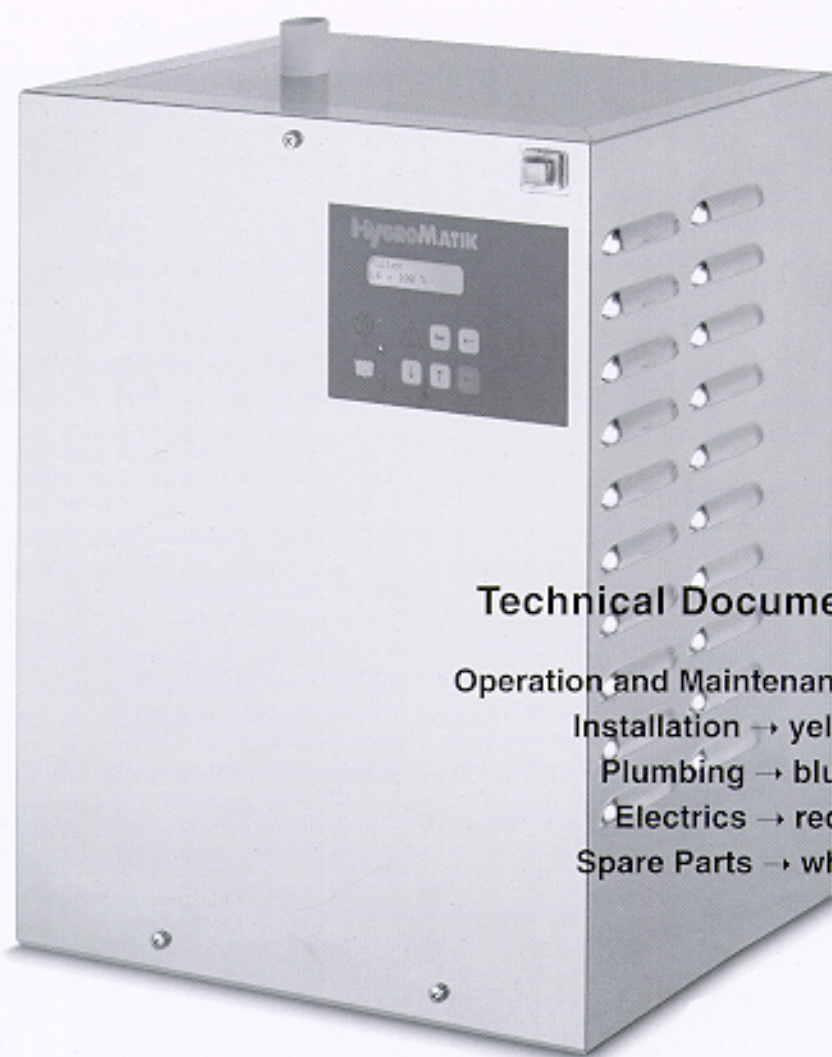


HygroMATIK®

CompactLine

Electrode Steam Humidifiers



Technical Documentation

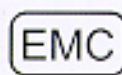
Operation and Maintenance → green

Installation → yellow

Plumbing → blue

Electrics → red

Spare Parts → white



Service Life and Commissioning

All electrode boiler type humidifiers rely upon the fact that water contains minerals and is therefore conductive.

- Normal tap water is ideal, but just what is normal tap water?

People in all areas believe their tap water to be "normal".

The table in section 1.1 headed "Operating Instructions" shows our interpretation of normal to be between 200 and 500 $\mu\text{S}/\text{cm}$ (Micro Siemens per Centimeter) at 15 °C.

Some areas, however, have levels well outside our conception of normal and if the internal electronics of any electrode humidifier are not set correctly, then poor overall performance can result, e.g. fast electrode wear or reduced steam output.

In the HYGROMATIK electrode humidifier the preset blow-down parameters can easily be adjusted to the precise requirements of a particular area by a small change within the programme.

In addition, a plastic star can be inserted between the electrodes to reduce electrode wear. A Super Flush can also be installed in order to extend maintenance periods.

For this reason we recommend that any fitted unit be inspected and monitored early on in its installed life to ensure that the unit is set up correctly and the most efficient operation is obtained.

Your HYGROMATIK dealer will be pleased to do all the necessary commissioning work on request. Contact the service department. They can arrange for a site visit to test the water conductivity, advise on the particular settings required and set the unit to operate at the optimum level for the system installed.

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CompactLine e 0310

Information in this manual is subject to change or alteration without prior notice.



Attention! All work must be carried out by qualified personnel. All electrical installation and work on electrical components of this unit must be executed by a qualified electrician. Switch power off beforehand!

CompactLine Electrode Steam Humidifiers for Use with Tap Water

Technical Documentation

Operation and Maintenance

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1.1 Introduction

Dear customer,

The HYGROMATIK steam humidifier is our answer to today's technical requirements. It satisfies them by means of its operational safety, its operational comfort and its economic efficiency.

To be sure of operating your HYGROMATIK steam humidifier efficiently please read these Operation and Maintenance Instructions.

Use the steam humidifier only in proper and safe conditions, paying attention to all notes in these instructions.

If you have any questions...please contact us:

Main office, Germany (0049)	
Tel.:	(0)4193/895-0
Technical Hotline:	(0)4193/895-293
Fax.:	(0)4193/895-33

1.1.1 Operating Instructions

The HYGROMATIK steam humidifier produces steam using normal tap water.

The CompactLine series of HYGROMATIK steam humidifiers covers 5 basic models with maximum generating capacities from 6 to 58 kg/h.

Be sure to use feed water with conductivity between 50 and 1200 $\mu\text{S}/\text{cm}$.

lower limit										upper limit
	50	200	500	800	1200					
allowable conductivity [$\mu\text{S}/\text{cm}$] of feed water at 15°C for HYGROMATIK steam humidifiers										



Attention: The HYGROMATIK steam humidifier produces steam at a temperature of 100°C. The steam is not to be used as a direct inhalant.

The correct use of the steam humidifier also includes adherence to our installation, dismantling, refitting, commissioning, operation and maintenance instruction as well as taking correct disposal steps.

Only qualified and authorised personnel may operate the unit. Persons transporting or working on the unit, must have read and understood the corresponding parts of the Operation and Maintenance Instruction and especially the chapter „Safety Notes“. Additionally, operating personnel must be informed of any possible dangers. You should place a copy of the Operation and Maintenance Instruction at the unit's operational location (or near the unit).

1.1.2 Typographic Distinctions

- Enumeration with preceding heading: General enumeration.
- » Enumeration with preceding double chevron: Work or maintenance steps that must be followed sequentially.
- Sequential step to be checked.

1.2 Safety Notes

1.2.1 General

These safety notes are required by law. They are for your protection and to prevent accidents.

Warning Notes and Safety Symbols

The following safety symbols shown in the text will warn about dangers and danger sources. Get familiar with these symbols.



Attention: Not observing this warning can lead to injury or danger to your life and/or damage to the unit.



Attention, Voltage: Dangerous electrical current. Not observing this warning can lead to injury or danger to your life.



Note: Materials/operational equipment must be handled and/or disposed of according to the law.



Note: Further explanation or cross-references to other sections of the text in the Operation and Maintenance Instructions.

