



Applied Systems

Technical Data

Air cooled chiller with centrifugal fan



EEDEN12-402

EUWAC-FBZW1

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EUWAC-FBZW1

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1 Features

- Optimised for use with R-407C
- Daikin scroll compressor
- Electronic DDC controller
- Standard phase sequence controller
- Maximum external static pressure (ESP): 150Pa
- Pressure gauges
- Standard operation range down to -10°C
- Regulating switch
- Water inlet or outlet temperature control
- Input contacts/available outputs
- Input: on/off, pump/flow switch
- Output: compressor operation, summary alarm, pump relay contact
- Compatible with hydraulic module



2 Specifications

2-1 Technical Specifications				EUWAC5FBZW1	EUWAC8FBZW1	EUWAC10FBZW1
Cooling capacity	Nom.	kW		11.3 (1)	17.9 (1)	23.0 (1)
Capacity steps		%			100-0	
Power input	Cooling	Nom.	kW	5.48 (1)	8.19 (1)	10.4 (1)
EER				2.06 (1)	2.19 (1)	2.21 (1)
Casing	Material			Polyester coated galvanised steel plate		
Dimensions	Unit	Height	mm	1,345	1,290	1,395
		Width	mm	856	1,180	1,330
		Depth	mm		630	
Weight	Unit	kg		164	224	261
	Operation weight	kg		166	228	266
Water heat exchanger - evaporator	Type			Brazed plate, one per circuit		
	Minimum water volume in the system	l		101	153	212
	Water flow rate	Min.	l/min	16	23	28
		Nom.	l/min	32	51	66
		Max.	l/min	64	92	112
	Nominal water pressure drop	Cooling Heat exchanger	kPa	25	42	48
	Insulation material			PVC nitril foam		
	Model	Type		AC70-24	AC70-34	AC70-40
		Quantity			1	
Air heat exchanger	Type			Cross fin coil/Hi-X tubes and PE coated waffle louvre fins		
	Rows	Quantity			3	
	Stages	Quantity		6+2	11+2	13+2
	Fin pitch	mm			2	
	Face area	m ²		0.472	0.772	0.950
Fan	Quantity				1	
	Type			Centrifugal		
	Air flow rate	Nom.	m ³ /min	70.2	109.8	126
	Discharge direction			Horizontal		
	External static pressure	Nom.	Pa	50	60	72
		Max.	Pa	100		150
Fan motor	Drive			Direct drive	Belt drive	
Sound power level	Cooling	Nom.	dBA	63	66	69
Compressor	Type			Hermetically sealed scroll compressor		
	Quantity				1	
	Model			JT140BF-YE	JT212DA-YE	JT265DA-YE
	Speed	rpm			2,900	
	Oil	Charged volume	l	1.5		2.7
Operation range	Water side	Cooling	Min.	°CDB	-10	
			Max.	°CDB	21	
	Air side	Cooling	Min.	°CDB	-10	
			Max.	°CDB	43	
Refrigerant	Type			R-407C		
	Control			Thermostatic expansion valve		
	Circuits	Quantity			1	
Refrigerant circuit	Charge	kg		2.1	3.9	4.7
	N2 holding charge			No		
Refrigerant oil	Type			Idemitsu FVC68D		
Piping connections	Evaporator water inlet/outlet (OD)			FBSP 1"		
	Evaporator water drain			Field installation		

2 Specifications

2

2-1 Technical Specifications			EUWAC5FBZW1	EUWAC8FBZW1	EUWAC10FBZW1
Safety devices	Item	01	High pressure switch		
		02	Low pressure switch		
		03	Evaporating temperature protection		
		04	Discharge temperature protector		
		05	Outlet water temperature protection		
		06	Compressor motor overcurrent relay		
		07	Fan thermal protector		
		08	Anti-recycling and guard timer		
		09	DDC with electronic temperature control		
		10	Reverse phase protector		
		11	Internal fuses		
Ambient temperature	Operation	Max.	°C	35	

2-2 Electrical Specifications			EUWAC5FBZW1	EUWAC8FBZW1	EUWAC10FBZW1
Compressor	Phase		3~		
	Voltage	V	400		
	Voltage range	Min. %	-10		
		Max. %	10		
	Starting current	A	60.0	95.0	130
	Nominal running current (RLA)	A	6.70	10.7	13.5
	Maximum running current	A	10.0	18.0	22.0
	Starting method		Direct on line		
	Recommended fuses		-		
Power supply	Name		W1		
	Phase		3N~		
	Frequency	Hz	50		
	Voltage	V	400		
	Voltage range	Min. %	-10		
		Max. %	10		
Unit	Starting current	A	81	110	145
	Current	Zmax	Text	0.06	0.04
	Nominal running current (RLA)	Cooling	A	14.0	16.8
	Maximum running current	A	16.8	21.4	25.5
	Recommended fuses according to IEC standard 269-2		3 x 25gG	3 x 32gG	
Fans	Quantity		1		
	Nominal running current (RLA)	A	4.6	3.3	
	Maximum running current	A	6.8	3.4	3.5
	Starting current - DOL	A	20.7	14.9	
Control circuit	Phase		1~		
	Voltage	V	230 (3)		
	Recommended fuses		Factory installed		
	Crankcase heater (E1/2HC)	W	33	50	

Notes

- (1) All values are valid for external static pressure of: 50Pa (5HP); 60Pa (8HP); 72Pa (10HP); for 8 & 10HP, a factory pulley setting of 0 turns open.
- (2) 5HP fan is a single phase motor
- (3) Control circuit voltage: 24AC (supplied by factory installed transformers)
- (4) According to EN14511:2001

3 Options

3 - 1 Options

EUWAC-FBZW1

Optional equipment for EUWAC-FBZ

Horse Power: 5~10

Modelnumber

EUWAC5FBZW1 (on)

EUWAC8FBZW1 (on)

EUWAC10FBZW1 (on)

Option number	Option description	Decimal code	Unit size			Availability
			5FBZW1	8FBZW1	10FBZW1	
ZH	Standard unit	-	•	•	•	factory mounted
ZL	Available options chilled water temp down to -5°C chilled water temp down to -10°C	1st digit 12 24	• •	• •	• •	factory mounted
EKAC10C	Available kits Address card for connection to BMS or Remote user interface Remote installed user interface		• •	• •	• •	kit kit
EKRUMCA						

NOTES

1. std = standard on unit
2. • = available
3. x = available and a quantity of x is needed for this unit size
4. – = not available
5. Impossible option combination : ZH + ZL
6. (on) = option number
7. 1st digit (on) = sum of 1st digit decimal code and this summation transferred to a 36 character system
8. To install EKRUMCA => EKAC10C needs to be installed on the unit.
9. EKAC10C : this address card allows direct connection to MODBUS BMS system.

