

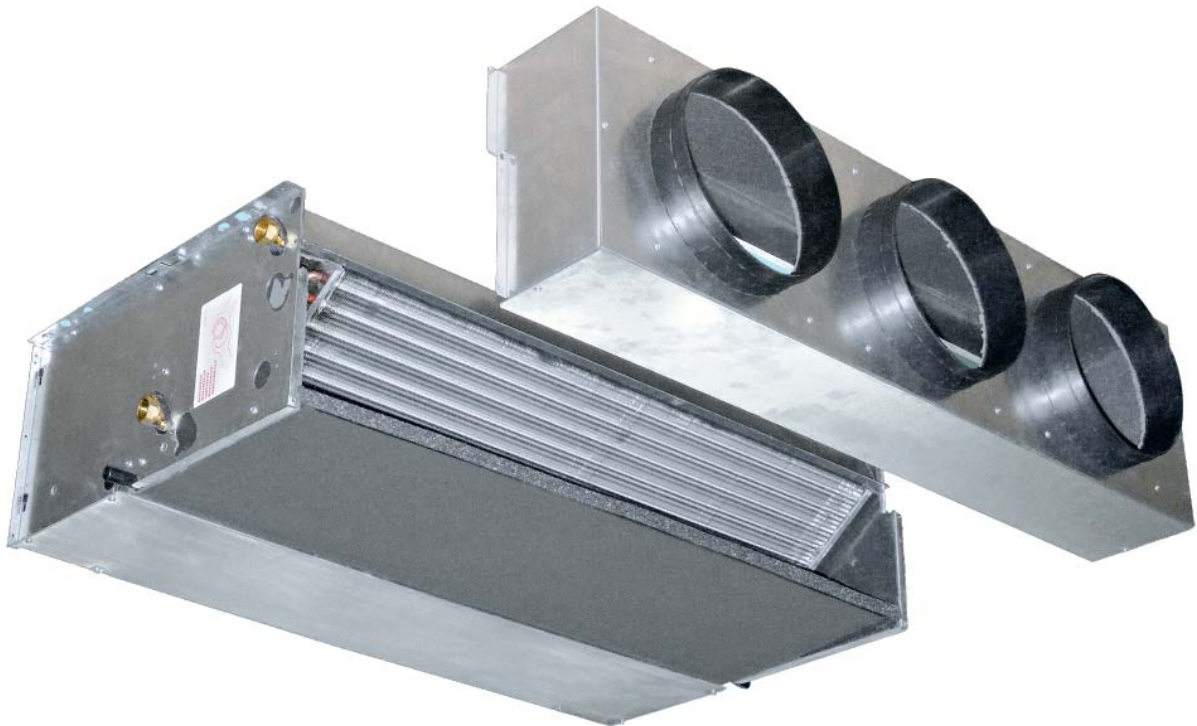


# UniTrane™ D-Line

## Ducted fan coils

Model DFS with AC fan motor

Model DFE with EC fan motor



UNT-PRC025B-GB

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## Introduction

In line with innovative trends and modern industrial design, the **DFS** fan coil range meets today's demanding requirements of performance, size, acoustics, low energy, ease of installation and maintenance.

All **DFS** fan coils are equipped with centrifugal fans and electric motors which reduce electrical consumption comparative to previous models, with 5 speed motors as standard offering greater flexibility in the selection of products.

New market trends have also led to an extension of the four pipe model which now has a two row LTHW (Low Temperature Hot Water) coil giving improved outputs at lower flow and return temperatures.

A full range of control options is available, with the highest precision in monitoring and maintaining the desired comfort conditions.

The **DFS & DFE** models are complemented with a full range of accessories: various types of adjustment valves, additional electric heater, auxiliary condensate pump, air inlet/outlet diffusers for fitted installations, and more.

### EC fan motor version (DFE)

The **DFE** models are available in three different sizes, for wall and ceiling installation, with casing and concealed.

The innovative brushless and sensorless type synchronous electronic motor with permanent magnets, is controlled by an **inverter** board designed and developed in Italy. The board is mounted on the unit, closed to the motor, without the need to be cooled down by the air flow.

The air flow rate can be varied **in continuous** by means of a 1-10 V signal generated by our controls or by independent control systems. The continuous air flow control improves the acoustic comfort and allows a more punctual reply to the variation of the thermal loads and a greater stability of the requested ambient temperature.

The extreme efficiency, also at low speed, allows a great reduction in electric consumption with absorption values under normal operating conditions that do not exceed 50 Watt for **DFE** models on the entire range. The excellent values of the **DFE** range in terms of sound levels have been maintained in all working conditions, without any resonance phenomenon at any frequency.

The full compliance with the Electromagnetic Compatibility Directive and with the other strict Standards in force is certified by an independent institute.



## Introduction

### DFS version with centrifugal fan

Range includes 4 air flow rates (from 375 to 2220 m<sup>3</sup>/h), each equipped with 3 or 4 row coil and with the possibility to add a 1 or 2 row coil for 4 pipe systems. It is the most comprehensive range, perfect to meet all air-conditioning requirements of work environments like offices, shops, restaurants and hotel rooms featuring ducted installations with available pressure up to 80 Pa.

**Compliant with ERP 2015 Regulation (EU) No. 327/2011**

### DFE version with high pressure centrifugal fan

Range includes 3 air flow rates (from 350 to 1450 m<sup>3</sup>/h), each equipped with 3 or 4 row coil and with the possibility to add a 1 or 2 row coil for 4 pipe systems. It is the most comprehensive range, perfect to meet all air-conditioning requirements of work environments like offices, shops, restaurants and hotel rooms featuring ducted installations with available pressure up to 80 Pa.

## Unit description

### Casing

Made from 1 mm galvanized steel insulated with polyolefin (PO) foam (class M1).

### Filter

Polypropylene cellular fabric regenerating filter. The filter frame of galvanized steel is inserted into special plastic sliding guides fastened to the internal structure for easy insertion and removal of the filter.

### Fan assembly

The fans have aluminium or plastic blades directly keyed on the motor with double aspiration and they are dynamically and statically balanced during manufacture in order to have an extremely quiet operation.

### Electric motor (DFS)

The motor is wired for single phase and has five speeds with capacitor. The motor is fitted on sealed for life bearings and is secured on anti-vibration and self-lubricating mountings. Internal thermal protection with automatic reset, protection IP 20, class B.

### Electronic motor (DFE)

Three phase permanent magnet brushless electronic motor that is controlled with reconstructed current according to a BLAC 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 230-240V and frequency of 50-60Hz.

### Coil

It is manufactured from drawn copper tube and the aluminium fins are mechanically bonded onto the tube by an expansion process. The coil has two 1/2 inch BSP internal connections and 1/8 inch BSP air vent and drain. The coil is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion. The connections are on the left hand side looking from the air outlet of the unit (see picture).

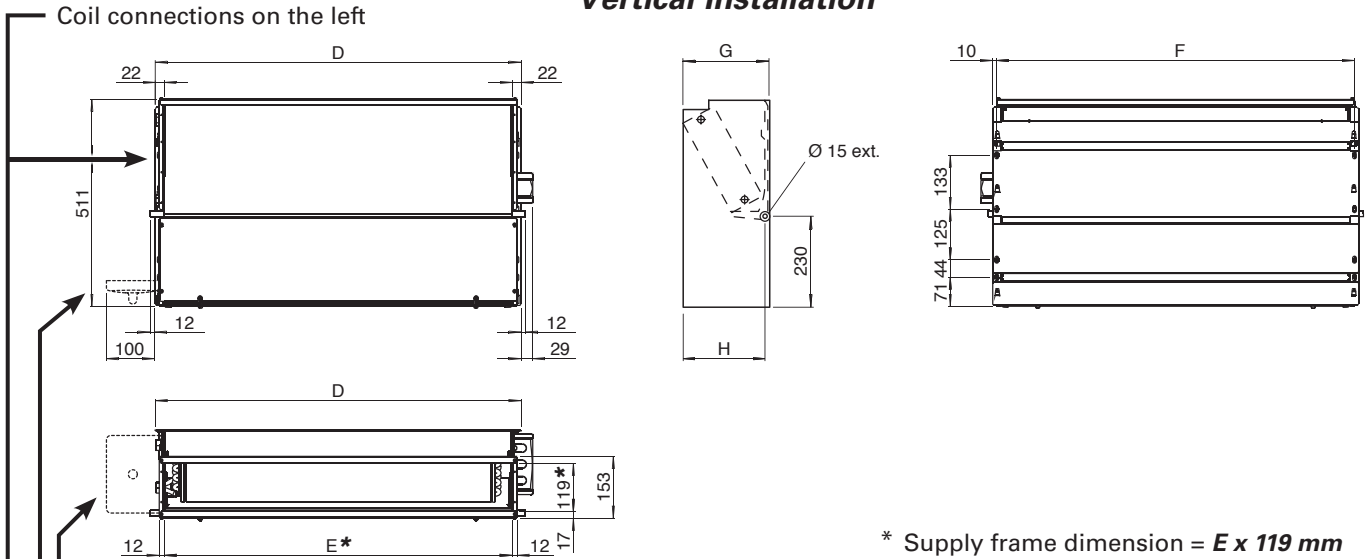
**Right-hand connections can be provided factory-fitted on request. The water connection is inter-changeable on site.**

### Condensate collection tray

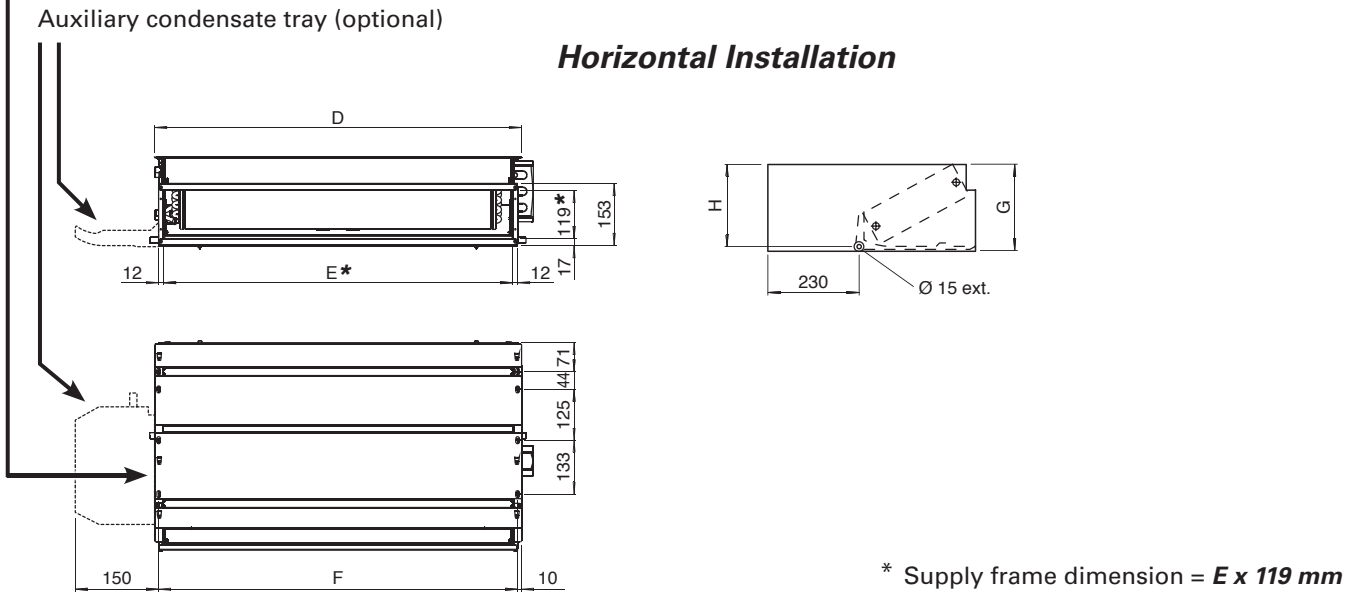
Made from plastic (ABS UL94 HB) for sizes 1÷3 and painted steel for the size 4 with a "L"-shaped plastic fitted on the inner casing; the tray is insulated with polyolefin (PO) foam (class M1). The outside diameter of the condensate discharge pipe is 15mm.

# Dimensions and weights

## Vertical Installation



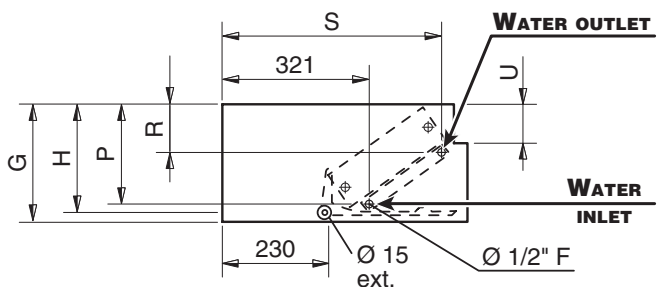
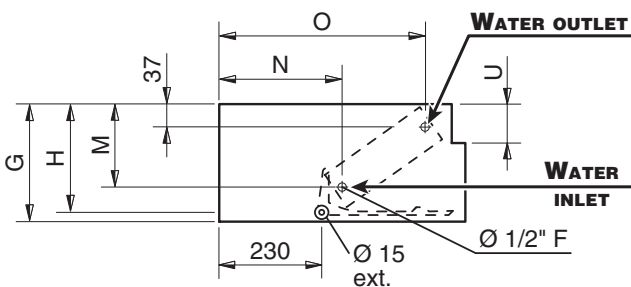
## Horizontal Installation



## COIL CONNECTIONS

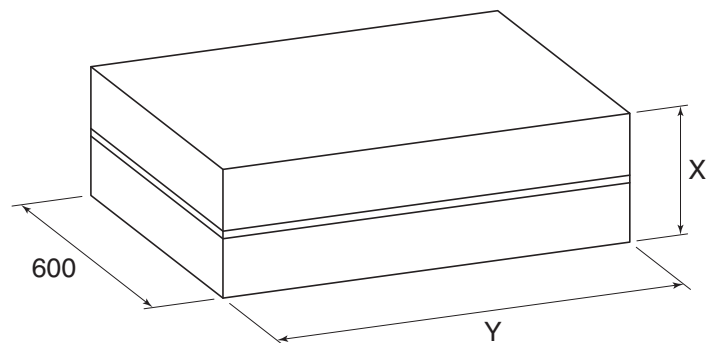
3 or 4 row coils

Heating additional coil (1 or 2 rows)



## Dimensions and weights

### PACKAGING



### Dimension (mm)

Model	1	2	3	4
D	689	904	1119	1570
E	645	860	1075	1526
F	669	884	1099	1550
G	218	248	248	248
H	205	235	235	235
M	145	170	170	170
N	260	270	270	270
O	460	450	450	450
P	185	210	210	210
R	105	110	110	110
S	475	465	465	465
U	65	95	95	95
X	260	290	290	290
Y	820	1035	1250	1790

### Weight (kg)

Model	Weight with packaging				Weight without packaging			
	1	2	3	4	1	2	3	4
3	19,1	26,1	30,4	47,7	17,3	23,5	27,3	43,3
3+1	20,3	27,6	32,2	50,0	18,5	25,0	29,1	45,6
3+2	21,0	28,5	33,3	-	19,2	25,9	30,2	-
4	20,1	27,4	31,9	49,5	18,3	24,8	28,8	45,1
4+1	21,3	28,9	33,7	51,8	19,5	26,3	30,6	47,4

### Water content (litres)

Model	1	2	3	4
3	0,9	1,6	1,9	3,2
4	1,3	2,2	2,8	4,2
+1	0,3	0,5	0,6	0,9
+2	0,6	1,0	1,2	-
4+1	21,3	28,9	33,7	51,8

# General data

## DFS

### 2 pipe units

The following standard rating conditions are used:

#### COOLING

Entering air temperature +27°C d.b. +19°C w.b.  
 Water temperature +7°C E.W.T. +12°C L.W.T.

#### HEATING

Entering air temperature + 20°C  
 Entering water temperature + 50°C  
 Water flow rate as for the cooling conditions

Model		DFS-2P-13			DFS-2P-23			DFS-2P-33			DFS-2P-43		
		2	3	4	2	3	4	2	3	4	1	2	3
Speed													
Air flow	m <sup>3</sup> /h	240	285	310	470	525	580	760	885	960	945	1155	1285
Available pressure	Pa	40	50	60	40	50	60	40	50	60	35	50	60
Cooling total capacity	kW	1,58	1,81	1,93	2,94	3,19	3,42	4,44	4,92	5,20	5,95	6,87	7,40
Cooling sensible capacity	kW	1,14	1,31	1,41	2,17	2,37	2,57	3,36	3,80	4,05	4,39	5,16	5,62
Heating capacity	kW	1,91	2,22	2,39	3,57	3,92	4,25	5,63	6,36	6,79	7,29	8,62	9,41
Dp Cooling	kPa	9,0	11,5	12,9	10,6	12,3	13,9	11,4	13,7	15,1	8,9	11,5	13,1
Dp Heating	kPa	6,9	9,0	10,3	8,3	9,8	11,4	9,0	11,0	11,9	6,8	9,2	10,8
Fan power input	W	40	46	55	82	90	97	107	121	134	140	148	158
Sound power outlet	dB(A)	44	47	50	46	49	51	51	54	57	52	56	58
Sound power inlet + radiated	dB(A)	52	54	57	52	54	57	57	60	63	59	62	64
Sound pressure level outlet (*)	dB(A)	35	38	41	37	40	42	42	45	48	43	47	49
Sound pressure level inlet + radiated (*)	dB(A)	43	45	48	43	45	48	48	51	54	50	53	55

Model		DFS-2P-14			DFS-2P-24			DFS-2P-34			DFS-2P-44		
		2	3	4	2	3	4	2	3	4	1	2	3
Speed													
Air flow	m <sup>3</sup> /h	240	285	310	470	525	580	760	885	960	945	1155	1285
Available pressure	Pa	40	50	60	40	50	60	40	50	60	35	50	60
Cooling total capacity	kW	1,74	2,01	2,15	3,27	3,57	3,85	4,80	5,36	5,68	6,51	7,59	8,22
Cooling sensible capacity	kW	1,23	1,43	1,54	2,32	2,55	2,77	3,52	3,99	4,25	4,68	5,54	6,05
Heating capacity	kW	1,90	2,22	2,40	3,90	4,30	4,69	6,00	6,83	7,31	7,85	9,39	10,30
Dp Cooling	kPa	5,4	7,0	7,9	18,1	21,2	24,3	9,7	11,9	13,2	11,8	15,6	18,0
Dp Heating	kPa	4,2	5,6	6,4	14,3	17,1	20,1	8,0	9,3	10,5	11,0	13,8	17,0
Fan power input	W	40	46	55	82	90	97	107	121	134	140	148	158
Sound power outlet	dB(A)	44	47	50	46	49	51	51	54	57	52	56	58
Sound power inlet + radiated	dB(A)	52	54	57	52	54	57	57	60	63	59	62	64
Sound pressure level outlet (*)	dB(A)	35	38	41	37	40	42	42	45	48	43	47	49
Sound pressure level inlet + radiated (*)	dB(A)	43	45	48	43	45	48	48	51	54	50	53	55

### 4 pipe units

The following standard rating conditions are used:

#### COOLING

Entering air temperature +27°C d.b. +19°C w.b.  
 Water temperature +7°C E.W.T. +12°C L.W.T.

#### HEATING

Entering air temperature +20°C  
 Water temperature +70°C E.W.T. +60°C L.W.T.

Model		DFS-4P-131			DFS-4P-231			DFS-4P-331			DFS-4P-431		
		2	3	4	2	3	4	2	3	4	1	2	3
Speed													
Air flow	m <sup>3</sup> /h	240	285	310	470	525	580	760	885	960	945	1155	1285
Available pressure	Pa	40	50	60	40	50	60	40	50	60	35	50	60
Cooling total capacity	kW	1,58	1,81	1,93	2,94	3,19	3,42	4,44	4,92	5,20	5,95	6,87	7,40
Cooling sensible capacity	kW	1,14	1,31	1,41	2,17	2,37	2,57	3,36	3,80	4,05	4,39	5,16	5,62
Heating capacity	kW	1,66	1,87	1,98	2,85	3,08	3,28	4,14	4,57	4,82	5,55	6,33	6,79
Dp Cooling	kPa	9,0	11,5	12,9	11,2	13,0	14,7	11,4	13,7	15,1	8,9	11,5	13,1
Dp Heating	kPa	5,3	6,6	7,3	3,8	4,3	4,8	6,2	7,4	8,1	13,5	17,2	19,5
Fan power input	W	40	46	55	82	90	97	107	121	134	140	148	158
Sound power outlet	dB(A)	44	47	50	46	49	51	51	54	57	52	56	58
Sound power inlet + radiated	dB(A)	52	54	57	52	54	57	57	60	63	59	62	64
Sound pressure level outlet (*)	dB(A)	35	38	41	37	40	42	42	45	48	43	47	49
Sound pressure level inlet + radiated (*)	dB(A)	43	45	48	43	45	48	48	51	54	50	53	55

(\*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m<sup>3</sup> room and a reverberation time of 0.5 sec.



## General data

### DFS 2 pipe units

The following standard rating conditions are used:

#### COOLING

Entering air temperature +27°C d.b. +19°C w.b.  
Water temperature +7°C E.W.T. +12°C L.W.T.

#### HEATING

Entering air temperature +20°C  
Entering water temperature +50°C  
Water flow rate as for the cooling conditions

**AVAILABLE PRESSURE: 0 Pa**

Model	DFS-2P-13					DFS-2P-23					DFS-2P-33					DFS-2P-43					
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	
Speed																					
Air flow	m <sup>3</sup> /h	375	410	470	540	595	580	665	765	870	1040	745	950	1150	1320	1415	1000	1360	1705	1980	2220
Cooling total capacity	kW	2,22	2,36	2,59	2,84	3,02	3,42	3,75	4,12	4,48	5,01	4,38	5,16	5,85	6,38	6,68	6,21	7,69	8,94	9,84	10,59
Cooling sensible capacity	kW	1,64	1,76	1,96	2,18	2,35	2,57	2,86	3,19	3,53	4,05	3,31	4,02	4,66	5,19	5,47	4,59	5,88	7,02	7,88	8,61
Heating capacity	kW	3,62	3,91	4,37	4,89	5,28	5,50	6,15	6,89	7,63	8,76	7,19	8,78	10,23	11,40	12,04	9,90	12,78	15,35	17,31	18,91
Dp Cooling	kPa	16,6	18,5	21,8	25,7	28,7	13,9	16,4	19,4	22,6	27,7	11,1	14,9	18,7	21,9	23,8	9,6	14,1	18,5	22,0	25,1
Dp Heating	kPa	8,9	10,2	12,5	15,3	17,6	7,3	8,9	11,0	13,2	16,9	6,1	8,7	11,5	13,9	15,4	5,0	7,9	11,0	13,6	16,0
Fan power input	W	41	46	54	65	76	88	95	107	120	140	97	121	143	164	174	163	191	218	237	256
Sound power Lw	dB(A)	47	50	53	56	59	45	47	51	54	59	49	54	59	63	64	49	55	60	64	66
Sound pressure (*)	dB(A)	38	41	44	47	50	36	38	42	45	50	40	45	50	54	55	40	46	51	55	57

Model	DFS-2P-14					DFS-2P-24					DFS-2P-34					DFS-2P-44					
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	
Speed																					
Air flow	m <sup>3</sup> /h	375	410	470	540	595	580	665	765	870	1040	745	950	1150	1320	1415	1000	1360	1705	1980	2220
Cooling total capacity	kW	2,50	2,68	2,96	3,27	3,50	3,85	4,27	4,72	5,16	5,83	4,73	5,64	6,44	7,06	7,40	6,81	8,56	10,07	11,16	12,05
Cooling sensible capacity	kW	1,82	1,96	2,19	2,46	2,66	2,77	3,10	3,47	3,84	4,43	3,47	4,22	4,91	5,47	5,78	4,91	6,34	7,63	8,59	9,41
Heating capacity	kW	3,98	4,31	4,86	5,48	5,95	6,06	6,83	7,71	8,59	9,97	7,64	9,43	11,08	12,41	13,13	10,40	13,57	16,43	18,61	20,40
Dp Cooling	kPa	10,4	11,7	14,1	16,8	19,0	24,3	29,2	35,0	41,2	51,2	9,5	13,0	16,5	19,5	21,2	12,9	19,4	26,0	31,2	35,9
Dp Heating	kPa	5,4	6,2	7,7	9,5	11,1	12,3	15,2	19,0	23,0	30,1	5,0	7,3	9,8	12,0	13,3	7,0	11,4	16,1	20,1	23,7
Fan power input	W	41	46	54	65	76	88	95	107	120	140	97	121	143	164	174	163	191	218	237	256
Sound power Lw	dB(A)	47	50	53	56	59	45	47	51	54	59	49	54	59	63	64	49	55	60	64	66
Sound pressure (*)	dB(A)	38	41	44	47	50	36	38	42	45	50	40	45	50	54	55	40	46	51	55	57

### 4 pipe units

The following standard rating conditions are used:

#### COOLING

Entering air temperature +27°C d.b. +19°C w.b.  
Water temperature +7°C E.W.T. +12°C L.W.T.

#### HEATING

Entering air temperature +20°C  
Water temperature +70°C E.W.T. +60°C L.W.T.