1.2.2 Operational Safety Notes

In General

Observe all safety and warning notices.

If there should be malfunctions, shut down the unit immediately and secure against being restarted. Faults should be rectified immediately.

During repair work, guarantee operational safety of the unit by using qualified personnel.

Only use original HYGROMATIK spare parts.

For the effective operation of this unit refer to any national regulations restricting or governing its use.

Accident Prevention Regulations

Observe the accident prevention regulations:

UVV "Electrical installation and electrical equipment" (VBG4/BGVA2) or equivalent national codes. In this way you can prevent injury to yourself or others.

Operation of the Unit

Do not impair the safety of the unit.

Periodically check all protection and warning devices for proper functioning.

Safety equipment is not to be removed or put out of operation.

Installation, Dismantling, Maintenance and Repair of the Unit.

Turn off power, when doing maintenance work or repairs to the unit.

Extensions to the unit or installation of additional equipment is only allowed after obtaining written approval from the manufacturer.

Electrical Parts

Work on electrical parts must be carried out by qualified electricians.

Turn off the power and secure against restart when working on electrical parts.

Immediately turn the unit off when faults occur in the electrical energy supply.

Only use original type fuses of correct rating.

Make periodical checks of the electrical equipment.

Defects, like loose connections or burned cables must be repaired immediately.

Test all installed protective devices after installation or repairs (e.g. earthing).

1.2.3 Disposal after Dismantling



Note: The operator is responsible for the component parts of the unit being disposed of according to the law.

1.3 Transport

1.3.1 General



Note: Transport the steam humidifier carefully. Prevent damage from careless loading and unloading and avoid the use of unnecessary force.

1.3.2 Transport Size and Weight

Type	C6	C10	C17	C30	C45	C58
Hight [cm]	54	58	75	75	81	90
Width [cm]	35	38	45	45	47	68
Depth [cm]	20	22	29	29	33	44
Weight [kg]	13	14	22	23	25	36

Dimensions and weights can vary insignificantly.

1.3.3 Packing



Note: Observe the pictograms displayed on the carton.

1.3.4 Interim Storage

During storage, keep the unit dry and protected from frost.

1.3.5 Check for Complete and Correct Delivery of Goods

Upon receipt of the unit, make sure that:

- type and serial number on the name plate correspond to the order and supply information,
- equipment is complete and in perfect condition.



Note: Immediately file a written claim with your shipping agent in case of transport damage or missing parts.

Following are typical conditions of notification to transport companies (national variations possible)*:

Transport Company	After Receipt of Goods
Post	24 hours at the latest
Rail	7 days at the latest
Lorry and railway companies	4 days at the latest
Parcel services	at once

*Subject to change without prior notice.

1.4 Function and Installation

1.4.1 Function

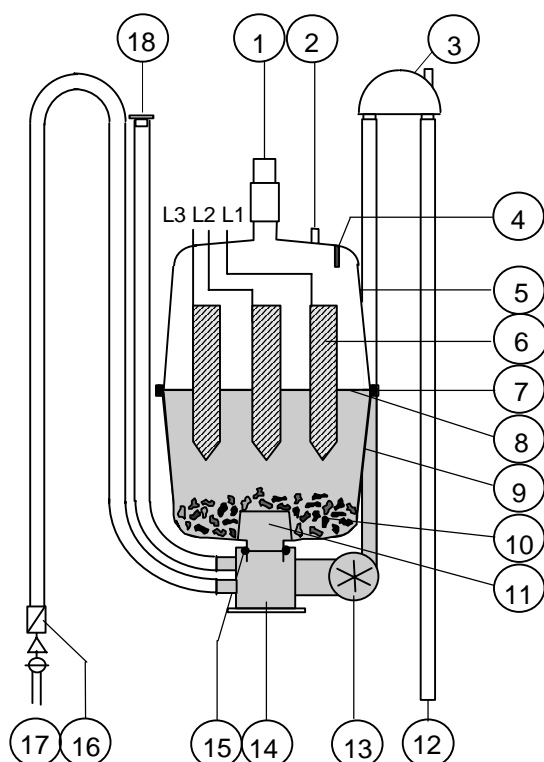
The fact that tap water normally has a certain amount of electrical conductivity is exploited to generate steam. Three or six electrodes in a closed cylinder are directly immersed in tap water and connected to an AC voltage.

As a result of the conductivity, current flows through the water between the electrodes. The electrical energy supplied to the water is converted directly into heat without loss.

The flow of current is a function of supply voltage, the immersed area of the electrodes, their spacing and the conductivity of the water. The steam output of the humidifier is a function of the power or current consumption. By changing the immersed area of the electrodes the current can be controlled.

At the same time the conductivity is held within a certain range (self-adaptive conductivity control) to achieve good continuous system controllability.

The steam generated has a temperature of about 100°C and only a low gauge pressure ("non-pressurised steam"). It is demineralized and largely free from bacteria. The minerals remain in the cylinder.



1.4.2 Installation and Procedures

When the hygrostat or controller calls for humidity the main contactor is operated, the electrodes (6) are supplied with voltage. The solenoid valve (16) admits water into the steam cylinder (5+9).

The current begins to flow when the electrodes start to immerse. The control system de-energises the solenoid valve and interrupts the admission of water when the preselected amperage is reached.

After a short heating period the water between the electrodes begins to boil and steam. The steam generation lowers the water level (8) in the steam cylinder and hence the output will fall. Fresh water is then admitted into the steam cylinder by the inlet solenoid valve (16).

The current consumption of the humidifier is measured and monitored continuously. When starting from cold, under certain circumstances the current may rise to 125% of its rated value at maximum output as a result of the increase in conductivity of the heated water. At this point the electronic overcurrent limiting device cuts in, causing some of the water in the cylinder to be drained. This reduces the immersed area of the electrodes and hence the current consumption.

In the course of time the concentration of salts increases and leads to an increase in the electrical conductivity of the water. The service life of the electrodes could thereby be drastically shortened. A reliable periodic blow-down of some of the concentrated water is therefore very important. This process is controlled to keep the conductivity of the water in the cylinder approximately constant.

Position	Description
1	Steam hose adapter
2	Condensate return
3	Vent pipe
4	Sensor electrode for max. limit
5	Top part of steam cylinder
6	Electrodes
7	Cylinder flange and o-ring
8	Water level
9	Lower part of steam cylinder
10	Scale deposits
11	Coarse strainer
12	Water drain
13	Blow-down pump
14	Cylinder base
15	O-ring
16	Water inlet solenoid valve
17	Water inlet
18	Hose for manual draining with stopper

HYGROMATIK uses a heavy duty waste water pump (13) for blowing down. The proper function of the pump is monitored continuously during operation. The humidifier switches off in the event of a fault, as it could be damaged if the conductivity of the water were allowed to increase further.

Depending on the quality of the water the steam cylinder will be drained completely every 3 to 8 days. The blow-down loss rate for water of normal quality lies between 7 and 15% of the humidification output. About 1 to 7 litres of hot water are discharged within a short time during each blow-down cycle.

Scale (10) collects in the space below the electrodes and is removed during routine maintenance. Some of the smaller pieces, granular material and sludge are removed by the blow-down pump.

