



EEDE04-7A

# technical data

**FWV/FWL/FWM/FWD**



**Low Wall Unit /  
(Concealed) Flexi type Unit /  
Duct Unit**

Applied Systems

## Fan Coil Units

# Fan Coil Units



ISO14001 assures an effective environmental management system in order to help protect human health and the environment from the potential impact of our activities, products and services and to assist in maintaining and improving the quality of the environment



Daikin units comply with the European regulations that guarantee the safety of the product.



Daikin Europe N.V. is approved by LRQA for its Quality Management System in accordance with the ISO9001 standard. ISO9001 pertains to quality assurance regarding design, development, manufacturing as well as to services related to the product.



Daikin Europe N.V. is participating in the EUROVENT Certification Programme. Products are as listed in the EUROVENT Directory of Certified Products. FWD units are not within the scope of the Eurovent Certification Programme

Specifications are subject to change without prior notice

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# 1 Nomenclature

**1** Digit

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
F	W	V L M D	0 1	0 1 2 3 4 6 8	A C	A	T F	N V	6	V	1 3	- E F G	- E M P Q R	- R S T
													Options	

Digit	Character	Description	Digit	Character	Description
1-2	FW	Water fancoil	13	-	<b>Electric heater/Fan stop thermostat</b> No heater / no fan stop thermostat Electric heater Fan stop thermostat Electric heater/Fan stop thermostat
3	V L M D	<b>Type</b> Vertical Flexi casing Flexi no casing Duct		E F G	
4-5	01>18	Size		14	
6	A/C	Series	E M P Q R		
7	A	Minor model change	15		-
8	T F	<b>Coil type</b> Coil type: 2-pipe Coil type: 4-pipe		R	
9	N V	<b>Valves</b> Without valves With ON/OFF valves		S T	
10	6	Production location			
11-12	V1 V3	<b>Power supply</b> 220-240V - 1 phase 230V - 1 phase			



## 2 Features

- **Controllers are easy to read and operate!**

- 3 different controllers:
  - 2 electronic controllers (built-in or remote)
  - 1 electromechanical control (built-in)
- The control panel consists of:
  - Fan speed selector (3 steps and auto)
  - Cool / Heat selector
  - Operational leds
  - Thermostat
- Numerous configurations possible
- Water probe and air sensor
- Auxiliary contacts

- **Fast and easy field set up, ready for use!**

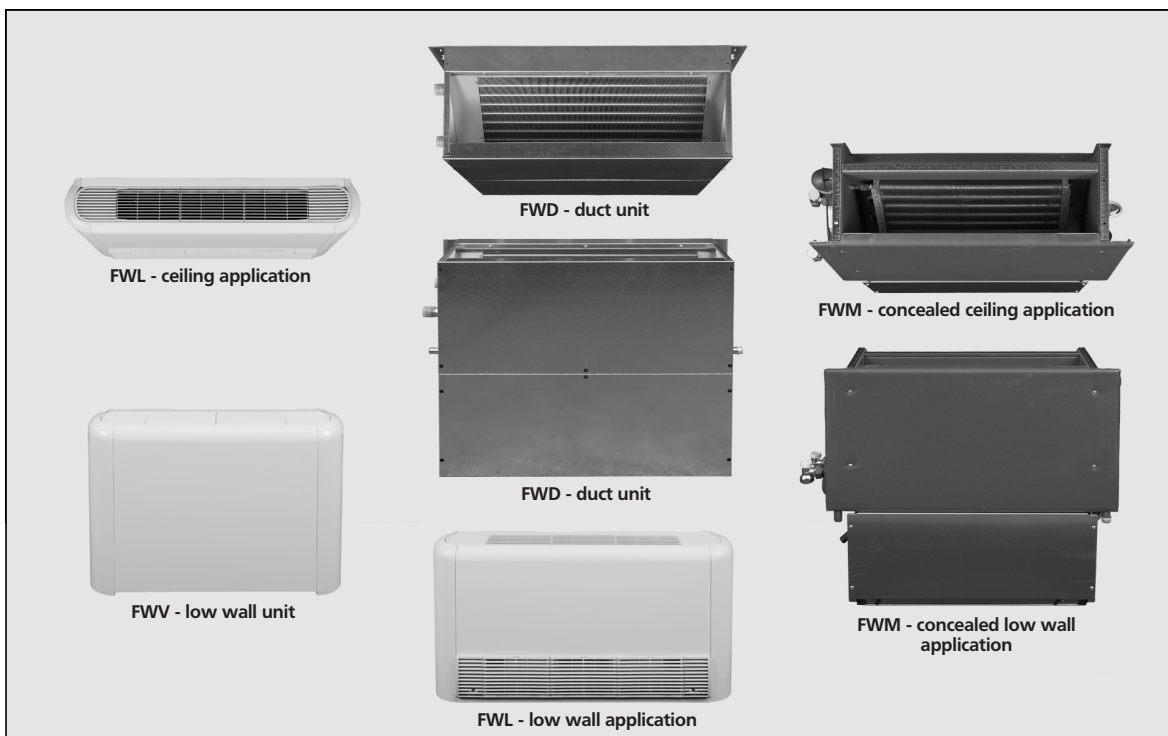
- Quick fixing system for wall/ceiling mounting
- Pre-assembled 3-way/4-port ON/OFF valves are available
- Valve packages can be factory-mounted and are leak tested
- Quick electrical connections

- **Low maintenance and high efficiency**

- Quick removal of washable filter
- Removable grilles
- Only 4 screws to access the fan motor
- Easy access to control valves

- **Wide range of options**

- Easy to use controllers
- Electric heater
- Valve kit
- Additional one-row heat exchanger
- ... and many others





# 3 Specifications

## 3-1 Technical specifications

### 3-1-1 FWV-FWL-FWM - 2-pipe series

3-1

NOMINAL CAPACITY and NOMINAL INPUT							
MODEL			FW..01C**	FW..02C**	FW..03C**	FW..04C**	
POWER INPUT		high	W	36	46	62	87
		medium	W	26	32	46	61
		low	W	21	21	30	41
COOLING CAPACITY (1)	Total capacity	high	kW	1.54	2.09	2.93	4.33
		medium	kW	1.24	1.81	2.38	3.27
		low	kW	1.04	1.45	1.76	2.51
	Sensible capacity	high	kW	1.20	1.51	2.11	3.15
		medium	kW	0.97	1.31	1.70	2.45
		low	kW	0.79	1.05	1.26	1.80
HEATING CAPACITY (2)		high	kW	2.14	2.79	3.81	5.63
		medium	kW	1.73	2.33	3.08	4.30
		low	kW	1.43	1.91	2.28	3.29

TECHNICAL SPECIFICATIONS							
MODEL			FW..01C**	FW..02C**	FW..03C**	FW..04C**	
DIMENSIONS	FWV/FWL	mm	564x774x226		564x984x226	564x1,194x226	
	FWM	mm	535x584x224		535x794x224	535x1,004x224	
WEIGHT	FWV	kg	19	20	25	30	
	FWL	kg	20	21	27	32	
	FWM	kg	14	15	19	23	
MATERIAL	FWV/FWL/FWM		Plastic + sheet metal				
COLOUR			Plastic and metal RAL9010				
SOUND LEVEL	Sound power	high	dB(A)	47	52	50	55
		medium	dB(A)	39	44	44	48
		low	dB(A)	34	36	38	40
WATER FLOW	Cooling	l/h	265	359	504	745	
	Heating	l/h	265	359	504	745	
WATER PRESSURE DROP	Cooling	kPa	13	13	11	12	
	Heating	kPa	9	10	9	9	
FAN	Type		Centrifugal multi-blade, double suction				
	Air flow rate at 0 Pa ESP	high	m <sup>3</sup> /h	319	344	442	706
		medium	m <sup>3</sup> /h	233	271	341	497
		low	m <sup>3</sup> /h	178	211	241	361
	Speed		3 steps: high, medium, low				
Qty		1	1	2	2		
MOTOR	Type		Closed induction, B class insulation, winding thermal cut-out				
HEAT EXCHANGER	Rows x stages x fin pitch	mm	2x10x1.8	3x10x1.6	3x10x1.6	3x10x1.8	
	Face area	m <sup>2</sup>	0.086	0.086	0.138	0.191	
	Water volume	ℓ	0.5	0.7	1	1.4	
AIR FILTER			Plastic				
INSULATION MATERIAL			Class 1 self-extinguishing				
VIBRATION INSULATION			Rubber ring for fan motor				
PIPING CONNECTIONS	Water inlet/outlet	inch	1/2"	1/2"	1/2"	1/2"	
	Drain FWV	mm	16				
	Drain FWM	mm	17				

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# 3 Specifications

## 3-1 Technical specifications

### 3-1-1 FWV-FWL-FWM - 2-pipe series

3

3-1

NOMINAL CAPACITY and NOMINAL INPUT						
MODEL			FW..06C**	FW..08C**	FW..10C**	
POWER INPUT		high	W	89	182	244
		medium	W	62	127	169
		low	W	42	86	109
COOLING CAPACITY (1)	Total capacity	high	kW	4.77	6.71	8.71
		medium	kW	3.87	5.27	6.78
		low	kW	3.17	3.97	4.49
	Sensible capacity	high	kW	3.65	4.91	6.38
		medium	kW	2.92	3.83	4.94
		low	kW	2.32	2.84	3.25
HEATING CAPACITY (2)		high	kW	6.36	7.83	11.10
		medium	kW	5.21	6.23	8.64
		low	kW	4.24	4.77	5.80

TECHNICAL SPECIFICATIONS						
MODEL			FW..06C**	FW..08C**	FW..10C**	
DIMENSIONS	FWV/FWL	mm	564x1,194x226	564x1,404x251		
	FWM	mm	535x1,004x224	535x1,214x249		
WEIGHT	FWV	kg	31	41	41	
	FWL	kg	33	44	44	
	FWM	kg	23	32	32	
MATERIAL	FWV/FWL/FWM		Plastic + sheet metal			
COLOUR			Plastic and metal RAL9010			
SOUND LEVEL	Sound power	high	dB(A)	59	61	66
		medium	dB(A)	52	54	58
		low	dB(A)	44	47	48
WATER FLOW	Cooling	l/h	820	1154	1498	
	Heating	l/h	820	1154	1498	
WATER PRESSURE DROP	Cooling	kPa	14	12	19	
	Heating	kPa	10	9	13	
FAN	Type		Centrifugal multi-blade, double suction			
	Air flow rate at 0 Pa ESP	high	m <sup>3</sup> /h	785	1011	1393
		medium	m <sup>3</sup> /h	605	771	1022
		low	m <sup>3</sup> /h	470	570	642
	Speed		3 steps: high, medium, low			
Qty		2	2	2		
MOTOR	Type		Closed induction, B class insulation, winding thermal cut-out			
HEAT EXCHANGER	Rows x stages x fin pitch	mm	3x10x1.6	3x12x2.1	3x12x2.1	
	Face area	m <sup>2</sup>	0.191	0.292	0.292	
	Water volume	ℓ	1.4	2.1	2.1	
AIR FILTER			Plastic			
INSULATION MATERIAL			Class 1 self-extinguishing			
VIBRATION INSULATION			Rubber ring for fan motor			
PIPING CONNECTIONS	Water inlet/outlet	inch	1/2"	3/4"	3/4"	
	Drain FWV	mm		16		
	Drain FWM	mm		17		

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#### NOTES

- rating conditions cooling 2 pipe: air 27°C DB - 19°C WB - entering water 7°C - leaving water 12°C
- rating conditions heating 2 pipe: air 20°C DB - entering water 50°C - water flow as in cooling mode

#### SYMBOLS

- \*\* : TN = 2-pipe, without valves  
 TV = 2-pipe, with ON / OFF valves  
 FN = 4-pipe, without valves



# 3 Specifications

## 3-1 Technical specifications

### 3 3-1-2 FWV-FWL-FWM - 4-pipe series

3-1

NOMINAL CAPACITY and NOMINAL INPUT							
MODEL			FW..01C**	FW..02C**	FW..03C**	FW..04C**	
POWER INPUT		high	W	36	59	62	87
		medium	W	26	41	46	61
		low	W	21	27	30	41
COOLING CAPACITY (1)	Total capacity	high	kW	1.50	1.79	2.87	4.26
		medium	kW	1.21	1.56	2.33	3.23
		low	kW	1.02	1.26	1.73	2.48
	Sensible capacity	high	kW	1.17	1.46	2.07	3.09
		medium	kW	0.95	1.27	1.66	2.42
		low	kW	0.78	1.02	1.24	1.78
HEATING CAPACITY (2)		high	kW	2.23	2.07	2.91	4.51
		medium	kW	1.89	1.84	2.53	3.75
		low	kW	1.62	1.61	2.06	3.11

TECHNICAL SPECIFICATIONS							
MODEL			FW..01C**	FW..02C**	FW..03C**	FW..04C**	
DIMENSIONS	FWV/FWL	mm	564x774x226		564x984x226	564x1,194x226	
	FWM	mm	535x584x224		535x794x224	535x1,004x224	
WEIGHT	FWV	kg	20	21	26	32	
	FWL	kg	21	22	28	34	
	FWM	kg	15	16	20	26	
MATERIAL	FWV/FWL/FWM		Plastic + sheet metal				
COLOUR			Plastic and metal RAL9010				
SOUND LEVEL	Sound power	high	dB(A)	47	54	50	55
		medium	dB(A)	39	48	45	48
		low	dB(A)	34	42	38	40
WATER FLOW	Cooling	l/h	268	308	494	733	
	Heating	l/h	196	182	286	396	
WATER PRESSURE DROP	Cooling	kPa	13	13	11	12	
	Heating	kPa	7	8	5	10	
FAN	Type		Centrifugal multi-blade, double suction				
	Air flow rate at 0 Pa ESP	high	m <sup>3</sup> /h	307	327	431	690
		medium	m <sup>3</sup> /h	225	261	332	490
		low	m <sup>3</sup> /h	174	205	238	356
Speed		3 steps: high, medium, low					
Qty		1	1	2	2		
MOTOR	Type		Closed induction, B class insulation, winding thermal cut-out				
HEAT EXCHANGER	Rows x stages x fin pitch	mm	1x8x1.6	1x8x1.6	1x8x1.6	1x8x1.6	
	Face area	m <sup>2</sup>	0.068	0.068	0.110	0.152	
	Water volume	ℓ	0.2	0.2	0.3	0.4	
AIR FILTER			Plastic				
INSULATION MATERIAL			Class 1 self-extinguishing				
VIBRATION ISOLATOR			Rubber ring for fan motor				
PIPING CONNECTIONS	Water inlet/outlet	inch	1/2"	1/2"	1/2"	1/2"	
	Drain FWV	mm	16				
	Drain FWM	mm	17				

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# 3 Specifications

## 3-1 Technical specifications

### 3-1-2 FWV-FWL-FWM - 4-pipe series

3

3-1

NOMINAL CAPACITY and NOMINAL INPUT						
MODEL			FW..06C**	FW..08C**	FW..10C**	
POWER INPUT		high	W	89	182	244
		medium	W	62	127	169
		low	W	42	86	109
COOLING CAPACITY (1)	Total capacity	high	kW	4.67	6.64	8.55
		medium	kW	3.81	5.23	6.69
		low	kW	3.11	3.93	4.45
	Sensible capacity	high	kW	3.57	4.85	6.26
		medium	kW	2.87	3.80	4.88
		low	kW	2.28	2.82	3.22
HEATING CAPACITY (2)		high	kW	4.67	7.91	9.30
		medium	kW	4.10	6.83	7.95
		low	kW	3.56	5.69	6.12

TECHNICAL SPECIFICATIONS						
MODEL			FW..06C**	FW..08C**	FW..10C**	
DIMENSIONS	FWV/FWL	mm	564x1,194x226	564x1,404x251		
	FWM	mm	535x1,004x224	535x1,214x249		
WEIGHT	FWV	kg	33	44	44	
	FWL	kg	35	46	46	
	FWM	kg	25	34	34	
MATERIAL	FWV/FWL/FWM		Plastic + sheet metal			
COLOUR			Plastic and metal RAL9010			
SOUND LEVEL	Sound power	high	dB(A)	59	59	66
		medium	dB(A)	53	52	58
		low	dB(A)	46	44	48
WATER FLOW	Cooling	l/h	803	1142	1471	
	Heating	l/h	465	694	816	
WATER PRESSURE DROP	Cooling	kPa	14	12	19	
	Heating	kPa	10	8	9	
FAN	Type		Centrifugal multi-blade, double suction			
	Air flow rate at 0 Pa ESP	high	m <sup>3</sup> /h	763	998	1362
		medium	m <sup>3</sup> /h	593	765	1007
		low	m <sup>3</sup> /h	460	565	636
	Speed		3 steps: high, medium, low			
Qty		2	2	2		
MOTOR	Type		Closed induction, B class insulation, winding thermal cut-out			
HEAT EXCHANGER	Rows x stages x fin pitch	mm	1x8x1.6	1x10x1.6	1x10x1.6	
	Face area	m <sup>2</sup>	0.152	0.243	0.243	
	Water volume	ℓ	0.4	0.6	0.6	
AIR FILTER			Plastic			
INSULATION MATERIAL			Class 1 self-extinguishing			
VIBRATION INSULATION			Rubber ring for fan motor			
PIPING CONNECTIONS	Water inlet/outlet	inch	1/2"	3/4"	3/4"	
	Drain FWV	mm	16	16	16	
	Drain FWM	mm	17	17	17	

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#### NOTES

- rating conditions cooling 4 pipe: air 27°C DB - 19°C WB - entering water 7°C - leaving water 12°C
- rating conditions heating 4 pipe: air 20°C DB - entering water 70°C - leaving water 60°C

#### SYMBOLS

- \*\* : TN = 2-pipe, without valves  
 TV = 2-pipe, with ON / OFF valves  
 FN = 4-pipe, without valves



# 3 Specifications

## 3-1 Technical specifications

### 3 3-1-3 FWD - 2-pipe series

3-1

NOMINAL CAPACITY and NOMINAL INPUT								
MODEL			FWD04A*	FWD06A*	FWD08A*	FWD10A*		
POWER CONSUMPTION			W	177	274	315	325	
Current input			A	0.77	1.34	1.51	1.54	
COOLING CAPACITY (1)	Total capacity	high	kW	3.90	6.20	7.80	8.82	
	Sensible capacity	high	kW	3.08	4.65	6.52	7.16	
HEATING CAPACITY (2)			high	kW	4.05	7.71	9.43	10.79

TECHNICAL SPECIFICATIONS							
MODEL			FWD04A*	FWD06A*	FWD08A*	FWD10A*	
DIMENSIONS			mm	280 x 754 x 559	280 x 964 x 559	280 x 1,174 x 559	
WEIGHT			kg	33	41	47	49
MATERIAL			Galvanised sheet metal				
COLOUR			Not painted (galvanised)				
SOUND LEVEL at ESP = 0 Pa	Sound power	high	dB(A)	66	69	72	72
		medium	dB(A)	61	63	67	67
		low	dB(A)	54	59	62	62
WATER FLOW	Cooling		l/h	674	1064	1339	1514
	Heating		l/h	674	1064	1339	1514
WATER PRESSURE DROP	Cooling		kPa	17	24	24	16
	Heating		kPa	14	20	20	13
FAN	Type		Centrifugal multi-blade, double suction				
	Air flow rate	high	m <sup>3</sup> /h	800	1250	1600	1600
	Available pressure		Pa	66	58	68	64
	Speed		3 steps: high, medium, low				
Qty				1	2	2	2
MOTOR			Type				Closed induction, B class insulation, winding thermal cut-out
HEAT EXCHANGER	Rows x stages x fin pitch		mm	3x10x2.1	3x10x1.8	3x10x2.1	4x10x2.1
	Face area		m <sup>2</sup>	0.138	0.1905	0.243	0.243
	Water volume		ℓ	1.06	1.42	1.79	2.38
AIR FILTER			Acrylic - Filtering class EU2				
INSULATION MATERIAL			Class 1 self-extinguishing				
VIBRATION ISOLATOR			Rubber ring for fan motor				
PIPING CONNECTIONS	Water inlet/outlet		inch	3/4"			
	Drain		mm	16			

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# 3 Specifications

## 3-1 Technical specifications

### 3-1-3 FWD - 2-pipe series

3

3-1

NOMINAL CAPACITY and NOMINAL INPUT						
MODEL			FWD12A*	FWD16A*	FWD18A*	
POWER CONSUMPTION		W	530	991	1001	
Current input		A	2.60	4.80	4.83	
COOLING CAPACITY (1)	Total capacity	high	kW	11.90	16.40	18.30
	Sensible capacity	high	kW	9.36	12.80	14.10
HEATING CAPACITY (2)		high	kW	14.45	19.81	21.92

TECHNICAL SPECIFICATIONS						
MODEL			FWD12A*	FWD16A*	FWD18A*	
DIMENSIONS		mm	352 x 1,174 x 718	352 x 1,384 x 718		
WEIGHT		kg	65	77	80	
MATERIAL		Galvanised sheet metal				
COLOUR		Not painted (galvanised)				
SOUND LEVEL at ESP = 0 Pa	Sound power	high	dB(A)	74	78	78
		medium	dB(A)	67	73	73
		low	dB(A)	60	69	69
WATER FLOW	Cooling	l/h	2056	2833	3140	
	Heating	l/h	2056	2833	3140	
WATER PRESSURE DROP	Cooling	kPa	26	34	45	
	Heating	kPa	21	28	37	
FAN	Type	Centrifugal multi-blade, double suction				
	Air flow rate	high	m <sup>3</sup> /h	2200	3000	3000
	Available pressure		Pa	97	145	134
	Speed	3 steps: high, medium, low				
	Qty		2	2	2	
MOTOR	Type	Closed induction, B class insulation, winding thermal cut-out				
HEAT EXCHANGER	Rows x stages x fin pitch	mm	3x14x2.1	4x14x2.1	5x14x2.1	
	Face area	m <sup>2</sup>	0.3402	0.4137	0.4137	
	Water volume	ℓ	2.5	4.02	5.03	
AIR FILTER	Acrylic - Filtering class EU2					
INSULATION MATERIAL	Class 1 self-extinguishing					
VIBRATION ISOLATOR	Rubber ring for fan motor					
PIPING CONNECTIONS	Water inlet/outlet	inch	1			
	Drain	mm	16			

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#### NOTES

- rating conditions cooling 2 pipe: air 27°C DB - 19°C WB - entering water 7°C - leaving water 12°C at nominal air flow and ESP
- rating conditions heating 2 pipe: air 20°C DB - entering water 50°C - water flow as in cooling mode at nominal air flow and ESP

