9.6	3.07	34.5	12.5	2.75
		-2	18.4	6.0	3.06	23.6	7.8	3.03	32.1	9.7	3.30	37.4	12.6	2.97
		0	19.4	6.1	3.20	24.9	7.8	3.20	33.8	9.8	3.45	39.4	12.6	3.12
		2	20.4	6.1	3.38	26.1	7.7	3.37	35.2	9.8	3.60	41.6	12.6	3.31
		5	22.0	6.0	3.65	28.0	7.7	3.63	37.2	9.7	3.84	44.7	12.4	3.59
	Water	8	24.0	6.1	3.92	30.8	8.0	3.84	42.1	10.1	4.18	48.7	13.0	3.76
		10	25.4	6.1	4.15	32.6	8.0	4.07	44.2	10.1	4.36	51.3	12.9	3.96
		12	26.8	6.1	4.39	34.4	8.0	4.30	46.3	10.2	4.55	53.8	12.9	4.17
		15	28.9	6.1	4.74	37.1	8.0	4.64	49.5	10.3	4.83	57.6	12.9	4.47
55	Brine	-5	16.4	6.6	2.47	21.4	8.8	2.44	29.0	10.6	2.73	33.0	14.1	2.34
		-2	17.8	6.7	2.66	23.1	8.7	2.65	31.6	10.7	2.95	35.9	14.2	2.53
		0	18.8	6.7	2.79	24.2	8.6	2.80	33.3	10.8	3.10	37.9	14.2	2.66
		2	19.8	6.7	2.94	25.3	8.6	2.95	34.2	10.6	3.22	40.1	14.1	2.84
		5	21.3	6.7	3.16	26.9	8.5	3.18	35.6	10.4	3.41	43.3	13.9	3.12
	Water	8	23.1	6.9	3.37	29.7	9.0	3.30	41.5	11.2	3.72	47.5	14.5	3.28
		10	24.5	6.9	3.57	31.4	9.0	3.50	43.6	11.2	3.88	49.9	14.5	3.45
		12	25.8	6.9	3.77	33.2	9.0	3.69	45.6	11.3	4.04	52.2	14.4	3.62
		15	27.9	6.8	4.07	35.8	9.0	3.99	48.6	11.4	4.28	55.7	14.4	3.87
60	Brine	-5	16.0	7.8	2.06	20.3	10.4	1.96	27.7	13.1	2.12	32.5	16.9	1.92
		-2	17.4	7.8	2.23	22.1	10.3	2.14	30.0	13.2	2.27	35.2	16.8	2.09
		0	18.3	7.8	2.34	23.3	10.3	2.27	31.6	13.3	2.37	37.0	16.8	2.20
		2	19.3	7.8	2.46	24.6	10.3	2.39	33.1	13.4	2.47	39.0	16.6	2.35
		5	20.8	7.9	2.65	26.4	10.3	2.58	35.5	13.5	2.62	42.0	16.2	2.59
	Water	8	21.9	7.9	2.78	28.1	10.3	2.72	37.9	13.5	2.81	45.9	16.6	2.76
		10	23.2	7.9	2.94	29.7	10.3	2.88	40.6	13.5	3.01	47.9	16.6	2.89
		12	24.4	7.9	3.10	31.4	10.3	3.04	43.5	13.4	3.24	49.9	16.5	3.02
		15	26.3	7.9	3.34	33.8	10.3	3.28	46.5	13.4	3.47	52.9	16.5	3.21

tVL = heating flow temperature (°C)
tQ = source temperature (°C)
Qh = heat output at full load (kW), measured in accordance with standard EN 14511
P = power consumption of the overall unit (kW)
COP = Coefficient of Performance for the overall unit in accordance with standard EN 14511

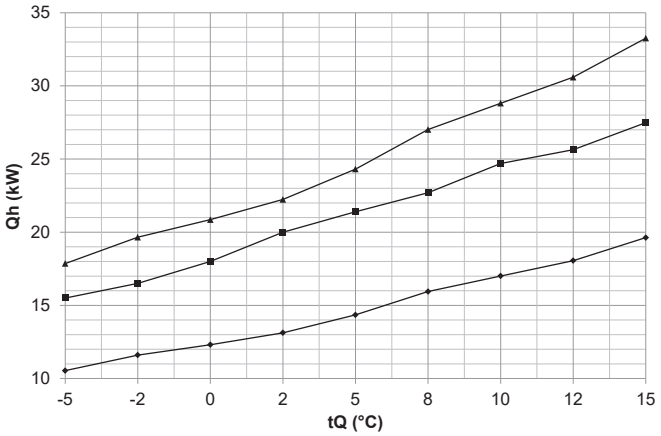
Observe daily power interruptions!
see “Engineering heat pumps general”

Performance data - heating

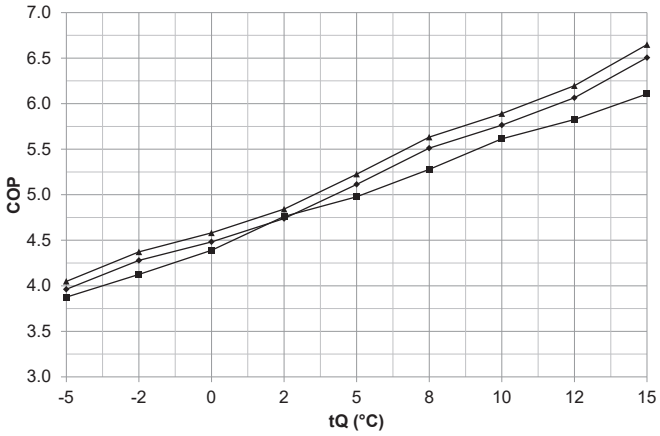
Maximum heat output

Thermalia® twin H (13-22)

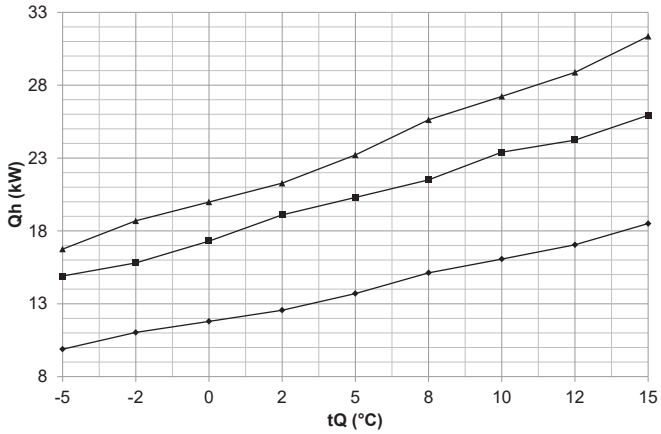
Heat output - t_{VL} 35 °C



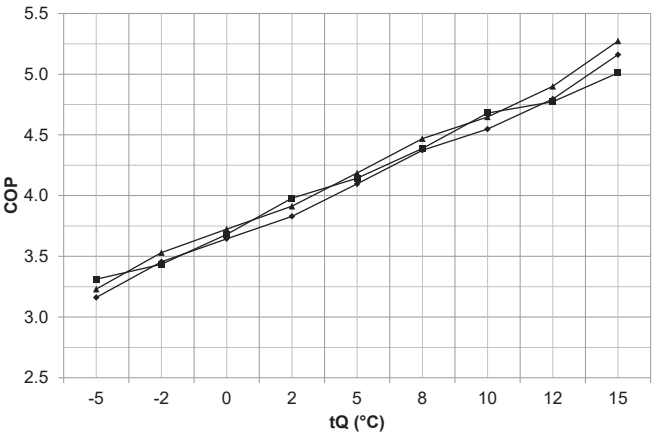
Output rating - t_{VL} 35 °C



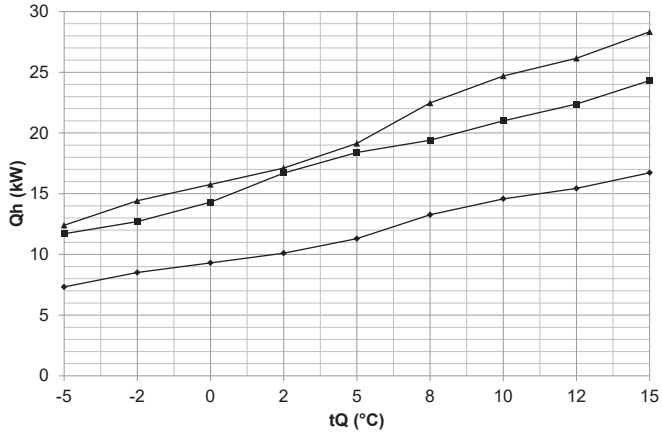
Heat output - t_{VL} 45 °C



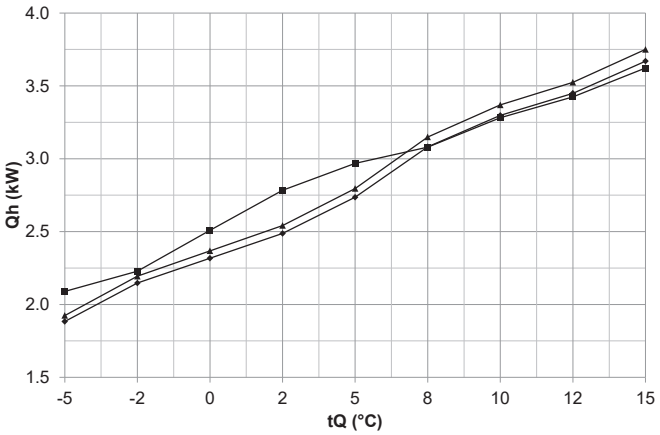
Output rating - t_{VL} 45 °C



Heat output - t_{VL} 60 °C



Output rating - t_{VL} 60 °C



tVL = heating flow temperature (°C)
tQ = source temperature (°C)
Qh = heat output at full load (kW), measured in accordance with standard EN 14511
COP = Coefficient of Performance for the overall unit in accordance with standard EN 14511

Thermalia® twin H (13)
Thermalia® twin H (19)
Thermalia® twin H (22)

Performance data - heating
Thermalia® twin H (13-22)

Indications acc. to EN14511

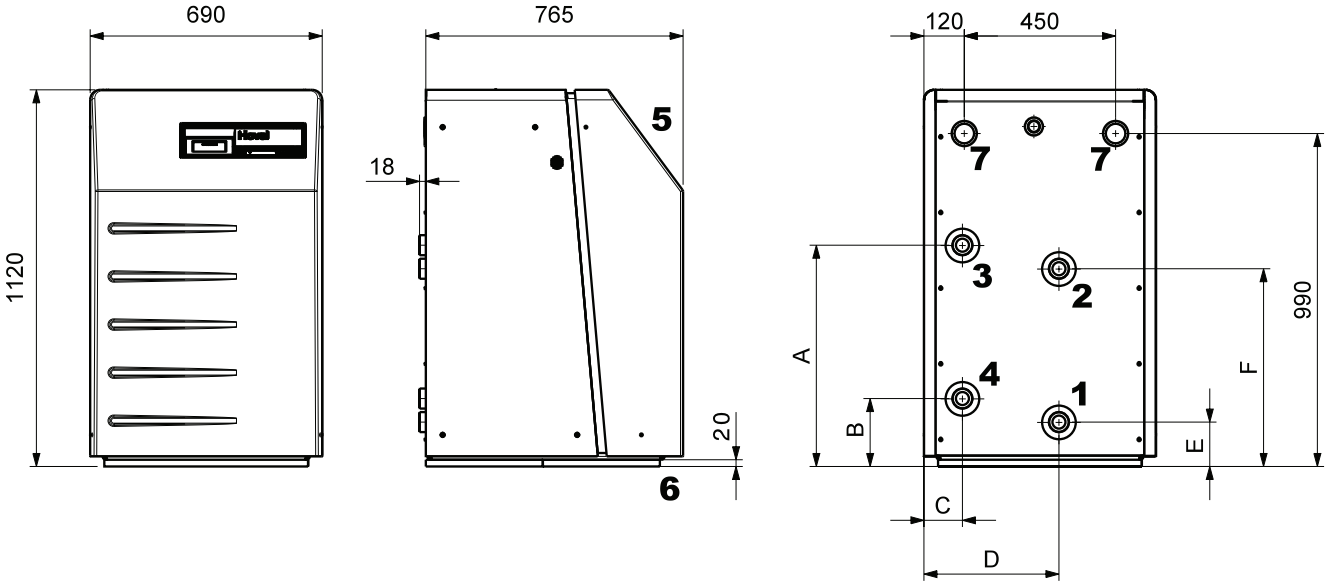
Type			H (13)			H (19)			H (22)		
tVL °C		tQ °C	Qh kW	P kW	COP	Qh kW	P kW	COP	Qh kW	P kW	COP
30	Brine	-5	10.9	2.4	4.48	15.8	3.5	4.51	18.4	4.0	4.58
		-2	11.9	2.5	4.81	16.8	3.7	4.54	20.1	4.1	4.92
		0	12.6	2.5	5.03	18.4	3.7	4.97	21.3	4.1	5.14
		2	13.4	2.5	5.33	20.5	3.8	5.39	22.7	4.2	5.45
		5	14.7	2.5	5.78	22.0	3.9	5.64	24.9	4.2	5.91
	Water	8	16.4	2.6	6.27	24.0	4.0	5.96	27.7	4.3	6.40
		10	17.5	2.7	6.57	25.3	4.0	6.33	29.6	4.4	6.72
		12	-	-	-	-	-	-	-	-	-
		15	-	-	-	-	-	-	-	-	-
35	Brine	-5	10.5	2.7	3.96	15.5	4.0	3.87	17.9	4.4	4.05
		-2	11.6	2.7	4.28	16.5	4.0	4.09	19.7	4.5	4.37
		0	12.3	2.7	4.48	18.0	4.1	4.42	20.9	4.6	4.58
		2	13.1	2.8	4.74	20.0	4.2	4.76	22.2	4.6	4.84
		5	14.3	2.8	5.11	21.4	4.3	4.98	24.3	4.7	5.23
	Water	8	15.9	2.9	5.51	22.7	4.3	5.24	27.0	4.8	5.63
		10	17.0	3.0	5.76	24.7	4.4	5.61	28.8	4.9	5.89
		12	18.1	3.0	6.06	25.6	4.4	5.83	30.6	4.9	6.20
		15	19.6	3.0	6.51	27.5	4.5	6.11	33.3	5.0	6.65
40	Brine	-5	10.2	2.9	3.53	15.1	4.4	3.43	17.3	4.8	3.61
		-2	11.3	3.0	3.83	16.1	4.4	3.66	19.2	4.9	3.92
		0	12.1	3.0	4.03	17.6	4.5	3.91	20.4	5.0	4.12
		2	12.8	3.0	4.25	19.5	4.6	4.24	21.8	5.0	4.34
		5	14.0	3.1	4.56	20.8	4.7	4.43	23.8	5.1	4.66
	Water	8	15.5	3.2	4.89	22.0	4.8	4.58	26.3	5.3	5.00
		10	16.5	3.2	5.10	24.0	4.8	5.00	28.0	5.4	5.21
		12	17.5	3.3	5.37	25.1	4.9	5.13	29.7	5.4	5.49
		15	19.1	3.3	5.77	26.8	5.0	5.36	32.3	5.5	5.90
45	Brine	-5	9.9	3.1	3.16	14.9	4.5	3.31	16.8	5.2	3.23
		-2	11.0	3.2	3.45	15.8	4.6	3.43	18.7	5.3	3.53
		0	11.8	3.2	3.64	17.3	4.7	3.68	20.0	5.4	3.72
		2	12.6	3.3	3.83	19.1	4.8	3.98	21.3	5.4	3.91
		5	13.7	3.3	4.10	20.3	4.9	4.14	23.2	5.5	4.19
	Water	8	15.1	3.5	4.37	21.5	4.9	4.39	25.6	5.7	4.47
		10	16.1	3.5	4.55	23.4	5.0	4.68	27.2	5.9	4.65
		12	17.0	3.6	4.79	24.2	5.1	4.77	28.9	5.9	4.90
		15	18.5	3.6	5.16	25.9	5.2	5.01	31.4	5.9	5.27
50	Brine	-5	9.0	3.4	2.67	13.8	4.9	2.82	15.3	5.6	2.73
		-2	10.2	3.4	2.95	14.8	4.9	3.02	17.3	5.7	3.02
		0	11.0	3.5	3.14	16.3	5.0	3.26	18.6	5.8	3.20
		2	11.7	3.5	3.32	18.3	5.2	3.52	19.9	5.9	3.39
		5	12.9	3.6	3.58	19.7	5.3	3.72	21.9	6.0	3.66
	Water	8	14.5	3.7	3.88	20.8	5.4	3.85	24.6	6.2	3.96
		10	15.6	3.8	4.07	22.6	5.4	4.19	26.4	6.3	4.16
		12	16.5	3.9	4.27	23.6	5.5	4.27	28.0	6.4	4.37
		15	17.9	3.9	4.58	25.4	5.6	4.54	30.3	6.5	4.68
55	Brine	-5	8.2	3.6	2.25	12.8	5.2	2.46	13.9	6.0	2.30
		-2	9.3	3.7	2.52	13.8	5.3	2.60	15.8	6.1	2.58
		0	10.1	3.8	2.70	15.3	5.4	2.83	17.2	6.2	2.76
		2	10.9	3.8	2.87	17.5	5.6	3.13	18.5	6.3	2.94
		5	12.1	3.9	3.13	19.0	5.7	3.33	20.5	6.4	3.20
	Water	8	13.9	4.0	3.45	20.1	5.8	3.47	23.5	6.7	3.53
		10	15.1	4.1	3.65	21.8	5.9	3.69	25.5	6.8	3.73
		12	16.0	4.2	3.83	23.0	6.0	3.82	27.1	6.9	3.92
		15	17.3	4.2	4.09	24.8	6.2	4.03	29.3	7.0	4.18
60	Brine	-5	7.3	3.9	1.88	11.7	5.6	2.09	12.4	6.4	1.92
		-2	8.5	4.0	2.15	12.7	5.7	2.23	14.4	6.6	2.19
		0	9.3	4.0	2.32	14.3	5.7	2.51	15.8	6.7	2.37
		2	10.1	4.1	2.49	16.7	6.0	2.78	17.1	6.7	2.54
		5	11.3	4.1	2.74	18.4	6.2	2.97	19.1	6.8	2.80
	Water	8	13.3	4.3	3.08	19.4	6.3	3.08	22.5	7.1	3.15
		10	14.6	4.4	3.30	21.0	6.4	3.28	24.7	7.3	3.37
		12	15.4	4.5	3.45	22.4	6.5	3.42	26.2	7.4	3.52
		15	16.7	4.6	3.67	24.3	6.7	3.62	28.3	7.6	3.75