Model	DFS-4P-131					DFS-4P-231					DFS-4P-331					DFS-4P-431					
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	
Speed																					
Air flow	m <sup>3</sup> /h	375	410	470	540	595	580	665	765	870	1040	745	950	1150	1320	1415	1000	1360	1705	1980	2220
Cooling total capacity	kW	2,22	2,36	2,59	2,84	3,02	3,42	3,75	4,12	4,48	5,01	4,38	5,16	5,85	6,38	6,68	6,21	7,69	8,94	9,84	10,59
Cooling sensible capacity	kW	1,64	1,76	1,96	2,18	2,35	2,57	2,86	3,19	3,53	4,05	3,31	4,02	4,66	5,19	5,47	4,59	5,88	7,02	7,88	8,61
Heating capacity	kW	2,25	2,39	2,61	2,85	3,04	3,28	3,58	3,92	4,25	4,76	4,08	4,79	5,40	5,89	6,16	5,76	7,04	8,14	8,95	9,63
Dp Cooling	kPa	16,6	18,5	21,8	25,7	28,7	13,9	16,4	19,4	22,6	27,7	11,1	14,9	18,7	21,9	23,8	9,6	14,1	18,5	22,0	25,1
Dp Heating	kPa	9,2	10,3	12,0	14,1	15,8	4,8	5,7	6,7	7,7	9,4	6,0	8,0	10,0	11,7	12,7	14,5	20,8	27,0	32,0	36,6
Fan power input	W	41	46	54	65	76	88	95	107	120	140	97	121	143	164	174	163	191	218	237	256
Sound power Lw	dB(A)	47	50	53	56	59	45	47	51	54	59	49	54	59	63	64	49	55	60	64	66
Sound pressure (*)	dB(A)	38	41	44	47	50	36	38	42	45	50	40	45	50	54	55	40	46	51	55	57

(\*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m<sup>3</sup> room and a reverberation time of 0.5 sec.

## General data

### DFE units with 3 and 4 row coil

#### 2 pipe units

The following standard rating conditions are used:

#### COOLING

Entering air temperature +27°C d.b. +19°C w.b.  
 Water temperature +7°C E.W.T. +12°C L.W.T.

#### HEATING

Entering air temperature + 20°C  
 Entering water temperature + 50°C  
 Water flow rate as for the cooling conditions

Model		DFE-2P-13			DFE-2P-23			DFE-2P-33		
Voltage		5	7	9	4	6	8	4,5	6,5	8,5
<b>Speed</b>		<b>MIN</b>	<b>MED</b>	<b>MAX</b>	<b>MIN</b>	<b>MED</b>	<b>MAX</b>	<b>MIN</b>	<b>MED</b>	<b>MAX</b>
Air flow	m <sup>3</sup> /h	240	280	325	420	485	560	720	820	950
Available pressure	Pa	35	50	65	35	50	65	35	50	65
Cooling total capacity	kW	1,55	1,76	1,98	2,66	2,98	3,33	4,21	4,64	5,16
Cooling sensible capacity	kW	1,16	1,33	1,51	2,02	2,28	2,57	3,27	3,64	4,10
Heating capacity	kW	1,91	2,18	2,48	3,25	3,46	4,10	5,33	5,94	6,68
Dp Cooling	kPa	8,9	11,1	13,7	9,0	11,0	13,4	10,5	12,4	15,0
Dp Heating	kPa	7,3	9,0	11,3	7,4	9,1	11,1	8,6	10,2	12,3
Fan power input	W	24	32	43	30	44	64	50	71	102
Sound power outlet	dB(A)	45	48	52	45	49	52	50	53	56
Sound power inlet + radiated	dB(A)	52	54	58	51	55	58	56	60	63
Sound pressure level outlet (*)	dB(A)	36	39	43	36	40	43	41	44	47
Sound pressure inlet + radiated (*)	dB(A)	43	45	49	42	46	49	47	51	54

Model		DFE-2P-14			DFE-2P-24			DFE-2P-34		
Voltage		5	7	9	4	6	8	4,5	6,5	8,5
<b>Speed</b>		<b>MIN</b>	<b>MED</b>	<b>MAX</b>	<b>MIN</b>	<b>MED</b>	<b>MAX</b>	<b>MIN</b>	<b>MED</b>	<b>MAX</b>
Air flow	m <sup>3</sup> /h	240	280	325	420	485	560	720	820	950
Available pressure	Pa	35	50	65	35	50	65	35	50	65
Cooling total capacity	kW	1,69	1,93	2,19	2,91	3,29	3,70	4,49	4,98	5,58
Cooling sensible capacity	kW	1,25	1,43	1,64	2,15	2,44	2,77	3,42	3,82	4,32
Heating capacity	kW	2,05	2,36	2,69	3,52	3,99	4,53	5,72	6,40	7,21
Dp Cooling	kPa	5,4	6,8	8,5	15,1	18,7	23,0	9,1	10,9	13,3
Dp Heating	kPa	4,4	5,5	7,0	12,4	15,4	19,0	7,5	9,0	10,9
Fan power input	W	24	32	43	30	44	64	50	71	102
Sound power outlet	dB(A)	45	48	52	45	49	52	50	53	56
Sound power inlet + radiated	dB(A)	52	54	58	51	55	58	56	60	63
Sound pressure level outlet (*)	dB(A)	36	39	43	36	40	43	41	44	47
Sound pressure inlet + radiated (*)	dB(A)	43	45	49	42	46	49	47	51	54

(\*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m<sup>3</sup> room and a reverberation time of 0.5 sec.

## General data

### DFE units with 1 row additional coil

#### 4 pipe units

The following standard rating conditions are used:

#### COOLING

Entering air temperature +27°C d.b. +19°C w.b.  
 Water temperature +7°C E.W.T. +12°C L.W.T.

#### HEATING

Entering air temperature +20°C  
 Water temperature +70°C E.W.T. +60°C L.W.T.

Model		DFE-2P-131			DFE-2P-231			DFE-2P-331		
		MIN	MED	MAX	MIN	MED	MAX	MIN	MED	MAX
Voltage		5	7	9	4	6	8	4,5	6,5	8,5
<b>Speed</b>		<b>MIN</b>	<b>MED</b>	<b>MAX</b>	<b>MIN</b>	<b>MED</b>	<b>MAX</b>	<b>MIN</b>	<b>MED</b>	<b>MAX</b>
Air flow	m <sup>3</sup> /h	240	280	325	420	485	560	720	820	950
Available pressure	Pa	35	50	65	35	50	65	35	50	65
Cooling total capacity	kW	1,55	1,76	1,98	2,66	2,98	3,33	4,21	4,64	5,16
Cooling sensible capacity	kW	1,16	1,33	1,51	2,02	2,28	2,57	3,27	3,64	4,10
Heating capacity	kW	1,64	1,83	2,02	2,62	2,89	3,19	3,97	4,33	4,79
Dp Cooling	kPa	8,9	11,1	13,7	9,0	11,0	13,4	10,5	12,4	15,0
Dp Heating	kPa	5,5	6,6	8,0	3,4	4,1	4,9	6,0	7,0	8,3
Fan power input	W	24	32	43	30	44	64	50	71	102
Sound power outlet	dB(A)	45	48	52	45	49	52	50	53	56
Sound power inlet + radiated	dB(A)	52	54	58	51	55	58	56	60	63
Sound pressure level outlet (*)	dB(A)	36	39	43	36	40	43	41	44	47
Sound pressure inlet + radiated (*)	dB(A)	43	45	49	42	46	49	47	51	54

(\*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m<sup>3</sup> room and a reverberation time of 0.5 sec.

## General data

### DFE

#### 2 pipe units

The following standard rating conditions are used:

#### COOLING

Entering air temperature +27°C d.b. +19°C w.b.  
 Water temperature +7°C E.W.T. +12°C L.W.T.

#### HEATING

Entering air temperature +20°C  
 Entering water temperature +50°C  
 Water flow rate as for the cooling conditions

**AVAILABLE PRESSURE: 0 Pa**

Model		DFE-2P-13					DFE-2P-23					DFE-2P-33						
		1	3	5	7,5	10	1	3	5	7,5	10	1	3	5	7,5	10		
Voltage																		
Air flow	m <sup>3</sup> /h	350	425	515	625	730	610	760	920	1120	1250	770	985	1180	1425	1450		
Cooling total capacity	kW	2,10	2,43	2,80	3,21	3,57	3,55	4,18	4,78	5,45	5,86	4,43	5,30	6,01	6,82	6,90		
Cooling sensible capacity	kW	1,60	1,39	2,20	2,56	2,89	2,76	3,30	3,84	4,48	4,87	3,46	4,22	4,88	5,64	5,72		
Heating capacity	kW	2,62	3,08	3,59	4,18	4,70	4,40	5,24	6,08	7,05	7,65	5,63	6,87	7,91	9,14	9,26		
Dp Cooling	kPa	15,2	19,7	25,2	32,1	38,6	15,0	20,0	25,3	32,0	36,2	11,5	15,7	19,6	24,5	25,0		
Dp Heating	kPa	12,7	16,3	20,7	26,4	31,7	12,3	16,3	20,6	26,0	30,1	9,3	12,9	16,1	20,2	20,7		
Fan power input	W	18	25,5	37	56	83	24	37	59	100	132	32	49	76	122	136		
Sound power	Lw	dB(A)		47	53	57	62	66	47	53	58	63	66	52	57	61	65	66
Sound pressure (*)	Lp	dB(A)		38	44	48	53	57	38	44	49	54	57	43	48	52	56	57

Model		DFE-2P-14					DFE-2P-24					DFE-2P-34						
		1	3	5	7,5	10	1	3	5	7,5	10	1	3	5	7,5	10		
Voltage																		
Air flow	m <sup>3</sup> /h	350	425	515	625	730	610	760	920	1120	1250	770	985	1180	1425	1450		
Cooling total capacity	kW	2,33	2,74	3,19	3,70	4,14	3,97	4,73	5,47	6,32	6,84	4,74	5,74	6,58	7,54	7,63		
Cooling sensible capacity	kW	1,75	2,08	2,45	2,88	3,28	2,98	3,60	4,22	4,96	5,41	3,62	4,46	5,17	6,02	6,10		
Heating	kW	2,88	3,41	4,03	4,75	5,39	4,88	5,89	6,90	8,10	8,84	6,06	7,42	8,63	10,04	10,18		
Dp Cooling	kPa	9,5	12,5	16,4	21,3	26,0	26,1	35,4	45,9	59,1	67,8	10,0	13,9	17,7	22,5	23,0		
Dp Heating	kPa	7,7	10,1	13,6	17,5	21,5	21,7	29,4	37,8	48,7	56,1	8,2	11,4	14,7	18,6	19,0		
Fan power input	W	18	25,5	37	56	83	24	37	59	100	132	32	49	76	122	136		
Sound power	Lw	dB(A)		47	53	57	62	66	47	53	58	63	66	52	57	61	65	66
Sound pressure (*)	Lp	dB(A)		38	44	48	53	57	38	44	49	54	57	43	48	52	56	57

#### 4 pipe units

The following standard rating conditions are used:

#### COOLING

Entering air temperature +27°C d.b. +19°C w.b.  
 Water temperature +7°C E.W.T. +12°C L.W.T.

#### HEATING

Entering air temperature +20°C  
 Water temperature +70°C E.W.T. +60°C L.W.T.

**AVAILABLE PRESSURE: 0 Pa**

Model		DFE-4P-131					DFE-4P-231					DFE-4P-331						
		1	3	5	7,5	10	1	3	5	7,5	10	1	3	5	7,5	10		
Voltage																		
Air flow	m <sup>3</sup> /h	350	425	515	625	730	610	760	920	1120	1250	770	985	1180	1425	1450		
Cooling total capacity	kW	2,10	2,43	2,80	3,21	3,57	3,55	4,18	4,78	5,45	5,86	4,43	5,30	6,01	6,82	6,90		
Cooling sensible capacity	kW	1,60	1,39	2,20	2,56	2,89	2,76	3,30	3,84	4,48	4,87	3,46	4,22	4,88	5,64	5,72		
Heating capacity	kW	2,13	2,44	2,78	3,17	3,43	3,38	3,93	4,46	4,96	5,31	4,15	4,91	5,54	6,24	6,28		
Dp Cooling	kPa	15,2	19,7	25,2	32,1	38,6	15,0	20,0	25,3	32,0	36,2	11,5	15,7	19,6	24,5	25,0		
Dp Heating	kPa	8,7	11,0	13,9	17,5	20,2	5,4	7,0	8,8	10,6	11,9	6,5	8,7	10,8	13,3	13,4		
Fan power input	W	18	25,5	37	56	83	24	37	59	100	132	32	49	76	122	136		
Sound power	Lw	dB(A)		47	53	57	62	66	47	53	58	63	66	52	57	61	65	66
Sound pressure (*)	Lp	dB(A)		38	44	48	53	57	38	44	49	54	57	43	48	52	56	57

(\*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m<sup>3</sup> room and a reverberation time of 0.5 sec.

# Operating limits

## DFS

Highest water inlet temperature..... +85 °C

Lowest water inlet temperature ..... +5 °C

for entering water temperatures below + 5°C, contact your local sales office

Highest working pressure ..... 1000 kPa (10 bars)

### Water flow limits for 3 row coil (l/h)

Model	DFS-2P-13	DFS-2P-23	DFS-2P-33	DFS-2P-43
Lowest	100	150	200	300
Highest	750	1000	2000	3000

### Water flow limits for 4 row coil (l/h)

Model	DFS-2P-14	DFS-2P-24	DFS-2P-34	DFS-2P-44
Lowest	150	150	300	400
Highest	1000	1500	2250	3300

### Water flow limits for 1 row additional coil (l/h)

Model	DFS 1	DFS 2	DFS 3	DFS 4
Lowest	50	100	100	100
Highest	350	500	750	750

### Water flow limits for 2 row additional coil (l/h)

Model	DFS 1	DFS 2	DFS 3	DFS 4
Lowest	100	100	100	-
Highest	350	500	750	-

## Motor electrical data (max. absorption)

Model		DFS 1	DFS 2	DFS 3	DFS 4
230/1	W	76	140	174	256
50Hz	A	0,33	0,64	0,81	1,22

## DFE

### Water flow limits for 3 row coil (l/h)

Model	DFE-2P-13	DFE-2P-23	DFE-2P-33
Lowest	100	150	200
Highest	750	1000	2000

### Water flow limits for 4 row coil (l/h)

Model	DFE-2P-14	DFE-2P-24	DFE-2P-34
Lowest	150	150	300
Highest	1000	1500	2250

### Water flow limits for 1 row additional coil (l/h)

Model	DFE-1	DFE-2	DFE-3
Lowest	50	100	100
Highest	350	500	750

### Water flow limits for 2 row additional coil (l/h)

Model	DFE-1	DFE-2	DFE-3
Lowest	100	100	100
Highest	350	500	750

## Motor electrical data (max. absorption)

Model		DFE-1	DFE-2	DFE-3
230/1	W	83	132	136
50Hz	A	0,67	1,04	1,07

# Performance data

## Cooling capacity of 3 row coil

Entering air temperature: 27°C – R. H.: 50% – Available pressure: 0 Pa

Mod.	Speed	Qv m³/h	WT: 7/12 °C				WT: 8/13 °C				WT: 10/15 °C				WT: 12/17 °C			
			Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa
DFS-2P-13	5	595	3,25	2,32	559	32,8	2,92	2,19	502	26,9	2,26	2,01	389	16,8	1,70	1,70	292	10,0
	4 MAX	540	3,05	2,16	525	29,3	2,74	2,04	472	24,1	2,12	1,86	365	15,0	1,59	1,59	273	8,8
	3 MED	470	2,78	1,95	479	24,9	2,51	1,83	431	20,5	1,93	1,67	333	12,7	1,44	1,44	247	7,4
	2 MIN	410	2,54	1,75	437	21,0	2,29	1,65	393	17,3	1,76	1,49	303	10,7	1,30	1,30	224	6,2
	1	375	2,38	1,64	410	18,8	2,15	1,54	370	15,5	1,65	1,38	284	9,6	1,22	1,22	210	5,5
DFS-2P-23	5	1040	5,42	3,96	931	31,8	4,84	3,78	833	25,9	3,77	3,48	649	16,4	2,85	2,85	489	9,8
	4 MAX	870	4,84	3,47	832	26,0	4,33	3,30	745	21,2	3,36	3,02	577	13,3	2,51	2,51	432	7,8
	3 MED	765	4,45	3,15	765	22,3	3,98	2,99	685	18,2	3,08	2,71	530	11,4	2,29	2,29	395	6,6
	2 MIN	665	4,05	2,83	696	18,8	3,63	2,68	624	15,4	2,80	2,42	481	9,6	2,07	2,07	357	5,5
	1	580	3,68	2,55	633	15,9	3,31	2,40	569	13,0	2,54	2,16	438	8,1	1,88	1,88	323	4,6
DFS-2P-33	5	1415	7,21	5,32	1240	27,3	6,44	5,11	1108	22,2	5,02	4,72	863	14,0	3,79	3,79	651	8,4
	4 MAX	1320	6,91	5,06	1188	25,3	6,17	4,85	1061	20,5	4,80	4,46	825	12,9	3,61	3,61	621	7,7
	3 MED	1150	6,33	4,57	1089	21,6	5,66	4,36	973	17,5	4,38	3,98	754	11,0	3,28	3,28	564	6,5
	2 MIN	950	5,59	3,96	961	17,2	4,99	3,76	859	14,0	3,85	3,40	663	8,7	2,86	2,86	492	5,1
	1	745	4,73	3,28	814	12,8	4,23	3,10	728	10,4	3,26	2,78	560	6,4	2,40	2,40	413	3,7
DFS-2P-43	5	2220	11,43	8,40	1966	28,8	10,21	8,03	1756	23,4	7,95	7,41	1368	14,8	6,00	6,00	1032	8,8
	4 MAX	1980	10,63	7,72	1829	25,3	9,51	7,36	1636	20,6	7,38	6,76	1270	12,9	5,54	5,54	953	7,6
	3 MED	1705	9,66	6,91	1662	21,3	8,64	6,56	1487	17,3	6,68	5,98	1149	10,8	4,99	4,99	858	6,3
	2 MIN	1360	8,31	5,82	1430	16,2	7,45	5,50	1281	13,3	5,73	4,96	985	8,2	4,24	4,24	729	4,7
	1	1000	6,69	4,57	1151	11,0	6,01	4,30	1034	9,0	4,61	3,83	792	5,5	3,38	3,38	581	3,1

## Cooling capacity of 3 row coil

Entering air temperature: 26°C – R. H.: 50% – Available pressure: 0 Pa

Mod.	Speed	Qv m³/h	WT: 7/12 °C				WT: 8/13 °C				WT: 10/15 °C				WT: 12/17 °C			
			Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa
DFS-2P-13	5	595	2,90	2,20	499	26,8	2,57	2,10	442	21,4	1,97	1,93	339	13,1	1,46	1,46	251	7,6
	4 MAX	540	2,73	2,04	469	24,0	2,41	1,95	415	19,1	1,84	1,78	317	11,7	1,36	1,36	234	6,7
	3 MED	470	2,49	1,83	428	20,3	2,20	1,75	379	16,2	1,67	1,58	288	9,8	1,23	1,23	211	5,6
	2 MIN	410	2,27	1,65	391	17,3	2,01	1,57	346	13,8	1,52	1,41	262	8,3	1,11	1,11	191	4,6
	1	375	2,14	1,54	368	15,4	1,89	1,46	325	12,3	1,43	1,31	246	7,4	1,04	1,04	178	4,1
DFS-2P-23	5	1040	4,82	3,78	829	25,8	4,28	3,63	736	20,7	3,29	3,29	566	12,8	2,45	2,45	422	7,5
	4 MAX	870	4,31	3,30	741	21,1	3,82	3,15	657	16,9	2,92	2,88	502	10,3	2,16	2,16	371	5,9
	3 MED	765	3,96	2,99	682	18,1	3,51	2,85	603	14,5	2,67	2,58	460	8,8	1,96	1,96	338	5,0
	2 MIN	665	3,61	2,68	622	15,4	3,19	2,54	549	12,2	2,42	2,30	417	7,4	1,77	1,77	304	4,2
	1	580	3,29	2,41	566	13,0	2,91	2,28	500	10,3	2,20	2,04	378	6,2	1,60	1,60	275	3,4
DFS-2P-33	5	1415	6,41	5,11	1102	22,1	5,69	4,90	979	17,7	4,38	4,38	754	11,0	3,27	3,27	562	6,4
	4 MAX	1320	6,14	4,84	1056	20,4	5,44	4,64	936	16,4	4,18	4,18	719	10,1	3,11	3,11	535	5,9
	3 MED	1150	5,63	4,36	968	17,5	4,98	4,16	856	13,9	3,81	3,80	655	8,5	2,81	2,81	484	4,9
	2 MIN	950	4,97	3,76	854	13,9	4,39	3,57	755	11,1	3,34	3,24	574	6,7	2,45	2,45	421	3,8
	1	745	4,22	3,11	725	10,4	3,72	2,94	640	8,3	2,81	2,63	483	4,9	2,04	2,04	351	2,7
DFS-2P-43	5	2220	10,17	8,04	1749	23,3	9,02	7,70	1551	18,7	6,94	6,94	1193	11,6	5,17	5,17	889	6,7
	4 MAX	1980	9,46	7,37	1628	20,5	8,38	7,04	1442	16,4	6,42	6,42	1105	10,1	4,76	4,76	819	5,8
	3 MED	1705	8,60	6,57	1479	17,3	7,61	6,26	1309	13,8	5,80	5,69	998	8,4	4,27	4,27	735	4,8
	2 MIN	1360	7,40	5,51	1273	13,2	6,54	5,22	1124	10,5	4,96	4,71	852	6,3	3,61	3,61	621	3,5
	1	1000	5,98	4,31	1028	9,0	5,27	4,07	907	7,1	3,97	3,62	683	4,2	2,86	2,86	492	2,3

## Correction factors for different R.H.

R.H.	WT:	7/12 °C	8/13 °C	10/15 °C	12/17 °C
48%	Pc	0,95	0,94	1,00	1,00
	Ps	1,00	1,00	1,00	1,00
46%	Pc	0,90	0,88	1,00	1,00
	Ps	1,00	1,00	1,00	1,00

### Legend

**WT** = Water temperature  
**Pc** = Cooling total capacity  
**Ps** = Cooling sensible capacity  
**Qw** = Water flow  
**Dp(c)** = Water pressure drop

**Speed** = Fan speed  
**MAX** = High speed  
**MED** = Medium speed  
**MIN** = Low speed  
**Qv** = Air flow

## Performance data

### Cooling capacity of 3 row coil

Entering air temperature: 25°C – R. H.: 50% – Available pressure: 0 Pa

Mod.	Speed	Qv m³/h	WT: 7/12 °C				WT: 8/13 °C				WT: 10/15 °C				WT: 12/17 °C			
			Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa
DFS-2P-13	5	595	2,56	2,10	441	21,4	2,26	2,01	388	16,9	1,71	1,71	294	10,2	1,24	1,24	214	5,7
	4 MAX	540	2,41	1,95	414	19,1	2,12	1,86	364	15,1	1,60	1,60	274	9,0	1,16	1,16	199	5,0
	3 MED	470	2,19	1,75	378	16,2	1,93	1,66	331	12,8	1,45	1,45	249	7,5	1,04	1,04	179	4,1
	2 MIN	410	2,00	1,57	344	13,7	1,76	1,49	302	10,8	1,31	1,31	225	6,3	0,94	0,94	161	3,4
	1	375	1,88	1,46	324	12,3	1,65	1,38	284	9,6	1,23	1,23	211	5,6	0,87	0,87	150	3,0
DFS-2P-23	5	1040	4,27	3,62	734	20,7	3,76	3,47	647	16,5	2,86	2,86	492	10,0	2,24	2,24	385	6,3
	4 MAX	870	3,81	3,15	655	16,9	3,35	3,00	576	13,3	2,53	2,53	435	8,0	1,88	1,88	324	4,6
	3 MED	765	3,49	2,85	601	14,5	3,07	2,71	528	11,4	2,31	2,31	397	6,8	1,67	1,67	287	3,7
	2 MIN	665	3,18	2,55	547	12,2	2,79	2,41	480	9,6	2,09	2,09	359	5,7	1,50	1,50	257	3,1
	1	580	2,90	2,28	498	10,3	2,54	2,16	436	8,1	1,89	1,89	325	4,7	1,35	1,35	231	2,5
DFS-2P-33	5	1415	5,68	4,90	976	17,7	5,01	4,69	861	14,1	3,81	3,81	656	8,5	3,17	3,17	545	6,1
	4 MAX	1320	5,43	4,63	934	16,4	4,78	4,44	823	13,0	3,63	3,63	625	7,8	2,96	2,96	510	5,4
	3 MED	1150	4,96	4,16	853	13,9	4,37	3,97	752	11,0	3,30	3,30	567	6,6	2,59	2,59	446	4,2
	2 MIN	950	4,38	3,58	753	11,1	3,84	3,40	661	8,8	2,88	2,88	496	5,2	2,16	2,16	371	3,0
	1	745	3,71	2,94	638	8,2	3,24	2,78	558	6,4	2,42	2,42	416	3,8	1,72	1,72	296	2,0
DFS-2P-43	5	2220	9,00	7,70	1548	18,7	7,93	7,38	1365	14,9	6,03	6,03	1038	9,0	4,88	4,88	840	6,1
	4 MAX	1980	8,36	7,04	1437	16,4	7,36	6,73	1266	13,0	5,57	5,57	959	7,8	4,37	4,37	752	5,0
	3 MED	1705	7,58	6,26	1304	13,8	6,67	5,96	1147	10,9	5,02	5,02	864	6,5	3,78	3,78	650	3,8
	2 MIN	1360	6,51	5,23	1120	10,5	5,71	4,95	983	8,2	4,27	4,27	734	4,8	3,05	3,05	525	2,6
	1	1000	5,25	4,07	904	7,1	4,60	3,84	790	5,6	3,40	3,40	585	3,2	2,40	2,40	412	1,7

### Correction factors for different R.H.

R.H.	WT:	7/12 °C	8/13 °C	10/15 °C	12/17 °C
48%	Pc	0,95	0,94	1,00	1,00
	Ps	1,00	1,00	1,00	1,00
46%	Pc	0,90	0,88	1,00	1,00
	Ps	1,00	1,00	1,00	1,00

