

QFDK "ägir II" chilled water cassette



Key features

- Chilled water cassette
- Cooling (2 pipes) and heating (4 pipes or electrical heating)
- ECM version for low energy consumption



Beautiful design, six different sizes, high control flexibility, easy maintenance: the new AGIRII chilled water cassette is the result of an extended design development. It combines high performances, silent operation and wide choice of controls. The air diffuser is available in two different aesthetical appearance, a steel grill-module (RAL 9010) and an ABS grille module with louvres (RAL 9003). Every unit can be supplied with cooling water coil, heating water coil or electrical heater. The cassette can have fresh air intake and a remote air diffuser can be connected to the unit. The integrated condensate pump is very quiet and has a max. head of 650 mm. A version is also available with a built-in control board to be controlled by an infrared remote control or to be connected to the building management system through the Modbus. Some units can be equipped with a low energy consumption ECM motor that is controlled by an inverter card that makes possible continuous air flow variations.

Quick Selection

Entering air temperature: 27 °C dry bulb - 19 °C wet bulb

Entering water temperature: 7 °C , Δt 5 °C

Table 1: Cooling - standard version

Size	Speed	Air flow m ³ /h	Cooling kW	Sound Pressure Lp dB(A)
QFDK-10	3	520	2.68	36
QFDK-20	3	710	4.33	44
QFDK-30	3	880	5.02	50
QFDK-40	3	1140	6.16	39
QFDK-50	3	1500	9.51	44
QFDK-60	3	1820	11.10	49

Table 2: Cooling - ECM version

Size	Speed	Air flow m ³ /h	Cooling kW	Sound Pressure Lp dB(A)
QFDK-10	3	535	2.75	38
QFDK-20	3	710	4.33	45
QFDK-30	3	880	5.02	51
QFDK-40	3	1165	6.33	39
QFDK-50	3	1770	10.75	48

Specifications

- 6 Sizes from 10 to 60 (Q = 310 - 1820 m³/h & P = 1.8 - 11.1 kW).
- 2-pipe system: - 2 rows for Size 10, 40 (cooling or heating).
3 rows for Size 20, 30, 50, 60 (cooling or heating).
- 4-pipe system - 1 additional row for heating.
- ECM motor for low energy consumption
- Versions: Model 600 x 600 mm - Size 10, 20, 30 to fit into standard ceiling module. Model 800 x 800 mm - Size 40, 50, 60 which allows the best outcome in terms of quietness and of price/performance ratio for these high capacity models.
- Low noise level.
- Easy to assemble, use and maintain.

Product code example

Chilled water cassette QFDK

QFDK-30-1-2-0-1

Metal grill-module

QFDZ-10-06

QFDK "ägir II" chilled water cassette - Description

Aesthetic ABS grill-module

An elegant designed standard ABS grill-module with louvres (standard colour RAL 9003).

Aesthetic metal grill-module

The high quality material used for the ceiling grille ensures no discolouration occurs. The product's hygiene qualities are maintained from a very low static dust collection. The powder coated metal grille (standard in RAL 9010) can be customised to specifier's/architect's choice.

Casing

Made of galvanized steel with inside thermal insulation (closed cell polyethelene 10 mm thick) and outside anticondensate lining.

Electrical connections

All electrical wires are connected to an easy accessible, external box which can include the electronic board.

Fandeck - Standard version

The fan assembly mounted on anti-vibrating supports is extremely silent. The single air inlet radial fan is connected to a 6 speed electric motor with single phase 230V/50Hz supply, insulation class B with an integrated Klixon thermal contact for motor protection. The units are standard supplied with 3 speeds connected and it is possible to change them on site if necessary.

Fandeck - ECM version

The fan assembly mounted on anti-vibrating supports is extremely silent. The fans are connected to a BLAC three phase permanent magnet DC brushless electronic motor that is controlled with current reconstructed according to a sinusoidal wave. The inverter board that controls the motor operation is powered by 230 Volt, single-phase and, with a switching system, it generates a three-phase frequency modulated, wave form power supply. The electric power supply required for the machine is therefore single-phase with voltage of 220 - 240 V and frequency of 50 - 60 Hz.

Heat exchanger

Made of copper tubes and aluminium fins bonded onto the tubes for maximum transfer contact. In the 2-pipe units the coil consist of 2 or 3 rows depending the Sizes (only Size 12 and 42 have a 2 row coil). In the 4-pipe units we have 2 rows for cooling and 1 row for heating (the inner row of the coil is used for heating).

Inletmodule/driptray

High density ABS polystyrene foam driptray, shaped in order to optimize the air diffusion, fire retardant rating B2 to DIN 4102.

Filter

Synthetic washable filter, easily removable

Condensate pump

Float switch centrifugal pump with 650 mm of maximum head, integral with the unit and wired to the main control panel.

Control valve kit

2- or 4-way control valves for ON/OFF operation, are available as standard accessory and delivered separately (not unit mounted).

Nominal performances (Eurovent certified performances) – QFDK, Standard version

2-pipe units

Cooling

Entering air temperature: 27 °C dry bulb - 19 °C wet bulb
 Entering water temperature: 7 °C, Δt 5 °C

Heating

Entering air temperature: 20 °C
 Entering water temperature: 50 °C
 Same water flow rate as for the cooling

Size		QFDK-10			QFDK-20			QFDK-30		
		1	2	3	1	2	3	1	2	3
Speed										
Air flow	m ³ /h	310	420	520	320	500	710	430	610	880
Cooling, total capacity	kW	1.84	2.34	2.68	2.25	3.34	4.33	2.94	3.88	5.02
Cooling, sensible capacity	kW	1.35	1.75	2.04	1.57	2.39	3.18	2.08	2.81	3.74
Heating	kW	2.22	2.90	3.35	2.56	3.93	5.23	3.43	4.63	6.17
Water flow	l/h	316	402	461	387	574	745	506	667	863
ΔP Cooling	kpa	4.9	7.6	9.7	4.6	9.4	15.1	7.5	12.4	19.7
ΔP Heating	kpa	4.1	6.3	8.2	3.0	6.2	9.7	6.7	11.2	17.7
Sound power	dB(A)	33	40	45	33	45	53	41	49	59
Sound pressure	dB(A)	24	31	36	24	36	44	32	40	50
Fan	W	25	32	44	25	44	68	32	57	90
	A	0.11	0.15	0.20	0.11	0.20	0.32	0.15	0.27	0.45
Water content		1.4	1.4	1.4	2.1	2.1	2.1	2.1	2.1	2.1
Dimensions	mm	575 x 575 x 275								

Size		QFDK-40			QFDK-50			QFDK-60		
		1	2	3	1	2	3	1	2	3
Speed										
Air flow	m ³ /h	630	820	1140	710	970	1500	710	1280	1820
Cooling, total capacity	kW	4.21	4.91	6.16	5.31	6.78	9.51	5.31	8.45	11.10
Cooling, sensible capacity	kW	3.03	3.58	4.59	3.71	4.80	6.94	3.71	6.09	8.25
Heating	kW	5.12	6.03	7.77	6.13	8.02	11.70	6.13	10.30	14.00
Water flow	l/h	724	845	1060	913	1166	1636	913	1453	1909
ΔP Cooling	kpa	10.9	14.3	21.6	9.4	14.7	26.9	9.4	21.8	35.6
ΔP Heating	kpa	6.7	9.9	15.1	7.9	12.4	23.0	7.9	18.6	30.6
Sound power	dB(A)	33	40	48	34	40	53	34	48	58
Sound pressure	dB(A)	24	31	39	25	31	44	25	39	49
Fan	W	33	48	77	42	63	120	42	95	170
	A	0.15	0.23	0.36	0.18	0.28	0.53	0.18	0.42	0.74
Water content		3.0	3.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
Dimensions	mm	820 x 820 x 303								

Operation limits

Water flow	MAX. working pressure 8 bars	MIN. entering water temperature: + 5 °C MAX. entering water temperature: + 80 °C
Air flow	Suitable relative humidity 15 - 75%	MIN. entering air temperature: + 6 °C MAX. entering air temperature: + 40 °C
Supply	Single phase 230V 50Hz	
Installation	Max height 4 m .	

Nominal performances (Eurovent certified performances) – QFDK, Standard version

4-pipe units

Cooling

Entering air temperature: 27 °C dry bulb - 19 °C wet bulb
Entering water temperature: 7 °C , Δt 5 °C

Heating

Entering air temperature: 20 °C
Entering water temperature: 70 °C , Δt 10 °C

Size		QFDK-10			QFDK-20			QFDK-30		
		1	2	3	1	2	3	1	2	3
Speed										
Air flow	m ³ /h	310	420	520	320	500	710	430	610	880
Cooling, total capacity	kW	1.85	2.36	2.70	1.85	2.65	3.34	2.36	3.02	3.81
Cooling, sensible capacity	kW	1.34	1.71	1.98	1.34	1.98	2.56	1.75	2.29	2.97
Water flow	l/h	318	406	464	318	456	574	406	519	655
ΔP Cooling	kPa	4.6	6.9	8.8	4.6	8.8	13.4	7.2	11.2	17.0
Heating	kW	2.43	3.02	3.46	2.43	3.46	4.40	3.10	3.97	4.95
Water flow	l/h	209	260	298	209	298	378	267	341	426
ΔP Heating	kPa	5.7	8.5	10.8	5.7	10.8	16.6	8.8	13.8	20.5
Sound power	dB(A)	33	40	45	33	45	53	41	49	59
Sound pressure	dB(A)	24	31	36	24	36	44	32	40	50
Fan	W	25	32	44	25	44	68	32	57	90
	A	0.11	0.15	0.20	0.11	0.20	0.32	0.15	0.27	0.45
Cool. water cont.	l	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Heat. water cont.	l	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Dimensions	mm	575 x 575 x 275								

Size		QFDK-40			QFDK-50			QFDK-60		
		1	2	3	1	2	3	1	2	3
Speed										
Air flow	m ³ /h	630	820	1140	710	970	1500	710	1280	1820
Cooling, total capacity	kW	4.14	5.03	6.34	4.52	5.66	7.71	4.52	6.93	8.89
Cooling, sensible capacity	kW	2.96	3.65	4.69	3.25	4.15	5.83	3.25	5.18	6.84
Water flow	l/h	712	865	1090	777	974	1326	777	1192	1529
ΔP Cooling	kPa	8.8	12.5	18.9	10.3	15.4	26.9	10.3	22.1	34.7
Heating	kW	5.91	7.19	9.10	6.45	8.10	11.0	6.45	9.98	12.70
Water flow	l/h	508	618	783	555	697	946	555	858	1092
ΔP Heating	kPa	9.8	14.0	21.4	11.5	17.4	29.9	11.5	25.3	38.8
Sound power	dB(A)	33	40	48	34	40	53	34	48	58
Sound pressure	dB(A)	24	31	39	25	31	44	25	39	49
Fan	W	33	48	77	42	63	120	42	95	170
	A	0.15	0.23	0.36	0.18	0.28	0.53	0.18	0.42	0.74
Cool. water cont.	l	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Heat. water cont.	l	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Dimensions	mm	820 x 820 x 303								

The sound pressure levels are valid for a room of 100 m³ and a reverberation time of 0.5 sec

Above data are based on Eurovent conditions

Operation limits

Water flow	MAX. working pressure 8 bars	MIN. entering water temperature: + 5 °C MAX. entering water temperature: + 80 °C
Air flow	Suitable relative humidity 15 - 75%	MIN. entering air temperature: + 6 °C MAX. entering air temperature: + 40 °C
Supply	Single phase 230V 50Hz	
Installation	Max height 4 m .	