#### SYMBOLS

- \*: T = 2-pipe  
F = 4-pipe



# 3 Specifications

## 3-1 Technical specifications

### 3 3-1-4 FWD - 4-pipe series

3-1

NOMINAL CAPACITY and NOMINAL INPUT							
MODEL			FWD04A*	FWD06A*	FWD08A*	FWD10A*	
POWER CONSUMPTION			W	177	274	315	325
Current input			A	0.77	1.34	1.51	1.54
COOLING CAPACITY (1)	Total capacity	high	kW	3.90	6.20	7.80	8.82
	Sensible capacity	high	kW	3.08	4.65	6.52	7.16
HEATING CAPACITY (2)			high	kW	4.49	6.62	9.21

TECHNICAL SPECIFICATIONS							
MODEL			FWD04A*	FWD06A*	FWD08A*	FWD10A*	
DIMENSIONS			mm	280 x 754 x 559	280 x 964 x 559	280 x 1,174 x 559	
WEIGHT			kg	35	43	50	52
MATERIAL			Plastic + sheet metal				
COLOUR			Not painted (galvanised)				
SOUND LEVEL at ESP = 0 Pa	Sound power	high	dB(A)	66	69	72	72
		medium	dB(A)	61	63	67	67
		low	dB(A)	54	59	62	62
WATER FLOW	Cooling		l/h	674	1064	1339	1514
	Heating		l/h	349	581	808	808
WATER PRESSURE DROP	Cooling		kPa	17	24	24	16
	Heating		kPa	9	15	13	13
FAN	Type		Centrifugal multi-blade, double suction				
	Air flow rate	high	m <sup>3</sup> /h	800	1250	1600	1600
	Available pressure		Pa	63	53	63	59
	Speed		3 steps: high, medium, low				
Qty				1	2	2	2
MOTOR			Type Closed induction, B class insulation, winding thermal cut-out				
HEAT EXCHANGER	Rows x stages x fin pitch		mm	1x10x1.8	1x10x1.8	1x10x1.8	1x10x1.8
	Face area		m <sup>2</sup>	0.138	0.1905	0.243	0.243
	Water volume		ℓ	0.35	0.47	0.59	0.59
AIR FILTER			Plastic				
INSULATION MATERIAL			Class 1 self-extinguishing				
VIBRATION INSULATION			Rubber ring for fan motor				
PIPING CONNECTIONS	Water inlet/outlet		inch	3/4"			
	Drain		mm	16			

4TW60221-1



# 3 Specifications

## 3-1 Technical specifications

### 3-1-4 FWD - 4-pipe series

3

3-1

NOMINAL CAPACITY and NOMINAL INPUT						
MODEL			FWD12A*	FWD16A*	FWD18A*	
POWER CONSUMPTION		W	530	991	1001	
Current input		A	2.60	4.80	4.83	
COOLING CAPACITY (1)	Total capacity	high	kW	11.90	16.40	18.30
	Sensible capacity	high	kW	9.36	12.80	14.10
HEATING CAPACITY (2)		high	kW	15.86	21.15	21.15

TECHNICAL SPECIFICATIONS						
MODEL			FWD12A*	FWD16A*	FWD18A*	
DIMENSIONS		mm	352 x 1,174 x 718	352 x 1,384 x 718		
WEIGHT		kg	71	83	86	
MATERIAL		Plastic + sheet metal				
COLOUR		Not painted (galvanised)				
SOUND LEVEL at ESP = 0 Pa	Sound power	high	dB(A)	74	78	78
		medium	dB(A)	67	73	73
		low	dB(A)	60	69	69
WATER FLOW	Cooling		l/h	2056	2833	3140
	Heating		l/h	1392	1856	1856
WATER PRESSURE DROP	Cooling		kPa	26	34	45
	Heating		kPa	12	16	16
FAN	Type	Centrifugal multi-blade, double suction				
	Air flow rate	high	m <sup>3</sup> /h	2200	3000	3000
	Available pressure		Pa	92	138	128
	Speed	3 steps: high, medium, low				
	Qty			2	2	2
MOTOR		Type Closed induction, B class insulation, winding thermal cut-out				
HEAT EXCHANGER	Rows x stages x fin pitch	mm	2x12x2.1	2x12x2.1	2x12x2.1	
	Face area	m <sup>2</sup>	0.3402	0.4137	0.4137	
	Water volume	ℓ	1.42	1.72	1.72	
AIR FILTER		Plastic				
INSULATION MATERIAL		Class 1 self-extinguishing				
VIBRATION INSULATION		Rubber ring for fan motor				
PIPING CONNECTIONS	Water inlet/outlet	inch	1			
	Drain	mm	16			

4TW60221-1

#### NOTES

- rating conditions cooling 4 pipe: air 27°C DB - 19°C WB - entering water 7°C - leaving water 12°C at nominal air flow and ESP
- rating condotions heating 4 pipe: air 20°C DB - entering water 70°C - leaving water 60°C at nominal air flow and ESP

#### SYMBOLS

- \*: T = 2-pipe  
F = 4-pipe



### 3 Specifications

#### 3-2 Electrical specifications

##### 3 3-2-1 FWV-FWL-FWM

3-2

ELECTRICAL SPECIFICATIONS							
MODEL			FW..01C**	FW..02C**	FW..02C**	FW..03C**	FW..04C**
POWER CONSUMPTION	high	W	36	46	59	62	87
	medium	W	26	32	41	46	61
	low	W	21	21	27	30	41
Current input	high	A	0.16	0.21	0.27	0.39	
	medium	A	0.12	0.15	0.20	0.28	
	low	A	0.10	0.10	0.14	0.19	
Required power supply	V / f / Hz		230 / 1 / 50				
Required fuses	A		0.5	0.5	0.5	0.5	
Required wire section	mm		1	1	1	1	

ELECTRICAL SPECIFICATIONS							
MODEL			FW..06C**	FW..08C**	FW..10C**		
POWER CONSUMPTION	high	W	89	182	244		
	medium	W	62	127	169		
	low	W	42	86	109		
Current input	high	A	0.38	0.80	1.12		
	medium	A	0.28	0.57	0.79		
	low	A	0.19	0.40	0.55		
Required power supply	V / f / Hz		230 / 1 / 50				
Required fuses	A		0.5	1	2		
Required wire section	mm		1	1	1		

4TW60011-2

The power consumption for the valve motor is 5 W (peak) only during opening

#### 3-2-2 FWD

ELECTRICAL SPECIFICATIONS							
MODEL			FWD04A*	FWD06A*	FWD08A*	FWD10A*	
Maximum power input at ESP = 0 Pa	high	W	234	349	443	443	
	medium	W	173	294	336	336	
	low	W	130	247	261	261	
Current input at ESP = 0 Pa	high	A	0.95	1.58	1.97	1.971	
	medium	A	0.74	1.39	1.52	1.515	
	low	A	0.57	1.18	1.20	1.204	
Required power supply	V / f / Hz		230 / 1 / 50				
Required fuses	A		2	2	2	4	
Required wire section	mm <sup>2</sup>		1	1	1.5	1.5	

ELECTRICAL SPECIFICATIONS							
MODEL			FWD12A*	FWD16A*	FWD18A*		
Maximum power input at ESP = 0 Pa	high	W	714	1197	1197		
	medium	W	473	966	966		
	low	W	328	704	704		
Current input at ESP = 0 Pa	high	A	3.210	5.370	5.370		
	medium	A	2.080	4.380	4.380		
	low	A	1.500	3.260	3.260		
Required power supply	V / f / Hz		230 / 1 / 50				
Required fuses	A		4	6	6		
Required wire section	mm <sup>2</sup>		2	2.5	2.5		

4TW60221-2

The power consumption for the valve motor is 5 W (peak) only during opening



# 4 Power consumption in function of ESP and speed

## 4-1 FWV/FWL/FWM - 2-pipe series

4

4-1

FW..01	Max.		Med.		Min.	
	ESP	Power input	Current	Power input	Current	Power input
(Pa)	(W)	(A)	(W)	(A)	(W)	(A)
0	36	0.161	26	0.112	21	0.091
10	36	0.159	25	0.110	21	0.090
20	35	0.154	25	0.109	20	0.088
30	35	0.150	24	0.105		
45	34	0.144				
50	33	0.137				

4TW60011-2 (2/15)

FW..02	Max.		Med.		Min.	
	ESP	Power input	Current	Power input	Current	Power input
(Pa)	(W)	(A)	(W)	(A)	(W)	(A)
0	46	0.196	32	0.136	21	0.108
10	46	0.193	32	0.134	21	0.107
20	46	0.193	31	0.132	21	0.106
30	44	0.192	31	0.131	20	0.104
40	44	0.191	30	0.129		

4TW60011-2 (3/15)

FW..03	Max.		Med.		Min.	
	ESP	Power input	Current	Power input	Current	Power input
(Pa)	(W)	(A)	(W)	(A)	(W)	(A)
0	62	0.271	46	0.204	30	0.138
10	61	0.262	44	0.197	29	0.134
20	59	0.253	45	0.192	29	0.131
30	58	0.247	43	0.186	28	0.130
40	56	0.240	42	0.181		
50	54	0.233				

4TW60011-2 (4/15)

FW..04	Max.		Med.		Min.	
	ESP	Power input	Current	Power input	Current	Power input
(Pa)	(W)	(A)	(W)	(A)	(W)	(A)
0	87	0.402	61	0.287	41	0.192
10	83	0.386	59	0.276	40	0.187
20	81	0.371	57	0.259	39	0.173
30	79	0.356	55	0.254	37	0.171
40	77	0.343	53	0.242	34	0.160
50	74	0.331	50	0.228		
60	70	0.319	45	0.211		
70	65	0.300				
75	63	0.296				

4TW60011-2 (5/15)

### SYMBOLS

ESP: External static pressure



## 4 Power consumption in function of ESP and speed

### 4-1 FWV/FWL/FWM - 2-pipe series

4  
4-1

FW..06	Max.		Med.		Min.	
	ESP	Power input	Current	Power input	Current	Power input
(Pa)	(W)	(A)	(W)	(A)	(W)	(A)
0	89	0.386	62	0.283	42	0.190
10	87	0.377	62	0.277	40	0.184
20	85	0.366	59	0.266	40	0.179
30	82	0.354	57	0.255	38	0.173
40	81	0.349	56	0.243	37	0.165
50	80	0.343	53	0.233		
60	76	0.331	49	0.217		
70	72	0.315				

4TW60011-2 (6/15)

FW..08	Max.		Med.		Min.	
	ESP	Power input	Current	Power input	Current	Power input
(Pa)	(W)	(A)	(W)	(A)	(W)	(A)
0	182	0.802	127	0.574	86	0.393
10	178	0.780	124	0.560	83	0.385
20	174	0.761	121	0.547	82	0.377
30	169	0.741	118	0.532	81	0.371
40	166	0.721	116	0.522	80	0.363
50	161	0.698	114	0.509	78	0.354
60	157	0.680	111	0.497	76	0.343
70	153	0.662	108	0.482		
80	147	0.639	104	0.464		
90	142	0.620	101	0.453		
100	137	0.595				

4TW60011-2 (7/15)

FW..10	Max.		Med.		Min.	
	ESP	Power input	Current	Power input	Current	Power input
(Pa)	(W)	(A)	(W)	(A)	(W)	(A)
0	244	1.065	169	0.780	109	0.543
10	240	1.048	165	0.753	108	0.528
20	232	1.010	160	0.735	106	0.513
30	222	0.985	155	0.711	105	0.500
40	214	0.960	151	0.690	104	0.495
50	207	0.925	147	0.673	102	0.485
60	199	0.900	143	0.656	96	0.453
70	192	0.872	139	0.636		
80	188	0.847	135	0.615		
90	183	0.820	129	0.591		
100	176	0.799				

4TW60011-2 (8/15)

#### SYMBOLS

ESP: External static pressure





# 4 Power consumption in function of ESP and speed

## 4-2 FWV/FWL/FWM - 4-pipe series

4

4-2

FW..01	Max.		Med.		Min.	
	ESP	Power input	Current	Power input	Current	Power input
(Pa)	(W)	(A)	(W)	(A)	(W)	(A)
0	36	0.161	26	0.112	21	0.091
10	36	0.159	25	0.110	21	0.090
20	35	0.154	25	0.109	20	0.088
30	35	0.150	24	0.105		
45	34	0.144				
50	33	0.137				

4TW60011-2 (9/15)

FW..02	Max.		Med.		Min.	
	ESP	Power input	Current	Power input	Current	Power input
(Pa)	(W)	(A)	(W)	(A)	(W)	(A)
0	59	0.246	41	0.174	27	0.139
10	58	0.243	40	0.173	27	0.138
20	57	0.243	40	0.170	27	0.136
30	57	0.242	40	0.169	30	0.130
40	57	0.241	39	0.168		

4TW60011-2 (10/15)

FW..03	Max.		Med.		Min.	
	ESP	Power input	Current	Power input	Current	Power input
(Pa)	(W)	(A)	(W)	(A)	(W)	(A)
0	62	0.271	46	0.204	30	0.138
10	61	0.262	44	0.197	29	0.134
20	59	0.253	45	0.192	29	0.131
30	58	0.247	43	0.186	28	0.130
40	56	0.240	42	0.181		
50	54	0.233				

4TW60011-2 (11/15)

FW..04	Max.		Med.		Min.	
	ESP	Power input	Current	Power input	Current	Power input
(Pa)	(W)	(A)	(W)	(A)	(W)	(A)
0	87	0.402	61	0.287	41	0.192
10	83	0.386	59	0.276	40	0.187
20	81	0.371	57	0.259	39	0.173
30	79	0.356	55	0.254	37	0.171
40	77	0.343	53	0.242	34	0.160
50	74	0.331	50	0.228		
60	70	0.319	45	0.211		
70	65	0.300				
75	63	0.296				

4TW60011-2 (12/15)

### SYMBOLS

ESP: External static pressure



## 4 Power consumption in function of ESP and speed

### 4-2 FWV/FWL/FWM - 4-pipe series

4  
4-2

FW..06	Max.		Med.		Min.	
	ESP	Power input	Current	Power input	Current	Power input
(Pa)	(W)	(A)	(W)	(A)	(W)	(A)
0	89	0.386	62	0.283	42	0.190
10	87	0.377	62	0.277	40	0.184
20	85	0.366	59	0.266	40	0.179
30	82	0.354	57	0.255	38	0.173
40	81	0.349	56	0.243	37	0.165
50	80	0.343	53	0.233		
60	76	0.331	49	0.217		
70	72	0.315				

4TW60011-2 (13/15)

FW..08	Max.		Med.		Min.	
	ESP	Power input	Current	Power input	Current	Power input
(Pa)	(W)	(A)	(W)	(A)	(W)	(A)
0	182	0.802	127	0.574	86	0.393
10	178	0.780	124	0.560	83	0.385
20	174	0.761	121	0.547	82	0.377
30	169	0.741	118	0.532	81	0.371
40	166	0.721	116	0.522	80	0.363
50	161	0.698	114	0.509	78	0.354
60	157	0.680	111	0.497	76	0.343
70	153	0.662	108	0.482		
80	147	0.639	104	0.464		
90	142	0.620	101	0.453		
100	137	0.595				

4TW60011-2 (14/15)

FW..10	Max.		Med.		Min.	
	ESP	Power input	Current	Power input	Current	Power input
(Pa)	(W)	(A)	(W)	(A)	(W)	(A)
0	244	1.065	169	0.780	109	0.543
10	240	1.048	165	0.753	108	0.528
20	232	1.010	160	0.735	106	0.513
30	222	0.985	155	0.711	105	0.500
40	214	0.960	151	0.690	104	0.495
50	207	0.925	147	0.673	102	0.485
60	199	0.900	143	0.656	96	0.453
70	192	0.872	139	0.636		
80	188	0.847	135	0.615		
90	183	0.820	129	0.591		
100	176	0.799				

4TW60011-2 (15/15)

#### SYMBOLS

ESP: External static pressure



## 4 Power consumption in function of ESP and speed

### 4-3 FWD -2-pipe series/4-pipe

4

4-3

FWD04	Max.		Med.		Min.	
	ESP	Power input	Current	Power input	Current	Power input
(Pa)	(W)	(A)	(W)	(A)	(W)	(A)
0	234	0.954	173	0.740	130	0.568
10	228	0.946	169	0.740	122	0.550
20	221	0.940	165	0.731	120	0.530
30	211	0.912	161	0.720	117	0.525
40	203	0.890	157	0.702	114	0.514
50	196	0.857	148	0.655	112	0.496
60	182	0.792	144	0.633	109	0.485
70	173	0.754	140	0.616	107	0.473
80	166	0.710	132	0.573	104	0.456
90	158	0.671	125	0.545	100	0.444
100	153	0.639	120	0.520	95	0.419
120	141	0.594	112	0.477	85	0.375
140	130	0.542	97	0.428	77	0.327
160	115	0.471				

4TW60221-2 (2/8)

FWD06	Max.		Med.		Min.	
	ESP	Power input	Current	Power input	Current	Power input
(Pa)	(W)	(A)	(W)	(A)	(W)	(A)
0	349	1.575	294	1.389	247	1.183
10	329	1.530	275	1.322	238	1.150
20	317	1.490	263	1.287	230	1.120
30	303	1.470	256	1.246	225	1.092
40	295	1.430	246	1.194	218	1.065
50	286	1.380	237	1.159	210	1.036
60	274	1.340	228	1.115	204	1.001
70	264	1.306	218	1.078	199	0.974
80	256	1.265	212	1.038	187	0.933
90	246	1.220	200	0.986	180	0.885
100	235	1.170	191	0.951	170	0.849
110	224	1.130	183	0.910	159	0.791
120	212	1.090	167	0.841	145	0.730
130	192	1.010	154.0	0.790	136	0.691
140	178	0.967	140.0	0.725	120	0.623
150	161	0.905	126.0	0.688	114	0.598
160	152	0.880				

4TW60221-2 (3/8)

#### SYMBOLS

ESP: External static pressure



## 4 Power consumption in function of ESP and speed

### 4-3 FWD -2-pipe series/4-pipe

4  
4-3

FWD08	Max.		Med.		Min.	
	ESP	Power input	Current	Power input	Current	Power input
(Pa)	(W)	(A)	(W)	(A)	(W)	(A)
0	443	1.971	336	1.515	261	1.204
10	420	1.915	317	1.475	247	1.186
20	404	1.850	301	1.418	238	1.144
30	382	1.808	290	1.366	231	1.106
40	367	1.715	279	1.330	221	1.045
52	353	1.670	262	1.246	212	1.008
60	335	1.582	251	1.189	203	0.972
70	315	1.508	248	1.163	195	0.935
80	302	1.430	233	1.109	186	0.885
90	280	1.350	221	1.045	176	0.839
100	267	1.292	210	0.994	168	0.804
110	254	1.224	198	0.936	155	0.741
120	238	1.166	185	0.889	146	0.705
130	225	1.106	172	0.826	135	0.648
140	203	1.028	155	0.746	126	0.605
150	193	0.970	142	0.682	118	0.576
160	174	0.897				

4TW60221-2 (4/8)

FWD10	Max.		Med.		Min.	
	ESP	Power input	Current	Power input	Current	Power input
(Pa)	(W)	(A)	(W)	(A)	(W)	(A)
0	443	1.971	336	1.515	261	1.204
10	420	1.915	317	1.475	247	1.186
20	404	1.850	301	1.418	238	1.144
30	382	1.808	290	1.366	231	1.106
40	367	1.715	279	1.330	221	1.045
52	353	1.670	262	1.246	212	1.008
60	335	1.582	251	1.189	203	0.972
70	315	1.508	248	1.163	195	0.935
80	302	1.430	233	1.109	186	0.885
90	280	1.350	221	1.045	176	0.839
100	267	1.292	210	0.994	168	0.804
110	254	1.224	198	0.936	155	0.741
120	238	1.166	185	0.889	146	0.705
130	225	1.106	172	0.826	135	0.648
140	203	1.028	155	0.746	126	0.605
150	193	0.970	142	0.682	118	0.576
160	174	0.897				

4TW60221-2 (5/8)

#### SYMBOLS

ESP: External static pressure



# 4 Power consumption in function of ESP and speed

## 4-3 FWD -2-pipe series/4-pipe

FWD12	Max.		Med.		Min.	
	ESP	Power input	Current	Power input	Current	Power input
(Pa)	(W)	(A)	(W)	(A)	(W)	(A)
0	714	3.210	473	2.080	328	1.500
10	683	3.100	452	2.070	309	1.485
20	663	3.070	440	2.060	303	1.460
30	646	3.020	430	2.040	299	1.438
40	630	2.990	420	1.970	290	1.403
50	620	2.950	415	1.915	287	1.382
60	604	2.895	402	1.900	278	1.338
70	580	2.800	390	1.860	272	1.306
80	570	2.730	380	1.790	267	1.280
90	550	2.650	370	1.730	257	1.236
100	530	2.600	350	1.650	252	1.213
110	520	2.540	340	1.600	249	1.190
120	490	2.450	330	1.540	244	1.173
130	480	2.390	320	1.480	239	1.139
140	450	2.300	310	1.440	235	1.118
150	440	2.225	300	1.380	230	1.100
160	430	2.210				

4TW60221-2 (6/8)

FWD16	Max.		Med.		Min.	
	ESP	Power input	Current	Power input	Current	Power input
(Pa)	(W)	(A)	(W)	(A)	(W)	(A)
0	1197	5.370	966	4.380	704	3.260
10	1159	5.300	921	4.200	680	3.250
20	1130	5.250	897	4.090	672	3.240
30	1112	5.200	879	4.046	660	3.200
40	1092	5.100	864	3.986	650	3.150
50	1086	5.090	848	3.930	640	3.080
60	1068	5.060	842	3.910	638	3.010
70	1060	5.020	830	3.883	629	2.990
80	1051	5.000	820	3.823	624	2.963
90	1050	4.960	810	3.774	620	2.958
100	1034	4.930	800	3.693	610	2.930
110	1026	4.900	790	3.620	600	2.870
120	1017	4.880	760	3.540	590	2.830
130	1006	4.850	743	3.480	580	2.790
140	997	4.820	730	3.420	570	2.740
150	985	4.790	717	3.400	556	2.690
160	973	4.760	710	3.350	540	2.600
170	963	4.690	703	3.300	532	2.566
180	944	4.620	680	3.200	520	2.470
190	926	4.550	661	3.133		
200	912	4.493	655	3.120		
210	894	4.405				
220	877	4.313				
230	860	4.215				
240	848	4.150				
250	841	4.117				

4TW60221-2 (7/8)