#### Legend

**WT** = Water temperature

**Pc** = Cooling total capacity

**Ps** = Cooling sensible capacity

**Qw** = Water flow

**Dp(c)** = Water pressure drop

**Speed** = Fan speed

**MAX** = High speed

**MED** = Medium speed

**MIN** = Low speed

**Qv** = Air flow

## Performance data

### Cooling capacity of 4 row coil

Entering air temperature: 27°C – R. H.: 50% – Available pressure: 0 Pa

Mod.	Speed	Qv m³/h	WT: 7/12 °C				WT: 8/13 °C				WT: 10/15 °C				WT: 12/17 °C			
			Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa
DFS-2P-14	5	595	3,78	2,63	651	21,9	3,39	2,49	583	17,8	2,61	2,23	448	11,0	1,92	1,92	331	6,3
	4 MAX	540	3,53	2,44	607	19,3	3,17	2,30	544	15,8	2,43	2,05	418	9,7	1,79	1,79	308	5,6
	3 MED	470	3,19	2,18	549	16,1	2,87	2,05	493	13,2	2,20	1,83	378	8,1	1,61	1,61	277	4,6
	2 MIN	410	2,88	1,95	496	13,4	2,60	1,84	446	11,0	1,99	1,62	342	6,8	1,45	1,44	250	3,8
	1	375	2,69	1,81	463	11,8	2,43	1,70	418	9,8	1,86	1,50	320	6,0	1,35	1,33	233	3,4
DFS-2P-24	5	1040	6,27	4,39	1078	58,3	5,64	4,14	970	48,0	4,37	3,75	751	30,0	3,25	3,25	559	17,5
	4 MAX	870	5,54	3,82	953	46,7	5,00	3,60	861	38,7	3,86	3,24	664	24,0	2,85	2,85	491	13,8
	3 MED	765	5,06	3,45	870	39,7	4,57	3,25	787	32,9	3,52	2,90	606	20,4	2,59	2,59	446	11,6
	2 MIN	665	4,57	3,09	786	33,0	4,13	2,91	711	27,4	3,18	2,58	548	17,0	2,33	2,30	402	9,6
	1	580	4,12	2,77	709	27,4	3,73	2,60	642	22,8	2,88	2,30	495	14,2	2,10	2,04	362	8,0
DFS-2P-34	5	1415	8,00	5,69	1376	24,4	7,15	5,40	1230	19,8	5,51	4,92	948	12,3	4,11	4,11	707	7,2
	4 MAX	1320	7,64	5,40	1314	22,4	6,83	5,12	1174	18,3	5,26	4,65	905	11,3	3,91	3,91	673	6,6
	3 MED	1150	6,96	4,86	1197	19,0	6,22	4,59	1070	15,4	4,78	4,15	822	9,5	3,54	3,54	609	5,5
	2 MIN	950	6,09	4,19	1047	14,9	5,46	3,95	938	12,2	4,19	3,54	720	7,5	3,07	3,07	529	4,3
	1	745	5,10	3,45	876	10,8	4,58	3,24	789	8,9	3,50	2,88	603	5,4	2,56	2,56	440	3,1
DFS-2P-44	5	2220	13,06	9,27	2246	41,4	11,67	8,80	2007	33,7	9,01	7,97	1549	20,9	6,70	6,70	1152	12,2
	4 MAX	1980	12,08	8,49	2078	36,0	10,80	8,04	1858	29,3	8,32	7,25	1431	18,1	6,17	6,17	1061	10,5
	3 MED	1705	10,89	7,56	1873	29,9	9,75	7,14	1677	24,4	7,49	6,40	1289	15,0	5,53	5,53	950	8,6
	2 MIN	1360	9,25	6,32	1592	22,3	8,30	5,94	1428	18,2	6,37	5,28	1095	11,2	4,66	4,66	801	6,3
	1	1000	7,32	4,90	1259	14,6	6,60	4,60	1136	12,1	5,05	4,05	869	7,4	3,67	3,57	631	4,1

### Cooling capacity of 4 row coil

Entering air temperature: 26°C – R. H.: 50% – Available pressure: 0 Pa

Mod.	Speed	Qv m³/h	WT: 7/12 °C				WT: 8/13 °C				WT: 10/15 °C				WT: 12/17 °C			
			Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa
DFS-2P-14	5	595	3,37	2,49	580	17,8	2,98	2,36	512	14,2	2,25	2,11	388	8,5	1,64	1,64	281	4,7
	4 MAX	540	3,15	2,30	541	15,7	2,78	2,18	479	12,5	2,10	1,94	361	7,5	1,52	1,52	261	4,1
	3 MED	470	2,85	2,06	490	13,1	2,52	1,94	433	10,5	1,90	1,72	326	6,2	1,36	1,36	235	3,4
	2 MIN	410	2,58	1,84	444	11,0	2,28	1,73	392	8,7	1,71	1,53	294	5,2	1,23	1,23	211	2,8
	1	375	2,41	1,71	415	9,7	2,13	1,61	367	7,7	1,60	1,41	275	4,6	1,14	1,14	196	2,5
DFS-2P-24	5	1040	5,62	4,15	966	47,9	4,97	3,94	856	38,3	3,79	3,57	652	23,3	2,78	2,78	478	13,2
	4 MAX	870	4,98	3,61	856	38,5	4,40	3,41	757	30,7	3,34	3,07	575	18,5	2,43	2,43	418	10,4
	3 MED	765	4,54	3,26	781	32,7	4,02	3,08	692	26,1	3,04	2,75	523	15,7	2,20	2,20	379	8,7
	2 MIN	665	4,10	2,91	706	27,2	3,64	2,74	626	21,8	2,74	2,44	472	13,0	1,97	1,97	340	7,1
	1	580	3,71	2,61	637	22,6	3,29	2,45	566	18,2	2,48	2,17	426	10,8	1,77	1,77	305	5,9
DFS-2P-34	5	1415	7,12	5,41	1224	19,8	6,29	5,15	1081	15,7	4,79	4,70	824	9,5	3,52	3,52	606	5,4
	4 MAX	1320	6,80	5,13	1169	18,2	6,00	4,88	1032	14,5	4,56	4,43	785	8,8	3,35	3,35	576	5,0
	3 MED	1150	6,19	4,60	1065	15,4	5,46	4,37	940	12,2	4,14	3,94	712	7,4	3,02	3,02	520	4,1
	2 MIN	950	5,43	3,96	934	12,1	4,79	3,74	824	9,6	3,61	3,35	621	5,7	2,61	2,61	449	3,2
	1	745	4,56	3,25	784	8,9	4,02	3,06	691	7,0	3,02	2,72	519	4,2	2,16	2,16	372	2,3
DFS-2P-44	5	2220	11,61	8,81	1996	33,5	10,27	8,38	1767	26,8	7,81	7,58	1343	16,2	5,73	5,73	986	9,2
	4 MAX	1980	10,74	8,05	1848	29,1	9,50	7,64	1635	23,3	7,21	6,88	1240	14,0	5,26	5,26	905	7,9
	3 MED	1705	9,70	7,15	1668	24,2	8,57	6,76	1473	19,3	6,48	6,06	1114	11,6	4,70	4,70	808	6,4
	2 MIN	1360	8,26	5,96	1420	18,1	7,29	5,61	1253	14,4	5,48	4,98	943	8,6	3,94	3,94	678	4,7
	1	1000	6,56	4,62	1128	12,0	5,79	4,33	996	9,5	4,34	3,81	746	5,6	3,09	3,09	531	3,0

### Correction factors for different R.H.

R.H.	WT:	7/12 °C	8/13 °C	10/15 °C	12/17 °C
48%	Pc	0,95	0,94	1,00	1,00
	Ps	1,00	1,00	1,00	1,00
46%	Pc	0,90	0,88	1,00	1,00
	Ps	1,00	1,00	1,00	1,00

#### Legend

WT = Water temperature  
Pc = Cooling total capacity  
Ps = Cooling sensible capacity  
Qw = Water flow  
Dp(c) = Water pressure drop

Speed = Fan speed  
MAX = High speed  
MED = Medium speed  
MIN = Low speed  
Qv = Air flow



## Performance data

### Cooling capacity of 4 row coil

Entering air temperature: 25°C – R. H.: 50% – Available pressure: 0 Pa

Mod.	Speed	Qv m³/h	WT: 7/12 °C				WT: 8/13 °C				WT: 10/15 °C				WT: 12/17 °C			
			Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa
DFS-2P-14	5	595	2,97	2,36	510	14,1	2,60	2,23	447	11,1	1,94	1,94	333	6,5	1,38	1,38	237	3,5
	4 MAX	540	2,77	2,18	477	12,5	2,43	2,06	418	9,8	1,80	1,80	310	5,7	1,28	1,28	220	3,0
	3 MED	470	2,51	1,94	432	10,4	2,19	1,83	377	8,2	1,62	1,62	279	4,7	1,14	1,14	196	2,5
	2 MIN	410	2,27	1,73	390	8,7	1,98	1,63	341	6,8	1,46	1,44	252	3,9	1,02	1,02	176	2,0
	1	375	2,12	1,61	365	7,7	1,85	1,51	319	6,0	1,36	1,33	235	3,4	0,95	0,95	163	1,8
DFS-2P-24	5	1040	4,96	3,94	853	38,2	4,36	3,75	749	30,1	3,27	3,27	563	17,9	2,35	2,35	405	9,8
	4 MAX	870	4,39	3,42	754	30,7	3,85	3,24	662	24,1	2,87	2,87	494	14,1	2,05	2,05	352	7,6
	3 MED	765	4,01	3,08	690	26,1	3,51	2,91	604	20,5	2,61	2,60	450	11,9	1,85	1,85	318	6,3
	2 MIN	665	3,62	2,75	623	21,8	3,17	2,59	546	17,1	2,35	2,30	405	9,9	1,65	1,65	284	5,2
	1	580	3,28	2,45	563	18,1	2,87	2,31	493	14,2	2,12	2,04	364	8,2	1,48	1,48	254	4,2
DFS-2P-34	5	1415	6,27	5,16	1078	51,7	5,50	4,91	946	42,4	4,14	4,14	713	39,4	3,15	3,15	541	29,4
	4 MAX	1320	5,98	4,88	1028	49,4	5,25	4,64	903	41,4	3,94	3,94	678	37,7	2,94	2,94	506	29,9
	3 MED	1150	5,45	4,37	937	42,2	4,77	4,15	821	36,6	3,57	3,57	613	32,6	2,58	2,58	444	25,1
	2 MIN	950	4,77	3,75	820	36,6	4,17	3,54	717	32,1	3,10	3,10	533	28,4	2,20	2,20	378	22,3
	1	745	4,00	3,07	688	30,7	3,49	2,89	601	27,5	2,58	2,56	443	24,1	1,81	1,81	311	18,6
DFS-2P-44	5	2220	10,23	8,37	1759	78,7	8,99	7,96	1546	70,0	6,75	6,75	1161	52,4	5,07	5,07	872	47,4
	4 MAX	1980	9,47	7,64	1629	72,2	8,30	7,24	1428	64,3	6,21	6,21	1068	48,7	4,54	4,54	781	43,0
	3 MED	1705	8,53	6,77	1467	66,2	7,48	6,40	1286	58,1	5,57	5,57	957	43,8	3,95	3,95	680	38,7
	2 MIN	1360	7,26	5,62	1248	55,4	6,35	5,29	1092	49,3	4,70	4,69	808	36,5	3,30	3,30	568	31,4
	1	1000	5,77	4,34	992	44,5	5,04	4,07	866	38,4	3,70	3,57	636	28,2	2,56	2,56	440	22,2

### Correction factors for different R.H.

R.H.	WT:	7/12 °C	8/13 °C	10/15 °C	12/17 °C
48%	Pc	0,95	0,94	1,00	1,00
	Ps	1,00	1,00	1,00	1,00
46%	Pc	0,90	0,88	1,00	1,00
	Ps	1,00	1,00	1,00	1,00

#### Legend

WT = Water temperature

Pc = Cooling total capacity

Ps = Cooling sensible capacity

Qw = Water flow

Dp(c) = Water pressure drop

Speed = Fan speed

MAX = High speed

MED = Medium speed

MIN = Low speed

Qv = Air flow

## Performance data

### Heating capacity of 3 row coil

Entering air temperature: 20°C – Available pressure: 0 Pa

Mod.	Speed	Qv m³/h	WT: 70/60 °C			WT: 60/50 °C			WT: 55/45 °C			WT: 50/40 °C			WT: 50/45 °C			WT: 45/40 °C		
			Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa
DFS-2P-13	5	595	6,89	593	27,5	5,28	454	17,6	4,48	386	13,3	3,68	316	9,5	4,22	725	42,0	3,42	588	29,3
	4 MAX	540	6,37	548	23,9	4,89	421	15,3	4,14	356	11,6	3,40	293	8,3	3,90	671	36,5	3,16	544	25,5
	3 MED	470	5,69	489	19,5	4,37	376	12,5	3,71	319	9,5	3,04	262	6,8	3,49	600	29,9	2,83	487	20,9
	2 MIN	410	5,09	437	15,9	3,91	336	10,2	3,32	285	7,8	2,72	234	5,5	3,12	536	24,4	2,53	434	17,0
	1	375	4,71	405	13,9	3,62	312	8,9	3,08	264	6,8	2,53	217	4,9	2,89	497	21,2	2,34	403	14,9
DFS-2P-23	5	1040	11,43	983	26,4	8,76	754	16,9	7,42	638	12,8	6,08	523	9,1	7,00	1205	40,5	5,67	976	28,2
	4 MAX	870	9,95	856	20,6	7,63	656	13,2	6,46	555	9,9	5,29	455	7,1	6,10	1049	31,5	4,94	850	22,0
	3 MED	765	8,99	773	17,1	6,89	592	11,0	5,83	502	8,3	4,79	412	5,9	5,50	946	26,2	4,46	766	18,3
	2 MIN	665	8,01	689	13,9	6,15	528	8,9	5,21	448	6,8	4,28	368	4,8	4,91	845	21,4	3,98	685	14,9
	1	580	7,16	615	11,4	5,50	473	7,3	4,66	401	5,5	3,83	329	3,9	4,39	754	17,4	3,56	612	12,2
DFS-2P-33	5	1415	15,74	1354	24,1	12,04	1035	15,4	10,17	875	11,6	8,32	715	8,2	9,64	1658	36,8	7,80	1342	25,6
	4 MAX	1320	14,90	1281	21,8	11,40	980	13,9	9,64	829	10,5	7,89	678	7,4	9,12	1569	33,4	7,39	1270	23,2
	3 MED	1150	13,36	1149	17,9	10,23	880	11,5	8,66	745	8,7	7,09	609	6,1	8,19	1408	27,4	6,62	1139	19,1
	2 MIN	950	11,47	987	13,6	8,78	755	8,7	7,44	640	6,6	6,10	524	4,7	7,01	1206	20,8	5,69	979	14,5
	1	745	9,36	805	9,4	7,19	618	6,1	6,09	524	4,6	5,00	430	3,3	5,74	986	14,5	4,66	801	10,1
DFS-2P-43	5	2220	24,70	2124	24,9	18,91	1626	16,0	16,01	1377	12,0	13,09	1126	8,5	15,12	2601	38,2	-	-	-
	4 MAX	1980	22,61	1945	21,3	17,31	1489	13,6	14,65	1259	10,2	11,99	1031	7,3	13,84	2380	32,5	-	-	-
	3 MED	1705	20,09	1727	17,2	15,35	1320	11,0	13,02	1120	8,3	10,68	918	5,9	12,29	2113	26,3	-	-	-
	2 MIN	1360	16,69	1435	12,3	12,78	1099	7,9	10,84	932	6,0	8,89	765	4,2	10,23	1759	18,9	-	-	-
	1	1000	12,90	1109	7,7	9,90	851	5,0	8,38	721	3,8	6,89	593	2,7	7,90	1358	11,8	-	-	-

### Heating capacity of 4 row coil

Entering air temperature: 20°C – Available pressure: 0 Pa

Mod.	Speed	Qv m³/h	WT: 70/60 °C			WT: 60/50 °C			WT: 55/45 °C			WT: 50/40 °C			WT: 50/45 °C			WT: 45/40 °C		
			Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa
DFS-2P-14	5	595	7,75	667	17,2	5,95	512	11,1	5,06	435	8,4	4,15	357	6,0	4,74	816	26,3	3,86	663	18,5
	4 MAX	540	7,14	614	14,8	5,48	471	9,5	4,65	400	7,2	3,82	328	5,2	4,37	752	22,7	3,54	610	15,9
	3 MED	470	6,32	544	11,9	4,86	418	7,7	4,12	355	5,8	3,39	291	4,2	3,87	665	18,2	3,14	540	12,7
	2 MIN	410	5,60	481	9,6	4,31	370	6,2	3,65	314	4,7	3,01	259	3,4	3,43	590	14,7	2,79	479	10,3
	1	375	5,17	444	8,3	3,98	342	5,4	3,38	290	4,1	2,78	239	2,9	3,17	545	12,7	2,57	442	8,9
DFS-2P-24	5	1040	12,97	1115	26,7	9,97	857	16,1	8,48	729	12,9	6,96	599	10,4	7,94	1367	36,8	6,45	1109	25,1
	4 MAX	870	11,16	960	20,6	8,59	739	13,0	7,30	628	11,6	6,01	517	10,3	6,83	1176	31,5	5,55	955	21,3
	3 MED	765	10,02	861	16,3	7,71	663	11,0	6,55	564	10,4	5,39	464	9,3	6,13	1054	28,4	4,98	857	18,5
	2 MIN	665	8,86	762	12,3	6,83	587	9,5	5,80	499	8,3	4,78	411	6,3	5,42	932	24,0	4,41	758	15,2
	1	580	7,86	676	9,4	6,06	521	7,3	5,16	443	6,7	4,25	365	5,2	4,81	827	20,0	3,91	673	12,4
DFS-2P-34	5	1415	17,13	1474	20,8	13,13	1129	13,3	11,12	956	10,0	9,11	783	7,2	10,50	1807	26,3	8,50	1462	18,5
	4 MAX	1320	16,20	1393	18,8	12,41	1067	12,0	10,51	904	9,1	8,60	740	6,5	9,93	1708	24,8	8,04	1382	16,3
	3 MED	1150	14,45	1243	15,3	11,08	953	10,8	9,38	806	7,4	7,68	660	5,3	8,85	1523	21,4	7,17	1233	14,3
	2 MIN	950	12,28	1056	11,4	9,43	811	8,7	7,99	687	6,5	6,55	563	4,9	7,52	1293	17,5	6,09	1048	12,2
	1	745	9,95	856	7,8	7,64	657	5,0	6,49	558	3,8	5,32	458	2,7	6,09	1047	11,9	4,94	849	8,3
DFS-2P-44	5	2220	26,66	2293	26,7	20,40	1754	16,1	17,29	1487	11,9	14,16	1218	12,7	16,30	2804	36,7	13,22	2274	25,6
	4 MAX	1980	24,24	2084	21,3	18,61	1600	14,1	15,76	1355	10,2	12,90	1110	10,8	14,85	2555	31,5	12,04	2070	21,3
	3 MED	1705	21,43	1843	17,2	16,43	1413	11,0	13,94	1199	9,3	11,41	982	8,6	13,13	2258	28,4	10,63	1828	16,3
	2 MIN	1360	17,67	1520	12,3	13,57	1167	8,7	11,53	991	7,4	9,45	813	6,2	10,82	1861	21,4	8,79	1512	12,4
	1	1000	13,52	1163	9,4	10,40	894	6,2	8,82	759	5,3	7,25	623	4,8	8,27	1422	16,7	6,71	1154	10,3

#### Legend

WT = Water temperature  
Ph = Capacity  
Qw = Water flow

Dp(c) = Water pressure drop  
Qv = Air flow  
Speed = Fan speed

MAX = High speed  
MED = Medium speed  
MIN = Low speed

## Performance data

### Heating capacity of 1 row additional coil

Entering air temperature: 20°C – Available pressure: 0 Pa

Mod.	Speed	Qv m³/h	WT: 80/70 °C			WT: 75/65 °C			WT: 70/60 °C			WT: 65/55 °C			WT: 60/50 °C			WT: 55/45 °C		
			Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa
DFS-1	5	595	3,77	324	22,6	3,40	293	19,1	3,04	261	15,8	2,67	230	12,8	2,30	197	9,9	1,93	166	7,4
	4 MAX	540	3,55	305	20,3	3,20	275	17,1	2,85	245	14,1	2,51	216	11,4	2,16	186	8,9	1,82	156	6,6
	3 MED	470	3,24	279	17,2	2,93	252	14,5	2,61	224	12,0	2,29	197	9,7	1,98	170	7,6	1,66	143	5,6
	2 MIN	410	2,96	255	14,6	2,68	230	12,4	2,39	205	10,3	2,10	180	8,3	1,81	156	6,4	1,52	131	4,8
	1	375	2,79	240	13,1	2,52	217	11,2	2,25	194	9,2	1,98	170	7,4	1,71	147	5,8	1,43	123	4,3
DFS-2	5	1040	5,96	512	13,7	5,37	462	11,5	4,76	409	9,4	4,17	359	7,5	3,57	307	5,8	2,97	256	4,3
	4 MAX	870	5,32	457	11,1	4,79	412	9,4	4,25	366	7,7	3,73	320	6,2	3,19	274	4,7	2,66	229	3,5
	3 MED	765	4,90	421	9,6	4,41	379	8,1	3,92	337	6,7	3,43	295	5,3	2,94	253	4,1	2,46	211	3,0
	2 MIN	665	4,48	385	8,2	4,03	347	6,9	3,58	308	5,7	3,14	270	4,5	2,69	232	3,5	2,25	193	2,6
	1	580	4,09	352	7,0	3,68	317	5,8	3,28	282	4,8	2,87	247	3,9	2,47	212	3,0	2,06	177	2,2
DFS-3	5	1415	7,68	660	18,2	6,92	595	15,4	6,16	530	12,7	5,40	465	10,2	4,64	399	7,9	3,89	335	5,8
	4 MAX	1320	7,34	631	16,8	6,62	570	14,2	5,89	507	11,7	5,18	445	9,4	4,45	383	7,3	3,73	321	5,4
	3 MED	1150	6,72	578	14,4	6,06	521	12,1	5,40	464	10,0	4,74	407	8,0	4,08	351	6,2	3,41	294	4,6
	2 MIN	950	5,95	512	11,5	5,37	462	9,7	4,79	412	8,0	4,19	361	6,4	3,62	311	5,0	3,03	261	3,7
	1	745	5,08	437	8,7	4,59	394	7,3	4,08	351	6,0	3,59	308	4,9	3,09	266	3,8	2,59	223	2,8
DFS-4	5	2220	11,93	1026	28,0	10,78	927	22,0	9,63	829	18,0	8,47	729	16,0	7,31	629	14,0	6,17	531	11,5
	4 MAX	1980	11,11	956	25,8	10,02	862	19,0	8,95	770	17,0	8,16	678	15,0	6,81	586	13,0	5,73	493	10,0
	3 MED	1705	10,07	866	22,0	9,11	783	17,0	8,14	700	15,0	7,16	616	13,0	6,19	532	11,0	5,21	448	9,0
	2 MIN	1360	8,73	751	18,0	7,88	678	15,0	7,04	605	13,0	6,21	534	11,0	5,36	461	10,0	4,51	388	8,0
	1	1000	7,13	613	15,0	6,44	554	12,0	5,76	495	10,0	5,08	437	9,0	4,38	377	8,0	3,70	318	6,0

### Heating capacity of 2 row additional coil

Entering air temperature: 20°C – Available pressure: 0 Pa

Mod.	Speed	Qv m³/h	WT: 65/55 °C			WT: 60/50 °C			WT: 55/45 °C			WT: 50/40 °C			WT: 45/40 °C			WT: 45/35 °C		
			Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa
DFS-1	5	595	4,59	394	6,0	3,96	341	4,7	3,33	286	3,5	2,69	232	2,4	2,57	442	7,9	2,06	178	1,5
	4 MAX	540	4,29	369	5,3	3,70	318	4,2	3,11	268	3,1	2,52	217	2,2	2,41	414	7,0	1,93	166	1,4
	3 MED	470	3,88	334	4,5	3,35	288	3,5	2,82	242	2,6	2,29	197	1,8	2,17	374	5,8	1,75	151	1,1
	2 MIN	410	3,51	302	3,7	3,04	261	2,9	2,55	219	2,2	2,07	178	1,5	1,97	339	4,9	1,59	137	1,0
	1	375	3,29	283	3,3	2,84	244	2,6	2,39	206	1,9	1,94	167	1,4	1,85	317	4,3	1,49	128	0,9
DFS-2	5	1040	7,60	654	20,2	6,58	566	15,8	5,55	478	11,9	4,53	389	8,4	4,27	734	26,4	3,49	300	5,3
	4 MAX	870	6,73	579	16,2	5,82	501	12,7	4,92	423	9,5	4,01	345	6,7	3,78	651	21,3	3,10	266	4,3
	3 MED	765	6,15	529	13,8	5,32	458	10,8	4,50	387	8,1	3,67	315	5,7	3,45	594	18,1	2,84	244	3,7
	2 MIN	665	5,56	478	11,5	4,82	414	9,0	4,06	349	6,8	3,32	285	4,8	3,12	537	15,1	2,57	221	3,1
	1	580	5,04	433	9,6	4,35	375	7,5	3,68	317	5,7	3,00	258	4,0	2,83	486	12,6	2,33	200	2,6
DFS-3	5	1415	10,26	882	24,0	8,90	765	17,0	7,52	647	14,0	6,16	530	11,0	5,77	992	28,0	4,77	410	11,0
	4 MAX	1320	9,79	842	21,0	8,49	730	16,0	7,19	618	13,0	5,87	505	10,0	5,50	946	26,0	4,56	392	10,0
	3 MED	1150	8,92	767	19,0	7,73	665	14,0	6,54	562	12,0	5,34	460	10,0	5,00	860	24,0	4,15	357	9,0
	2 MIN	950	7,79	670	17,0	6,76	581	13,0	5,72	492	11,0	4,68	402	9,0	4,38	753	21,0	3,63	312	8,0
	1	745	6,52	561	15,0	5,66	487	11,0	4,79	412	10,0	3,92	337	8,0	3,67	631	18,0	3,06	263	6,0