Cooling selection tables - QFDK, Standard version

2-pipe units

Table 1: Entering air temperature: 27 °C dry bulb - 19 °C wet bulb

Size	Speed	Air flow m3/h	EWT 5 - LWT 10 (°C)			EWT 7 - LWT 12 (°C)			EWT 9 - LWT 14 (°C)			EWT 12 - LWT 17 (°C)		
			Water flow l/h	Total Capacity kW	Sensible Capacity kW	Water flow l/h	Total Capacity kW	Sensible Capacity kW	Water flow l/h	Total Capacity kW	Sensible Capacity kW	Water flow l/h	Total Capacity kW	Sensible Capacity kW
10	High	520	554	3.22	2.22	462	2.68	1.98	362	2.10	1.75	252	1.47	1.47
	Med	420	482	2.80	1.91	403	2.34	1.71	317	1.84	1.50	220	1.28	1.28
	Low	310	417	2.42	1.64	317	1.84	1.32	276	1.61	1.29	188	1.09	1.09
20	High	710	926	5.38	3.64	745	4.33	3.11	617	3.59	2.87	420	2.44	2.44
	Med	500	715	4.15	2.77	575	3.34	2.35	483	2.81	2.18	319	1.86	1.86
	Low	320	508	2.95	1.94	387	2.25	1.55	349	2.03	1.53	225	1.31	1.31
30	High	880	1049	6.10	4.17	863	5.02	3.66	694	4.03	3.29	479	2.79	2.79
	Med	610	835	4.85	3.26	667	3.88	2.76	559	3.25	2.57	376	2.19	2.19
	Low	430	633	3.68	2.44	506	2.94	2.05	430	2.50	1.92	283	1.65	1.65
40	High	1140	1264	7.35	5.00	1060	6.16	4.48	840	4.88	3.95	573	3.33	3.33
	Med	820	1003	5.83	3.92	845	4.91	3.50	674	3.92	3.09	453	2.63	2.63
	Low	630	858	4.99	3.32	722	4.21	2.97	580	3.37	2.62	384	2.23	2.23
50	High	1500	1943	11.30	7.59	1635	9.51	6.80	1301	7.57	5.99	880	5.12	5.12
	Med	970	1374	7.99	5.27	1166	6.78	4.72	939	5.46	4.15	612	3.56	3.56
	Low	710	1070	6.22	4.06	913	5.31	3.64	740	4.30	3.20	434	2.52	2.52
60	High	1820	2277	13.24	9.01	1909	11.10	8.07	1511	8.78	7.11	1044	6.07	6.07
	Med	1280	1722	10.01	6.88	1454	8.45	5.98	1162	6.75	5.27	775	4.51	4.51
	Low	710	1070	6.22	4.06	913	5.31	3.64	740	4.30	3.20	434	2.52	2.52

4-pipe units

Table 2: Entering air temperature: 27 °C dry bulb - 19 °C wet bulb

Size	Speed	Air flow m3/h	EWT 5 - LWT 10 (°C)			EWT 7 - LWT 12 (°C)			EWT 9 - LWT 14 (°C)			EWT 12 - LWT 17 (°C)		
			Water flow l/h	Total Capacity kW	Sensible Capacity kW	Water flow l/h	Total Capacity kW	Sensible Capacity kW	Water flow l/h	Total Capacity kW	Sensible Capacity kW	Water flow l/h	Total Capacity kW	Sensible Capacity kW
10	High	520	569	3.31	2.26	465	2.70	1.98	374	2.18	1.79	260	1.51	1.51
	Med	420	465	2.71	1.83	405	2.36	1.70	309	1.80	1.44	210	1.22	1.22
	Low	310	398	2.31	1.55	318	1.85	1.31	267	1.55	1.22	177	1.03	1.03
20	High	710	718	4.18	2.91	574	3.34	2.49	467	2.72	2.30	330	1.92	1.92
	Med	500	569	3.31	2.26	455	2.65	1.93	374	2.18	1.79	260	1.51	1.51
	Low	320	398	2.31	1.55	318	1.85	1.31	267	1.55	1.22	177	1.03	1.03
30	High	880	791	4.60	3.23	656	3.81	2.89	512	2.98	2.56	366	2.13	2.13
	Med	610	632	3.67	2.53	520	3.02	2.24	413	2.40	2.00	288	1.67	1.67
	Low	430	510	2.97	2.01	405	2.36	1.70	337	1.96	1.59	231	1.35	1.35
40	High	1140	1299	7.55	5.12	1090	6.34	4.58	864	5.02	4.04	586	3.41	3.41
	Med	820	1027	5.97	4.00	866	5.03	3.57	691	4.02	3.15	462	2.68	2.68
	Low	630	842	4.89	3.24	713	4.14	2.90	572	3.33	2.56	374	2.17	2.17
50	High	1500	1588	9.23	6.35	1327	7.71	5.69	1046	6.08	5.02	726	4.22	4.22
	Med	970	1158	6.73	4.53	974	5.66	4.06	775	4.50	3.57	524	3.05	3.05
	Low	710	920	5.35	3.56	778	4.52	3.19	623	3.62	2.81	411	2.39	2.39
60	High	1820	1836	10.67	7.43	1529	8.89	6.66	1199	6.97	5.98	849	4.94	4.94
	Med	1280	1423	8.27	5.64	1191	6.93	5.05	942	5.48	4.46	646	3.75	3.75
	Low	710	920	5.35	3.56	778	4.52	3.19	623	3.62	2.81	411	2.39	2.39

LWT = Leaving water temperature, EWT = Entering water temperature.

Correction factors for cooling capacities - different working conditions.

Multiply the factors by the capacity figures in the 7 - 12 °C table above.

Water (°C)	Total capacity (db / wb / RH)			Sensible capacity (db / wb / RH)		
	25°C / 18°C / 50.7%	26°C / 18.5°C / 48.7%	28°C / 20°C / 48%	25°C / 18°C / 50.7%	26°C / 18.5°C / 48.7%	28°C / 20°C / 48%
7/12	0.82	0.89	1.11	0.90	0.94	1.06
10/15	0.56	0.63	0.82	0.72	0.78	0.90
14/18	0.35	0.41	0.52	0.50	0.58	0.72

Heating selection tables - QFDK, Standard version

2-pipe units

Table 3: Entering air temperature: 20 °C

Size	Speed	Air flow m ³ /h	EWT 45 - LWT 40 (°C)		EWT 50 - LWT 40 (°C)		EWT 60 - LWT 50 (°C)		EWT 70 - LWT 60 (°C)		EWT 80 - LWT 70 (°C)	
			Water flow l/h	Capacity kW	Water flow l/h	Capacity kW	Water flow l/h	Capacity kW	Water flow l/h	Capacity kW	Water flow l/h	Capacity kW
10	High	520	482	2.80	266	3.10	377	4.39	488	5.68	599	6.97
	Med	420	417	2.42	232	2.69	327	3.80	422	4.91	513	5.96
	Low	310	356	2.07	198	2.31	279	3.25	360	4.19	441	5.12
20	High	710	787	4.57	440	5.12	619	7.19	795	9.25	972	11.30
	Med	500	593	3.45	334	3.89	467	5.43	598	6.96	730	8.48
	Low	320	412	2.39	235	2.73	326	3.79	415	4.83	505	5.87
30	High	880	903	5.25	504	5.86	709	8.25	914	10.63	1118	13.00
	Med	610	702	4.08	394	4.58	552	6.42	709	8.25	866	10.070
	Low	430	520	3.02	294	3.42	410	4.77	524	6.10	639	7.43
40	High	1140	1118	6.50	624	7.26	878	10.21	1130	13.14	1383	16.08
	Med	820	865	5.03	486	5.65	681	7.92	874	10.16	1067	12.41
	Low	630	734	4.27	415	4.82	578	6.72	741	8.61	903	10.50
50	High	1500	1683	9.78	951	11.06	1327	15.43	1699	19.76	2071	24.08
	Med	970	1146	6.67	655	7.62	906	10.54	1155	13.43	1403	16.32
	Low	710	876	5.09	505	5.87	694	8.07	882	10.25	1068	12.42
60	High	1820	2015	11.72	1132	13.17	1586	18.45	2037	23.68	2486	28.91
	Med	1280	1471	8.55	834	9.70	1161	13.50	1484	17.26	1807	21.01
	Low	710	876	5.09	505	5.87	694	8.07	882	10.25	1068	12.42

4-pipe units

Table 4: Entering air temperature: 20 °C

Size	Speed	Air flow m ³ /h	EWT 45 - LWT 40 (°C)		EWT 50 - LWT 40 (°C)		EWT 60 - LWT 50 (°C)		EWT 70 - LWT 60 (°C)		EWT 80 - LWT 70 (°C)	
			Water flow l/h	Capacity kW	Water flow l/h	Capacity kW	Water flow l/h	Capacity kW	Water flow l/h	Capacity kW	Water flow l/h	Capacity kW
10	High	520	283	1.65	149	1.73	218	2.54	288	3.34	358	4.17
	Med	420	247	1.44	130	1.51	191	2.22	251	2.92	312	3.63
	Low	310	196	1.14	103	1.20	151	1.76	199	2.31	247	2.87
20	High	710	351	2.04	184	2.14	270	3.14	357	4.15	444	5.17
	Med	500	277	1.61	146	1.69	214	2.48	282	3.28	350	4.07
	Low	320	196	1.14	103	1.20	151	1.76	199	2.31	247	2.87
30	High	880	402	2.34	211	2.45	310	3.60	410	4.76	510	5.93
	Med	610	317	1.84	166	1.94	244	2.84	323	3.75	401	4.67
	Low	430	247	1.44	130	1.51	191	2.22	251	2.92	312	3.63
40	High	1140	771	4.48	410	4.76	596	6.93	783	9.10	970	11.28
	Med	820	609	3.54	324	3.77	471	5.48	618	7.19	766	8.90
	Low	630	501	2.91	267	3.11	388	4.51	508	5.91	629	7.31
50	High	1500	929	5.40	493	5.73	718	8.34	943	10.97	1170	13.60
	Med	970	686	3.99	365	4.25	531	6.17	697	8.10	864	10.04
	Low	710	547	3.18	291	3.39	423	4.92	554	6.45	686	7.98
60	High	1820	1074	6.24	569	6.61	829	9.64	1091	12.68	1353	15.74
	Med	1280	845	4.91	449	5.22	653	7.60	858	9.98	1064	12.37
	Low	710	547	3.18	291	3.39	423	4.92	554	6.45	686	7.98

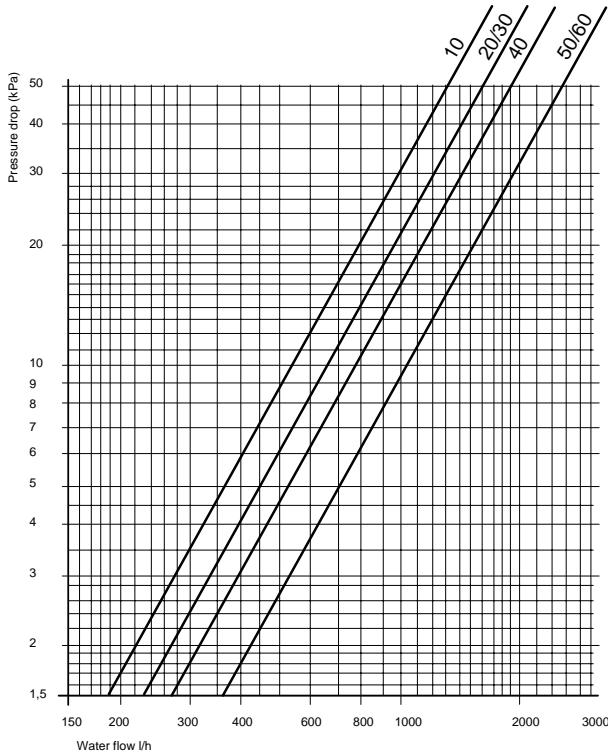
Note!

Other selections are available from our computer program. Ask your local sales representative.

LWT = Leaving water temperature, EWT = Entering water temperature.