tVL = heating flow temperature (°C)
tQ = source temperature (°C)
Qh = heat output at full load (kW), measured in accordance with standard EN 14511
P = power consumption of the overall unit (kW)
COP = Coefficient of Performance for the overall unit in accordance with standard EN 14511

Observe daily power interruptions!
see “Engineering heat pumps general”

Thermalia® twin (20-42) and twin H (13-22)

(Dimensions in mm)



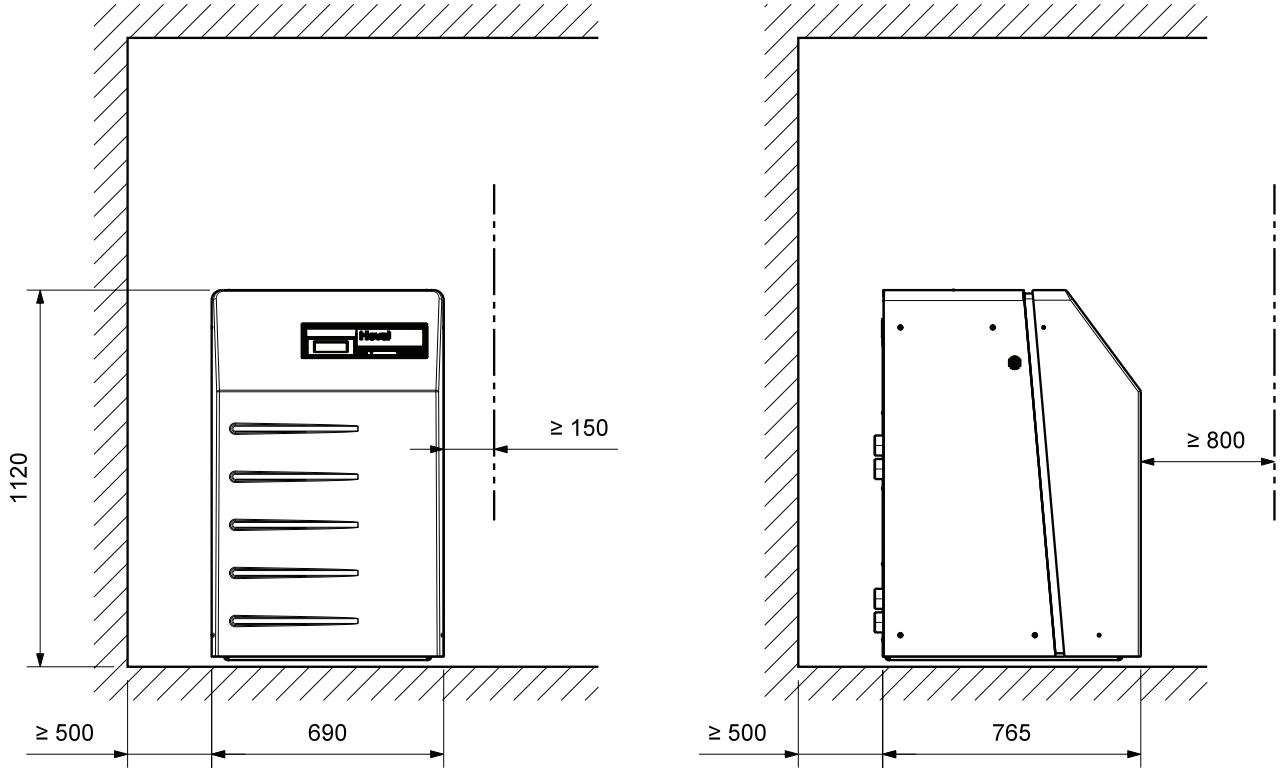
Type	A	B	C	D	E	F
Thermalia® twin (20-42)	741	222	274.5	481.5	170	689
Thermalia® twin H (13-22)	658	202	114	401	132	588

1 Heat source - discharge R 1½″
Thermalia® twin (20,26), twin H (13,19)
Heat source - discharge R 2″
Thermalia® twin (36,42), twin H (22)
2 Heat source - inlet R 1½″
Thermalia® twin (20,26), twin H (13,19)
Heat source - inlet R 2″
Thermalia® twin (36,42), twin H (22)
3 Heating flow R 1½″
Thermalia® twin (20,26)
Heating flow R 2″
Thermalia® twin (36,42)
4 Heating return R 1½″
Thermalia® twin (20,26)
Heating return R 2″
Thermalia® twin (36,42)
5 Operating panel
6 Vibration damping
7 Electrical connection

Required space

Required wall distance in mm for operation and maintenance
(Dimensions in mm)

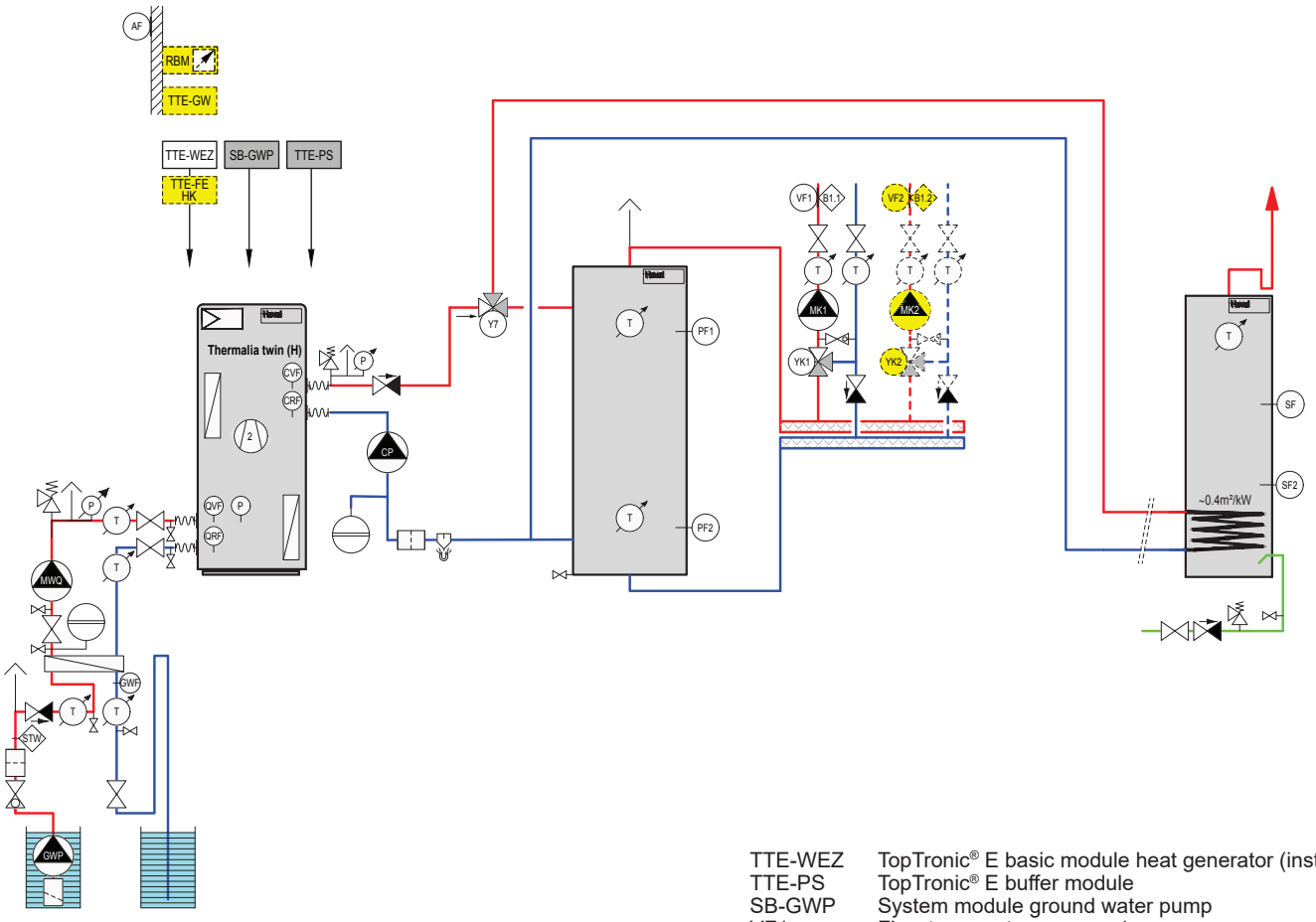
Front	Rear	Right or left side
min. 800	min. 500	min. 500



Thermalia® twin

Brine/water-water/water heat pump with
- water/water - indirect utilisation
- energy storage buffer tank
- calorifier
- 1-... mixer circuit(s)

Hydraulic schematic BBBCE070



TTE-WEZ	TopTronic® E basic module heat generator (installed)
TTE-PS	TopTronic® E buffer module
SB-GWP	System module ground water pump
VF1	Flow temperature sensor 1
B1.1	Flow temperature guard (if required)
MK1	Pump mixer circuit 1
YK1	Actuator mixer 1
AF	Outdoor sensor
SF	Calorifier sensor
SF2	Calorifier sensor 2
PF1	Buffer sensor 1
PF2	Buffer sensor 2
Y7	Switching valve
GWF	Frost controller
STW	Flow controller
CP	Condenser pump
GWP	Ground water pump
MWQ	Delivery pump in heat source intermediate circuit (cold-water design)

Option

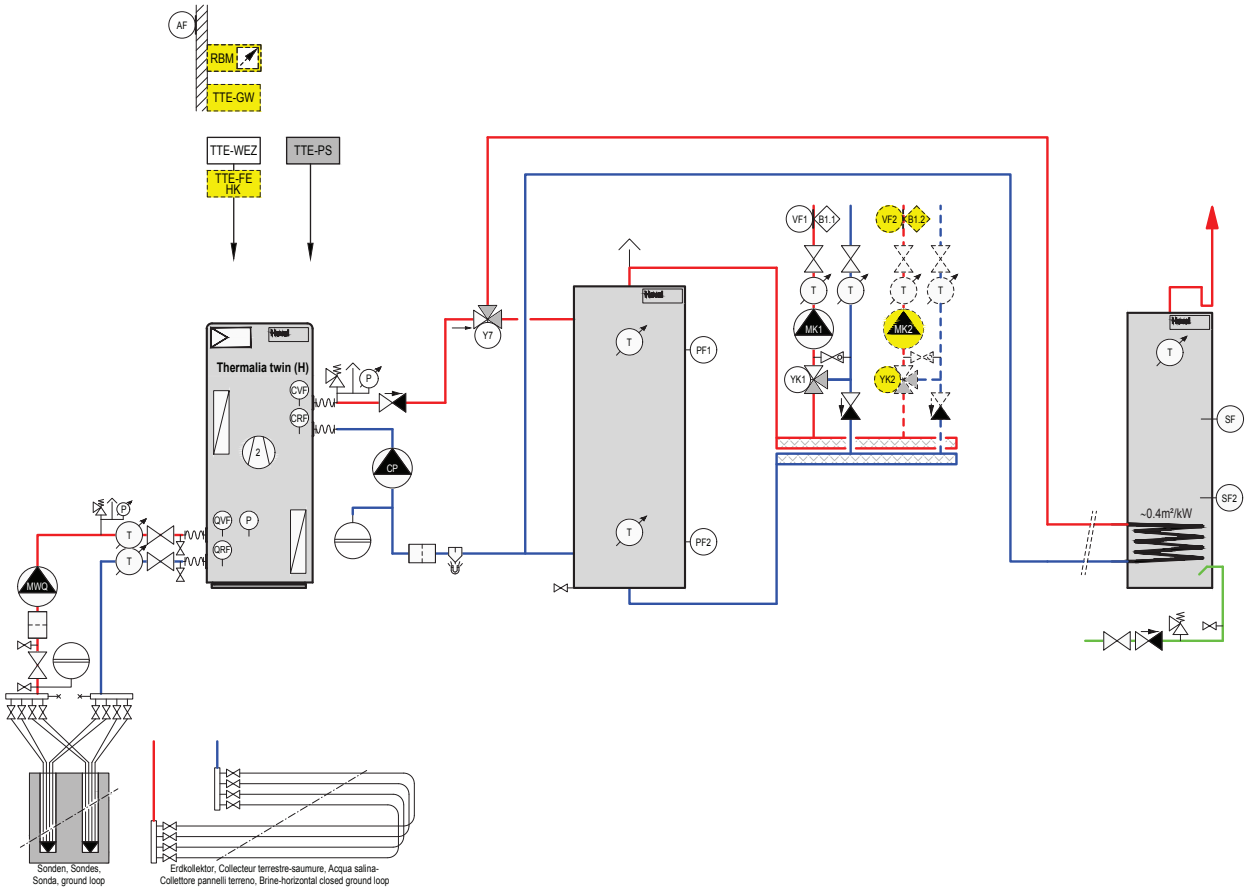
RBM	TopTronic® E room control module
TTE-GW	TopTronic® E Gateway
TTE-FE HK	TopTronic® E module expansion heating circuit
VF2	Flow temperature sensor 2
B1.2	Flow temperature guard (if required)
MK2	Pump mixer circuit 2
YK2	Actuator mixer 2

Important notices
- The example schematics merely show the basic principle and do not contain all information required for installation. Installation must be carried out according to the conditions on-site, dimensioning and local regulations.
- Shut-off devices to the safety equipment (pressure expansion tank, safety valve, etc.) must be secured against unintentional closing!
- Install sacks to prevent single-pipe gravity circulation!