## 4 Power consumption in function of ESP and speed

### 4-3 FWD -2-pipe series/4-pipe

4

4-3

FWD18 ESP	Max.		Med.		Min.	
	Power input	Current	Power input	Current	Power input	Current
(Pa)	(W)	(A)	(W)	(A)	(W)	(A)
0	1197	5.370	966	4.380	704	3.260
10	1159	5.300	921	4.200	680	3.250
20	1130	5.250	897	4.090	672	3.240
30	1112	5.200	879	4.046	660	3.200
40	1092	5.100	864	3.986	650	3.150
50	1086	5.090	848	3.930	640	3.080
60	1068	5.060	842	3.910	638	3.010
70	1060	5.020	830	3.883	629	2.990
80	1051	5.000	820	3.823	624	2.963
90	1050	4.960	810	3.774	620	2.958
100	1034	4.930	800	3.693	610	2.930
110	1026	4.900	790	3.620	600	2.870
120	1017	4.880	760	3.540	590	2.830
130	1006	4.850	743	3.480	580	2.790
140	997	4.820	730	3.420	570	2.740
150	985	4.790	717	3.400	556	2.690
160	973	4.760	710	3.350	540	2.600
170	963	4.690	703	3.300	532	2.566
180	944	4.620	680	3.200	520	2.470
190	926	4.550	661	3.133		
200	912	4.493	655	3.120		
210	894	4.405				
220	877	4.313				
230	860	4.215				
240	848	4.150				
250	841	4.117				

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#### SYMBOLS

ESP: External static pressure

# 5 Capacity tables

## 5-1 Cooling capacities FWV/FWL/FWM - 2-pipe



Air temperature (°C DB - °C WB)		22 - 16															
Water temperature (Entering °C - leaving °C)		6 - 11				7 - 12				8 - 13				9 - 14			
Model		Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop	Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop	Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop	Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop
		W	W	ℓ/h	kPa	W	W	ℓ/h	kPa	W	W	ℓ/h	kPa	W	W	ℓ/h	kPa
FW.01 TN/TV	Max.	880	840	152	5	820	820	140	4	730	730	125	4	650	650	111	3
	Med.	720	720	124	4	660	660	114	3	610	610	104	3	550	550	95	2
	Min.	640	570	110	3	580	580	100	2	540	540	92	2	490	490	84	2
FW.02 TN/TV	Max.	1290	1070	221	6	1090	1090	187	4	980	980	169	4	880	880	151	3
	Med.	1120	930	192	5	880	830	151	3	860	860	148	3	790	790	135	2
	Min.	910	750	157	3	780	700	133	2	730	730	125	2	670	670	114	2
FW.03 TN/TV	Max.	1730	1470	296	5	1480	1480	255	3	1370	1370	235	3	1260	1260	216	3
	Med.	1450	1200	249	3	1260	1120	216	3	1180	1180	203	2	1080	1080	186	2
	Min.	1240	960	213	3	1090	890	186	2	920	820	158	1	860	860	149	1
FW.04 TN/TV	Max.	2480	2170	425	5	2140	2140	368	4	1970	1970	339	3	1810	1810	310	3
	Med.	1990	1740	341	3	1720	1630	295	2	1620	1620	279	2	1490	1490	256	2
	Min.	1750	1360	300	3	1520	1270	261	2	1290	1170	221	1	1230	1230	212	1
FW.06 TN/TV	Max.	2820	2570	484	6	2390	2390	410	4	2120	2120	363	3	1930	1930	331	3
	Med.	2150	1990	369	4	1980	1980	340	3	1830	1830	314	3	1670	1670	287	2
	Min.	1960	1650	336	3	1700	1550	292	2	1590	1590	272	2	1460	1460	250	2
FW.08 TN/TV	Max.	3850	3380	661	5	3290	3290	565	4	3040	3040	522	3	2780	2780	478	3
	Med.	3140	2680	539	3	2720	2510	467	3	2570	2570	441	2	2360	2360	405	2
	Min.	2730	2130	469	3	2380	1990	409	2	2010	1840	346	1	1940	1940	333	1
FW.10 TN/TV	Max.	5350	4540	918	8	4380	4380	752	6	3920	3920	672	5	3420	3420	587	4
	Med.	3910	3410	671	5	3310	3310	569	4	3060	3060	525	3	2800	2800	482	3
	Min.	2910	2370	499	3	2530	2210	434	2	2300	2300	394	2	2110	2110	362	2

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# 5 Capacity tables

## 5-1 Cooling capacities FWV/FWL/FWM - 2-pipe



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5-1

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Air temperature (°C DB - °C WB)		25 - 18															
Water temperature (Entering °C - leaving °C)		6 - 11				7 - 12				8 - 13				9 - 14			
Model		Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop	Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop	Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop	Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop
		W	W	ℓ/h	kPa	W	W	ℓ/h	kPa	W	W	ℓ/h	kPa	W	W	ℓ/h	kPa
FW.01 TN/TV	Max.	1480	1110	254	13	1260	1030	217	9	1020	940	175	6	920	920	158	5
	Med.	1190	900	205	9	1010	830	174	6	810	750	139	4	740	740	126	4
	Min.	1000	740	172	6	850	670	145	5	680	610	117	3	620	620	107	3
FW.02 TN/TV	Max.	2020	1410	346	13	1750	1300	300	10	1450	1190	250	7	1120	1060	193	4
	Med.	1750	1230	300	10	1520	1130	260	8	1260	1030	217	6	970	920	167	3
	Min.	1400	980	240	7	1210	910	208	5	1000	820	172	4	820	750	141	3
FW.03 TN/TV	Max.	2820	1970	484	11	2440	1820	419	8	2010	1640	345	6	1660	1660	284	4
	Med.	2290	1590	393	7	1970	1460	338	6	1590	1310	273	4	1320	1200	226	3
	Min.	1690	1180	290	4	1460	1080	251	3	1300	1020	224	3	1140	950	196	2
FW.04 TN/TV	Max.	4170	2940	715	12	3590	2710	617	9	2940	2450	504	6	2440	2440	418	4
	Med.	3140	2280	538	7	2670	2090	458	5	2080	1860	357	3	1880	1880	322	3
	Min.	2390	1670	410	4	2060	1540	354	3	1830	1440	315	3	1600	1350	274	2
FW.06 TN/TV	Max.	4600	3400	788	14	3970	3150	682	10	3280	2880	562	7	2690	2690	463	5
	Med.	3720	2720	639	9	3200	2510	549	7	2580	2270	443	5	2160	2160	371	4
	Min.	3040	2160	522	7	2580	1970	444	5	2050	1760	352	3	1780	1660	306	3
FW.08 TN/TV	Max.	6470	4590	1109	11	5590	4230	960	9	4590	3830	788	6	3730	3730	640	4
	Med.	5060	3580	868	7	4320	3270	741	6	3360	2890	578	4	2850	2690	489	3
	Min.	3780	2640	649	4	3230	2410	554	3	2870	2270	492	3	2500	2120	429	2
FW.10 TN/TV	Max.	8410	5960	1441	18	7320	5520	1255	14	6110	5050	1049	10	4900	4900	842	7
	Med.	6530	4620	1121	12	5650	4250	970	9	4640	3850	797	6	3770	3770	647	4
	Min.	4300	3030	737	6	3600	2740	618	4	3050	2520	523	3	2650	2360	455	2

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# 5 Capacity tables

## 5-1 Cooling capacities FWV/FWL/FWM - 2-pipe



Air temperature (°C DB - °C WB)		27 - 19															
Water temperature (Entering °C - leaving °C)		6 - 11				7 - 12				8 - 13				9 - 14			
Model		Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop	Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop	Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop	Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop
		W	W	ℓ/h	kPa	W	W	ℓ/h	kPa	W	W	ℓ/h	kPa	W	W	ℓ/h	kPa
FW.01 TN/TV	Max.	1750	1280	301	17	<b>1540</b>	<b>1200</b>	264	13	1310	1120	226	10	1090	1090	188	7
	Med.	1410	1040	242	12	1240	970	213	9	1060	900	181	7	880	880	151	5
	Min.	1180	850	203	9	1040	790	179	7	890	730	152	5	710	670	122	3
FW.02 TN/TV	Max.	2350	1610	403	16	<b>2090</b>	<b>1510</b>	359	13	1810	1400	311	10	1510	1290	260	8
	Med.	2030	1400	348	13	1810	1310	311	10	1570	1220	270	8	1320	1120	226	6
	Min.	1630	1120	279	9	1450	1050	249	7	1260	970	216	5	1050	890	180	4
FW.03 TN/TV	Max.	3290	2260	564	14	<b>2930</b>	<b>2110</b>	503	11	2540	1950	436	9	2110	1790	362	6
	Med.	2670	1820	459	10	2380	1700	408	8	2060	1570	353	6	1680	1420	289	4
	Min.	1990	1360	341	6	1760	1260	302	5	1500	1150	258	4	1320	1080	227	3
FW.04 TN/TV	Max.	4870	3370	835	15	<b>4330</b>	<b>3150</b>	743	12	3750	2920	643	10	3090	2670	530	7
	Med.	3690	2620	632	9	3270	2450	561	8	2800	2260	481	6	2230	2050	383	4
	Min.	2850	1950	489	6	2510	1800	431	5	2100	1640	361	3	1860	1540	319	3
FW.06 TN/TV	Max.	5360	3890	919	18	<b>4770</b>	<b>3650</b>	818	14	4140	3400	710	11	3430	3140	589	8
	Med.	4350	3120	747	12	3870	2920	664	10	3340	2710	574	8	2730	2480	469	5
	Min.	3570	2490	613	9	3170	2320	544	7	2710	2140	466	5	2150	1920	370	4
FW.08 TN/TV	Max.	7520	5250	1289	15	<b>6710</b>	<b>4910</b>	1152	12	5830	4560	1001	9	4830	4170	829	7
	Med.	5930	4110	1016	10	5270	3830	904	8	4530	3530	778	6	3630	3190	624	4
	Min.	4510	3070	774	6	3970	2840	681	5	3310	2570	569	4	2910	2420	500	3
FW.10 TN/TV	Max.	9740	6800	1671	23	<b>8710</b>	<b>6380</b>	1494	19	7600	5940	1305	15	6380	5480	1096	11
	Med.	7590	5280	1302	15	6780	4940	1163	12	5890	4580	1011	10	4880	4200	838	7
	Min.	5070	3500	870	7	4490	3250	771	6	3820	2980	655	4	3090	2700	530	3

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# 5 Capacity tables

## 5-1 Cooling capacities FWV/FWL/FWM - 2-pipe



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5-1

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Air temperature (°C DB - °C WB)		30 - 22															
Water temperature (Entering °C - leaving °C)		6 - 11				7 - 12				8 - 13				9 - 14			
Model		Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop	Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop	Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop	Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop
		W	W	ℓ/h	kPa	W	W	ℓ/h	kPa	W	W	ℓ/h	kPa	W	W	ℓ/h	kPa
FW.01 TN/TV	Max.	2640	1520	453	35	2440	1450	419	30	2240	1370	384	26	2020	1290	347	21
	Med.	2120	1230	364	24	1960	1170	337	21	1800	1110	309	18	1630	1050	279	15
	Min.	1770	1020	304	17	1640	960	282	15	1510	910	259	13	1360	860	234	11
FW.02 TN/TV	Max.	3430	1920	589	32	3190	1820	548	28	2940	1730	505	24	2680	1630	460	20
	Med.	2940	1660	505	25	2740	1580	471	22	2530	1500	435	19	2310	1410	397	16
	Min.	2360	1340	404	17	2200	1270	377	15	2030	1200	349	13	1860	1130	319	11
FW.03 TN/TV	Max.	4770	2690	818	27	4450	2550	764	24	4110	2410	706	20	3760	2280	645	17
	Med.	3880	2180	665	19	3620	2070	621	16	3350	1960	575	14	3060	1840	526	12
	Min.	2890	1630	495	11	2700	1550	463	10	2500	1460	429	9	2290	1370	393	7
FW.04 TN/TV	Max.	7110	4000	1220	30	6630	3800	1137	26	6120	3600	1050	22	5580	3400	958	19
	Med.	5400	3120	926	18	5030	2960	864	16	4650	2810	798	14	4240	2650	729	12
	Min.	4190	2350	719	12	3910	2230	671	10	3620	2110	621	9	3300	1980	567	8
FW.06 TN/TV	Max.	7810	4570	1340	34	7280	4350	1249	30	6720	4130	1153	26	6130	3910	1053	22
	Med.	6350	3690	1090	24	5920	3510	1016	21	5470	3330	939	18	4990	3140	857	15
	Min.	5220	2970	895	17	4870	2820	836	15	4500	2670	773	13	4110	2520	706	11
FW.08 TN/TV	Max.	10880	6210	1867	29	10160	5900	1743	25	9400	5600	1613	22	8600	5280	1476	19
	Med.	8610	4890	1478	19	8040	4650	1381	17	7440	4400	1278	15	6810	4150	1169	12
	Min.	6630	3710	1137	12	6190	3520	1062	11	5730	3320	983	9	5230	3120	898	8
FW.10 TN/TV	Max.	14010	7980	2403	44	13090	7610	2247	39	12140	7230	2084	34	11110	6840	1909	29
	Med.	10990	6250	1885	29	10260	5940	1761	26	9490	5630	1629	22	8680	5320	1491	19
	Min.	7400	4190	1269	14	6910	3980	1186	13	6400	3760	1098	11	5850	3540	1004	9

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# 5 Capacity tables

## Heating capacities FWV/FWL/FWM - 2-pipe



Air temperature (°C)		20											
Water temperature (Entering °C - leaving °C)		45 - 40			60 - 50			70 - 60			90 - 70		
Model		Heating capacity	Water flow	Water pressure drop	Heating capacity	Water flow	Water pressure drop	Heating capacity	Water flow	Water pressure drop	Heating capacity	Water flow	Water pressure drop
		W	ℓ/h	kPa	W	ℓ/h	kPa	W	ℓ/h	kPa	W	ℓ/h	kPa
FW.01 TN/TV	Max.	1820	317	15	2840	249	10	3710	325	15	4940	218	7
	Med.	1480	256	11	2310	201	7	2990	263	10	4010	177	5
	Min.	1210	211	8	1900	166	5	2470	216	7	3320	147	3
FW.02 TN/TV	Max.	2350	409	14	3690	322	9	4760	418	13	6410	283	6
	Med.	1950	340	10	3070	268	6	3950	346	10	5340	236	5
	Min.	1600	279	7	2530	221	5	3250	285	7	4420	195	3
FW.03 TN/TV	Max.	3200	556	11	5030	439	7	6460	567	11	8760	386	5
	Med.	2580	449	8	4070	356	5	5220	458	7	7110	314	4
	Min.	1910	332	5	3020	264	3	3860	339	4	5290	233	2
FW.04 TN/TV	Max.	4730	823	12	7420	648	8	9570	840	12	12890	569	6
	Med.	3610	628	8	5690	497	5	7300	641	7	9910	437	4
	Min.	2760	480	5	4360	381	3	5590	490	5	7620	336	2
FW.06 TN/TV	Max.	5360	932	15	8410	735	9	10850	952	14	14620	645	7
	Med.	4390	763	11	6900	603	7	8860	778	10	12020	530	5
	Min.	3570	620	7	5630	491	5	7200	632	7	9810	433	3
FW.08 TN/TV	Max.	7150	1244	12	11240	982	7	14450	1268	11	19550	863	5
	Med.	5690	989	8	8960	783	5	11480	1008	7	15610	689	4
	Min.	4370	759	5	6890	602	3	8830	774	5	12040	531	2
FW.10 TN/TV	Max.	9310	1618	18	14590	1275	11	18830	1652	17	25350	1119	8
	Med.	7240	1258	12	11370	994	7	14630	1283	11	19780	873	5
	Min.	4860	845	6	7670	670	4	9820	862	6	13390	591	3

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# 5 Capacity tables

## 5-1 Heating capacities FWV/FWL/FWM - 2-pipe



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5-1

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Air temperature (°C)		22											
Water temperature (Entering °C - leaving °C)		45 - 40			60 - 50			70 - 60			90 - 70		
Model		Heating capacity	Water flow	Water pressure drop	Heating capacity	Water flow	Water pressure drop	Heating capacity	Water flow	Water pressure drop	Heating capacity	Water flow	Water pressure drop
		W	ℓ/h	kPa	W	ℓ/h	kPa	W	ℓ/h	kPa	W	ℓ/h	kPa
FW.01 TN/TV	Max.	1650	287	13	2670	233	8	3530	310	13	4750	210	7
	Med.	1330	232	9	2160	189	6	2850	250	9	3860	170	5
	Min.	1100	191	6	1780	156	4	2350	206	7	3190	141	3
FW.02 TN/TV	Max.	2130	371	12	3460	303	8	4530	398	12	6180	273	6
	Med.	1770	308	9	2880	252	6	3760	330	9	5150	227	4
	Min.	1460	253	6	2370	208	4	3090	271	6	4260	188	3
FW.03 TN/TV	Max.	2900	505	9	4730	413	6	6150	540	10	8430	372	5
	Med.	2340	407	7	3820	334	4	4970	436	7	6840	302	3
	Min.	1730	302	4	2840	248	3	3670	322	4	5090	225	2
FW.04 TN/TV	Max.	4290	746	10	6970	609	7	9110	799	11	12410	548	5
	Med.	3280	570	6	5340	466	4	6960	610	7	9540	421	3
	Min.	2500	436	4	4090	357	3	5320	467	4	7330	324	2
FW.06 TN/TV	Max.	4860	846	13	7900	690	8	10330	906	13	14080	622	6
	Med.	3980	693	9	6490	567	6	8440	740	9	11570	511	5
	Min.	3240	562	6	5280	461	4	6850	601	6	9450	417	3
FW.08 TN/TV	Max.	6490	1129	10	10560	923	7	13760	1207	10	18830	831	5
	Med.	5160	897	7	8410	735	4	10930	960	7	15030	664	3
	Min.	3960	689	4	6470	565	3	8410	737	4	11590	512	2
FW.10 TN/TV	Max.	8440	1468	15	13700	1197	10	17920	1572	16	24410	1077	8
	Med.	6570	1142	10	10690	934	7	13920	1221	10	19050	841	5
	Min.	4410	767	5	7200	629	3	9350	821	5	12900	569	3

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# 5 Capacity tables

## 5-2 Cooling capacities FWV/FWL/FWM - 4-pipe



Air temperature (°C DB - °C WB)		22 - 16															
Water temperature (Entering °C - leaving °C)		6 - 11				7 - 12				8 - 13				9 - 14			
Model		Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop	Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop	Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop	Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop
		W	W	ℓ/h	kPa	W	W	ℓ/h	kPa	W	W	ℓ/h	kPa	W	W	ℓ/h	kPa
FW.01 FN/FV	Max.	860	810	148	5	790	790	136	4	710	710	122	3	640	640	109	3
	Med.	700	660	120	3	650	650	112	3	600	600	103	3	550	550	94	2
	Min.	640	560	109	3	570	570	98	2	530	530	91	2	480	480	83	2
FW.02 FN/FV	Max.	1030	1030	177	4	940	940	161	3	860	860	147	3	780	780	134	2
	Med.	940	870	162	3	830	830	143	3	770	770	132	2	700	700	121	2
	Min.	830	720	142	3	710	670	122	2	650	650	112	2	600	600	103	1
FW.03 FN/FV	Max.	1680	1430	289	4	1460	1460	251	3	1350	1350	232	3	1240	1240	213	2
	Med.	1440	1180	246	3	1250	1100	214	3	1160	1160	199	2	1070	1070	183	2
	Min.	1230	950	211	3	1080	880	185	2	910	810	157	1	850	850	147	1
FW.04 FN/FV	Max.	2420	2120	415	4	2110	2110	363	4	1950	1950	335	3	1790	1790	307	3
	Med.	1980	1720	339	3	1710	1610	294	2	1610	1610	276	2	1480	1480	254	2
	Min.	1740	1350	298	3	1510	1260	260	2	1280	1160	220	1	1220	1220	210	1
FW.06 FN/FV	Max.	2750	2500	471	5	2330	2330	400	4	2070	2070	356	3	1900	1900	326	3
	Med.	2140	1960	367	4	1960	1960	336	3	1810	1810	310	3	1660	1660	284	2
	Min.	1940	1630	334	3	1690	1520	289	2	1570	1570	269	2	1440	1440	247	2
FW.08 FN/FV	Max.	3790	3330	650	5	3270	3270	561	3	3020	3020	518	3	2760	2760	475	3
	Med.	3130	2660	537	3	2710	2490	465	2	2560	2560	439	2	2350	2350	403	2
	Min.	2720	2120	467	3	2370	1970	407	2	2010	1820	344	1	1930	1930	331	1
FW.10 TN/TV	Min.	5240	4450	899	8	4290	4290	737	6	3830	3830	658	5	3340	3340	574	4
	Med.	3840	3350	658	5	3280	3280	564	3	3030	3030	521	3	2780	2780	477	3
	Min.	2890	2350	496	3	2520	2190	432	2	2280	2280	392	2	2100	2100	360	2

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# 5 Capacity tables

## 5-2 Cooling capacities FWV/FWL/FWM - 4-pipe



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Air temperature (°C DB - °C WB)		25 - 18															
Water temperature (Entering °C - leaving °C)		6 - 11				7 - 12				8 - 13				9 - 14			
Model		Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop	Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop	Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop	Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop
		W	W	ℓ/h	kPa	W	W	ℓ/h	kPa	W	W	ℓ/h	kPa	W	W	ℓ/h	kPa
FW.01 FN/FV	Max.	1450	1080	248	12	1230	1000	211	9	990	910	171	6	890	890	154	5
	Med.	1170	880	200	8	990	810	170	6	790	740	136	4	720	720	123	3
	Min.	980	720	169	6	830	660	143	5	670	600	115	3	620	620	106	3
FW.02 FN/FV	Max.	1730	1360	297	10	1490	1260	256	7	1230	1160	211	5	1050	1050	180	4
	Med.	1500	1140	257	8	1290	1050	222	6	1060	970	183	4	900	900	155	3
	Min.	1210	910	208	5	1040	840	179	4	870	770	150	3	760	760	130	2
FW.03 FN/FV	Max.	2770	1930	474	10	2390	1780	410	8	1970	1610	337	6	1620	1620	278	4
	Med.	2240	1560	384	7	1930	1420	330	5	1550	1270	266	4	1300	1180	224	3
	Min.	1660	1160	285	4	1450	1070	249	3	1290	1000	222	3	1130	940	194	2
FW.04 FN/FV	Max.	4100	2890	703	11	3530	2660	606	9	2880	2410	494	6	2390	2390	411	4
	Med.	3100	2250	532	7	2630	2060	452	5	2070	1840	355	3	1860	1860	320	3
	Min.	2360	1650	405	4	2050	1520	351	3	1820	1430	313	3	1590	1340	273	2
FW.06 FN/FV	Max.	4500	3320	772	13	3890	3080	668	10	3200	2810	550	7	2640	2640	453	5
	Med.	3660	2670	628	9	3150	2460	540	7	2530	2220	435	5	2120	2120	365	3
	Min.	2990	2120	513	6	2530	1940	435	5	2040	1740	350	3	1770	1640	303	2
FW.08 FN/FV	Max.	6390	4540	1097	11	5530	4180	949	9	4530	3780	778	6	3680	3680	633	4
	Med.	5020	3550	862	7	4290	3240	735	6	3330	2860	571	4	2840	2680	487	3
	Min.	3740	2620	642	4	3210	2390	551	3	2860	2250	490	3	2490	2110	427	2
FW.10 TN/TV	Max.	8250	5850	1416	18	7180	5420	1232	14	5990	4950	1029	10	4810	4810	826	7
	Med.	6450	4560	1106	11	5580	4200	957	9	4580	3800	786	6	3720	3720	638	4
	Min.	4260	3000	730	6	3560	2710	612	4	3030	2500	521	3	2640	2350	453	2