#### Legend

WT = Water temperature  
Ph = Capacity  
Qw = Water flow

Dp(c) = Water pressure drop  
Qv = Air flow  
Speed = Fan speed

MAX = High speed  
MED = Medium speed  
MIN = Low speed

## Performance data

### DFE - Cooling capacity of 3 row coil

Entering air temperature: 27°C – R. H.: 50% – Available pressure: 0 Pa

Model ECM	Vol-tage	Qv m <sup>3</sup> /h	WT: 7/12 °C				WT: 8/13 °C				WT: 10/15 °C				WT: 12/17 °C			
			Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa
DFE-2P-13	10	730	3,84	2,86	660	44,0	3,43	2,70	590	35,8	2,56	2,37	440	21,1	2,08	2,08	358	14,4
	7,5	625	3,46	2,54	595	36,5	3,09	2,40	531	29,8	2,32	2,10	399	17,7	1,84	1,84	316	11,7
	5	515	3,02	2,19	519	28,7	2,70	2,06	464	23,5	2,03	1,80	349	14,0	1,58	1,58	272	8,9
	3	425	2,62	1,87	451	22,4	2,35	1,76	404	18,3	1,77	1,54	304	11,0	1,35	1,35	232	6,8
	1	350	2,26	1,60	389	17,2	2,02	1,50	347	14,1	1,53	1,31	263	8,6	1,15	1,15	198	5,1
DFE-2P-23	10	1250	6,31	4,82	1085	41,3	5,62	4,55	967	33,5	4,17	4,01	717	19,5	3,50	3,50	602	14,2
	7,5	1120	5,88	4,44	1011	36,5	5,24	4,19	901	29,6	3,90	3,68	671	17,3	3,22	3,22	554	12,2
	5	920	5,15	3,82	886	28,9	4,60	3,59	791	23,5	3,43	3,15	590	13,9	2,77	2,77	476	9,4
	3	760	4,50	3,28	774	22,8	4,02	3,09	691	18,6	3,02	2,71	519	11,1	2,38	2,38	409	7,2
	1	610	3,83	2,75	659	17,1	3,43	2,59	590	14,0	2,58	2,26	444	8,4	1,99	1,99	342	5,2
DFE-2P-33	10	1450	7,44	5,67	1280	28,6	6,62	5,34	1139	23,1	4,90	4,70	843	13,4	4,10	4,10	705	9,7
	7,5	1425	7,36	5,59	1266	28,0	6,55	5,28	1127	22,7	4,84	4,63	832	13,1	4,05	4,05	697	9,5
	5	1180	6,48	4,84	1115	22,4	5,78	4,56	994	18,2	4,29	3,99	738	10,6	3,50	3,50	602	7,3
	3	985	5,71	4,20	982	18,0	5,10	3,95	877	14,6	3,80	3,46	654	8,6	3,04	3,04	523	5,7
	1	770	4,77	3,44	820	13,1	4,27	3,24	734	10,7	3,20	2,83	550	6,3	2,49	2,49	428	4,0

### DFE - Cooling capacity of 3 row coil

Entering air temperature: 26°C – R. H.: 50% – Available pressure: 0 Pa

Model ECM	Vol-tage	Qv m <sup>3</sup> /h	WT: 7/12 °C				WT: 8/13 °C				WT: 10/15 °C				WT: 12/17 °C			
			Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa
DFE-2P-13	10	730	3,42	2,71	588	35,9	3,01	2,54	518	28,4	2,26	2,26	389	17,0	1,90	1,90	327	12,3
	7,5	625	3,08	2,40	530	29,8	2,71	2,25	466	23,7	2,01	2,01	346	13,7	1,68	1,68	289	10,0
	5	515	2,69	2,06	463	23,4	2,37	1,93	408	18,7	1,69	1,67	291	10,1	1,45	1,45	249	7,6
	3	425	2,33	1,77	401	18,3	2,06	1,66	354	14,6	1,47	1,43	253	8,0	1,24	1,24	213	5,8
	1	350	2,01	1,51	346	14,1	1,78	1,41	306	11,3	1,28	1,21	220	6,2	1,06	1,06	182	4,4
DFE-2P-23	10	1250	5,61	4,56	965	33,6	4,92	4,29	846	26,5	3,81	3,81	655	16,7	3,19	3,19	549	12,0
	7,5	1120	5,23	4,19	900	29,7	4,59	3,94	789	23,4	3,51	3,51	604	14,4	2,94	2,94	506	10,4
	5	920	4,58	3,60	788	23,5	4,03	3,38	693	18,6	3,01	3,01	518	11,0	2,53	2,53	435	8,0
	3	760	4,01	3,10	690	18,6	3,53	2,90	607	14,7	2,59	2,59	445	8,4	2,17	2,17	373	6,1
	1	610	3,41	2,59	587	14,0	3,01	2,43	518	11,1	2,14	2,09	368	6,1	1,82	1,82	313	4,5
DFE-2P-33	10	1450	6,61	5,35	1137	23,2	5,79	5,03	996	18,2	4,47	4,47	769	11,4	3,74	3,74	643	8,2
	7,5	1425	6,53	5,28	1123	22,7	5,73	4,96	986	17,9	4,41	4,41	759	11,1	3,69	3,69	635	8,0
	5	1180	5,76	4,57	991	18,2	5,06	4,28	870	14,4	3,81	3,81	655	8,6	3,19	3,19	549	6,2
	3	985	5,08	3,96	874	14,6	4,46	3,71	767	11,5	3,31	3,31	569	6,7	2,77	2,77	476	4,9
	1	770	4,24	3,24	729	10,6	3,74	3,04	643	8,4	2,65	2,61	456	4,5	2,27	2,27	390	3,4

### Correction factors for different R.H.

R.H.	WT:	7/12 °C	8/13 °C	10/15 °C	12/17 °C
48%	Pc	0,95	0,94	1,00	1,00
	Ps	1,00	1,00	1,00	1,00
46%	Pc	0,90	0,88	1,00	1,00
	Ps	1,00	1,00	1,00	1,00

#### Legend

**WT** = Water temperature  
**Pc** = Cooling total capacity  
**Ps** = Cooling sensible capacity  
**Qw** = Water flow  
**Dp(c)** = Water pressure drop  
**Qv** = Air flow

#### Note

For air side pressure drop higher than 0Pa use correction factors at page 26 and 27.

## Performance data

### DFE - Cooling capacity of 3 row coil

Entering air temperature: 25°C – R. H.: 50% – Available pressure: 0 Pa

Model ECM	Vol- tage	Qv m <sup>3</sup> /h	WT: 7/12 °C				WT: 8/13 °C				WT: 10/15 °C				WT: 12/17 °C			
			Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa
DFE-2P-13	10	730	3,01	2,55	518	28,6	2,59	2,38	445	21,9	2,08	2,08	358	14,6	1,72	1,72	296	10,3
	7,5	625	2,71	2,26	466	23,8	2,34	2,11	402	18,3	1,85	1,85	318	11,9	1,52	1,52	261	8,3
	5	515	2,37	1,94	408	18,7	2,05	1,81	353	14,4	1,59	1,59	273	9,1	1,31	1,31	225	6,4
	3	425	2,06	1,66	354	14,6	1,78	1,55	306	11,3	1,36	1,36	234	6,9	1,12	1,12	193	4,9
	1	350	1,77	1,41	304	11,3	1,54	1,32	265	8,7	1,16	1,16	200	5,2	0,96	0,96	165	3,7
DFE-2P-23	10	1250	4,93	4,29	848	26,7	4,23	4,02	728	20,3	3,50	3,50	602	14,4	2,88	2,88	495	10,1
	7,5	1120	4,59	3,95	789	23,6	3,95	3,69	679	18,0	3,23	3,23	556	12,4	2,66	2,66	458	8,7
	5	920	4,03	3,39	693	18,7	3,47	3,16	597	14,3	2,77	2,77	476	9,5	2,28	2,28	392	6,7
	3	760	3,53	2,91	607	14,8	3,05	2,72	525	11,4	2,38	2,38	409	7,3	1,97	1,97	339	5,1
	1	610	3,00	2,43	516	11,2	2,60	2,27	447	8,6	1,99	1,99	342	5,3	1,64	1,64	282	3,7
DFE-2P-33	10	1450	5,79	5,03	996	18,4	4,96	4,71	853	13,9	4,10	4,10	705	9,8	3,37	3,37	580	6,9
	7,5	1425	5,73	4,97	986	18,0	4,91	4,64	845	13,6	4,05	4,05	697	9,6	3,33	3,33	573	6,7
	5	1180	5,05	4,29	869	14,5	4,34	4,01	746	11,0	3,51	3,51	604	7,4	2,88	2,88	495	5,2
	3	985	4,46	3,72	767	11,6	3,84	3,47	660	8,9	3,04	3,04	523	5,8	2,50	2,50	430	4,1
	1	770	3,73	3,04	642	8,5	3,22	2,84	554	6,5	2,49	2,49	428	4,1	2,05	2,05	353	2,9

### Correction factors for different R.H.

R.H.	WT:	7/12°C	8/13°C	10/15°C	12/17°C
48%	Pc	0,95	0,94	1,00	1,00
	Ps	1,00	1,00	1,00	1,00
46%	Pc	0,90	0,88	1,00	1,00
	Ps	1,00	1,00	1,00	1,00

#### Legend

**WT** = Water temperature  
**Pc** = Cooling total capacity  
**Ps** = Cooling sensible capacity  
**Qw** = Water flow  
**Dp(c)** = Water pressure drop  
**Qv** = Air flow

#### Note

For air side pressure drop higher than 0Pa use correction factors at page 26 and 27.

## Performance data

### DFE - Cooling capacity of 4 row coil

Entering air temperature: 27°C – R. H.: 50% – Available pressure: 0 Pa

Model ECM	Vol-tage	Qv m³/h	WT: 7/12 °C				WT: 8/13 °C				WT: 10/15 °C				WT: 12/17 °C			
			Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa
DFE-2P-14	10	730	4,47	3,26	769	29,7	3,99	3,07	686	24,2	2,99	2,68	514	14,4	2,36	2,36	406	9,4
	7,5	625	3,98	2,87	685	24,3	3,56	2,70	612	19,8	2,68	2,36	461	11,8	2,08	2,08	358	7,5
	5	515	3,43	2,44	590	18,7	3,07	2,29	528	15,3	2,32	2,00	399	9,2	1,77	1,77	304	5,6
	3	425	2,94	2,07	506	14,3	2,64	1,94	454	11,7	2,00	1,69	344	7,1	1,50	1,50	258	4,2
	1	350	2,51	1,75	432	10,8	2,25	1,64	387	8,9	1,71	1,43	294	5,4	1,26	1,26	217	3,1
DFE-2P-24	10	1250	7,35	5,37	1264	77,1	5,59	5,07	961	63,1	4,97	4,45	855	38,0	3,92	3,92	674	24,6
	7,5	1120	6,80	4,93	1170	67,1	6,10	4,64	1049	55,1	4,61	4,07	793	33,3	3,59	3,59	617	21,1
	5	920	5,89	4,20	1013	52,1	5,28	3,95	908	42,8	4,01	3,46	690	26,0	3,06	3,06	526	15,9
	3	760	5,08	3,59	874	40,3	4,57	3,38	786	33,1	3,48	2,95	599	20,2	2,60	2,60	447	12,0
	1	610	4,27	2,97	734	29,6	3,84	2,80	660	24,4	2,93	2,44	504	15,0	2,15	2,15	370	8,6
DFE-2P-34	10	1450	8,24	6,07	1417	26,3	7,34	5,71	1262	21,4	5,46	4,99	939	12,5	4,38	4,38	753	8,4
	7,5	1425	8,13	5,98	1398	25,8	7,25	5,63	1247	20,9	5,40	4,92	929	12,3	4,32	4,32	743	8,2
	5	1180	7,09	5,15	1219	20,2	6,33	4,84	1089	16,5	4,74	4,23	815	9,7	3,71	3,71	638	6,3
	3	985	6,19	4,44	1065	15,9	5,53	4,17	951	13,0	4,15	3,64	714	7,7	3,20	3,20	550	4,8
	1	770	5,11	3,61	879	11,3	4,57	3,39	786	9,3	3,45	2,95	593	5,6	2,62	2,62	451	3,4

### DFE - Cooling capacity of 4 row coil

Entering air temperature: 26°C – R. H.: 50% – Available pressure: 0 Pa

Model ECM	Vol-tage	Qv m³/h	WT: 7/12 °C				WT: 8/13 °C				WT: 10/15 °C				WT: 12/17 °C			
			Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa
DFE-2P-14	10	730	3,97	3,07	683	24,2	3,50	2,88	602	19,2	2,57	2,57	442	11,0	2,16	2,16	372	8,0
	7,5	625	3,55	2,70	611	19,8	3,12	2,53	537	15,7	2,22	2,18	382	8,5	1,90	1,90	327	6,4
	5	515	3,06	2,30	526	15,2	2,70	2,15	464	12,2	1,93	1,85	332	6,6	1,61	1,61	277	4,8
	3	425	2,63	1,95	452	11,7	2,32	1,82	399	9,3	1,67	1,57	287	5,2	1,37	1,37	236	3,6
	1	350	2,24	1,65	385	8,8	1,98	1,54	341	7,1	1,44	1,32	248	4,0	1,16	1,16	200	2,7
DFE-2P-24	10	1250	6,56	5,08	1128	63,1	5,79	4,77	996	50,3	4,14	4,13	712	27,5	3,58	3,58	616	21,0
	7,5	1120	6,07	4,65	1044	55,0	5,37	4,37	924	44,0	3,85	3,78	662	24,1	3,28	3,28	564	18,0
	5	920	5,26	3,96	905	42,7	4,65	3,72	800	34,2	3,35	3,21	576	18,9	2,80	2,80	482	13,6
	3	760	4,54	3,38	781	33,0	4,02	3,17	691	26,5	2,92	2,74	502	14,8	2,38	2,38	409	10,3
	1	610	3,82	2,80	657	24,3	3,39	2,63	583	19,5	2,47	2,27	425	11,1	1,97	1,97	339	7,4
DFE-2P-34	10	1450	7,31	5,72	1257	21,4	6,42	5,36	1104	16,9	4,77	4,77	820	9,9	3,99	3,99	686	7,1
	7,5	1425	7,22	5,64	1242	20,9	6,34	5,29	1090	16,5	4,70	4,70	808	9,6	3,94	3,94	678	6,9
	5	1180	6,30	4,85	1084	16,4	5,54	4,54	953	13,0	4,04	4,04	695	7,4	3,39	3,39	583	5,3
	3	985	5,50	4,18	946	13,0	4,85	3,91	834	10,3	3,43	3,37	590	5,5	2,92	2,92	502	4,1
	1	770	4,55	3,40	783	9,3	4,01	3,18	690	7,4	2,86	2,73	492	4,0	2,37	2,39	407	2,9

### Correction factors for different R.H.

R.H.	WT:	7/12 °C	8/13 °C	10/15 °C	12/17 °C
48%	Pc	0,95	0,94	1,00	1,00
	Ps	1,00	1,00	1,00	1,00
46%	Pc	0,90	0,88	1,00	1,00
	Ps	1,00	1,00	1,00	1,00

#### Legend

**WT** = Water temperature  
**Pc** = Cooling total capacity  
**Ps** = Cooling sensible capacity  
**Qw** = Water flow  
**Dp(c)** = Water pressure drop  
**Qv** = Air flow

#### Note

For air side pressure drop higher than 0Pa use correction factors at page 28 and 29.

## Performance data

### DFE - Cooling capacity of 4 row coil

Entering air temperature: 25°C – R. H.: 50% – Available pressure: 0 Pa

Model ECM	Vol- tage	Qv m <sup>3</sup> /h	WT: 7/12 °C				WT: 8/13 °C				WT: 10/15 °C				WT: 12/17 °C			
			Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa	Pc kW	Ps kW	Qw l/h	Dp(c) kPa
DFE-2P-14	10	730	3,50	2,88	602	19,3	3,02	2,69	519	14,8	2,37	2,37	408	9,5	1,95	1,95	335	6,7
	7,5	625	3,12	2,54	537	15,8	2,70	2,37	464	12,1	2,08	2,08	358	7,6	1,72	1,72	296	5,4
	5	515	2,69	2,16	463	12,2	2,33	2,01	401	9,4	1,77	1,77	304	5,7	1,46	1,46	251	4,0
	3	425	2,31	1,83	397	9,3	2,01	1,70	346	7,2	1,50	1,50	258	4,3	1,24	1,24	213	3,0
	1	350	1,98	1,54	341	7,1	1,72	1,43	296	5,5	1,27	1,27	218	3,2	1,05	1,05	181	2,2
DFE-2P-24	10	1250	5,79	4,78	996	50,6	5,02	4,47	863	39,1	3,93	3,93	676	25,1	3,25	3,25	559	17,7
	7,5	1120	5,36	4,38	922	44,2	4,65	4,09	800	34,2	3,60	3,60	619	21,5	2,98	2,98	513	15,2
	5	920	4,64	3,73	798	34,3	4,03	3,48	693	26,6	3,06	3,06	526	16,2	2,54	2,54	437	11,4
	3	760	4,01	3,18	690	26,6	3,49	2,96	600	20,7	2,61	2,61	449	12,2	2,16	2,16	372	8,6
	1	610	3,37	2,63	580	19,6	2,94	2,45	506	15,3	2,16	2,16	372	8,8	1,79	1,79	308	1,79
DFE-2P-34	10	1450	6,42	5,37	1104	17,0	5,52	5,01	949	12,9	4,38	4,38	753	8,5	3,60	3,60	619	5,9
	7,5	1425	6,34	5,29	1090	16,6	5,45	4,94	937	12,7	4,32	4,32	743	8,3	3,56	3,56	612	5,8
	5	1180	5,53	4,55	951	13,1	4,77	4,24	820	10,0	3,71	3,71	638	6,4	3,06	3,06	526	4,5
	3	985	4,84	3,92	832	10,3	4,18	3,65	719	7,9	3,20	3,20	550	4,9	2,64	2,64	454	3,4
	1	770	4,00	3,19	688	7,4	3,46	2,97	595	5,7	2,62	2,62	451	3,4	2,16	2,16	372	2,4

### Correction factors for different R.H.

R.H.	WT:	7/12°C	8/13°C	10/15°C	12/17°C
48%	Pc	0,95	0,94	1,00	1,00
	Ps	1,00	1,00	1,00	1,00
46%	Pc	0,90	0,88	1,00	1,00
	Ps	1,00	1,00	1,00	1,00

#### Legend

**WT** = Water temperature  
**Pc** = Cooling total capacity  
**Ps** = Cooling sensible capacity  
**Qw** = Water flow  
**Dp(c)** = Water pressure drop  
**Qv** = Air flow

#### Note

For air side pressure drop higher than 0Pa use correction factors at page 28 and 29.

## Performance data

### DFE - Heating capacity of 3 row coil

Entering air temperature: 20°C – Available pressure: 0 Pa

Model ECM	Vol-tage	Qv m <sup>3</sup> /h	WT: 70/60 °C			WT: 60/50 °C			WT: 50/40 °C			WT: 50/45 °C			WT: 45/40 °C		
			Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa
DFE-2P-13	10	730	8,03	691	36,9	6,15	529	23,8	4,26	366	12,9	4,90	843	55,5	3,97	683	39,0
	7,5	625	7,11	611	29,8	5,45	469	19,2	3,78	325	10,5	4,34	746	44,8	3,52	605	31,5
	5	515	6,09	524	22,7	4,67	402	14,7	3,25	280	8,0	3,72	640	34,1	3,02	519	24,0
	3	425	5,21	448	17,2	3,99	343	11,1	2,78	239	6,1	3,18	547	25,9	2,58	444	18,2
	1	350	4,43	381	12,9	3,40	292	8,4	2,37	204	4,6	2,70	464	19,5	2,19	377	13,7
DFE-2P-23	10	1250	13,06	1123	34,1	9,98	858	21,9	6,90	593	11,8	7,97	1371	51,2	6,45	1109	35,9
	7,5	1120	12,02	1034	29,4	9,19	790	18,9	6,36	547	10,3	7,34	1262	44,3	5,94	1022	31,1
	5	920	10,33	888	22,6	7,90	679	14,5	5,48	471	7,9	6,31	1085	33,9	5,11	879	23,8
	3	760	8,88	764	17,3	6,80	585	11,1	4,72	406	6,1	5,42	932	26,0	4,39	755	18,3
	1	610	7,42	638	12,6	5,69	489	8,1	3,95	340	4,4	4,53	779	19,0	3,67	631	13,3
DFE-2P-33	10	1450	15,89	1367	24,9	12,13	1043	16,0	8,38	721	8,6	9,70	1668	37,5	7,84	1348	26,2
	7,5	1425	15,68	1348	24,3	11,97	1029	15,6	8,27	711	8,4	9,58	1648	36,6	7,74	1331	25,6
	5	1180	13,54	1164	18,8	10,34	889	12,1	7,16	616	6,5	8,27	1422	28,3	6,69	1151	19,8
	3	985	11,71	1007	14,6	8,96	771	9,4	6,21	534	5,1	7,15	1230	21,9	5,79	996	15,4
	1	770	9,57	823	10,2	7,33	630	6,6	5,08	437	3,6	5,84	1004	15,3	4,73	814	10,8

### DFE - Heating capacity of 4 row coil

Entering air temperature: 20°C – Available pressure: 0 Pa

Model ECM	Vol-tage	Qv m <sup>3</sup> /h	WT: 70/60 °C			WT: 60/50 °C			WT: 50/40 °C			WT: 50/45 °C			WT: 45/40 °C		
			Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa
DFE-2P-14	10	730	9,18	789	24,2	7,03	605	15,6	4,88	420	8,5	5,61	965	36,4	4,54	781	25,6
	7,5	625	8,06	693	19,3	6,18	531	12,4	4,29	369	6,8	4,92	846	29,0	3,99	686	20,4
	5	515	6,82	587	14,4	5,24	451	9,3	3,65	314	5,1	4,17	717	21,6	3,38	581	15,2
	3	425	5,76	495	10,7	4,43	381	6,9	3,09	266	3,8	3,52	605	16,1	2,86	492	11,3
	1	350	4,85	417	7,9	3,73	321	5,1	2,60	224	2,8	2,96	509	11,8	2,41	415	8,4
DFE-2P-24	10	1250	15,00	1290	62,1	11,52	991	40,2	8,02	690	22	9,16	1576	93,3	7,43	1278	65,8
	7,5	1120	13,73	1181	53,1	10,54	906	34,4	7,35	632	18,8	8,38	1441	79,8	6,80	1170	56,3
	5	920	11,67	1004	39,9	8,96	771	25,8	6,26	538	14,2	7,13	1226	59,9	5,79	996	42,3
	3	760	9,92	853	30,0	7,63	656	19,4	5,33	458	10,7	6,06	1042	45,0	4,92	846	31,8
	1	610	8,19	704	21,4	6,31	543	13,9	4,41	379	7,7	5,01	862	32,2	4,07	700	22,8
DFE-2P-34	10	1450	17,44	1500	22,6	13,33	1146	14,5	9,22	793	7,9	10,65	1832	34,0	8,62	1483	23,9
	7,5	1425	17,19	1478	22,1	13,14	1130	14,2	9,10	783	7,7	10,50	1806	33,2	8,50	1462	23,3
	5	1180	14,71	1265	16,8	11,26	968	10,8	7,80	671	5,9	8,99	1546	25,2	7,28	1252	17,7
	3	985	12,63	1086	12,8	9,68	832	8,3	6,72	578	4,5	7,72	1328	19,3	6,25	1075	13,6
	1	770	10,27	883	8,9	7,88	678	5,8	5,48	471	3,1	6,28	1080	13,4	5,09	875	9,4

#### Legend

WT = Water temperature  
 Ph = Capacity  
 Qw = Water flow  
 Dp(c) = Water pressure drop  
 Qv = Air flow

#### Note

For air side pressure drop higher than 0Pa use correction factors at page 28 and 29.