Thermalia® twin

Brine/water-water/water heat pump with
- earth probes
- energy storage buffer tank
- calorifier
- 1-... mixer circuit(s)

Hydraulic schematic BBBCE030



TTE-WEZ	TopTronic® E basic module heat generator (installed)
TTE-PS	TopTronic® E buffer module
VF1	Flow temperature sensor 1
B1.1	Flow temperature guard (if required)
MK1	Pump mixer circuit 1
YK1	Actuator mixer 1
AF	Outdoor sensor
SF	Calorifier sensor
SF2	Calorifier sensor 2
PF1	Buffer sensor 1
PF2	Buffer sensor 2
Y7	Switching valve
CP	Condenser pump
MWQ	Delivery pump in heat source intermediate circuit (cold-water design)

Option

RBM	TopTronic® E room control module
TTE-GW	TopTronic® E Gateway
TTE-FE HK	TopTronic® E module expansion heating circuit
VF2	Flow temperature sensor 2
B1.2	Flow temperature guard (if required)
MK2	Pump mixer circuit 2
YK2	Actuator mixer 2

Important notices
- The example schematics merely show the basic principle and do not contain all information required for installation. Installation must be carried out according to the conditions on-site, dimensioning and local regulations.
- Shut-off devices to the safety equipment (pressure expansion tank, safety valve, etc.) must be secured against unintentional closing!
- Install sacks to prevent single-pipe gravity circulation!

Hoval Thermalia® dual

Brine/water-water/water heat pump

- Compact unit with high energy efficiency
- Extremely quiet running thanks to 3-bearing construction
- Stable steel frame structure, a ground plate including vibration-free machine adjustable feet
- Removable, powder-coated sheet steel side panels and front doors with quick-release fasteners
- All casing parts are sound-insulated and thermally insulated
- Colour of side panels, ceiling and rear side: brown red (RAL 3011)
- Colour of doors: flame red (RAL 3000)
- 2 spiral (scroll) compressors
- With plate heat exchanger (condenser and evaporator) made of stainless steel (1.4401), soldered
- Two separate refrigerant circuits with electronic expansion valves, filter dryer with sight glass, liquid receivers and high-pressure and low-pressure sensors
- Electronic initial current limiter with rotating field and phase monitoring
- Integrated brine pressure monitoring
- Two output levels
- Hydraulic connections with flexible hoses and flanges
  Thermalia® dual, dual R (55-85): 2″ 4x 1 m
  Thermalia® dual, dual R (110,140): flange DN80/PN6
  Thermalia® dual H (35-70): 2″ 4x 1 m
  Thermalia® dual H (90): flange DN80/PN6
- Working media
  Thermalia® dual, dual R (55-140) with R410A
  Thermalia® dual H (35-90) with R134a
- Heat pump wired and ready to connect
- Operating side on front with integrated TopTronic® E controller

TopTronic® E controller

Control panel

- Colour touchscreen 4.3 inch
- Heat generator blocking switch for interrupting operation
- Fault signalling lamp

TopTronic® E control module

- Simple, intuitive operating concept
- Display of the most important operating statuses
- Configurable start screen
- Operating mode selection
- Configurable day and week programmes
- Operation of all connected Hoval CAN bus modules
- Commissioning wizard
- Service and maintenance function
- Fault message management
- Analysis function
- Weather display (with online HovalConnect)
- Adaptation of the heating strategy based on the weather forecast (with online HovalConnect)

TopTronic® E basic module heat generator (TTE-WEZ)

- Control functions integrated for
  - 1 heating/cooling circuit with mixer
  - 1 heating/cooling circuit without mixer
  - 1 hot water loading circuit
  - bivalent and cascade management
- Outdoor sensor
- Immersion sensor (calorifier sensor)
- Contact sensor (flow temperature sensor)
- Rast-5 basic plug set

Options for TopTronic® E controller

- Can be expanded by max. 1 module expansion:
  - module expansion heating circuit or
  - module expansion universal
  - module expansion heat accounting
- Can be networked with a total of up to 16 controller modules:
  - heating circuit/hot water module
  - solar module
  - buffer module
  - measuring module

Number of modules that can be additionally installed in the heat generator:

- 1 module expansion and 1 controller module **or**
- 2 controller modules

The supplementary plug set must be ordered in order to use expanded controller functions.

Further information about the TopTronic® E see “Controls”

Electrical connections

- Connection at rear

Delivery

- Heat pump pre-assembled and packed

Seal of approval FWS
The Thermalia® dual (55-140), dual H (35-90) series are certified by the seal of approval of the authorisation commission of Switzerland.

Model range

Thermalia® dual Type	Water/water 35 °C	Water/water 55 °C	Brine/water 35 °C	Brine/water 55 °C	Refrigerant	Flow min. °C	Flow max. °C	Heat output B0W35 kW	Heat output W10W35 kW	Cooling capacity B17W9 kW	Cooling capacity B25W18 kW
(55)	A+++	A+++	A+++	A++	2 x R410A	-	62	57.9	76.7	-	-
(70)			A+++	A++	2 x R410A	-	62	73.2	97.2	-	-
(85)					2 x R410A	-	62	84.8	112.8	-	-
(110)					2 x R410A	-	62	113.4	149.1	-	-
(140)					2 x R410A	-	62	137.8	181.1	-	-
H (35)	A+++	A+++	A+++	A++	2 x R134a	-	70	34.9	49.3	-	-
H (50)	A+++	A+++	A+++	A++	2 x R134a	-	70	52.5	71.8	-	-
H (70)			A+++	A++	2 x R134a	-	70	70.9	97.1	-	-
H (90)					2 x R134a	-	70	87.3	119.5	-	-
R (55)	A+++	A+++	A+++	A++	2 x R410A	7	62	57.9	76.7	64.7	81.1
R (70)			A+++	A++	2 x R410A	7	62	73.2	97.2	86.2	108.3
R (85)					2 x R410A	7	62	84.8	112.8	107.0	127.7
R (110)					2 x R410A	7	62	113.4	149.1	138.1	165.0
R (140)					2 x R410A	7	62	137.8	181.1	156.9	183.9

Energy efficiency class of the compound system with control.

Brine/water or water/water heat pump

Notice
Suitable heat source and charging pumps:

Hoval system pump set SPS-I with interface for pump control
Type 0-10 V or PWM1

Premium pump Stratos
with IF module Stratos Ext. Off (0-10 V)

See brochure “Accessories” - chapter “Circulating pumps”

Energy efficiency class
see Description

Brine/water-water/water heat pump with 2 hermetic spiral (scroll) compressors for indoor installation with built-in Hoval TopTronic® E control

Integrated control functions for
- 1 heating/cooling circuit with mixer
- 1 heating/cooling circuit without mixer
- 1 hot water loading circuit
- bivalent and cascade management

• Can be optionally expanded by max. 1 module expansion:
- module expansion heating circuit or
- module expansion universal or
- module expansion heat balancing

• Can be optionally networked with a total of up to 16 controller modules (incl. solar module)

Delivery
Compact unit wired-up internally ready for connection, supplied fully packaged incl. connection hoses 2″ or weld-on flanges DN80/PN6

Hoval Thermalia® dual
Working medium R410A, 2 circuits.
Max. flow temperature 62 °C

Thermalia® dual type	Heat output for B0W35 kW	Heat output for W10W35 kW	Part No.
(55)	57.9	76.7	7014 291
(70)	73.2	97.2	7014 292
(85)	84.8	112.8	7014 293
(110)	113.4	149.1	7014 294
(140)	137.8	181.1	7014 295

Hoval Thermalia® dual H
Working medium R134a, 2 circuits.
Max. flow temperature 70 °C

Thermalia® dual H type	Heat output for B0W35 kW	Heat output for W10W35 kW	Part No.
H (35)	34.9	49.3	7014 296
H (50)	52.5	71.8	7014 297
H (70)	70.9	97.1	7014 298
H (90)	87.3	119.5	7014 299

Hoval Thermalia® dual R
Working medium R410A, 2 circuits.
Max. flow temperature 62 °C

Thermalia® dual R type	Cooling capacity [1] for B17W9 kW	Cooling capacity [1] for B25W18 kW	Part No.
R (55)	64.7	81.1	7016 550
R (70)	86.2	108.3	7016 551
R (85)	107.0	127.7	7016 552
R (110)	138.1	165.0	7016 553
R (140)	156.9	183.9	7016 554

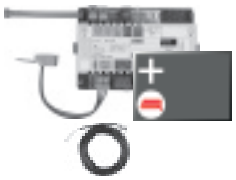
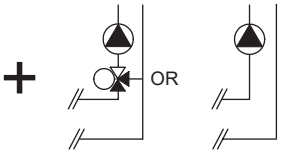
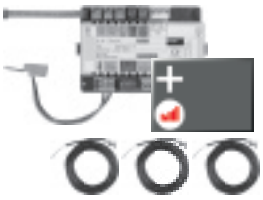
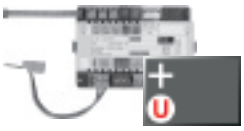
[1] Heat output: see Hoval Thermalia® dual

Accessories

		Part No.
	**Set of sound attenuation feet 65/75** for Thermalia® dual (55, 70), H (35, 50), dual R (55,70) for reducing the transmission of solid-borne noise Set consisting of 4 vibration-damping adjustable feet, threaded rod and locknut Elastomer part material: NR, black Housing material: galvanised steel, chromated	6045 228
	**Set of sound attenuation feet 45/55,** for Thermalia® dual (85, 110, 140), H (70, 90), dual R (85, 110, 140) for reducing the transmission of solid-borne noise Set consisting of 4 vibration-damping adjustable feet, threaded rod and locknut Elastomer part material: NR, black Housing material: galvanised steel, chromated	6045 229

TopTronic® E module expansions

for TopTronic® E basic module heat generator

	Part No.
  **TopTronic® E module expansion heating circuit TTE-FE HK** Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions: - 1 heating circuit without mixer or - 1 heating circuit with mixer incl. fitting accessories 1x contact sensor ALF/2P/4/T L = 4.0 m Can be installed in: Boiler control, wall housing, control panel **Notice** The supplementary plug set may have to be ordered to implement functions differing from the standard!	6034 576
 **TopTronic® E module expansion heating circuit incl. energy balancing TTE-FE HK-EBZ** Expansion to the inputs and outputs of the basic module heat generator or the heating circuit/domestic hot water module for implementing the following functions: - 1 heating/cooling circuit w/o mixer or - 1 heating/cooling circuit with mixer in each case incl. energy balancing incl. fitting accessories 3x contact sensor ALF/2P/4/T L = 4.0 m Can be installed in: Boiler control, wall housing, control panel **Notice** Suitable flow rate sensors (pulse sensors) must be provided on site.	6037 062
 **TopTronic® E module expansion Universal TTE-FE UNI** Expansion to the inputs and outputs of a controller module (basic module heat generator, heating circuit/domestic hot water module, solar module, buffer module) for implementing various functions incl. fitting accessories Can be installed in: Boiler control, wall housing, control panel **Further information** see “Controls” - “Hoval TopTronic® E module expansions” chapter **Notice** Refer to the Hoval System Technology to find which functions and hydraulic arrangements can be implemented.	6034 575

Accessories for TopTronic® E

		Part No.
 	**Supplementary plug set**	
	for basic module heat generator (TTE-WEZ)	6034 499
	for controller modules and module expansion TTE-FE HK	6034 503
	**TopTronic® E controller modules**	
	TTE-HK/WW TopTronic® E heating circuit/ hot water module	6034 571
	TTE-SOL TopTronic® E solar module	6037 058
	TTE-PS TopTronic® E buffer module	6037 057
	TTE-MWA TopTronic® E measuring module	6034 574
	**TopTronic® E room control modules**	
	TTE-RBM TopTronic® E room control modules	
	easy white	6037 071
	comfort white	6037 069
	comfort black	6037 070
	**Enhanced language package TopTronic® E**	6039 253
	one SD card required per control module Consisting of the following languages: HU, CS, SL, RO, PL, TR, ES, HR, SR, JA, DA	
	**HovalConnect**	
	HovalConnect LAN	6049 496
	HovalConnect WLAN	6049 498
HovalConnect available from mid-2020 Up to that point, TopTronic® E online is delivered.	**TopTronic® E interface modules**	
	GLT module 0-10 V	6034 578
	HovalConnect Modbus	6049 501
	HovalConnect KNX	6049 593
	**TopTronic® E wall casing**	
	WG-190 Wall casing small	6035 563
	WG-360 Wall casing medium	6035 564
	WG-360 BM Wall casing medium with control module cut-out	6035 565
	WG-510 Wall casing large	6035 566
	WG-510 BM Wall casing large with control module cut-out	6038 533
	**TopTronic® E sensors**	
	AF/2P/K Outdoor sensor	2055 889
	TF/2P/5/6T Immersion sensor, L = 5.0 m	2055 888
	ALF/2P/4/T Contact sensor, L = 4.0 m	2056 775
	TF/1.1P/2.5S/6T Collector sensor, L = 2.5 m	2056 776
	**System housing**	
	System housing 182 mm	6038 551
	System housing 254 mm	6038 552
	Bivalent switch	2061 826

Outdoor sensor, immersion sensor and contact sensor supplied with the heat pump.

Further information
see “Controls”

Accessories

	Part No.
 **Protective pipe immersion sleeve SB 280 ½″** brass nickel-plated PN10, 280 mm	2018 837
 **Flange compensator set DN80 PN6** for Thermalia® dual(110-140), dual H(90), dual R (110-140) for reducing the transmission of solid-borne and fluid-borne noise Set consisting of 4 flange compensators DN80 PN6 without fittings Structural length 130 mm	6040 025

System water protection filter FGM025...050 - 200
For horizontal installation in return for filtration of heating and cooling water, with high filtration capacity for corrosion particles and dirt without significant pressure loss.
Consisting of:
- Filter head and bowl in brass
- Magnetic insert (nickel-neodymium)
- 2 pressure gauges
- Very large filter surface made of stainless steel
- Filter fineness 200 µm
- With drain valve
- Connections Rp1″ andRp2″: Internal thread with integrated shut-off valves and union connection (outlet)
- Water temperature: max. 90 °C

Notice:
Fulfills the function of sludge separator and strainer

FF050 - 200
Casing and cover made of cast iron GGG-50
Cover with clip lock
- Filter strainer insert made of stainless steel
- Cover seal made of NBR
- 2 magnetic insert (nickel-neodymium)
- 2 pressure gauges
- Very large filter surface in stainless steel
- Filter fineness 200 µm
- With filling and drain valve
- Connections flange DN 50

Type	Connection	Volume flow [m³/h] at Δp <0.1 bar pressure loss	Part No.
FGM025	Rp 2″	7.2	2076 375
FF050	DN 50	18.0	2076 376

Strainers
see “Various system components”

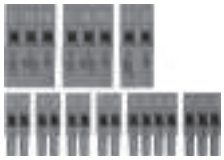
Immersion sensor TF/2P/2.5/6T, L = 2.5 m — 2056 789
for TopTronic® E controller modules/ module expansions with exception of basic module district heating/fresh water or basic module district heating com, cable length: 2.5 m without plug sensor sleeve diameter: 6 x 50 mm, dewpoint-proof,
sensor may already be included in scope of delivery of heat generator/controller module/module expansion, operating temperature: -20…105 °C, index of protection: IP67

Part No.

