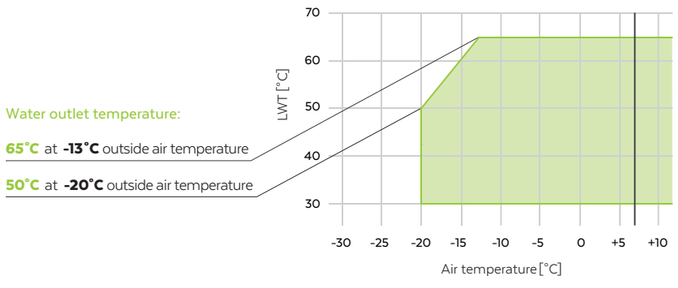
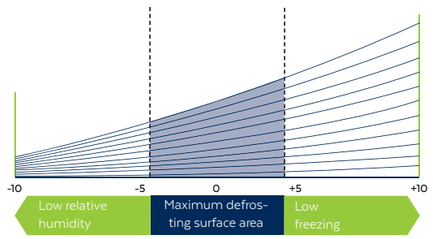
AIR-COOLED R290 HEAT PUMPS

Optimised heat pump
SKADEC heat pumps are specially optimised for heating operation. The advantage of these components is that they significantly improve the performance and efficiency in heating operations. Cold water provision can also be achieved using the highly efficient heat pump. The optimised housing ensures controlled drainage of condensation water. Most suppliers of heat pumps, on the other hand, focus on the cooling mode, which is why these pumps are also known as „reversible chillers“.



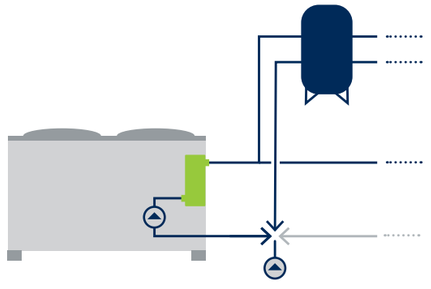


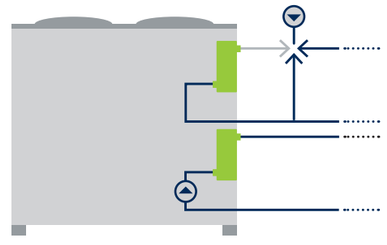
Integrated defrosting management
- Increased overall efficiency due to reduced defrosting frequency
- Defrosting on demand
- Minimum defrosting cycles through sliding defrosting function
- Pressure monitoring depending on the outside air temperature

Our multi-circuit heat pumps, designed with separate air and cold sides, provide a defrosting function independent of the circuit used, leading to the following advantages:
- The heating function is always guaranteed. While one circuit is defrosting, the second circuit continues to generate heat.
- Increased safety for hot water heating
- Higher efficiency due to the targeted defrosting function

Service hot water heating (optional)
In classic operation, heat pumps work predominantly purely for comfort applications. In addition to comfort applications, domestic hot water can also be heated by the heat pump. The heat pump then operates in two operating points and at two temperature levels. A 3-way valve installed outside the unit is controlled via the heat pump.

Heat recovery in refrigeration mode (optional)
The heat pump has an optional second heat exchanger for heat recovery in cooling mode. The excess heat can be used, for example, to heat drinking water. In this case, the system has four hydraulic connections. A constant flow can be ensured via an externally installed 3-way valve.





Manufacturing quality / components from well-known manufacturers
SKADEC heat pumps are manufactured to German industrial standards. Great emphasis is placed on high quality of workmanship. Our heat pumps are exclusively equipped with Bitzer and Bock reciprocating compressors. The German products stand for the highest quality and reliability.

Automation / VDE-wired control cabinet
As standard, we use PLC controllers in all heat pumps. The control cabinets of the heat pumps are wired and tested according to VDE guidelines. We attach great importance to a standard-compliant load distribution and vibration-proof design.