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# 5 Capacity tables

## 5-2 Cooling capacities FWV/FWL/FWM - 4-pipe



Air temperature (°C DB - °C WB)		27 - 19															
Water temperature (Entering °C - leaving °C)		6 - 11				7 - 12				8 - 13				9 - 14			
Model		Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop	Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop	Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop	Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop
		W	W	ℓ/h	kPa	W	W	ℓ/h	kPa	W	W	ℓ/h	kPa	W	W	ℓ/h	kPa
FW.01 FN/FV	Max.	1710	1250	293	16	1500	1170	258	13	1280	1090	220	10	1070	1070	183	7
	Med.	1380	1010	236	11	1210	950	208	9	1030	880	177	7	860	860	147	5
	Min.	1160	830	199	8	1020	780	175	7	870	720	149	5	700	650	120	3
FW.02 FN/FV	Max.	2020	1550	347	13	1790	1460	308	10	1550	1370	266	8	1240	1240	212	5
	Med.	1750	1300	301	10	1560	1270	267	8	1340	1140	231	6	1110	1050	191	4
	Min.	1420	1040	244	7	1260	1020	216	6	1080	910	186	4	890	830	153	3
FW.03 FN/FV	Max.	3220	2210	552	13	2870	2070	493	11	2490	1910	427	8	2060	1750	354	6
	Med.	2610	1780	449	9	2330	1660	400	8	2010	1530	345	6	1640	1390	282	4
	Min.	1960	1340	336	6	1730	1240	297	5	1470	1130	253	3	1310	1070	225	3
FW.04 FN/FV	Max.	4780	3310	821	15	4260	3090	730	12	3680	2870	632	9	3030	2620	520	7
	Med.	3640	2590	625	9	3230	2420	554	7	2760	2230	474	6	2200	2010	377	4
	Min.	2820	1920	483	6	2480	1780	425	5	2080	1620	357	3	1850	1530	317	3
FW.06 FN/FV	Max.	5250	3800	900	17	4670	3570	802	14	4050	3320	696	11	3360	3060	577	8
	Med.	4280	3060	735	12	3810	2870	653	10	3290	2660	564	7	2680	2430	461	5
	Min.	3510	2440	603	8	3110	2280	534	7	2660	2100	457	5	2100	1880	361	3
FW.08 FN/FV	Max.	7430	5190	1275	15	6640	4850	1138	12	5760	4500	990	9	4770	4120	819	7
	Med.	5880	4080	1010	10	5230	3800	898	8	4500	3510	772	6	3600	3160	618	4
	Min.	4470	3050	767	6	3930	2820	675	5	3270	2550	562	3	2900	2400	497	3
FW.10 TN/TV	Max.	9560	6680	1641	23	8550	6260	1468	19	7460	5830	1281	15	6260	5370	1074	11
	Med.	7500	5210	1286	15	6690	4880	1148	12	5810	4520	998	9	4810	4140	827	7
	Min.	5030	3470	862	7	4450	3220	763	6	3780	2950	649	4	3070	2680	528	3

4TW60012-1 (Sheet 6/13)

# 5 Capacity tables

## 5-2 Cooling capacities FWV/FWL/FWM - 4-pipe



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5-2

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Air temperature (°C DB - °C WB)		30 - 22															
Water temperature (Entering °C - leaving °C)		6 - 11				7 - 12				8 - 13				9 - 14			
Model		Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop	Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop	Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop	Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop
		W	W	ℓ/h	kPa	W	W	ℓ/h	kPa	W	W	ℓ/h	kPa	W	W	ℓ/h	kPa
FW.01 FN/FV	Max.	2570	1480	442	33	2380	1410	409	29	2180	1340	374	25	1970	1260	338	20
	Med.	2070	1200	355	23	1920	1140	329	20	1760	1080	302	17	1590	1020	273	14
	Min.	1740	1000	298	17	1610	950	277	15	1480	890	254	12	1340	840	230	10
FW.02 FN/FV	Max.	2990	1810	513	25	2780	1730	476	22	2550	1640	438	19	2320	1560	398	16
	Med.	2580	1530	442	19	2400	1460	412	17	2210	1380	379	15	2010	1310	345	12
	Min.	2090	1230	359	13	1950	1170	334	12	1790	1110	308	10	1630	1050	280	9
FW.03 FN/FV	Max.	4670	2630	802	26	4360	2500	748	23	4030	2370	692	20	3680	2230	632	17
	Med.	3790	2130	650	18	3540	2020	607	16	3280	1910	562	14	2990	1800	514	12
	Min.	2840	1600	487	11	2660	1520	456	10	2460	1440	422	8	2250	1350	387	7
FW.04 FN/FV	Max.	6990	3930	1199	29	6510	3740	1117	25	6010	3540	1032	22	5480	3340	941	18
	Med.	5330	3080	915	18	4970	2930	853	16	4590	2770	789	14	4190	2610	720	12
	Min.	4140	2320	710	11	3860	2200	663	10	3570	2080	613	9	3260	1950	560	7
FW.06 FN/FV	Max.	7650	4470	1312	33	7130	4260	1224	29	6580	4040	1130	25	6000	3820	1031	21
	Med.	6250	3630	1073	23	5830	3450	1001	20	5380	3270	925	18	4920	3090	844	15
	Min.	5130	2920	880	16	4790	2770	822	14	4430	2620	760	13	4040	2470	694	11
FW.08 FN/FV	Max.	10760	6140	1846	28	10050	5840	1724	25	9290	5530	1596	21	8500	5220	1460	18
	Med.	8550	4860	1467	19	7990	4620	1371	17	7390	4370	1269	14	6760	4120	1161	12
	Min.	6580	3680	1127	12	6140	3490	1054	10	5680	3300	975	9	5180	3100	891	8
FW.10 TN/TV	Max.	13770	7840	2362	43	12870	7470	2208	38	11940	7100	2048	33	10910	6710	1874	28
	Med.	10850	6170	1861	28	10130	5870	1738	25	9370	5560	1609	22	8570	5250	1472	18
	Min.	7340	4150	1258	14	6850	3940	1176	13	6340	3730	1089	11	5800	3510	996	9

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# 5 Capacity tables

## Heating capacities FWV/FWL/FWM - 4-pipe



Air temperature (°C)		20											
Water temperature (Entering °C - leaving °C)		45 - 40			60 - 50			70 - 60			90 - 70		
Model	Air flow	Heating capacity	Water flow	Water pressure drop	Heating capacity	Water flow	Water pressure drop	Heating capacity	Water flow	Water pressure drop	Heating capacity	Water flow	Water pressure drop
	m <sup>3</sup> /h	W	ℓ/h	kPa	W	ℓ/h	kPa	W	ℓ/h	kPa	W	ℓ/h	kPa
FW.01 FN/FV	Max.	1080	188	7	1670	146	5	<b>2230</b>	196	7	2890	128	3
	Med.	920	160	6	1410	124	3	1890	166	5	2470	109	2
	Min.	780	136	4	1210	106	3	1620	142	4	2120	94	2
FW.02 FN/FV	Max.	1010	175	7	1550	135	4	<b>2070</b>	182	6	2690	119	3
	Med.	890	155	5	1370	120	3	1840	161	5	2390	105	2
	Min.	780	135	4	1200	105	3	1610	141	4	2100	93	2
FW.03 FN/FV	Max.	1560	270	5	2380	208	3	<b>2910</b>	286	5	4200	185	2
	Med.	1340	234	4	2060	180	2	2530	249	4	3630	160	2
	Min.	1090	189	3	1670	145	2	2060	202	3	2950	130	1
FW.04 FN/FV	Max.	2200	382	9	3390	296	5	<b>4510</b>	396	8	5870	259	4
	Med.	1820	317	6	2810	246	4	3750	329	6	4890	216	3
	Min.	1500	261	4	2320	203	3	3110	273	4	4060	179	2
FW.06 FN/FV	Max.	2580	448	10	3970	347	6	<b>4670</b>	465	10	6890	304	5
	Med.	2260	393	8	3490	305	5	4100	408	8	6060	268	4
	Min.	1970	343	6	3050	266	4	3560	355	6	5290	234	3
FW.08 FN/FV	Max.	3890	675	28	6020	526	17	<b>7910</b>	694	27	10410	460	12
	Med.	3360	584	21	5210	456	13	6830	600	21	9020	398	10
	Min.	2800	486	16	4350	380	10	5690	499	15	7540	333	7
FW.10 TN/TV	Max.	4560	793	37	7060	617	23	<b>9300</b>	816	36	12210	539	17
	Med.	3910	679	28	6050	529	17	7950	698	27	10470	462	13
	Min.	3010	523	18	4680	409	11	6120	537	17	8100	358	8

4TW60012-1 (Sheet 11/13)

# 5 Capacity tables

## 5-2 Heating capacities FWV/FWL/FWM - 4-pipe



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5-2

5

Air temperature (°C)		22											
Water temperature (Entering °C - leaving °C)		45 - 40			60 - 50			70 - 60			90 - 70		
Model		Heating capacity	Water flow	Water pressure drop	Heating capacity	Water flow	Water pressure drop	Heating capacity	Water flow	Water pressure drop	Heating capacity	Water flow	Water pressure drop
		W	ℓ/h	kPa	W	ℓ/h	kPa	W	ℓ/h	kPa	W	ℓ/h	kPa
FW.01 FN/FV	Max.	970	169	6	1560	136	4	2120	186	7	2780	123	3
	Med.	820	143	5	1320	115	3	1800	158	5	2370	105	2
	Min.	700	122	3	1130	98	2	1540	135	4	2030	90	2
FW.02 FN/FV	Max.	900	157	5	1440	126	3	1970	173	6	2580	114	3
	Med.	800	139	4	1280	111	3	1750	153	5	2300	101	2
	Min.	700	121	3	1110	97	2	1530	134	4	2010	89	2
FW.03 FN/FV	Max.	1380	240	4	2200	193	3	3090	271	5	4020	177	2
	Med.	1190	208	3	1910	166	2	2690	236	4	3480	154	2
	Min.	960	168	2	1540	135	1	2180	191	3	2820	124	1
FW.04 FN/FV	Max.	1980	344	7	3160	277	5	4290	376	8	5640	249	4
	Med.	1630	284	5	2620	229	3	3560	313	6	4710	208	3
	Min.	1350	234	4	2160	189	2	2960	260	4	3900	172	2
FW.06 FN/FV	Max.	2320	403	9	3710	324	6	5040	442	9	6630	292	4
	Med.	2040	354	7	3260	285	4	4420	387	7	5830	257	3
	Min.	1770	308	5	2840	248	3	3840	337	6	5090	225	3
FW.08 FN/FV	Max.	3510	610	23	5640	493	15	7530	660	24	10020	443	12
	Med.	3040	528	18	4890	427	12	6500	570	19	8680	383	9
	Min.	2530	440	13	4080	356	9	5410	475	14	7260	320	7
FW.10 TN/TV	Max.	4120	717	31	6610	578	20	8850	777	33	11750	519	16
	Med.	3530	614	24	5670	495	16	7570	664	25	10080	445	12
	Min.	2720	473	15	4380	383	10	5820	511	16	7800	344	8

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# 5 Capacity tables

## 5-3 Cooling capacities FWD - 2-pipe/4-pipe



Air temperature (°C DB - °C WB)		22 - 16															
Water temperature (Entering °C - leaving °C)		6 - 11				7 - 12				8 - 13				9 - 14			
Model	Air flow	Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop	Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop	Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop	Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop
	m <sup>3</sup> /h	W	W	ℓ/h	kPa	W	W	ℓ/h	kPa	W	W	ℓ/h	kPa	W	W	ℓ/h	kPa
FWD04	400	1410	1250	241	3	1240	1240	213	2	1150	1150	197	2	1050	1050	180	2
	600	1850	1720	317	5	1590	1590	273	4	1440	1440	247	3	1310	1310	226	2
	800	2370	2200	406	7	2000	2000	343	5	1790	1790	307	4	1570	1570	269	3
FWD06	800	2550	2290	437	5	2190	2190	376	4	2000	2000	343	3	1830	1830	314	3
	1000	3160	2780	542	7	2650	2650	455	5	2360	2360	405	4	2050	2050	352	3
	1250	3810	3320	653	10	3160	3160	543	7	2830	2830	486	6	2490	2490	427	5
FWD08	1200	3470	3470	595	6	3120	3120	535	5	2750	2750	472	4	2500	2500	429	3
	1400	3930	3930	674	7	3550	3550	609	6	3150	3150	541	5	2720	2720	468	4
	1600	4360	4360	748	9	3950	3950	677	7	3520	3520	604	6	3070	3070	528	5
FWD10	1200	3830	3830	657	4	3550	3550	610	3	3280	3280	563	3	3000	3000	515	2
	1400	4320	4320	742	5	3870	3870	663	4	3560	3560	612	3	3260	3260	560	3
	1600	4870	4870	835	6	4380	4380	751	5	3840	3840	660	4	3490	3490	600	3
FWD12	1600	5600	5080	961	7	4660	4660	799	5	4130	4130	709	4	3630	3630	624	3
	1900	6550	5940	1123	9	5380	5380	923	6	4810	4810	825	5	4200	4200	721	4
	2000	6840	6210	1174	10	6050	6050	1038	8	5420	5420	931	7	4770	4770	819	5
FWD16	2000	7760	6650	1331	9	5980	5980	1026	6	5350	5350	919	5	4780	4780	820	4
	2500	9350	8100	1604	13	7190	7190	1233	8	6470	6470	1111	7	5730	5730	984	5
	3000	10790	9460	1851	16	8280	8280	1421	10	7480	7480	1284	8	6660	6660	1144	7
FWD18	2000	9140	7440	1569	13	7490	6750	1286	9	6060	6060	1041	6	5430	5430	932	5
	2500	10930	9070	1875	18	9040	8290	1551	13	7280	7280	1250	9	6540	6540	1124	7
	3000	12570	10630	2156	23	10430	9750	1792	17	8400	8400	1443	11	7560	7560	1298	9

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# 5 Capacity tables

## 5-3 Cooling capacities FWD - 2-pipe/4-pipe



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5-3

5

Air temperature (°C DB - °C WB)		25 - 18															
Water temperature (Entering °C - leaving °C)		6 - 11				7 - 12				8 - 13				9 - 14			
Model	Air flow	Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop	Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop	Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop	Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop
	m <sup>3</sup> /h	W	W	ℓ/h	kPa	W	W	ℓ/h	kPa	W	W	ℓ/h	kPa	W	W	ℓ/h	kPa
FWD04	400	2170	1620	371	6	1840	1490	317	5	1460	1350	252	3	1330	1330	227	3
	600	3010	2270	515	11	2590	2110	443	8	2110	1930	364	6	1800	1800	310	4
	800	3740	2860	641	16	3220	2660	554	12	2660	2450	457	9	2240	2240	385	6
FWD06	800	4220	3070	724	12	3630	2840	623	9	2960	2580	508	6	2490	2490	428	5
	1000	5030	3660	968	17	4340	3390	745	13	3580	3100	616	9	2990	2990	511	7
	1250	5980	4330	1026	23	5180	4020	889	17	4310	3690	740	13	3540	3540	609	9
FWD08	1200	6020	4740	1032	15	5180	4410	889	12	3870	3870	666	7	3550	3550	608	6
	1400	6770	5400	1161	19	5840	5040	1004	14	4370	4370	749	9	4010	4010	688	7
	1600	7470	6040	1282	22	6470	5650	1109	17	4830	4830	828	10	4440	4440	763	9
FWD10	1200	6650	5130	1141	10	5640	4720	968	7	4260	4260	731	4	3870	3870	666	4
	1400	7570	5900	1300	12	6470	5460	1109	9	4870	4870	835	6	4450	4450	763	5
	1600	8440	6640	1447	15	7240	6170	1242	11	5450	5450	936	7	4990	4990	857	6
FWD12	1600	8930	6680	1530	16	7730	6200	1328	12	6380	5680	1098	9	5250	5250	904	6
	1900	10220	7720	1753	20	8860	7180	1519	16	7370	6610	1267	11	6030	6030	1037	8
	2200	11420	8710	1958	24	9920	8120	1703	19	8280	7490	1422	14	6760	6760	1159	10
FWD16	2000	11600	8520	1987	18	10180	7950	1746	15	8640	7340	1483	11	6670	6670	1145	7
	2500	13770	10270	2362	25	12120	9610	2077	20	10330	8910	1775	15	7970	7970	1368	9
	3000	15780	11930	2707	32	13890	11180	2383	25	11870	10410	2038	19	9150	9150	1573	12
FWD18	2000	12920	9310	2218	25	11510	8720	1976	20	9990	8110	1714	15	8300	7450	1426	11
	2500	15380	11280	2635	33	13700	10600	2351	27	11900	9880	2045	21	9940	9120	1706	15
	3000	17650	13180	3028	42	15720	12400	2700	34	13670	11590	2347	27	11440	10740	1966	20

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# 5 Capacity tables

## 5-3 Cooling capacities FWD - 2-pipe/4-pipe



Air temperature (°C DB - °C WB)		27 - 19															
Water temperature (Entering °C - leaving °C)		6 - 11				7 - 12				8 - 13				9 - 14			
Model	Air flow	Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop	Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop	Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop	Total cooling capacity	Sensible cooling capacity	Water flow	Water pressure drop
	m <sup>3</sup> /h	W	W	ℓ/h	kPa	W	W	ℓ/h	kPa	W	W	ℓ/h	kPa	W	W	ℓ/h	kPa
FWD04	400	2580	1870	443	8	2280	1750	392	7	1950	1620	335	5	1570	1480	270	3
	600	3560	2600	608	14	3150	2450	540	12	2720	2290	468	9	2250	2110	385	6
	800	4400	3270	756	21	3900	3080	674	17	3390	2890	583	13	2660	2660	457	9
FWD06	800	4990	3520	857	16	4430	3300	760	13	3830	3070	659	10	3160	2820	544	7
	1000	5920	4180	1015	22	5270	3930	904	18	4570	3660	785	14	3800	3380	652	10
	1250	6970	4940	1195	29	6200	4650	1064	24	5380	4340	924	19	4500	4020	772	13
FWD08	1200	7100	5420	1217	20	6310	5110	1084	17	5460	4790	936	13	4230	4230	727	8
	1400	7970	6160	1368	25	7090	5820	1217	20	6150	5470	1055	16	4760	4760	817	10
	1600	8790	6890	1508	30	7800	6520	1339	24	6800	6130	1166	19	5260	5260	904	12
FWD10	1200	7910	5890	1357	13	6990	5530	1199	11	5990	5140	1026	8	4690	4690	806	5
	1400	8960	6760	1537	17	7950	6360	1364	13	6840	5930	1174	10	5340	5340	918	7
	1600	9970	7600	1710	20	8820	7160	1514	16	7640	6700	1310	12	5950	5950	1022	8
FWD12	1600	10490	7630	1800	21	9350	7170	1606	17	8130	6700	1397	13	6780	6190	1166	10
	1900	11970	8800	2056	26	10690	8290	1832	22	9310	7760	1598	17	7800	7200	1339	12
	2200	13370	9920	2293	32	11900	9360	2056	26	10410	8780	1786	20	8740	8170	1501	15
FWD16	2000	13450	9670	2308	24	12100	9130	2077	20	10660	8560	1829	16	9100	7970	1562	12
	2500	15950	11640	2736	32	14360	11010	2466	27	12670	10360	2178	21	10850	9670	1865	16
	3000	18260	13510	3136	41	16400	12800	2833	34	14520	12060	2491	27	12450	11290	2138	21
FWD18	2000	14790	10490	2538	31	13430	9930	2304	26	11990	9350	2059	21	10440	8740	1793	17
	2500	17610	12710	3020	42	15990	12050	2743	35	14270	11370	2448	29	12430	10660	2135	23
	3000	20150	14820	3456	53	18300	14100	3140	45	16370	13320	2812	37	14270	12520	2452	29

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# 5 Capacity tables

## 5-4 Heating capacities FWD - 2-pipe



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Air temperature (°C)		20											
Water temperature (Entering °C - leaving °C)		50 - 45			60 - 50			70 - 60			90 - 70		
Model	Air flow	Heating capacity	Water flow	Water pressure drop	Heating capacity	Water flow	Water pressure drop	Heating capacity	Water flow	Water pressure drop	Heating capacity	Water flow	Water pressure drop
	m <sup>3</sup> /h	W	ℓ/h	kPa	W	ℓ/h	kPa	W	ℓ/h	kPa	W	ℓ/h	kPa
FWD04TN	400	3010	526	9	3830	335	4	4970	436	6	6660	295	3
	600	4070	709	15	5160	450	7	6700	587	10	8940	396	5
	800	4990	871	22	6300	551	9	8200	720	15	10910	482	7
FWD06TN	800	5760	1004	18	7320	641	8	9490	832	12	12690	562	6
	1000	6790	1181	23	8600	752	10	11170	979	16	14900	659	7
	1250	7960	1386	31	10050	878	13	13080	1147	21	17400	768	10
FWD08TN	1200	7920	1379	21	10030	878	9	13030	1145	14	17370	767	7
	1400	8830	1541	25	11170	976	11	14520	1274	17	19320	853	8
	1600	9690	1688	29	12220	1069	13	15920	1397	20	21150	932	9
FWD10TN	1200	8940	1559	14	11380	994	6	14730	1292	9	19730	871	4
	1400	10040	1750	17	12740	1112	7	16530	1451	11	22090	976	5
	1600	11080	1930	20	14040	1228	9	18230	1598	13	24330	1073	6
FWD12TN	1600	11760	2048	21	14960	1307	9	19380	1699	14	25930	1145	7
	1900	13350	2326	27	16930	1480	12	21970	1930	18	29340	1296	9
	2200	14830	2585	32	18770	1638	14	24400	2142	21	32520	1436	10
FWD16TN	2000	15010	2617	24	19180	1678	11	24740	2171	16	33240	1465	8
	2500	17750	3092	32	22600	1976	14	29220	2563	22	39140	1728	10
	3000	20270	3528	41	25760	2250	18	33350	2927	27	44570	1966	13
FWD18TN	2000	16300	2837	31	20970	1832	14	26890	2358	21	36350	1606	10
	2500	19430	3384	42	24930	2178	19	32040	2812	28	43180	1904	14
	3000	22340	3892	53	28590	2498	24	36810	3229	36	49510	2185	17