Float ball flow switch
nominal pressure 10 bar
installed length 335 mm
bistable reed contact as normally open contact
Contact open, if there is no flow

Area of application l/h	°C	Connection	Part No.
1500-15000	0-80	Rp 2″	2040 709
3000-30000	0-80	DN 65	2064 164
8000-60000	0-80	DN 65	2064 165

For active cooling, the installation of a flow controller is mandatory!



Expansion connector set — 6032 509
for the automatic heat pump ECR461.
Use for additional function:
- Flow monitor
- Crankcase bottom heating
(included in the scope of delivery
for Belaria® twin A, twin AR, dual AR)
- Condensation drain heating
- Heat quantity metering
Plugs:
- 1x 230V digital input
- 2x 230V outputs
- 4x low-voltage inputs
- 1x ratio. Input

Frost protection temperature switch 270XT-95068 — 2007 313
to heat source ground water
Type of protection: IP 40
Area of application: -24/18 °C

Freeze protection concentrate PowerCool DC 924-PXL — 2009 987
on basis propylene glycol
completely mixable with water
with corrosion protection
Frost protection: -20 °C with
40 % mixture ratio
Content plastic container: 10 kg

Service

Commissioning by works service or Hoval trained authorised serviceman/company is condition for warranty.

For commissioning and other services please contact your Hoval sales office.

Thermalia® dual (55-140) with R410A

Type		(55)	(70)	(85)	(110)	(140)
Seasonal coefficient of performance moderate climate (brine) 35 °C /55 °C	SCOP	5.1/3.7	5.0/3.7	5.1/3.7	5.1/3.7	5.0/3.7
Max. performance data heating in acc. with EN 14511						
• Heat output B0W35	kW	57.9	73.2	84.8	113.4	137.8
• Power consumption B0W35	kW	12.5	15.9	18.3	27.9	29.9
• Performance B0W35	COP	4.63	4.60	4.63	4.62	4.61
• Heat output W10W35	kW	76.9	97.2	112.8	149.1	181.1
• Power consumption W10W35	kW	12.7	16.6	19.1	26.0	31.3
• Performance W10W35	COP	6.07	5.87	5.91	5.73	5.79
Sound data according to EN 12102						
• Sound power level	dB(A)	57.2	55.7	57.2	64.2	64.2
Hydraulic data brine/water						
• Maximum flow temperature	°C	62	62	62	62	62
• Operating pressure	bar	6	6	6	6	6
B0W35						
• Heating water spread	K	5	5	5	5	5
• Required volume flow	m³/h	9.9	12.6	14.6	19.5	23.7
• Pressure drop, condenser	kPa	5.7	6.2	5.4	7.6	8.1
• Condenser connections	R ext. thread	2″	2“	2″	DN80/PN6	DN80/PN6
B0W35						
• Brine spread	K	3	4	4	4	5
• Required volume flow	m³/h	14.8	14.0	16.3	20.9	21.1
• Pressure drop, evaporator	kPa	15.8	10.0	11.2	12.8	11.3
• Evaporator connections	R ext. thread	2″	2″	2″	DN80/PN6	DN80/PN6
Hydraulic data water/water						
• Maximum flow temperature	°C	62	62	62	62	62
• Operating pressure	bar	6	6	6	6	6
W10/W35 (intermediate circuit)						
• Heating water spread	K	5	5	5	5	5
• Required volume flow	m³/h	13.2	16.7	19.4	25.6	31.1
• Pressure drop, condenser	kPa	9.8	10.6	9.3	12.6	13.4
• Condenser connections	R ext. thread	2″	2″	2″	DN80/PN6	DN80/PN6
W10/W35 (intermediate circuit)						
• Brine spread in intermediate circuit [1]	K	3	4	4	4	5
• Required volume flow GW	m³/h	20.9	19.7	22.9	30.1	29.3
• Pressure drop, evaporator	kPa	28.3	17.2	19.8	22.8	18.6
• Evaporator connections	R ext. thread	2″	2″	2″	DN80/PN6	DN80/PN6
Refrigerating data						
• Refrigerant				R410A		
• Refrigerant filling quantity	kg	2 x 6.0	2 x 7.4	2 x 8.2	2 x 10.0	2 x 10.7
• Compressor oil filling quantity	kg	2 x 2.46	2 x 3.30	2 x 3.60	2 x 6.70	2 x 6.70
(Type of compressor oil: DAPHNE HERMETIC OIL FVC32D for dual (55), EMKARATE® RL 32HB - 160SZ - 160Z)						
Electrical data						
• Power supply	V			3+N~400 V / 50 Hz		
• Max. power consumption (without pumps)	kW	24.8	30.4	34.6	46.6	56.6
• Max. operating current (without pumps)	A	45.6	51.0	58.2	75.6	93.2
• Max. starting current	A	85.3	100.5	114.1	160.3	186.6
• Main current fuse (on site)	A	C63	C63	C80	C100	C125
• Control current fuse (on site)	A	16	16	16	16	16
Dimensions / weight						
• Dimensions (H x W x D)	mm		1907 x 1066 x 774		1907 x 1316 x 774	
• Minimum size of the installation room (without ventilation)	m³	16	17	19	26	31
• Weight	kg	560	620	700	770	820

[1] ΔT in accordance with regional regulations. The temperature difference is adjustable from 3 to 6 kelvin. The pump regulates the volumetric current to the set temperature difference.

Thermalia® dual H (35-90) with R134a

Type		H (35)	H (50)	H (70)	H (90)
Seasonal coefficient of performance moderate climate (brine) 35 °C /55 °C	SCOP	4.6/3.5	4.8/3.6	4.8/3.5	4.7/3.5
Max. performance data heating in acc. with EN 14511					
• Heat output B0W35	kW	34.9	52.5	70.9	87.3
• Power consumption B0W35	kW	8.1	12.0	16.3	20.3
• Performance B0W35	COP	4.31	4.38	4.35	4.30
• Heat output W10W35	kW	49.3	71.8	97.1	119.5
• Power consumption W10W35	kW	8.2	12.3	16.8	21.1
• Performance W10W35	COP	6.01	5.83	5.78	5.66
Sound data according to EN 12102					
• Sound power level	dB(A)	55.2	60.2	63.2	63.2
Hydraulic data brine/water					
• Maximum flow temperature	°C	70	70	70	70
• Operating pressure	bar	6	6	6	6
B0W35					
• Heating water spread	K	5	5	5	5
• Required volume flow	m^3/h	6.0	9.0	12.2	15.0
• Pressure drop, condenser	kPa	4.2	3.3	3.9	4.7
• Condenser connections	R ext. thread	2″	2″	2″	DN80/PN6
B0W35					
• Brine spread	K	3	3	4	4
• Required volume flow	m^3/h	8.7	13.2	13.4	16.4
• Pressure drop, evaporator	kPa	8.9	9.1	8.3	8.8
• Evaporator connections	R ext. thread	2″	2″	2″	DN80/PN6
Hydraulic data water/water					
• Maximum flow temperature	°C	70	70	70	70
• Operating pressure	bar	6	6	6	6
W10/W35 (intermediate circuit)					
• Heating water spread	K	5	5	5	5
• Required volume flow	m^3/h	8.5	12.3	16.7	20.5
• Pressure drop, condenser	kPa	7.8	6.0	7.0	8.4
• Condenser connections	R ext. thread	2″	2″	2″	DN80/PN6
W10/W35 (intermediate circuit)					
• Brine spread in intermediate circuit [1]	K	3	3	4	4
• Required volume flow GW	m^3/h	13.4	19.4	19.6	24.1
• Pressure drop, evaporator	kPa	18.2	16.8	15.2	15.9
• Evaporator connections	R ext. thread	2″	2″	2″	DN80/PN6
Refrigerating data					
• Refrigerant		R134a			
• Refrigerant filling quantity	kg	2 x 5.4	2 x 8.0	2 x 8.2	2 x 9.0
• Compressor oil filling quantity (Type of compressor oil: EMKARATE® RL 32HB - 160SZ - 160Z)	kg	2 x 3.3	2 x 6.2	2 x 8.0	2 x 8.0
Electrical data					
• Power supply	V	3+N~400 V / 50 Hz			
• Max. power consumption (without pumps)	kW	17.4	25.6	34.8	44.2
• Max. operating current (without pumps)	A	32.0	45.6	58.6	75.8
• Max. starting current	A	76.0	107.8	151.8	182.9
• Main current fuse (on site)	A	C50	C63	C80	C100
• Control current fuse (on site)	A	16	16	16	16
Dimensions / weight					
• Dimensions (H x W x D)	mm	1907 x 1066 x 774		1907 x 1316 x 774	
• Minimum size of the installation room (without ventilation)	m^3	22	24	27	36
• Weight	kg	491	700	770	800

[1] ΔT in accordance with regional regulations. The temperature difference is adjustable from 3 to 6 kelvin. The pump regulates the volumetric current to the set temperature difference.

Thermalia® dual R (55-140) with R410A

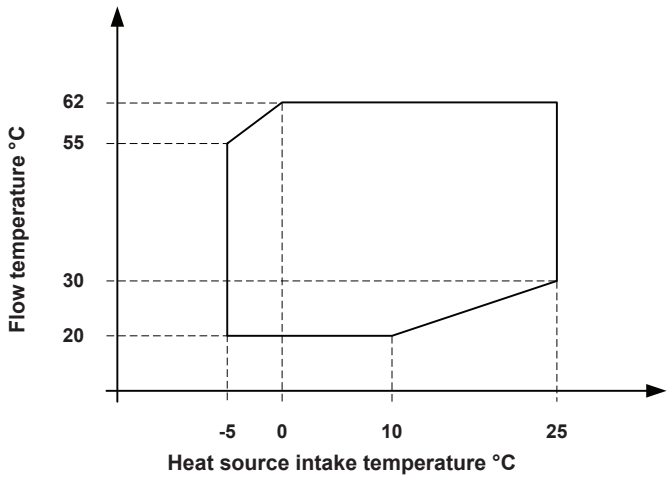
Type		R (55)	R (70)	R (85)	R (110)	R (140)
Seasonal coefficient of performance moderate climate (brine) 35 °C /55 °C	SCOP	5.1/3.7	5.0/3.7	5.1/3.7	5.1/3.7	5.0/3.7
Max. performance data heating and cooling in acc. with EN 14511						
• Heat output B0W35	kW	57.9	73.2	84.8	113.4	137.8
• Power consumption B0W35	kW	12.5	15.9	18.3	27.9	29.9
• Performance B0W35	COP	4.63	4.60	4.63	4.62	4.61
• Heat output W10W35	kW	76.9	97.2	112.8	149.1	181.1
• Power consumption W10W35	kW	12.7	16.6	19.1	26.0	31.3
• Performance W10W35	COP	6.07	5.87	5.91	5.73	5.79
• Cooling capacity B17W9	kW	64.7	86.2	107.0	138.1	156.9
• Power consumption B17W9	kW	10.6	13.1	14.8	21.2	25.9
• Performance B17W9	EER	6.12	6.6	7.21	6.51	6.05
• Cooling capacity B25W18	kW	81.1	108.3	127.7	165.0	183.9
• Power consumption B25W18	kW	12.6	16.2	18.4	26.2	30.4
• Performance B25W18	EER	6.44	6.71	6.95	6.31	6.04
Sound data according to EN 12102						
• Sound power level	dB(A)	57.2	55.7	57.2	64.2	64.2
Hydraulic data brine/water						
• Maximum flow temperature	°C	62	62	62	62	62
• Operating pressure	bar	6	6	6	6	6
B0W35						
• Heating water spread	K	5	5	5	5	5
• Required volume flow	m³/h	9.9	12.6	14.6	19.5	23.7
• Pressure drop, condenser	kPa	5.7	6.2	5.4	7.6	8.1
• Condenser connections	R AG	2″	2“	2″	DN80/PN6	DN80/PN6
B0W35						
• Brine spread	K	3	4	4	4	5
• Required volume flow	m³/h	14.8	14.0	16.3	20.9	21.1
• Pressure drop, evaporator	kPa	15.8	10.0	11.2	12.8	11.3
• Evaporator connections	R AG	2″	2″	2″	DN80/PN6	DN80/PN6
Hydraulic data water/water						
• Maximum flow temperature	°C	62	62	62	62	62
• Operating pressure	bar	6	6	6	6	6
W10/W35 (intermediate circuit)						
• Heating water spread	K	5	5	5	5	5
• Required volume flow	m³/h	13.2	16.7	19.4	25.6	31.1
• Pressure drop, condenser	kPa	9.8	10.6	9.3	12.6	13.4
• Condenser connections	R AG	2″	2″	2″	DN80/PN6	DN80/PN6
W10/W35 (intermediate circuit)						
• Brine spread in intermediate circuit [1]	K	3	4	4	4	5
• Required volume flow GW	m³/h	20.9	19.7	22.9	30.1	29.3
• Pressure drop, evaporator	kPa	28.3	17.2	19.8	22.8	18.6
• Evaporator connections	R AG	2″	2″	2″	DN80/PN6	DN80/PN6
Refrigerating data						
• Refrigerant				R410A		
• Refrigerant filling quantity	kg	2 x 6.0	2 x 7.4	2 x 8.2	2 x 10.0	2 x 10.7
• Compressor oil filling quantity	dm³	2 x 2.46	2 x 3.3	2 x 3.6	2 x 6.7	2 x 6.7
(Type of compressor oil: DAPHNE HERMETIC OIL FVC32D for dual (55), EMKARATE® RL 32HB - 160SZ - 160Z)						
Electrical data						
• Power supply	V			3+N~400 V / 50 Hz		
• Max. power consumption (without pumps)	kW	24.8	30.4	34.6	46.6	56.6
• Max. operating current (without pumps)	A	45.6	51.0	58.2	75.6	93.2
• Max. starting current	A	85.3	100.5	114.1	160.3	186.6
• Main current fuse (on site)	A	C63	C63	C80	C100	C125
• Control current fuse (on site)	A	16	16	16	16	16
Dimensions / weight						
• Dimensions (H x W x D)	mm		1907 x 1066 x 774		1907 x 1316 x 774	
• Minimum size of the installation room (without ventilation)	m³	27.2	33.6	37.3	45.5	48.6
• Weight	kg	560	620	700	770	820

[1] ΔT in accordance with regional regulations. The temperature difference is adjustable from 3 to 6 kelvin.
The pump regulates the volumetric current to the set temperature difference.