## Performance data

### DFE - Heating capacity of 1 row additional coil

Entering air temperature: 20°C – Available pressure: 0 Pa

Model ECM	Vol-tage	Qv m <sup>3</sup> /h	WT: 80/70 °C			WT: 75/65 °C			WT: 70/60 °C			WT: 65/55 °C			WT: 60/50 °C			WT: 55/45 °C		
			Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa
DFE-1	10	730	4,28	368	28,8	3,85	331	24,4	3,43	295	20,2	3,01	259	16,3	2,59	223	12,7	2,18	187	9,5
	7,5	625	3,94	339	25,0	3,56	306	21,1	3,17	273	17,5	2,78	239	14,1	2,39	206	11,0	2,01	173	8,2
	5	515	3,46	298	19,9	3,12	268	16,8	2,78	239	13,9	2,44	210	11,2	2,10	181	8,8	1,76	151	6,6
	3	425	3,03	261	15,7	2,73	235	13,3	2,44	210	11,0	2,14	184	8,9	1,84	158	7,0	1,55	133	5,2
	1	350	2,65	228	12,4	2,39	206	10,5	2,13	183	8,7	1,87	161	7,0	1,61	138	5,5	1,36	117	4,1
DFE-2	10	1250	6,65	572	17,2	5,98	514	14,5	5,31	457	11,9	4,64	399	9,6	3,97	341	7,4	3,3	284	5,4
	7,5	1120	6,21	534	15,3	5,58	480	12,9	4,96	427	10,6	4,33	372	8,5	3,71	319	6,6	3,09	266	4,8
	5	920	5,59	481	12,7	5,02	432	10,7	4,46	384	8,8	3,90	335	7,1	3,34	287	5,5	2,79	240	4,0
	3	760	4,92	423	10,2	4,43	381	8,5	3,93	338	7,0	3,44	296	5,7	2,95	254	4,4	2,46	212	3,2
	1	610	4,23	364	7,8	3,81	328	6,6	3,38	291	5,4	2,96	255	4,3	2,54	218	3,4	2,12	182	2,5
DFE-3	10	1450	7,83	673	19,2	7,05	606	16,2	6,28	540	13,4	5,50	473	10,8	4,73	407	8,4	3,96	341	6,3
	7,5	1425	7,78	669	19,0	7,01	603	16,0	6,24	537	13,3	5,47	470	10,7	4,70	404	8,3	3,94	339	6,2
	5	1180	6,91	594	15,4	6,22	535	13,0	5,54	476	10,8	4,86	418	8,7	4,18	359	6,8	3,5	301	5,0
	3	985	6,11	525	12,4	5,51	474	10,5	4,91	422	8,7	4,30	370	7,0	3,70	318	5,5	3,1	267	4,1
	1	770	5,17	445	9,2	4,66	401	7,8	4,15	357	6,5	3,64	313	5,2	3,13	269	4,1	2,63	226	3,0

### DFE - Heating capacity of 2 row additional coil

Entering air temperature: 20°C – Available pressure: 0 Pa

Model ECM	Vol-tage	Qv m <sup>3</sup> /h	WT: 65/55 °C			WT: 60/50 °C			WT: 55/45 °C			WT: 50/40 °C			WT: 45/40 °C			WT: 45/35 °C		
			Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa	Ph kW	Qw l/h	Dp(c) kPa
DFE-1	10	730	5,22	449	7,5	4,49	386	5,9	3,77	324	4,4	3,05	262	3,1	2,92	502	9,7	2,33	200	2,0
	7,5	625	4,69	403	6,3	4,04	347	4,9	3,40	292	3,7	2,75	237	2,6	2,62	451	8,1	2,10	181	1,6
	5	515	4,10	353	4,9	3,53	304	3,9	2,97	255	2,9	2,41	207	2,0	2,29	394	6,4	1,84	158	1,3
	3	425	3,57	307	3,9	3,08	265	3,0	2,59	223	2,3	2,10	181	1,6	1,99	342	5,0	1,61	138	1,0
	1	350	3,09	266	3,0	2,67	230	2,3	2,24	193	1,8	1,82	157	1,2	1,73	298	3,9	1,40	120	0,8
DFE-2	10	1250	8,50	731	24,7	7,35	632	19,4	6,19	532	14,6	5,04	433	10,3	4,76	819	32,0	3,88	334	6,7
	7,5	1120	7,91	680	21,7	6,83	587	17,1	5,76	495	12,9	4,69	403	9,1	4,42	760	28,1	3,61	310	5,9
	5	920	6,92	595	17,2	5,98	514	13,5	5,05	434	10,2	4,11	353	7,2	3,87	666	22,2	3,17	273	4,7
	3	760	6,06	521	13,6	5,24	451	10,7	4,42	380	8,1	3,60	310	5,7	3,39	583	17,6	2,78	239	3,7
	1	610	5,17	445	10,3	4,47	384	8,1	3,77	324	6,1	3,08	265	4,3	2,89	497	13,3	2,38	205	2,8
DFE-3	10	1450	10,32	888	47,3	8,94	769	37,3	7,55	649	28,2	6,17	531	20,1	5,78	994	61,2	4,78	411	13,1
	7,5	1425	10,20	877	46,3	8,83	759	36,5	7,47	642	27,6	6,10	525	19,7	5,71	982	60,0	4,73	407	12,8
	5	1180	8,97	771	37,0	7,77	668	29,1	6,57	565	22,0	5,37	462	15,7	5,03	865	47,8	4,17	359	10,3
	3	985	7,91	680	29,6	6,85	589	23,4	5,80	499	17,7	4,74	408	12,6	4,43	762	38,3	3,68	316	8,2
	1	770	6,62	569	21,6	5,73	493	17,1	4,85	417	12,9	3,97	341	9,2	3,71	638	28,0	3,09	266	6,0

#### Legend

WT = Water temperature  
 Ph = Capacity  
 Qw = Water flow  
 Dp(c) = Water pressure drop  
 Qv = Air flow

#### Note

For air side pressure drop higher than 0Pa use correction factors at page 28 and 29.

## Performance data

### Air flow (m<sup>3</sup>/h) depending on speed and requested available pressure

Mod.	Speed	Available pressure (Pa)								
		0	10	20	30	40	50	60	70	80
DFS-1	5	595	565	530	495	455	410	355	297	230
	4 MAX	540	507	475	435	395	348	300	245	185
	3 MED	470	437	403	365	327	285	237	187	130
	2 MIN	410	378	344	305	265	225	180	135	-
	1	375	340	302	260	220	178	137	-	-
DFS-2	5	1040	995	950	900	845	782	720	650	575
	4 MAX	870	825	780	730	680	630	575	515	450
	3 MED	765	710	665	620	572	530	480	430	360
	2 MIN	665	610	560	515	470	430	380	330	-
	1	580	535	495	455	410	370	320	270	-
DFS-3	5	1415	1375	1325	1270	1200	1120	1040	945	845
	4 MAX	1320	1280	1230	1170	1105	1030	950	860	780
	3 MED	1150	1115	1070	1020	960	890	810	730	650
	2 MIN	950	905	860	810	760	700	640	570	500
	1	745	685	640	600	550	505	460	400	340
DFS-4	5	2220	2130	2030	1930	1825	1720	1600	1495	1375
	4 MAX	1980	1900	1820	1740	1650	1550	1450	1340	1220
	3 MED	1705	1650	1585	1520	1450	1380	1295	1200	1100
	2 MIN	1360	1330	1300	1260	1215	1160	1090	1000	910
	1	1000	985	975	955	935	900	870	820	750

### Power absorption (Watt) depending on air flow and available pressure

Mod.	Speed	Available pressure (Pa)								
		0	10	20	30	40	50	60	70	80
DFS-1	5	76	123	121	119	117	115	112	110	107
	4 MAX	65	109	107	105	103	101	99	97	95
	3 MED	54	98	96	94	92	90	88	86	85
	2 MIN	46	89	87	85	83	81	80	78	-
	1	41	81	79	78	76	75	73	-	-
DFS-2	5	140	177	173	169	164	159	154	149	145
	4 MAX	120	144	139	135	130	126	122	118	114
	3 MED	107	125	121	118	114	111	108	105	101
	2 MIN	95	112	106	102	98	95	92	90	-
	1	88	104	99	95	91	88	86	84	-
DFS-3	5	174	326	320	314	306	296	287	276	266
	4 MAX	164	308	302	295	287	278	268	257	248
	3 MED	144	284	278	272	264	255	245	236	227
	2 MIN	122	250	244	238	231	224	218	212	207
	1	97	219	214	210	206	203	200	197	196
DFS-4	5	256	465	452	439	425	411	396	383	368
	4 MAX	237	420	409	399	387	374	361	346	330
	3 MED	219	379	370	362	353	343	331	317	301
	2 MIN	191	321	317	311	305	297	287	274	262
	1	164	274	272	269	266	260	256	248	238

## Performance data

### Correction factors for Total cooling capacity

Mod.	Speed	Available pressure (Pa)								
		0	10	20	30	40	50	60	70	80
DFS-1	5	1,00	0,97	0,94	0,91	0,86	0,81	0,74	0,66	0,56
	4 MAX	1,00	0,97	0,93	0,89	0,84	0,78	0,71	0,62	0,51
	3 MED	1,00	0,96	0,92	0,87	0,82	0,75	0,66	0,57	0,45
	2 MIN	1,00	0,96	0,91	0,85	0,78	0,70	0,61	0,50	-
	1	1,00	0,95	0,89	0,81	0,73	0,64	0,54	-	-
DFS-2	5	1,00	0,98	0,95	0,93	0,89	0,85	0,81	0,76	0,70
	4 MAX	1,00	0,97	0,94	0,91	0,87	0,84	0,79	0,74	0,67
	3 MED	1,00	0,96	0,93	0,89	0,85	0,81	0,76	0,71	0,63
	2 MIN	1,00	0,96	0,91	0,87	0,82	0,78	0,72	0,66	-
	1	1,00	0,96	0,92	0,88	0,82	0,77	0,70	0,63	-
DFS-3	5	1,00	0,98	0,97	0,94	0,92	0,88	0,84	0,80	0,74
	4 MAX	1,00	0,98	0,96	0,94	0,91	0,87	0,83	0,78	0,74
	3 MED	1,00	0,98	0,96	0,94	0,91	0,87	0,82	0,77	0,72
	2 MIN	1,00	0,97	0,95	0,92	0,89	0,84	0,80	0,74	0,68
	1	1,00	0,96	0,92	0,89	0,85	0,80	0,76	0,69	0,62
DFS-4	5	1,00	0,98	0,95	0,93	0,90	0,87	0,83	0,80	0,76
	4 MAX	1,00	0,98	0,96	0,93	0,91	0,88	0,84	0,80	0,76
	3 MED	1,00	0,98	0,96	0,94	0,92	0,89	0,86	0,82	0,78
	2 MIN	1,00	0,99	0,98	0,96	0,94	0,92	0,89	0,84	0,80
	1	1,00	0,99	0,99	0,98	0,96	0,95	0,93	0,90	0,85

### Correction factors for Sensible cooling capacity and Heating capacity

Mod.	Speed	Available pressure (Pa)								
		0	10	20	30	40	50	60	70	80
DFS-1	5	1,00	0,96	0,92	0,88	0,83	0,76	0,68	0,60	0,49
	4 MAX	1,00	0,96	0,91	0,86	0,80	0,73	0,65	0,55	0,45
	3 MED	1,00	0,95	0,90	0,83	0,77	0,69	0,60	0,50	0,38
	2 MIN	1,00	0,94	0,88	0,81	0,73	0,64	0,54	0,43	-
	1	1,00	0,93	0,86	0,77	0,68	0,57	0,47	-	-
DFS-2	5	1,00	0,97	0,94	0,90	0,86	0,82	0,77	0,71	0,65
	4 MAX	1,00	0,96	0,93	0,88	0,84	0,79	0,74	0,68	0,61
	3 MED	1,00	0,95	0,91	0,86	0,81	0,77	0,71	0,65	0,57
	2 MIN	1,00	0,94	0,89	0,83	0,78	0,73	0,66	0,59	-
	1	1,00	0,94	0,89	0,84	0,78	0,72	0,64	0,57	-
DFS-3	5	1,00	0,98	0,95	0,93	0,89	0,85	0,80	0,75	0,69
	4 MAX	1,00	0,98	0,95	0,92	0,88	0,84	0,79	0,73	0,68
	3 MED	1,00	0,98	0,95	0,92	0,88	0,83	0,78	0,72	0,66
	2 MIN	1,00	0,97	0,93	0,89	0,85	0,80	0,75	0,69	0,62
	1	1,00	0,94	0,90	0,86	0,80	0,75	0,70	0,63	0,56
DFS-4	5	1,00	0,97	0,94	0,91	0,87	0,83	0,79	0,75	0,70
	4 MAX	1,00	0,97	0,94	0,91	0,88	0,84	0,80	0,75	0,70
	3 MED	1,00	0,98	0,95	0,92	0,89	0,86	0,82	0,78	0,73
	2 MIN	1,00	0,98	0,97	0,95	0,92	0,89	0,85	0,80	0,75
	1	1,00	0,99	0,98	0,97	0,95	0,93	0,91	0,87	0,81

## Performance data

### Air flow and capacity correction factors with different available pressure

Model ECM	Voltage	Qv (m³/h)										Capacity correction factors for high speed figures at 10 V signal																											
		Ap (Pa)										K1														K2													
		0	10	20	30	40	50	60	70	80	0	10	20	30	40	50	60	70	80	0	10	20	30	40	50	60	70	80											
DFE-1	10	730	695	648	595	540	480	423	355	280	1,00	0,97	0,92	0,87	0,81	0,75	0,68	0,59	0,49	1,00	0,96	0,91	0,85	0,79	0,72	0,65	0,56	0,46											
	9,5	720	670	620	570	510	450	387	315	240	0,99	0,94	0,89	0,84	0,78	0,71	0,63	0,54	0,43	0,99	0,94	0,88	0,82	0,76	0,68	0,60	0,51	0,40											
	9	692	647	595	540	480	420	350	275	190	0,96	0,92	0,87	0,81	0,75	0,68	0,59	0,48	0,36	0,96	0,91	0,85	0,79	0,72	0,65	0,56	0,45	0,33											
	8,5	661	620	570	510	450	385	310	280	125	0,93	0,89	0,84	0,78	0,71	0,63	0,53	0,49	0,25	0,93	0,88	0,82	0,76	0,68	0,60	0,50	0,46	0,23											
	8	650	600	543	485	420	355	273	180	-	0,92	0,87	0,82	0,75	0,68	0,59	0,48	0,34	-	0,91	0,86	0,79	0,73	0,65	0,56	0,45	0,31	-											
	7,5	625	575	520	460	395	317	230	137	-	0,90	0,85	0,79	0,72	0,64	0,54	0,42	0,27	-	0,89	0,83	0,77	0,70	0,61	0,51	0,39	0,24	-											
	7	692	550	492	430	360	280	185	-	-	0,96	0,82	0,76	0,69	0,60	0,49	0,35	-	-	0,96	0,80	0,73	0,66	0,57	0,46	0,32	-	-											
	6,5	573	520	465	400	320	235	130	-	-	0,85	0,79	0,73	0,65	0,55	0,43	0,26	-	-	0,83	0,77	0,70	0,62	0,52	0,40	0,23	-	-											
	6	555	500	440	367	285	180	-	-	-	0,83	0,77	0,70	0,61	0,50	0,34	-	-	-	0,81	0,74	0,67	0,58	0,47	0,31	-	-	-											
	5,5	540	476	410	332	245	140	-	-	-	0,81	0,74	0,66	0,56	0,44	0,27	-	-	-	0,79	0,71	0,63	0,53	0,41	0,25	-	-	-											
	5	515	450	380	296	200	-	-	-	-	0,78	0,71	0,63	0,51	0,37	-	-	-	-	0,76	0,68	0,60	0,48	0,34	-	-	-	-											
	4	472	400	320	226	105	-	-	-	-	0,74	0,65	0,55	0,41	0,21	-	-	-	-	0,71	0,62	0,52	0,38	0,19	-	-	-	-											
	3	425	347	252	132	-	-	-	-	-	0,68	0,58	0,45	0,26	-	-	-	-	-	0,65	0,55	0,42	0,24	-	-	-	-	-											
2	384	295	187	-	-	-	-	-	-	0,63	0,51	0,35	-	-	-	-	-	-	0,60	0,48	0,32	-	-	-	-	-	-												
1	350	250	115	-	-	-	-	-	-	0,59	0,45	0,23	-	-	-	-	-	-	0,56	0,42	0,21	-	-	-	-	-	-												
DFE-2	10	1250	1195	1140	1075	1010	940	860	780	680	1,00	0,97	0,94	0,91	0,87	0,83	0,78	0,73	0,66	1,00	0,97	0,93	0,89	0,85	0,80	0,75	0,69	0,62											
	9,5	1245	1075	1115	1050	980	900	820	722	715	1,00	0,96	0,93	0,89	0,85	0,80	0,75	0,69	0,68	1,00	0,95	0,92	0,87	0,83	0,78	0,72	0,65	0,65											
	9	1220	1155	1090	1020	945	860	770	665	535	0,98	0,95	0,91	0,87	0,83	0,78	0,72	0,65	0,55	0,98	0,94	0,90	0,86	0,81	0,75	0,69	0,61	0,51											
	8,5	1200	1135	1065	990	907	815	715	593	440	0,97	0,94	0,90	0,86	0,81	0,75	0,68	0,59	0,47	0,97	0,93	0,88	0,84	0,78	0,72	0,65	0,55	0,43											
	8	1160	1092	1020	940	853	755	645	510	315	0,95	0,92	0,87	0,83	0,77	0,71	0,63	0,53	0,36	0,94	0,90	0,86	0,80	0,74	0,67	0,59	0,49	0,32											
	7,5	1120	1048	970	890	800	695	570	410	-	0,93	0,89	0,85	0,80	0,74	0,67	0,58	0,44	-	0,92	0,87	0,82	0,77	0,71	0,63	0,54	0,40	-											
	7	1080	1005	927	840	740	630	490	300	-	0,91	0,87	0,82	0,77	0,70	0,62	0,51	0,34	-	0,89	0,85	0,79	0,73	0,66	0,58	0,47	0,31	-											
	6,5	1040	960	880	785	685	560	400	-	-	0,89	0,84	0,79	0,73	0,66	0,57	0,44	-	-	0,87	0,82	0,76	0,70	0,62	0,53	0,40	-	-											
	6	1000	920	835	735	625	485	285	-	-	0,86	0,82	0,76	0,70	0,62	0,51	0,33	-	-	0,84	0,79	0,73	0,66	0,58	0,47	0,29	-	-											
	5,5	960	880	785	685	560	400	-	-	-	0,84	0,79	0,73	0,66	0,57	0,44	-	-	-	0,82	0,76	0,70	0,62	0,53	0,40	-	-	-											
	5	920	830	737	625	495	300	-	-	-	0,82	0,76	0,70	0,62	0,52	0,34	-	-	-	0,79	0,73	0,66	0,58	0,48	0,31	-	-	-											
	4	840	750	640	510	340	-	-	-	-	0,77	0,71	0,63	0,53	0,38	-	-	-	-	0,73	0,67	0,59	0,49	0,34	-	-	-	-											
	3	760	655	535	370	-	-	-	-	-	0,71	0,64	0,55	0,41	-	-	-	-	-	0,68	0,60	0,51	0,37	-	-	-	-	-											
2	680	560	400	160	-	-	-	-	-	0,66	0,57	0,44	0,20	-	-	-	-	-	0,62	0,53	0,40	0,18	-	-	-	-	-												
1	610	475	280	-	-	-	-	-	-	0,61	0,50	0,32	-	-	-	-	-	-	0,57	0,46	0,29	-	-	-	-	-	-												
DFE-3	10	1450	1395	1350	1310	1260	1205	1145	1075	990	1,00	0,97	0,95	0,93	0,91	0,88	0,85	0,82	0,77	1,00	0,97	0,95	0,92	0,90	0,87	0,83	0,79	0,74											
	9,5	1445	1390	1345	1295	1245	1185	1115	1030	935	1,00	0,97	0,95	0,93	0,90	0,87	0,84	0,79	0,74	1,00	0,97	0,94	0,92	0,89	0,85	0,81	0,76	0,71											
	9	1440	1385	1340	1280	1225	1155	1075	975	850	0,99	0,97	0,95	0,92	0,89	0,86	0,82	0,76	0,69	0,99	0,96	0,94	0,91	0,88	0,84	0,79	0,73	0,65											
	8,5	1435	1380	1335	1270	1195	1110	1015	900	750	0,99	0,97	0,95	0,91	0,88	0,83	0,78	0,72	0,63	0,99	0,96	0,94	0,90	0,86	0,81	0,76	0,69	0,59											
	8	1430	1370	1305	1230	1145	1050	940	800	630	0,99	0,96	0,93	0,90	0,85	0,80	0,74	0,66	0,55	0,99	0,96	0,92	0,88	0,83	0,78	0,71	0,62	0,51											
	7,5	1425	1345	1265	1180	1085	970	845	690	500	0,99	0,95	0,91	0,87	0,82	0,76	0,69	0,59	0,46	0,99	0,94	0,90	0,85	0,80	0,73	0,65	0,55	0,42											
	7	1360	1290	1210	1120	1015	895	760	590	-	0,96	0,92	0,89	0,84	0,78	0,72	0,63	0,52	-	0,95	0,91	0,87	0,82	0,76	0,68	0,60	0,48	-											
	6,5	1320	1240	1160	1060	955	825	660	460	-	0,94	0,90	0,86	0,81	0,75	0,67	0,57	0,43	-	0,93	0,89	0,84	0,78	0,72	0,64	0,53	0,39	-											
	6	1270	1190	1100	995	880	735	570	-	-	0,91	0,88	0,83	0,77	0,71	0,62	0,51	-	-	0,90	0,86	0,81	0,74	0,67	0,58	0,47	-	-											
	5,5	1220	1140	1040	930	800	645	450	-	-	0,89	0,85	0,80	0,74	0,66	0,56	0,42	-	-	0,87	0,83	0,77	0,70	0,62	0,52	0,38	-	-											
	5	1180	1080	980	865	725	545	-	-	-	0,87	0,82	0,76	0,70	0,61	0,49	-	-	-	0,85	0,79	0,73	0,66	0,57	0,45	-	-	-											
	4	1080	982	870	730	560	350	-	-	-	0,82	0,77	0,70	0,62	0,50	0,34	-	-	-	0,79	0,74	0,67	0,58	0,46	0,31	-	-	-											
	3	985	875	745	570	350	-	-	-	-	0,77	0,70	0,63	0,51	0,34	-	-	-	-	0,74	0,67	0,59	0,47	0,31	-	-	-	-											
2	890	760	595	-	-	-	-	-	-	0,71	0,63	0,53	-	-	-	-	-	-	0,68	0,60	0,49	-	-	-	-	-	-												
1	770	600	405	-	-	-	-	-	-	0,64	0,53	0,39	-	-	-	-	-	-	0,60	0,49	0,35	-	-	-	-	-	-												