4 Control systems

4 - 1 Control Systems

Direct and user parameters

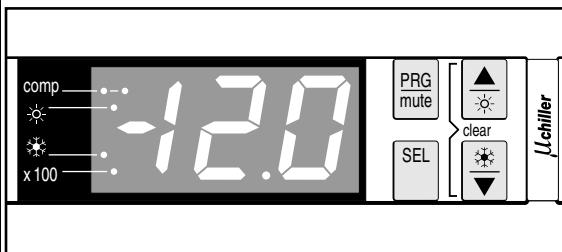
The digital controller provides direct and user parameters. The direct parameters are important for the everyday usage of the unit, e.g. to adjust the temperature setpoint or to consult actual operational information. The user parameters on the contrary provide advanced features such as adjusting time delays or disabling the buzzer. Each parameter is defined by a code and a value. For example, the parameter used to select local or remote on/off control has code h7 and value 1 or 0.

4

User interface EUWAC5-10FZ

The digital controller consists of a numeric display, four labelled keys which you can press and four LEDs providing extra user information.

Digital controller



Keys provided on the controller.

Each key, except for the lower left key, combines two functions: **PRG** / **mute**, **▲** / **✖** and **✖** / **▼**. The function carried out when the user presses one of these keys depends on the status of the controller and the unit at that specific moment.



PRG Key, to enter the scroll list of user parameters, to confirm a parameter modification and to return to normal operation.



mute Key, to de-activate the buzzer in the case of an alarm.



▲ Key, to scroll through the list of direct or user parameters or to raise a setting.



SEL Key, to enter the scroll list of direct parameters or to switch between a parameter's code and its value.



✖ Key, to start the unit in cooling mode or to switch the unit off when cooling mode is active.



▼ Key, to scroll through the list of direct or user parameters or to lower a setting.

LEDs provided on the controller:

The controller provides five LEDs one of which, the **comp** LED, is not used.



comp LED, indicates the status of the compressor.

The LED does not light up when the compressor is not active, blinks when the compressor cannot start up although extra load is requested (e.g. timer active) and lights up permanently when the compressor is active.



LED, indicates that cooling mode is active.



x100 LED, indicates that the value on the numeric display should be multiplied by 100.

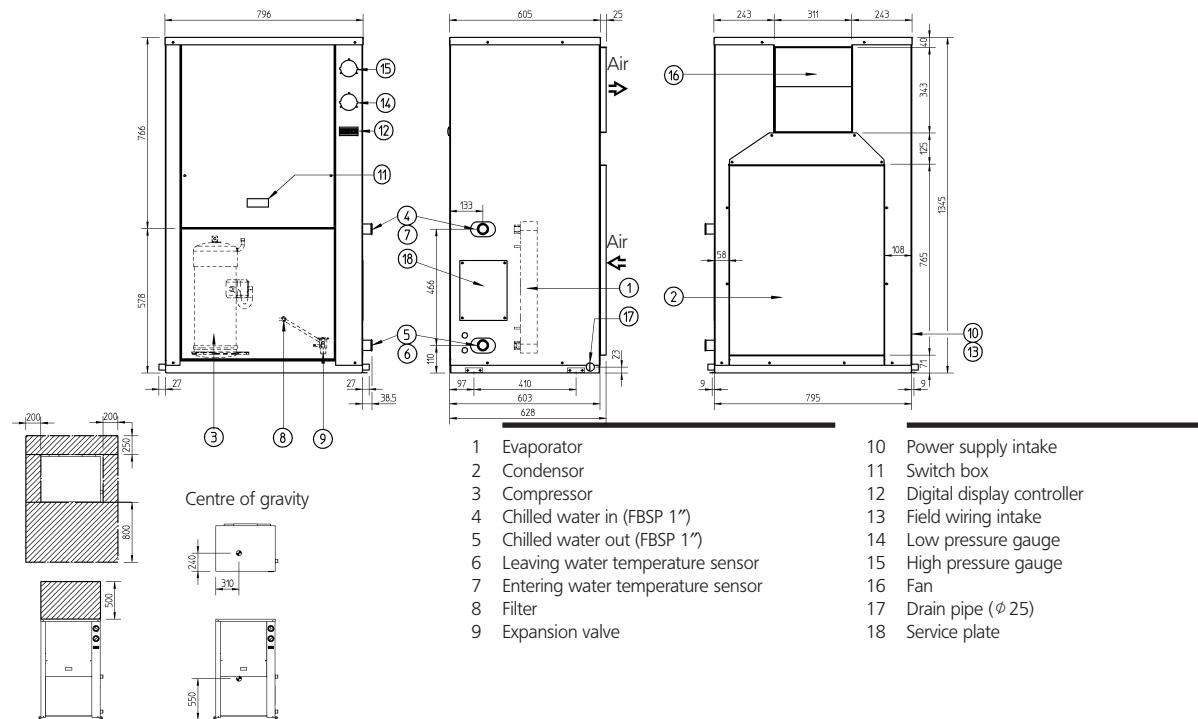
Note:

- Temperature readout tolerance: $\pm 1^{\circ}\text{C}$.
- Legibility of the numeric display may decrease in direct sunlight.