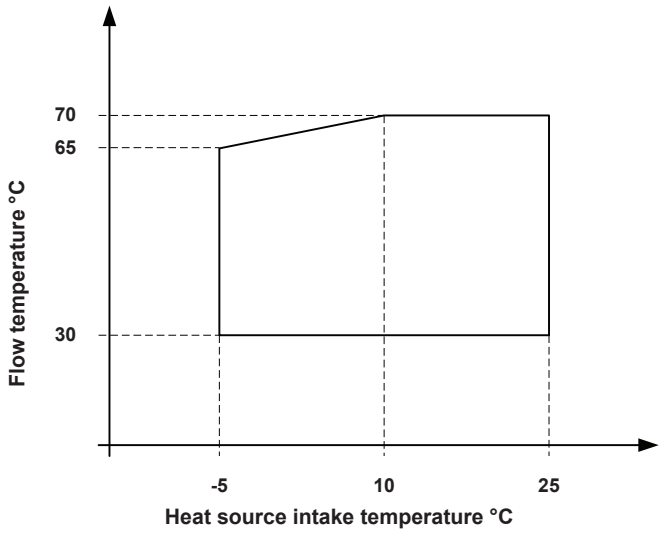
Diagrams range of application

Heating and hot water

Thermalia® dual (55-140), dual R (55-140)

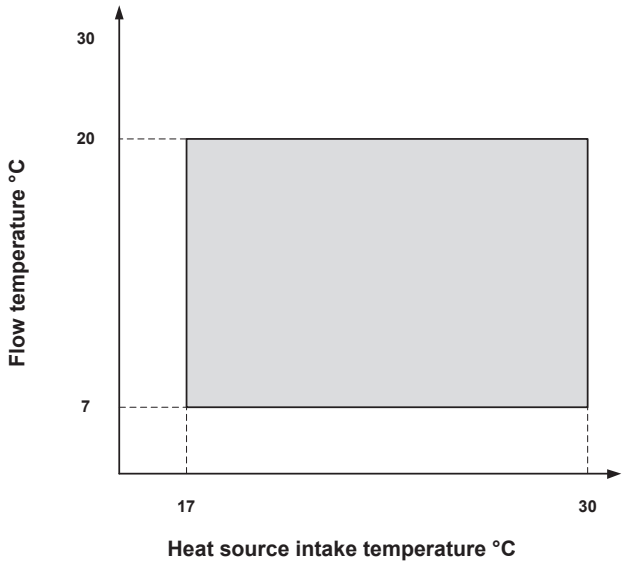


Thermalia® dual H (35-90)



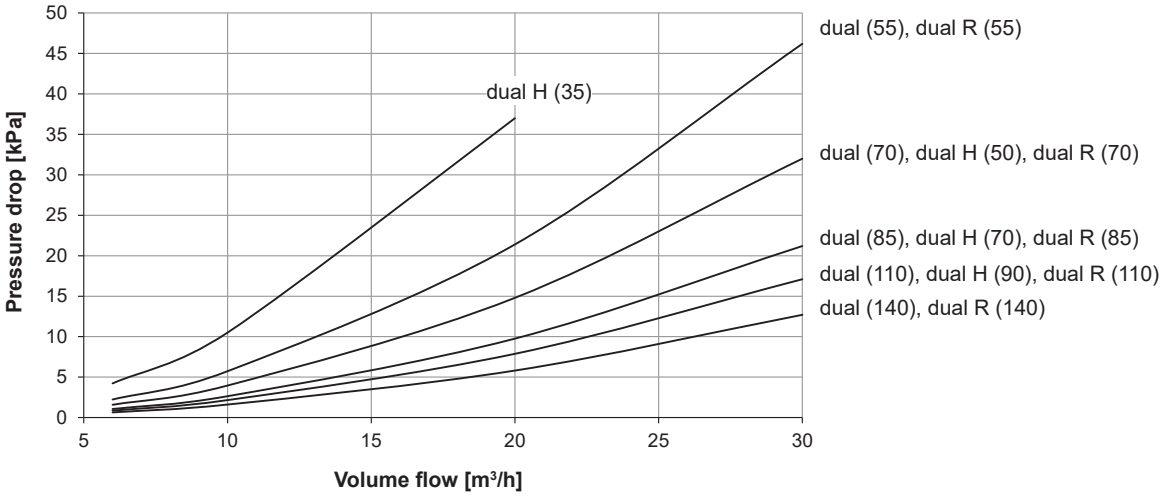
Cooling

Thermalia® dual R (55-140)



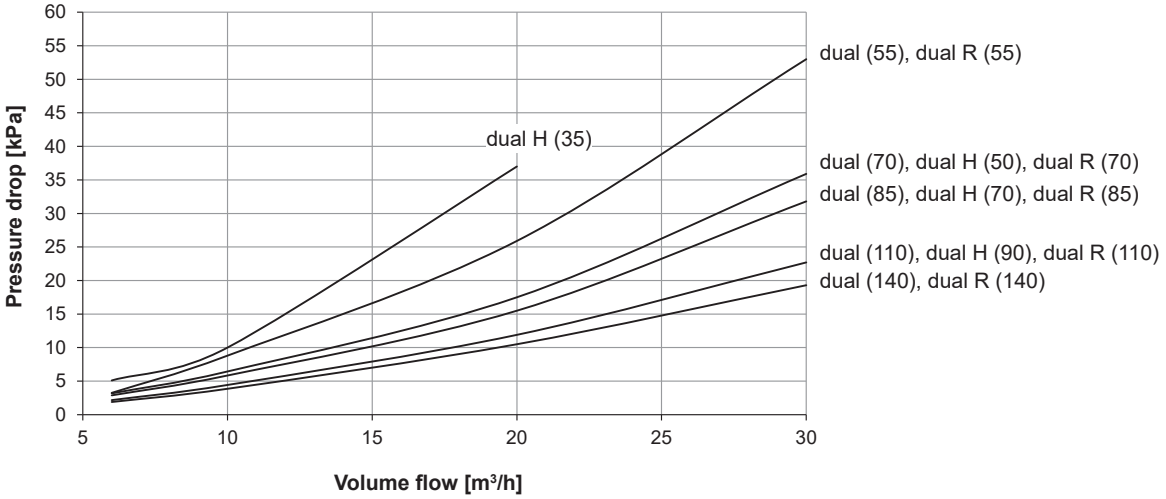
Heating

Pressure drop condenser
with water



Heat source

Pressure drop evaporator
with ethylene glycol 25 %
(antifrogen N)



Cooling capacity

$$Q_0 = Q - P$$

Q_0 = cooling capacity (kW)
Q = heat output (kW)
P = power consumption compressor (kW)
Δt_2 = temperature difference heat source supply/discharge(K)
C = 0.86
c_p = 0.89 (specific heat)
γ = 1.05 (specific weight, density)

Volume flow evaporator

$$V = \frac{Q_0 \cdot c}{\Delta t_2 \cdot c_p \cdot \gamma} \ (m^3/h)$$

Δp (kPa) = pressure drop with frost protection (1 kPa = 0.1 mWC)
Δp = f x ΔP

f		Ethylene glycol % (Antifrogen N)
0.97	≙	20 %
1	≙	25 %
1.03	≙	30 %

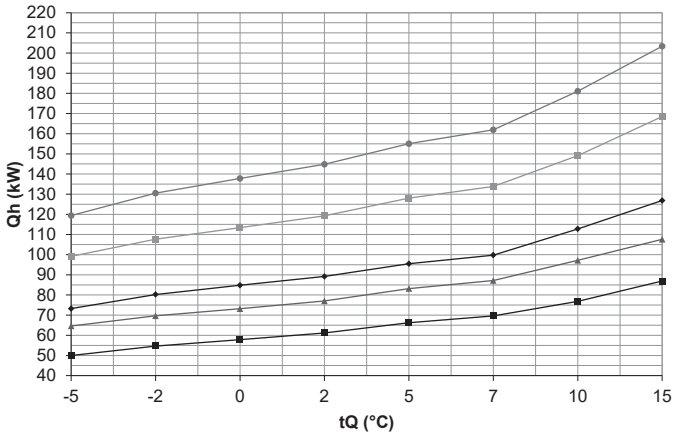
Δp_w (kPa) = Pressure drop with water (1 kPa = 0.1 mWC)
Δp_w = ΔP x 0.89

Performance data - heating

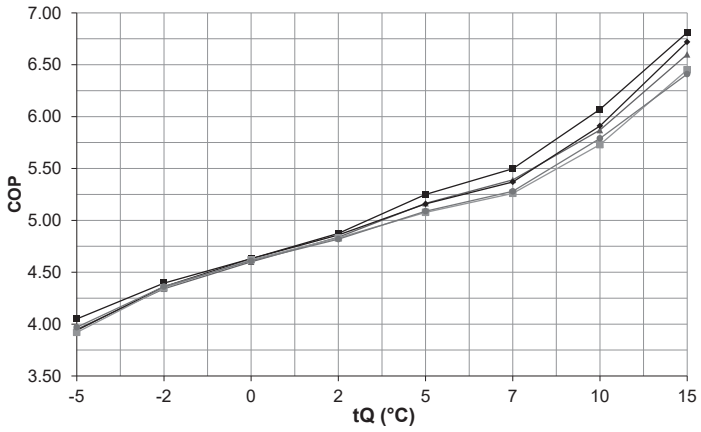
Maximum heat output

Thermalia® dual (55-140), dual R (55-140) with R410A

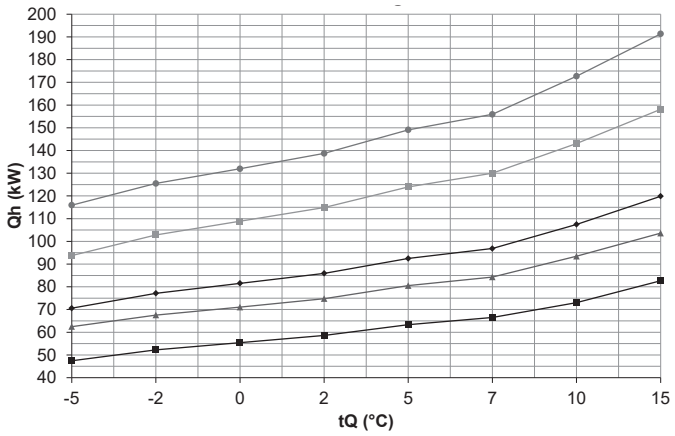
Heat output - t_{VL} 35 °C



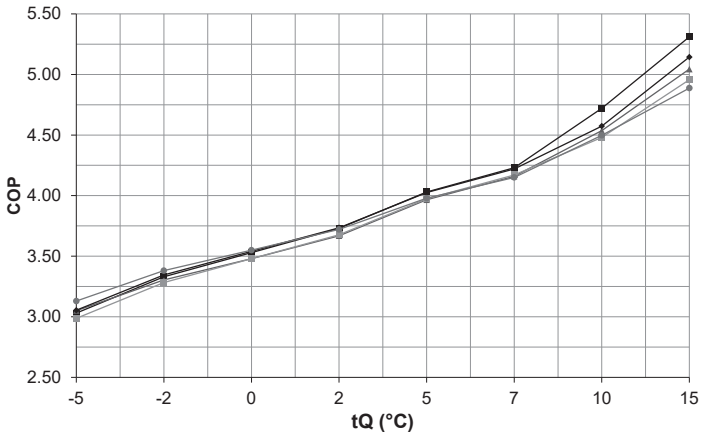
Output rating - t_{VL} 35 °C



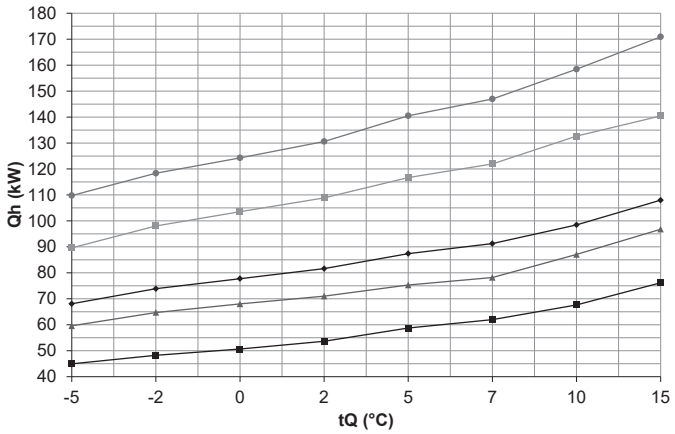
Heat output - t_{VL} 45 °C



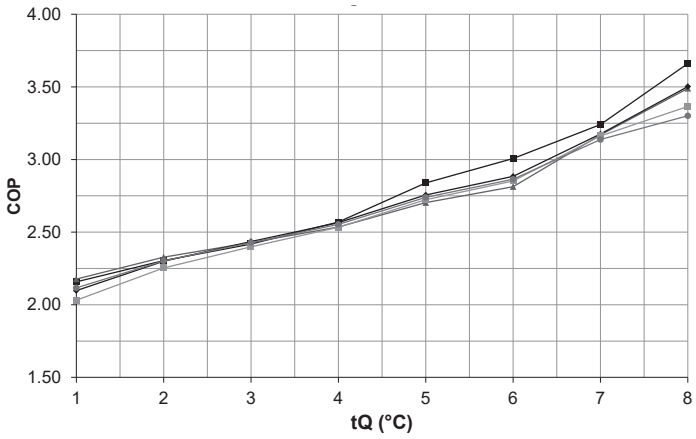
Output rating - t_{VL} 45 °C



Heat output - t_{VL} 62 °C



Output rating - t_{VL} 62 °C



- Thermalia® dual, dual R (55)
- Thermalia® dual, dual R (70)
- Thermalia® dual, dual R (85)
- Thermalia® dual, dual R (110)
- Thermalia® dual, dual R (140)

tVL = heating flow temperature (°C)
tQ = source temperature (°C)
Qh = heat output at full load (kW), measured in accordance with standard EN 14511
COP = Coefficient of Performance for the overall unit in accordance with standard EN 14511

Performance data - heating

Thermalia® dual (55-140), dual R (55-140)