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# 5 Capacity tables

## 5-4 Heating capacities FWD - 2-pipe



Air temperature (°C)		22											
Water temperature (Entering °C - leaving °C)		50 - 45			60 - 50			70 - 60			90 - 70		
Model	Air flow	Heating capacity	Water flow	Water pressure drop	Heating capacity	Water flow	Water pressure drop	Heating capacity	Water flow	Water pressure drop	Heating capacity	Water flow	Water pressure drop
	m <sup>3</sup> /h	W	ℓ/h	kPa	W	ℓ/h	kPa	W	ℓ/h	kPa	W	ℓ/h	kPa
FWD04TN	400	2780	486	8	3590	313	4	4730	415	6	6410	283	3
	600	3760	655	13	4840	423	6	6380	560	9	8600	380	5
	800	4610	803	19	5910	517	8	7810	685	13	10500	463	6
FWD06TN	800	5320	929	15	6870	624	7	9040	793	11	12230	540	5
	1000	6270	1091	20	8070	705	9	10630	933	14	14340	633	7
	1250	7340	1279	27	9430	824	12	12450	1092	19	16750	739	9
FWD08TN	1200	7310	1274	18	9420	823	8	12410	1089	13	16730	739	6
	1400	8830	1541	25	10480	915	10	13830	1213	15	18610	821	7
	1600	9690	1688	29	11470	1002	11	15150	1330	18	20370	899	9
FWD10TN	1200	8250	1436	12	10680	933	5	14030	1230	8	19000	839	4
	1400	9270	1614	15	11960	1045	7	15740	1381	10	21720	939	5
	1600	10220	1781	17	13170	1151	8	17350	1523	12	23420	1034	6
FWD12TN	1600	10860	1892	19	14040	1227	8	18440	1619	13	24980	1102	6
	1900	12320	2146	23	15890	1388	10	20920	1835	16	28250	1247	8
	2200	13690	2384	28	17610	1539	13	23220	2038	20	31310	1382	10
FWD16TN	2000	13870	2416	21	18020	1574	10	23560	2067	15	32010	1414	7
	2500	16390	2855	28	21320	1855	13	27820	2442	20	37710	1664	10
	3000	18720	3260	35	24190	2113	16	31750	2787	25	42930	1896	12
FWD18TN	2000	15060	2624	27	19710	1722	12	25610	2248	19	35030	1546	9
	2500	17960	3129	36	23420	2047	17	30520	2677	26	41600	1837	13
	3000	20650	3598	46	26870	2347	21	35060	3077	33	47700	2106	16

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# 5 Capacity tables

## 5-5 Heating capacities FWD - 4-pipe



Air temperature (°C)		20											
Water temperature (Entering °C - leaving °C)		50 - 45			60 - 50			70 - 60			90 - 70		
Model	Air flow	Heating capacity	Water flow	Water pressure drop	Heating capacity	Water flow	Water pressure drop	Heating capacity	Water flow	Water pressure drop	Heating capacity	Water flow	Water pressure drop
	m <sup>3</sup> /h	W	ℓ/h	kPa	W	ℓ/h	kPa	W	ℓ/h	kPa	W	ℓ/h	kPa
FWD04FN	400	1950	338	7	2370	209	3	3190	281	5	4150	184	2
	600	2390	418	11	2930	256	4	3920	346	7	5090	223	3
	800	2740	479	13	3360	292	6	4490	396	9	5820	256	4
FWD06FN	800	3280	569	16	4060	356	7	5370	472	10	7030	310	5
	1000	3650	634	19	4510	392	8	5970	526	13	7800	346	6
	1250	4040	704	22	4990	436	9	6620	581	15	8620	381	7
FWD08FN	1200	4900	853	15	6040	526	6	8030	706	10	10460	461	5
	1400	5280	918	17	6490	569	7	8650	760	12	11250	497	5
	1600	5620	979	19	6900	605	8	9210	806	13	11960	529	6
FWD10FN	1200	4900	853	15	6040	526	6	8030	706	10	10460	461	5
	1400	5280	918	17	6490	569	7	8650	760	12	11250	497	5
	1600	5620	979	19	6900	605	8	9210	806	13	11960	529	6
FWD12FN	1600	7930	1382	13	9880	864	5	13020	1141	9	17110	756	4
	1900	8840	1541	15	10990	961	7	14500	1271	10	19020	839	5
	2200	9670	1685	18	12010	1051	8	15860	1393	12	20790	918	6
FWD16FN	2000	10020	1746	15	12540	1094	6	16450	1444	10	21690	958	5
	2500	11530	2009	19	14400	1260	8	18920	1660	13	24900	1098	6
	3000	12900	2246	23	16080	1404	10	21150	1854	16	27790	1228	7
FWD18FN	2000	10020	1746	15	12540	1094	6	16450	1444	10	21690	958	5
	2500	11530	2009	19	14400	1260	8	18920	1660	13	24900	1098	6
	3000	12900	2246	23	16080	1404	10	21150	1854	16	27790	1228	7

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# 5 Capacity tables

## 5-5 Heating capacities FWD - 4-pipe



Air temperature (°C)		22											
Water temperature (Entering °C - leaving °C)		50 - 45			60 - 50			70 - 60			90 - 70		
Model	Air flow	Heating capacity	Water flow	Water pressure drop	Heating capacity	Water flow	Water pressure drop	Heating capacity	Water flow	Water pressure drop	Heating capacity	Water flow	Water pressure drop
	m <sup>3</sup> /h	W	ℓ/h	kPa	W	ℓ/h	kPa	W	ℓ/h	kPa	W	ℓ/h	kPa
FWD04FN	400	1790	313	6	2210	194	3	3030	266	4	3990	176	2
	600	2200	385	9	2730	238	4	3730	328	6	4900	216	3
	800	2520	439	12	3130	274	5	4270	374	8	5590	248	4
FWD06FN	800	3020	526	13	3800	331	6	5110	446	10	6760	299	4
	1000	3360	587	16	4220	367	7	5680	500	11	7510	331	5
	1250	3720	648	19	4670	408	8	6290	552	14	8300	366	6
FWD08FN	1200	4510	785	13	5640	493	6	7630	670	9	10060	443	4
	1400	4860	846	15	6070	529	6	8220	720	11	10820	479	5
	1600	5170	900	17	6450	565	7	8750	767	12	11500	508	6
FWD10FN	1200	4510	785	13	5640	493	6	7630	670	9	10060	443	4
	1400	4860	846	15	6070	529	6	8220	720	11	10820	479	5
	1600	5170	900	17	6450	565	7	8750	767	12	11500	508	6
FWD12FN	1600	7310	1274	11	9250	810	5	12380	1087	8	16460	727	4
	1900	8140	1418	13	6970	608	8	13790	1210	9	18310	806	4
	2200	8910	1552	16	11250	983	7	15090	1325	11	20010	882	5
FWD16FN	2000	9240	1609	13	11760	1026	6	15650	1372	9	20880	922	4
	2500	10630	1854	17	13490	1177	7	18000	1580	12	23970	1058	6
	3000	11890	2070	20	15070	1318	9	20130	1764	14	26760	1181	7
FWD18TN	2000	9240	1609	13	11760	1026	6	15650	1372	9	20880	922	4
	2500	10630	1854	17	13490	1177	7	18000	1580	12	23970	1058	6
	3000	11890	2070	20	15070	1318	9	20130	1764	14	26760	1181	7

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# 6 Correction factors

## 6-1 Correction factors for cooling & heating capacities

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### 6-1-1 FWV-FWL-FWM

	ESP	10		20		30		40		50		60	
	Fan speed	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2
FW..01	Max.	0.86	0.91	0.72	0.8	0.56	0.67	-	-	-	-	-	-
	Med.	0.78	0.84	0.56	0.65	0.33	0.41	-	-	-	-	-	-
	Min.	0.71	0.77	0.35	0.4	-	-	-	-	-	-	-	-
FW..02	Max.	0.85	0.89	0.73	0.78	0.61	0.67	0.5	0.57	0.4	0.47	0.31	0.36
	Med.	0.82	0.85	0.63	0.68	0.45	0.5	0.27	0.3	-	-	-	-
	Min.	0.78	0.8	0.55	0.59	0.35	0.37	-	-	-	-	-	-
FW..03	Max.	0.89	0.91	0.77	0.81	0.64	0.69	0.51	0.56	0.36	0.4	0.18	0.21
	Med.	0.82	0.84	0.64	0.67	0.47	0.5	0.29	0.32	-	-	-	-
	Min.	0.75	0.77	0.48	0.5	-	-	-	-	-	-	-	-
FW..04	Max.	0.93	0.95	0.85	0.89	0.77	0.82	0.67	0.73	0.56	0.63	0.42	0.5
	Med.	0.91	0.93	0.81	0.84	0.71	0.75	0.59	0.64	0.46	0.51	0.31	0.35
	Min.	0.84	0.86	0.68	0.71	0.52	0.55	0.34	0.36	-	-	-	-
FW..06	Max.	0.93	0.95	0.85	0.89	0.77	0.81	0.67	0.73	0.56	0.62	0.41	0.47
	Med.	0.92	0.93	0.82	0.86	0.73	0.77	0.61	0.66	0.48	0.53	0.31	0.36
	Min.	0.86	0.88	0.71	0.74	0.56	0.59	0.4	0.43	0.23	0.25	-	-
FW..08	Max.	0.96	0.96	0.91	0.92	0.86	0.88	0.8	0.83	0.74	0.78	0.67	0.71
	Med.	0.95	0.96	0.9	0.92	0.85	0.87	0.79	0.81	0.73	0.76	0.65	0.69
	Min.	0.91	0.92	0.81	0.82	0.71	0.73	0.6	0.62	0.49	0.51	0.37	0.39
FW..10	Max.	0.96	0.97	0.92	0.93	0.87	0.89	0.82	0.85	0.77	0.81	0.72	0.76
	Med.	0.95	0.96	0.9	0.91	0.84	0.86	0.78	0.81	0.71	0.75	0.64	0.68
	Min.	0.92	0.93	0.84	0.86	0.76	0.78	0.67	0.69	0.57	0.6	0.47	0.5

		FW..01		FW..02		FW..03		FW..04		FW..06		FW..08		FW..10	
		medium	low	medium	low	medium	low	medium	low	medium	low	medium	low	medium	low
<b>Total cooling capacity</b>	TCC	0.81	0.68	0.87	0.69	0.81	0.60	0.76	0.58	0.81	0.66	0.79	0.59	0.78	0.52
<b>Sensible cooling capacity</b>	SCC	0.81	0.66	0.87	0.70	0.81	0.60	0.78	0.57	0.80	0.64	0.78	0.58	0.77	0.51
<b>Heating capacity - 2 pipe</b>	HC2P	0.81	0.66	0.83	0.68	0.81	0.59	0.76	0.58	0.82	0.66	0.79	0.61	0.78	0.52
<b>Heating capacity - 4 pipe</b>	HC40	0.85	0.73	0.89	0.78	0.87	0.71	0.83	0.69	0.88	0.76	0.86	0.72	0.85	0.66

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Conditions

Cooling  
Heating 2-pipe  
Heating 4-pipe

Air: 27°C DB - 19°C WB - Water: entering 7°C - leaving 12°C  
Air: 20°C Water: entering 50°C water flow as for cooling  
Air: 20°C Water: entering 70°C - leaving 60°C

F1 = correction factor for air flow  
F2 = correction factor for capacities



# 6 Correction factors

## 6-1 Correction factors for cooling & heating capacities

### 6-1-2 FWD

	ESP (Pa)	0		20		40		60		80		100		120		140		160		180		200		220		240	
	Fan speed	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2
FWD04	Max.	1.18	1.13	1.13	1.09	1.08	1.06	1.02	1.02	0.96	0.97	0.89	0.92	0.8	0.85	0.7	0.77	0.53	0.62	-	-	-	-	-	-	-	-
	Med.	1.34	1.24	1.28	1.2	1.21	1.15	1.13	1.1	1.04	1.03	0.95	0.96	0.82	0.86	0.65	0.71	-	-	-	-	-	-	-	-	-	-
	Min.	1.44	1.34	1.37	1.29	1.29	1.23	1.2	1.16	1.1	1.08	0.97	0.98	0.79	0.82	-	-	-	-	-	-	-	-	-	-	-	-
FWD06	Max.	1.26	1.19	1.18	1.13	1.09	1.07	0.99	0.99	0.88	0.91	0.75	0.81	0.6	0.68	0.4	0.48	-	-	-	-	-	-	-	-	-	-
	Med.	1.37	1.26	1.28	1.2	1.19	1.13	1.08	1.06	0.97	0.97	0.83	0.87	0.67	0.73	0.44	0.5	-	-	-	-	-	-	-	-	-	-
	Min.	1.47	1.34	1.38	1.28	1.28	1.21	1.17	1.13	1.04	1.03	0.9	0.92	0.72	0.77	0.45	0.5	-	-	-	-	-	-	-	-	-	-
FWD08	Max.	1.28	1.2	1.21	1.15	1.13	1.09	1.04	1.03	0.94	0.96	0.83	0.88	0.71	0.77	0.55	0.63	0.3	0.36	-	-	-	-	-	-	-	-
	Med.	1.18	1.13	1.11	1.08	1.03	1.02	0.94	0.96	0.85	0.88	0.74	0.79	0.61	0.68	0.42	0.49	-	-	-	-	-	-	-	-	-	-
	Min.	1.15	1.11	1.08	1.06	1.00	1.00	0.91	0.93	0.82	0.85	0.7	0.75	0.56	0.62	0.35	0.41	-	-	-	-	-	-	-	-	-	-
FWD10	Max.	1.26	1.2	1.18	1.14	1.1	1.08	1.02	1.02	0.92	0.94	0.82	0.85	0.7	0.74	0.54	0.6	0.31	0.38	-	-	-	-	-	-	-	-
	Med.	1.17	1.14	1.1	1.08	1.02	1.02	0.94	0.95	0.84	0.87	0.73	0.77	0.6	0.64	0.41	0.46	-	-	-	-	-	-	-	-	-	-
	Min.	1.14	1.12	1.07	1.06	0.99	0.99	0.91	0.92	0.81	0.83	0.7	0.72	0.56	0.57	0.35	0.43	-	-	-	-	-	-	-	-	-	-
FWD12	Max.	1.35	1.24	1.29	1.21	1.22	1.16	1.15	1.11	1.07	1.06	0.99	0.99	0.89	0.92	0.77	0.82	0.61	0.68	-	-	-	-	-	-	-	-
	Med.	1.16	1.12	1.1	1.08	1.03	1.03	0.96	0.97	0.88	0.91	0.79	0.83	0.69	0.74	0.56	0.62	0.35	0.4	-	-	-	-	-	-	-	-
	Min.	1.02	1.02	0.96	0.97	0.89	0.91	0.82	0.85	0.74	0.78	0.65	0.7	0.54	0.59	0.39	0.43	-	-	-	-	-	-	-	-	-	-
FWD16	Max.	1.13	1.1	1.12	1.09	1.1	1.07	1.08	1.06	1.06	1.05	1.04	1.04	1.03	1.02	1.01	1.01	0.98	0.99	0.96	0.98	0.94	0.96	0.92	0.94	0.89	0.92
	Med.	1.11	1.08	1.09	1.07	1.07	1.05	1.04	1.03	1.02	1.02	1.00	1.00	0.97	0.98	0.95	0.96	0.92	0.94	0.89	0.92	0.86	0.89	0.83	0.86	0.79	0.84
	Min.	1.09	1.07	1.06	1.05	1.03	1.03	1.01	1.01	0.98	0.99	0.95	0.96	0.92	0.94	0.89	0.91	0.86	0.88	0.82	0.85	0.78	0.82	0.74	0.78	0.69	0.74
FWD18	Max.	1.12	1.09	1.11	1.08	1.09	1.06	1.07	1.05	1.05	1.04	1.03	1.03	1.01	1.01	0.99	1.00	0.97	0.98	0.95	0.97	0.93	0.95	0.91	0.93	0.88	0.91
	Med.	1.1	1.07	1.07	1.06	1.05	1.04	1.03	1.02	1.01	1.01	0.98	0.99	0.96	0.97	0.93	0.95	0.9	0.92	0.87	0.9	0.84	0.88	0.81	0.85	0.78	0.82
	Min.	1.08	1.06	1.05	1.04	1.03	1.02	1.00	1.00	0.97	0.98	0.94	0.95	0.91	0.93	0.88	0.9	0.84	0.87	0.81	0.84	0.77	0.81	0.72	0.77	0.67	0.72

4TW60228-1A

Conditions

Cooling  
 Heating 2-pipe  
 Heating 4-pipe

Air: 27°C DB - 19°C WB - Water: entering 7°C - leaving 12°C  
 Air: 20°C Water: entering 50°C water flow as for cooling  
 Air: 20°C Water: entering 70°C - leaving 60°C

F1 = correction factor for air flow  
 F2 = correction factor for capacities



## 6 Capacity tables

### 6-2 Glycol correction factors

**6**  
6-2

Glycol percentage in weight	Freezing temperature (°C)	Capacity correction factor	Pressure drop correction factor
0	0	1	1.00
10	-4	0.97	1.05
20	-10	0.92	1.10
30	-16	0.87	1.15
40	-24	0.82	1.20

4TW69228-1A  
4TW60019-4



## 6 Capacity tables

### 6-3 Capacity and absorption of electric heater

#### 6-3-1 FWW/FWL/FWM

FWV / FWL / FWM		Power input electric heater	Current Absorption
Unit	Electric heater	kW	A
FW.01	EEH01A6	1.0	4.34
FW.02	EEH02A6	1.5	6.52
FW.03	EEH03A6	1.6	6.95
FW.04	EEH06A6	2.0	8.69
FW.06	EEH06A6	2.0	8.69
FW.08	EEH10A6	3.0	13.00
FW.10	EEH10A6	3.0	13.00

4TW60011-3

Power supply = 230 V / +- 10% / 1~ / 50Hz

#### 6-3-2 FWD

FWD		Power input electric heater	Current Absorption
Unit	Electric heater	kW	A
FWD04	EDEHS04A6	2.0	8.7
FWD06	EDEHS06A6	3.0	4.3
	EDEHB06A6	6.0	8.7
FWD08	EDEHS10A6	4.5	6.5
	EDEHB10A6	9.0	13.0
FWD10	EDEHS10A6	4.5	6.5
	EDEHB10A6	9.0	13.0
FWD12	EDEHS12A6	4.5	6.5
	EDEHB12A6	9.0	13.0
FWD16	EDEHS18A6	9.0	13.0
	EDEHB18A6	12.0	17.3
FWD18	EDEHS18A6	9.0	13.0
	EDEHB18A6	12.0	17.3

4TW60221-3

Power supply = 230 V / +- 10% / 1~ / 50Hz



# 7 Water pressure drop

## 7-1 FWV/FWL/FWM

### 7-1-1 2-pipe series - cooling

7-1

FWV / FWL / FWM							
Water flow l/h	Water pressure drop						
	FW..01	FW..02	FW..03	FW..04	FW..06	FW..08	FW..10
	kPa	kPa	kPa	kPa	kPa	kPa	kPa
50	0.71	0.41	0.19	0.11	0.1	0.05	0.05
100	2.44	1.42	0.66	0.36	0.35	0.16	0.16
200	8.25	4.81	2.25	1.23	1.21	0.56	0.55
300	16.84	9.81	4.6	2.51	2.46	1.14	1.14
400	27.92	16.27	7.63	4.17	4.09	1.9	1.89
500	41.33	24.09	11.3	6.18	6.06	2.82	2.81
600	56.93	33.19	15.57	8.51	8.35	3.89	3.87
800	94.32	55.02	25.82	14.12	13.84	6.44	6.42
1000	139.51	81.4	38.2	20.9	20.5	9.54	9.5
1500	-	165.77	77.83	42.61	41.8	19.46	19.39
2000	-	-	128.9	70.59	69.27	32.27	32.15
2500	-	-	-	104.41	102.47	47.75	47.58
3000	-	-	-	143.74	141.09	65.76	65.53
4000	-	-	-	-	-	108.92	108.56
5000	-	-	-	-	-	161.06	160.55

4TW60019-1 (Sheet 1/3)

### 7-1-2 2-pipe series - heating

FWV / FWL / FWM							
Water flow l/h	Water pressure drop						
	FW..01	FW..02	FW..03	FW..04	FW..06	FW..08	FW..10
	kPa	kPa	kPa	kPa	kPa	kPa	kPa
50	0.61	0.36	0.17	0.09	0.09	0.04	0.04
100	2.02	1.19	0.56	0.31	0.31	0.14	0.14
200	6.72	3.94	1.86	1.02	1.01	0.47	0.47
300	13.6	7.97	3.75	2.07	2.04	0.96	0.95
400	22.45	13.14	6.18	3.41	3.36	1.57	1.57
500	33.14	19.39	9.12	5.02	4.95	2.32	2.31
600	45.55	26.64	12.53	6.89	6.79	3.18	3.17
800	75.27	44.01	20.69	11.38	11.2	5.24	5.23
1000	111.15	64.97	30.54	16.79	16.52	7.72	7.71
1500	-	-	62.01	34.06	33.49	15.64	15.61
2000	-	-	102.52	56.28	55.34	25.84	25.78
2500	-	-	-	83.12	81.71	38.15	38.05
3000	-	-	-	-	112.36	52.45	52.32
4000	-	-	-	-	-	86.7	86.47
5000	-	-	-	-	-	-	127.7

4TW60019-1 (Sheet 2/3)

### 7-1-3 4-pipe series - heating

FWV / FWL / FWM							
Water flow l/h	Water pressure drop						
	FW..01	FW..02	FW..03	FW..04	FW..06	FW..08	FW..10
	kPa	kPa	kPa	kPa	kPa	kPa	kPa
50	0.68	0.68	0.26	0.23	0.21	0.28	0.28
100	2.27	2.27	0.87	0.78	0.7	0.93	0.94
200	7.55	7.55	2.88	2.58	2.32	3.07	3.12
300	15.3	15.3	5.83	5.21	4.69	6.18	6.29
400	25.26	25.26	9.62	8.59	7.73	10.16	10.34
500	37.28	37.28	14.19	12.67	11.4	14.97	15.23
600	51.25	51.25	19.5	17.41	15.65	20.54	20.9
800	84.71	84.71	32.22	28.75	25.84	33.88	34.46
1000	-	-	47.57	42.43	38.12	49.97	50.82
1500	-	-	-	86.13	77.36	101.32	103.02

4TW60019-1 (Sheet 3/3)



