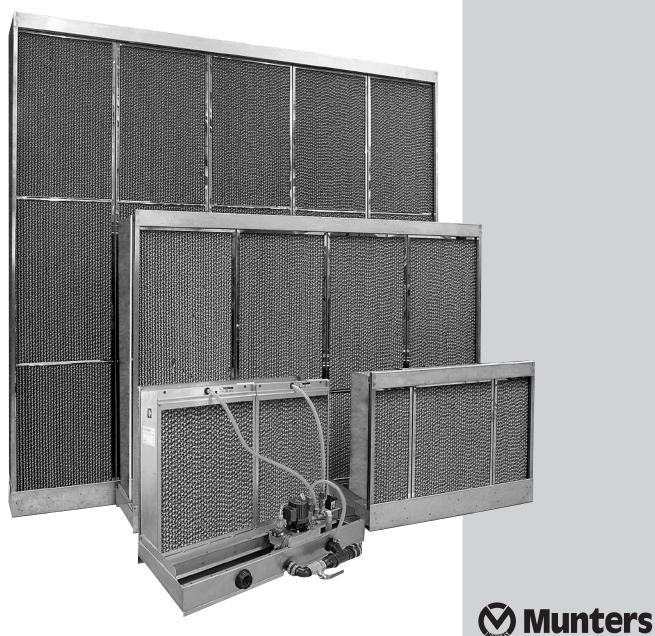
Evaporative Humidifier/Cooler FA6 for AHU's

- Installation instructions
- Operation and Maintenance
- Spare Parts



FA6

Disclaimer

Munters reserves the right to make alterations to specifications, quantities, dimensions etc. for production or other reasons, subsequent to publication.

The information contained herein has been prepared by qualified experts within Munters.

While we believe the information is accurate and complete, we make no warranty or representation for any particular purposes. The information is offered in good faith and with the understanding that any use of the units or accessories in breach of the directions and warnings in this document is at the sole discretion and risk of the user.

This manual has been prepared in English as original language.

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FA6 Installation planning – Connection of cold-water, drain and electricity

Simple to install

The FA6 is easy to install and easy to configure into both existing and new HVAC systems.

For installation you need to have access to electricity (400V/50Hz) and (230V/50Hz) as standard for Pump and Solenoid valves. Pump for (230V/50Hz) or (120V/60Hz) and solenoid valves for (24V AC) are available as option on standard FA6.

Water supply (1-10 bar) and drainage (\emptyset 50 mm). See the technical manual for details.

Connect to existing BMS/control system or Munters can supply a new control system for the control of humidifier/ cooler.

Due to its high performance and compact design it is the ideal replacement for older, less efficient humidifiers/coolers.

Included in standard delivery for connection of water supply.

Direct water system

- 1 Shutoff valve ¹/₂" male connection
- 2 Solenoid valve ¹/₂" female
- 3 Constant flow value $\frac{1}{2}$ " female
- 4 Flexible hose 1/2" female

Circulating water system

- 1 Shutoff valve $\frac{1}{2}$ " male connection
- 2 Solenoid valve for water inlet is included in design
- 3 Flexible hose 1/2" female

Not included in delivery but recommended

- 1 Water filter 18060708 a pore size of 500 µm
- 2 Water trap (Ø 40 mm) 180CU1060 and 40-55 mm adapter

Placement in unit space

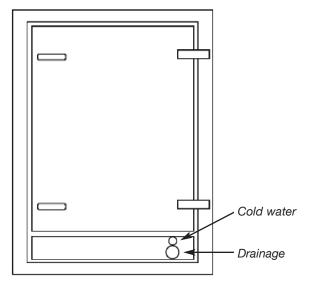
Make sure AHU section where FA6 unit will be placed is designed to carry the weight of the unit.

The humidifier is to be installed level and the floor must withstand water.

The unit space is to have a drain for any water spilled during service.

To simplify the installation of piping, it is recommended that a permanent access cover be installed in the lower part of the Inspection hatch.

Make sure access for inspection/service is possible in a safe way through the AHU inspection door.



Water connection

Circulating-water system

The total water consumption can be calculated using the instructions in FA6 Technical manual page 18.

The necessary water pressure can be found in table below. The cold-water supply is to be installed so that any condensation from the pipes falls into the reservoir. The cold-water supply is provided with a shutoff valve to shut off the water supply during service. A water filter having a pore size of 500 μ m is recommended to be installed.