Indications acc. to EN 14511

Type			(55), R (55)			(70), R (70)			(85), R (85)			(110), R (110)			(140), R (140)		
tVL		tQ	Qh	P	COP	Qh	P	COP	Qh	P	COP	Qh	P	COP	Qh	P	COP
°C		°C	kW	kW		kW	kW		kW	kW		kW	kW		kW	kW	
30	Brine	-5	50.6	10.9	4.67	65.6	14.3	4.59	74.0	15.6	4.74	100.1	21.2	4.71	121.5	25.4	4.79
		-2	55.9	10.9	5.12	70.6	13.8	5.12	81.2	15.5	5.24	109.0	20.9	5.22	132.6	25.3	5.24
		0	59.3	11.0	5.41	74.1	13.6	5.47	86.0	15.5	5.56	115.0	20.8	5.54	139.9	25.4	5.52
		2	62.6	11.0	5.68	78.2	13.5	5.77	90.5	15.5	5.83	121.1	20.9	5.79	147.0	25.5	5.75
		5	67.6	11.2	6.05	84.9	13.7	6.18	97.1	15.7	6.19	130.3	21.5	6.07	157.5	26.0	6.06
		7	70.9	11.2	6.31	89.2	13.8	6.46	101.5	15.8	6.44	136.5	21.7	6.28	164.5	26.2	6.27
	Water	10	78.4	11.0	7.10	99.1	14.5	6.82	115.4	16.9	6.84	152.2	23.1	6.59	185.3	27.7	6.69
		15	88.8	11.2	7.93	109.6	14.2	7.73	130.3	16.7	7.82	173.7	23.2	7.48	209.4	28.0	7.47
35	Brine	-5	50.0	12.3	4.05	64.6	16.4	3.95	73.2	18.6	3.94	99.1	25.3	3.92	119.4	30.1	3.97
		-2	54.7	12.4	4.40	69.7	16.1	4.34	80.2	18.4	4.36	107.7	24.8	4.35	130.5	29.9	4.36
		0	57.9	12.5	4.63	73.2	15.9	4.60	84.8	18.3	4.63	113.4	24.6	4.62	137.8	29.9	4.61
		2	61.2	12.6	4.87	77.0	15.9	4.84	89.2	18.4	4.86	119.2	24.7	4.83	144.8	30.0	4.82
		5	66.3	12.6	5.25	83.2	16.1	5.16	95.5	18.5	5.16	128.0	25.2	5.08	155.0	30.5	5.09
		7	69.6	12.7	5.50	87.2	16.2	5.39	99.8	18.6	5.37	133.9	25.4	5.26	161.9	30.7	5.28
	Water	10	76.9	12.7	6.07	97.2	16.6	5.87	112.8	19.1	5.91	149.1	26.0	5.73	181.1	31.3	5.79
		15	86.9	12.8	6.81	107.6	16.3	6.60	126.8	18.9	6.72	168.5	26.1	6.45	203.4	31.7	6.41
40	Brine	-5	48.9	14.0	3.50	63.7	18.4	3.47	72.2	20.9	3.45	96.8	28.4	3.41	117.8	33.6	3.50
		-2	53.5	14.0	3.81	68.8	18.2	3.78	78.9	20.7	3.81	105.6	28.0	3.78	128.1	33.5	3.83
		0	56.6	14.1	4.02	72.2	18.1	4.00	83.4	20.6	4.05	111.4	27.8	4.01	135.0	33.4	4.04
		2	59.8	14.1	4.24	76.0	18.1	4.20	87.7	20.6	4.26	117.3	27.8	4.22	141.9	33.6	4.23
		5	64.8	14.1	4.58	81.9	18.1	4.51	94.1	20.7	4.54	126.1	28.2	4.48	152.2	33.9	4.49
		7	68.1	14.2	4.81	85.7	18.2	4.72	98.3	20.7	4.74	131.9	28.3	4.66	159.0	34.1	4.67
	Water	10	75.0	14.1	5.32	95.3	18.6	5.13	110.1	21.3	5.17	146.1	29.0	5.04	176.9	34.8	5.08
		15	84.8	14.2	5.98	105.6	18.4	5.73	123.4	21.1	5.85	163.3	29.0	5.63	197.4	35.4	5.57
45	Brine	-5	47.5	15.7	3.03	62.5	20.5	3.05	70.6	23.1	3.05	93.7	31.4	2.99	115.9	37.0	3.13
		-2	52.2	15.7	3.33	67.6	20.4	3.30	77.2	23.1	3.35	102.8	31.3	3.28	125.5	37.1	3.38
		0	55.4	15.7	3.53	71.1	20.4	3.48	81.5	23.0	3.54	108.9	31.3	3.48	132.0	37.2	3.55
		2	58.6	15.7	3.73	74.8	20.4	3.67	85.9	23.0	3.73	114.9	31.2	3.68	138.7	37.3	3.72
		5	63.3	15.7	4.03	80.5	20.3	3.97	92.5	23.0	4.03	124.0	31.2	3.97	149.1	37.5	3.98
		7	66.5	15.7	4.23	84.3	20.3	4.16	96.8	22.9	4.22	130.0	31.2	4.17	155.9	37.6	4.15
	Water	10	73.1	15.5	4.72	93.5	20.6	4.54	107.5	23.5	4.57	143.0	31.9	4.48	172.7	38.4	4.50
		15	82.7	15.6	5.31	103.6	20.5	5.04	119.9	23.3	5.14	158.1	31.9	4.96	191.3	39.2	4.89
50	Brine	-5	47.1	17.1	2.76	61.8	22.5	2.75	70.3	26.1	2.69	93.5	35.5	2.63	114.2	41.9	2.72
		-2	51.1	17.2	2.98	66.9	22.5	2.97	76.6	25.9	2.96	102.2	35.0	2.92	123.7	41.6	2.97
		0	53.9	17.2	3.13	70.3	22.6	3.11	80.8	25.8	3.14	107.9	34.8	3.10	130.1	41.5	3.14
		2	57.0	17.2	3.32	73.7	22.6	3.26	84.9	25.7	3.30	113.5	34.7	3.27	136.8	41.6	3.29
		5	62.1	17.1	3.62	78.9	22.6	3.50	91.0	25.7	3.54	121.8	34.8	3.50	146.9	41.8	3.51
		7	65.3	17.1	3.82	82.3	22.5	3.65	95.1	25.7	3.70	127.4	34.9	3.65	153.6	41.9	3.66
	Water	10	71.7	17.2	4.17	91.6	22.6	4.05	104.8	25.7	4.08	140.0	34.9	4.01	168.5	42.0	4.02
		15	80.9	17.2	4.70	101.6	22.7	4.48	116.4	25.5	4.56	152.9	34.8	4.39	185.3	42.9	4.32
55	Brine	-5	46.5	18.6	2.50	62.1	24.2	2.56	70.5	28.3	2.49	92.8	38.5	2.41	113.7	45.5	2.50
		-2	49.9	18.7	2.67	66.8	24.2	2.77	76.6	27.7	2.76	101.7	37.4	2.72	122.0	44.4	2.75
		0	52.5	18.7	2.80	70.0	24.1	2.90	80.6	27.4	2.94	107.4	36.8	2.92	127.8	43.9	2.91
		2	55.5	18.7	2.97	73.2	24.1	3.03	84.4	27.3	3.09	112.8	36.7	3.07	134.2	43.9	3.06
		5	60.7	18.6	3.27	77.9	24.1	3.24	90.1	27.3	3.30	120.5	37.0	3.26	144.5	44.3	3.26
		7	64.0	18.5	3.46	81.1	24.1	3.37	93.9	27.3	3.44	125.7	37.1	3.39	151.2	44.5	3.40
	Water	10	70.2	18.8	3.73	89.7	24.6	3.64	102.2	27.9	3.66	136.9	37.8	3.62	164.3	45.5	3.61
		15	79.0	18.8	4.21	99.6	24.8	4.02	112.9	27.7	4.07	147.7	37.7	3.92	179.3	46.6	3.85
62	Brine	-5	45.0	20.8	2.16	59.6	27.4	2.18	68.1	32.5	2.10	89.6	44.1	2.03	109.8	51.9	2.12
		-2	48.2	20.9	2.30	64.7	27.8	2.33	73.9	32.1	2.30	98.0	43.5	2.25	118.4	51.4	2.30
		0	50.7	20.9	2.42	68.0	28.0	2.43	77.8	31.9	2.43	103.6	43.2	2.40	124.3	51.2	2.43
		2	53.7	20.9	2.57	71.0	28.0	2.54	81.6	31.8	2.57	108.9	43.0	2.53	130.6	51.2	2.55
		5	58.7	20.7	2.84	75.3	27.9	2.70	87.4	31.7	2.76	116.7	42.8	2.72	140.5	51.3	2.74
		7	62.0	20.6	3.01	78.2	27.8	2.81	91.3	31.6	2.88	121.9	42.7	2.85	147.0	51.3	2.86
	Water	10	67.6	20.9	3.24	87.1	27.5	3.17	98.5	31.0	3.18	132.7	42.0	3.16	158.4	50.5	3.14
		15	76.2	20.8	3.66	96.8	27.7	3.49	108.0	30.8	3.50	140.4	41.7	3.37	170.9	51.8	3.30

tVL = heating flow temperature (°C)
tQ = source temperature (°C)
Qh = heat output at full load (kW), measured in accordance with standard EN 14511
P = power consumption of the overall unit (kW)
COP = Coefficient of Performance for the overall unit in accordance with standard EN 14511

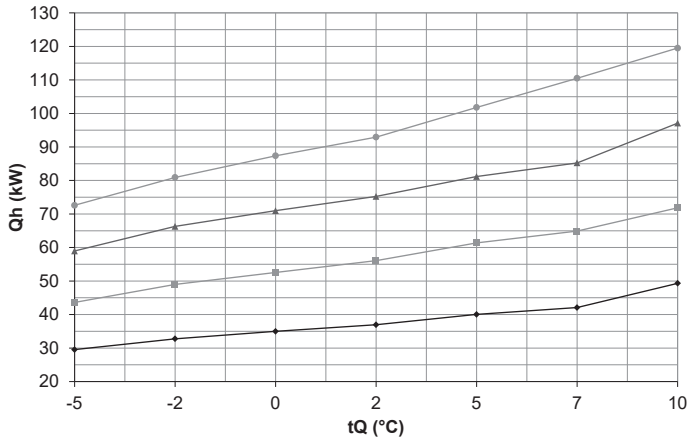
Observe daily power interruptions!
see “Engineering heat pumps general”

Performance data - heating

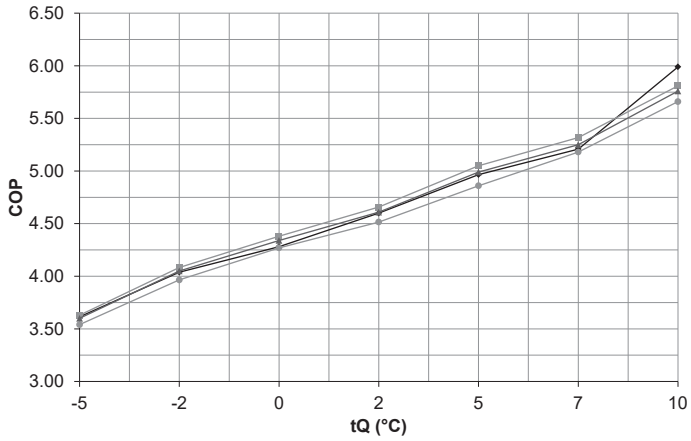
Maximum heat output

Thermalia® dual H (35-90) with R134a

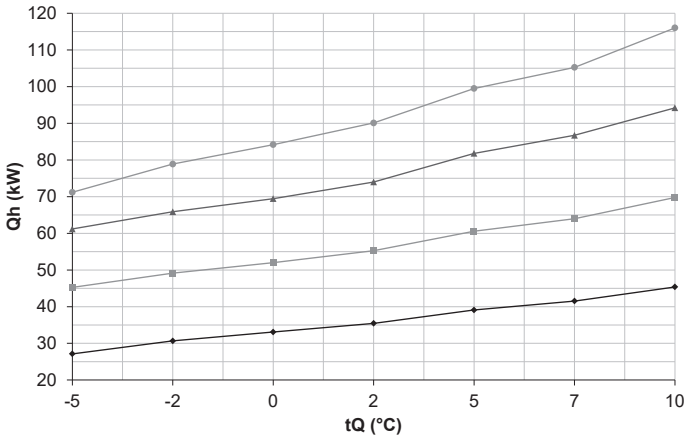
Heat output - t_{VL} 35 °C



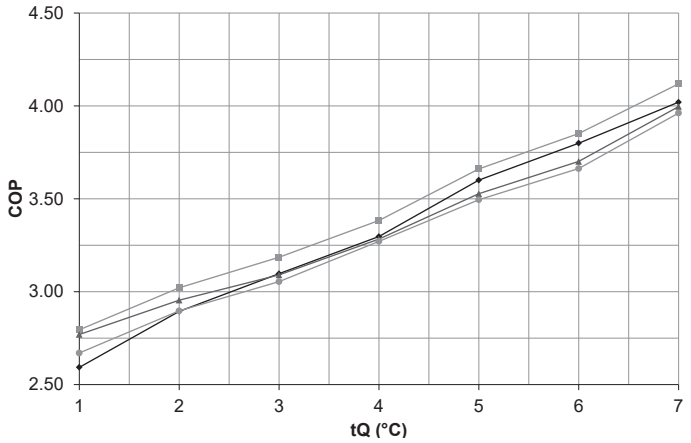
Output rating - t_{VL} 35 °C



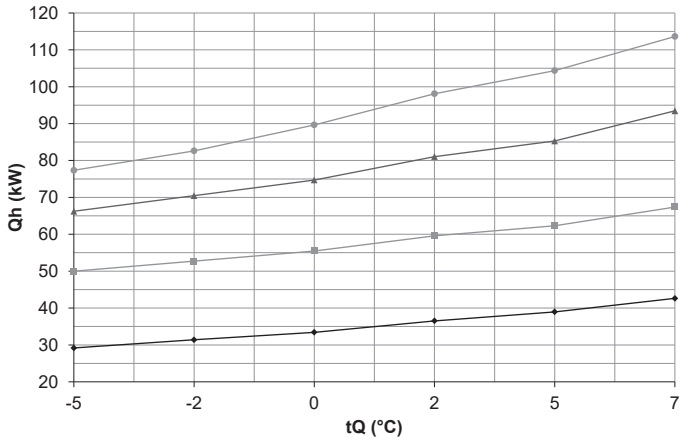
Heat output - t_{VL} 50 °C



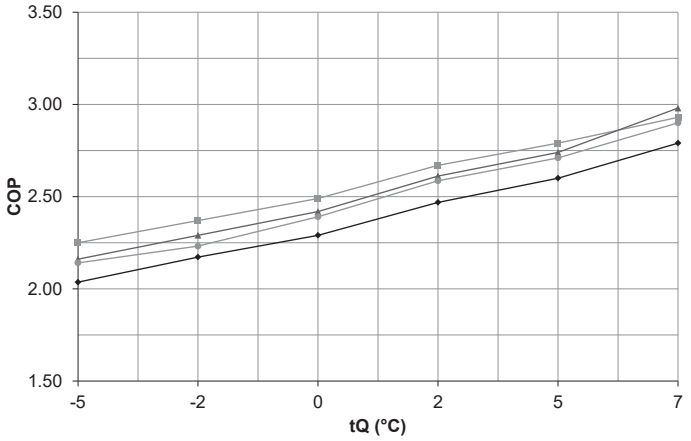
Output rating - t_{VL} 50 °C



Heat output - t_{VL} 65 °C



Output rating - t_{VL} 65 °C



tVL = heating flow temperature (°C)
tQ = source temperature (°C)
Qh = heat output at full load (kW), measured in accordance with standard EN 14511
COP = Coefficient of Performance for the overall unit in accordance with standard EN 14511

- Thermalia® dual H (35)
- Thermalia® dual H (50)
- Thermalia® dual H (70)
- Thermalia® dual H (90)

Performance data - heating

Thermalia® dual H (35-90)