Advantages

- High efficiency due to inverter-controlled reciprocating compressors
- Natural refrigerant propane (R290) without ozone depletion potential and low global warming potential (GWP=3).
- Not subject to F-gas regulation
- High-efficiency EC axial fans (standard)
- Control cabinet separated from the compressor area
- Compact size
- Control cabinet wired according to VDE
- Powerful PLC controller

Versions / Options

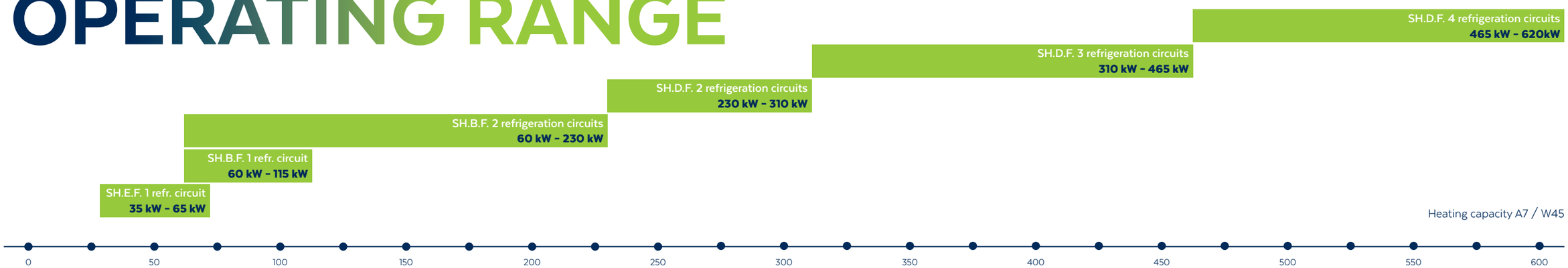
Machines and refrigeration circuits
- Low-noise design (standard)
- Frequency converter for all compressors (standard)
- Improved sound-insulation for housing SH.B
- Lamella anti-corrosion coating
- Spring vibration damper
- Housing colour as requested in RAL
- Monitoring package consisting of cooling and energy meters
- Double safety valve with shuttle valve

Hydraulic module
- Pump group includes pump, dirt filter, safety valve, drain, vent, expansion tank
- Standard pump (high or low discharge head)
- Frequency-controlled pump (high or low discharge head)
- Standard double pump (high or low discharge head)
- Frequency-controlled double pump (high or low discharge head)
- Heat tracing (medium water)
- Check valve upstream of the pump
- Pressure transmitter (downstream or upstream of the pump)

Heat recovery
- Service hot water heating in cooling mode
- Mixing valve for constant flow
- Heat tracing (medium water)

Automation
- WAGO PLC PFC (standard)
- Siemens S7-S1200 or S7-1500
- Industrial VPN Cloud & remote maintenance router
- Modbus TCP interface (standard)
- Interfaces: Bacnet IP, Modbus RTU, Profibus, Profinet (further interfaces on request)
- 7“ touch screen (standard)
- 10“ touch screen
- 15“ touch screen