Direct-water system

The total water consumption can be found in FA6 Technical manual, page 17.

The cold-water supply is to be installed so that any condensation from the pipe falls into the reservoir. The cold-water supply is to be provided with a shutoff valve in order to be able to shut off the water supply during service. A water filter having a pore size of 500 µm is recommended to be installed.

Pressure requirements at water supply connection point

	Pressure re	quirements
	Circulating water	Direct water
Required min. pressure at connection point	500 kPa* (5.0 bar)	150 kPa (1.5 bar)
Permitted max. pressure at connection point	1,000 kPa (10.0 bar)	1,000 kPa (10.0 bar)

Air filter

The humidifier is to be equipped with a pre-filter of at least EU3 class. This will prevent dust with particularly long fibres from sticking to the inlet side of the humidifier.

For installations where the air contains organic dust, a fine filter of at least EU7 class is recommended.

Water discharge

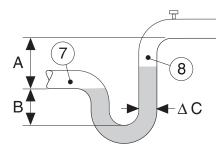
The discharge pipe from the humidifier is connected via the rubber socket and the recommended water trap to a wastewater system.

The water trap must be sized to take into account the maximum under pressure in the humidifier reservoir during operation, i.e. at start-up when the fan is running and the dampers are fully closed.

To calculate the size of the water trap required:

Suction side (normal installation)

1. With the fan running and all dampers closed, measure the under pressure (P) downstream.



2. Use the following formula to design the water trap: $A \ge P + 25 \text{ mm}$ $B \ge (P + 25)/2 + 25 \text{ mm}$ $C \ge 32 \text{ mm}$ (Ø 40 mm) if using Munters Water trap.

To avoid design and installation problems of the water trap we recommend the use of Munters standard Water trap, art no 180CU1060.

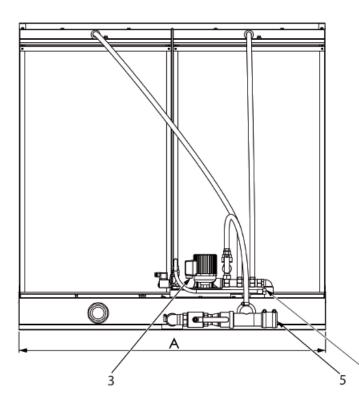


Mounting instructions

Suction side fan after humidifierMount pressure reduction hose A inside AHU unit, after the humidifierPressure side (fan before humidifier) Mount pressure reduction hose A outside AHU unit.

Technical specifications

Connection points and access space requirements for service



Pump size (ref. p. 9)	Voltage V ±10%	Frequency Hz	Power W	Rated current A
8 KTF16	3-phase Δ230/Y400	50	49	0.26/0.15
9 KTF51	3-phase Δ230/Y400	50	75	0.38/0.22
10 KTF81	3-phase Δ230/Y400	50	140	0.71/0.41
11 KTF82	3-phase Δ230/Y400	50–60	220	0.95/0.55

Electrical data – circulation pump

Electrical - solenoid valve for step control

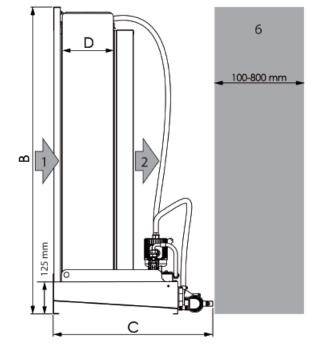
Voltage V ±10%	Frequency Hz	Power W
1-phase 230 V(AC)	50–60	43/24
24 V(AC)	50–60	15

Drain capacity

Bottom valve only	30 l/min
Overflow protection only	30 l/min
Bottom valve + overflow protection	60 l/min

Stated drain capacity is valid when using 50mm drain pipes.

- **1.** Supply air
- **2.** Humidified air
- **3.** Electrical connection point for pump
- 4. Cold-water connection female threaded coupling, 1/2" 18 mm
- **5.** Discharge pipe with a rubber socket for piping with dimension d=50 mm / 2".
- 6. Access for inspection and servicing



Sound attenuation*

4

	Integral attenuation, dB Octave band Hz							
	63	125	250	500	1,000	2,000	4,000	8,000
FA6-65	3	2	2	2	4	5	8	10
FA6-85	3	2	2	3	5	6	12	15
FA6-95	3	2	3	3	5	7	13	16

*) Sound level for FA6 unit is not above 70 dB.