A sensor electrode (4) supervises the maximum level of water in the cylinder. If the cylinder is filled to the max. level electrode, filling is interrupted.

This situation may arise when the conductivity of the water is low or the electrodes are worn. However, in the former case the situation generally only lasts for a short time, as the built-in control system in conjunction with the large-area electrodes ensures that the output increases rapidly.

The steam cylinder (5+9) is provided with a flange (7) and clamps. The cylinder can therefore easily be opened in order to remove scale and sludge that have accumulated, and to replace the electrodes if necessary. The sealing between the cylinder and the cylinder base (14) as well as between the top and lower part of the cylinder is with o-rings.

1.5 Maintenance

The HYGROMATIK steam humidifier is largely maintenance free. Nevertheless, operational faults can occur, which have to do with insufficient or improper maintenance. With proper maintenance the unit will operate longer so regular maintenance is essential.



Attention: during maintenance:

- Only qualified and authorised personnel should work on the unit.
- Pay attention to safety regulations.
- Take unit out of operation for maintenance work and secure against restarting.
- After maintenance work the unit should be rechecked by qualified personnel for operational safety.

The operating characteristics and maintenance intervals of the steam humidifier are mainly dependent on the existing water quality (total hardness, conductivity) and the amount of steam generated since the last maintenance. Different qualities can lengthen or shorten the period. The residues found in the steam cylinder provide an indication of future maintenance intervals.

The latest point in time at which a cylinder must be cleaned is:

Electronic	Indicator (Display / red LED)
– L – ST	Service-Message: red LED is blinking: - Cylinder-Full, delayed *, - Blow-down Fault *, - Filling Fault *. Unit has been switched off automatically.
– EMP – DS	Message Service in the display (red LED is blinking). Unit has been switched off automatically. *. The message Service can also be indicated by one of the potential free contacts. Refer to the manual "Operation Instructions EMP-Electronic", chapter "Parameter Settings using Code".

* Refer to the corresponding Electronic Operation Instructions chapter "Faults".

1.5.1 Maintenance Work

Depending on what kind of water is used the deposition and crystallisation of hardness constituents can differ, even if there is no difference in conductivity or hardness.

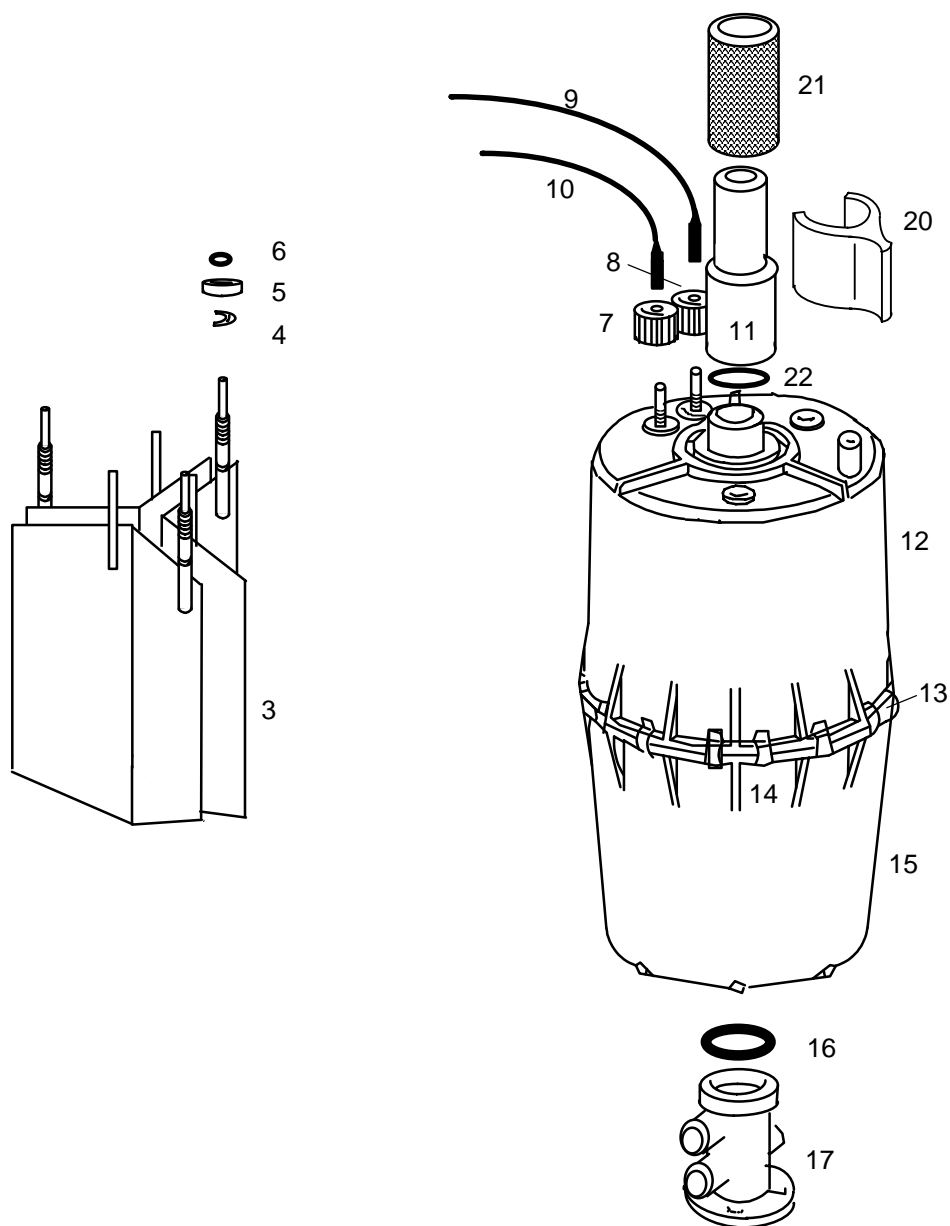
Any information concerning life time as well as cleaning and maintenance periods of the electrodes is only based on typical empirical data.

Cycle	Maintenance Work
4 weeks after commissioning (with normal water quality)	Visual inspection of electrical and mechanical components, cables, connections, etc. Removal of scale from cylinder, water outlet hose and drain pump Inspection of electrodes
6 months (with normal water quality)	Visual inspection of electrical and mechanical components, cables, connections, etc. Removal of scale from cylinder, water outlet hose and drain pump Inspection of electrodes

In most cases the levels of conductivity suggested under 1.1.1 "Operating Instructions" can be considered as typical; although it may be necessary to adapt the parameters individually in a few cases.

Only in rare cases does water need pre-treatment (softening followed by blending to approx. 4-8 °dH, partial demineralisation to avoid unsuitable hardness). HYGROMATIK will provide the addresses of companies specialising in water treatment on request.

1.5.2 Cleaning the Steam Cylinder



Disassembly

» Drain residual water in the cylinder.

Units with EMP or DS control electronics:

» Press  and  on the control panel simultaneously.

Units with L control electronics:

» Press the on/off control switch in position "II".

» Unscrew and remove front panel.



Attention: Wait some minutes after operation, because steam cylinder could be still hot.