Water pressure drop - QFDK, Standard version

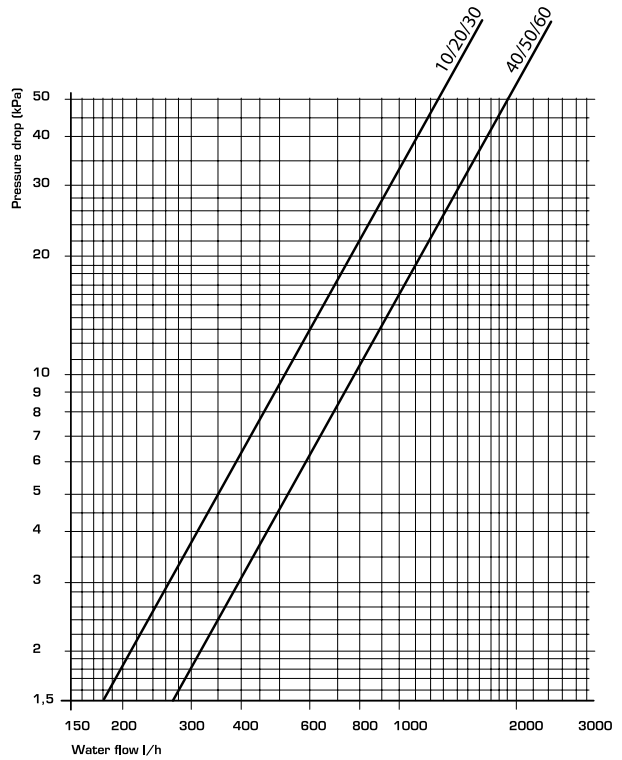
2-pipe unit



°C	K
20	0.94
30	0.90
40	0.86
50	0.82
60	0.78
70	0.74
80	0.70

Pressure drop for mean water temperature of 10°C, for different temperatures multiply the pressure drop figure by the K correction factors in the table

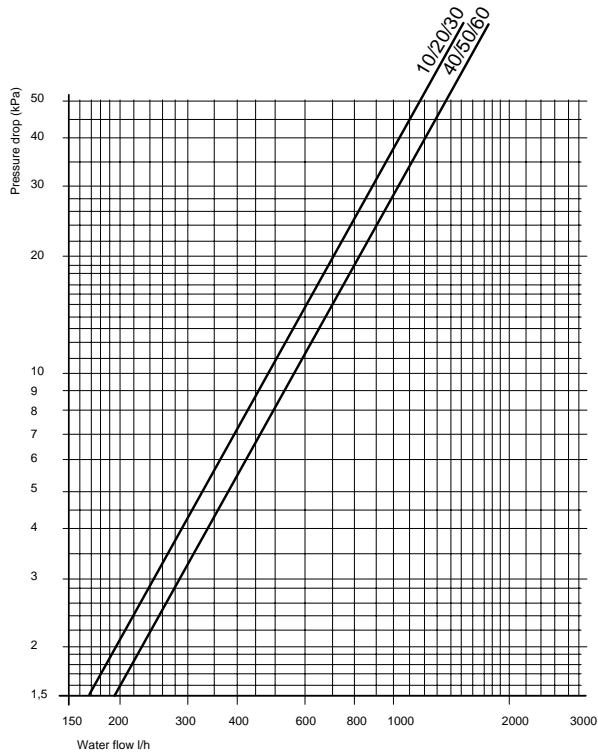
4-pipe unit cooling



°C	K
20	0.94
30	0.90
40	0.86
50	0.82
60	0.78
70	0.74
80	0.70

Pressure drop for mean water temperature of 10°C, for different temperatures multiply the pressure drop figure by the K correction factors in the table.

4-pipe unit heating



°C	K
40	1.14
50	1.08
60	1.02
70	0.96
80	0.90

Pressure drop for mean water temperature of 65°C, for different temperatures multiply the pressure drop figure by the K correction factors in the table.

Performances (Eurovent certified performances) - QFDK, ECM version

2-pipe units

Cooling

Entering air temperature: 27 °C dry bulb - 19 °C wet bulb

Entering water temperature: 7 °C , $\Delta t = 5$ K

Heating

Entering air temperature: 20 °C

Entering water temperature: 50 °C

Same water flow rate as for the cooling

Size		QFDK ECM-10			QFDK ECM-20			QFDK ECM-30			QFDK ECM-40			QFDK ECM-50		
		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Speed																
Air flow	m ³ /h	310	380	535	310	445	710	360	610	880	630	870	1165	710	1130	1770
Cooling, total capacity	kW	1.84	2.17	2.75	2.24	3.05	4.33	2.56	3.87	5.02	4.21	5.15	6.33	5.29	7.72	10.75
Cooling, sensible capacity	kW	1.35	1.61	2.09	1.57	2.17	3.18	1.81	2.81	3.74	3.03	3.77	4.72	3.69	5.53	7.94
Heating	kW	2.22	2.67	3.44	2.55	3.58	5.24	2.96	4.63	6.2	5.11	6.35	8.01	5.89	8.83	12.73
Water flow	l/h	317	373	473	385	524	744	441	666	864	723	885	1089	909	1328	1848
ΔP Cooling	kPa	4.9	6.6	10.1	4.6	9.4	15.1	5.9	12.4	19.7	10.9	15.6	22.7	9.4	18.5	33.6
ΔP Heating	kPa	4	5.5	8.7	3.6	6.6	13.1	4.7	10.5	17.7	8.7	12.8	19.5	7.2	14.9	28.8
Sound power	dB(A)	33	39	47	33	43	54	37	50	60	33	39	48	34	47	57
Sound pressure	dB(A)	24	30	38	24	34	45	28	41	51	24	30	39	25	38	48
Fan	W	5	8	16	5	11	31	7	21	62	10	17	33	10	32	108
Water content	l	1.4	1.4	1.4	2.1	2.1	2.1	2.1	2.1	2.1	3.0	3.0	3.0	4.0	4.0	4.0
Dimensions	mm	575 x 575 x 275			575 x 575 x 275			575 x 575 x 275			820 x 820 x 303			820 x 820 x 303		

4-pipe units

Cooling

Entering air temperature: 27 °C dry bulb - 19 °C wet bulb

Entering water temperature: 7 °C , $\Delta t = 5$ K

Heating

Entering air temperature: 20 °C

Entering water temperature: 60 °C / 70 °C

Size		QFDK ECM-10			QFDK ECM-20			QFDK ECM-30			QFDK ECM-40			QFDK ECM-50		
		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Speed																
Air flow	m ³ /h	310	380	535	310	445	710	360	610	880	630	870	1165	710	1130	1770
Cooling, total capacity	kW	1.85	2.18	2.77	2.09	2.81	3.93	2.38	3.53	4.53	4.3	5.28	6.51	4.98	7.17	9.87
Cooling, sensible capacity	kW	1.34	1.6	2.08	1.49	2.04	2.95	1.71	2.62	3.46	3.08	3.84	4.83	3.52	5.2	7.4
Water flow	l/h	318	375	476	359	483	676	409	608	779	740	908	1120	856	1233	1697
ΔP Cooling	kPa	4.6	6.2	9.5	3.5	5.7	10.5	4.1	8.4	13.1	9.4	13.6	19.8	8.8	17	30.1
Heating	kW	2.43	2.85	3.62	1.98	2.53	3.35	2.2	3.06	3.79	6.14	7.54	9.36	5.22	7.16	9.51
Water flow	l/h	209	245	311	170	217	288	189	263	326	528	649	805	449	616	818
ΔP Heating	kPa	5.7	7.6	11.7	3.5	5.5	9	4.5	7.5	11	10.5	15.5	22.5	6.5	11	18
Sound power	dB(A)	33	39	47	33	43	54	37	50	60	33	39	48	34	47	57
Sound pressure	dB(A)	24	30	38	24	34	45	28	41	51	24	30	39	25	38	48
Fan	W	5	8	16	5	11	31	7	21	62	10	17	33	10	32	108
Cooling water content	l	1.4	1.4	1.4	1.7	1.7	1.7	1.7	1.7	1.7	3.0	3.0	3.0	3.6	3.6	3.6
Heating water content	l	0.7	0.7	0.7	0.5	0.5	0.5	0.5	0.5	0.5	1.4	1.4	1.4	1.1	1.1	1.1
Dimensions	mm	575 x 575 x 275			575 x 575 x 275			575 x 575 x 275			820 x 820 x 303			820 x 820 x 303		

Operation limits

Water flow	MAX. working pressure 8 bars	MIN. entering water temperature: + 5 °C MAX. entering water temperature: + 80 °C
Air flow	Suitable relative humidity 15 - 75%	MIN. entering air temperature: + 6 °C MAX. entering air temperature: + 40 °C
Supply	Single phase 230V 50Hz	
Installation	Max height 4 m .	

Cooling selection tables - QFDK, ECM version

2-pipe units

Table 5: Entering air temperature: 27 °C dry bulb - 19 °C wet bulb

Model	Speed	Air flow m3/h	EWT 5 - LWT 10 (°C)			EWT 7 - LWT 12 (°C)			EWT 9 - LWT 14 (°C)			EWT 12 - LWT 17 (°C)		
			Water flow l/h	Total Capacity kW	Sensible Capacity kW	Water flow l/h	Total Capacity kW	Sensible Capacity kW	Water flow l/h	Total Capacity kW	Sensible Capacity kW	Water flow l/h	Total Capacity kW	Sensible Capacity kW
QFDK ECM-10	High	535	570	3.32	2.33	473	2.75	2.09	368	2.14	1.84	266	1.54	1.54
	Med	380	448	2.6	1.8	373	2.17	1.61	293	1.7	1.42	207	1.21	1.21
	Low	310	379	2.2	1.51	317	1.84	1.35	250	1.45	1.18	174	1.01	1.01
QFDK ECM-20	High	710	888	5.17	3.55	744	4.33	3.18	588	3.42	2.8	410	2.38	2.38
	Med	445	621	3.61	2.43	524	3.05	2.17	419	2.43	1.91	281	1.63	1.63
	Low	310	453	2.63	1.75	385	2.24	1.57	311	1.81	1.38	204	1.18	1.18
QFDK ECM-30	High	880	1035	6.02	4.18	864	5.02	3.74	678	3.94	3.3	482	2.8	2.8
	Med	610	793	4.61	3.15	666	3.87	2.81	528	3.07	2.48	363	2.11	2.11
	Low	360	520	3.02	2.02	441	2.56	1.81	354	2.06	1.59	235	1.37	1.37
QFDK ECM-40	High	1165	1304	7.58	5.27	1089	6.33	4.72	857	4.98	4.17	604	3.51	3.51
	Med	870	1055	6.13	4.21	885	5.15	3.77	701	4.07	3.32	483	2.81	2.81
	Low	630	859	4.99	3.39	723	4.21	3.03	576	3.35	2.67	392	2.28	2.28
QFDK ECM-50	High	1770	2210	12.85	8.88	1848	10.75	7.94	1456	8.47	7	1031	5.99	5.99
	Med	1130	1574	9.15	6.18	1328	7.72	5.53	1059	6.16	4.86	718	4.18	4.18
	Low	710	1068	6.21	4.12	909	5.29	3.69	734	4.27	3.24	482	2.8	2.8

4-pipe units

Table 6: Entering air temperature: 27 °C dry bulb - 19 °C wet bulb

Model	Speed	Air flow m3/h	EWT 5 - LWT 10 (°C)			EWT 7 - LWT 12 (°C)			EWT 9 - LWT 14 (°C)			EWT 12 - LWT 17 (°C)		
			Water flow l/h	Total Capacity kW	Sensible Capacity kW	Water flow l/h	Total Capacity kW	Sensible Capacity kW	Water flow l/h	Total Capacity kW	Sensible Capacity kW	Water flow l/h	Total Capacity kW	Sensible Capacity kW
QFDK ECM-10	High	535	572	3.32	2.32	476	2.77	2.08	372	2.17	1.83	264	1.54	1.54
	Med	380	448	2.61	1.79	375	2.18	1.6	296	1.72	1.41	206	1.2	1.2
	Low	310	378	2.2	1.5	318	1.85	1.34	252	1.46	1.18	172	1	1
QFDK ECM-20	High	710	812	4.72	3.29	676	3.93	2.95	528	3.07	2.6	378	2.2	2.2
	Med	445	576	3.35	2.28	483	2.81	2.04	382	2.22	1.79	262	1.53	1.53
	Low	310	425	2.47	1.66	359	2.09	1.49	287	1.67	1.31	192	1.12	1.12
QFDK ECM-30	High	880	940	5.46	3.86	779	4.53	3.46	606	3.52	3.05	442	2.57	2.57
	Med	610	729	4.24	2.93	608	3.53	2.62	477	2.77	2.31	337	1.96	1.96
	Low	360	486	2.82	1.91	409	2.38	1.71	325	1.89	1.5	221	1.29	1.29
QFDK ECM-40	High	1165	1341	7.79	5.4	1120	6.51	4.83	882	5.13	4.26	619	3.6	3.6
	Med	870	1081	6.29	4.3	908	5.28	3.84	719	4.18	3.38	497	2.89	2.89
	Low	630	877	5.1	3.45	740	4.3	3.08	590	3.43	2.71	398	2.32	2.32
QFDK ECM-50	High	1770	2035	11.83	8.26	1697	9.87	7.4	1332	7.74	6.53	951	5.53	5.53
	Med	1130	1467	8.53	5.82	1233	7.17	5.2	979	5.69	4.58	672	3.9	3.9
	Low	710	1010	5.87	3.93	856	4.98	3.52	687	3.99	3.09	457	2.66	2.66

LWT = Leaving water temperature, EWT = Entering water temperature.