Maximum continuous operating temperature

	Air	Water
GLASdek	200 °C	40 °C
Mesh reinforced plastic hose	50 °C	50 °C
PVC pipes	50 °C	50 °C
Circulation pump ON	40 °C	80 °C
Circulation pump OFF	75 °C	80 °C

IP classes

Pump	54
Solenoid valve	65
Drain valve	54

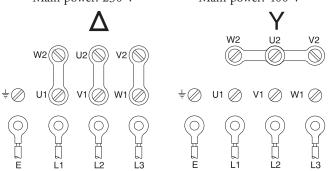
Electrical connections



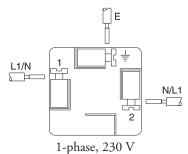
Warning: High voltage is used in FA6 units!

All electrical connections and wiring must be done according to national standards by qualified personnel. To avoid damage on wires during normal operation and service.

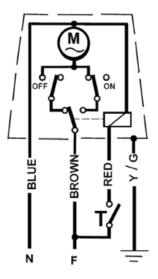




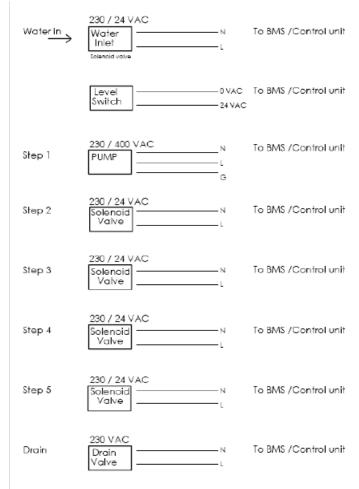
Electrical connection for the solenoid valve



Motorized drain valve



Electrical connection for the solenoid valve



Programming off BMS/control system

This is Munters recommendation of controlling the units in step control mode.

Item Mode	BV drain	SV supply**	Pump step 1	SV step 2	SV step 3	SV step n		
Off	open	0	0	0	0	0		
Ready	closed	1	0	0	0	0		
Step 1*	closed	1	1	0	0	0		
Step 2	closed	1	1	1	0	0		
Step 3	closed	1	1	1	1	0		
Step n	closed	1	1	1	1	1		
SV	Solenoid valve for water-supply / step control 2 / step control 3							
BV	Motorized ball-valve for drain (230 V, 1-phase, 4 wire)							
Pump			Circulation pump (4	00 V, 50 Hz, 3-phase)			

* Allow 5 min delay for complete filling of the tray.

** For direct water SV supply is Step 1.

There should be a time delay off 15 min in the control mode off each step.

Step 1 pump starts.

Step 2 solenoid valve no: 1 opens (must be open min 15 min before second solenoid valve opens).

Step 3 solenoid valve no: 2 opens (must be open min 15 min before third solenoid valve opens).

The time delay off 15 min is also applicable when closing solenoid valves/steps.

Safety responsibility

Each person who works with, or operates, a humidifier is primarily responsible for:

- Personal safety, the safety of others, and the prevention of damage to the humidifier
- The humidifier being operated correctly
- Electrical wiring must be done according to national standards by qualified personnel.

These instructions explain how the humidifier is to be used. These instructions are only recommendations and are not a substitute for the responsibility stated above.

Improper use of equipment

If the humidifier is used improperly, personal injury or damage to the product may occur.

The humidifier may not be placed in operation before the product, or the system of which the humidifier is a part has been declared to agree with the specifications of the machinery directive and its supplements. The pump motor must be provided with a trip switch so that the power can be cut off during service and maintenance work. The trip switch shall be mounted on the humidifier. All electrical cabling must be secured in a safe way to avoid damages during normal operation or service or prevent the removal of cassettes.

FA6 unit with all electric components must be included in AHU emergency stop function.

The pump motor is to be protected by a motor protection device.

Warning: The humidifier may not be connected to any voltage or frequency other than that shown on the rating plate.

Note: Do not step on unit or drain/water pipes.

Disposal of used humidifier cassettes

The material used in cassettes is not combustible. Used cassettes should therefore be treated in the same way as other incombustible materials such as plasterboard or bricks.

The material is to be disposed of at sites approved by the authorities.