Note: The residual water in the cylinder can be drained by the hose for "manual draining" connected to the cylinder base (17).



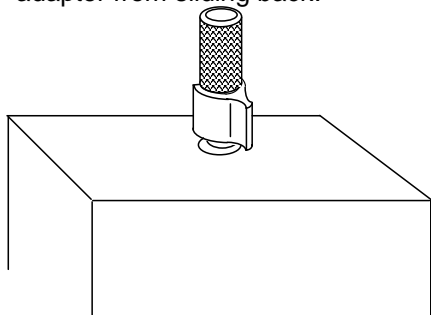
Attention:

- Steam humidifier without filling cup:
The "manual drain" hose is attached to the upper connection of the cylinder base.
- Units with filling cup:
The "manual drain" hose is attached to the lower connection of the cylinder base.

- » Remove the yellow stopper from the "manual drain" hose.
- » Put hose into a sink or a bucket.
- » Completely empty the cylinder of any water.
- » Close the hose with the stopper.
- » Disconnect the steam humidifier from the power supply. Control switch OFF and remove safety fuse F1. Secure against restart.
- » Check that unit is without power.
- » Remove clip (20) between adapter (11) and cabinet.
- » Push steam hose adapter (11) upwards.



Note: Push clip (20) on to the steam hose adapter (11) on top of cabinet to prevent adapter from sliding back.



- » Lift steam cylinder (12+15) out of the base (17) and adapter (11) and remove from humidifier.
- » Unplug the electrodes (10).
- » Unplug the sensor electrode (9).
- » Release its flange clamps (14) and open the cylinder.

Cleaning



Note: When cleaning do not use acids or other chemicals!

- » Remove all scale and sludge from cylinder.

- » Remove deposit from the heating electrodes (3) by knocking them (small amounts that remain are acceptable).
- » Inspect the inside of the top part of the cylinder for furring and any electrical bridging (black grooves) between the electrodes and their bushings and remove completely by washing.



Note: Top half of the cylinder must be replaced if electrical bridges have penetrated deeply into the material.

- » Clean cylinder and coarse strainer.
- » Restore the surface of the max. level sensor in the top part of the cylinder to bright metal condition.

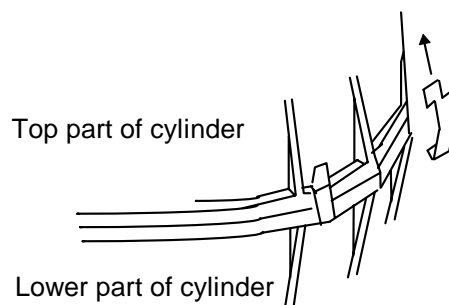
Reassembly

- » Replace the flange o-ring (13) with original HYGROMATIK solvent-free o-ring.



Note: When joining the cylinder the upper and lower parts must have a firm fit.

- » Connect upper (12) and lower parts (15) with clamps (14).



- » Remove the o-ring (16) from the lower part of the cylinder.
- » Insert a new solvent-free, moistened HYGROMATIK o-ring (16) into the cylinder base.
- » Remove o-ring (22) from the upper part of the cylinder.
- » Insert a new solvent-free, moistened HYGROMATIK o-ring (22) into adapter (11).
- » Connect plug (9) to level sensor.
- » Connect plugs (10) to electrodes.



Attention: Check the electrode plugs on the electrodes for firm seating.



Note: Connect the electrode plugs with the matching electrodes. Pay attention to the coloured hand nuts (7)!

» Refit cylinder into the adapter (11).



Note: Connection for the condensate hose (28) must be positioned at the front on the left side.

» Position cylinder vertically and then settle firmly into cylinder base.

» Push adapter downwards onto the steam outlet.

» Fix adapter (11) with clip (20).

» Push in safety fuse.

Switch on the unit and operate for 15 to 30 minutes. Check for any leaks.

1.5.3 Electrode Wear

Electrode wear is dependent on:

- feed water quality (conductivity and hardness) and
- generated amount of steam.



Attention: The electrodes must be exchanged at the latest if the display shows the message **Service** (red LED is blinking). The unit is switched off in case it senses a period of one hour's operation in the „Cylinder full“ condition. Refer also to chapter 1.5. As a guide they must still be a third to one half their original length.

The original length of HYGROMATIK stainless steel large-area electrodes is as follows:

Type	C6	C10	C17-45	C58
Length [mm]	125	155	235	300

Uneven Electrode Wear

If a main fuse has blown the corresponding electrode will not be supplied with power and will not be subject to wear.

In most cases the longer electrode is not supplied with power and so will not wear.



Note: Replace unevenly worn electrodes. Check power supply (Fuses, phase difference). See also Electronic Operation Instructions, chapter "Faults".

1.5.4 Replacing Electrodes



Note:

- If electrodes must be exchanged frequently or
- black sludge collects in the cylinder or
- there is arcing in the cylinder

this indicates, that the conductivity of the water is too high, or the cylinder is not being drained frequently enough. In this case please contact HYGROMATIK for advice.

» Disassemble the cylinder and open, as described in chapter "Cleaning the Steam Cylinder".

» Loosen hand nuts (7) and take out old electrodes (3).

» Insert new electrodes and fasten hand nuts (**by hand only**).

» Replace flange o-ring (13),

» Adapter o-ring (22) and

» Base o-ring (16) with solvent-free, moistened HYGROMATIK parts.

» Reassemble the steam cylinder and fit in the steam humidifier as described in chapter, "Cleaning the Steam Cylinder".

» Connect plugs (10) to electrodes (3).



Attention: Check the electrode plugs on the electrodes for firm seating.



Note: Connect the electrode plugs with the matching electrodes. Pay attention to the coloured hand nuts!

» Connect sensor electrode plug (9) to max. level sensor .(Hand nut (8) - grey)

» Push in safety fuses

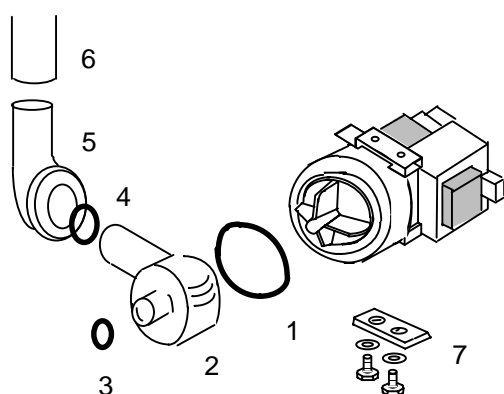
» Switch on unit and after 15-30 minutes of operation check for leaks.

If there is a leak, switch off power and observe safety regulations regarding work carried out with live components.

1.5.5 Cleaning the Pump

- » Disassemble the cylinder, as described in chapter "Cleaning the Steam Cylinder".
- » Remove electric cable from pump.
- » Remove adapter (5) from pump.
- » Remove screws (7) and the pump from cylinder base.
- » Open pump (bayonet joint).
- » Remove residues from discharge hoses and pump. Replace o-ring (2), or body (4) as necessary if any of these parts are no longer in perfect condition.
- » Reassemble the pump.
- » Insert moistened o-ring (3) in the cylinder base lateral opening.
- » Insert pump into cylinder base and fasten with screws (7).
- » Slide the moistened o-ring (4) on to the pump inlet opening.
- » Push adapter (5) over the pump outlet opening.
- » Connect electric cable to pump.
- » Assemble cylinder, as described in chapter "Cleaning the Steam Cylinder".