OPERATING RANGE



Air-cooled R290 heat pumps

Type SKADEC SH		***E.F.031.S.1.1***	***E.F.039.S.1.1***	***E.F.048.S.1.1***	***E.F.055.S.1.1***	***E.F.061.S.1.1***	***B.F.056.S.1.1***	***B.F.062.S.1.1***	***B.F.067.S.1.1***
Standard version									
Refrigeration capacity[1]	kW	31	38,9	47,7	54,7	61,5	56,3	62,3	67,55
Power consumption	kW	9,4	12,6	16,39	19,33	22,12	17,7	20,29	22,44
EER		3,31	3,09	2,91	2,83	2,78	3,18	3,07	3,01
Heating capacity[2]	kW	36,2	45,4	54,7	55,3	65,2	66,2	73,35	74,3
Power consumption	kW	9,7	12,4	16,23	16,17	19,06	17,42	19,56	19,55
COP		3,74	3,66	3,37	3,42	3,42	3,8	3,75	3,8
$\eta_{s,h}$	%	227,6	227,6	195,1	164,6	176	200,9	200,5	197,8
SCOP[3]		5,76	5,76	4,95	4,48	4,48	5,1	5,09	5,02
SEER		5,31	5,53	4,63	4,31	4,48	4,69	4,7	4,66
$\eta_{s,c}$		209,3	218,3	171,3	169,3	176	184,6	185	183,5
System data									
Refrigerant	Type	R290							
Number of compressors	n	1							
Number of independent refrigeration circuits	n	1							
Refrigerant capacity per circuit[4]	kg	7	8	8	8,5	8,5	11	12	12
Sound pressure level in 10m[5]	db(A)	49	50	56	56	57	51	51	52
Fan									
Type		EC							
Number of fans	n	3					2		
Air flow	m^3/h	20076	20076	25749	25749	25749	27920	27920	27920
Plate heat exchanger									
Number of plate heat exchangers	n	1							
Flow rate cooling	m^3/h	5,31	6,66	8,17	9,37	10,53	9,64	10,67	11,57
Pressure drop cooling	kPa	13,8	20,7	29,9	9,45	11,7	9,95	11,9	13,8
Flow rate heating	m^3/h	6,24	7,83	9,43	9,53	11,24	11,42	12,65	12,81
Pressure drop heating	kPa	3,6	5,6	8,1	4,1	11,4	6,1	14,2	14,5
Power supply									
Max. power consumption	A	33,2	33,2	39,9	44,9	55,7	38,9	42,9	49,7
Start-up current	A	< 33,2	< 33,2	< 39,9	< 44,9	< 55,7	< 38,9	< 42,9	< 49,7
Dimensions and weight									
Lenght	mm	2614	2614	2614	2614	2614	3118	3118	3118
Width	mm	946	946	946	946	946	1234	1234	1234
Height	mm	1733	1733	1733	1733	1733	2238	2238	2238
Operating weight[6]	kg	810	810	830	835	860	1350	1390	1400

New series up to 70 kW, energy efficiency label in process

[1] Outside air temperature 35°C, medium temperature 12/7°C, medium water. The values conform to the EN 14511 standard.
[2] Outside air temperature 7°C, medium temperature 40/45°C, medium water. The values conform to the EN 14511 standard.
[3] SCOP specified according to EN14825, average climate, application at low temperatures
[4] Theoretical values refer to the basic unit. The actual amount of gas charged in the unit may differ.
[5] Sound pressure level at a distance of 10m in the free field and at the extended point (enveloping surface method according to ISO 3744), tolerance +/-2 dB(A)
[6] Individual values may differ. Data based on the basic version without accessories.