Dimensions, weights and pump sizes

					FAG	5-65		FA	5-85		FA	6-95	
					C=630 mm, D=100 mm		C=630 mm	, D=200	mm	C=730 mm	n, D=300	mm	
	Dime	nsions m	Q cass	ty ettes	Pump size	Wei k	ght g	Pump size	Wei k		Pump size		ight kg
	Α	В	Width	Width		Wet	Dry		Wet	Dry		Wet	Dry
Size			300mm	600mm									
060-060		600			8	44	23	8	50	26	8	58	28
060-090	600	900		1	8	49	26	8	57	30	8	70	33
060-120		1200			8	52	28	8	64	33	9	80	38
090-060		600			8	60	29	8	69	33	8	84	39
090-090	900	900	1	1	8	66	32	8	78	38	8	100	46
090-120		1200			8	73	35	8	91	43	9	116	53
120-060		600			8	76	35	8	88	41	9	106	48
120-090	1200	900		2	8	84	39	8	100	46	9	129	56
120-120		1200			8	92	42	8	115	52	9	148	64
150-090		900			8	103	48	8	124	56	9	159	67
150-120		1200			8	113	51	8	142	62	9	184	79
150-150	1500	1500	1	2	8	123	55	9	159	71	9	208	90
150-180		1800			8	134	60	9	178	79	9	237	102
150-210		2100			8	141	64	9	197	88	9	262	113
150-240		2400			8	150	68	9	212	95	10	286	123
180-090		900			8	118	50	8	142	61	9	185	76
180-120		1200			8	134	59	8	169	74	9	218	91
180-150	1800	1500		3	8	146	64	9	187	82	9	247	104
180-180		1800			8	158	70	9	210	92	10	281	118
180-210		2100			8	165	74	9	233	102	10	309	130
180-240		2400			8	177	79	9	250	109	10	338	142
210-120		1200			8	156	68	9	197	86	10	254	107
210-150		1500			8	169	74	9	219	96	10	288	121
210-180	2100	1800 2100	1	3	8	184 193	81 85	9	245 271	108 118	10 10	328 362	138
210-210 210-240		2400			8 8	206	85 91	9 9	2/1 292	118	10	395	153 167
240-120		1200			8	175	75	9	221	95	10	286	118
240-150 240-180	2400	1500 1800		4	8 8	191 206	82 89	9 9	246 276	106 119	10 11	325 370	134 153
240-180	2400	2100		4	8	216	94	9	306	131	11	407	169
240-240		2400			8	232	101	9	329	141	11	446	185
240-270		2700			9	247	107	9	359	153	11	483	195
270-120		1200			8	197	84	9	250	107	10	323	133
270-120		1500			8	241	91	9	278	119	10	366	152
270-180	2700	1800	1	4	8	232	100	9	310	134	11	417	173
270-210		2100			8	244	106	9	345	148	11	461	192
270-240		2400			9	261	113	10	372	160	11	503	210
270-270		2700			9	277	120	10	405	174	11	554	231
300-120		1200			8	216	91	9	274	116	11	355	145
300-150		1500			8	235	99	9	304	129	11	403	164
300-180		1800		5	8	254	108	10	341	145	11	459	186
300-210	3000	2100			8	267	114	10	380	161	11	505	207
300-240		2400			9	286	122	10	408	173	11	554	227
300-270		2700			9	305	130	10	445	188	11	610	250
300-300		3000			9	336	141	10	462	222	11	638	309

Humidifier with height over 210 cm are delivered disassembled. Upon request other sizes can be delivered disassembled.

Installation

Delivery conditions and storage

Every humidifier is inspected before being delivered to ensure good quality. If a humidifier needs to be stored before installation, it must be covered and protected from physical damage as well as from dust, water and snow. Keep the humidifier in its packing as long as possible.

- Humidifiers 060-060 up to 210 are delivered ready assembled.
- Humidifier with height over 210 cm are delivered disassembled.

Upon request other sizes can be delivered disassembled.

Note that the stainless-steel self-tapping screws and the cover plate between the unit casing and the humidifier are not part of the delivery.

Inspection

Remove the packing material and check that the humidifier has not been damaged in transport. Damage must be reported prior to installation.

Transport and lifting

The humidifier must always be handled carefully. Provided that the packing material has not been removed, the humidifier can be lifted by a crane or fork-lift truck. If a crane is used, measures must be taken to prevent damage to the cassettes, pump and discharge pipe.

Please note that units larger than the following height (see Chart 1 below) have cassettes with a weight of more than 25 kg/pc! Be careful when lifting /removing the parts to avoid injuries.