Switch on unit and operate for 15 to 30 minutes. Check for any leaks.



1.5.6 Cleaning the Solenoid Inlet Valve

Disassembly

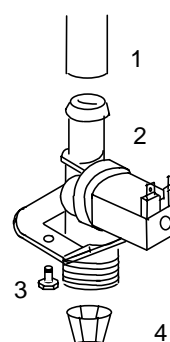
- » Disassemble cylinder, as described in chapter "Cleaning the Steam Cylinder".
- » Switch off unit and pull out safety fuse F1. Secure against restarting.
- » Turn off water supply and unscrew cap nut of external water connection hose.
- » Release connecting hose (1) to cylinder base.
- » Pull out cable plugs.
- » Remove fitting screws from solenoid valve (3).
- » Remove solenoid valve.
- » Remove filter (4) in the supply and clean.

Assembly

- » Insert filter (4).
- » Insert solenoid valve into unit.
- » Firmly fasten solenoid valve with screws (3).
- » Connect external water connection hose.
- » Connect cable plugs to solenoid valve.
- » Connect connection hose (1) to solenoid valve.
- » Assemble cylinder as described in chapter "Cleaning the Steam Cylinder".
- » Open water supply.

The unit can now be put into operation again.

- » Check water supply hose for leaks.



1.5.7 Cable Fitting, Electrode Cables

» Check all fittings for firm seating.



Attention: Loose cable connections lead to excessive contact resistance and overheating of the contact surface.

» Check insulation of the electrode plugs. If damaged the electrode plugs must be exchanged.



Note: Please pay attention to the condition of the electrode plugs especially after refitting several times.

1.5.8 Access Electric Compartment

The control electronics is attached to a mounting plate, which in turned is fastened with two screws at the divider plate between electric and steam compartment.



Note: When removing the upper screw only the complete electronics assembly can be rotated to a vertical position to gain easy access to the components installed at the back wall of the compartment.



Attention, High Voltage: Switch power off before installing or dismantling the electronics assembly. The assembly is not properly earthed when dismantled. Earthing is accomplished by the screws.

1.5.9 Checking Operation

Start the steam humidifier and operate for a few minutes at maximum output if possible.

» Check safety devices.

» Check hose connections for any leaks.

1.6 Dismantling

Removing the steam humidifier follows the same sequence as installing, only in reverse order



Attention: Dismantling the unit should only be carried out by qualified personnel. The electrical supply should only be disconnected by a qualified electrician.

Pay attention to the "Safety Notes" chapter 1.2, particularly to those referring to disposal.

**CompactLine Electrode Steam Humidifiers
for Use with Tap Water**

Technical Documentation

Installation

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2.9 Drill Pattern.....8

2.9.1 Drill Pattern DN258

2.9.2 Drill Pattern DN409

2. Installation



Attention: Installing this unit should be carried out only by qualified personnel. We accept no liability for damages caused by faulty installation.

Observe all safety and warning notices you find on the unit.

Do not connect the unit to electrical power before final installation.

Additional equipment may not be installed inside the unit without prior written consent by HYGROMATIK.

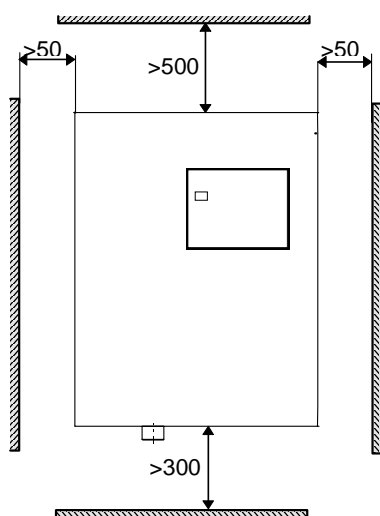
2.1 Steam Humidifier



Note: Be aware of the following when selecting the steam humidifier location.

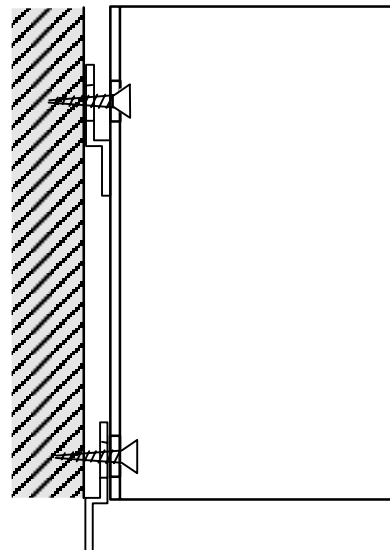
- Degree of protection is equal to IP20.
- Ambient temperature 5 to 40 °C
- Relative humidity below 80 %.
- Distances to the walls in compliance with those in the diagrams.
- The steam manifold should be joined to the steam humidifier using the shortest possible lengths of steam and condensate hoses.
- The hoses must be without sags and kinks and be laid with a continuous slope of 5-10% (otherwise they might sag).

Wall Distances [mm]



Note: It is often advantageous to take into account existing water connections (feed and drain) when selecting the steam humidifier location.