Indications acc. to EN 14511

Type			H (35)			H (50)			H (70)			H (90)		
tVL °C		tQ °C	Qh kW	P kW	COP	Qh kW	P kW	COP	Qh kW	P kW	COP	Qh kW	P kW	COP
35	Brine	-5	29.5	8.2	3.61	43.6	12.0	3.63	59.0	16.4	3.60	72.6	20.5	3.54
		-2	32.8	8.1	4.04	49.0	12.0	4.08	66.3	16.4	4.05	80.9	20.4	3.97
		0	35.0	8.1	4.32	52.5	12.0	4.38	71.0	16.4	4.34	87.4	20.3	4.30
		2	37.0	8.0	4.60	56.1	12.0	4.66	75.2	16.3	4.61	92.9	20.6	4.51
		5	40.0	8.1	4.97	61.4	12.2	5.05	81.2	16.3	4.99	101.8	20.9	4.86
		7	42.1	8.1	5.21	64.9	12.2	5.32	85.2	16.2	5.25	110.5	21.3	5.18
	Water	10	49.3	8.2	5.99	71.8	12.4	5.81	97.1	16.9	5.76	119.5	21.1	5.66
40	Brine	-5	28.7	9.0	3.20	44.4	13.2	3.36	60.0	18.0	3.33	71.9	22.4	3.22
		-2	32.1	9.1	3.54	49.1	13.2	3.71	66.1	18.0	3.66	80.2	22.4	3.57
		0	34.5	9.1	3.78	52.4	13.3	3.95	70.2	18.1	3.88	86.1	22.5	3.82
		2	36.7	9.0	4.08	55.8	13.3	4.20	74.6	18.1	4.12	91.7	22.4	4.09
		5	40.1	9.0	4.43	61.0	13.5	4.53	81.4	18.5	4.40	100.4	23.3	4.31
		7	42.4	9.1	4.66	64.5	13.5	4.77	85.9	18.6	4.61	107.2	23.6	4.54
	Water	10	47.5	9.2	5.19	71.2	13.7	5.18	95.8	19.0	5.04	118.1	23.7	4.98
45	Brine	-5	27.8	9.7	2.86	45.1	14.6	3.09	61.0	19.9	3.06	71.4	24.4	2.92
		-2	31.5	9.8	3.20	49.7	14.7	3.39	66.0	19.9	3.32	79.5	24.7	3.22
		0	33.9	9.9	3.44	52.8	14.7	3.58	69.7	19.9	3.50	85.0	24.9	3.41
		2	36.4	9.9	3.66	55.8	14.8	3.77	74.0	20.2	3.66	90.8	25.3	3.59
		5	40.1	10.2	3.92	60.3	14.9	4.04	81.2	20.9	3.89	99.6	25.8	3.86
		7	42.6	10.3	4.14	63.3	15.0	4.22	85.8	21.2	4.04	105.5	26.1	4.04
	Water	10	46.6	10.2	4.58	70.4	15.3	4.61	94.6	21.4	4.43	116.9	26.4	4.42
50	Brine	-5	27.1	10.5	2.59	45.3	16.2	2.80	61.2	22.1	2.77	71.2	26.7	2.67
		-2	30.7	10.6	2.89	49.1	16.3	3.02	65.9	22.3	2.95	78.9	27.2	2.90
		0	33.1	10.7	3.10	52.0	16.3	3.19	69.5	22.5	3.09	84.2	27.6	3.05
		2	35.5	10.8	3.30	55.2	16.3	3.38	74.0	22.5	3.28	90.1	27.5	3.27
		5	39.1	10.9	3.60	60.6	16.5	3.66	81.8	23.2	3.53	99.5	28.5	3.50
		7	41.5	10.9	3.80	64.0	16.6	3.85	86.7	23.4	3.70	105.3	28.7	3.66
	Water	10	45.4	11.3	4.02	69.8	16.9	4.12	94.2	23.6	4.00	116.0	29.3	3.96
55	Brine	-5	26.4	11.5	2.30	45.1	18.0	2.51	61.0	24.5	2.49	71.2	29.1	2.45
		-2	29.9	11.7	2.56	48.6	18.0	2.70	65.8	25.0	2.63	78.3	30.0	2.61
		0	32.2	11.8	2.74	51.3	18.1	2.84	69.5	25.3	2.75	83.5	30.5	2.74
		2	34.5	11.9	2.91	54.8	18.2	3.02	74.2	25.5	2.92	89.7	30.9	2.91
		5	38.1	12.0	3.18	60.8	18.3	3.32	82.2	25.6	3.21	99.9	31.3	3.20
		7	40.4	12.1	3.35	64.6	18.4	3.51	87.3	25.7	3.40	106.5	31.5	3.38
	Water	10	44.8	12.5	3.58	69.0	18.8	3.68	94.1	25.9	3.63	115.4	32.2	3.58
65	Brine	-5	-	-	-	-	-	-	-	-	-	-	-	-
		-2	29.2	14.3	2.04	50.0	22.2	2.25	66.2	30.6	2.16	77.3	36.1	2.14
		0	31.4	14.5	2.17	52.7	22.2	2.37	70.5	30.8	2.29	82.6	37.0	2.23
		2	33.4	14.6	2.29	55.5	22.3	2.49	74.7	30.9	2.42	89.6	37.5	2.39
		5	36.5	14.8	2.47	59.6	22.3	2.67	81.0	31.0	2.61	98.1	37.9	2.59
		7	39.0	15.0	2.60	62.3	22.3	2.79	85.3	31.1	2.74	104.4	38.5	2.71
	Water	10	42.6	15.3	2.79	67.4	23.0	2.93	93.5	31.4	2.98	113.6	39.2	2.90

tVL = heating flow temperature (°C)
tQ = source temperature (°C)
Qh = heat output at full load (kW), measured in accordance with standard EN 14511
P = power consumption of the overall unit (kW)
COP = Coefficient of Performance for the overall unit in accordance with standard EN 14511

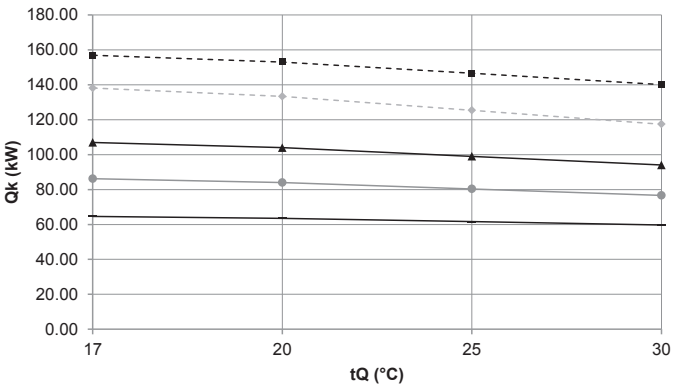
Observe daily power interruptions!
see “Engineering heat pumps general”

Performance data – cooling

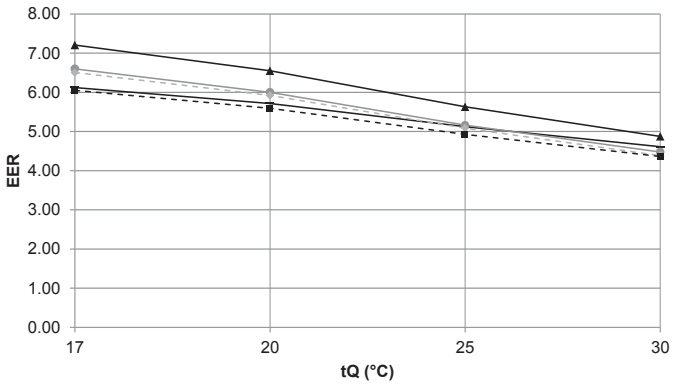
Maximum cooling capacity

Thermalia® dual R (55-140) with R410A

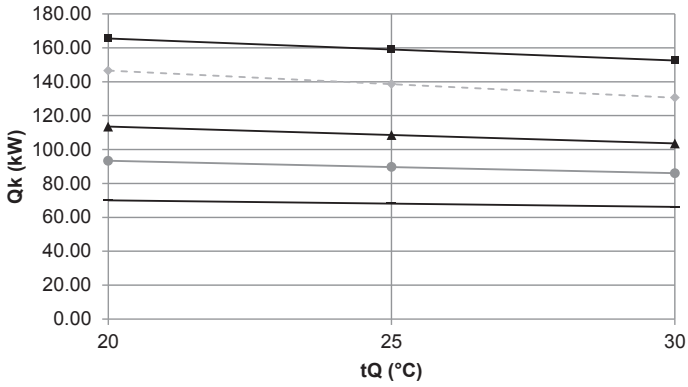
Cooling capacity - t_{FL} 9 °C



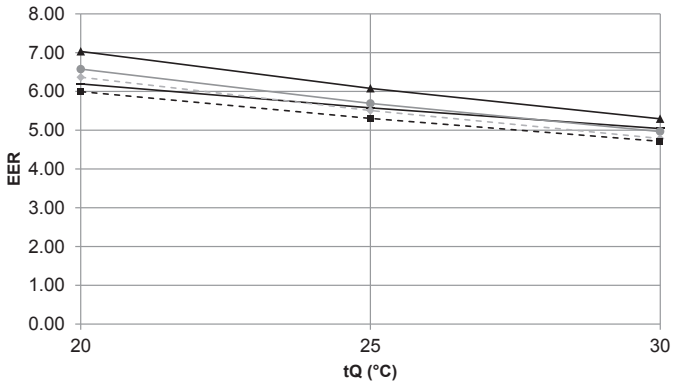
Coefficient of performance - t_{FL} 9 °C



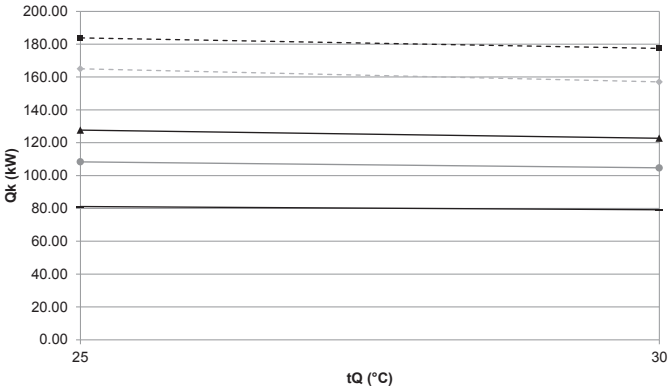
Cooling capacity - t_{FL} 12 °C



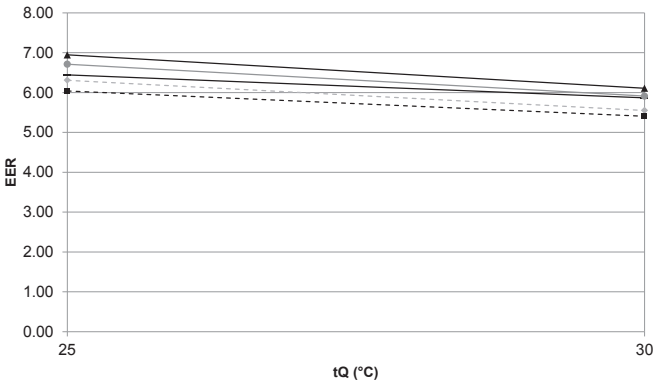
Coefficient of performance - t_{FL} 12 °C



Cooling capacity - t_{FL} 18 °C



Coefficient of performance - t_{FL} 18 °C



tFL = Cooling water flow temperature (°C)
tQ = Source temperature (°C)
Qk = Cooling capacity (kW), measured in accordance with standard EN 14511
EER = Coefficient of performance for the overall unit in accordance with standard EN 14511

- Thermalia® dual R (55)
- Thermalia® dual R (70)
- Thermalia® dual R (85)
- Thermalia® dual R (110)
- Thermalia® dual R (140)

Performance data – cooling

Thermalia® dual R (55-140)

Data according to EN 14511

Type tFL °C	Heat source Medium t1	tQ °C	R (55) Qk kW	R (55) P kW	R (55) EER	R (70) Qk kW	R (70) P kW	R (70) EER	R (85) Qk kW	R (85) P kW	R (85) EER	R (110) Qk kW	R (110) P kW	R (110) EER	R (140) Qk kW	R (140) P kW	R (140) EER
9	Brine (Sole)	17	64.66	10.56	6.12	86.20	13.06	6.60	106.97	14.84	7.21	138.10	21.23	6.51	156.90	25.92	6.05
		20	63.52	11.11	5.72	84.00	14.00	6.00	103.98	15.87	6.55	133.33	22.51	5.92	153.02	27.35	5.59
		25	61.62	12.03	5.12	80.34	15.56	5.16	99.00	17.58	5.63	125.37	24.65	5.09	146.56	29.74	4.93
		30	59.72	12.94	4.61	76.67	17.13	4.48	94.02	19.29	4.87	117.42	26.79	4.38	140.09	32.12	4.36
12	Brine (Sole)	20	70.02	11.30	6.20	93.34	14.19	6.58	113.55	16.14	7.04	146.53	23.01	6.37	165.46	27.59	6.00
		25	68.12	12.21	5.58	89.67	15.76	5.69	108.57	17.85	6.08	138.57	25.15	5.51	158.99	29.97	5.30
		30	66.22	13.13	5.04	86.01	17.32	4.97	103.59	19.56	5.30	130.62	27.29	4.79	152.52	32.36	4.71
15	Brine (Sole)	25	74.61	12.40	6.02	99.01	15.95	6.21	118.15	18.12	6.52	151.77	25.65	5.92	171.42	30.20	5.68
		30	72.71	13.31	5.46	95.34	17.52	5.44	113.17	19.83	5.71	143.82	27.79	5.18	164.96	32.59	5.06
18	Brine (Sole)	25	81.11	12.59	6.44	108.34	16.15	6.71	127.72	18.39	6.95	164.97	26.15	6.31	183.86	30.44	6.04
		30	79.21	13.50	5.87	104.68	17.71	5.91	122.74	20.10	6.11	157.02	28.29	5.55	177.39	32.82	5.40

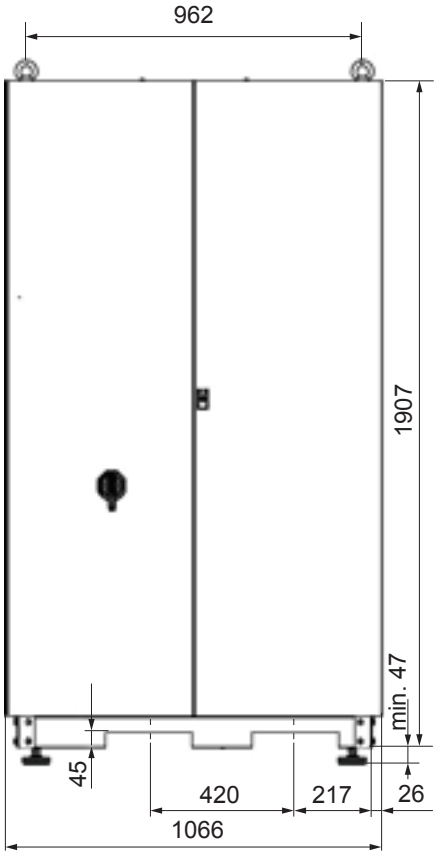
tFL = Cooling water flow temperature (°C)
tQ = Source temperature (°C)
Qk = Cooling capacity (kW), measured in accordance with standard EN 14511
P = Power consumption of the overall unit (kW) incl. high-efficiency pump, measured in accordance with EN 14511
EER = Coefficient of performance for the overall unit in accordance with standard EN 14511

Observe daily power interruptions!
see “Engineering heat pumps general”

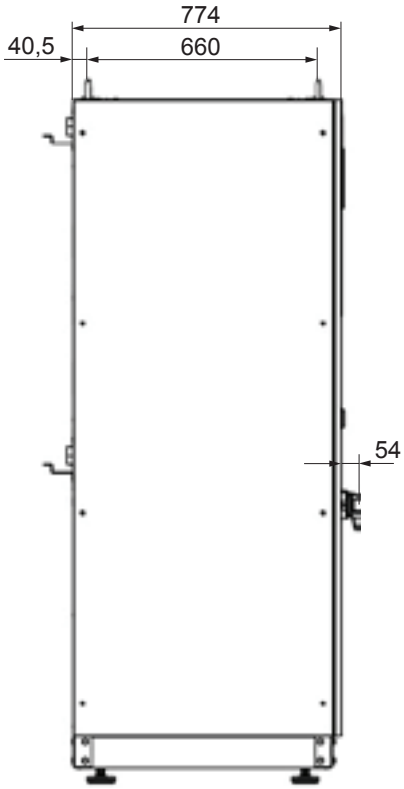
Thermalia® dual (55-85), dual H (35), dual R (55-85)

(Dimensions in mm)