# 7 Water pressure drop

## 7-2 FWD

### 7-2-1 2-pipe series - cooling

7

7-2

Water flow l/h	FWD						
	Water pressure drop						
	FWD04	FWD06	FWD08	FWD10	FWD12	FWD16	FWD18
	kPa	kPa	kPa	kPa	kPa	kPa	kPa
100	0.59	0.37	0.25	0.13	0.13	0.09	0.1
200	2.02	1.25	0.84	0.45	0.43	0.32	0.35
300	4.12	2.57	1.72	0.92	0.88	0.65	0.71
400	6.83	4.27	2.86	1.53	1.47	1.08	1.19
500	10.12	6.32	4.24	2.27	2.19	1.6	1.76
600	13.94	8.71	5.85	3.14	3.02	2.22	2.44
700	18.28	11.42	7.67	4.12	3.97	2.92	3.2
800	23.12	14.45	9.69	5.21	5.02	3.69	4.06
900	28.45	17.77	11.92	6.41	6.17	4.55	5
1000	34.23	21.39	14.35	7.71	7.43	5.48	6.02
1100	40.48	25.29	16.97	9.11	8.79	6.47	7.11
1200	47.17	29.48	19.78	10.62	10.24	7.54	8.29
1300	54.29	33.94	22.77	12.23	11.78	8.68	9.54
1400	61.84	38.66	25.94	13.93	13.42	9.89	10.87
1500	69.81	43.65	29.28	15.73	15.16	11.16	12.27
1600	78.19	48.9	32.8	17.62	16.98	12.5	13.75
1700	86.97	54.4	36.5	19.6	18.89	13.91	15.3
1800	96.15	60.15	40.36	21.67	20.89	15.38	16.92
1900	105.73	66.15	44.38	23.83	22.97	16.92	18.61
2000	-	72.39	48.57	26.08	25.14	18.52	20.37
2100	-	78.88	52.93	28.42	27.4	20.18	22.19
2200	-	85.6	57.44	30.84	29.73	21.9	24.09
2300	-	92.55	62.11	33.35	32.15	23.68	26.05
2400	-	99.74	66.93	35.94	34.65	25.53	28.08
2500	-	107.16	71.91	38.62	37.23	27.43	30.17
3000	-	-	99.07	53.21	51.3	37.8	41.59
4000	-	-	-	88.2	85.07	62.71	69
5000	-	-	-	-	-	92.83	102.16

4TW60229-1 (Sheet 1/3)

### 7-2-2 2-pipe series - heating

Water flow l/h	FWD						
	Water pressure drop						
	FWD04	FWD06	FWD08	FWD10	FWD12	FWD16	FWD18
	kPa	kPa	kPa	kPa	kPa	kPa	kPa
100	0.51	0.32	0.22	0.12	0.11	0.08	0.09
200	1.68	1.07	0.72	0.39	0.38	0.28	0.31
300	3.4	2.16	1.46	0.78	0.76	0.56	0.62
400	5.6	3.56	2.4	1.29	1.25	0.93	1.03
500	8.25	5.24	3.53	1.9	1.84	1.37	1.51
600	11.33	7.18	4.84	2.61	2.53	1.88	2.07
700	14.81	9.39	6.32	3.4	3.3	2.45	2.71
800	18.69	11.83	7.97	4.29	4.16	3.09	3.41
900	22.95	14.52	9.77	5.26	5.1	3.79	4.18
1000	27.57	17.43	11.73	6.32	6.12	4.55	5.02
1100	32.55	20.57	13.85	7.46	7.22	5.36	5.91
1200	37.89	23.94	16.11	8.67	8.4	6.23	6.88
1300	43.56	27.51	18.51	9.97	9.65	7.14	7.9
1400	49.58	31.3	21.06	11.34	10.97	8.14	8.98
1500	55.92	35.29	23.74	12.78	12.37	9.17	10.12
1600	62.58	39.49	26.57	14.3	13.84	10.26	11.32
1700	69.57	43.89	29.52	15.89	15.37	11.4	12.57
1800	76.87	48.49	32.61	17.55	16.98	12.59	13.88
1900	84.48	53.28	35.83	19.28	18.65	13.83	15.24
2000	92.4	58.26	39.18	21.09	20.39	15.12	16.66
2100	100.61	63.43	42.66	22.95	22.2	16.45	18.14
2200	109.13	68.79	46.26	24.89	24.07	17.84	19.66
2300	-	74.34	49.99	26.9	26.01	19.27	21.24
2400	-	80.07	53.84	28.97	28.01	20.75	22.87
2500	-	85.97	57.81	31.1	30.08	22.28	24.55
3000	-	118.18	79.46	42.74	41.32	30.59	33.71
4000	-	-	-	70.61	68.24	50.5	55.63
5000	-	-	-	104.24	100.72	74.51	82.08

4TW60229-1 (Sheet 2/3)

# 7 Water pressure drop

## 7-2 FWD



### 7 7-2-3 4-pipe series - heating

7-2

FWD							
Water flow l/h	Water pressure drop						
	FWD04	FWD06	FWD08	FWD10	FWD12	FWD16	FWD18
	kPa	kPa	kPa	kPa	kPa	kPa	kPa
100	0.83	0.71	0.35	0.35	0.13	0.1	0.1
200	2.75	2.36	1.16	1.16	0.42	0.33	0.33
300	5.55	4.76	2.34	2.34	0.85	0.67	0.67
400	9.14	7.84	3.84	3.84	1.39	1.1	1.1
500	13.48	11.54	5.65	5.65	2.05	1.61	1.61
600	18.51	15.83	7.75	7.75	2.81	2.21	2.21
700	24.21	20.7	10.13	10.13	3.66	2.88	2.88
800	30.56	26.1	12.77	12.77	4.62	3.63	3.63
900	37.52	32.04	15.68	15.68	5.66	4.45	4.45
1000	45.09	38.49	18.83	18.83	6.8	5.34	5.34
1100	53.25	45.44	22.22	22.22	8.02	6.29	6.29
1200	61.98	52.88	25.85	25.85	9.33	7.32	7.32
1300	71.27	60.8	29.72	29.72	10.72	8.41	8.41
1400	81.11	69.18	33.81	33.81	12.19	9.56	9.56
1500	91.5	78.03	38.13	38.13	13.74	10.78	10.78
1600	102.41	87.32	42.67	42.67	15.37	12.06	12.06
1700	-	97.06	47.42	47.42	17.08	13.39	13.39
1800	-	107.24	52.39	52.39	18.87	14.79	14.79
1900	-	-	57.57	57.57	20.73	16.25	16.25
2000	-	-	62.96	62.96	22.67	17.76	17.76
2500	-	-	92.92	92.92	33.44	26.19	26.19
3000	-	-	-	-	45.95	35.98	35.98
3500	-	-	-	-	60.12	47.06	47.06
4000	-	-	-	-	75.89	59.4	59.4
4500	-	-	-	-	93.21	72.95	72.95
5000	-	-	-	-	112.04	87.67	87.67

4TW60229-1 (Sheet 3/3)





## 8 Operation range

### 8-1 FWV/FWL/FWM

Minimum water temperature	<b>+5°C</b>
Maximum water temperature	<b>+95°C</b>
Maximum operating pressure	<b>10 bar</b>
Minimum air inlet temperature	<b>5°C</b>
Maximum air inlet temperature	<b>+43°C</b>
Power supply	<b>230V +-10% / 1~ / 50Hz</b>

4TW60013-1

**8**

8-1

### 8-2 FWD

Minimum water temperature	<b>+5°C</b>
Maximum water temperature	<b>+95°C</b>
Maximum operating pressure	<b>10 bar</b>
Minimum air inlet temperature	<b>-20°C</b>
Maximum air inlet temperature	<b>+43°C</b>
Power supply	<b>230V +-10% / 1~ / 50Hz</b>

4TW60223-1

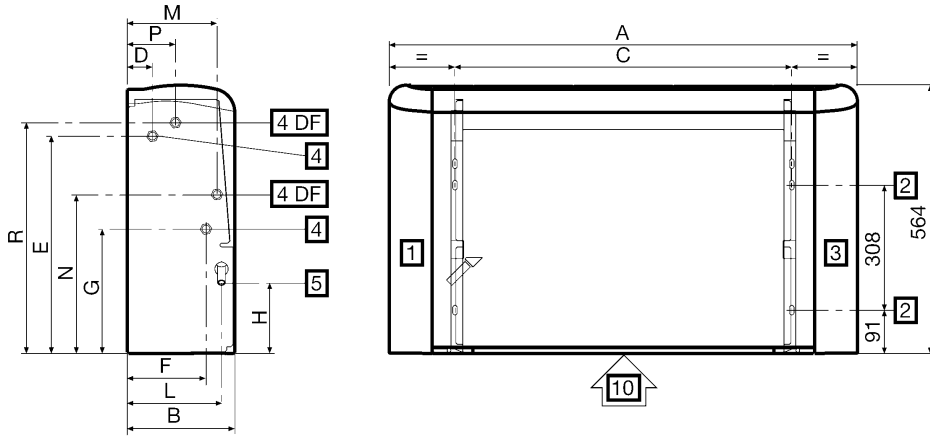


# 9 Dimensional drawings

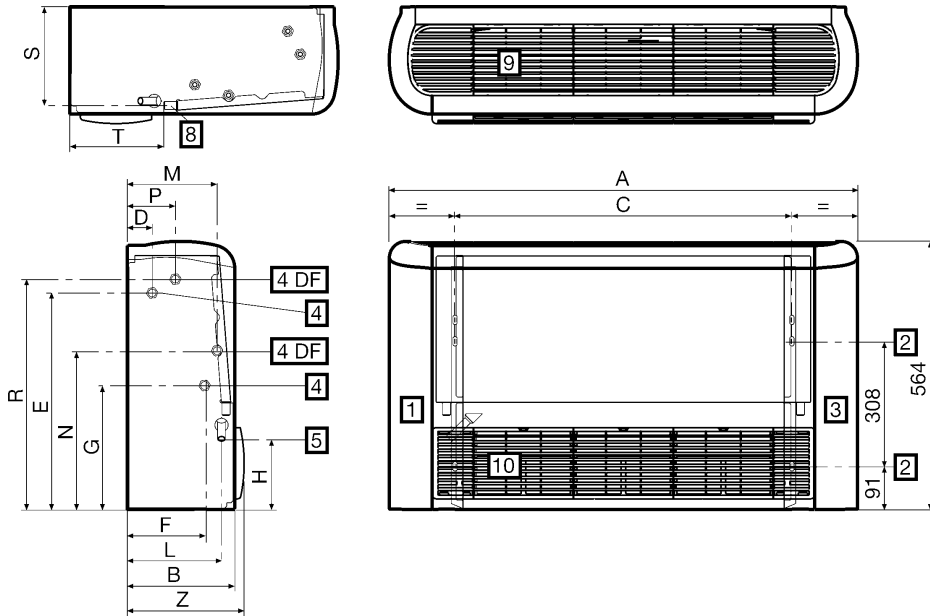
## 9-1 FWV/FWL

9  
9-1

FWV



FWL



	A	B	C	D	E	F	G	H	L	M	N	P	R	S	T	Z
FWV+FWL 01+02	774	226	498	51	458	163	263	149	198	187	335	99	486	208	198	246
FWV+FWL 03	984	226	708	51	458	163	263	149	198	187	335	99	486	208	198	246
FWV+FWL 04+06	1194	226	918	51	458	163	263	149	198	187	335	99	486	208	198	246
FWV+FWL 08+10	1404	251	1128	48	497	185	259	155	220	195	348	120	478	234	208	271



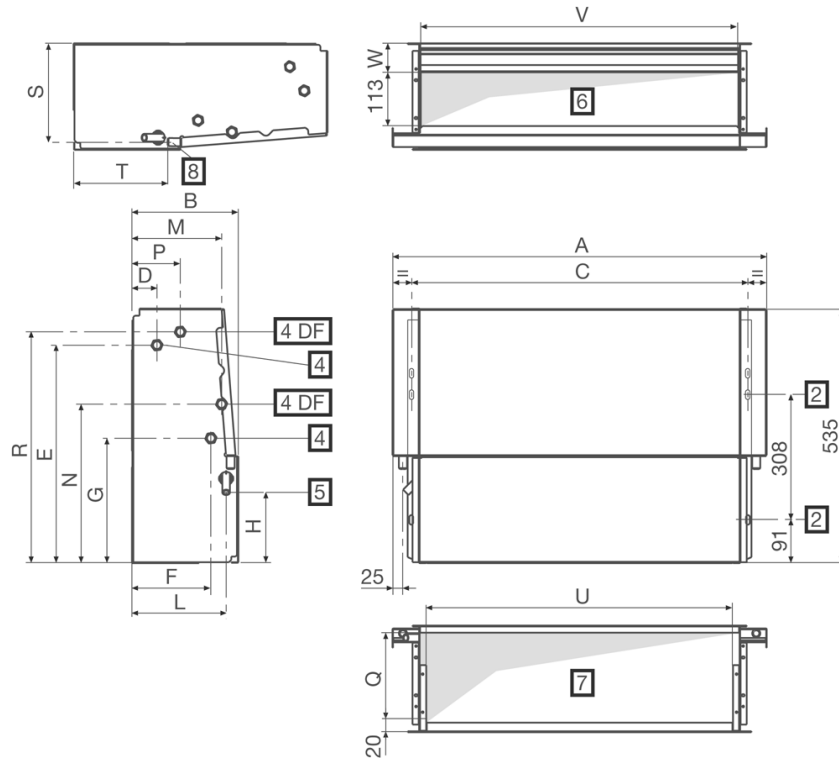
# 9 Dimensional drawings

## 9-2 FWM

9

9-2

FWM



	A	B	C	D	E	F	G	H	L	M	N	P	Q	R	S	T	U	V	W
FWM 01+02	584	224	498	51	458	163	263	149	198	187	335	99	189	486	208	198	436	464	61
FWM 03	794	224	708	51	458	163	263	149	198	187	335	99	189	486	208	198	646	674	61
FWM 04+06	1004	224	918	51	458	163	263	149	198	187	335	99	189	486	208	198	856	884	61
FWM 08+10	1214	249	1128	48	497	185	259	155	220	195	348	120	215	478	234	208	1066	1094	67

4TW60014-1 (Sheet 2/2)



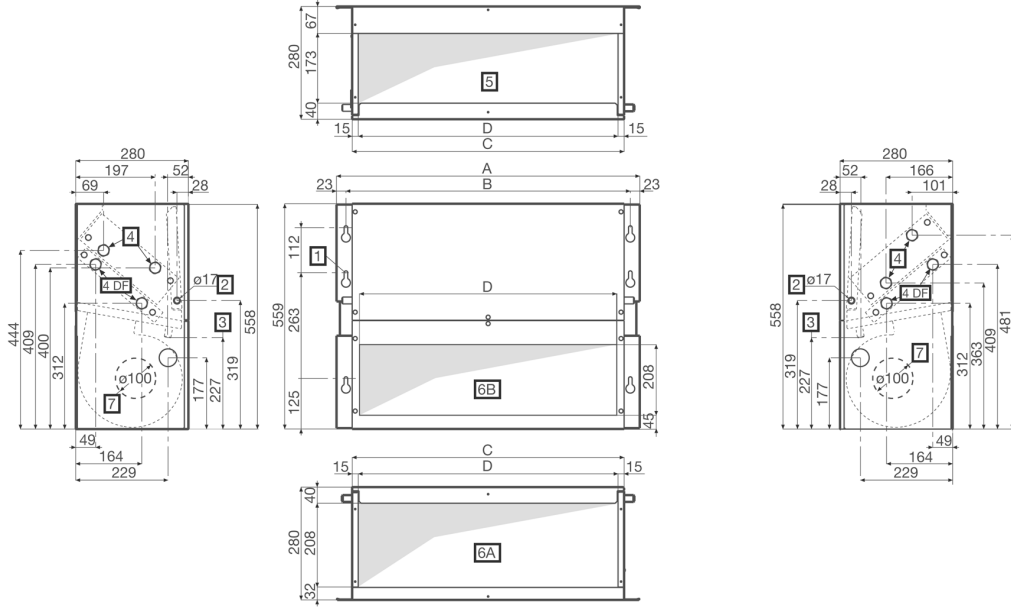
# 9 Dimensional drawings

## 9-3 FWD

9

9-3

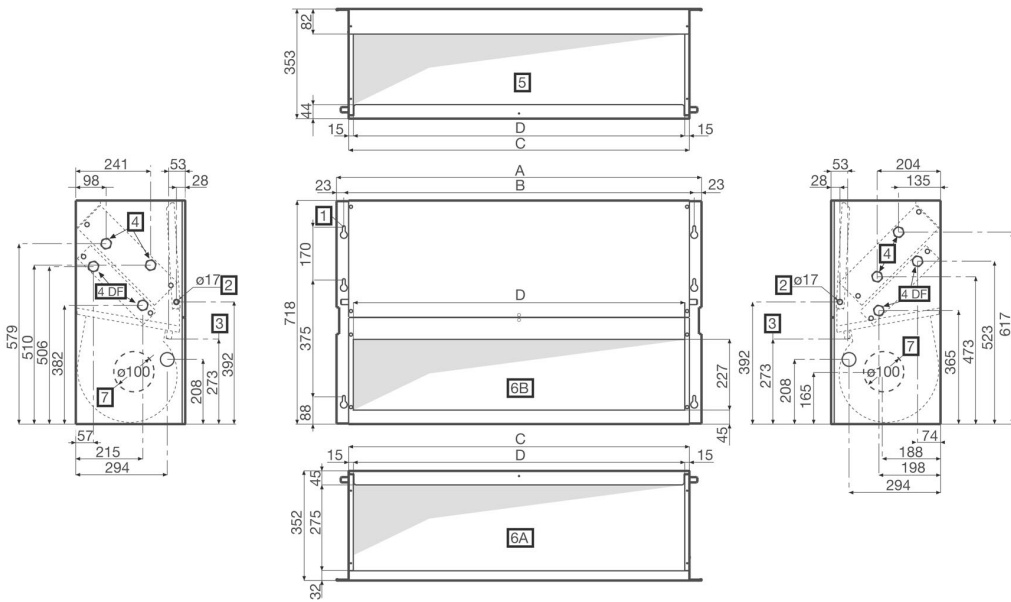
### FWD04~10



	A	B	C	D
FWD04	754	707	676	646
FWD06	964	917	886	856
FWD08+10	1174	1127	1096	1066

4TW60224-1 (Sheet 1/2)

### FWD12~18



	A	B	C	D
FWD12	1174	1127	1096	1066
FWD16+18	1384	1337	1306	1276

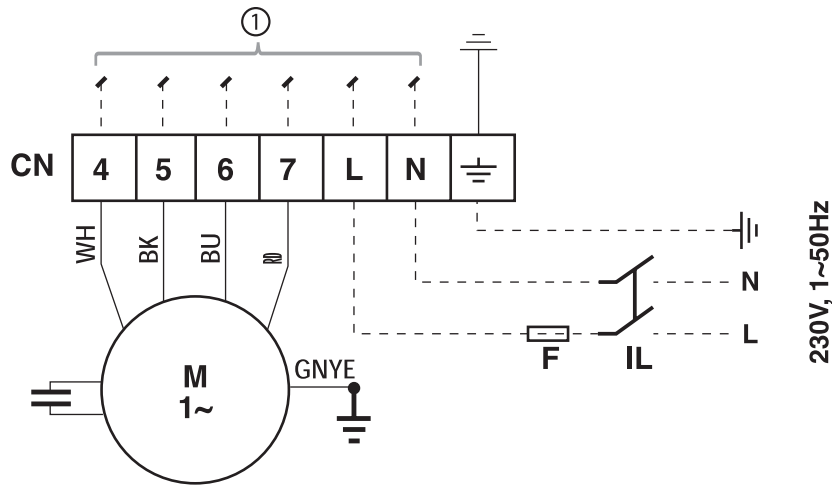
4TW60224-1 (Sheet 2/2)



# 10 Wiring diagrams

## 10-1 FWV/FWL/FWM

10  
10-1



### SYMBOLS

- BK Black = maximum speed
- BU Blue = medium speed
- GNYE Yellow/Green = earth connection
- RD Red = minimum speed
- WH White = common
- Field wiring
- F Protection fuse (field supply)
- IL Main switch (field supply)
- M Fan motor
- PE Earth connection

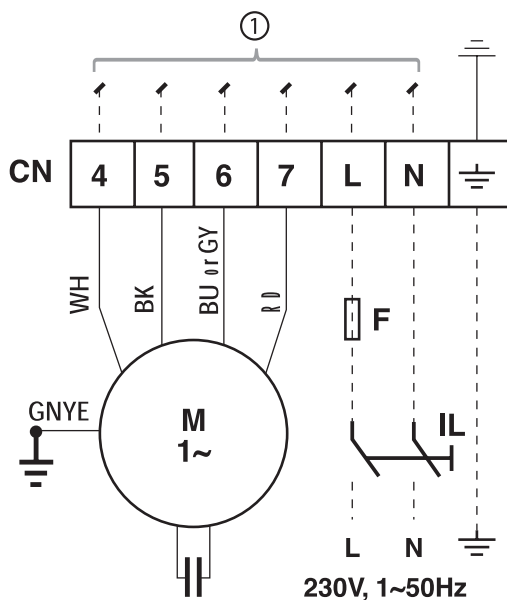
4TW60016-1



# 10 Wiring diagrams

## 10-2 FWD

10  
10-2



### SYMBOLS

- BK Black = maximum speed
- BU Blue = medium speed
- GNYE Yellow/Green = earth connection
- RD Red = minimum speed
- WH White = common
- Field wiring
- F Protection fuse (field supply)
- IL Main switch (field supply)
- M Fan motor
- PE Earth connection

4TW60226-1



# 11 Sound power data

## 11-1 FWV/FWL/FWM

### 11-1-1 2-pipe series

11  
11-1

Sound power level								
FW..01 TN/TV								
Sound Power Levels dB(A)	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Global Lw
Max.	27.2	42.0	43.1	41.1	37.1	27.6	17.6	47
Med.	20.7	34.2	35.2	33.0	27.2	18.2	16.5	39
Min.	18.6	29.6	30.6	26.5	20.7	15.9	16.0	34
FW..02 TN/TV								
Sound Power Levels dB(A)	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Global Lw
Max.	30.2	44.5	47.8	46.8	43.1	34.6	22.2	52
Med.	24.1	38.4	40.4	38.4	33.4	24.5	16.2	44
Min.	17.8	31.9	31.8	28.6	22.0	17.2	15.1	36
FW..03 TN/TV								
Sound Power Levels dB(A)	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Global Lw
Max.	31.4	42.6	46.0	44.5	42.6	34.8	21.7	50
Med.	26.5	36.6	40.4	37.2	33.7	24.8	17.8	44
Min.	22.9	33.2	35.3	29.1	24.5	18.8	17.4	38
FW..04 TN/TV								
Sound Power Levels dB(A)	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Global Lw
Max.	35.5	48.3	51.1	49.4	46.3	36.5	22.6	55
Med.	29.0	41.7	43.8	41.2	36.6	25.4	16.9	48
Min.	23.6	35.8	36.4	32.0	25.3	18.2	16.0	40
FW..06 TN/TV								
Sound Power Levels dB(A)	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Global Lw
Max.	39.1	51.8	54.5	54.3	50.3	42.5	31.1	59
Med.	34.1	45.1	47.0	46.0	41.7	32.2	19.6	52
Min.	29.6	38.3	39.8	37.3	32.0	22.0	14.7	44
FW..08 TN/TV								
Sound Power Levels dB(A)	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Global Lw
Max.	40.0	54.2	55.8	54.7	52.8	46.4	35.2	61
Med.	33.6	47.9	49.2	47.7	45.0	36.3	23.9	54
Min.	27.7	41.7	42.1	40.3	35.5	25.8	21.1	47
FW..10 TN/TV								
Sound Power Levels dB(A)	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Global Lw
Max.	44.5	58.0	60.1	60.4	58.4	53.6	46.3	66
Med.	37.5	50.7	53.8	52.5	50.5	44.3	33.7	58
Min.	27.8	42.2	43.8	41.6	38.1	28.6	20.9	48
Conditions of measurements	in case of (M) models the sound power is calculated WITHOUT any additional inlet or outlet grill or plenum!							