#### Legend

Qv = Air flow

K1 = Correction factors for Total cooling capacity

K2 = Correction factors for Sensible cooling capacity and Heating capacity

Ap = Available pressure

## Performance data

### Air flow table, correction factors for capacity and Watts absorbed by the motor with different available pressures

Model ECM	Vol-tage	Qv (m³/h)									Qv %								W									
		Ap (Pa)									Ap (Pa)								Ap (Pa)									
		0	10	20	30	40	50	60	70	80	0	10	20	30	40	50	60	70	80	0	10	20	30	40	50	60	70	80
DFE-1	10	730	695	648	595	540	480	423	355	280	1,00	0,95	0,89	0,82	0,74	0,66	0,58	0,49	0,38	80	77	73	68	63	59	54	49	44
	9,5	720	670	620	570	510	450	387	315	240	0,99	0,92	0,85	0,78	0,70	0,62	0,53	0,43	0,33	75	71	67	63	58	53	49	44	40
	9	692	647	595	540	480	420	350	275	190	0,95	0,89	0,82	0,74	0,66	0,58	0,48	0,38	0,26	69	65	61	57	53	49	44	40	35
	8,5	661	620	570	510	450	385	310	280	125	0,91	0,85	0,78	0,70	0,62	0,53	0,42	0,38	0,17	63	60	56	52	48	44	39	38	30
	8	650	600	543	485	420	355	273	180	-	0,89	0,82	0,74	0,66	0,58	0,49	0,37	0,25	-	59	55	51	47	43	40	35	31	-
	7,5	625	575	520	460	395	317	230	137	-	0,86	0,79	0,71	0,63	0,54	0,43	0,32	0,19	-	54	51	47	43	39	35	31	27	-
	7	692	550	492	430	360	280	185	-	-	0,95	0,75	0,67	0,59	0,49	0,38	0,25	-	-	55	46	43	39	35	32	27	-	-
	6,5	573	520	465	400	320	235	130	-	-	0,78	0,71	0,64	0,55	0,44	0,32	0,18	-	-	44	42	39	36	32	28	24	-	-
	6	555	500	440	367	285	180	-	-	-	0,76	0,68	0,60	0,50	0,39	0,25	-	-	-	41	38	35	32	29	25	-	-	-
	5,5	540	476	410	332	245	140	-	-	-	0,74	0,65	0,56	0,45	0,34	0,19	-	-	-	38	35	32	29	25	22	-	-	-
	5	515	450	380	296	200	-	-	-	-	0,71	0,62	0,52	0,41	0,27	-	-	-	-	35	32	29	26	22	-	-	-	-
	4	472	400	320	226	105	-	-	-	-	0,65	0,55	0,44	0,31	0,14	-	-	-	-	29	26	23	20	17	-	-	-	-
	3	425	347	252	132	-	-	-	-	-	0,58	0,48	0,35	0,18	-	-	-	-	-	24	21	18	15	-	-	-	-	-
2	384	295	187	-	-	-	-	-	-	0,53	0,40	0,26	-	-	-	-	-	-	20	17	15	-	-	-	-	-	-	
1	350	250	115	-	-	-	-	-	-	0,48	0,34	0,16	-	-	-	-	-	-	17	14	12	-	-	-	-	-	-	
DFE-2	10	1250	1195	1140	1075	1010	940	860	780	680	1,00	0,96	0,91	0,86	0,81	0,75	0,69	0,62	0,54	132	132	131	125	119	113	106	99	91
	9,5	1245	1075	1115	1050	980	900	820	722	715	1,00	0,94	0,89	0,84	0,78	0,72	0,66	0,58	0,57	132	128	123	117	111	104	97	89	89
	9	1220	1155	1090	1020	945	860	770	665	535	0,98	0,92	0,87	0,82	0,76	0,69	0,62	0,53	0,43	126	121	115	109	103	96	89	81	71
	8,5	1200	1135	1065	990	907	815	715	593	440	0,96	0,91	0,85	0,79	0,73	0,65	0,57	0,47	0,35	119	113	107	101	94	87	80	71	61
	8	1160	1092	1020	940	853	755	645	510	315	0,93	0,87	0,82	0,75	0,68	0,60	0,52	0,41	0,25	109	103	97	91	85	78	70	61	49
	7,5	1120	1048	970	890	800	695	570	410	-	0,90	0,84	0,78	0,71	0,64	0,56	0,46	0,33	-	99	93	88	82	76	68	60	51	-
	7	1080	1005	927	840	740	630	490	300	-	0,86	0,80	0,74	0,67	0,59	0,50	0,39	0,24	-	88	83	78	72	66	60	52	42	-
	6,5	1040	960	880	785	685	560	400	-	-	0,83	0,77	0,70	0,63	0,55	0,45	0,32	-	-	78	73	69	64	58	52	44	-	-
	6	1000	920	835	735	625	485	285	-	-	0,80	0,74	0,67	0,59	0,50	0,39	0,23	-	-	71	67	62	57	51	44	35	-	-
	5,5	960	880	785	685	560	400	-	-	-	0,77	0,70	0,63	0,55	0,45	0,32	-	-	-	64	60	55	50	44	37	-	-	-
	5	920	830	737	625	495	300	-	-	-	0,74	0,66	0,59	0,50	0,40	0,24	-	-	-	58	53	49	44	38	30	-	-	-
	4	840	750	640	510	340	-	-	-	-	0,67	0,60	0,51	0,41	0,27	-	-	-	-	47	43	38	33	28	-	-	-	-
	3	760	655	535	370	-	-	-	-	-	0,61	0,52	0,43	0,30	-	-	-	-	-	37	33	29	24	-	-	-	-	-
2	680	560	400	160	-	-	-	-	-	0,54	0,45	0,32	0,13	-	-	-	-	-	29	25	21	16	-	-	-	-	-	
1	610	475	280	-	-	-	-	-	-	0,49	0,38	0,22	-	-	-	-	-	-	23	19	16	-	-	-	-	-	-	
DFE-3	10	1450	1395	1350	1310	1260	1205	1145	1075	990	1,00	0,96	0,93	0,90	0,87	0,83	0,79	0,74	0,68	136	136	136	136	136	136	134	130	124
	9,5	1445	1390	1345	1295	1245	1185	1115	1030	935	1,00	0,96	0,93	0,89	0,86	0,82	0,77	0,71	0,64	136	136	136	136	134	131	126	121	114
	9	1440	1385	1340	1280	1225	1155	1075	975	850	0,99	0,96	0,92	0,88	0,84	0,80	0,74	0,67	0,59	134	134	134	131	128	123	118	111	101
	8,5	1435	1380	1335	1270	1195	1110	1015	900	750	0,99	0,95	0,92	0,88	0,82	0,77	0,70	0,62	0,52	132	132	130	126	121	115	108	99	88
	8	1430	1370	1305	1230	1145	1050	940	800	630	0,99	0,94	0,90	0,85	0,79	0,72	0,65	0,55	0,43	129	125	121	116	110	103	95	86	74
	7,5	1425	1345	1265	1180	1085	970	845	690	500	0,98	0,93	0,87	0,81	0,75	0,67	0,58	0,48	0,34	122	116	111	105	98	91	82	73	62
	7	1360	1290	1210	1120	1015	895	760	590	-	0,94	0,89	0,83	0,77	0,70	0,62	0,52	0,41	-	111	106	101	95	88	81	72	62	-
	6,5	1320	1240	1160	1060	955	825	660	460	-	0,91	0,86	0,80	0,73	0,66	0,57	0,46	0,32	-	102	97	92	86	80	72	62	51	-
	6	1270	1190	1100	995	880	735	570	-	-	0,88	0,82	0,76	0,69	0,61	0,51	0,39	-	-	93	88	83	77	70	62	54	-	-
	5,5	1220	1140	1040	930	800	645	450	-	-	0,84	0,79	0,72	0,64	0,55	0,44	0,31	-	-	84	80	75	69	62	54	45	-	-
	5	1180	1080	980	865	725	545	-	-	-	0,81	0,74	0,68	0,60	0,50	0,38	-	-	-	76	71	66	61	54	46	-	-	-
	4	1080	982	870	730	560	350	-	-	-	0,74	0,68	0,60	0,50	0,39	0,24	-	-	-	62	58	53	47	41	33	-	-	-
	3	985	875	745	570	350	-	-	-	-	0,68	0,60	0,51	0,39	0,24	-	-	-	-	49	45	40	35	29	-	-	-	-
2	890	760	595	-	-	-	-	-	-	0,61	0,52	0,41	-	-	-	-	-	-	39	35	31	-	-	-	-	-	-	
1	770	600	405	-	-	-	-	-	-	0,53	0,41	0,28	-	-	-	-	-	-	30	26	21	-	-	-	-	-	-	

#### Legend

Qv = Air flow

Qv % = Correction factors for Air flow

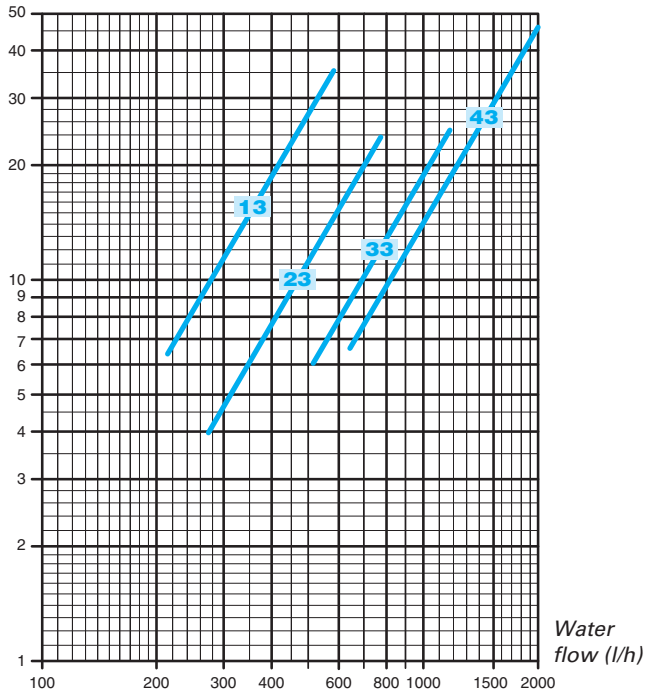
W = Watts absorbed by the motor

Ap = Available pressure

# Water pressure drop

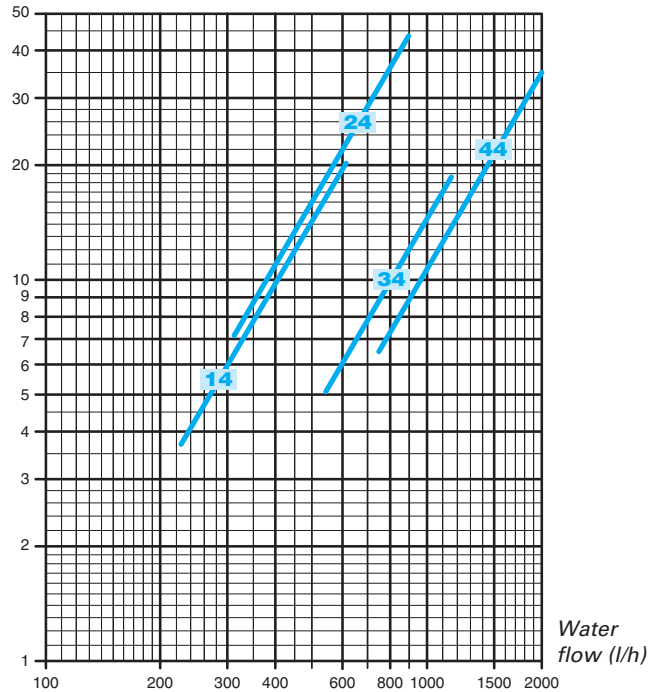
## 3 row coil

$Dp - kPa$



## 4 row coil

$Dp - kPa$

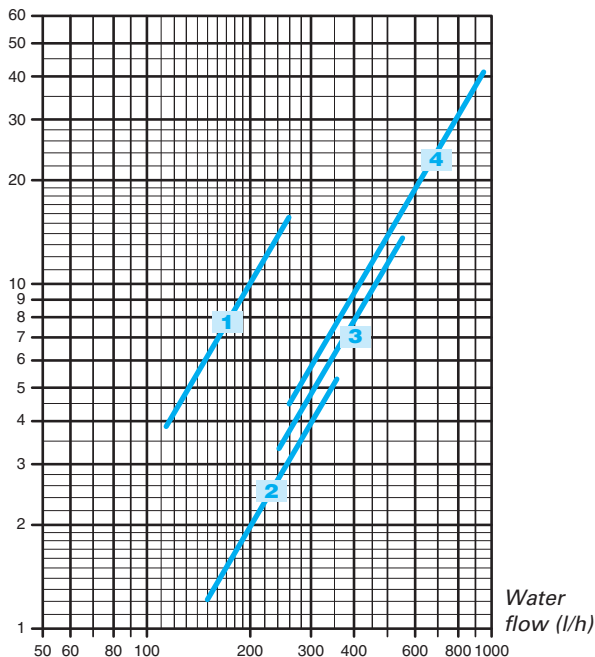


The water pressure drop figures refer to a mean water temperature of **10°C**; for different temperatures, multiply the pressure drop figures by the correction factors **K**.

°C	20	30	40	50	60	70	80
K	0,94	0,90	0,86	0,82	0,78	0,74	0,70

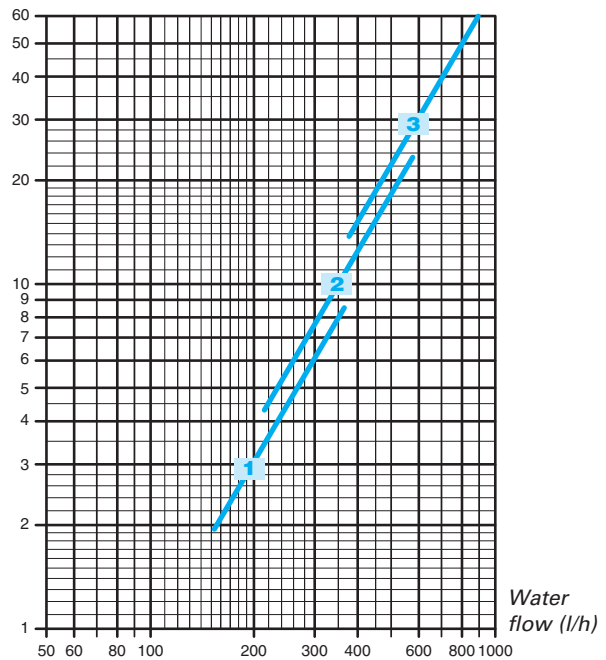
## 1 row additional coil

$Dp - kPa$



## 2 row additional coil

$Dp - kPa$

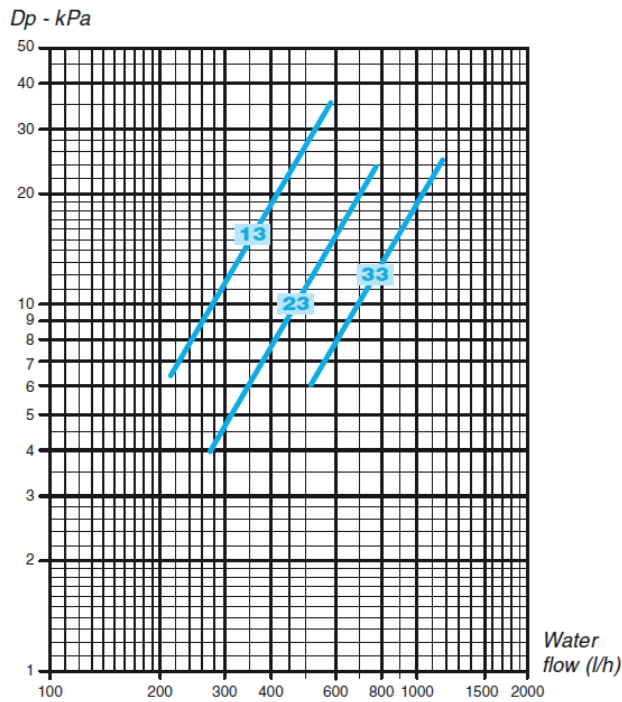


The water pressure drop figures refer to a mean water temperature of **65°C**; for different temperatures, multiply the pressure drop figures by the correction factors **K**.

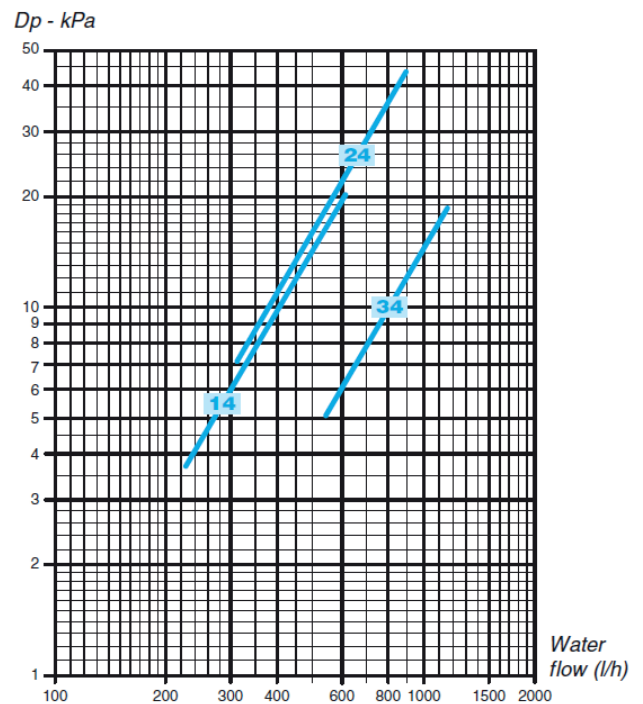
°C	40	50	60	70	80
K	1,14	1,08	1,02	0,96	0,90

## Water pressure drop

### 3 row coil



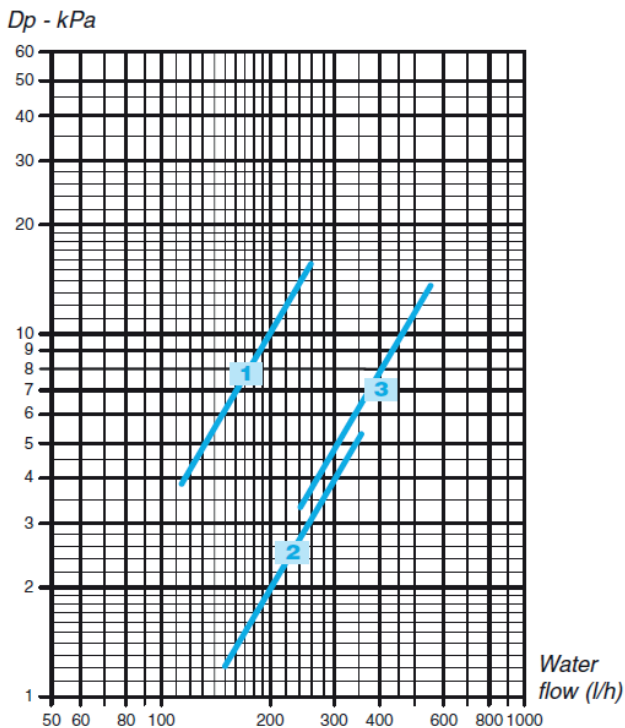
### 4 row coil



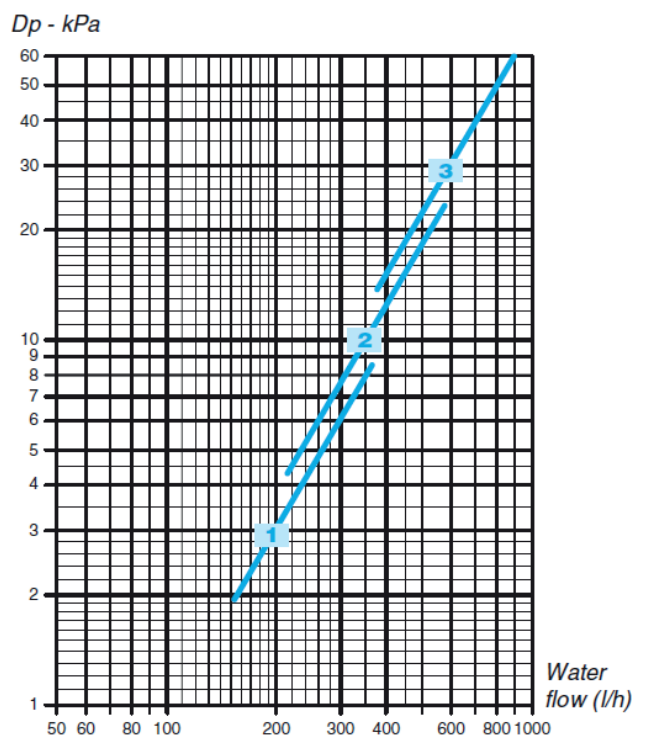
The water pressure drop figures refer to a mean water temperature of **10°C**; for different temperatures, multiply the pressure drop figures by the correction factors **K**.

°C	20	30	40	50	60	70	80
K	0,94	0,90	0,86	0,82	0,78	0,74	0,70

### 1 row additional coil



### 2 row additional coil



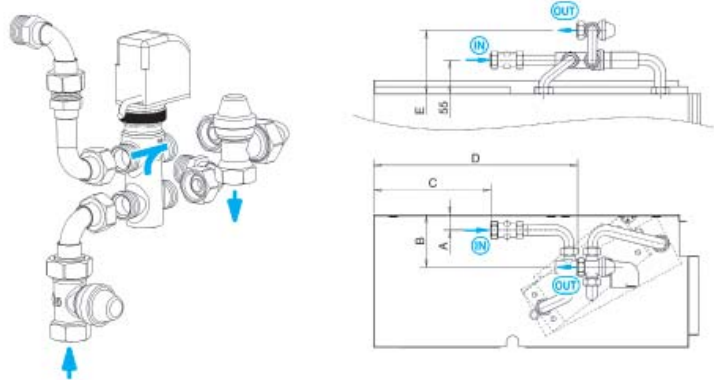
The water pressure drop figures refer to a mean water temperature of **65°C**; for different temperatures, multiply the pressure drop figures by the correction factors **K**.

°C	40	50	60	70	80
K	1,14	1,08	1,02	0,96	0,90

# Accessories

## VBP main coil 3 way valve

Control valve kit:  
3 way valve, ON-OFF, with electric motor and mounting kit with micrometric lockshield valve.



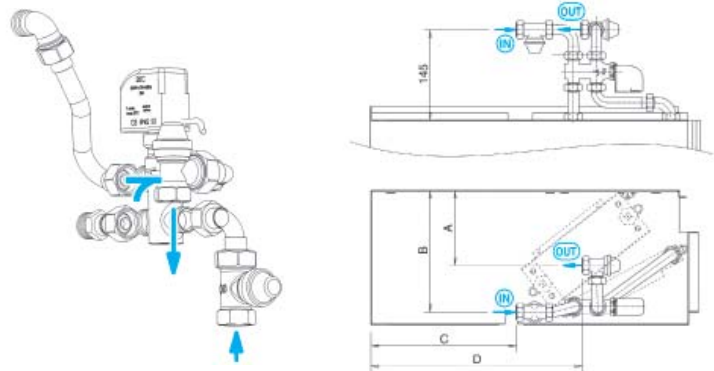
Dimensions ± 10 mm

Mod.	Dimensions (mm)					Valve			Micrometric lockshield valve		
	A	B	C	D	E	DN	(Ø)	Kvs	DN	(Ø)	Kvs
1	25	85	190	290	105	15	1/2"	1,6	15	1/2" F	2
2	25	85	190	290	105	20	3/4"	2,5	15	1/2" F	2
3	50	120	185	290	105	20	3/4"	2,5	15	1/2" F	2
4*	50	120	185	290	105	20	3/4"	4	20	3/4" F	3,5

\*This model is available for DFS only

## VBA additional coil 3 way valve

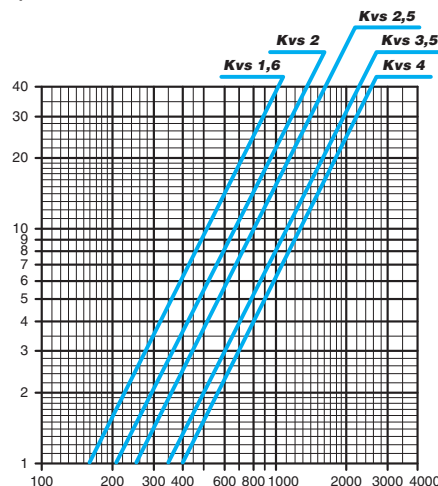
Control valve kit:  
3 way valve, ON-OFF, with electric motor and mounting kit with micrometric lockshield valve.



Dimensions ± 10 mm

Mod.	Dimensions (mm)				Valve			Micrometric lockshield valve		
	A	B	C	D	DN	(Ø)	Kvs	DN	(Ø)	Kvs
1 - 2	120	195	240	340	15	1/2"	1,6	15	1/2" F	2
3	135	200	235	330	15	1/2"	1,6	15	1/2" F	2
4*	135	200	235	330	15	1/2"	1,6	15	1/2" F	2

\*This model is available for DFS only

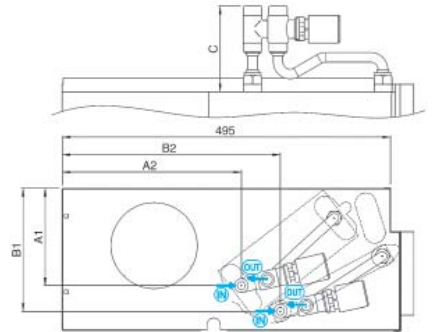
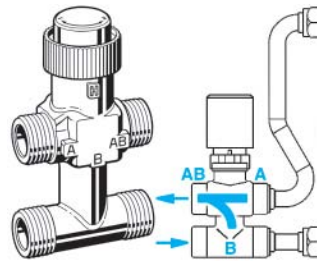




## Accessories

### VS simplified kit for 3 way valve

3 way valve, (ON-OFF) with electric motor and mounting kit. Valve with flat connection without micrometric lockshield valve.



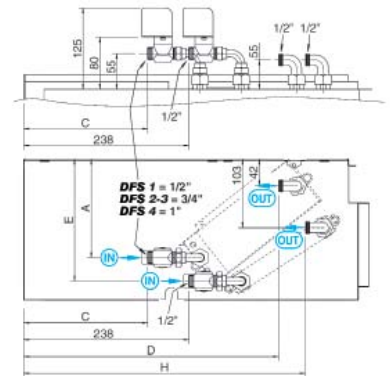
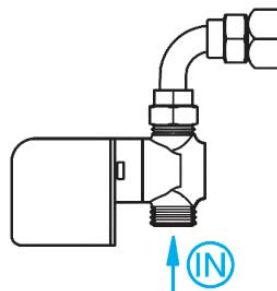
Dimensions ± 10 mm

Mod.	Dimensions (mm)					Main Valve			Additional Valve		
	A1	A2	B1	B2	C	DN	(Ø)	Kvs	DN	(Ø)	Kvs
1	152	270	185	330	116	15	1/2"	1,6	15	1/2"	1,6
2	152	268	185	330	124	20	3/4"	2,5			
3	177	270	210	327	124	20	3/4"	2,5			
4*	177	270	210	329	124	20	3/4"	4			

\*This model is available for DFS only

### V2 2 way valve for main and additional coil

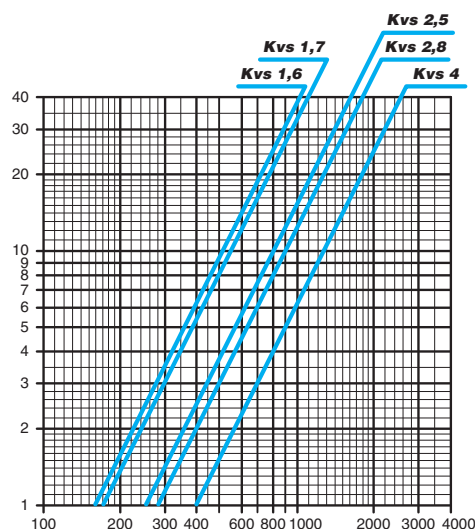
Control valve kit:  
2 way valve, ON-OFF, with electric motor and mounting kit.