6 Dimensional drawings

6 - 1 Dimensional Drawings

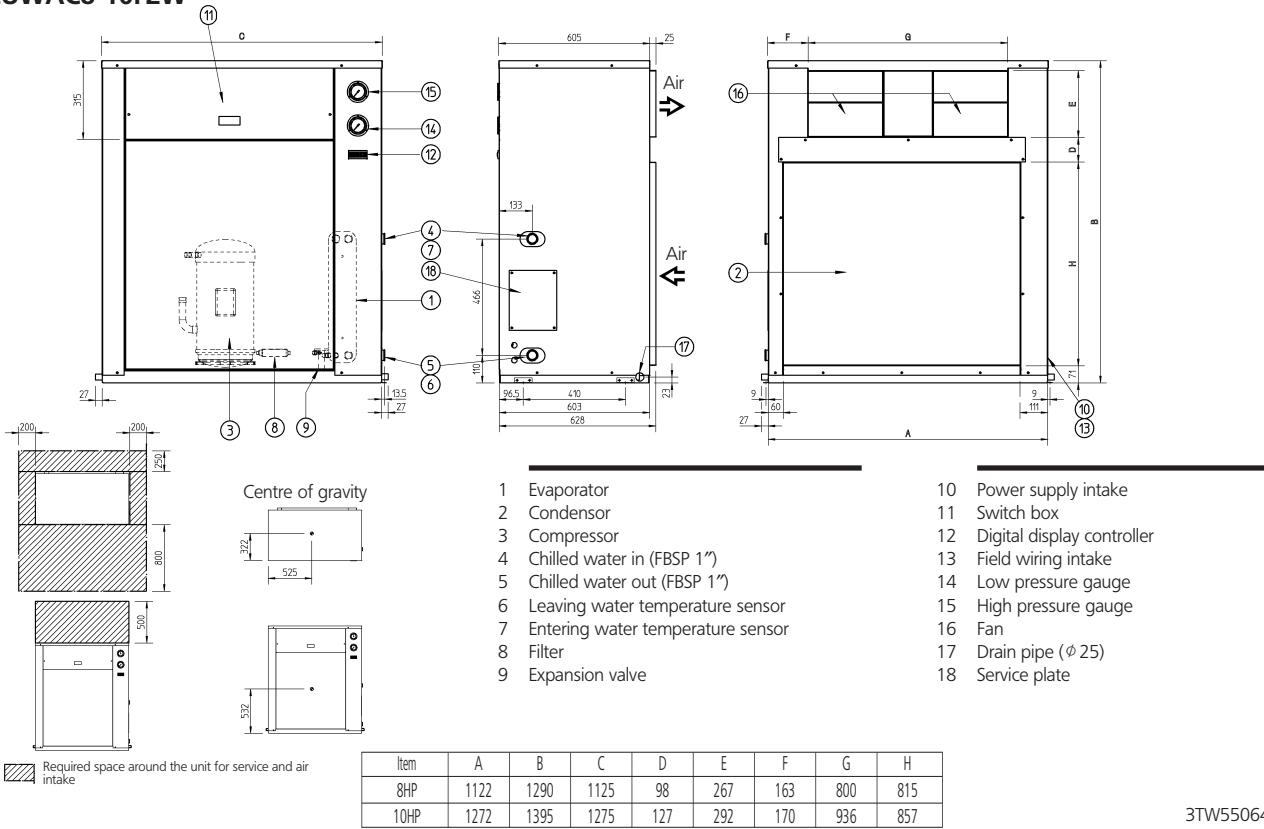
EUWAC5FZW



Required space around the unit for service and air intake

3TW55054-1C

EUWAC8-10FZW



3TW55064-1C

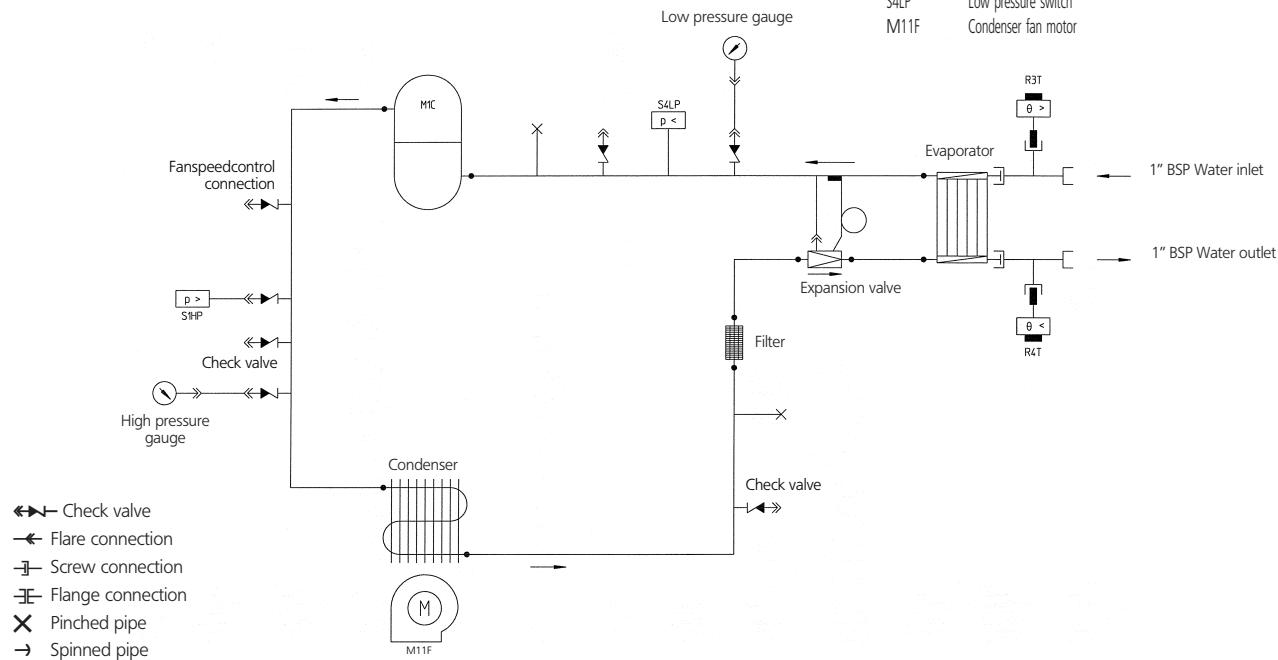
7 Piping diagrams

7 - 1 Piping Diagrams

EUWAC5FZW

M1C
S1HP
R3T
R4T
S4LP
M11F

Compressor
High pressure switch
Water inlet temp. sensor
Water outlet temp. sensor
Low pressure switch
Condenser fan motor