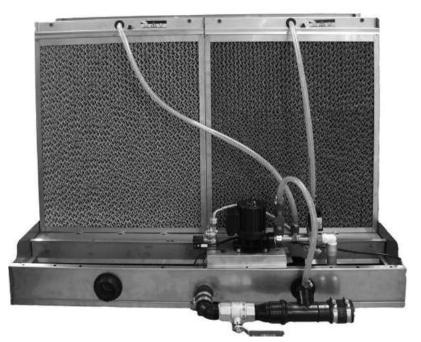
Caution: Spilled water can cause slippery surface.



Weight in motion, over 25 kg. Be careful when moving the parts.

Chart 1

	Unit height [cm]					
	Wet	Dry				
95% (300 mm)	120	180				
85% (200 mm)	150	270				
65% (100 mm)	300	—				

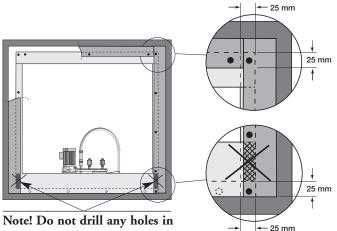


When delivered assembled

- 1. Remove the distribution Headers*.
- 2. Remove the cassettes and any droplet separator*.
- 3. Place the reservoir along with the rest of the components in the AHU unit.
- 4. Continue at item 2 see below.
- * 1-2 if needed small units can in most cases be installed mounted.

When delivered as components

- Place the reservoir in the unit and assemble the side posts, cross beam and rubber sealing. Insert the cassette bridge.
- 2. Secure the cover plate against the unit casing and the humidifier casing, using self tapping stainless-steel sheet-metal screws. The cover plate size is shown in the dimensioned drawing below. Make sure unit is mounted level.

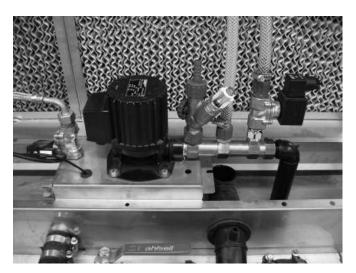


the water tray!

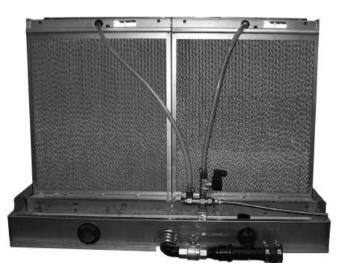
3. Insert the cassettes and the droplet separator, if any, according to the disassembly instructions of cassettes and droplet separator page 15.

Note the direction of the air flow.

- 4. Mount the Discharge pipe, see page 12, and connect it to the drain. Don't tighten the hose clip so tight that the discharge pipe is deformed. A water trap is recommended.
- 5. Assemble the distribution header and connect water hose to distribution pipe. The cassette is locked in place by pressing the snap catches straight down, causing the distribution header to lock into the cassette. Check that the distribution head cannot be lifted upwards.
- 6. Attach the hoses to the distribution header and connect the bleed-off valve to the discharge pipe.
- 7. For units with circulating water, install the pump assembly.



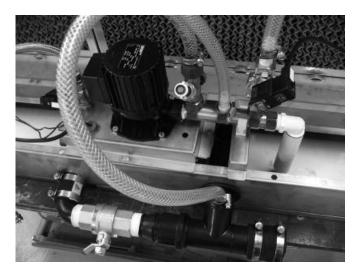
Direct water units install distribution pipe.



8. Connect FA6 unit to BMS/Control system. Please note that all electrical wiring must be done according to national standards by qualified personnel.

Assembly instruction drain system FA6

Drain system is not mounted when unit is delivered.



1. Mount rubber sealing on plug insert plug from inside of tray Mount plug on left or right side depending on what service side is required.



2. Fit rubber sealing washer.



3. Mount lock ring tighten by hand.



4. Mount rubber seal for drain system.



5. Mount the drain system into the rubber seal.



For left/right change side on part 1-2.

6. Mount overfill protection part, hole should be horizontal.



Start-up

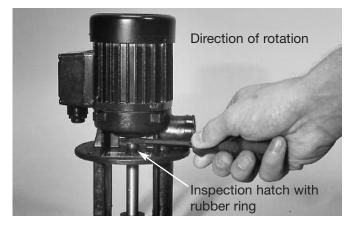
Inspection before startup

1. Remove any loose material in the bottom of the water tray.

2. Close the bottom valve and fill the reservoir with water. Check that the connections are tight.



The level of the water in circulating-water humidifiers is very important. If the level is consistently too low, humidifying performance may be drastically impaired.