Correction factors for cooling capacities - different working conditions.

Multiply the factors by the capacity figures in the 7 - 12 °C table above.

Water (°C)	Total capacity (db / wb / RH)			Sensible capacity (db / wb / RH)		
	25°C / 18°C / 50.7%	26°C / 18.5°C / 48.7%	28°C / 20°C / 48%	25°C / 18°C / 50.7%	26°C / 18.5°C / 48.7%	28°C / 20°C / 48%
7/12	0.82	0.89	1.11	0.90	0.94	1.06
10/15	0.56	0.63	0.82	0.72	0.78	0.90
14/18	0.35	0.41	0.52	0.50	0.58	0.72

Heating selection tables - QFDK, ECM version

2-pipe units

Table 7: Entering air temperature: 20 °C

Size	Speed	Air flow m3/h	EWT 45 - LWT 40 (°C)		EWT 50 - LWT 40 (°C)		EWT 60 - LWT 50 (°C)		EWT 70 - LWT 60 (°C)		EWT 80 - LWT 70 (°C)	
			Water flow l/h	Capacity kW	Water flow l/h	Capacity kW	Water flow l/h	Capacity kW	Water flow l/h	Capacity kW	Water flow l/h	Capacity kW
QFDK ECM-10	High	535	493	2.87	272	3.17	330	3.83	387	4.49	500	5.82
	Med	380	383	2.22	213	2.48	257	2.99	300	3.49	387	4.51
	Low	310	318	1.85	178	2.07	214	2.49	250	2.91	322	3.75
QFDK ECM-20	High	710	749	4.36	420	4.89	505	5.87	589	6.85	758	8.81
	Med	445	512	2.98	290	3.38	347	4.04	404	4.7	517	6.01
	Low	310	365	2.12	209	2.43	249	2.9	289	3.36	368	4.28
QFDK ECM-30	High	880	886	5.15	494	5.75	595	6.92	696	8.09	896	10.42
	Med	610	663	3.85	373	4.34	448	5.2	522	6.07	670	7.79
	Low	360	423	2.46	241	2.81	288	3.35	335	3.89	427	4.96
QFDK ECM-40	High	1165	1152	6.7	642	7.47	774	9	904	10.51	1165	13.54
	Med	870	912	5.3	512	5.95	615	7.15	717	8.34	922	10.72
	Low	630	734	4.27	415	4.82	497	5.78	578	6.72	741	8.61
QFDK ECM-50	High	1770	1817	10.56	1015	11.81	1222	14.21	1428	16.6	1837	21.37
	Med	1130	1262	7.34	713	8.29	854	9.93	994	11.56	1274	14.82
	Low	710	842	4.9	481	5.6	574	6.67	666	7.74	849	9.87

4-pipe units

Table 8: Entering air temperature: 20 °C

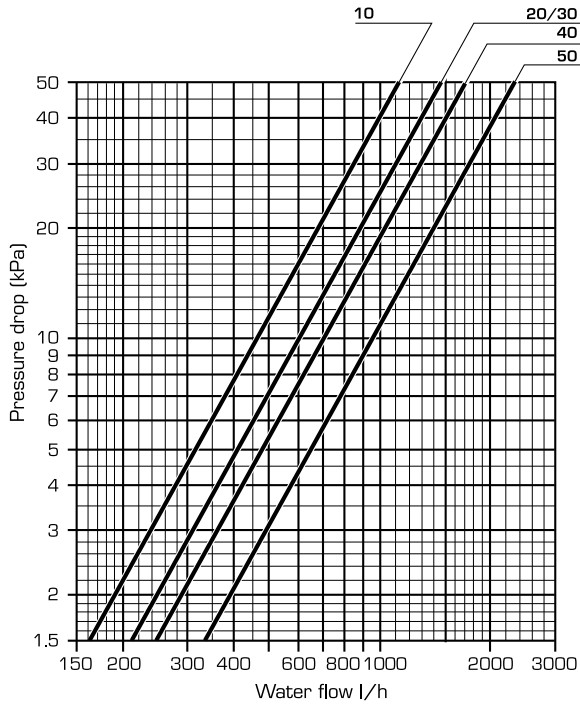
Model	Speed	Air flow m3/h	EWT 45 - LWT 40 (°C)		EWT 50 - LWT 40 (°C)		EWT 60 - LWT 50 (°C)		EWT 70 - LWT 60 (°C)		EWT 80 - LWT 70 (°C)	
			Water flow l/h	Capacity kW	Water flow l/h	Capacity kW	Water flow l/h	Capacity kW	Water flow l/h	Capacity kW	Water flow l/h	Capacity kW
QFDK ECM-10	High	535	305	1.78	161	1.87	198	2.3	236	2.74	311	3.62
	Med	380	241	1.4	127	1.48	156	1.82	186	2.16	245	2.85
	Low	310	205	1.19	108	1.26	133	1.55	158	1.84	209	2.43
QFDK ECM-20	High	710	279	1.62	139	1.61	176	2.04	213	2.48	288	3.35
	Med	445	211	1.23	106	1.23	133	1.55	161	1.87	217	2.53
	Low	310	165	0.96	83	0.97	105	1.22	127	1.47	170	1.98
QFDK ECM-30	High	880	315	1.83	156	1.82	198	2.31	241	2.8	326	3.79
	Med	610	255	1.48	127	1.48	161	1.87	195	2.27	263	3.06
	Low	360	184	1.07	93	1.08	117	1.36	141	1.64	189	2.2
QFDK ECM-40	High	1165	793	4.61	421	4.9	517	6.01	613	7.13	805	9.36
	Med	870	639	3.72	340	3.96	417	4.85	494	5.75	649	7.54
	Low	630	521	3.03	278	3.23	340	3.96	403	4.68	528	6.14
QFDK ECM-50	High	1770	800	4.65	413	4.8	514	5.97	615	7.15	818	9.51
	Med	1130	603	3.5	312	3.63	388	4.51	464	5.39	616	7.16
	Low	710	440	2.56	229	2.67	284	3.3	339	3.94	449	5.22

LWT = Leaving water temperature

EWT = Entering water temperature

Water pressure drop - QFDK, ECM version

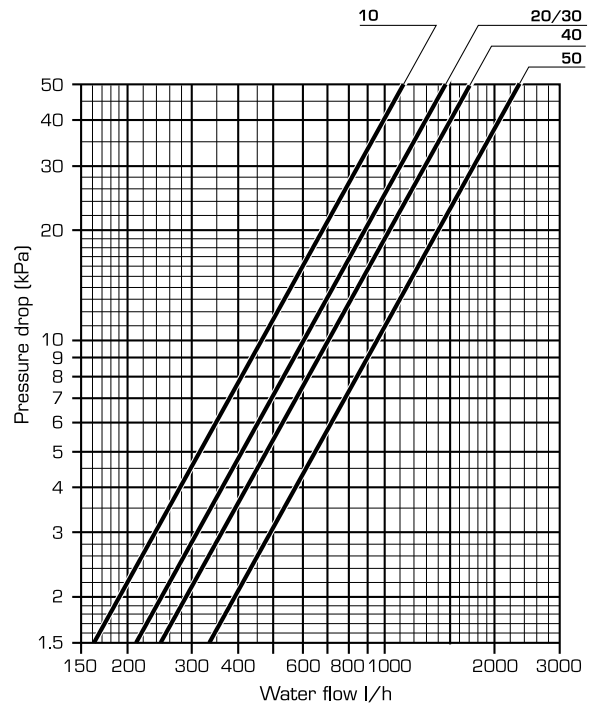
2-pipe unit



°C	K
20	0.94
30	0.90
40	0.86
50	0.82
60	0.78
70	0.74
80	0.70

Pressure drop for mean water temperature of 10°C, for different temperatures multiply the pressure drop figure by the K correction factors in the table

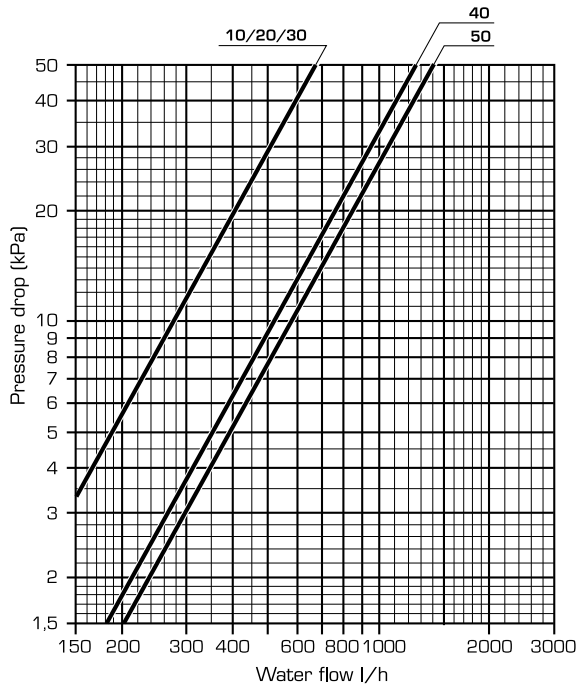
4-pipe unit cooling



°C	K
20	0.94
30	0.90
40	0.86
50	0.82
60	0.78
70	0.74
80	0.70

Pressure drop for mean water temperature of 10°C, for different temperatures multiply the pressure drop figure by the K correction factors in the table.

4-pipe unit heating



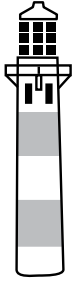
°C	K
40	1.14
50	1.08
60	1.02
70	0.96
80	0.90

Pressure drop for mean water temperature of 65°C, for different temperatures multiply the pressure drop figure by the K correction factors in the table.

Acoustic data

Often sound levels are the key influencing factor in the selection of equipment. The notion sound power is often confused with the notion sound pressure. The two notions can be defined as follows :

Sound power (Lw)



Sound power is the output required producing sound pressure waves. It is not, as such, directly measurable.
 Sound power is established by measuring the sound pressure on the inner surface of a sphere placed around the source. It is measured and stated in Watts.
 Sound power is therefore a measurement, which is not dependent on area or distance, and it is used as a basis for all acoustic data.

Sound pressure (Lp)

This is the alternating pressure produced by waves from a sound source. It is a measure of the noise level or noise intensity.
 Sound pressure is dependent on the average absorption factor of the room, distance from the sound source, the position of the unit in the room, the occupation and is therefore not suitable for calculations of sound propagation or spread.

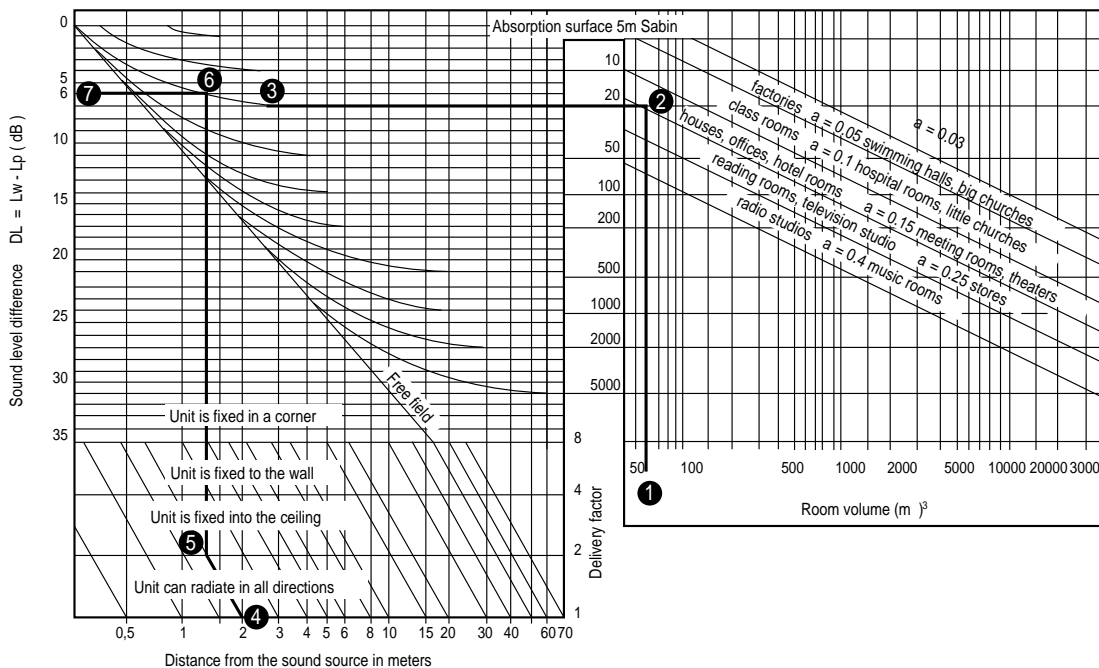
An explanatory example :

The sound power level can be compared with the heating capacity of a boiler. This capacity will remain the same regardless of the thermal characteristics of the installation.