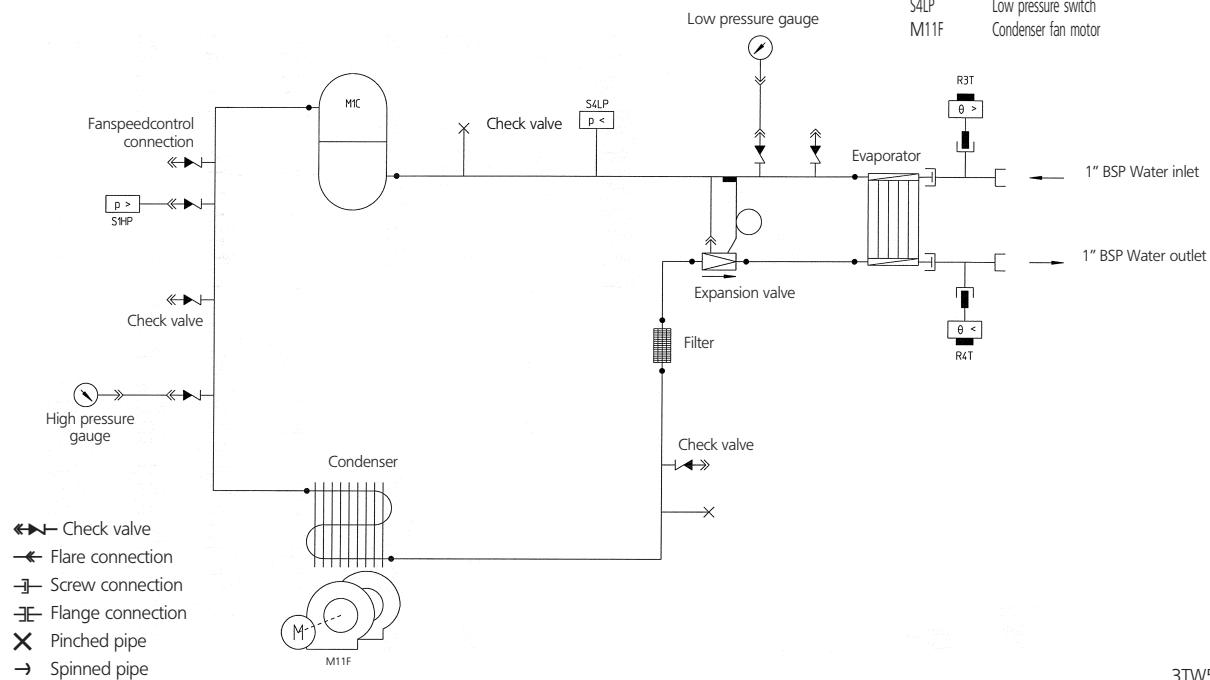
7

3TW55055-1A

EUWAC8-10FZW

M1C
S1HP
R3T
R4T
S4LP
M11F

Compressor
High pressure switch
Water inlet temp. sensor
Water outlet temp. sensor
Low pressure switch
Condenser fan motor

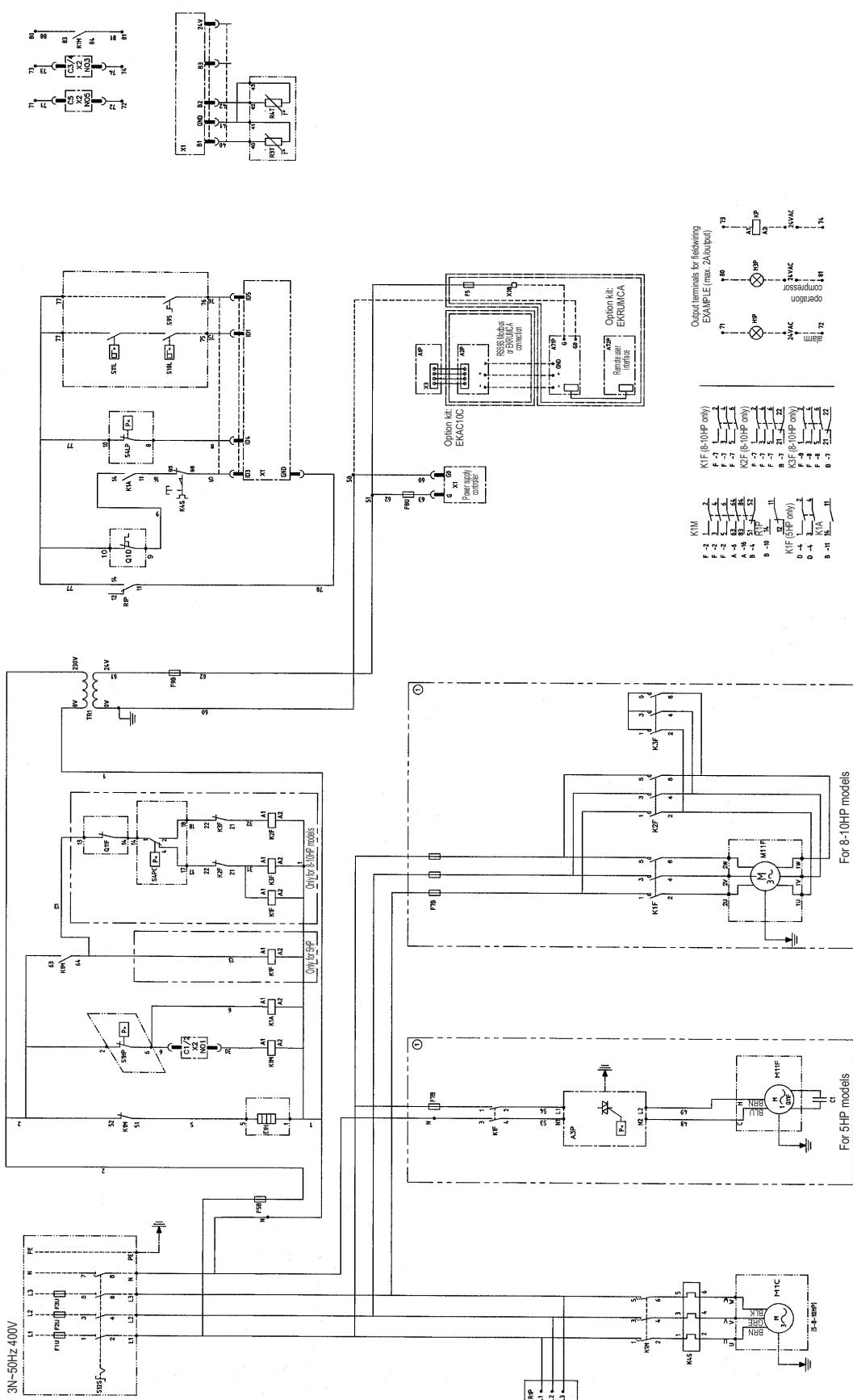


3TW55065-1A

8 Wiring diagrams

8 - 1 Wiring Diagrams - Three Phase

EUWAC-FBZW1



2TW60286-1(1)