3. Start the pump and check the direction of rotation by touching the rubber ring with a screwdriver. Viewed from above, the motor should rotate clockwise. If it rotates in the wrong direction, switch two of the phases.

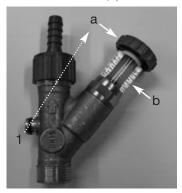
First start up/ Rinsing clean the humidifier

Due to residual material from the manufacturing process off the cassettes the cassettes need to be cleaned/flushed.

- 1. Fill the water tray with water (AHU fan not running).
- 2. Open the bleed-off valve completely and run the pump for about half an hour.
- 3. Shut off the pump and empty the reservoir. Clean the bottom of the reservoir.
- 4. Refill the reservoir and start the pump.
- 5. Repeat the rinsing process until water is clear.

Adjustment of bleed-off flow

Move adjustment wheel from pos 1 to adjustment screw (a). Adjust the adjustment screw (a) to achieve the desired bleed-off flow (b) in l/min. Read off the flow at the lower side of the float. In some cases, (for small humidifiers), the bleed-off may



be so low that the flow cannot be read on the scale. In these cases, remove the hose from the bleed-off valve at the connection with the discharge pipe. The bleedoff flow is then adjusted using a calibrated vessel and timer to measure the water volume.

Service

Periodic maintenance

Periodic maintenance is recommended in the spring following each operating season, see below.

Note that no service work may be started before the safety switch of the FA6 unit is in its "off" position.

Annual service

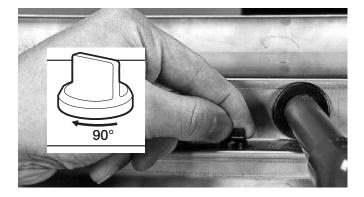
	Service routine
Distribution header	Clean the distribution holes. See below.
Pump filter	Clean the pump filter. See below.
Reservoir	Clean the reservoir. See below.

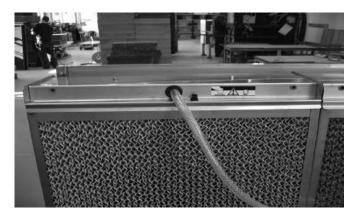
Annual inspection

	Inspection routine	
Check function of level switch	Check water level in reservoir. See below.	
Bleed-off valve	Check the bleed-off valve. See below.	
Humidifier cassette	Check that the cassette becomes evenly wetted and that no calci- um streaks can be found on the inlet side of the cassette. Carry out fault-finding if necessary See page 16.	
Hoses and couplings	Check that the hoses and cou- plings do not leak.	
Discharge pipe and trap.	Check the discharge pipe and water trap. Clean if necessary.	

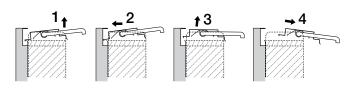
Cleaning distribution holes

- 1. Shut off water supply and empty the reservoir by opening the valve at the bottom before starting service work.
- 2. Open the safety catch on the distribution header by turning a quarter turn. The catch ensures that the distribution header does not release from the cassette during operation.





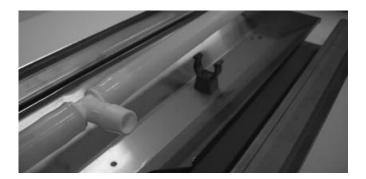
3. Remove the distribution header by unhooking it from the cross beam on the front of the humidifier.

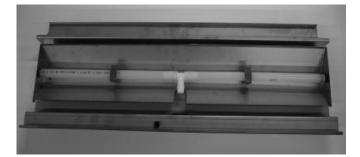


4. Remove the hose from the distribution header. Be careful when removing hose. To avoid that T connection is damaged.



5. Cleaning the distribution header







Option 1.

Connect the distribution-header pipe to a pressurized cold-water system. Flush clean. In most cases, this will be sufficient.

Option 2.

Loosen the end plugs. Remove the distribution-header pipe from the distribution header to gain access to the distribution holes. Clean the holes with a sharp-pointed object and flush out the distribution pipe internally.

6. Re-assemble in reverse order.

Cleaning the reservoir and pump filter

1. Remove the end plate on the pump filter and pull the rest of the pump filter out. Clean the pump filter in any way convenient.