4TW60017-1 (Sheet 1/2)

To calculate the sound pressure you must define some conditions and use this formula

$$L_p = L_w - 10 \times \text{Log}_{10} (4\pi \times d^2 Q)$$

Where:

Q = direction factor: is Q=4 if the FCU is installed near 2 walls (vertical or floor-ceiling), Q=2 if the FCU is installed near 1 wall (at floor or ceiling but faraway the 2nd wall)

d = distance (mt) from the sound source and the measure point

LP = Sound pressure (dBA)

Lw = Sound power (dBA)



# 11 Sound power data

## 11-1 FWV/FWL/FWM

### 11 11-1-2 4-pipe series

11-1

Sound power level								
FW..01 TN/TV								
Sound Power Levels dB(A)	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Global Lw
Max.	27.2	42.0	43.1	41.1	37.1	27.6	17.6	<b>47</b>
Med.	20.7	34.2	35.2	33.0	27.2	18.2	16.5	<b>39</b>
Min.	18.6	29.6	30.6	26.5	20.7	15.9	16.0	<b>34</b>
FW..02 TN/TV								
Sound Power Levels dB(A)	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Global Lw
Max.	32.2	46.5	49.8	48.8	45.1	36.6	24.2	<b>54</b>
Med.	28.1	42.4	44.4	42.4	37.4	28.5	20.2	<b>48</b>
Min.	23.8	37.9	37.8	34.6	28.0	23.2	21.1	<b>42</b>
FW..03 TN/TV								
Sound Power Levels dB(A)	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Global Lw
Max.	31.4	42.6	46.0	44.5	42.6	34.8	21.7	<b>50</b>
Med.	26.5	36.6	40.4	37.2	33.7	24.8	17.8	<b>44</b>
Min.	22.9	33.2	35.3	29.1	24.5	18.8	17.4	<b>38</b>
FW..04 TN/TV								
Sound Power Levels dB(A)	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Global Lw
Max.	35.5	48.3	51.1	49.4	46.3	36.5	22.6	<b>55</b>
Med.	29.0	41.7	43.8	41.2	36.6	25.4	16.9	<b>48</b>
Min.	23.6	35.8	36.4	32.0	25.3	18.2	16.0	<b>40</b>
FW06 TN/TV								
Sound Power Levels dB(A)	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Global Lw
Max.	39.1	51.8	54.5	54.3	50.3	42.5	31.1	<b>59</b>
Med.	35.1	46.1	48.0	47.0	42.7	33.2	20.6	<b>53</b>
Min.	31.6	40.3	41.8	39.3	34.0	24.0	16.7	<b>46</b>
FW08 TN/TV								
Sound Power Levels dB(A)	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Global Lw
Max.	38.0	52.2	53.8	52.7	50.8	44.4	33.2	<b>59</b>
Med.	31.6	45.9	47.2	45.7	43.0	34.3	21.9	<b>52</b>
Min.	24.7	38.7	39.1	37.3	32.5	22.8	18.1	<b>44</b>
FW10 TN/TV								
Sound Power Levels dB(A)	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Global Lw
Max.	44.5	58.0	60.1	60.4	58.4	53.6	46.3	<b>66</b>
Med.	37.5	50.7	53.8	52.5	50.5	44.3	33.7	<b>58</b>
Min.	27.8	42.2	43.8	41.6	38.1	28.6	20.9	<b>48</b>
Conditions of measurements	in case of (M) models the sound power is calculated WITHOUT any additional inlet or outlet grill or plenum!							

4TW60017-1 (Sheet 2/2)

To calculate the sound pressure you must define some conditions and use this formula

$$L_p = L_w - 10 \times \log_{10} (4\pi \times d^2 Q)$$

Where:

Q = direction factor: is Q=4 if the FCU is installed near 2 walls (vertical or floor-ceiling), Q=2 if the FCU is installed near 1 wall (at floor or ceiling but faraway the 2nd wall)

d = distance (mt) from the sound source and the measure point

LP = Sound pressure (dBA)

Lw = Sound power (dBA)





# 11 Sound power data

## 11-2 FWD

### 11-2-1 2-pipe/4-pipe series

**11**  
11-2

FWD04		125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Global Lw
Max.	Lw tot dB(A)	43.6	47.0	60.0	62.0	60.7	54.8	46.2	<b>66</b>
		<b>125 Hz</b>	<b>250 Hz</b>	<b>500 Hz</b>	<b>1000 Hz</b>	<b>2000 Hz</b>	<b>4000 Hz</b>	<b>8000 Hz</b>	
	Outlet	40.4	43.3	55.9	58.4	57.0	51.4	42.9	<b>62.5</b>
	Structure	29.3	38.5	53.6	53.0	52.1	43.8	34.3	<b>58.0</b>
	Inlet	40.4	43.3	55.9	58.4	57.0	51.4	42.9	<b>62.5</b>
Med.	Lw tot dB(A)	40.7	53.8	53.8	57.0	53.6	50.6	43.3	<b>61</b>
		<b>125 Hz</b>	<b>250 Hz</b>	<b>500 Hz</b>	<b>1000 Hz</b>	<b>2000 Hz</b>	<b>4000 Hz</b>	<b>8000 Hz</b>	
	Outlet	37.5	50.2	49.7	53.4	49.9	47.2	40.0	<b>57.7</b>
	Structure	26.4	45.3	47.4	47.9	45.0	39.6	31.5	<b>52.9</b>
	Inlet	37.5	50.2	49.7	53.4	49.9	47.2	40.0	<b>57.7</b>
Min.	Lw tot dB(A)	33.8	47.7	47.0	49.8	47.0	41.9	33.5	<b>54</b>
		<b>125 Hz</b>	<b>250 Hz</b>	<b>500 Hz</b>	<b>1000 Hz</b>	<b>2000 Hz</b>	<b>4000 Hz</b>	<b>8000 Hz</b>	
	Outlet	30.6	44.1	42.9	46.2	43.3	38.6	30.2	<b>50.7</b>
	Structure	19.5	39.2	40.6	40.8	38.4	30.9	21.6	<b>46.0</b>
	Inlet	30.6	44.1	42.9	46.2	43.3	38.6	30.2	<b>50.7</b>

4TW60227-1 (Sheet 1/7)

Sound power levels measured at ESP = 0 Pa

FWD06		125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Global Lw
Max.	Lw tot dB(A)	45.0	56.9	60.8	64.7	63.5	57.7	49.7	<b>69</b>
		<b>125 Hz</b>	<b>250 Hz</b>	<b>500 Hz</b>	<b>1000 Hz</b>	<b>2000 Hz</b>	<b>4000 Hz</b>	<b>8000 Hz</b>	
	Outlet	41.8	53.2	56.7	61.2	59.9	54.4	46.4	<b>65.2</b>
	Structure	30.7	48.3	54.4	55.7	55.0	46.7	37.8	<b>60.3</b>
	Inlet	41.8	53.2	56.7	61.2	59.9	54.4	46.4	<b>65.2</b>
Med.	Lw tot dB(A)	41.5	52.6	56.9	59.0	54.7	50.9	40.5	<b>63</b>
		<b>125 Hz</b>	<b>250 Hz</b>	<b>500 Hz</b>	<b>1000 Hz</b>	<b>2000 Hz</b>	<b>4000 Hz</b>	<b>8000 Hz</b>	
	Outlet	38.3	49.0	52.7	55.4	51.1	47.6	37.2	<b>59.1</b>
	Structure	27.2	44.1	50.4	50.0	46.2	39.9	28.7	<b>54.6</b>
	Inlet	38.3	49.0	52.7	55.4	51.1	47.6	37.2	<b>59.1</b>
Min.	Outlet	33.9	45.1	48.8	50.8	46.3	45.3	30.2	<b>54.9</b>
	Structure	<b>22.8</b>	<b>40.3</b>	<b>46.5</b>	<b>45.3</b>	<b>41.4</b>	<b>37.6</b>	<b>21.6</b>	<b>50.4</b>
	Inlet	33.9	45.1	48.8	50.8	46.3	45.3	30.2	<b>54.9</b>

4TW60227-1 (Sheet 2/7)

Sound power levels measured at ESP = 0 Pa



# 11 Sound power data

## 11-2 FWD

11

### 11-2-1 2-pipe/4-pipe series

11-2

FWD08		125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Global Lw
Max.	Lw tot dB(A)	50.7	62.1	64.8	68.1	66.5	62.5	56.2	72
		<b>125 Hz</b>	<b>250 Hz</b>	<b>500 Hz</b>	<b>1000 Hz</b>	<b>2000 Hz</b>	<b>4000 Hz</b>	<b>8000 Hz</b>	
	Outlet	47.5	58.4	60.7	64.5	62.8	59.1	52.9	68.9
	Structure	36.4	53.6	58.4	59.1	57.9	51.5	44.3	64.0
	Inlet	47.5	58.4	60.7	64.5	62.8	59.1	52.9	68.9
Med.	Lw tot dB(A)	45.0	57.5	60.1	62.5	58.9	56.4	49.2	67
		<b>125 Hz</b>	<b>250 Hz</b>	<b>500 Hz</b>	<b>1000 Hz</b>	<b>2000 Hz</b>	<b>4000 Hz</b>	<b>8000 Hz</b>	
	Outlet	41.8	53.8	56.0	58.9	55.3	53.0	45.9	63.0
	Structure	30.7	49.0	53.7	53.5	50.4	45.4	37.3	58.4
	Inlet	41.8	53.8	56.0	58.9	55.3	53.0	45.9	63.0
Min.	Lw tot dB(A)	40.5	53.4	55.9	57.5	54.3	50.3	42.4	62
		<b>125 Hz</b>	<b>250 Hz</b>	<b>500 Hz</b>	<b>1000 Hz</b>	<b>2000 Hz</b>	<b>4000 Hz</b>	<b>8000 Hz</b>	
	Outlet	37.4	49.7	51.8	53.9	50.6	46.9	39.1	58.2
	Structure	26.3	44.9	49.5	48.4	45.7	39.3	30.5	53.7
	Inlet	37.4	49.7	51.8	53.9	50.6	46.9	39.1	58.2

4TW60227-1 (Sheet 3/7)

Sound power levels measured at ESP = 0 Pa

FWD10		125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Global Lw
Max.	Lw tot dB(A)	50.7	62.1	64.8	68.1	66.5	62.5	56.2	72
		<b>125 Hz</b>	<b>250 Hz</b>	<b>500 Hz</b>	<b>1000 Hz</b>	<b>2000 Hz</b>	<b>4000 Hz</b>	<b>8000 Hz</b>	
	Outlet	47.5	58.4	60.7	64.5	62.8	59.1	52.9	68.9
	Structure	36.4	53.6	58.4	59.1	57.9	51.5	44.3	64.0
	Inlet	47.5	58.4	60.7	64.5	62.8	59.1	52.9	68.9
Med.	Lw tot dB(A)	45.0	57.5	60.1	62.5	58.9	56.4	49.2	67
		<b>125 Hz</b>	<b>250 Hz</b>	<b>500 Hz</b>	<b>1000 Hz</b>	<b>2000 Hz</b>	<b>4000 Hz</b>	<b>8000 Hz</b>	
	Outlet	41.8	53.8	56.0	58.9	55.3	53.0	45.9	63.0
	Structure	30.7	49.0	53.7	53.5	50.4	45.4	37.3	58.4
	Inlet	41.8	53.8	56.0	58.9	55.3	53.0	45.9	63.0
Min.	Lw tot dB(A)	40.5	53.4	55.9	57.5	54.3	50.3	42.4	62
		<b>125 Hz</b>	<b>250 Hz</b>	<b>500 Hz</b>	<b>1000 Hz</b>	<b>2000 Hz</b>	<b>4000 Hz</b>	<b>8000 Hz</b>	
	Outlet	37.4	49.7	51.8	53.9	50.6	46.9	39.1	58.2
	Structure	26.3	44.9	49.5	48.4	45.7	39.3	30.5	53.7
	Inlet	37.4	49.7	51.8	53.9	50.6	46.9	39.1	58.2

4TW60227-1 (Sheet 4/7)

Sound power levels measured at ESP = 0 Pa



# 11 Sound power data

## 11-2 FWD

### 11-2-1 2-pipe/4-pipe series

11

11-2

FWD12		125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Global Lw
Max.	Lw tot dB(A)	52.0	62.5	65.2	70.0	69.2	64.5	58.2	74
		<b>125 Hz</b>	<b>250 Hz</b>	<b>500 Hz</b>	<b>1000 Hz</b>	<b>2000 Hz</b>	<b>4000 Hz</b>	<b>8000 Hz</b>	
	Outlet	48.8	58.8	61.1	66.4	65.5	61.1	54.9	70.7
	Structure	37.7	54.0	58.8	61.0	60.6	53.5	46.3	65.7
	Inlet	48.8	58.8	61.1	66.4	65.5	61.1	54.9	70.7
Med.	Lw tot dB(A)	46.2	57.7	59.9	62.8	60.5	57.1	50.0	67
		<b>125 Hz</b>	<b>250 Hz</b>	<b>500 Hz</b>	<b>1000 Hz</b>	<b>2000 Hz</b>	<b>4000 Hz</b>	<b>8000 Hz</b>	
	Outlet	43.1	54.0	55.8	59.2	56.9	53.8	46.8	63.5
	Structure	32.0	49.2	53.5	53.8	52.0	46.1	38.2	58.8
	Inlet	43.1	54.0	55.8	59.2	56.9	53.8	46.8	63.5
Min.	Lw tot dB(A)	39.3	50.6	54.2	55.9	53.1	47.8	41.5	60
		<b>125 Hz</b>	<b>250 Hz</b>	<b>500 Hz</b>	<b>1000 Hz</b>	<b>2000 Hz</b>	<b>4000 Hz</b>	<b>8000 Hz</b>	
	Outlet	36.1	46.9	50.1	52.4	49.5	44.4	38.2	56.5
	Structure	25.0	42.1	47.8	46.9	44.6	36.8	29.6	52.0
	Inlet	36.1	46.9	50.1	52.4	49.5	44.4	38.2	56.5

4TW60227-1 (Sheet 5/7)

Sound power levels measured at ESP = 0 Pa

FWD16		125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Global Lw
Max.	Lw tot dB(A)	61.0	70.5	70.0	72.5	71.1	69.6	63.8	78
		<b>125 Hz</b>	<b>250 Hz</b>	<b>500 Hz</b>	<b>1000 Hz</b>	<b>2000 Hz</b>	<b>4000 Hz</b>	<b>8000 Hz</b>	
	Outlet	57.8	66.8	65.9	68.9	67.4	66.2	60.5	74.5
	Structure	46.7	62.0	63.6	63.5	62.5	58.6	51.9	69.4
	Inlet	57.8	66.8	65.9	68.9	67.4	66.2	60.5	74.5
Med.	Lw tot dB(A)	58.3	65.1	67.1	67.9	65.8	64.2	56.7	73
		<b>125 Hz</b>	<b>250 Hz</b>	<b>500 Hz</b>	<b>1000 Hz</b>	<b>2000 Hz</b>	<b>4000 Hz</b>	<b>8000 Hz</b>	
	Outlet	55.2	61.4	63.0	64.3	62.1	60.8	53.4	69.8
	Structure	44.1	56.5	60.7	58.9	57.2	53.2	44.8	65.0
	Inlet	55.2	61.4	63.0	64.3	62.1	60.8	53.4	69.8
Min.	Lw tot dB(A)	52.1	61.3	62.3	63.8	62.6	60.7	49.1	69
		<b>125 Hz</b>	<b>250 Hz</b>	<b>500 Hz</b>	<b>1000 Hz</b>	<b>2000 Hz</b>	<b>4000 Hz</b>	<b>8000 Hz</b>	
	Outlet	48.9	57.7	58.2	60.3	58.9	57.4	45.8	65.7
	Structure	37.8	52.8	55.9	54.8	54.0	49.7	37.2	60.9
	Inlet	48.9	57.7	58.2	60.3	58.9	57.4	45.8	65.7

4TW60227-1 (Sheet 6/7)

Sound power levels measured at ESP = 0 Pa



# 11 Sound power data

## 11-2 FWD

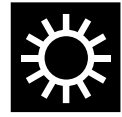
### 11-2-1 2-pipe/4-pipe series

11-2

FWD018		125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Global Lw
Max.	Lw tot dB(A)	61.0	70.5	70.0	72.5	71.1	69.6	63.8	<b>78</b>
		<b>125 Hz</b>	<b>250 Hz</b>	<b>500 Hz</b>	<b>1000 Hz</b>	<b>2000 Hz</b>	<b>4000 Hz</b>	<b>8000 Hz</b>	
	Outlet	57.8	66.8	65.9	68.9	67.4	66.2	60.5	<b>74.5</b>
	Structure	46.7	62.0	63.6	63.5	62.5	58.6	51.9	<b>69.4</b>
	Inlet	57.8	66.8	65.9	68.9	67.4	66.2	60.5	<b>74.5</b>
Med.	Lw tot dB(A)	58.3	65.1	67.1	67.9	65.8	64.2	56.7	<b>73</b>
		<b>125 Hz</b>	<b>250 Hz</b>	<b>500 Hz</b>	<b>1000 Hz</b>	<b>2000 Hz</b>	<b>4000 Hz</b>	<b>8000 Hz</b>	
	Outlet	55.2	61.4	63.0	64.3	62.1	60.8	53.4	<b>69.8</b>
	Structure	44.1	56.5	60.7	58.9	57.2	53.2	44.8	<b>65.0</b>
	Inlet	55.2	61.4	63.0	64.3	62.1	60.8	53.4	<b>69.8</b>
Min.	Lw tot dB(A)	52.1	61.3	62.3	63.8	62.6	60.7	49.1	<b>69</b>
		<b>125 Hz</b>	<b>250 Hz</b>	<b>500 Hz</b>	<b>1000 Hz</b>	<b>2000 Hz</b>	<b>4000 Hz</b>	<b>8000 Hz</b>	
	Outlet	48.9	57.7	58.2	60.3	58.9	57.4	45.8	<b>65.7</b>
	Structure	37.8	52.8	55.9	54.8	54.0	49.7	37.2	<b>60.9</b>
	Inlet	48.9	57.7	58.2	60.3	58.9	57.4	45.8	<b>65.7</b>

4TW60227-1 (Sheet 7/7)

Sound power levels measured at ESP = 0 Pa



# 12 Installation

## 12-1 Controller

12  
12-1

	Cool/heat changeover			Options		Basic control functions		Control features		
2-pipe	✓					✓	✓	✓	✓	
	✓			✓		✓	✓		✓	
	✓				✓	✓	✓	✓	✓	
	✓			✓	✓	✓	✓		✓	
		✓					✓	✓	✓	
		✓		✓			✓	✓		
			✓	✓	✓	✓	✓	✓	✓	✓
4-pipe	✓			✓		✓	✓		✓	
	✓					✓	✓	✓	✓	
			✓			✓	✓	✓		✓
			✓	✓		✓	✓		✓	✓



Manual cool/heat changeover.



Automatic cool/heat changeover based on water temperature.



Automatic cool/heat changeover based on air temperature.



Control of the 3-way/4pipe ON/OFF valve. The water valve is shut-off once the desired temperature is reached.



The controller controls the electric heater as integration or replacement of the hot water heating system. When the operating mode selector switch is turned to "electric heater" and the electric heater is turned on, the fan runs continuously at medium speed.



The fan speed can be set at one of the 3 speeds (low, medium or maximum) by turning the operation mode selector.



The fan speed is switched automatically based on the difference between the temperature set on the thermostat and the room temperature.



Optimised comfort cooling. When the fan coil has reached the desired setpoint, the fan will operate at medium speed and at regular intervals to ensure constant room temperature and lower sound.



The controller prevents the fan coil unit from operating in one mode, if the required water temperature is not achieved to operate in the selected mode.



The dead zone is a temperature interval close to the set temperature. When the air is warmer/cooler than the top/lower limit of the neutral zone, the cooling/heating mode is selected.



## 12 Installation

### 12-2 Installation precautions

#### 12-2-1 FWW/FWL/FWM

12-2

Fan coil units should be installed in a position where they heat and cool the room evenly, on walls or ceilings that can bear their weight. Fit any accessories on the standard unit before installing it. Read the relevant technical sheets for the installation and use of the accessories. Keep free space around the fan coil to allow proper operation and ordinary and extraordinary maintenance (see the "9. Dimensional drawings") Provide a panel to reach the unit in case of recessed mounting (Concealed models). Install the remote control panel, if any, in a position that can easily be reached by the user to set the functions and that is suitable for the proper detection of the temperature, if provided.

Therefore avoid:

- positions directly exposed to sunlight;
- positions exposed to hot or cold draughts;
- obstacles preventing the proper temperature detection

If the system is shut down during the winter months, drain off the water from the system to prevent damage due to freezing; if antifreeze solutions are used, check the freezing point using the table shown on technical manual.

Keep at least 100 mm of free space at air inlet for a proper air suction and an easy removal of the filter.

For ducted units the outlet/inlet grill surface must be at least equal to the outlet/inlet surface of the unit to avoid extra noise and strong performance reduction.

#### BEFORE THE INSTALLATION

Installation and maintenance should be carried out by technical personnel qualified for this type of machine, in compliance with current safety regulations.

For installation and use of possible accessories please refer to the pertinent technical sheets.

In choosing where to install the unit, comply with the following points:

- the heating unit should not be placed immediately under a socket
  - do not install the unit in rooms where inflammable gases are present
  - do not let water is sprayed directly on the unit
  - install the unit on ceilings or walls that bear its weight. Leave enough space all around for proper operation and maintenance of the unit.
- Keep the unit in its packaging until it is ready to be installed, to prevent dust getting inside it.

#### INSTALLATION WARNING:

**On the fan coil install a switch (IL) and/or all remote controls in a position out of the reach of persons who are in a bathtub or shower.**

In case of ceiling-mounted models, check that the installation height does not exceed the maximum height shown in 7. Dimensional drawings in order to avoid excessive hot air stratification in the upper part of the room; in case of greater installation heights we suggest to proceed with the back suction from the lower part of the room. The installation heights shown in the figure refer to the maximum running speed.