8 Wiring diagrams

8 - 1 Wiring Diagrams - Three Phase

EUWAC-FBZW1

	Not standard included	
	Not possible as option	Possible as option
Obligatory	#	# #
Not obligatory	*	* *

Recommended fuses gL/gG (aM also admitted) according to IEC standard 269-2
(F1I,F2U,F3U = gL/gG)

400V			
Fuses + overcurrent	5HP	8HP	10HP
F1U, F2U, F3U	25gG	32gG	32gG
F5B	1A	1A	1A
F7B	10A	6A	6A
F9B	1A	1A	1A
F8U	315mAT	315mAT	315mAT
F5	250mAT	250mAT	250mAT
K4S	10A	18A	22A

Digital inputs	Digital outputs (relays)	Analog inputs
X1 <ID1-GND> flow switch	X2 <C1/2-NO1> compressor on	X1 <B1-GND> inlet water t°
X1 <ID2-GND>	X2 <C1/2-NO2> --	X1 <B2-GND> outlet water t°
X1 <ID3-GND> high pressure switch + discharge protector + overcurrent	X2 <C3/4-NO3> voltage free contact for pump	X1 <B3-GND> --
X1 <ID4-GND> low pressure switch	X2 <C3/4-NO4> --	Analogue output
X1 <ID5-GND> remote On/Off	X2 <C5-NO5> alarm voltage free contact	X1 <Y-GND> --

X1	connector in terminal unit for digital inputs, analog inputs and for power supply controller	Q1D PE	discharge thermal protector main earth terminal	F1U,F2U,F3U #	main fuses for the unit
X2	connector for digital outputs in terminal unit	M1C	compressor motor	C1	capacitor for fanmotor
TR1	transfo 230V → 24V for supply of controllers	M11F	Triac	A72P **	PCB: remote user interface
S12S #	main isolator switch	KP *	pumpcontactor	A71P **	PCB: power supply card
S11L #	contact that closes if pump is working	K2F	contactors for speedselection fanmotor (low)	A3P	PCB: fanspeedcontroller
S10L #	flowswitch	K1F, K3F	contactors for speedselection fanmotor (high)	A2P	PCB: address card
S9S *	switch for remote start/stop or dual setpoint	K1A	auxiliary contactor for high pressure	A1P	PCB: terminal unit
S4PC	head pressure control pressure switch for fanspeed control	K4S K1M	overcurrent relay compressor contactor	BRN: brown BLK: black	
S4LP	low pressure switch	H3P *	indication lamp operation compressor	BLU: blue	
S1HP	high pressure switch	H1P *	indication lamp alarm	GRE: grey	
S4T	outlet water temperature sensor	F5 # #	surge proof fuse		
R3T	inlet water temperature sensor	F8U	surge proof fuse		
R1P	reverse phase protector	F7B	fuse for fanmotor		
Q11F	thermal protector fan	F5B,F9B	fuse for the control circuit / secondary of TR1		

2TW60286-1(2)

NOTES

1. * : Terminal 1, ~ : Wire 2, --- : Field wiring to be in accordance with the local electrical regulations, --- : Earth wiring.

: Option, : Wiring dependent on model, : PCB-display, : outside switchbox

2. If compressor rotates reversely, it may be damaged

3. Optional:

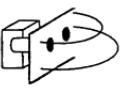
- ZH = Glycol application chilled water temperature down to -5°C
- ZL = Glycol application chilled water temperature down to -10°C
- EKAC10C = address card for Modbus or remote user interface
- EKRUMCA = remote user interface

9 Sound data

9 - 1 Sound Level Data

		Sound power Lw per Octave band (dB)							Total (dBA)
		63	125	250	500	1000	2000	4000	
EUWAC5FZW	Lw	65	66	65	59	51	44	36	63
	Lwd	85	70	67	70	67	66	64	75
EUWAC8FZW	Lw	75	70	66	61	56	48	40	66
	Lwd	70	70	68	65	66	62	60	72
EUWAC10FZW	Lw	73	70	69	64	58	52	48	69
	Lwd	77	69	68	69	66	66	62	74

4TW55057-1A

Compact unit with ducts Sound power level for the housing		Lw
Compact unit with ducts Sound power level for the proportion of sound radiated by the openings of the ducts		Lw

NOTES

- 1 Data valid at nominal operation conditions with external static pressure of
 5 HP → ESP 50 Pa
 8 HP → ESP 60 Pa
 10 HP → ESP 72 Pa
 And a factory pulley setting of 0 turns open
- 2 Testing according to ENV12102

10 Installation

10 - 1 Water Charge, Flow and Quality

Be sure the water quality is in accordance with the specifications below:

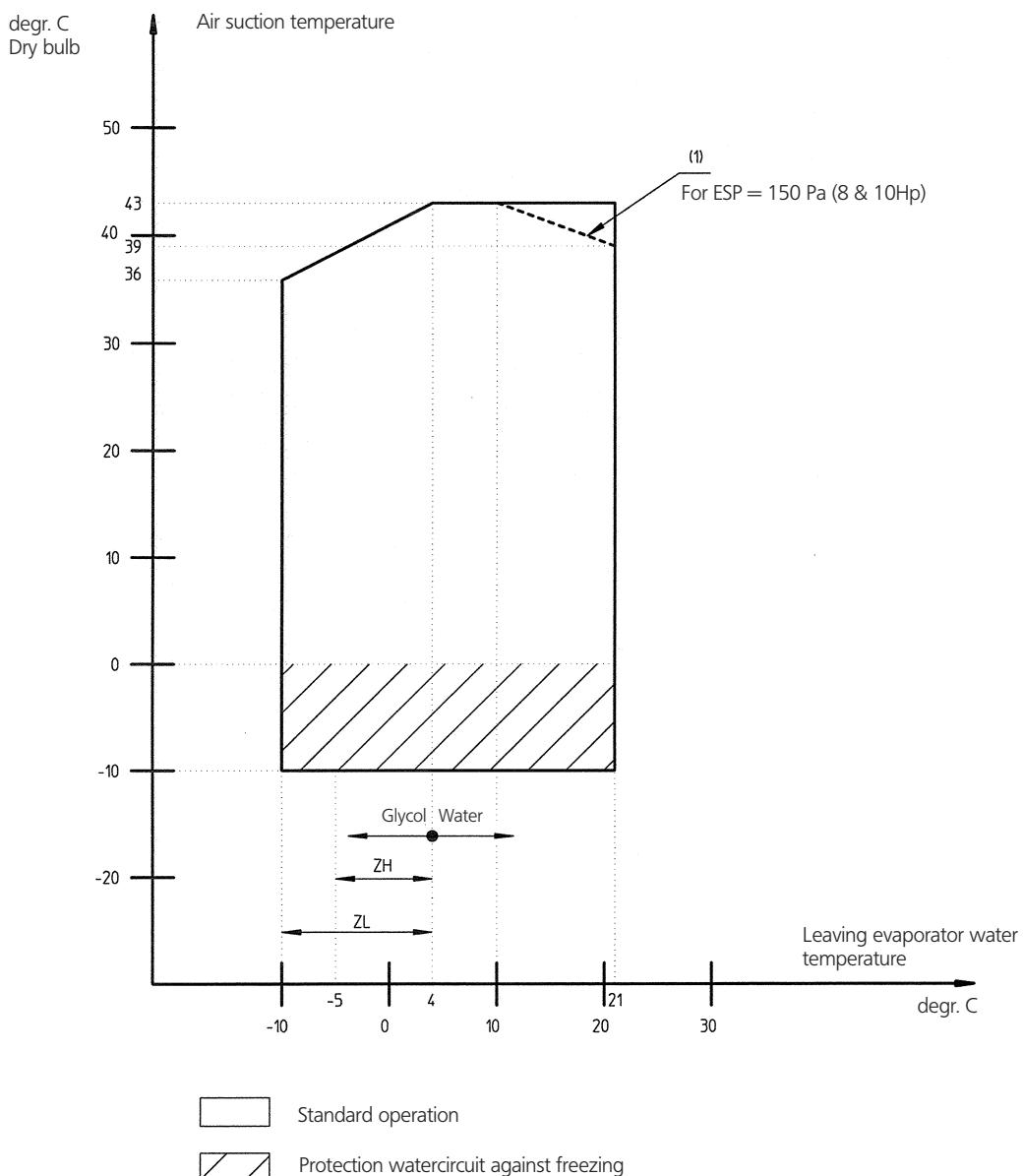
ITEMS	Cooled water		Tendency if out of criteria
	Circulating water (below 20°C)	Water supply	
Items to be controlled:			
- pH at 25°C	6.8 - 8.0	6.8 - 8.0	Corrosion + scale
- Electrical conduct (mS/m) at 25°C	Below 40	Below 30	Corrosion + scale
(µS/cm) at 25°C	—	—	Corrosion + scale
- Chloride ion (mg Cl⁻/l)	Below 50	Below 50	Corrosion
- Sulfate ion (mg SO₄²⁻/l)	Below 50	Below 50	Corrosion
- M-alkalinity (pH 4.8) (mg SO₃²⁻/l)	Below 50	Below 50	Scale
- Total hardness (mg CaCO₃/l)	Below 70	Below 70	Scale
- Calcium hardness (mg CaCO₃/l)	Below 50	Below 50	Scale
- Silica ion (mg SiO₂/l)	Below 30	Below 30	Scale
Items to be referred to:			
- Iron (mg Fe/l)	Below 1.0	Below 0.3	Corrosion + scale
- Copper (mg Cu/l)	Below 1.0	Below 0.1	Corrosion
- Sulfite ion (mg S²⁻/l)	Not detectable	Not detectable	Corrosion
- ammonium ion (mg NH₄⁺/l)	Below 1.0	Below 0.1	Corrosion
- Remaining chloride (mg Cl/l)	Below 0.3	Below 0.3	Corrosion
- Free carbide (mg SO₂/l)	Below 4.0	Below 4.0	Corrosion
- Stability index	—	—	Corrosion + scale

Names, definitions and units are according to JIS K 0101. Units and figures between brackets are old units published as reference only.