The sound pressure level can be compared with the temperature obtained in a room supplied from the boiler. Obviously, the temperature will vary depending upon the room characteristics and so it is with sound pressure.

Therefore, accurate comparisons between competing equipment should always be made, in the case of the boiler, by comparing boiler capacity and in case of fan coil units by comparing the sound power levels.

Conversion : Sound power level dB(A) » Sound pressure level dB(A)



Office 5.25 m x 4.15 m x 2.75 m » Room volume: 60 m³

QFDK-10 :

Sound power level at low speed is 33 dB(A)

Absorption factor a : 0.15

Distance from the source : 2 m

Direction factor : 2

ΔL : 6 dB

Sound pressure level:

$L_p = L_w(A) - \Delta L$

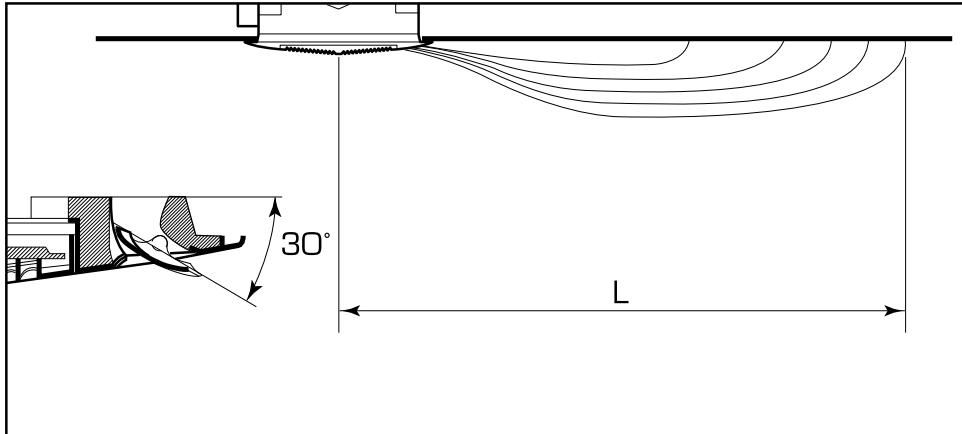
$L_p = 33 - 6 = 27 \text{ dB(A)}$

Air throw data

The air throw indicated in the tables must only be considered the maximum value, as it may change significantly in relation to the dimensions and the positioning of the furniture related to the room in which the cassette unit is installed. The useful throw "L" refers to the distance between the appliance and the point where the air speed is 0.2 m/sec.

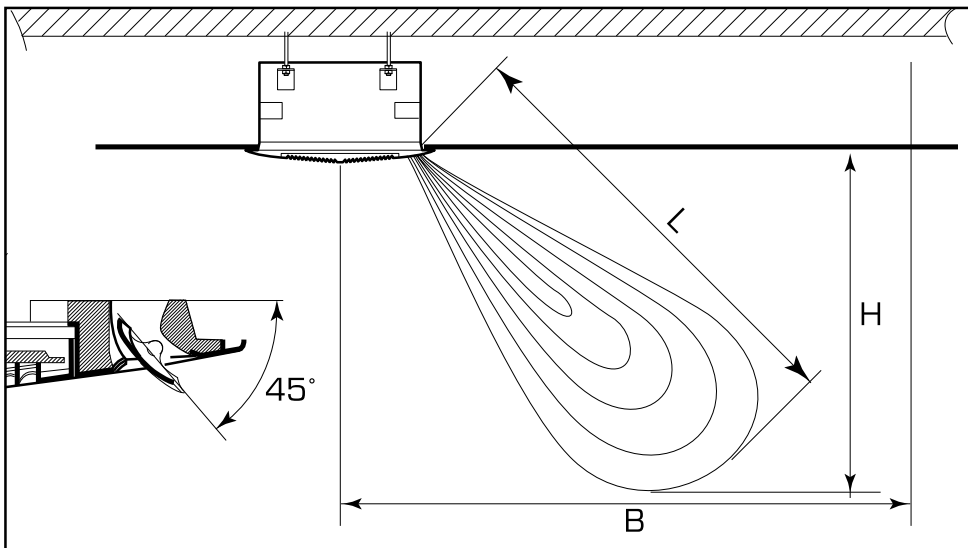
Air throw distance chart - ABS grill-module with adjustable air diffusion louvres

In cooling mode it is recommended that the louver has a gradient of 30°, the so-called "Coanda" effect will occur



Size	QFDK-10			QFDK-20			QFDK-30			QFDK-40			QFDK-50			QFDK-60			
Speed	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
Air throw L	m	3.0	3.5	3.8	3.0	3.8	4.5	3.5	4.2	5.0	3.2	3.7	4.3	3.4	4.0	5.0	3.4	4.6	6.5

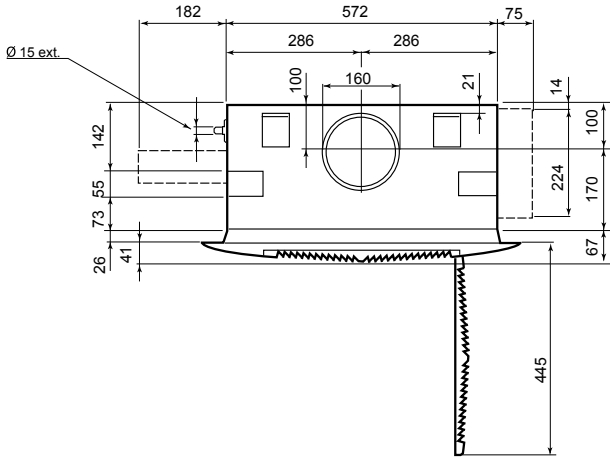
In heating mode it is recommended that the louver has a gradient of 45°, there will be a downwards throw.



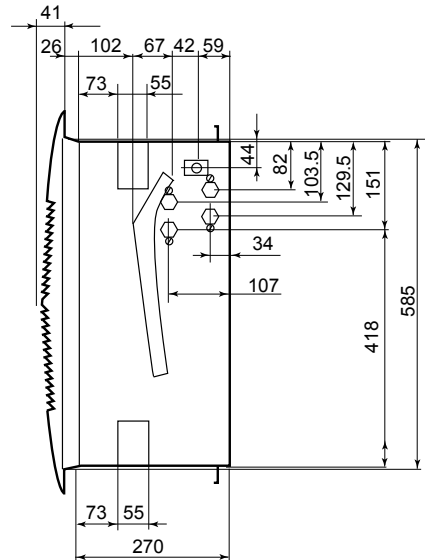
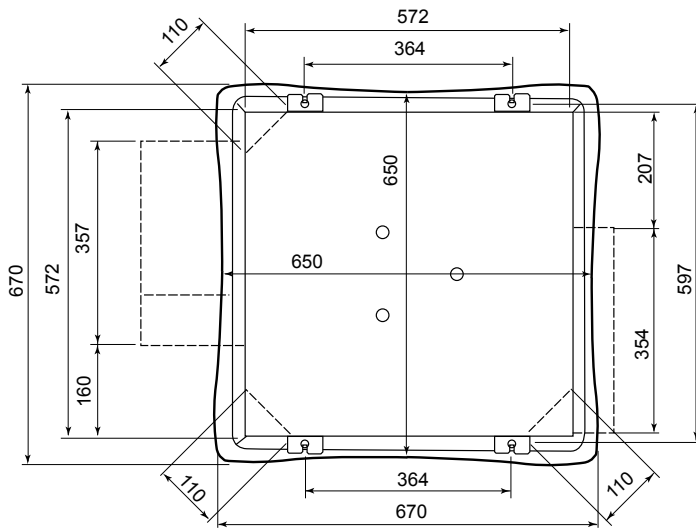
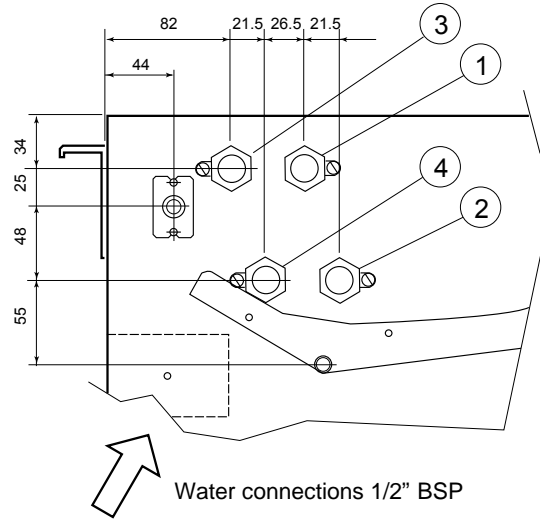
Size	QFDK-10			QFDK-20			QFDK-30			QFDK-40			QFDK-50			QFDK-60			
Speed	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
Air throw L	m	3.3	3.9	4.2	3.3	4.2	4.8	3.9	4.5	5.2	3.5	4.1	4.8	3.8	4.6	5.4	3.8	5.1	5.8
Height H	m	2.2	2.6	2.8	2.2	2.8	3.2	2.6	3.0	3.4	2.2	2.6	3.0	2.4	2.8	3.4	2.4	3.1	3.6
Air throw L	m	3.3	3.9	4.2	3.3	4.2	4.8	3.9	4.5	5.2	3.5	4.1	4.8	3.8	4.6	5.4	3.8	5.1	5.8
Distance B	m	2.5	2.9	3.1	2.5	3.1	3.6	2.9	3.4	3.9	2.7	3.2	3.8	3.0	3.6	4.2	3.0	4.0	4.6

Dimensions and weights

Model 600 x 600 mm - Size 10, 20, 30

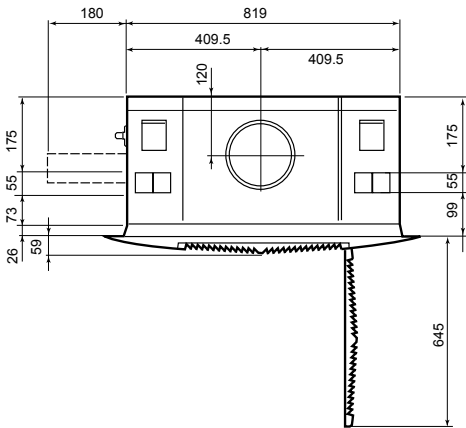


- 1. Inlet heating (4-pipe)
- 2. Outlet heating (4-pipe)
- 3. Inlet cooling/heating
- 4. Outlet cooling/heating