Dimensions ± 10 mm

Mod.	Dimensions (mm)					Main Valve			Additional Valve		
	A1	A2	B1	B2	C	DN	(Ø)	Kvs	DN	(Ø)	Kvs
1	149	180	438	186	456	15	1/2"	1,7	15	1/2"	1,7
2	150	181	438	186	456	20	3/4"	2,8			
3	176	175	422	210	440	20	3/4"	2,8			
4*	176	175	422	210	440	25	1"	4			

\*This model is available for DFS only



## Accessories

### 3 way double valve kit for 4 pipe installation and single coil

The kit consists of:

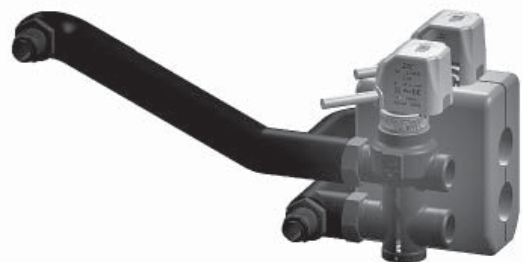
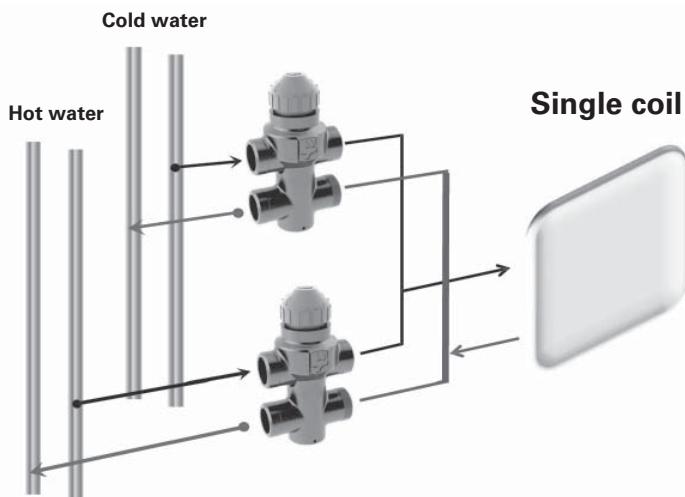
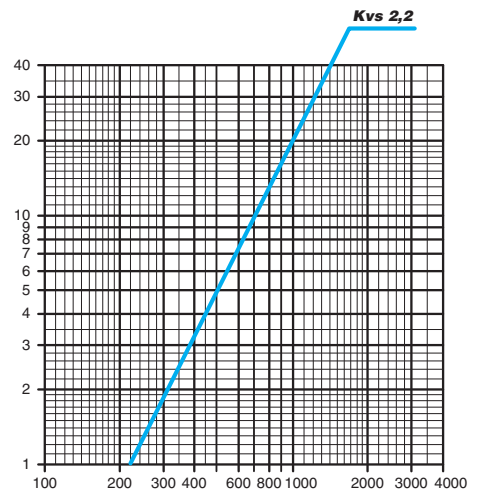
- 2 special 3 way valves;
- 2 230 Volt ON-OFF actuators with internal safety micro switch;
- insulated pipe kit;
- external valve insulation sleeve.

Model	Ø	Kvs
DFS 1-4 / DFE 1-3	3/4"	2,2

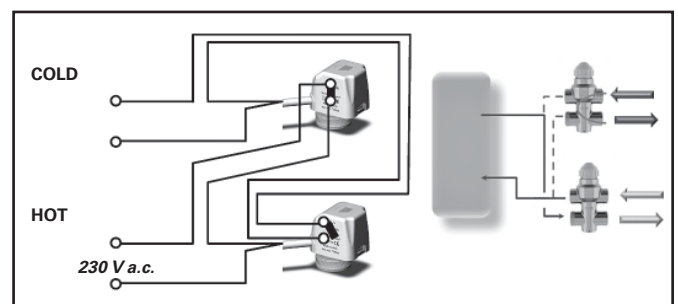
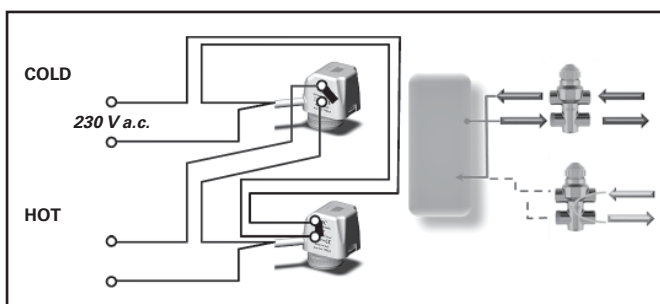
The kit uses a special 3 way valve which allows the transformation of the fan coil, equipped with one single coil, into a 4 pipe installation.

The new **4X2** valve has been designed to keep the water flow between flow and return perfectly separated, allowing its use in parallel.

Therefore, it can be used on 4 pipe fan coil systems with one single heat-exchange coil on board the fan coil.



### Double actuator electrical connections



### Balancing valves independent from the system pressure

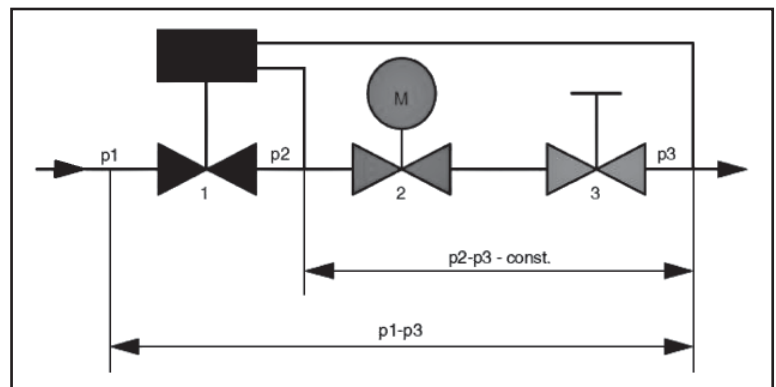
- The balancing valve and a combined 2 way valve allow the regulation of the water flow value autonomously, regardless of the system pressure, and the control of the flow by using an ON/OFF electro-thermal actuator.
- The balancing valve allows you to balance the hydraulic system by supplying the required water flow, for each fan- coil, and to maintain it even under partial load conditions.
- A graduated ring nut placed under the valve allows you to set the flow rate value and also allows direct reading of the set value.



### Valve operation logic

- "p1" is the valve inlet pressure.
- "p3" is the outlet pressure.
- "p2" is the diaphragm activation pressure, which allows differential pressure "p2" – "p3" to be maintained at a constant value, in order to guarantee the water to flow at the set value.

The minimum differential pressure "p1" – "p3" required to guarantee the correct value of the set water flow rate, is indicated in the diagrams on page 22. This is an essential factor to size the system pressure drop and pump pressure head.



The flow rate is kept at a constant value only if the valve pressure drop is higher than the indicated value.

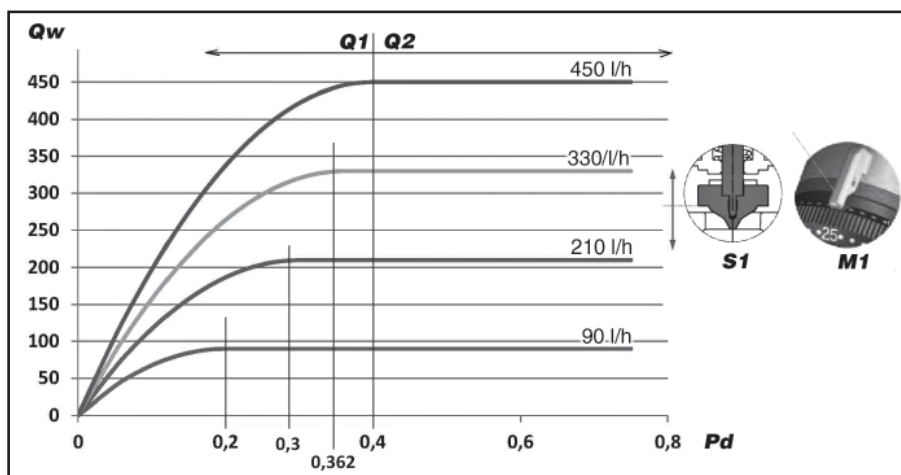
### Minimum operating differential pressure

The minimum differential pressure and the balancing valve pressure drop must be considered to size the system pumps.

Flow rate is constant if the pressure drop is higher than that indicated in the diagrams on page 22.

The following diagram shows an example of the flow rate trend according to the pressure drop and calibration required.

**Example DN 10 Model**



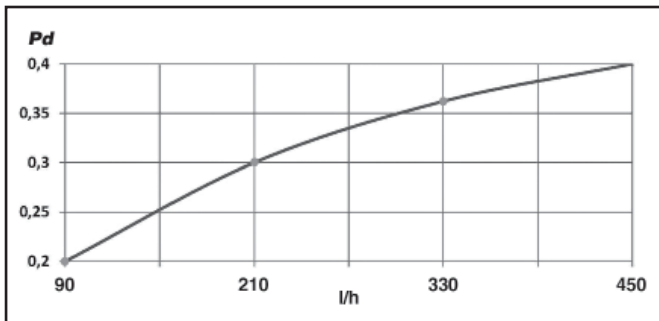
#### LEGEND:

- Qw** = Water flow rate
- Pd** = Min. differential pressure "p1" – "p3" (bar)
- Q1** = Area with inconstant water flow
- Q2** = Area with constant water flow
- S1** = Position of the adjustment valve plunger
- M1** = Position of the knob

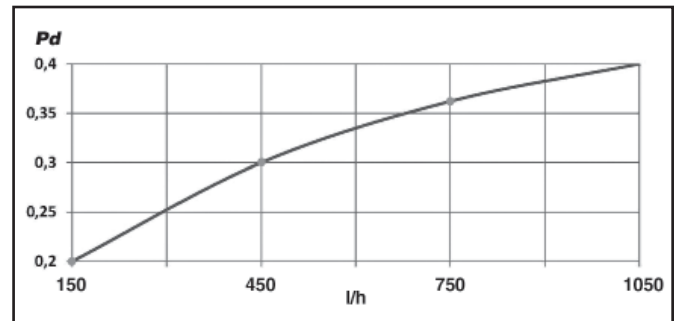
## Accessories

The valve upstream-downstream minimum differential pressure (“p1” – “p3”), which depends on the valve calibration value, must be exceeded to access the constant flow rate field.

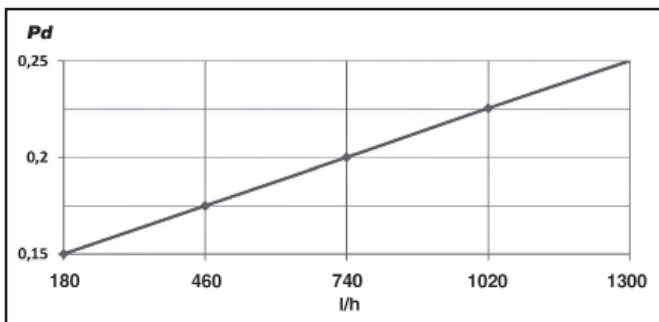
**DN 10 Model**



**DN 15 Model**



**DN 20 Model**



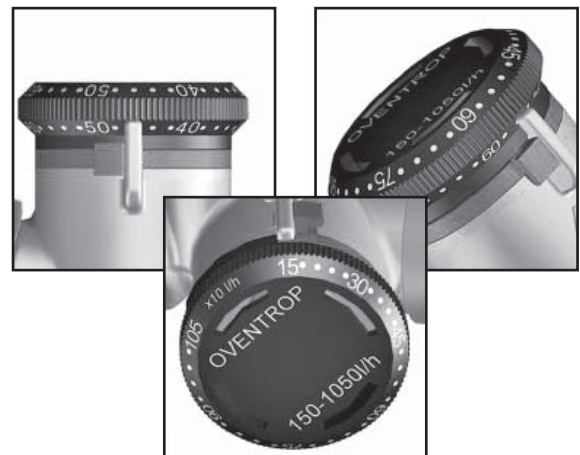
**LEGEND:**

Pd = Min. differential pressure “p1” – “p3” (bar)

E.g., when sizing the system pump, in which the **DN 10** valves will be installed and in which 210 l/h are constantly required for each device, consider a useful pressure of 0.3 bar (to compensate the pressure drop of the valve) for each balancing valve. Therefore, the pressure drop values produced by the system balancing valves must be summed and the pump must be sized to produce a pressure equal to or greater than the value obtained previously.

### Benefits

- Reduced dimensions.
- Easy installation on 2 or 4 pipe devices.
- Pre-regulation of the nominal value set even with installed actuator.
- Easy display of the nominal value set. Nominal values are indicated in 10 l/h without any conversion.
- Guarantee of constant flow rate set even with partial loads.
- Pre-regulation can be blocked and leaded with the locking ring.



### Technical features

DN Model	Flow Rate Range (l/h)	Kvs
DN 10	90 – 450	1,1
DN 15	150 – 1050	1,8
DN 20	180 – 1300	2,5

### Operation limits of the balancing valves

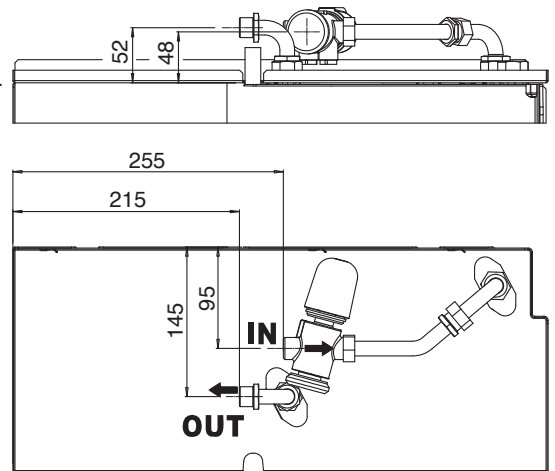
- Maximum operating temperature 120°C
- Maximum operating pressure 16 bar
- Maximum % of water/glycol mixture 50%
- Minimum operating temperature -10°C
- Maximum differential pressure 4 bar

## Accessories

### Balancing valves for main coil

2 way valve for main coil and assembly kit.

The valve is supplied equipped with 230 Volt electro-thermal actuator for the ON/OFF control.



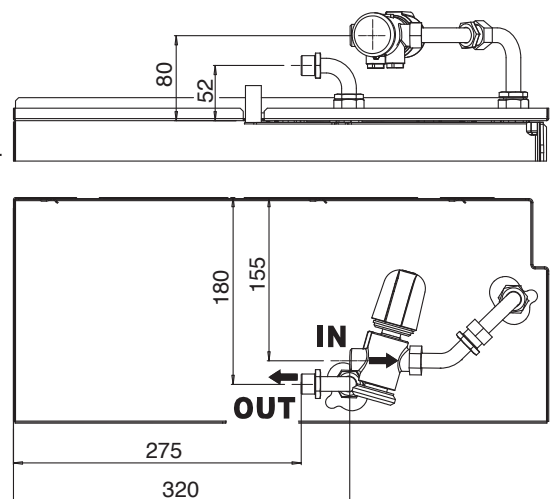
Model	VALVE		
	DN	Ø	Range
1	10	1/2"	90 - 450
2 - 3	15	3/4"	150 - 1050
4*	20	1"	180 - 1300

\*This model is available for DFS only

### Balancing valves for additional coil

2 way valve for additional coil and assembly kit.

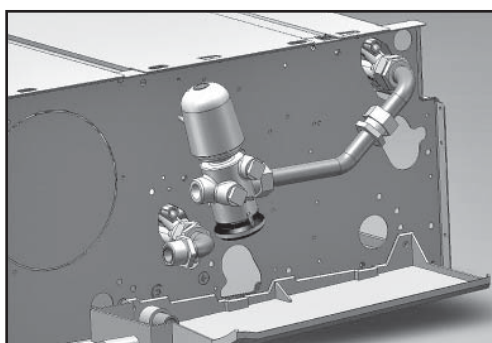
The valve is supplied equipped with 230 Volt electro-thermal actuator for the ON/OFF control.



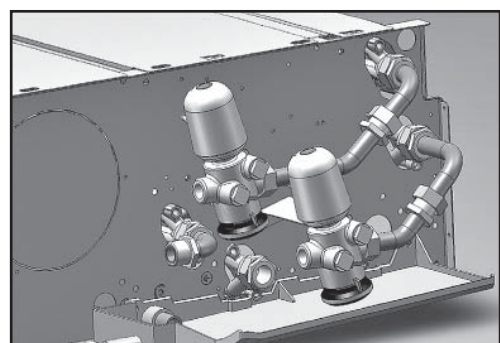
Model	VALVE		
	DN	Ø	Range
1 - 3	10	1/2"	90 - 450
4*	15	3/4"	150 - 1050

\*This model is available for DFS only

### 2 pipe system



### 4 pipe system



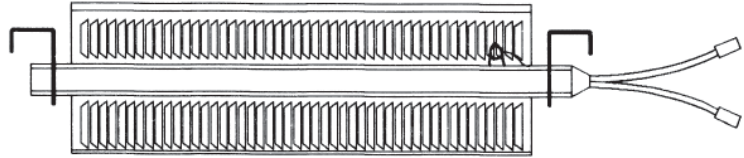
## Accessories

### BEL electric heater

1 PHASE 230V

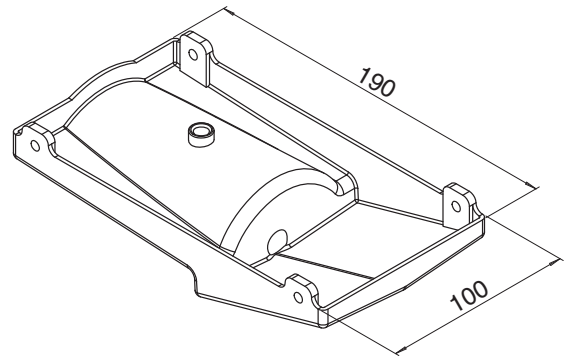
Electric heater with integral:  
safety thermostat and relay  
control.

- DFS-1: 1500 / 900 / 600 W
- DFS-2: 2000 / 1250 / 750 W
- DFS-3: 2500 / 1500 / 1000 W
- DFS-4: 3500 W



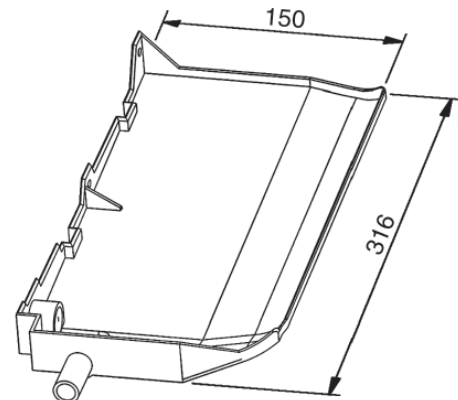
### BSV extension condensate collection tray to cover valve assembly (for vertical units)

For DFE range the controls can control the electric heater only if  
there is no hot water supply.



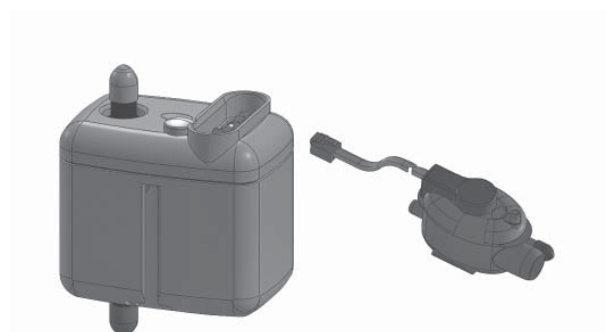
### BSI-C extension condensate collection tray to cover valve assembly (for horizontal units)

- Left or right hand connection



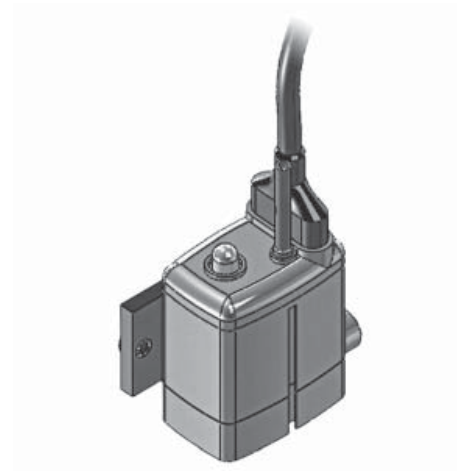
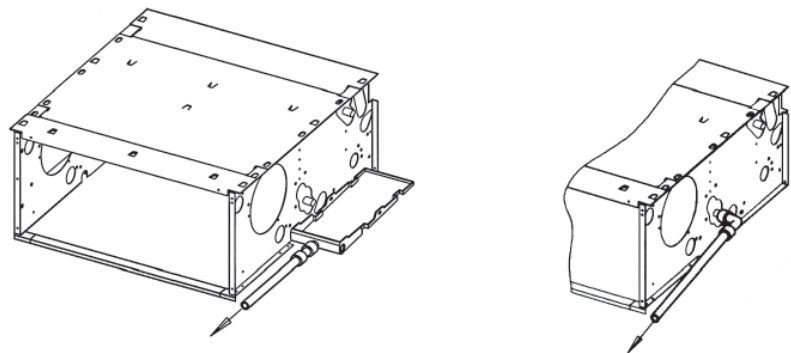
### DRPV-C fitted condensate pump (for vertical units)

Height for vertical flow (m)	Water flow (l/h) depending on the length of horizontal flow	
	5 m	10 m
1	7,6	7,2
2	5,6	5,2
3	4,0	3,7
4	3,2	2,9

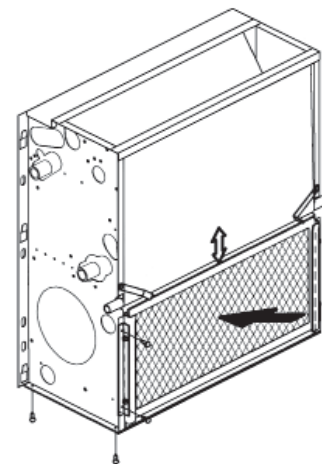


**DRPI-C fitted condensate pump (for horizontal units)**

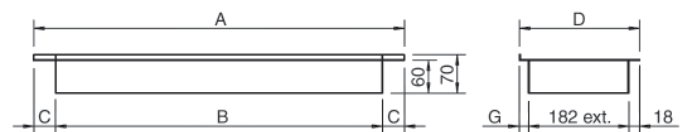
Height for vertical flow (m)	Water flow (l/h) depending on the length of horizontal flow	
	5 m	10 m
1	7,6	7,2
2	5,6	5,2
3	4,0	3,7
4	3,2	2,9


**SCR plastic condensate drain pipe with fast connection (allows correct condensate drain)**

**KAF frontal intake kit**

Bottom closing panel and filter sliding guides.


**FRD straight inlet flange**

Can be used together with GRAG air inlet grid.  
Made of galvanized steel.

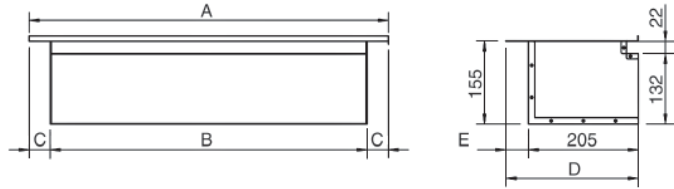


Size	Type	A	B	C	D	G
DFS/DFE 1	FRD - 3/4	669	590	39,5	216	16
DFS/DFE 2	FRD - 4S	884	790	47	246	46
DFS/DFE 3	FRD - 8/9	1099	990	54,5	246	46
DFS/DFE 4	FRD - 8S	1549	1440	54,5	246	46

## Accessories

### FR 90 90° inlet flange

Can be used together with GRAP air inlet grid.  
Made of galvanized steel.

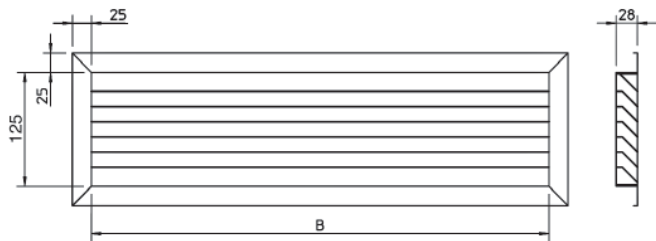


Size	Type	A	B	C	D	G
DFS/DFE 1	FR90 - 3/4	669	590	39,5	216	11
DFS/DFE 2	FR90 - 4S	884	790	47	246	41
DFS/DFE 3	FR90 - 8/9	1099	990	54,5	246	41
DFS/DFE 4*	FR90 - 8S	1549	1440	54,5	246	41

\*This model is available for DFS only

### GRAP air inlet grid

To be used with FR 90 90° inlet flange.  
Made of anodized aluminium.

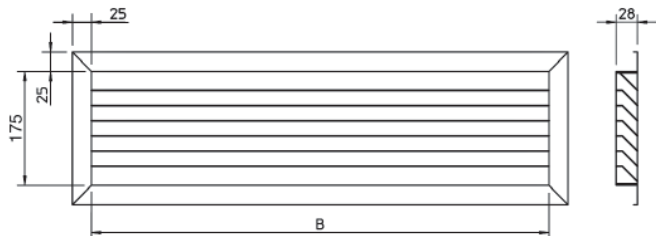


Size	Type	Description	B
DFS/DFE 1	GRAP - 3/4	Grid 600x150	575
DFS/DFE 2	GRAP - 5/6	Grid 800x150	775
DFS/DFE 3	GRAP - 7/9	Grid 1000x150	975
DFS/DFE 4*	GRAP - S4	Grid 1450x150	1425

\*This model is available for DFS only

### GRAG air inlet grid

To be used with FRD straight inlet flange.  
Made of anodized aluminium.

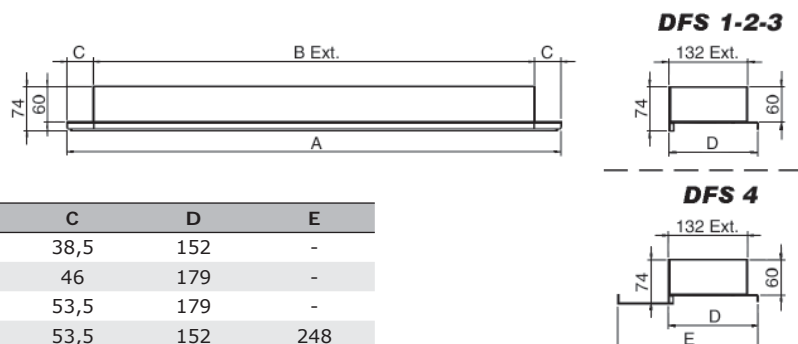


Size	Type	Description	B
DFS/DFE 1	GRAG - 3/4	Grid 600x200	575
DFS/DFE 2	GRAG - 5/6	Grid 800x200	775
DFS/DFE 3	GRAG - 7/9	Grid 1000x200	975
DFS/DFE 4*	GRAG - S4	Grid 1450x200	1425

\*This model is available for DFS only

### FMD straight outlet flange

Made of galvanized steel.