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Type SKADEC SH		***B.F.070.S.1.1***	***B.F.071.S.1.1***	***B.F.089.S.1.1***	***B.F.048.S.2.2***	***B.F.052.S.2.2***	***B.F.059.S.2.2***	***B.F.066.S.2.2***	***B.F.086.S.2.2***
Standard version									
Refrigeration capacity[1]	kW	69,75	71,25	88,8	48,3	52,5	58,8	65,8	74,9
Power consumption	kW	22,94	23,59	30,55	15,2	17,1	18,6	21,6	25,9
EER		3,04	3,02	2,91	3,17	3,08	3,15	3,04	2,89
Heating capacity[2]	kW	94,8	109,1	115	62,3	76,2	90,2	100	113,4
Power consumption	kW	25,9	30,56	34,23	16,8	21,3	25,0	28,01	32,31
COP		3,66	3,57	3,36	3,71	3,58	3,61	3,57	3,51
$\eta_{s,h}$	%	188,3	190,9	186,3	189,5	189,5	199,9	206,4	193,8
SCOP[3]		4,78	4,85	4,73	4,81	4,81	5,07	5,23	4,99
SEER		4,57	4,43	4,4	4,22	4,22	4,16	4,14	4,09
$\eta_{s,c}$		179,7	174,1	173,1	165,9	165,9	163,3	162,8	160,8
System data									
Refrigerant	Type	R290							
Number of compressors	n	1			2				
Number of independent refrigeration circuits	n	1			2				
Refrigerant capacity per circuit[4]	kg	14	14	14	6	7	8,5	11	11
Sound pressure level in 10m[5]	dB(A)	54	55	56	50	50	51	52	54
Fan									
Type		EC							
Number of fans	n	2							
Air flow	m^3/h	27920	27920	47646	28600	28600	28600	28600	28600
Plate heat exchanger									
Number of plate heat exchangers	n	1							
Flow rate cooling	m^3/h	11,95	12,2	15,21	8,27	8,99	10,07	11,27	12,83
Pressure drop cooling	kPa	14,6	15,2	22,7	16	18,5	22,7	13,2	16,7
Flow rate heating	m^3/h	16,23	18,81	19,83	10,74	13,14	15,55	17,24	19,55
Pressure drop heating	kPa	22,4	29,9	33,2	22,4	33,1	46	25,3	32,3
Power supply									
Max. power consumption	A	56,9	67,8	67,8	46,1	46,1	55,9	62,1	72,1
Start-up current	A	< 56,9	< 67,8	< 67,8	< 46,1	< 46,1	< 55,9	< 62,1	< 72,1
Dimensions and weight									
Lenght	mm	3118	3118	3118	3425	3425	3425	3425	3425
Width	mm	1234	1234	1234	1147	1147	1147	1147	1147
Height	mm	2238	2238	2238	2418	2418	2418	2418	2418
Operating weight[6]	kg	1410	1410	1480	1650	1690	1780	1790	1850

New series up to 70 kW, energy efficiency label in process

[1] Outside air temperature 35°C, medium temperature 12/7°C, medium water. The values conform to the EN 14511 standard.
[2] Outside air temperature 7°C, medium temperature 40/45°C, medium water. The values conform to the EN 14511 standard.
[3] SCOP specified according to EN14825, average climate, application at low temperatures
[4] Theoretical values refer to the basic unit. The actual amount of gas charged in the unit may differ.
[5] Sound pressure level at a distance of 10m in the free field and at the extended point (enveloping surface method according to ISO 3744), tolerance +/-2 dB(A)
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Air-cooled R290 heat pumps

Type SKADEC SH		***B.F.113.S.2.2***	***B.F.125.S.2.2***	***B.F.135.S.2.2***	***B.F.139.S.2.2***	***B.F.142.S.2.2***	***B.F.178.S.2.2***	***D.F.206.S.2.2***	***D.F.216.S.2.2***
Standard version									
Refrigeration capacity[1]	kW	112,6	124,6	135,1	139,5	142,5	177,6	206,5	216,5
Power consumption	kW	35,41	40,59	44,88	45,89	47,19	61,10	69,76	73,89
EER		3,18	3,07	3,01	3,04	3,02	2,91	2,96	2,93
Heating capacity[2]	kW	132,4	146,7	148,6	189,6	218,2	230	238,9	255,74
Power consumption	kW	34,84	39,12	39,11	51,8	61,12	68,45	68,65	73,7
COP		3,8	3,75	3,8	3,66	3,57	3,36	3,48	3,47
$\eta_{s,h}$	%	200	191,8	187	189,4	207,4	175,7	183	186,7
SCOP[3]		5,08	4,87	4,75	4,81	5,26	4,47	4,65	4,77
SEER		4,76	5,19	5,07	5,07	5,07	4,35	4,34	4,39
$\eta_{s,c}$		187,5	204,5	200	199,8	199,8	170,9	170,5	172,4
System data									
Refrigerant	Type	R290							
Number of compressors	n	2							
Number of independent refrigeration circuits	n	2							
Refrigerant capacity per circuit[4]	kg	11,5	12	12	13	13	14	18	18,5
Sound pressure level in 10 m[5]	dB(A)	54	54	55	57	58	59	60	60
Fan									
Type		EC							
Number of fans	n	4							
Air flow	m^3/h	55840	55840	55840	55840	55840	95292	112848	112848
Plate heat exchanger									
Number of plate heat exchangers	n	1							
Flow rate cooling	m^3/h	19,28	21,34	23,14	23,89	24,4	30,42	35,36	37,08
Pressure drop cooling	kPa	34,8	20,5	23,8	25,2	26,2	13,9	18,3	20
Flow rate heating	m^3/h	22,83	25,3	25,62	32,69	37,59	39,66	41,2	44,1
Pressure drop heating	kPa	43,6	25,1	25,7	41,4	54,4	20,2	21,6	24,5
Power supply									
Max. power consumption	A	76,3	84,3	97,9	112,3	134,1	139,5	138,5	143,1
Start-up current	A	< 76,3	< 84,3	< 97,9	< 112,3	< 134,1	< 139,5	< 138,5	< 143,1
Dimensions and weight									
Length	mm	5755	5755	5755	5755	5755	5755	4505	4505
Width	mm	1224	1224	1224	1224	1224	1224	2283	2283
Height	mm	2310	2310	2310	2310	2310	2310	2395	2395
Operating weight[6]	kg	2610	2610	2640	2680	2690	2630	2950	2960