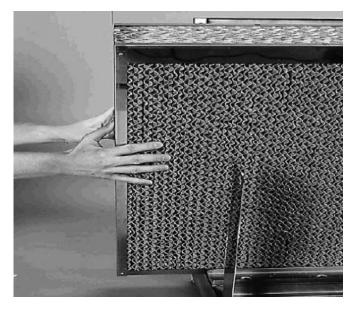


2. Clean the bottom of the tray. Rinse with water and make sure that the residue is washed into the drain.

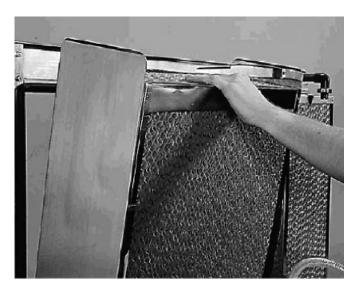


Disassembly of cassettes and droplet separators

1. Remove the distribution header as shown in



2. If a droplet separator has been installed, it is removed in the same way as the cassettes, see photos above or below.



Great care is to be exercised in handling the humidifier cassettes so that the GLASdek material is not damaged. Always push in, pull out, or lift the cassettes by grasping the metal frame.

Caution: Spilled water can cause a slippery surface.

- 3a. If the cassettes are to be removed from the side, first lift up the guillotine.
- 3b. Cassettes can also be removed from the open tray side, in the direction of the airflow.

Restart after service

- 1. Shut the bottom valve.
- 2. Switch on the pump's safety switch.
- 3. Check that the snap catches on the top of the distribution headers are in place. Push the catches downward.
- 4. Check and adjust, if necessary, the bleed-off flow.

Fault-finding

Fault-finding table

If the humidifier fails to function properly, the check list below may help in finding the fault before contacting the Munters service organization. The plant's maintenance personnel will be able to easily identify simple faults with the help of the check list.

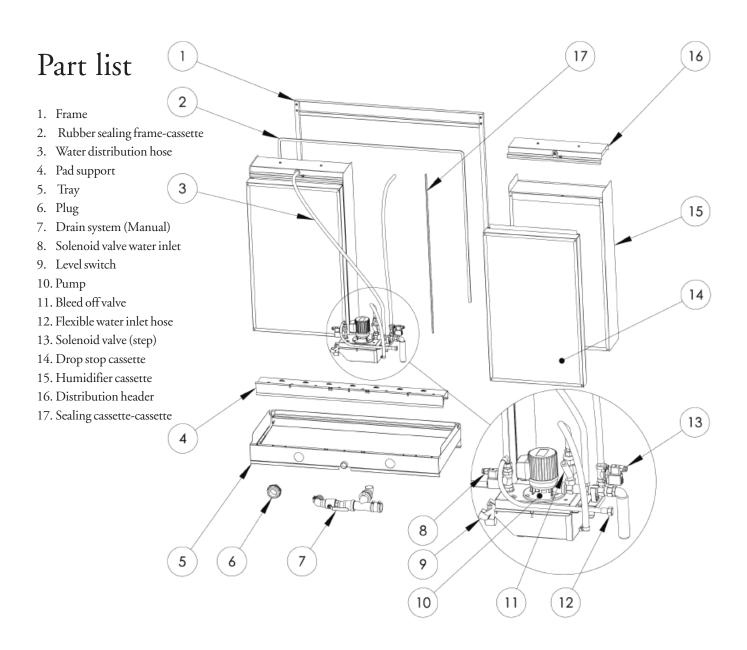
Fault indications	Possible fault	Remedial measures	
	Discharges pipe damaged or improperly connected	Check all connections. Replace if necessary.	
Water leaking from unit.	Reservoir or connection pipe leaking.	Look for leaks in the reservoir and connec- tions. Tighten or replace the faulty material.	
	Condensate problem.	Insulate tray and water pipes.	
	Cassettes are not properly mounted.	Check that the cassettes have been installed correctly according to the airflow arrows and that the seals between the cassettes are not leaking.	
Water droplets entrained in airflow.	The distribution header has been damaged or improperly installed.	Check that the connections are not damaged and not leaking. Check that the distribution header has been installed properly and that the snap catches are in the locked position.	
	The airflow rate is too high.	Measure that the air velocity rate across the humidifier surface. Reduce the velocity if too high, or install a droplet separator.	
Uneven water distribution over the cassettes.	The holes in the distribution header have become clogged by minerals.	Clean the hole or replace the distribution header, if necessary.	
	Insufficient water to the distribution header.	Check the function and direction of rotation of the pump. Clean the distribution header. Check the water level in the reservoir and adjust the float valve if necessary.	
Excessive calcium deposits on the inlet side of the cassettes.	Excessive mineral concentrations in the reservoir.	Check the bleed-off flow. Adjust if necessary.	
	The water quality has changed.	Measure the water quality and adjust the bleed-off flow if necessary.	
Calcium deposits on some parts of the cas-	Uneven water supply.	Check that the water-distribution system does not leak or that it has not become clogged. Clean or replace faulty parts.	
settes.	The interval between humidifier being on and off is too short.	Check how the humidifier is controlled. Change the cycle time if necessary.	