11 Operation range

11 - 1 Operation Range

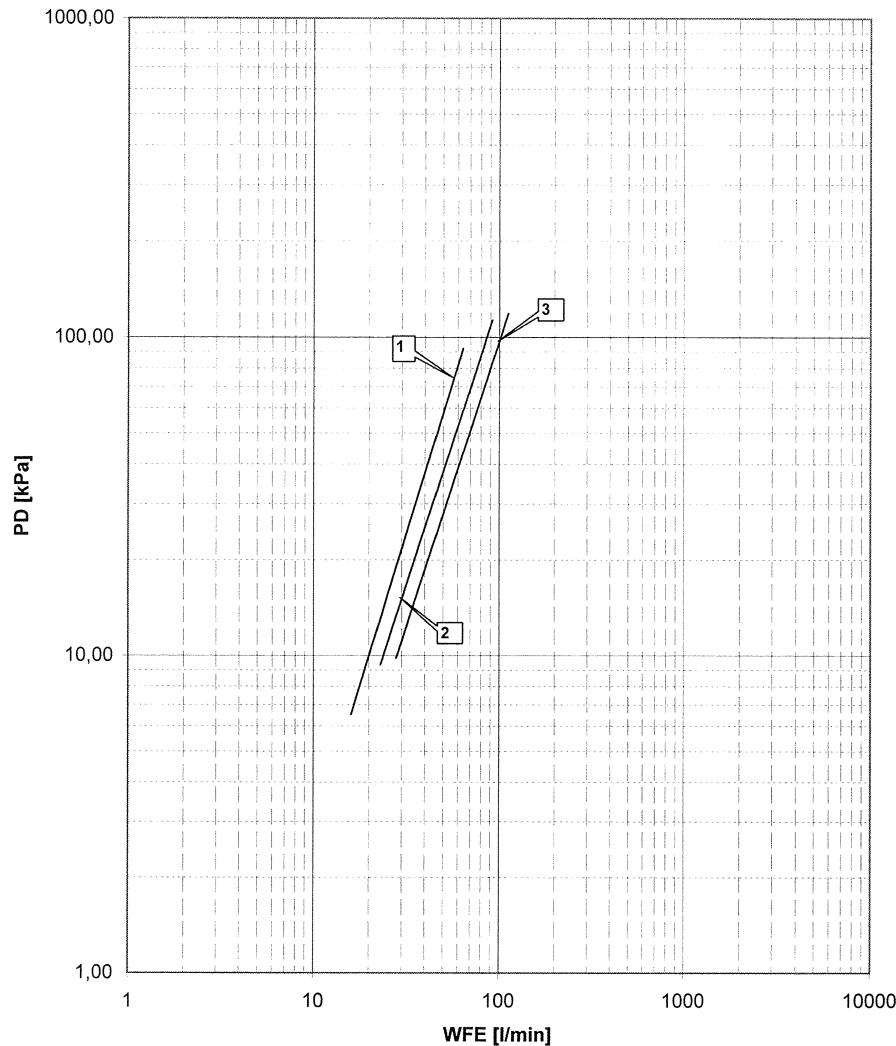
11



4TW55053-1A

12 Hydraulic performance

12 - 1 Water Pressure Drop Curve Evaporator



PD : Water pressure drop through the unit
WF : Evaporator waterflow rate

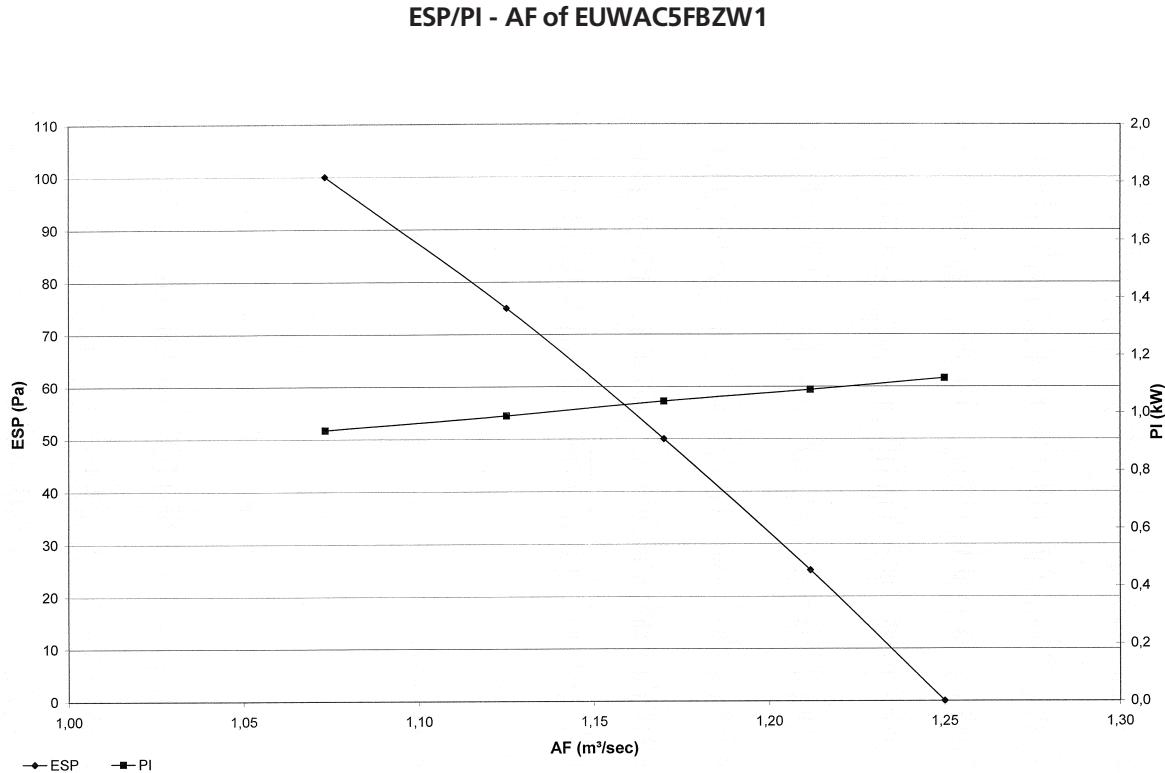
- 1 EUWAC5FZW
- 2 EUWAC8FZW
- 3 EUWAC10FZW

Warning: Selecting a flow outside the curves can cause damage to or malfunction of the unit. See also minimum and maximum allowed water flowrate in the technical specifications.

