TRANE

TRANE CUBE FLEX

Air-to-water Scroll Heat Pumps For High Hot Water Temperature Applications

Model CXB HT
Cooling capacity 18 - 32 kW
Heating capacity 23 - 38 kW

Model FLEX HP HT
Cooling capacity 50 - 144 kW
Heating capacity 54 - 154 kW

TRANE TECHNOLOGIES

Air-to-water Scroll Heat Pumps
For High Hot Water Temperature Applications

An advanced and sustainable alternative to gas boilers in residential or light commercial buildings

Unit description

- Scroll compressor with innovative vapor injection system, optimized for high temperature heating
- Inverter driven axial fans (CXB HT) - optional for FLEX HP HT
- Brazed plate heat exchanger with pressure differential switch and antifreeze protection electric heater
- Condenser coils with copper tubes and aluminum fins
- Electronic expansion valve
- Microprocessor-based iPRO controller to manage unit on/off mode, operating mode settings and more
- Communication card RS485
- Dedicated accessories for very low air temperature operation (snow free cover, electric heater on condenser coil, etc..)

Accessories

- Remote control display
- Flow switch
- Automatic water filling
- Spring anti vibration
- Water filter
- Victaulic kit
- 3 way valves for hot sanitary water production

Options

- Low noise configurations
- Oversized water pump for operation with >25% glycol
- Automatic circuit breakers for compressors and/or fans
- Low ambient air temperature kit for heating operation with air temperatures between -10°C and -20°C
- Control panel electric heater with thermostat
- Over/under voltage + phase failure protection relay
- External heat source management for space heating and hot sanitary water
- Soft starter
- Electrical power supply without neutral
- Serial card with BACnet Protocol MS/TP or TCP/IP
- Gateway Modbus LonTalk™
- Auxiliary electric heater for water tank
- Special treatments on condenser coils

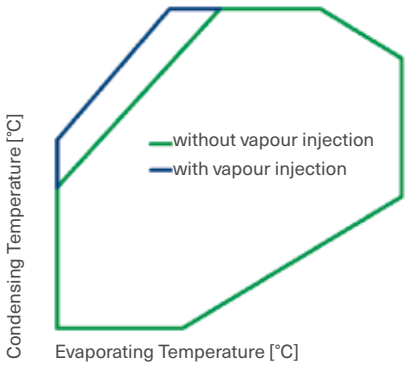
Unique compressor technology

Advantages

- Unique compressor technology for heat pumps applied in low ambient air conditions.
- Cooling provided by inter-stage injection allows the operation of the compressor over a larger envelope compared to a conventional single-stage scroll compressor, providing higher heat delivery temperatures at low evaporating temperatures.
- More heat delivered with a higher COP compared to a conventional cycle.

Vapour injection scroll compressor is for use with an economized vapour compression cycle **heat pump**.

Position of the injection ports in the scroll set and the internal tubing connecting the injection inlet with the scroll set



Scroll compressor without injection is limited by the compressor high discharge gas temperature.

The vapour injection scroll offers advantages particularly in air/water heating applications where the leaving hot water temperatures need to be high.

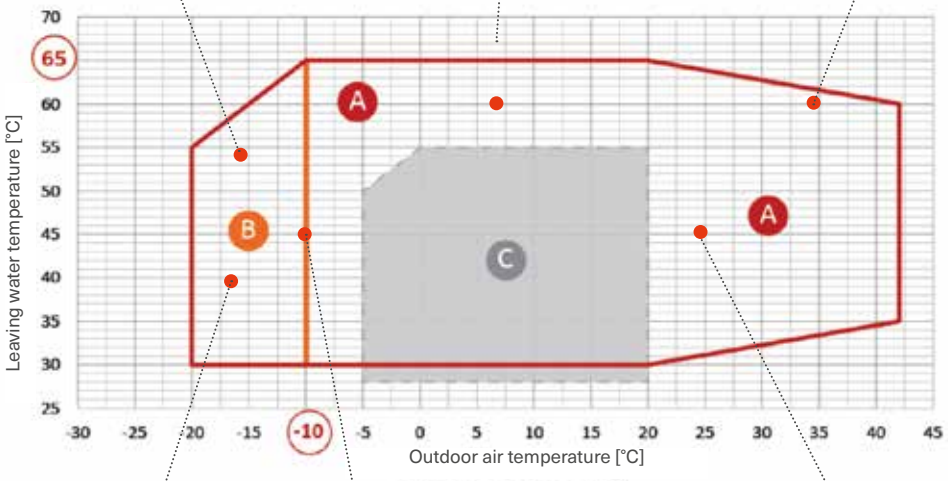
Operating map - heating mode

HT units have an exceptionally wide heating operating map to reach high leaving hot water temperatures even at very low ambient air temperatures.