Spare parts

Ordering spare parts

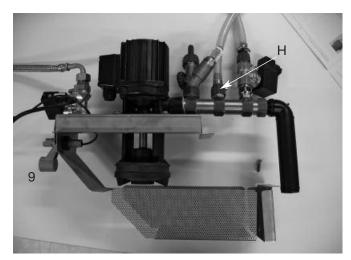
Spare and replacement parts can be ordered from your local Munters company. For addresses and telephone numbers, please refer to the back page of this manual. When ordering parts always try to provide the following details:

- FA6 type/part no. (refer to identification plate on unit)
- Date of manufacture (refer to identification plate)
- Serial number (refer to identification plate on unit and also illustration to the right.)
- Description of spare part required
- Article number of spare part required
- Quantity required



Spare-parts list

3.	Distribution hose ¹⁾
8.	Solenoid valve water inlet 3/8" 18018046
9.	Level switch
10.	Circulation pump
	Pump size;
	8 KTF1618060521
	9 KTF51
	10 KTF8118060524
	11 KTF8218060525
11.	Bleed-off valve
	Scale range l/min
	Flow guard 1-8
13.	Solenoid valve step ½"
17.	Sealing strip on cassette ¹⁾ 18060029
тт	TI. 1.1



¹⁾ The distribution hose and the sealing strip is supplied in lengths of 10 meters.



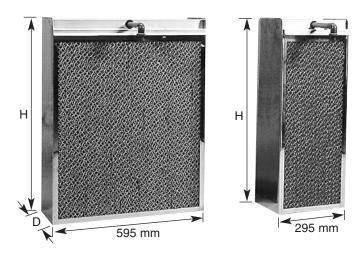






Item	number	for	humidifier	modules

FA6	Module	65% efficiency D = 100 mm		85% efficiency D = 200 mm		95% efficiency D = 300 mm	
height code	height H, mm	Width 295 mm	Width 595 mm	Width 295 mm	Width 595 mm	Width 295 mm	Width 595 mm
060	453	18060401-0	18060411-0	18060421-0	18060431-0	18060441-0	18060451-0
090	753	18060402-0	18060412-0	18060422-0	18060432-0	18060442-0	18060452-0
120	1053	18060403-0	18060413-0	18060423-0	18060433-0	18060443-0	18060453-0
150	1353	18060404-0	18060414-0	18060424-0	18060434-0	18060444-0	18060454-0
180	1653	18060405-0	18060415-0	18060425-0	18060435-0	18060445-0	18060455-0
210	1953	18060406-0	18060416-0	18060426-0	18060436-0	18060446-0	18060456-0
240	2253	18060407-0	18060417-0	18060427-0	18060437-0	18060447-0	18060457-0
270	2253	18060408-0	18060418-0	18060428-0	18060438-0	18060448-0	18060458-0
300	2853	18060409-0	18060419-0	18060429-0	18060439-0	18060449-0	18060459-0



The number of modules required for each FA6 size, is given on page 9.

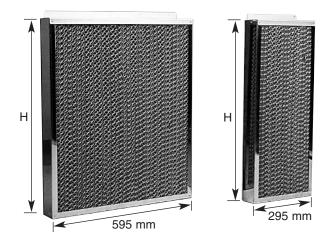
A humidifier module consists of humidifier cassette and a distribution header.

The modules are available in two widhts.

Item number for droplet separator

The number of droplet separators for each FA6 size is the same as the number of cassettes.

FA6	Separator	Width	Width	
height code	height H [mm]	295 mm	595 mm	
060	383	18060601-0	18060611-0	
090	683	18060602-0	18060612-0	
120	983	18060603-0	18060613-0	
150	1283	18060604-0	18060614-0	
180	1583	18060605-0	18060615-0	
210	1883	18060606-0	18060616-0	
240	2183	18060607-0	18060617-0	
270	2483	18060608-0	18060618-0	
300	2783	18060609-0	18060619-0	





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