Wall Mounting



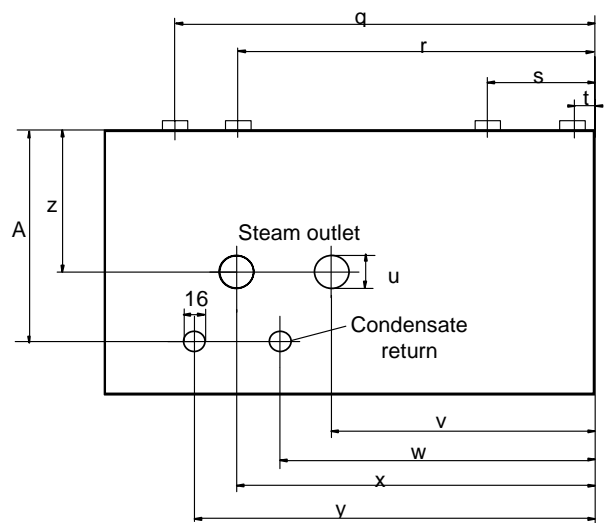
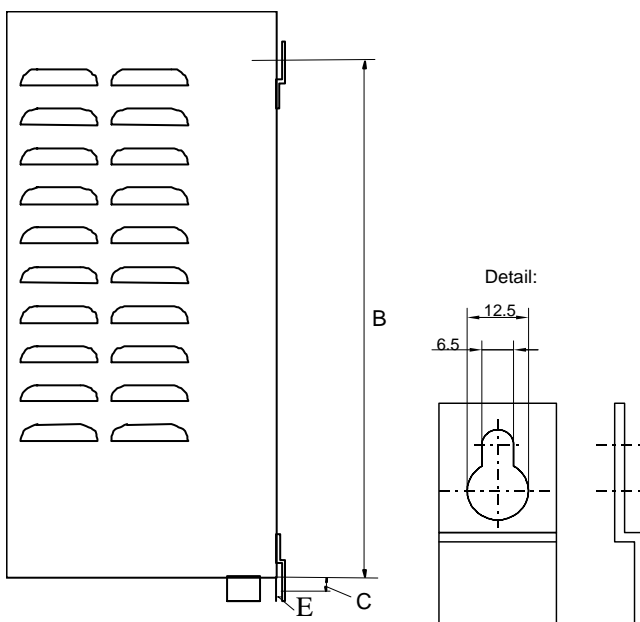
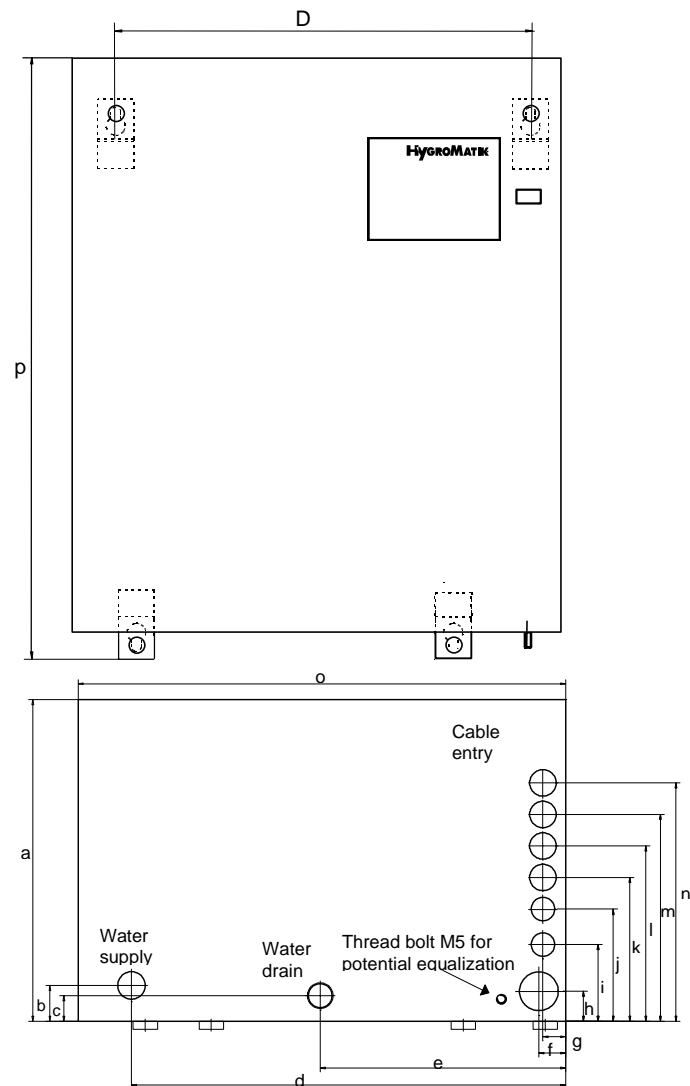
Note: To function properly the steam humidifier must be installed vertically.

- » Position the steam humidifier in the planned location, adjust with spirit level and mark position of hanging bolts. See "Equipment Dimensions" chapter 2.1.1.
- » Hang the unit onto bolts screwed into the marked position and tighten.
- » Fix the unit at the lower brackets.

If there is no suitable wall, it is recommended that the equipment is installed on brackets which can be embedded in the floor.

2.1.1 Equipment Dimensions C6-C58

	C6	C10	C17	C30	C45	C58
a	189	208	275	275	316	384
b	32	35	35	35	35	35
c	22	25	25	25	25	25
d	299	340	407	407	405,5	518
e	217	249,5	265	265	220	205
f	-	-	-	-	30	28
g	23	23	23	23	26,0	28
h	21,5	21,5	21,5	21,5	29,5	29,5
i	56,5	56,5	61,5	61,5	75	75
j	-	91,5	98,5	98,5	110	110
k	-	123	135,5	135,5	141	145
l	-	151	172,5	172,5	172	-
m	-	179	209,5	209,5	203	-
n	-	-	246,5	246,5	234	-
o	334	370	437	437	479	570
p	434	476	650	650	705	797
q	319	348	415	415	413,5	555,5
r	269,5	308	375	375	395	446
s	71	82	102	102	100,5	122
t	15	22	22	22	20	12,5
u	26	26	26	41	41	41
v	-	-	-	-	-	239,5
w	-	-	-	-	-	352
x	250,5	269	302,5	302,5	301	369
y	273,5	300,5	349,5	349,5	348	389
z	92	111	144,5	144,5	165	195
A	135,5	165,5	226	226	246,5	336
B	375	417,3	587	587	644	679
C	13	11	11	11	10	21
D	305	326	393	393	393,5	543
E	5	5	5	5	5	5



2.2 Fan Unit (optional)



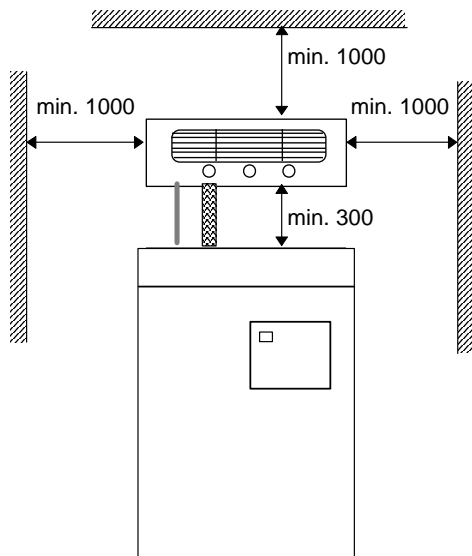
Note: The fan unit should be positioned such that draught effects are avoided. A minimum height of 2 m above floor level is generally sufficient.

- Install the fan unit directly on a wall.

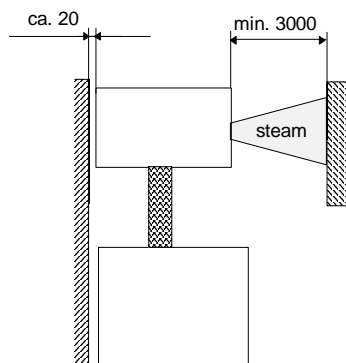
Fan Unit*	Type
Wall mounting	VG 08, 17, 30

* See also "Technical Data".

- The fan unit is mounted above the steam humidifier.
- When using several fan units simultaneously a maximum distance of 5 m from the steam humidifier should not be exceeded.
- The distances to the walls have to comply with the figures in the diagrams.



Fan unit, wall mounted [mm]



Side view, wall mounted fan unit [mm]

2.3 Steam Manifolds

- Install steam manifolds close to the steam humidifier.
- Position control sensors and limiting devices at the proper distance from the last manifold, taking into account the complete steam absorption distance.

The quantity and size of available steam manifolds and the nominal diameter of the relevant steam and condensate hoses can be taken from the table.