Restaurant (Germany)

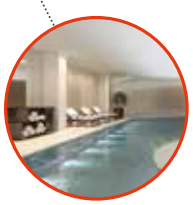
Luxury home (UK)

Professional restaurant kitchen (Europe)



Ski lift ticket office (Austria)

Small office building (Sweden)



Small hotel with swimming pool (Poland)

General data

CXB HT	Unit size	023	029	038
Cooling performance according to EN 14511 (1)				
Total cooling capacity	kW	18.5	23.7	31.9
Total power input	kW	7.1	9.3	13.2
Total EER		2.61	2.55	2.41
Water flow	m^3/h	3.18	4.08	5.49
Water pressure drop	kPa	5.7	8.5	15.7
Heating performance according to EN 14825 (1)				
Total heating capacity	kW	22.5	29.2	37.7
Total power input	kW	6.8	8.5	11.6
Total COP		3.31	3.44	3.25
Water flow	m^3/h	3.87	5.02	6.48
Water pressure drop	kPa	8.47	12.9	22.0
Seasonal efficiency in heating according to EN 14825 (2)				
P rated	kW	17.9	23.1	30.0
$\eta_{s,heating}$	%	115%	120%	115%
SCOP		2.96	3.06	2.95
Hydraulic module (optional)				
Available pump pressure	kPa	147	177	144
Water tank volume	l	100	100	100
Expansion vessel	l	1	1	1
Compressors				
Number of compressors	n	2	2	2
Number of refrigerant circuits	n	1	1	1
Type of control / part load steps			Step control / 2 steps	
Minimum capacity step	%	50%	50%	50%
Refrigerant charge (3)	kg	11	20	19
Oil charge	kg	2.5	2.5	3.8
Fans				
Number of fans		2	2	2
Air flow	m^3/h	11013	10606	15150
Power input for each fan (in chiller mode)	kW	0.14	0.14	0.4
Absorbed current for each fan	A	0.58	0.58	1.70
Sound level (4)				
Sound pressure level at 10 m	dB(A)	46	46	46
Dimensions and weights				
Length	mm	1807	2061	2061
Depth	mm	780	780	780
Height	mm	1687	1687	1687
Additional height for water tank	mm	380	380	380
Operating weight	kg	386	454	468
Additional weight for water pump	kg	12	12	12
Additional weight for water tank	kg	190	190	190

(1) Cooling: outdoor air temperature 35°C and chilled water temperature 12/7°C. Heating: outdoor air temperature 7°C/90% RH and hot water 40/45°C
(2) Ecodesign rating for Heat pump space heaters, medium temperature.
Outdoor air temperature: 7°C dry bulb/6°C wet bulb and hot water temperature in/out: 47°C/55°C.
(3) Refrigerant charge values are not binding, the effective quantity of R410A refrigerant is provided on the unit nameplate.
(4) Sound data based on units without hydraulic module.

FLEX HP HT	Unit size	050	060	070	075	085	095	110	130	140	145
Cooling performance according to EN 14511 (1)											
Total cooling capacity	kW	50,3	58,2	67,5	74,0	84,3	94,1	109,9	130,0	137,0	143,7
Total power input	kW	20,2	22,6	24,0	27,2	33,7	38,8	41,7	47,5	50,6	53,9
Total EER		2,49	2,58	2,82	2,72	2,50	2,43	2,64	2,74	2,71	2,67
Heating performance according to EN 14825 (1)											
Total heating capacity	kW	53,9	60,9	69,9	77,1	90,5	101,1	117,4	138,6	146,7	153,9
Total power input	kW	18,8	21,2	22,5	25,1	31,2	35,3	39,1	45,9	48,2	50,9
Total COP		2,87	2,88	3,11	3,07	2,90	2,86	3,00	3,02	3,04	3,02
Seasonal efficiency in heating according to EN 14825 (2)											
P rated	kW	39,4	44,6	51,1	56,4	66,2	73,9	85,9	101,0	107,0	113,0
ηs , heating	%	111%	111%	120%	119%	112%	110%	116%	117%	118%	117%
SCOP		2,90	2,86	11,30	3,05	2,87	2,40	2,98	2,99	3,02	3,00
Sound level (4)											
Sound power level	dB(A)	86	87	87	87	88	88	89	90	90	90
Sound pressure level at 5m	dB(A)	59	60	60	60	61	61	62	63	63	63
Sound power level S (Super Low Noise)	dB(A)	81	82	82	82	83	83	84	85	85	85
Dimensions and weights											
Length	mm	2558	2558	2558	2558	3599	3599	3599	2558	2558	2558
Depth	mm	1100	1100	1100	1100	1100	1100	1100	2200	2200	2200
Height	mm	2090	2090	2090	2090	2205	2205	2205	2205	2205	2205
Operating weight	kg	736	786	841	845	1140	1210	1304	1368	1374	1379

(1) Cooling: outdoor air temperature 35°C and chilled water temperature 12/7°C. Heating: outdoor air temperature 7°C/90% RH and hot water 40/45°C
(2) Ecodesign rating for Heat pump space heaters, medium temperature.
Outdoor air temperature: 7°C dry bulb/6°C wet bulb and hot water temperature in/out: 47°C/55°C. ηs,h / SCOP as defined in Ecodesign requirements for Space heaters and combination heaters with Prated < 400kW - EU Regulation N° 813/2013 of 2 August 2013
(3) Refrigerant charge values are not binding, the effective quantity of R410A refrigerant is provided on the unit nameplate.
(4) Sound data based on units without hydraulic module.

The Trane advantage

Trane is recognized as a world leader with over 100 years of experience in creating and sustaining safe, comfortable and energy efficient environments while improving the performance of buildings around the world.

Trane solutions optimize indoor environments with a broad portfolio of energy efficient heating, ventilating and air conditioning systems, building services, parts support and advanced controls.

To ensure your equipment continues working at its optimum throughout the life of the building, Trane provides a full range of service solutions combined with in-house expertise and an extensive support network.

Trane – by Trane Technologies (NYSE: TT), a global climate innovator – creates comfortable, energy efficient indoor environments through a broad portfolio of heating, ventilating and air conditioning systems and controls, services, parts and supply. For more information, please visit *trane.eu* or *tranetechnologies.com.*

CG-SLB051-GB July 2022