Size	Type	A	B	C	D	E
DFS/DFE 1	FMD - 3/4	667	590	38,5	152	-
DFS/DFE 2	FMD - 4S	882	790	46	179	-
DFS/DFE 3	FMD - 8/9	1097	990	53,5	179	-
DFS/DFE 4*	FMD - 8S	1547	1440	53,5	152	248

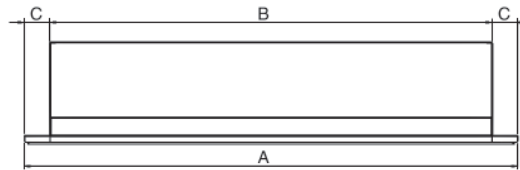
\*This model is available for DFS only



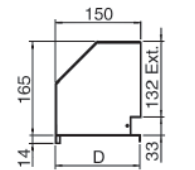
## Accessories

### FR 90 90° outlet flange

Made of galvanized steel insulated with polyethylene lining.



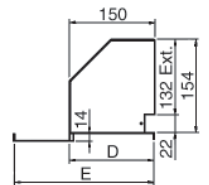
#### DFS/DFE 1-2-3



Size	Type	A	B	C	D	E
DFS/DFE 1	FM90 - 3/4	667	590	38,5	152	-
DFS/DFE 2	FM90 - 4S	882	790	46	179	-
DFS/DFE 3	FM90 - 8/9	1097	990	53,5	179	-
DFS/DFE 4*	FM90 - 8S	1547	1440	53,5	152	248

\*This model is available for DFS only

#### DFS/DFE 4

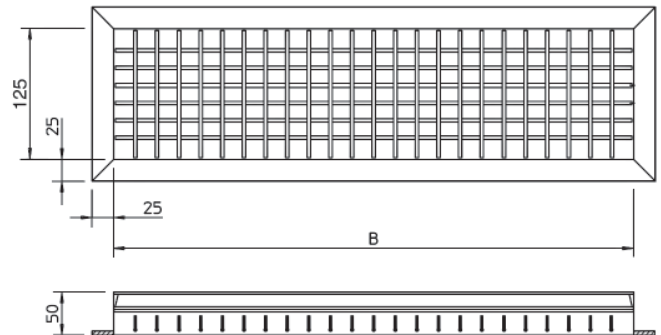


### BMA air outlet grid

Double louvre grid to be fitted to the duct, to the FMD straight outlet flange or to the FM 90 90° outlet flange. Made of anodized aluminium.

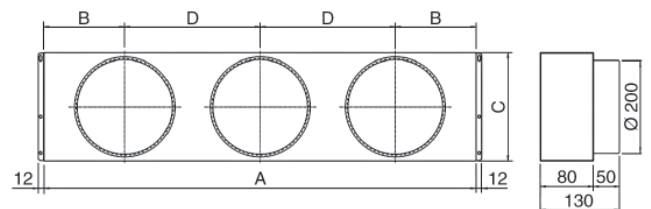
Size	Type	B
DFS/DFE 1	BMA - 3/4	575
DFS/DFE 2	BMA - 5/6	775
DFS/DFE 3	BMA - 7/9	975
DFS/DFE 4*	BMA - 8S	1425

\*This model is available for DFS only



### PRC air inlet spigot plenum

Made of galvanized steel insulated with polyethylene lining. All the plenums are supplied with spigots for the connection of flexible ducts.

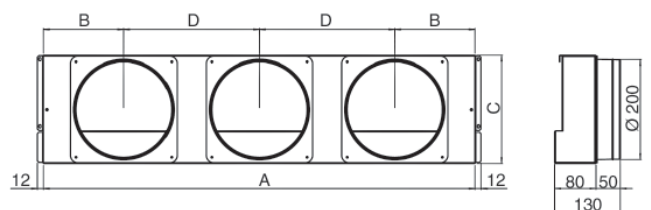


Size	Type	A	B	C	D	Number of spigots
DFS/DFE 1	PRC - 3/4	645	166	218	313	2
DFS/DFE 2	PRC - 4S	860	160	248	270	3
DFS/DFE 3	PRC - 8/9	1075	190	248	347,5	3
DFS/DFE 4*	PRC - 8S	1525	223	248	360	4

\*This model is available for DFS only

### PMC spigot diffuser

Made of galvanized steel insulated with polyethylene lining. All the plenums are supplied with spigots for the connection of flexible ducts.



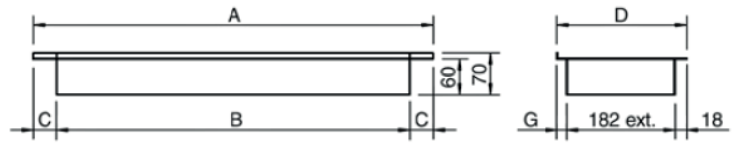
Size	Type	A	B	C	D	Number of spigots
DFS/DFE 1	PMC - 3/4	645	166	218	313	2
DFS/DFE 2	PMC - 4S	860	160	248	270	3
DFS/DFE 3	PMC - 8/9	1075	190	248	347,5	3
DFS/DFE 4*	PMC - 8S	1525	223	248	360	4

\*This model is available for DFS only

## Accessories

### FRD straight inlet flange

Can be used together with GRAG air inlet grid.  
Made of galvanized steel.



Version	DFE
Model	NC

Size		Type	A	B	C	D	G
SEC/F	HP						
2	–	FRD - 2	454	390	32	216	16
4	1	FRD - 3/4	669	590	39,5	216	16
6	–	FRD - 5/6	884	790	47	216	16
–	2	FRD - 4S	884	790	47	246	46
7	–	FRD - 7	1099	990	54,5	216	16
9	3	FRD - 8/9	1099	990	54,5	246	46

# Control functions

Electrical diagrams are shown on the installation, use and maintenance manual

	M-3V	T-TMO	T-REM	T-AUTO(+T-POWER-A)	IR-MB (+T-POWER-A)	M-2T
<b>CONTROL OPERATIONS</b>						
<b>CONTROL IDENTIFICATION</b>						
ON-OFF switch	●	●	●	●	●	●
ON-OFF switch for electric heater			●	●	●	
Manual 3 speed switch	●	●	●	●	●	●
Manual/Automatic 3 speed selection				●	●	
Summer/Winter switch		●	●	●	●	●
Remote centralized Summer/Winter switch or by an automatic change-over fitted on the water pipe			●	●	●	
Automatic Summer/Winter switch with neutral zone for 4 pipe installation with 2 valves				●	●	
Room thermostat for fan control (ON-OFF)		●	●	●	●	●
Room thermostat for 1 valve control (2 pipe installation)		●	●	●	●	●
Room thermostat for 2 valve control (4 pipe installation)		●	●	●	●	
Simultaneous thermostatic control of the valves and fan		●	●	●	●	●
Room thermostat for chilled water valve (SUMMER) and electric heater (WINTER) control (in winter only the heater is working)		●	●	●	●	
Room thermostat for fan and electric heater control (4 pipe installation + electric heater)			●	●	●	
Installation of bimetallic low temperature CUT-OUT thermostat (TMM)		●				
Installation of electronic low temperature CUT-OUT thermostat (LTCO)			●	●	●	

## Electronic controls

The **DFS** units can be controlled using the remote controls above; in the standard version, the motor speeds connected to the main terminal block, are:

- for sizes **1, 2 and 3** motor speeds 2, 3 and 4 are connected while the wires for speeds 1 and 5 are connected to a two-pole support terminal block.
- for size **4** motor speeds 1, 2 and 3 are connected while the wires for speeds 4 and 5 are connected to a two-pole support terminal block.



# Wall electronic controls

## DFS version



Dimensions: 75x75x30 mm

### M-3V

- Manual 3 speed switch.
- Without thermostatic control.
- It can not control the valves.



Dimensions: 135x86x31 mm

### T-TMO

- ON-OFF switch.
- Manual 3 speed switch.
- Manual Summer/Winter switch.
- Electronic room thermostat for fan control (ON-OFF).
- Electronic room thermostat for valve control (ON-OFF) (the fan keeps working).
- It allows to control the low temperature cut-out thermostat (TMM).
- It allows to control the chilled water valve (ON-OFF) and the electric heater (BEL) only in case that hot water is not used in winter (otherwise please use T-REM control with on/off switch for the electric heater).



Dimensions: 135x86x31 mm

### T-REM

- ON-OFF switch.
- Manual 3 speed switch.
- Manual, automatic or centralized Summer/Winter switch.
- Electric heater activation button.
- Electronic room thermostat for fan control (ON-OFF).
- Electronic room thermostat for valve control (ON-OFF).
- Simultaneous thermostatic control of the valves and fan.
- It allows to control the low temperature cut-out thermostat (LTCO).
- It allows to control the water valves (ON-OFF) and the electric heater managed as main heating element or as an integration element.
- Energy saving function.

## Wall electronic controls



Dimensions: 135x86x24 mm

### T-AUTO

**The control must always be connected with T-POWER-M power unit (fitted on the unit) or with T-POWER-A power unit (not fitted on the unit).**

- ON-OFF push button.
- Manual, automatic or centralized Summer/Winter switch.
- Manual or automatic 3 speed progressive push button.
- Summer/Winter/Fan/Auto mode push button.
- Electric heater activation button.
- Electronic room thermostat for fan control (ON-OFF).
- Electronic room thermostat for valve control (ON-OFF).
- Simultaneous thermostatic control of the valves and fan.
- It allows to control the low temperature cut-out thermostat (LTCO).
- It allows to control the water valves (ON-OFF) and the electric heater managed as main heating element or as an integration element.
- Energy saving push button.

**N.B.:** with 4 pipe installations and continuous chilled and hot water supply, it allows the automatic summer winter change-over in accordance to the room temperature (-1°C = Winter, +1°C = Summer, Neutral Zone 2°C).



Dimensions: 110x72x25 mm

### IR-MB

**The control must always be connected with T-POWER-M power unit (fitted on the unit) or with T-POWER-A power unit (not fitted on the unit).**

Wall control with display that allows controlling one or more units in Master/Slave mode.

The control is equipped with internal sensor to detect the room temperature, which can be defined as a priority compared to the return air sensor on the fan coil.

The IR-MB control features the following functions:

- Switch the unit ON and OFF.
- Temperature set.
- Manual, centralized or automatic Summer/Winter switch.
- 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).
- It allows to control the water valves (ON-OFF) and the electric heater managed as main heating element or as an integration element.
- Time setting.
- Weekly ON/OFF program.



Dimensions: 128x75x25 mm

### M-2T

**2 pipes units only.**

- ON-OFF switch.
- 3 speed switch.
- Manual Summer/Winter switch.
- Thermostatic control on the fan.
- Thermostatic control on the valve and continuous fan operation.
- Simultaneous thermostatic control of the valve and fan.

## Wall electronic controls

### DFE version



Dimensions: 135x86x24 mm

#### T-AUTO

**The control must always be connected with T-POWER-M power unit (fitted on the unit) or with T-POWER-A power unit (not fitted on the unit).**

- ON-OFF push button.
- Manual, automatic or centralized Summer/Winter switch.
- Manual or automatic 3 speed progressive push button.
- Summer/Winter/Fan/Auto mode push button.
- Electric heater activation button.
- Electronic room thermostat for fan control (ON-OFF).
- Electronic room thermostat for valve control (ON-OFF).
- Simultaneous thermostatic control of the valves and fan.
- It allows to control the low temperature cut-out thermostat (LTCO).
- It allows to control the water valves (ON-OFF) and the electric heater managed as main heating element or as an integration element.
- Energy saving push button.

**N.B.:** with 4 pipe installations and continuous chilled and hot water supply, it allows the automatic summer winter change-over in accordance to the room temperature (-1°C = Winter, +1°C = Summer, Neutral Zone 2°C).



Dimensions: 110x72x25 mm

#### IR-MB

**The control must always be connected with T-POWER-M power unit (fitted on the unit) or with T-POWER-A power unit (not fitted on the unit).**

Wall control with display that allows controlling one or more units in Master/Slave mode.

The control is equipped with internal sensor to detect the room temperature, which can be defined as a priority compared to the return air sensor on the fan coil.

The IR-MB control features the following functions:

- Switch the unit ON and OFF.
- Temperature set.
- Manual, centralized or automatic Summer/Winter switch.
- 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).
- It allows to control the water valves (ON-OFF) and the electric heater managed as main heating element or as an integration element.
- Time setting.
- Weekly ON/OFF program.



Dimensions: 132x87x23,6 mm

#### T-ECM

0-10V control with display designed to be mounted on the wall or to be installed on a 503 wall box.

- ON-OFF switch.
- Manual 3 speed switch or automatic continuous speed control.
- Manual Summer/Winter switch.
- Summer/Winter/Fan/Auto mode push button.
- Electronic room thermostat for fan control (ON-OFF).
- Electronic room thermostat for valve control (ON-OFF).
- Simultaneous thermostatic control of the valves and fan.
- It allows to control the low temperature cut-out thermostat (LTCO).

## Speed switches



### REL 1D

- Speed switch (Slave).
- It allows to control up to 8 units with only one centralized wall control (1 speed switch for each unit).
- For controls T-TMO and T-REM.



### T-AUTO

Power unit to be installed on the fan coil (fan coil interface).

- It controls the fan and the valves of the fan coil.
- It is connected to the electric supply.
- It receives the information required from the control.

*Control power absorption: 2,3 VA*

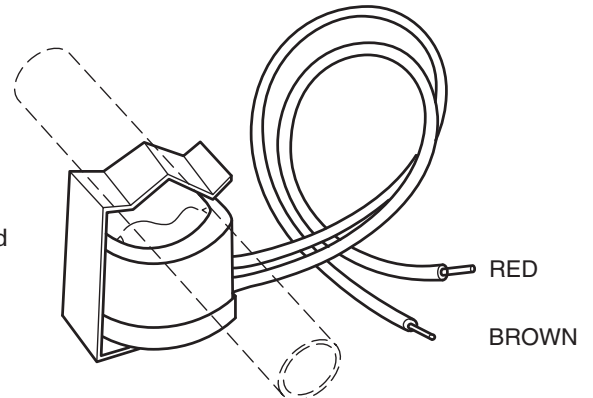
Description	Identification
Power unit for T-AUTO and IR-MB remote control (fitted on the unit)	T-POWER-M
Power unit for T-AUTO and IR-MB remote control (not fitted on the unit)	T-POWER-A



# Wall electronic control accessories

## TMM low temperature cut-out thermostat

To be installed in contact with the hot water circuit.  
 To eliminate cold air blow.  
 Installed by the installing engineer.  
 To be used with the T-TMO control.  
 For units working on heating only.  
 It stops the fan when the water temperature is lower than 30°C and it starts the fan when is higher than 38°C.



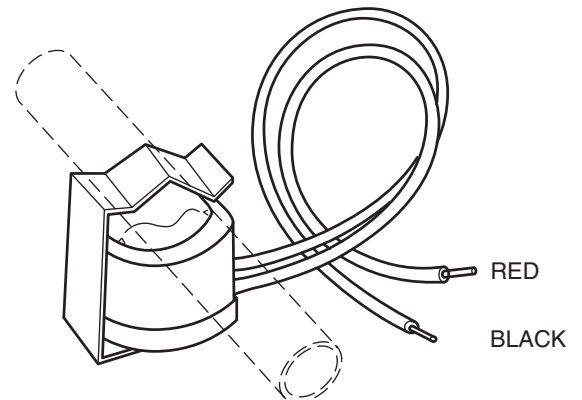
## LTCO low temperature cut-out thermostat

To be fitted between the coil fins.  
 When connecting the control, the LTCO probe cable must be separated from the power supply wires.  
 To be used (for AC motor) control and the T-POWER-A power unit.  
 It stops the fan when the water temperature is lower than 28°C and it starts the fan when is higher than 33°C.  
 To be used with the T-ECM (for EC motor) controls and the T-POWER-A power unit. It stops the fan when the water temperature is lower than 28°C and it starts the fan when it is higher than 33°C.



## Change-Over CH 15-25

Automatic summer/winter switch  
 to be installed in contact with the water circuit.  
 For 2-pipe installations only  
 (not to be used with 2 way valve).  
 To be used with the T-REM control.



**T2 sensor** to be placed on the water supply pipe upstream 3 way valves (not to be used with 2 way valve).

The T2 sensor must be used as described below:

- Change-Over for the automatic switch of the operating mode.  
 If water temperature is lower than 20°C, cooling mode is set; on the other hand, if water temperature exceeds 30°C, heating mode is set.
- It can be used on units with electric heater and hot water supply. The T2 priority probe activates the electric heater or water valve, depending on the water temperature detected. If water temperature exceeds 34°C, the water valve ON-OFF control is activated; on the other hand, if water temperature is lower than 30°C, the electric heater is activated.

To be used with the T-POWER-A power unit.



## Controls and MB version

All units can be supplied with a wide range of controls, which allows managing one single unit or several units by using the Modbus RTU - RS 485 communication protocol. Units can be managed according to the Master/Slave logic (up to 20 units) or by supervisory components. The system consists in a **MB** board and a series of controls, such as the **IR-MB** wall control, the **RT03-A** infra-red remote control, and the **TODS** multifunction control.

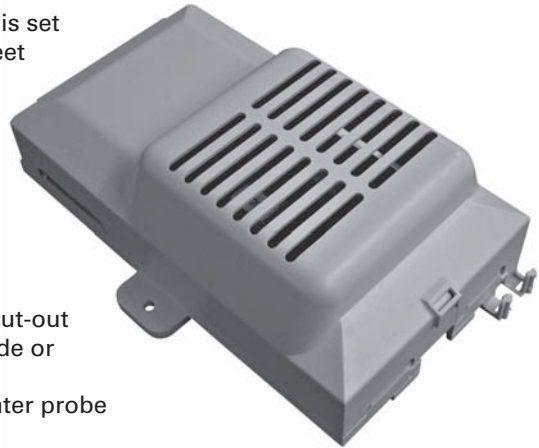
### MB electronic board

Description	Identification
DFS: MB electronic board fitted on the unit	MB-M
DFS: MB electronic board supplied with separate packaging	MB-A

Description	Identification
DFE: MB electronic board fitted on the unit	MB-ECM-M
DFE: MB electronic board supplied with separate packaging	MB-ECM-A

The **MB** electronic board, to be mounted on the fan coil internal unit, 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 T3 probe fitted), which can be activated only in heating mode or heating and cooling mode.
- Automatic switch of the operating mode by means of T2 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 infra-red remote control.
- IR-MB wall mounted control.
- RS 485 serial connection to manage several fan coils in Master/Slave configuration or to create a supervisory network.

## Controls and MB version

### IR-MB wall control

Description	Identification
Wall control (to be used with MB board only)	IR-MB

Wall control with display that allows controlling one or more units in Master/Slave mode. The control is equipped with internal sensor to detect the room temperature, which can be defined as a priority compared to the return air sensor on the fan coil. The **IR-MB** control features the following functions:

- Switch the appliance ON and OFF.
- Temperature set.
- Modify the set point (when used as a +/- 3° variation of the set point configured from NET supervisory program or PSM-DI).
- 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.
- Weekly ON/OFF program.
- Display and change of the fan coil operation parameters.



### RT03-A infra-red remote control

Description	Identification
RT03 infra-red remote control with receiver supplied with separate packaging (to be used with MB board only)	RT03-REC-A
RT03 infra-red remote control supplied with separate packaging (to be used with MB board only)	RT03-A
Receiver for RT03 infra-red remote control supplied with separate packaging (to be used with MB board only)	REC-A

The infra-red remote control allows setting by a remote position the fan coil operation parameters.

The **RT03-A** infra-red remote control features 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.



Installation example with infra-red remote control



## Controls and MB version

A group of units with **MB** electronic board can be connected via a serial link and can consequently be managed at the same time by just one **IR-MB** wall control or **RT03-A** infra-red remote control. Using the special jumper present on the **MB** board, one unit must be configured as the master, and all the others as slaves. It is clear that the remote control must be pointed at the receiver on the master unit. To avoid problems, it is recommended to install and connect the receiver only on the master unit.

### With IR-MB wall control

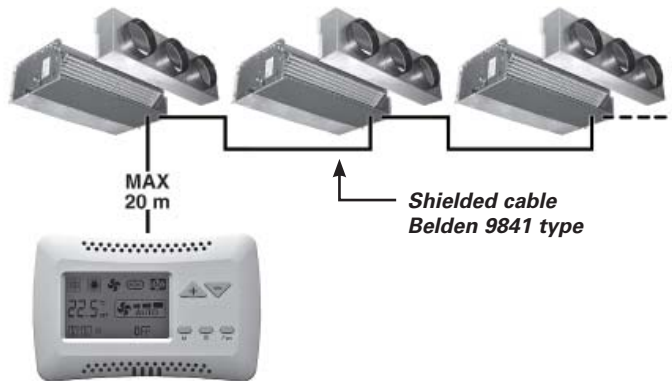
#### One control for each unit

(MAXIMUM LENGTH OF THE CONNECTION CABLE = 20 m)



#### One control for more units (20 units max.)

(MAXIMUM TOTAL LENGTH OF THE CONNECTION CABLE = 800 m)



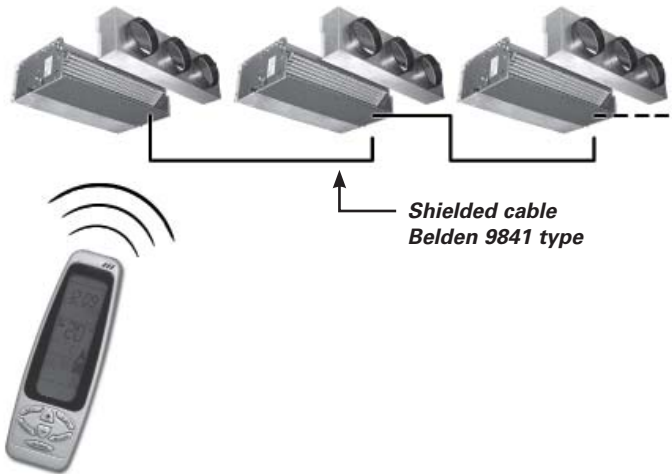
### With RT03-A infra-red remote control

#### One control for each unit



#### One control for more units (20 units max.)

(MAXIMUM TOTAL LENGTH OF THE CONNECTION CABLE = 800 m)



### T2 accessory for units with MB electronic board

The T2 sensor can be combined with MB boards to be placed on the water supply pipe upstream 3 way valves (not to be used with 2 way valve).



The T2 sensor must be used as described below:

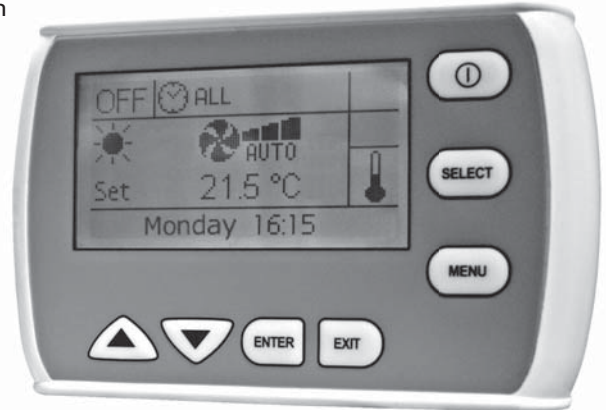
- Change-Over for 2-pipe system for the automatic switch of the operating mode.  
If water temperature is lower than 20°C, cooling mode is set; on the other hand, if water temperature exceeds 30°C, heating mode is set.
- It can be used on units with electric heater and hot water supply. The T2 priority probe activates the electric heater or water valve, depending on the water temperature detected. If water temperature exceeds 34°C, the water valve ON-OFF control is activated; on the other hand, if water temperature is lower than 30°C, the electric heater is activated.

## Controls and MB version

### TODS multifunction control panel

Another option available for the serial communication between the units is the possibility to connect up to 60 **DFS and DFE** units in series and manage them with just one wall mounted **TODS** controller. The wall mounted controller can be used to set the operating mode for each individual unit connected, display the operating conditions of each individual unit, and set the ON/OFF time sets for each day of the week (the program can be set for all the units and for a maximum of two groups of units).

If more than 60 units need to be connected, two or more controllers must be used. Each unit must have a MB board. The **TODS** control is used to manage a series of fan coils, up to a maximum of 60 units (the maximum length of the RS 485 connection cable must not exceed 800 m), from one single control point.



The **TODS** control communicates via a serial line with all the units connected, with the possibility of controlling them all together or individually. In fact, the unique address of each individual fan coil means that all the units can be called at the same time, or the individual unit called, to perform the following functions:

- display the current operating mode, the fan speed, the set point;
- display the room temperature measured on the individual unit;
- turn all the units ON and OFF at the same time or alternatively each unit individually;
- change the operating mode (fan only, heating, cooling, automatic changeover);
- change the set point;
- modify the values and operation parameters of the fan speed.

Each function can then be sent to all the units connected, or alternatively to each individual unit.

Different set points or operating modes can be set for each individual unit.

The **TODS** panel can also be used for the time management of the units over the week. Four ON times and four OFF times can be set on the units for each day of the week. A different Temperature set that will be considered as Operation set for all connected appliances, can be set for each event. If the Temperature set is not entered for the individual event, it must be set during programming for each individual unit or for the entire network.

Units without receiver or with receiver can be connected within the network: the former can receive instructions only from the **TODS** wall mounted panel; while the latter can receive information from both the wall mounted panel and infra-red remote control. Use the infra-red remote control to force ON mode of the individual unit, if ON/OFF daily time programming has been set. The unit will regain the settings from the **TODS** panel during execution of successive start-up program.

**Note:** set the configuration Dip Switches of each fan coil as illustrated in the remote control use manual, based on the required solutions.

**Note:** the RS 485 network's overall length must not exceed 700/800 metres.



# Notes



## Notes



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