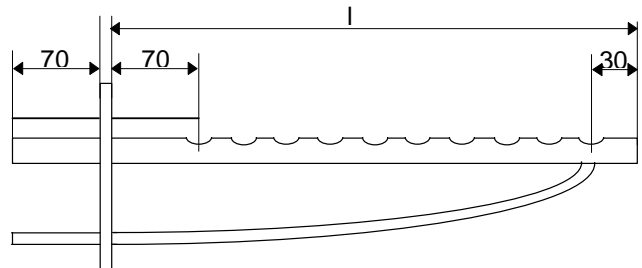
Typ	C6-C17	C30	C45	C58
Steam manifold	1x25	1x40	2x40	2x40
Steam hose	DN25	DN40	DN40	2xDN40
Condensate hose	DN12	DN12	DN12	2xDN12

We recommend the use of two steam manifolds for C45.

Steam Manifold Lengths [mm]

I	220	400	600	900	1200	1500
DN25	x	x	x	x	x	x
DN40	x	x	x	x	x	x

The selected steam manifold length should be the longest standard length that will fit into the duct width.



Steam distributor dimensions: see chapter 2.9 "Drill pattern".

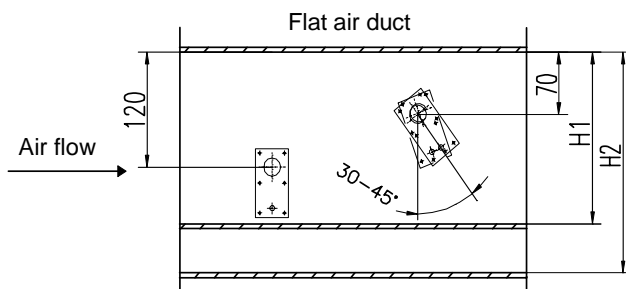
2.3.1 Installation

- Preferably steam manifolds should be fitted on the fan discharge side in an air duct with pressure up to 1200 Pa max.
- If fitted on the fan suction side a maximum pressure of -500 Pa is permitted.

For high pressure systems extensions should be made to the feed and drain hoses depending on the actual total pressure. Detailed information is available on request.

When installing the steam manifolds, please pay attention to the following:

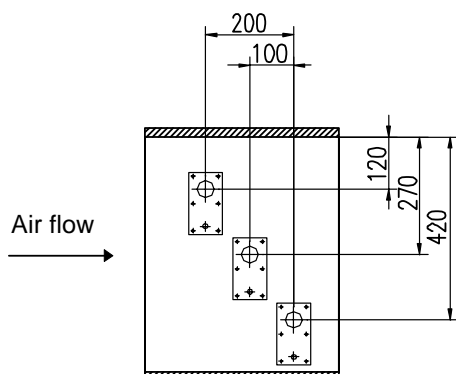
- Steam manifolds are always installed horizontally in the side wall of the duct.
- The air flow may be from either direction.
- A minimum distance of 120 mm to the top of the air duct should be observed.
- The minimum distance may be reduced to 70 mm if the steam manifold is turned at an angle of 30 - 45° to the direction of the air flow.



	H1 [mm]		H2 [mm]
	30°	45°	
DN25	182	168	225
DN40	193	179	230

- Ensure uniform steam distribution in the air duct.

Air Duct	Installation Point
Flat	Different lengths, next to one another
Narrow, high	Equal lengths, above one another. Displaced sideways if possible
Square-shaped	Equal lengths, displaced in height and sideways
Flat, very wide	Opposite one another



If the installation situation is not particularly favourable always check the conditions of air flow carefully, in particular for possible risk of condensation in the air duct.

Please ensure that the air duct is up to the latest technical standard.

Depending on the duct dimensions an additional fastening of the steam manifolds could be required.


2.4 Steam Hose



Note: When installing the steam hose, please pay attention to the following:

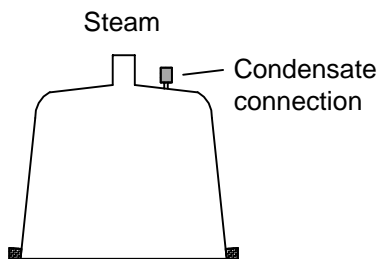
- The steam hose diameter may not be smaller than the steam outlet of the HYGROMATIK steam humidifier (do not restrict the cross-section, otherwise back pressure will increase).
- The steam hose must be without sags and kinks and be laid with a continuous slope of 5-10% (otherwise the hose might sag). See chapter 2.6.
- The steam hose should be as short as possible. In case of lengths of over 5 m the hose should be insulated to avoid excess condensation.
- In the case that steam is distributed by two steam manifolds the T-pieces for the steam and condensate hoses should be installed near the manifolds. If the installation is carried out in this way only one steam hose is necessary for the main part, loss of condensate will be minimised.
- Depending on how the hose is laid, hose clips should be set at intervals of approx. 500 mm.
- Allow access to the steam hose, so that it can be inspected later.
- In case of straight lengths of several meters, it is recommended to place the steam hose in temperature resistant plastic pipe (40 mm dia for hose DN25; 60 mm dia for hose DN40) or to use copper pipe.
- Only genuine HYGROMATIK hoses are capable of withstanding the operating conditions.
- Allow for minimum bending radii:
 - Steam hose DN 25: Rmin = 200 mm
 - Steam hose DN 40: Rmin = 400 mm

2.5 Condensate Hose


 **Note:** When installing the condensate hose, please pay attention to the following:

If the steam manifold is positioned higher than 500 mm above the steam humidifier:

- » Remove condensate plug from connection on the cylinder.

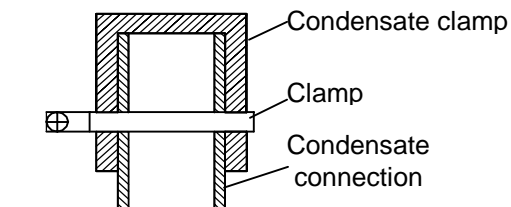


- » Lay the condensate hose with a slope of 5-10% to the steam cylinder so that condensate can flow back unrestricted.

 **Note:** It is recommended to form a loop of 200 mm diameter as a vapour trap provided there is enough space. Possible operating noises can be reduced in this manner.

If the steam manifold is positioned lower than 500 mm above the steam humidifier:

- » Let the condensate flow into a drain.
- » In order to avoid steam losses, a loop of at least 200 mm diameter should be formed.
- » The loop in the condensate hose should be located at least 500 mm away from the steam manifold connection.
- » Ensure that the condensate connection on the steam cylinder is closed with a plug.

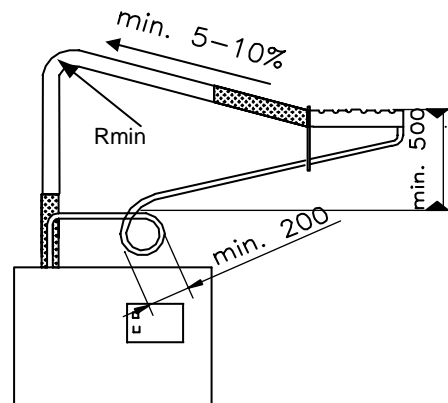


- » Use hose clips at intervals of approx. 500 mm depending on type of hose.