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[3] SCOP specified according to EN14825, average climate, application at low temperatures
[4] Theoretical values refer to the basic unit. The actual amount of gas charged in the unit may differ.
[5] Sound pressure level at a distance of 10m in the free field and at the extended point (enveloping surface method according to ISO 3744), tolerance +/-2 dB(A)
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Type SKADEC SH		***D.F.236.S.2.2***	***D.F.257.S.2.2***	***D.F.309.S.3.3***	***D.F.325.S.3.3***	***D.F.354.S.3.3***	***D.F.360.S.3.3***
Standard version							
Refrigeration capacity[1]	kW	236	257	309,7	324,8	353,9	359,4
Power consumption	kW	81,66	90,81	104,63	110,85	122,46	123,08
EER		2,89	2,83	2,96	2,93	2,89	2,92
Heating capacity[2]	kW	281	310,1	358,4	373,5	421,5	465,2
Power consumption	kW	80,98	89,88	102,99	107,64	121,47	134,84
COP		3,47	3,45	3,48	3,47	3,47	3,45
$\eta_{s,h}$	%	173,8	172,1	189,1	196	185,1	180,4
SCOP[3]		4,42	4,38	4,82	4,97	4,7	4,59
SEER		4,36	4,27	4,45	4,46	4,46	4,39
$\eta_{s,c}$		171,4	167,6	175	175,5	175,5	172,5
System data							
Refrigerant	Type	R290					
Number of compressors	n	2		3			
Number of independent refrigeration circuits	n	2		3			
Refrigerant capacity per circuit[4]	kg	19	19	18	18,5	19	19
Sound pressure level in 10 m[5]	dB(A)	61	61	61	61	62	61
Fan							
Type		EC					
Number of fans	n	4		6			
Air flow	m^3/h	112848	112848	169272	169272	169272	169272
Plate heat exchanger							
Number of plate heat exchangers	n	1		3			
Flow rate cooling	m^3/h	40,42	44,01	53,02	55,64	60,62	61,55
Pressure drop cooling	kPa	23,4	27,3	29,7	32,5	37,9	39
Flow rate heating	m^3/h	48,46	53,46	61,82	64,41	72,68	80,24
Pressure drop heating	kPa	29,2	35	9,9	10,7	13,3	15,9
Power supply							
Max. power consumption	A	162,1	206,7	207	213,9	242,4	309,3
Start-up current	A	< 162,1	< 206,7	< 207	< 213,9	< 242,4	< 309,3
Dimensions and weight							
Length	mm	4505	4505	6010	6010	6010	6010
Width	mm	2283	2283	2283	2283	2283	2283
Height	mm	2395	2395	2355	2355	2355	2355
Operating weight[6]	kg	2980	3080	4400	4450	4480	4490

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