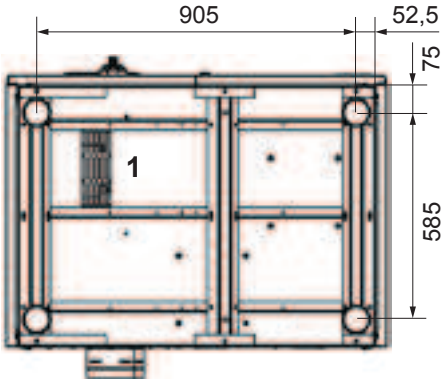
Front view



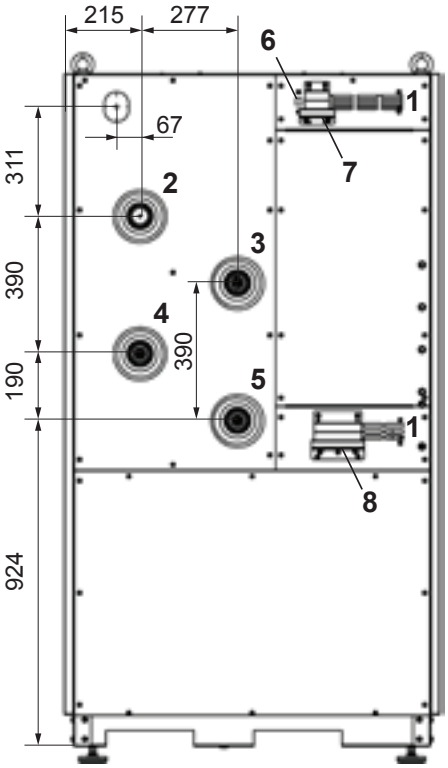
Side view



View from below



Rear view



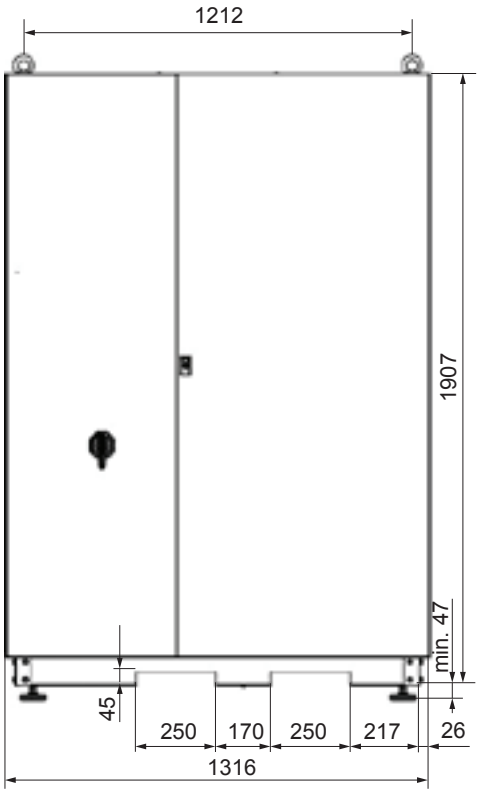
1 Vent opening
2 Flow heating or storage tank Rp 2″
3 Brine or ground water inlet Rp 2″
4 Return heating or storage tank Rp 2″
5 Brine or ground water outlet Rp 2″
6 LAN interface
7 Cable feedthrough for sensors and actuators
8 Cable feedthrough for the mains supply and connection to the main circuit

Adjustable feet with M12 thread

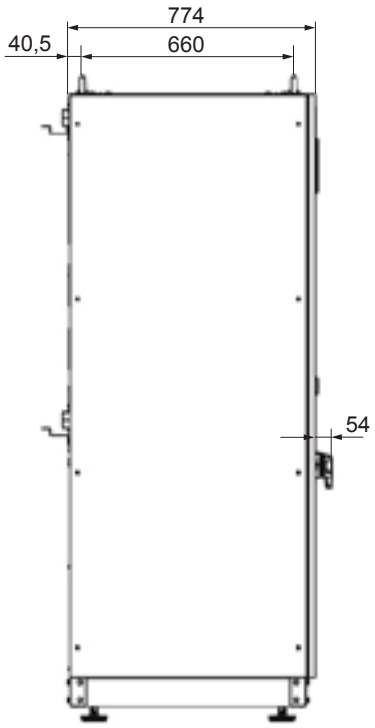
Thermalia® dual (110-140), dual H (50-90), dual R (110-140)

(Dimensions in mm)

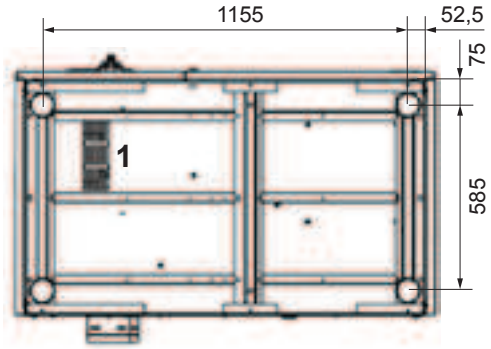
Front view



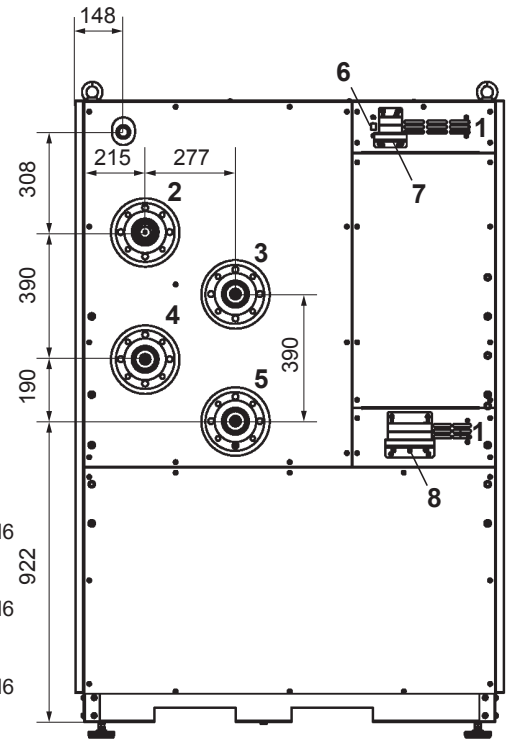
Side view



View from below



Rear view



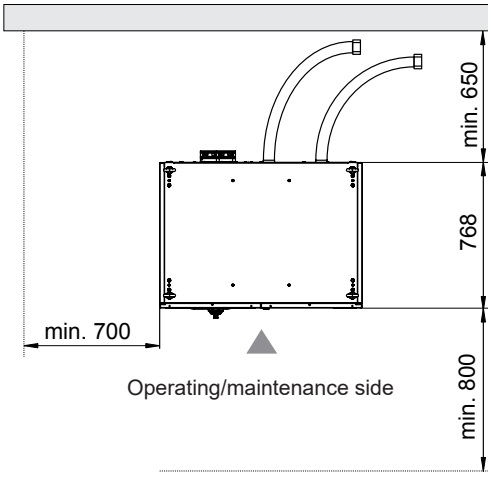
1 Vent opening
2 Flow heating or storage tank
Thermalia® dual H (50,70) Rp 2″
Thermalia® dual, dual R (110,140), dual H (90) flange DN80/PN6
3 Brine or ground water inlet
Thermalia® dual H (50,70) Rp 2″
Thermalia® dual, dual R (110,140), dual H (90) flange DN80/PN6
4 Return heating or storage tank
Thermalia® dual H (50,70) Rp 2″
Thermalia® dual, dual R (110,140), dual H (90) flange DN80/PN6
5 Brine or ground water outlet
Thermalia® dual H (50,70) Rp 2″
Thermalia® dual, dual R (110,140), dual H (90) flange DN80/PN6
6 LAN interface
7 Cable feedthrough for sensors and actuators
8 Cable feedthrough
for the mains supply and connection to the main circuit

Adjustable feet
with M12 thread

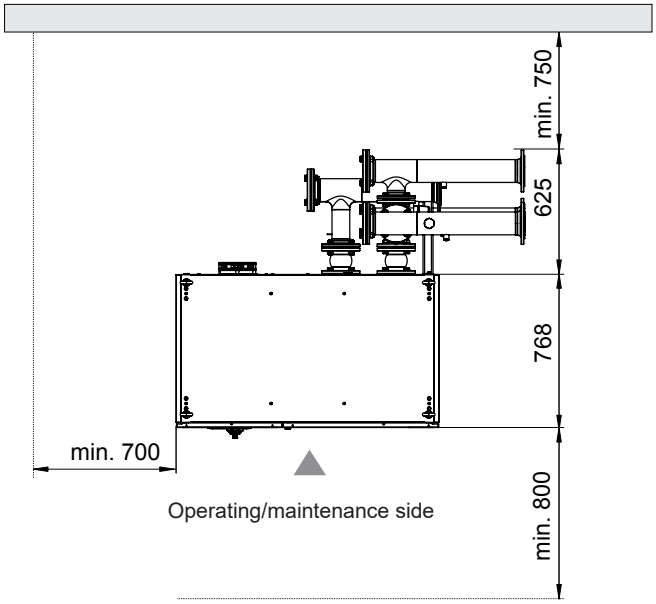
Space requirement

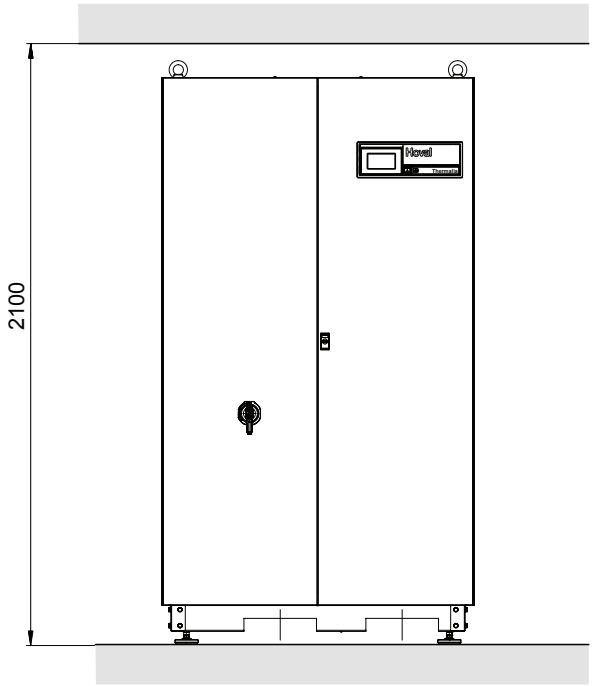
Required wall clearance for operation and maintenance
(Dimensions in mm)

Thermalia® dual (55-85), dual H (35-70), dual R (55-85)



Thermalia® dual (110-140), dual H (90), dual R (110-140)

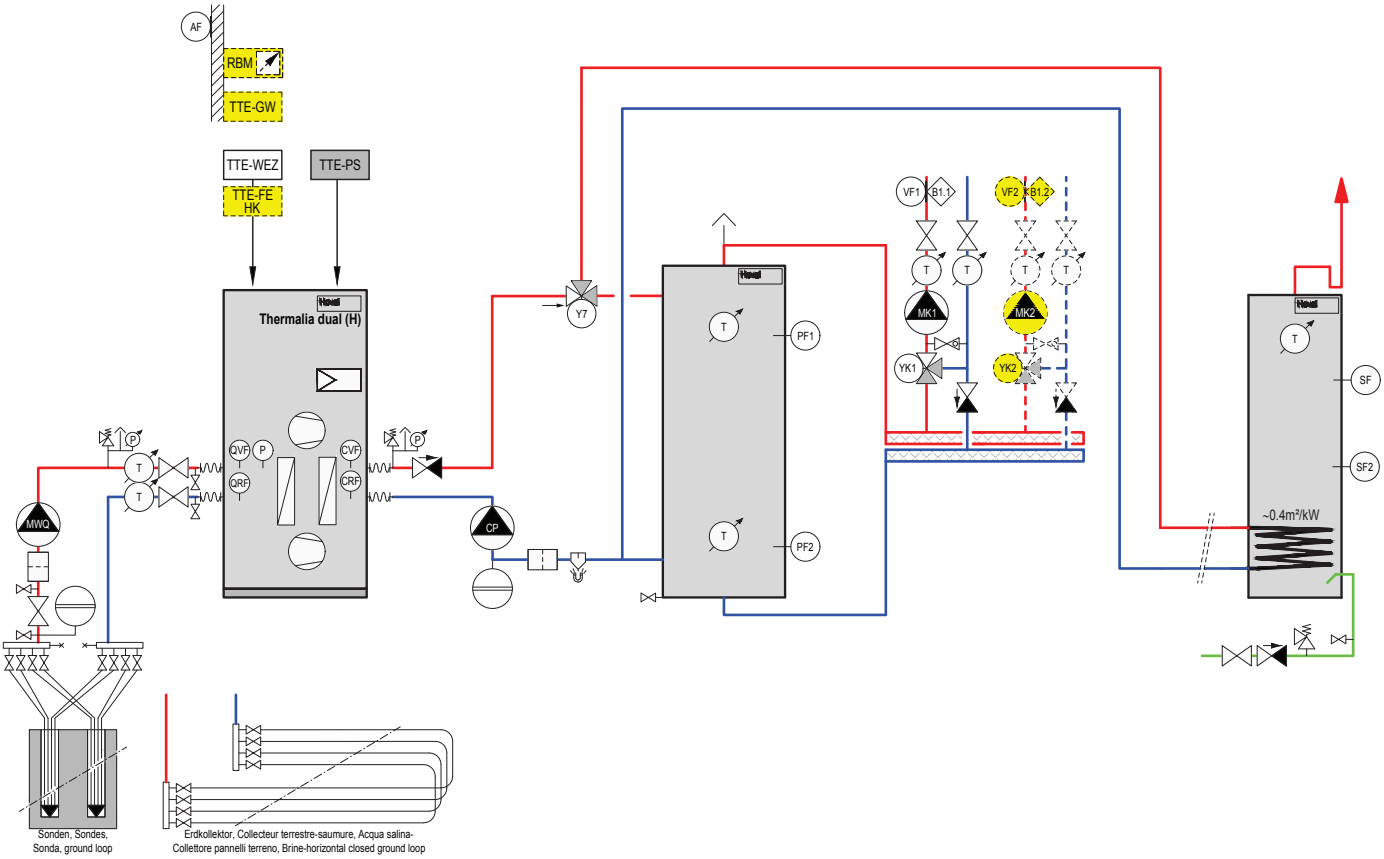




Thermalia® dual

Brine/water-water/water heat pump with
- energy buffer storage tank
- calorifier
- 1-... mixer circuit(s)

Hydraulic schematics BBBDE020



TTE-WEZ	TopTronic® E basic module heat generator (installed)
TTE-PS	TopTronic® E buffer module
VF1	Flow temperature sensor 1
B1.1	Flow temperature guard (if required)
MK1	Pump mixer circuit 1
YK1	Actuator mixer 1
AF	Outdoor sensor
SF	Calorifier sensor
SF2	Calorifier sensor 2
PF1	Buffer sensor 1
PF2	Buffer sensor 2
Y7	Switching valve
CP	Condenser pump
MWQ	Delivery pump in heat source intermediate circuit (cold-water design)

Option

RBM	TopTronic® E room control module
TTE-GW	TopTronic® E Gateway
TTE-FE HK	TopTronic® E module expansion heating circuit
VF2	Flow temperature sensor 2
B1.2	Flow temperature guard (if required)
MK2	Pump mixer circuit 2
YK2	Actuator mixer 2

Important notices
- The example schematics merely show the basic principle and do not contain all information required for installation. Installation must be carried out according to the conditions on-site, dimensioning and local regulations.
- With underfloor heating a flow temperature monitor must be built in.
- Shut-off devices to the safety equipment (pressure expansion tank, safety valve, etc.) must be secured against unintentional closing!
- Install sacks to prevent single-pipe gravity circulation!