4TW55059-2A

12 Hydraulic performance

12 - 2 Water Pressure Drop Curve Condenser



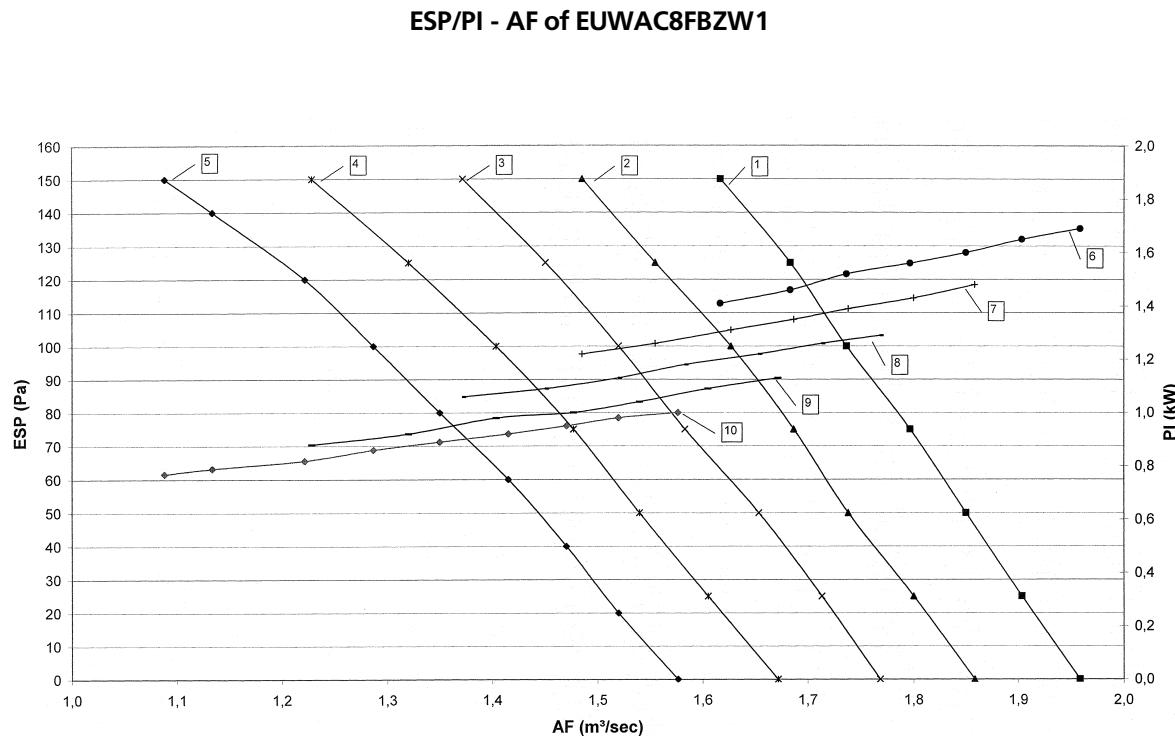
3TW55058-1

NOTES

- 1
 - ESP = External static pressure
 - PI = power input of the fans
 - AF = airflow of the fans
- 2 Values applicable for no headpressure control working only.

12 Hydraulic performance

12 - 2 Water Pressure Drop Curve Condenser



12

3TW55068-1

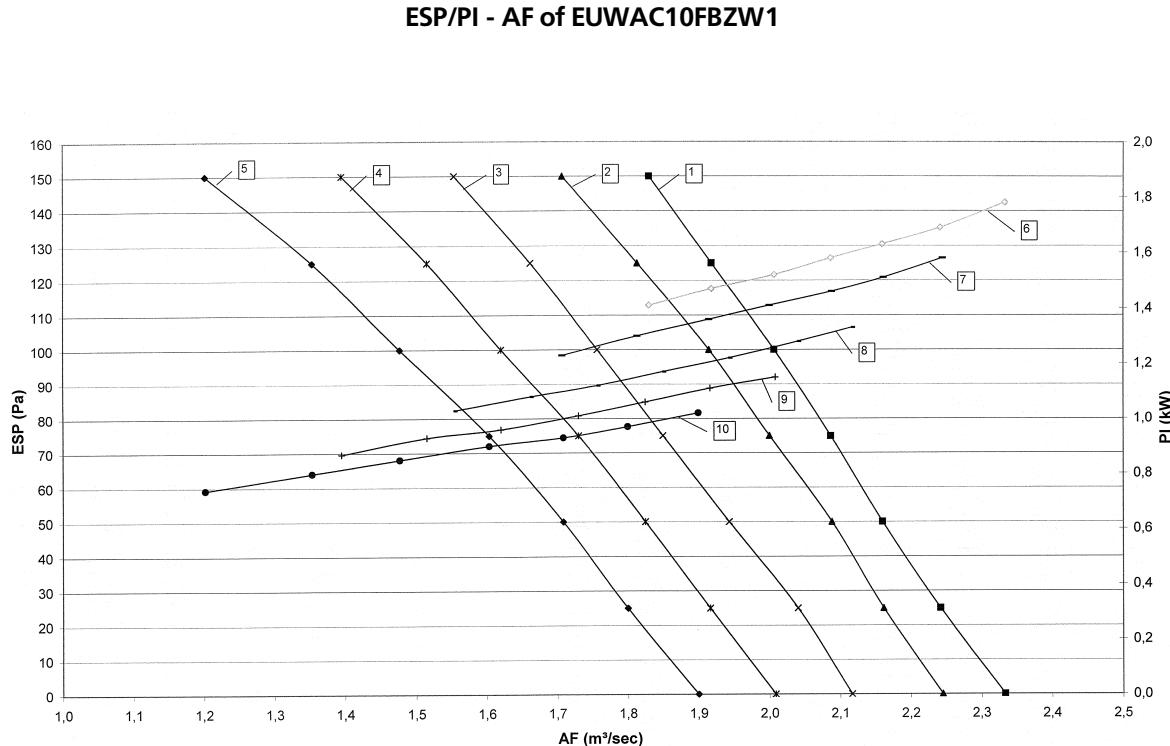
1. ESP with pulley closed
2. EPS with pulley 1 turn open
3. ESP with pulley 2 turns open
4. ESP with pulley 3 turns open
5. ESP with pulley 4 turns open
6. PI with pulley closed
7. PI with pulley 1 turn open
8. PI with pulley 2 turns open
9. PI with pulley 3 turns open
10. PI with pulley 4 turns open

NOTES

- 1 ESP = External static pressure
 PI = power input of the fans
 AF = airflow of the fans
- 2 Values applicable for no headpressure control working only.
- 3 Factory setting is "pulley closed".

12 Hydraulic performance

12 - 2 Water Pressure Drop Curve Condenser



3TW55078-1

1. ESP with pulley closed
2. EPS with pulley 1 turn open
3. ESP with pulley 2 turns open
4. ESP with pulley 3 turns open
5. ESP with pulley 4 turns open
6. PI with pulley closed
7. PI with pulley 1 turn open
8. PI with pulley 2 turns open
9. PI with pulley 3 turns open
10. PI with pulley 4 turns open

NOTES

- 1 ESP = External static pressure
 PI = power input of the fans
 AF = airflow of the fans
- 2 Values applicable for no headpressure control working only.
- 3 Factory setting is "pulley closed".



Daikin's unique position as a manufacturer of air conditioning equipment, compressors and refrigerants has led to its close involvement in environmental issues. For several years Daikin has had the intention to become a leader in the provision of products that have limited impact on the environment. This challenge demands the eco design and development of a wide range of products and an energy management system, resulting in energy conservation and a reduction of waste.



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