Carry out the hydraulic connections to the heat exchanger and in case of cooling operation, to the water drainage system. We suggest to provide for the water inlet from the bottom side of the heat exchanger and the outlet on the upper side. Bleed the air from the heat exchanger operating on the air-vent valves (10 hexagon wrench) located beside the water connections of the heat exchanger. For a better water drainage lean the drain pipe downwards at least 3 cm/m avoiding loops or narrowing on its way.

#### INSTALLATION FOR THE CONCEALED CEILING MODEL

The air outlets should not be placed immediately under a socket. For the concealed ceiling model, perform the connection between the fan coil and the ducts, and place damping material between the duct and the unit. The ducts, in particular the outlet ones, must be insulated. In order to avoid air back suction on the fan coil, keep a minimum distance between the air outlet and recovered air flow as shown in installation manual of the unit. The minimum installation height should not be lower than 1.8 metres from floor level. Provide for an inspection port to the unit.

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# 12 Installation

## 12-2 Installation precautions

### 12-2-1 FWW/FWL/FWM

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12-2

#### ELECTRICAL CONNECTIONS

Carry out the electrical wiring after having turned the power off in compliance with the relevant local and national regulations following the relevant wiring diagram.

Check that the power supply corresponds to the rated power reported on the unit nameplate.

Each fan coil requires a switch (IL) on the feeder line with a distance of at least 3 mm between the opening contacts, and a suitable safety fuse (F).

#### USE

To use the fan coil unit, refer to the instructions of the control panel, available as accessory.

Air outlet grids on the cover cabinet (wall mounted and floor/ceiling mounted) can be turned 180° to direct the flow into the room or towards the wall on which the unit is mounted. The grids and the side doors are snapped into the cabinet. Before removing them in order to change their position, cut the power off and wear protective gloves.

#### MAINTENANCE

For safety reasons before carrying out any maintenance or cleaning operation, switch off the unit turning the selection switch to "Stop" and the power supply switch on position 0 (OFF).

Be careful during any maintenance operation; you could get injured by some metal parts; use protective work gloves. The fan coils do not require any particular maintenance operation: only the periodical cleaning of the air filter should be carried out. It is necessary to carry out a running in period of 100 hours in order to eliminate all mechanical friction. The starting up must be carried out at the maximum speed.

For good operation of the fan coils follow the instructions below:

- keep the air filter clean;
- do not pour liquids into the unit;
- do not introduce metal parts through the air outlet grid;
- keep the air inlet and outlet free at all times.

Each time the machine is turned on after being idle for a long period, ensure there is no air in the heat exchanger. Before using the unit for air conditions, check that:

- condensate drainage is performed correctly;
- the heat exchanger fins are not obstructed by deposits of dirt.

If necessary clean the fins with low pressure compressed air or steam without damaging them.

#### CLEANING

**For safety reasons before carrying out any maintenance or cleaning operation switch off the unit turning the selection switch to "Stop" and the power supply switch on 0 (OFF).**

Clean the filter at least once a month and in any case before using the unit (before the heating or the air conditioning season).

For cleaning the air filter proceed as follows (pictures see manual of units):

- Floor models: turn the screws 90°, which secure the filter to the cover cabinet, to 1/4 turn and remove the filter;
- Concealed models: reach the fan coil through the inspection panel and remove the filter, turning the locking brackets 90°;
- Floor ceiling: remove the air filters that are inside the intake grids located on the front panel of the cover cabinet;
- clean the filter with lukewarm water, or in case of dry dust, with compressed air;
- reassemble the filter after having dried it up

It is recommended to replace the air filter yearly, and to use original spare parts; the fan coil model is reported on the nameplate located on the internal part of the side panel of the unit.

To clean the unit cabinet proceed as follows

- use a soft cloth;
- do not pour any liquid on the unit, as this could cause electrical shocks or damage the components inside it;
- do not use any aggressive chemical solvents; do not use very hot water to clean the air outlet grid

Note: this is only based text and should be combined with manuals for relative pictures and additional information.

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# 12 Installation

## 12-2 Installation precautions

### 12-2-2 FWD

12-2

#### BEFORE THE INSTALLATION

The equipment is to be installed and serviced exclusively by technical personnel who are qualified for using this type of machine, in compliance with the relevant local and national regulations.

On receiving the equipment, check its state ensuring that it was not damaged during transport. Refer to the associated technical sheets for the installation and use instructions of any accessories.

#### INTENDED CONDITIONS OF USE AND OPERATING LIMITS

No responsibility is assumed if the equipment is installed by unqualified personnel, if it is used improperly or under inadmissible conditions, if maintenance is not performed as envisaged in this manual or if original spare parts are not used. For the operating limits please refer to the appropriate chapter. Any other use is considered improper.

Keep the equipment inside the packing until it is ready to be installed so that dust will not infiltrate.

Air sucked by the equipment must always be filtered. Use, when possible, the specific accessories.

If not used during the winter, drain the water from the system to prevent damage caused by the formation of ice. If antifreeze solutions are used, check the freezing point.

**Do not change the internal wiring or other parts of the equipment.**

#### INSTALLATION WARNING:

**On the fan coil unit install a switch (IL) and/or all remote controls in a position out of the reach of persons who are in a bathtub or shower.**

The FWD units may be installed either in horizontal or vertical position. Check that the desired installation complies with one of the diagrams shown in the installation manual, in which both possible configurations, M or AB, are suitable to work for heating and cooling.

**AA** (INTAKE IN LINE - DELIVERY IN LINE)

**AB** (AIR SUCTION AT 90° - AIR OUTLET IN LINE)

#### CONFIGURATION of the unit

The units are always supplied in AA configuration, but the air intake position may be changed during the installation.

#### FIXING the unit

Fix the standard unit to the ceiling or wall using at least 4 of the 6 slots;

For horizontal installations (ceiling-mounting) it is advisable to use M8 threaded bars, screw anchors suitable for the machine's weight, and to arrange for the positioning of the machine using 2 M8 bolts and a washer the diameter of which is suitable for

Before tightening the check nut, adjust the closing of the main nut so that the equipment will slant correctly, i.e. for facilitating the discharging of the condensate.

The correct slant is achieved by tilting the intake downwards as compared to the delivery, until a difference in level of about 10 mm is obtained from one end to the other. Make the hydraulic connections with the heat exchanger and, for cooling operations, with the condensate discharge.

Use one of the two drains of the auxiliary tank, visible on the outside of the unit's side panels and vertical condensate discharge.

For vertical installations (wall-mounting), fix the unit so that water may flow out toward the condensate discharge used. A slant equivalent to a difference in level of about 5 mm is enough between the two side panels. The two condensate discharge tubes of the main tank are located inside the side panels and may be accessed through a membrane type passage that should be perforated for passing the discharge tube through it. It is advisable not to remove the aforesaid passage because it prevents the sharp edge of the hole on the side panel from damaging the condensate discharge tube over time.

To connect the unit to the condensate discharge line, use a flexible rubber tube and fix it to the chosen discharge tube (f 3/8) by means of a metal clamp (use the discharge that is located on the hydraulic attachments side). To assist the draining of the condensate, slant the discharge tube downwards by at least 30 mm/m making sure that its entire route is clear and free from bends or blockages.

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# 12 Installation

## 12-2 Installation precautions

### 12-2-2 FWD

#### A few rules to follow

Carry out the heat exchanger's air exhaust, with pumps stopped, by means of the air valves located adjacent to the attachments of the heat exchanger itself.

When implementing a duct system, it is advisable to place the vibration-damping joints between the ducting and the unit. If you wish to install an electrical resistance module as accessory, the delivery vibration-damping joint should be heat-resistant. The ducting, especially the delivery one, should be insulated with anticondensing material.

Provide an inspection panel adjacent to the equipment for the maintenance and cleaning operations.

Install the control panel on the wall. Choose a position that is easy to access for the setting of the functions and, if contemplated, for the reading of the temperature. Try to avoid positions that are directly exposed to sun rays, or positions subject to direct hot or cold air currents, and do not place obstacles in the way that would prevent the correct reading of the temperature.

#### ELECTRICAL CONNECTIONS

Carry out the electrical wiring after having turned the power off in compliance with the relevant local and national regulations following the relevant wiring diagram.

Only qualified personnel should carry out the wiring operations.

Each fan coil requires a switch (IL) on the feeder line with a distance of at least 3 mm between the opening contacts, and a suitable safety fuse (F).

Power consumption is shown on the data plate fixed to the unit. Make sure to carefully execute the wiring in function of the combination unit/controller and this according to the correct wiring diagram delivered with every accessory. In order to make the electrical connections you must remove the lower closing panel to access the terminal board. The power cables (power supply and control) must be routed to the terminal board through the membrane passage that is on the side panel of the machine on the side opposite the hydraulic attachments.

#### WARNING

**The COMMON wire of the motor is the WHITE one: if connected incorrectly the motor would be damaged irreparably.**

#### FUNCTIONAL CHECKS

Check that the equipment has been installed so that it guarantees the required slant.

Check that the condensate discharge is not clogged (by rubble deposits, etc.).

Check the seal of the hydraulic connections.

Check that all the wirings are tight (perform the check with voltage OFF).

Make sure air has been purged from the heat exchanger.

Power the equipment and check its working efficiency.

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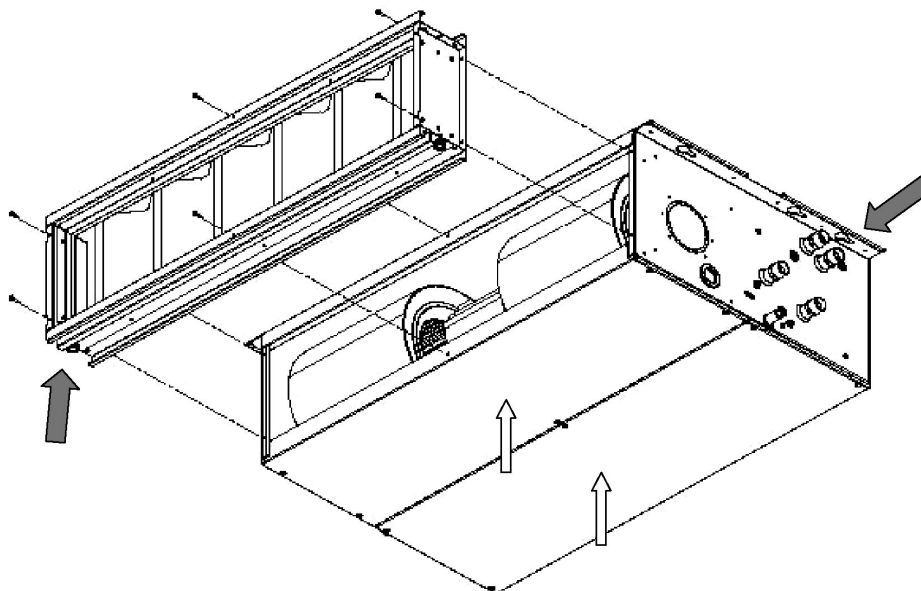
## 12 Installation

### 12-3 Installation & service distance for FWD units

#### 12 1. Ducted unit with filter only

12-3 Consider at least:

- 500 mm free space on water connections side (piping & connections)
- 200 mm free space on the opposite side (to unscrew heat exchangers or fan deck in case of repairing)
- Possibility to extract filter for cleaning has to be considered
- Possibility to reach the unit for ordinary and extraordinary maintenance (for instance removing front panels) has to be considered



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#### 2. Ducted unit with filter and electric heater

Consider also:

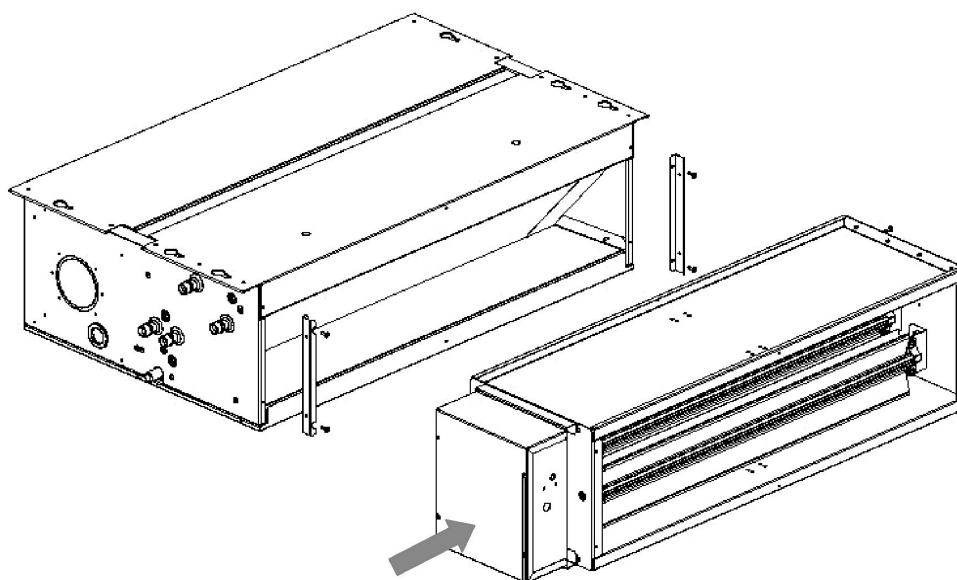
- 500 mm free space on water connections side (piping & connections), measured from the electrical box of the heating module (refer to option technical leaflet for details - total 620 mm)
- 200 mm free space on the opposite side (to unscrew heat exchangers or fan deck in case of repairing)
- Possibility to extract filter for cleaning has to be considered
- Possibility to reach the unit for ordinary and extraordinary maintenance (for instance removing front panels) has to be considered



# 12 Installation

## 12-3 Installation & service distance for FWD units

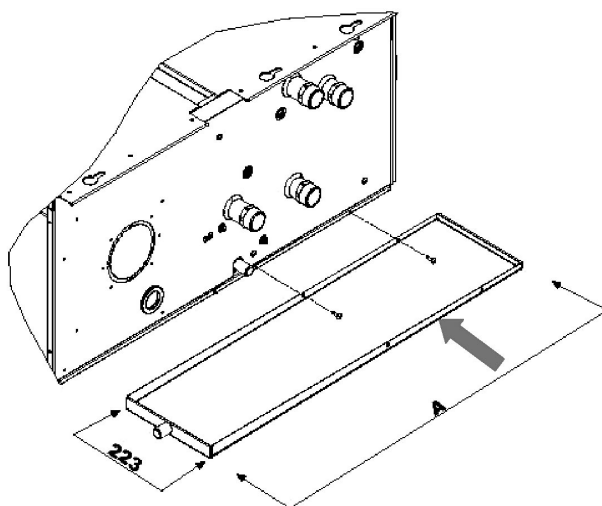
**12**  
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### 3. Ducted unit with filter and valves

Consider also:

- 500 mm free space on water connections side (piping & connections), measured from the valve piping (refer to option technical leaflet for details - total around 720 mm)
- 200 mm free space on the opposite side (to unscrew heat exchangers or fan deck in case of repairing)
- Possibility to extract filter for cleaning has to be considered
- Possibility to reach the unit for ordinary and extraordinary maintenance (for instance removing front panels) has to be considered



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# 13 Options

## 13-1 FWV / FWL / FWM

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### 13-1-1 Option list

	Description	Reference	01	02	03	04	06	08	10	FWV	FWL	FWM	Factory mounted	Kit	Notes/remarks	
	Additional single-row heat exchanger	ESRH.A6	ESRH02A6		ESRH03A6	ESRH06A6		ESRH10A6		X	X	X	X	X	Cannot be used in combination with electric heater	
	Electric heater	EEH.A6	EEH01A6	EEH02A6	EEH03A6	EEH06A6		EEH10A6		X	X	X	X(*)	X	Cannot be used in combination with additional H/E requires electronic controller	
	2-pipe ON-OFF 3 way motor driven valve complete with mounting kit pre-assembled	E2MV.A6	E2MV03A6			E2MV06A6		E2MV10A6		X	X	X	X	X	Requires electronic controller or electromechanical controller	
	4-pipe ON-OFF 3 way motor driven valve complete with mounting kit pre-assembled	E4MV.A6	E4MV03A6			E4MV06A6		E4MV10A6		X	X	X	X(*)	X	Requires electronic controller	
	Fan stop thermostat	YFSTA6	YFSTA6							X	X	X	X(*)	X		
	Air intake & discharge grill + front filter fixing kit for concealed models	EADF.A6	EADF02A6	EADF03A6	EADF06A6		EADF10A6					X	-	X		
	Supporting feet (= supporting brackets + covers)	ESFV.A6	ESFV06A6					ESFV10A6		X		X	-	X	Covers cannot be used for FWM	
	Supporting feet + grill	ESFVG.A6	ESFVG02A6	ESFVG03A6	ESFVG06A6		ESFVG10A6		X				-	X		
	Manual fresh air intake louvers	EFA.A6	EFA02A6	EFA3A6	EFA6A6		EFA10A6		X				-	X		
	Rear panel for vertical mounted models	ERP.V.A6	ERP.V02A6	ERP.V03A6	ERP.V06A6		ERP.V10A6		X	X			-	X	Only for vertical mounted units	
	Controller electro mechanical built in	ECFWM.B6	ECFWM.B6							X	X	X	X(*)	X		
	Controller electrical built in + water probe	ECFWE.B6	ECFWE.B6							X	X	X	X(*)	X	Water probe included	
	Controller electrical remote + water probe	ECFWE.R6	ECFWE.R6							X	X	X	-	X	Water probe included	
	Power interface for connection of up to 4 FCU to a single control panel	EPIM.SA6	EPIM.SA6							X	X	X	X	X		
	Vertical drain pan	EDPV.A6	EDPV.A6					EDPV.A6		X	X	X	-	X		
	Horizontal drain pan	EDPH.A6	EDPH.A6					EDPH.A6				X	X	-	X	

#### NOTES

X: available    X(\*): only possible as factory mounted on special order request    -: not available

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# 13 Options

## 13-1 FWV / FWL / FWM

### 13-1-2 Cross reference table

		Additional single-row heat exchanger	Electric heater	2-pipe ON-OFF 3 way motor driven valve complete with mounting kit	4-pipe ON-OFF 3 way motor driven valve complete with mounting kit	Fan stop thermostat	Air intake & discharge grill + front filter fixing kit for concealed models	Supporting feet (= supporting brackets + covers)	Supporting feet + grill	Manual fresh air intake louvers	Rear panel for vertical mounted models	Controller electro mechanical built in	Controller electronical built in	Controller electronical remote + water probe	Power interface for connection of up to 4 FCU to a single control panel	Vertical drain pan	Horizontal drain pan
		ESRH.A6	EEH.A6	E2MV.A6	E4MV.A6	YFSTA6	EAIDF.A6	ESFV.A6	ESFVG.A6	EFA.A6	ERP.V.A6	ECFWM.B6	ECFWE.B6	ECFWE.R6	EPIMSA6	EDPVA6	EDPHA6
Additional single-row heat exchanger	ESRH.A6				X		X	X	X	X	X		X	X	X	X	X
Electric heater	EEH.A6			X			X	X	X	X	X		X	X	X	X	X
2-pipe ON-OFF 3 way motor driven valve complete with mounting kit	E2MV.A6		X				X	X	X	X	X	X	X	X	X	X	X
4-pipe ON-OFF 3 way motor driven valve complete with mounting kit	E4MV.A6	X					X	X	X	X	X		X	X	X	X	X
Fan stop thermostat	YFSTA6						X	X	X	X	X	X			X	X	X
Air intake & discharge grill + front filter fixing kit for concealed models	EAIDF.A6	X	X	X	X	X		X	X	X				X	X	X	X
Supporting feet (= supporting brackets + covers)	ESFV.A6	X	X	X	X	X	X			X	X	X	X	X	X	X	X
Supporting feet + grill	ESFVG.A6	X	X	X	X	X	X			X	X	X	X	X	X	X	X
Manual fresh air intake louvers	EFA.A6	X	X	X	X	X			X		X	X	X	X	X	X	X
Rear panel for vertical mounted models	ERP.V.A6	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X
Controller electro mechanical built in	ECFWM.B6			X		X		X	X	X	X				X	x	X
Controller electronical built in	ECFWE.B6	X	X	X	X			X	X	X	X				X	X	X
Controller electronical remote + water probe	ECFWE.R6	X	X	X	X		X	X	X	X	X				X	X	X
Power interface for connection of up to 4 FCU to a single control panel	EPIMSA6	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X
Vertical drain pan	EDPVA6	X	X	X	X		X	X	X	X	X				X	X	X
Horizontal drain pan	EDPHA6	X	X	X	X	X	X	X	X	X	X	X	X	X		x	X

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# 13 Options









## 13-2 FWD

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### 13-2-1 Option list

	Description	Reference	04	06	08	10	12	16	18	Factory mounted	Kit	Notes/remarks
	Electric heater: small	EDEH(S)A6	EDEH04A6	EDEHS06A6	EDEHS10A6		EDEHS12A6	EDEHS18A6		-	X	Requires electronic controller
	Electric heater: big	EDEH(B)A6	EDEH04A6	EDEHB06A6	EDEHB10A6		EDEHB12A6	EDEHB18A6		-	X	
	2-pipe 3-way valve	ED2MV.A6	ED2MV04A6	ED2MV10A6			ED2MV12A6	ED2MV18A6		-	X	For FWD12-16-18 only motor valve (piping not included)
	4-pipe 3-way valve	ED4MV.A6	ED4MV04A6	ED4MV10A6			2 x ED2MV12A6	2 x ED2MV18A6		-	X	
	Drain pan	EDDPV.A6	EDDPV10A6				EDDPV18A6			-	X	
	Fan stop thermostat	YFSTA6	YFSTA6						-	X		
	Fresh air intake louvers (motorised)	EDMFA.A6	EDMFA04A6	EDMFA06A6	EDMFA10A6		EDMFA12A6	EDMFA18A6		-	X	
	Controller electronic - remote Controller electronic - remote (incl. power interface)	ECFVDER6	ECFVDER6						-	X		

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# 13 Options

## 13-2 FWD

### 13-2-2 Cross reference table

		Electric heater: small	Electric heater: big	2-pipe 3-way valve	4-pipe 3-way valve	Fan stop thermostat	Motorised fresh air intake	Controller electronic - remote	Drain pan (vertical models)
Description		EDEH(S).A6	EDEH(B).A6	ED2MV.A6	ED4MV.A6	YFSTA6	EDMFA.A6	ECFWDER6	EDDPV.A6
Electric heater: small	EDEH(S).A6		X	X			X	X	X
Electric heater: big	EDEH(B).A6		X	X			X	X	X
2-pipe 3-way valve	ED2MV.A6	X					X	X	X
4-pipe 3-way valve	ED4MV.A6						X	X	X
Fan stop thermostat	YFSTA6						X		
Motorised fresh air intake	EDMFA.A6	X	X	X	X	X		X	X
Controller electronic - remote	ECFWDER6	X	X	X	X		X		X
Drain pan (vertical & horizontal models)	EDDPV.A6	X	X	X	X		X		X
Drain pan (vertical models)	EDDPV.A6	X	X	X	X		X	X	

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