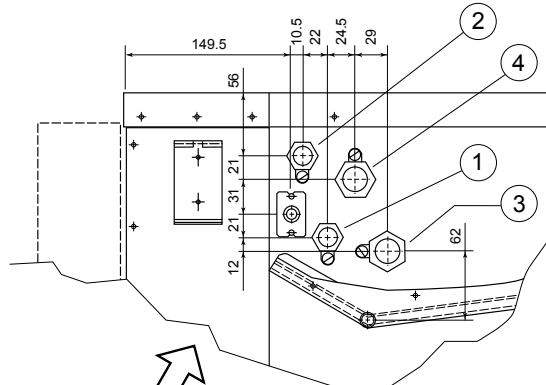


Size of the unit	Unit weight (kg)	Diffuser weight (kg)
10 - 20 - 30	24	3

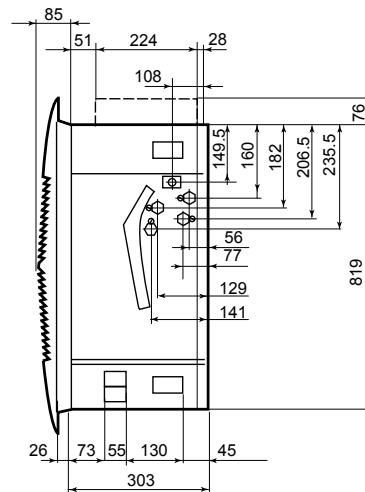
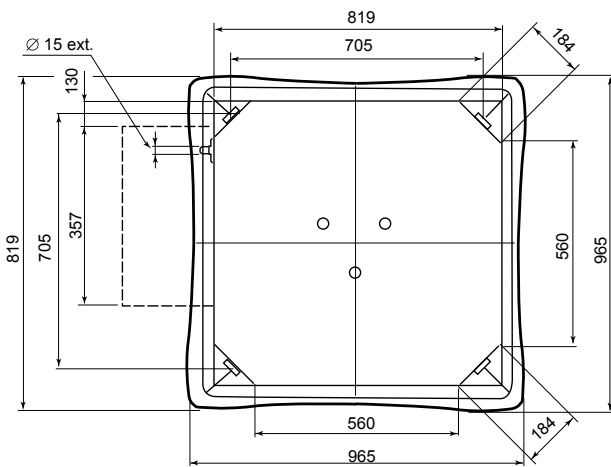
Model 800 x 800 mm - Size 40, 50, 60



- 1. Inlet heating (4-pipe)
- 2. Outlet heating (4-pipe)
- 3. Inlet cooling/heating
- 4. Outlet cooling/heating



Water connections
 2-pipe units
 cooling/heating
 3/4" BSP
 4-pipe units
 cooling 3/4" BSP
 heating 1/2" BSP



Size of the unit	Unit weight (kg)	Diffuser weight (kg)
40 - 50 - 60	39	6

Practical guidelines

Precautions to be taken before and during installation

- Units are carefully inspected and tested prior to delivery.
- The water system must be carefully designed and balanced if the fan coil system is to perform correctly.
- The units should be installed in such a way to allow easy access for maintenance and adjustments.
- It is important that the unit is placed level or slopes slightly towards the condensate drain side.
- Sufficient slope of the drain system shall be assured for a quick condensate removal = 2 % (min. 2 cm/m).
- The inlet water connections for cooling and heating are always the lower of the coil connection.
- Although units equipped with water control valves have been carefully checked at the factory, it is advisable to check the tightness of all pipe connections on site using a spanner.
- Make sure that the condensate will drain off freely.
- Do not connect the drain system directly to the drainpipe of the main driptray but use the drainpipe of the auxiliary driptray for the evacuation of the condensate.
- It is recommended to seal the joint between the unit and the auxiliary driptray with a sealer.
- The distance between the air intake side and the floor or wall should be minimum 100 mm.
- Make sure that no shelving or furniture obstructs free air circulation.
- Dispose of packaging material in accordance with local requirements.

Electrical connections

- All motors are tested prior to delivery.
- The voltage of the motor is stated on the identification label of each unit.
- The electrical wiring of the units should be done by an authorised electrician in accordance with the local regulations.
- The electrical heating elements must only be factory installed.
- The electrical installation should be of permanent type and the unit protected by means of fuses in the power supply from the mains.
- Incorrect field wiring will cause motor damage.
- Always use the same power supply circuit for the fan coil system (fan coil units, thermostats, etc. ...)
- Do not connect more than one fan coil unit to one common speed selector switch.
- In master/slave applications, check carefully the equipotentiality of the electrical connections.

Control system

- When the fans are not running, it is strongly advisable to ensure that the chilled water supply to the coils is automatically shut off, to prevent condensation in and on the unit.
- Units equipped with electrical heating elements must be connected to a regulation with permanent ventilation.

Starting-up

- Check that the coils have been cleaned after the installation work.
- Check the water system and open the valves for the water supply.
- Check that the water connections do not leak.
- Open the venting screws and check that there is no air in the coils.
- Equalisation of the pressure drop across the whole water system is recommended.
- Check that the fan impeller rotates freely and in the correct direction.
- Run the fan at high, medium and low speed and check that no mechanical noise can be heard.
- Check that the unit is well secured and does not vibrate.
- Check the performance of the supervisory system.

Maintenance

- Before performing any service or maintenance operations, turn OFF the main power supply.
- Inspect the unit at regular intervals.
- The frequency of cleaning the coil and the driptray depend on local conditions.
- The coil should be cleaned on both sides. Use a vacuum cleaner with a rubber nozzle.
- Work carefully to avoid damaging the coil surfaces.
- Check that the drainpipe is clean and not clogged.
- The motor bearings are permanently lubricated and do not require lubrication.
- The standard filters are of the washable type and should be cleaned when clogged.
- Check min. once a month the filter – final pressure drop is recommended up to 25 Pa.
- The frequency of filter cleaning or replacement is dependent on the dust content in the return air. (our recommendation: Max. 1 month after starting-up period and further min. every 3 months)

WARNING!

- **The cooling and heating output of the unit will be reduced if the unit is running with clogged filters.**
- **Unit mounted electrical heating elements can influence the sound level of the units.**
- **Dirty/clogged filters will increase the sound level and are harmful to the operation and working-expenses of the units.**

- **Prolonged operation with a dirty / clogged filter may lead to deterioration of the motor.**
- **To avoid breaks caused by ice, please empty the watercircuit when the roomtemperature goes down to 0 °C.**

Prior to installation, we recommend that you study the condensate drainage system thoroughly and take special note of the following points:

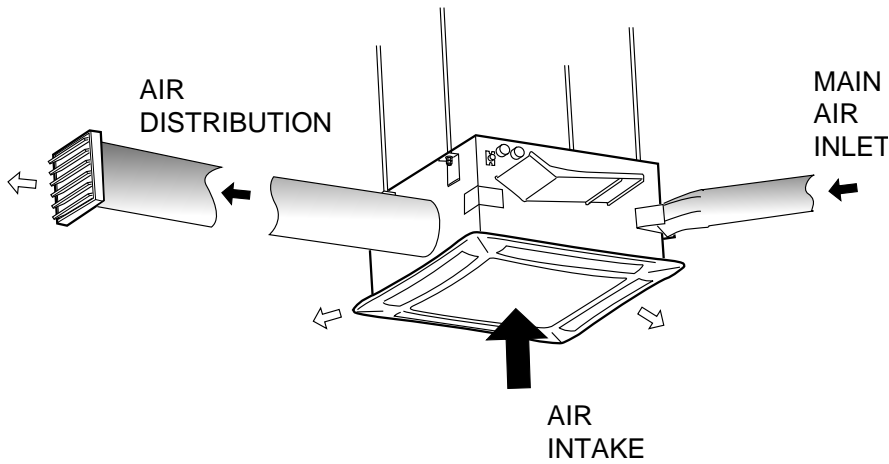
- The slope of drain pipes must be at least 2 cm per meter (2%).
- The diameter must be at least 32 mm and, in all cases, must be adapted to the number of units.
- An air vent must be installed downpipe to avoid pressurizing the drainage line.
- The drain pipe must be fitted with a syphon trap.
- All pipes must be fastened securely and at regularly intervals.
- The system must never have a counter slope.
- Elevation must take place as close to the unit's outlet as possible.
- Elbows must have a sufficient curvature radius so as not to cause significant pressure drop.
- Never exceed the recommended pump head stipulated in the unit's manual.
- Respect the diameter of the drainage pipe specified in the unit's manual.

Practical guidelines

Problem	Symptom	Remedy
<p>Length too long The slope, although respecting the maximum discharge height H, is too long. The quantity of water contained in the tube is thus greater than the capacity of the condensate tray.</p>	<p>The pump cycles but nothing is drained. Overflows sometimes occur.</p>	<p>Use the diameter of tubing specified in the unit's operating manual.</p>
<p>Pipe inappropriate The maximum height is respected although pipe diameter is not in compliance. The quantity of water contained in the pipe is thus greater than the capacity of the condensate tray.</p>	<p>The pump cycles but nothing is drained. Overflows sometimes occur.</p>	<p>Use the diameter of tubing specified in the unit's operating manual.</p>
<p>Manometric delivery head too high The height H is greater than the value specified in the unit's operating manual. Difference in height too high.</p>	<p>The pump operates continuously without discharging condensates and overflowing may result.</p>	<p>If the installation cannot be adapted, install an intermediate drain pump.</p>
<p>Conduit poorly secured The main drainage pipe is not properly secured. Under the effect of heat (in attic space, for example), the tube softens slightly and a water pocket forms. When the pump stops, siphonage of this pocket may occur.</p>	<p>The pump cycles but nothing is drained. Overflows sometimes occur.</p>	<p>Secure all drainage tubes solidly and at regular intervals (approx. every meter)</p>
<p>Tube enters too far into drainage fitting Siphonage may be initiated when the drainage tube is inserted too far into the main drain line connection. Overflowing may result.</p>	<p>Water backflow sometimes occurs when the pump stops overflowing may result.</p>	<p>Place the tube in the highest position possible.</p>
<p>Insufficient slope Water accumulation occurs in the main conduit and causes overflowing due to siphonage.</p>	<p>The last units overflow regularly.</p>	<p>Increase the slope of the main drainage line, and split the line as required.</p>
<p>Insufficient diameter In case of high ambient humidity, the instantaneous delivery may become sufficient to prevent the lifting pumps of the last units from operating.</p>	<p>The last units overflow regularly.</p>	<p>Increase the diameter of the main drainage line, and split the line as required.</p>

Accessories for QFDK

Installation



QFDZ-03-30

Fresh air connection/adaption piece

The cassette is fitted with inlets for fresh air to be mixed with room air inside the unit.

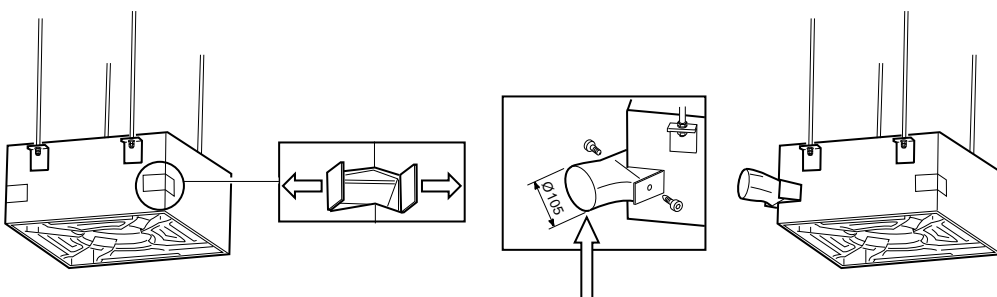
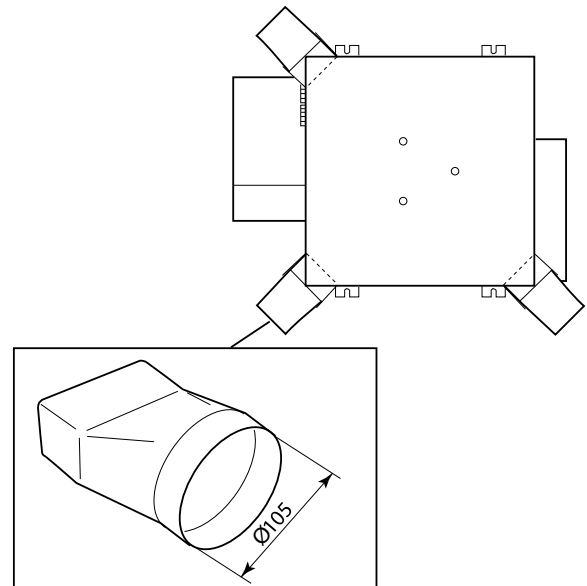
Note!

The fresh air flow is limited to 20% of the total fan coil air flow at medium speed and 100 m³/h for each treated air inlet. Fresh air must be filtered.

Installation:

The fresh air inlets are designed for the insertion of standard 110 x 55 mm rectangular ducts. Note! Not installed when delivered.

The air duct is connected quickly and easily. After removing the blank and the insulation inside the appliance, the mounting plate is rolled back and the air duct with its V-shaped section must be pushed into the unit. The duct is then fixed to the mounting plate.



Accessories for QFDK

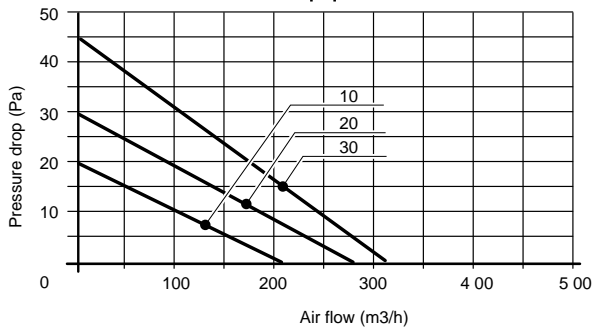
Air distribution data for separate supply air outlets

Two air outlets are provided on the side of the unit. They can be used to supply air from the cassette unit to distant areas of a room or even to a different room. The total air flow does not change. The air flow at high speed depending on the air duct pressure drop which is shown in the tables below.

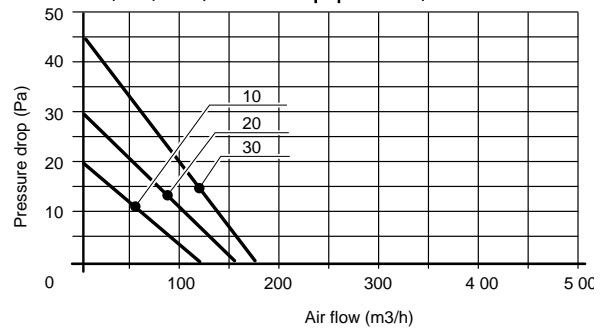
1 used air outlet

2 used air outlets

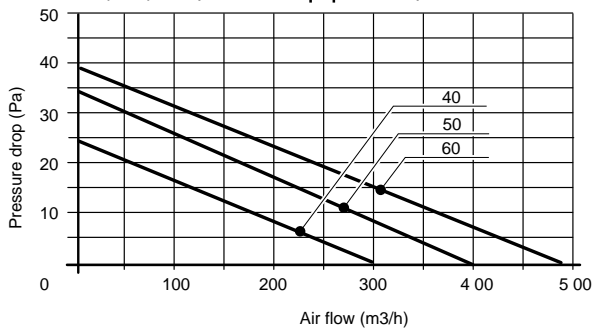
Size 10, 20, 30 (2- and 4-pipe unit)



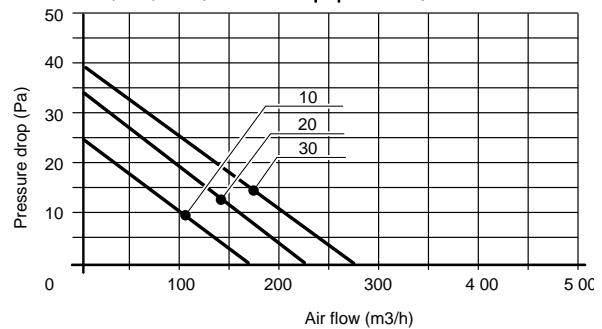
Size 10, 20, 30 (2- and 4-pipe unit)



Size 40, 50, 60 (2- and 4-pipe unit)



Size 40, 50, 60 (2- and 4-pipe unit)



Grill-modules

Ordered and delivered separately



QFDZ-15-06

ABS grill-module - with louvers for size 10, 20, 30 (600x600) - RAL 9003

QFDZ-15-08

ABS grill-module - with louvers for size 40, 50, 60 (800x800) - RAL 9003

QFDZ-10-06

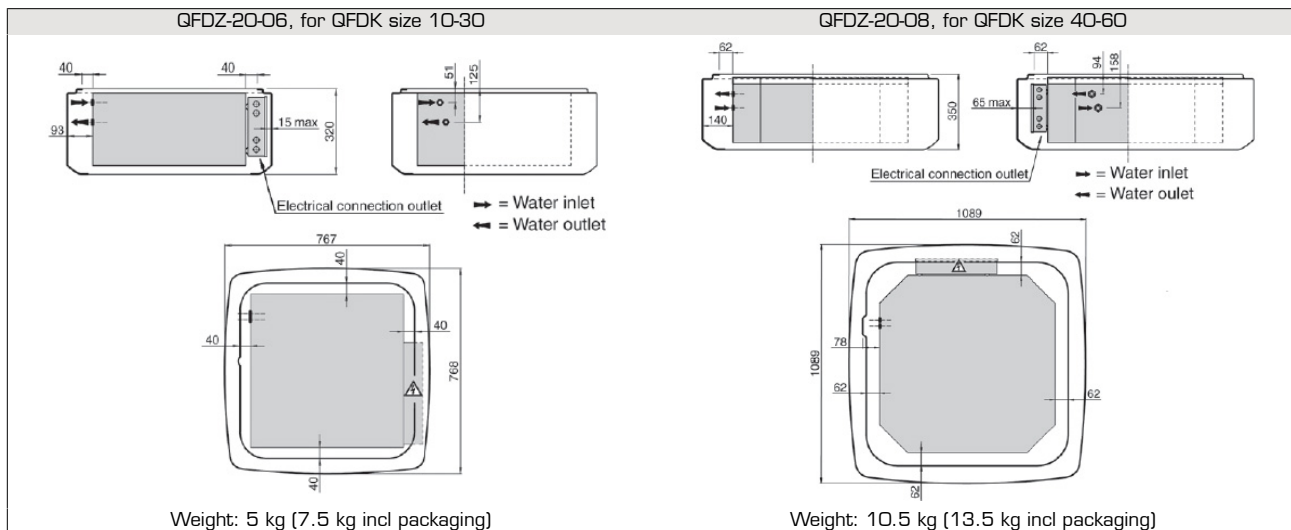
Metal grill-module for size 10, 20, 30 (600x600) - RAL 9010

Cover cabinet

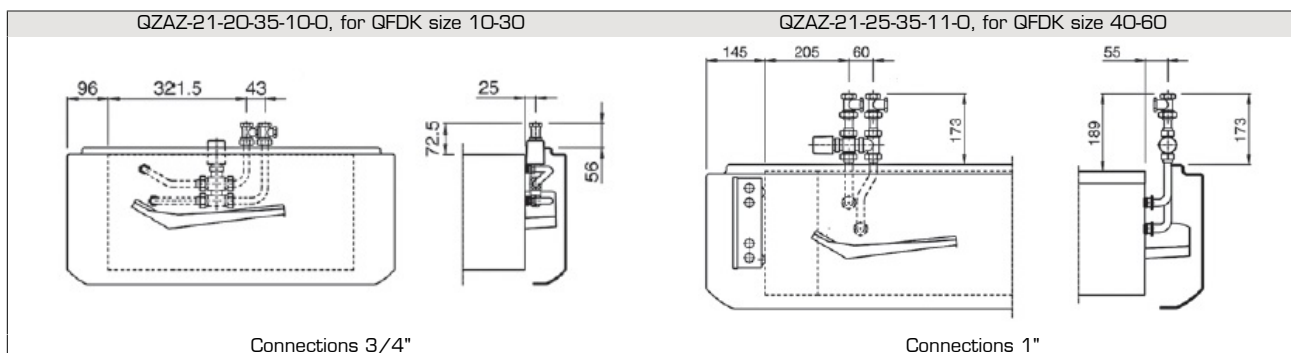


The cover cabinet is designed for all environments where false ceilings are not featured or cannot be constructed. The installation height is up to 5m due to the highly flexible adjustment of the air distribution louvers. It is designed for 2-pipe units only and there is no possibility to use it in combination with fresh air intake (QFDZ-03-30) or electrical heater. The casing is painted in RAL 9003.

The special casing is delivered in separate packaging; this must only be fitted after having installed the QFDK cassette unit and completed the water and electrical connections.

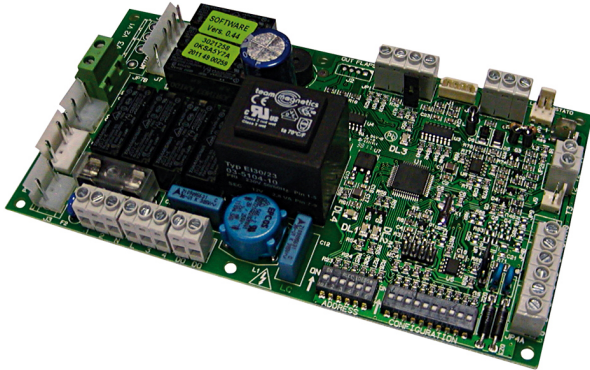


Electrical and water connections must enter from above the unit and must not interfere with the casing. Valve kits for connection from above



Electronic board for infrared control & modbus communication

Electronic board



A electronic board can be mounted as per standard on the cassette and is set to carry out different functions and adjustment modes in order to meet the installation requirements. These modes are selected by setting the configuration dip switches on the board:

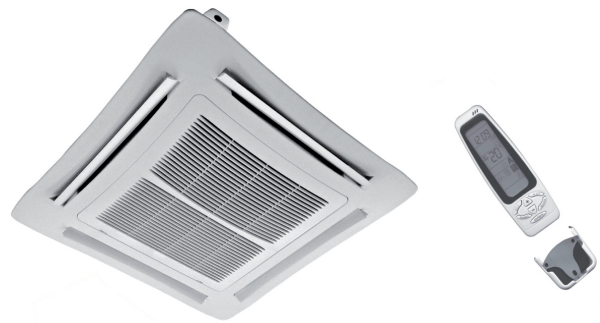
- 2/4 pipe system.
- Fan ON/OFF thermostatic control.
- Valve ON/OFF thermostatic control and continuous ventilation.
- Valve and simultaneous ventilation ON/OFF thermostatic control.
- Fan operation control depending on the coil temperature (cut-out probe fitted), which can be activated only in heating mode or heating and cooling mode.
- Automatic switch of the operating mode by means of water probe (optional) applied on the 2 pipe system.
- Seasonal switch by means of remote contact.
- ON/OFF of the fan coil by means of the remote contact (window or clock contact).
- Electric heater control

By activating the cut-out T3 probe function, the fan is stopped in winter when the coil temperature is lower than 32°C and started when the temperature reaches 36°C. In summer mode, the fan stops when the temperature inside the coil exceeds 22°C and starts when it drops below 18°C.

The following connections are located on the power board:

- Receiver for infrared remote control (QZAZ-05-92 or QZAZ-05-94).
- QZAZ-05-95 wall mounted control.
- RS 485 serial connection to manage several fan coils in Master/Slave configuration or to create a supervisory network (Modbus).

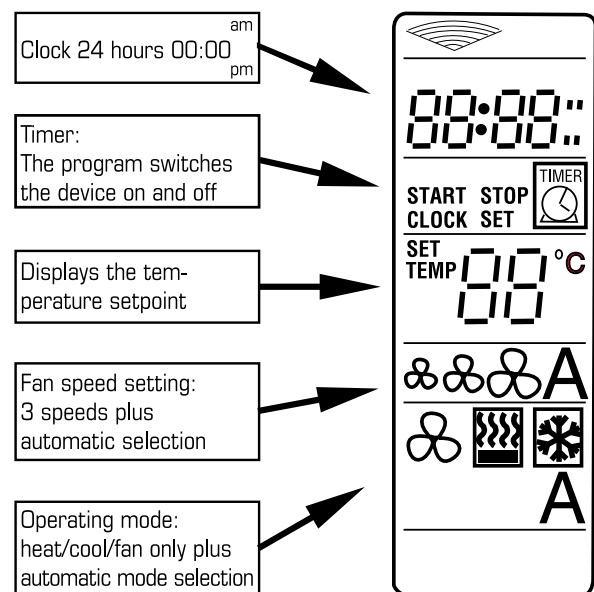
Infra red remote control



The infrared remote control QZAZ-05-90 allows setting by a remote position the fan coil operation parameters. It integrates the following functions:

- Switch the appliance ON and OFF.
- Temperature set.
- Set the fan speed (low, medium, high or autofan).
- Set the operation mode (fan only, cooling, heating; auto for 4 pipe systems with mode selection depending on the air temperature).
- Time setting.
- 24 hours ON/OFF program.

Application/Control operations:



The remote control QZAZ-05-90 must be ordered separately. The QFDK unit must be ordered with the electronic board. The infrared receiver must be ordered separately (see table below) and mounted on the unit.

Not mounted IR receiver	Product
QZAZ-05-94	QFDK with ABS grille (QFDZ-15-bb)
QZAZ-05-92	QFDK with metal grille (QFDZ-10-bb)

Control valve kits (valve & actuator)

3-way control valve kit with micrometric lockshield

Table 9: Characteristics

Sizes	Valve	Kvs (m ³ /h) ^{a)}	Δp _{max} (kpa)	Diameter (Ø) ^{b)}
10-20-30	Cooling valve	2.5	50	3/4"
	Heating valve	2.5	50	3/4"
40-50-60	Cooling valve	4.5	50	1"
	Cooling valve	2.5	50	3/4"

a) Maximum pressure difference for valve to close
b) External thread, flat seal

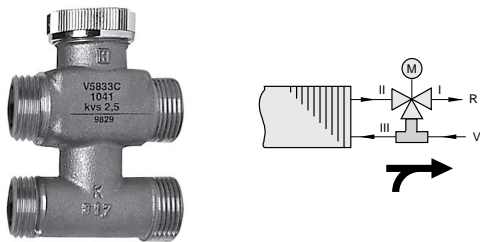


Table 10: 230V, ON/OFF (Honeywell)

Sizes	Code for 2-pipe unit, fitted	Code for 2-pipe unit, not fitted	Code for 4-pipe unit, fitted	Code for 4-pipe unit, not fitted
10-20-30	QZAZ-21-20-33-10-1	QZAZ-21-20-33-10-0	QZAZ-21-20-33-12-1	QZAZ-21-20-33-12-0
40-50-60	QZAZ-21-25-33-11-1	QZAZ-21-25-33-11-0	QZAZ-21-25-33-13-1	QZAZ-21-25-33-13-0

Table 11: 24V, ON/OFF (Johnson controls)

Sizes	Code for 2-pipe unit, fitted	Code for 2-pipe unit, not fitted	Code for 4-pipe unit, fitted	Code for 4-pipe unit, not fitted
10-20-30	QZAZ-21-20-34-10-1	QZAZ-21-20-34-10-0	QZAZ-21-20-34-12-1	QZAZ-21-20-34-12-0
40-50-60	QZAZ-21-25-34-11-1	QZAZ-21-25-34-11-0	QZAZ-21-25-34-13-1	QZAZ-21-25-34-13-0

2-way control valve kit with micrometric lockshield valve

Table 12: Characteristics

Sizes	Valve	Kvs (m ³ /h) ^{a)}	Δp _{max} (kpa)	Diameter (Ø) ^{b)}
10-20-30	Cooling valve	2.8	50	3/4"
	Heating valve	2.8	50	3/4"
40-50-60	Cooling valve	5.2	60	1"
	Cooling valve	2.8	50	3/4"

a) Maximum pressure difference for valve to close
b) External thread, flat seal

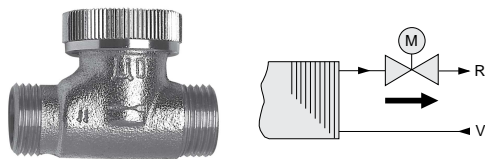


Table 13: 230V, ON/OFF (Honeywell)

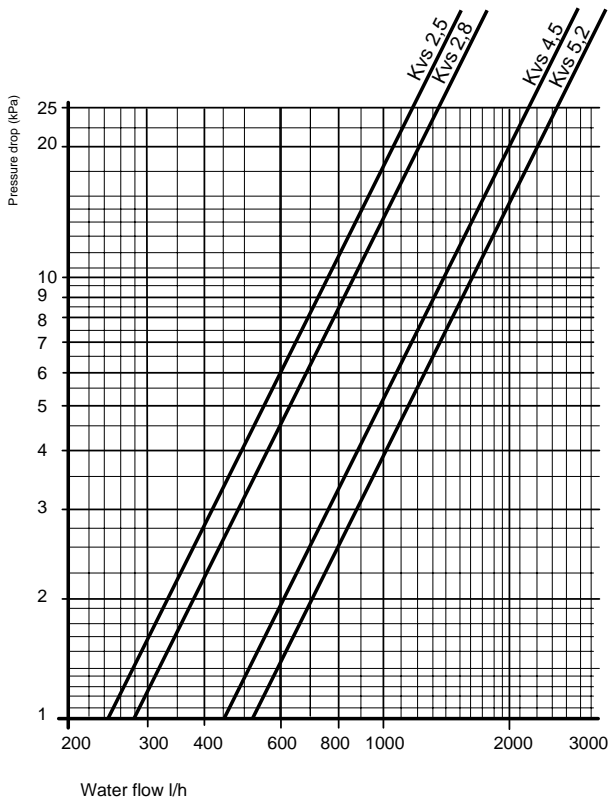
Sizes	Code for 2-pipe unit, fitted	Code for 2-pipe unit, not fitted	Code for 4-pipe unit, fitted	Code for 4-pipe unit, not fitted
10-20-30	QZAZ-21-20-23-10-1	QZAZ-21-20-23-10-0	QZAZ-21-20-23-12-1	QZAZ-21-20-23-12-0
40-50-60	QZAZ-21-25-23-11-1	QZAZ-21-25-23-11-0	QZAZ-21-25-23-13-1	QZAZ-21-25-23-13-0

Table 14: 24V, ON/OFF (Johnson controls)

Sizes	Code for 2-pipe unit, fitted	Code for 2-pipe unit, not fitted	Code for 4-pipe unit, fitted	Code for 4-pipe unit, not fitted
10-20-30	QZAZ-21-20-24-10-1	QZAZ-21-20-24-10-0	QZAZ-21-20-24-12-1	QZAZ-21-20-24-12-0
40-50-60	QZAZ-21-25-24-11-1	QZAZ-21-25-24-11-0	QZAZ-21-25-24-13-1	QZAZ-21-25-24-13-0

Operation limits

Rated pressure	16 bar
Maximum ambient temperature	50 °C
Maximum water flow temperature	110 °C
Power	230V-50/60 Hz
Rating	3 VA
Protection	IP 43
Travel time	approx 3 min.
Maximum glycol content of water	50%



Note!

The maximum pressure drop across the fully open valve should not exceed 25 kPa for cooling operation and 15 kPa for heating operation.

Product code

Chilled water cassette

QFDK-aa-b-c-d-e

Version

K = cassette without grill-module (accessory)

Size (aa)

10, 20, 30 (600 x 600 mm)

40, 50, 60 (800 x 800 mm)

Control arrangement (b)

0 = Standard control board (for STRA controller)

1 = Electronic board for standard motor (only for e=1)

2 = Electronic board for ECM motor (only for e=5)

Coil arrangement (c)

2 = 2-pipe system (one water coil) - cooling or heating

4 = 4-pipe system (two water circuits) - cooling and heating

Electrical heating elements (d)

0 = without

1 = with

for size 10 (P = 1.5 kW/230 V/1 ph + N)

for size 20-30 (P = 2.5 kW/230 V/1 ph + N)

for size 40-60 (3.0 kW/400 V/3 ph + N)

Motor arrangement (e)

1 = standard AC motor - 230V / 1 / 50Hz (only for b=0 or 1)

5 = ECM motor - 230V/1/50Hz (0-10 V output) (only for sizes 10 - 50 and b=0 or 2)

Grill-module

QFDZ-aa-bb

Material, execution (aa)

10 = painted metal, color RAL 9010, size 10 - 30

15 = ABS with louvers, color RAL9003, size 10 - 60

Size (bb)

06 = for sizes 10 - 30, 600 x 600 mm

08 = for sizes 40 - 60, 800 x 800 mm

Accessories

Accessories must be specified separately. The accessories are ordered and delivered separately.

Valve kit

QZAZ-21-bb-cc-dd-e

Connection size (bb)

20 = 3/4" (for QFDK size 10 - 30)

25 = 1" (for QFDK size 40 - 60)

Valve & actuator (cc)

23 = 2-way Micrometric lockshields, 230V, ON/OFF

24 = 2-way Micrometric lockshields, 24V, ON/OFF

33 = 3-way Micrometric lockshields, 230V, ON/OFF

34 = 3-way Micrometric lockshields, 24V, ON/OFF

35 = 3-way valve, 230V, ON/OFF (for QFDZ-20-bb)

Coil arrangement (dd)

10 = 2-pipe size 10-30

11 = 2-pipe size 40-60

12 = 4-pipe size 10-30

13 = 4-pipe size 40-60

Delivery execution (e)

0 = Supplied loose

1 = Factory fitted

Fresh air connection/ adaption piece

QFDZ-03-30

IR control

QZAZ-05-bb

90 = Remote control

92 = IR-reciever, not mounted for QFDZ-10-06

93 = IR-reciever, mounted for QFDZ-15-bb

94 = IR-reciever, not mounted for QFDZ-15-bb

Control equipment is included in a separate catalogue "Control equipment" and must be specified separately.

Cover Cabinet

QFDZ-aa-bb

Execution (aa)

20 = Cover cabinet, color RAL 9003

Size (bb)

06 = for sizes 10 - 30

08 = for sizes 40 - 60

Order example

Here is an guide to assist in placing an order complete with typical accessories. For more information about orders or specific requirements for special units, please contact your nearest **Fläkt Woods sales office**.

Stand alone unit with AC-motor, wallmounted controller & factory fitted valves kits

Unit	QFDK-40-0-4-0-1	
ABS-grille	QFDZ-15-08	
Control	QZAZ-05-21	STRA-07-00-0-00
Power unit / Relay	N/A	STRZ-14-3-0-0-0
Transformer	N/A	STRZ-24-1
Valve kit, factory fitted	2-way, 230V ON/OFF	2-way, 24V ON/OFF
4-pipe valve kit	QZAZ-21-25-23-13-1	QZAZ-21-25-24-13-1

Stand alone unit with EC-motor, wallmounted controller and factory mounted valve kit

Unit	QFDK-20-0-2-0-5	
ABS-grille	QFDZ-15-06	
Control	QZAZ-05-76	STRA-17-00-0-00
Power unit / Relay	QZAZ-05-77/78	N/A
Transformer	N/A	STRZ-24-1
Valve kit, factory fitted	3-way, 230V ON/OFF	3-way, 24V ON/OFF
2-pipe valve kit	QZAZ-21-20-33-10-1	QZAZ-21-20-34-10-1

Stand alone units with IR-control

Unit	QFDK-30-1-2-0-1	QFDK-50-2-4-0-5
ABS-grille	QFDZ-10-06	QFDZ-15-08
IR remote control	QZAZ-05-90	QZAZ-05-90
IR sensor	QZAZ-05-92	QZAZ-05-94
Valve kit	3-way, 230V ON/OFF for 2-pipe, supplied loose	3-way, 230V ON/OFF for 4-pipe, factory fitted
	QZAZ-21-20-33-10-0	QZAZ-21-25-33-13-1

Spare parts

Below is a table listing the available spare parts for the QFDK Cassette unit

Code	Identification	QFDK-aa-0-c-d-1	QFDK-aa-0-c-d-5	QFDK-aa-1-c-d-1	QFDK-aa-2-c-d-5
QFDK-99-01-1-1	AC-motor, size 10, 20, 30	X		X	
QFDK-99-01-4-1	AC-motor, size 40	X		X	
QFDK-99-01-5-1	AC-motor, size 50-60	X		X	
QFDK-99-01-1-5	EC-motor, size 10, 20, 30		X		X
QFDK-99-01-4-5	EC-motor, size 40, 50		X		X
QFDK-99-01-1-3	Blower, size 10, 20, 30	X	X	X	X
QFDK-99-01-4-3	Blower, size 40, 50, 60	X	X	X	X
QFDK-99-11-1-6	Main condensate tray, size 10, 20, 30	X	X	X	X
QFDK-99-11-1-8	Main condensate tray, size 40, 50, 60	X	X	X	X
QFDK-99-06-1-1	Condensate pump	X	X	X	X
QFDK-99-21-1-1	Float switch	X	X	X	X
QFDK-99-03-10	Filter, size 10, 20, 30	X	X	X	X
QFDK-99-03-40	Filter, size 40, 50, 60	X	X	X	X
QFDK-99-07-10-1	Auto-transformer, size 10, 20, 30	X		X	
QFDK-99-07-40-1	Auto-transformer, size 40	X		X	
QFDK-99-07-50-1	Auto-transformer, size 50, 60	X		X	
QFDK-99-20-1-1	Drain pump electrical board for QFDK	X			
QFDK-99-20-1-5	Drain pump electrical board for QFDK-EC		X		
QFDK-99-20-8-1	Drain pump electrical board for QFDK-MB			X	
QFDK-99-20-8-5	Drain pump electrical board for QFDK-EC-MB				X

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 web: www.airtrend.rs