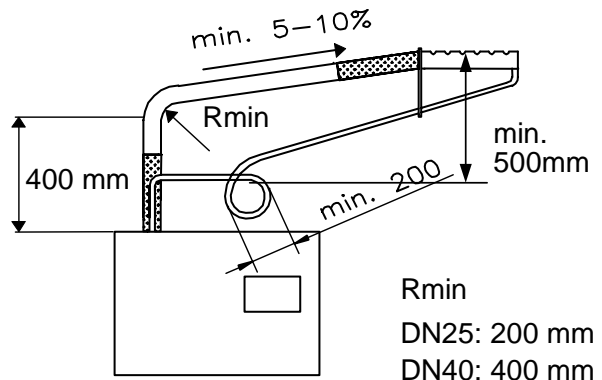
2.6 Installation Examples

If the steam manifold is positioned higher than 500 mm above the steam humidifier.

- » Lay the steam hose at a height of at least 400 mm above unit and then connect to the steam manifold with a constant rise or fall.
- » Lay condensate hose with a slope to the steam cylinder.



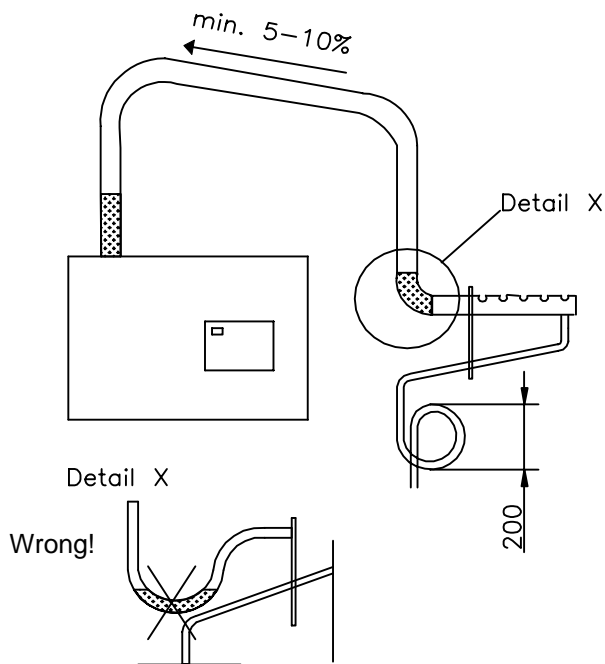
Steam hose with falling slope



Steam hose with rising slope

If the steam manifold is positioned below the steam humidifier:

» Lay steam hose at a height of at least 400 mm above unit and then connect to the steam manifold with a constant fall.



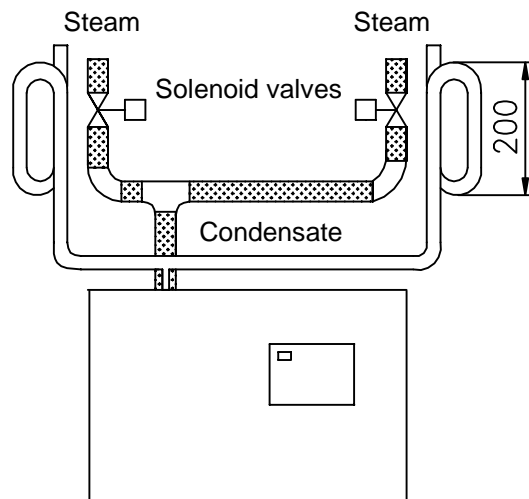
» Lay condensate hose with a loop of 200 mm diameter to the drain.

2.7 Steam Solenoid Valves

When humidifying a number of loads, which are to be controlled separately, using a single steam humidifier, steam solenoid valves can be included in the steam hoses. Valve control has to be provided by the customer.

- Install the vertical risers with flow from bottom to top.
- The best position is just above the steam humidifier.

Hose nozzles are included with the steam solenoid valves for easy installation in the steam hose. The condensate hose must normally be laid with a loop (at least 200 mm) to the steam humidifier or drain.



2.8 Checking



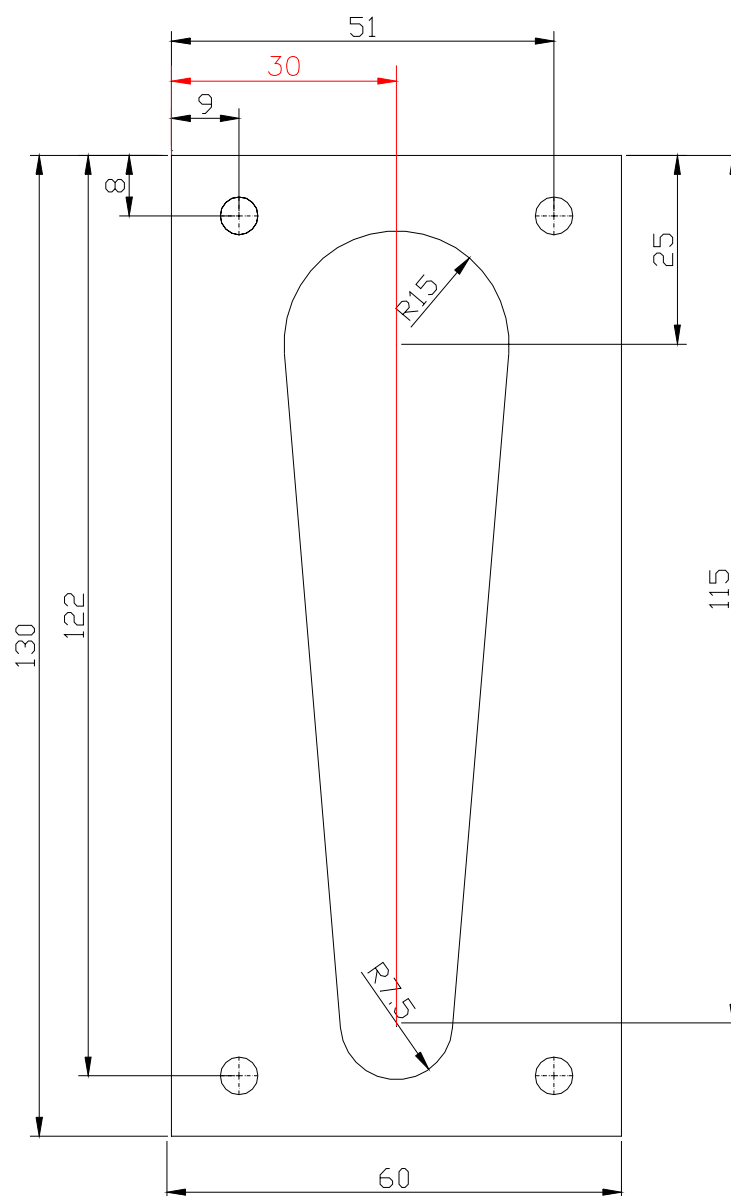
Attention: This unit may only be operated by qualified and properly trained personnel.

Please check the installation using the following list:

- ☐ Does unit hang vertically?
- ☐ Are wall distances to the unit according to chapter 2.1?
- ☐ Does steam hose have a slope of 5-10%?
- ☐ Is condensate hose installed with a loop of min. 200 mm?
- ☐ Is steam manifold positioned correctly?
- ☐ Are all bolts and clamps tightened properly?

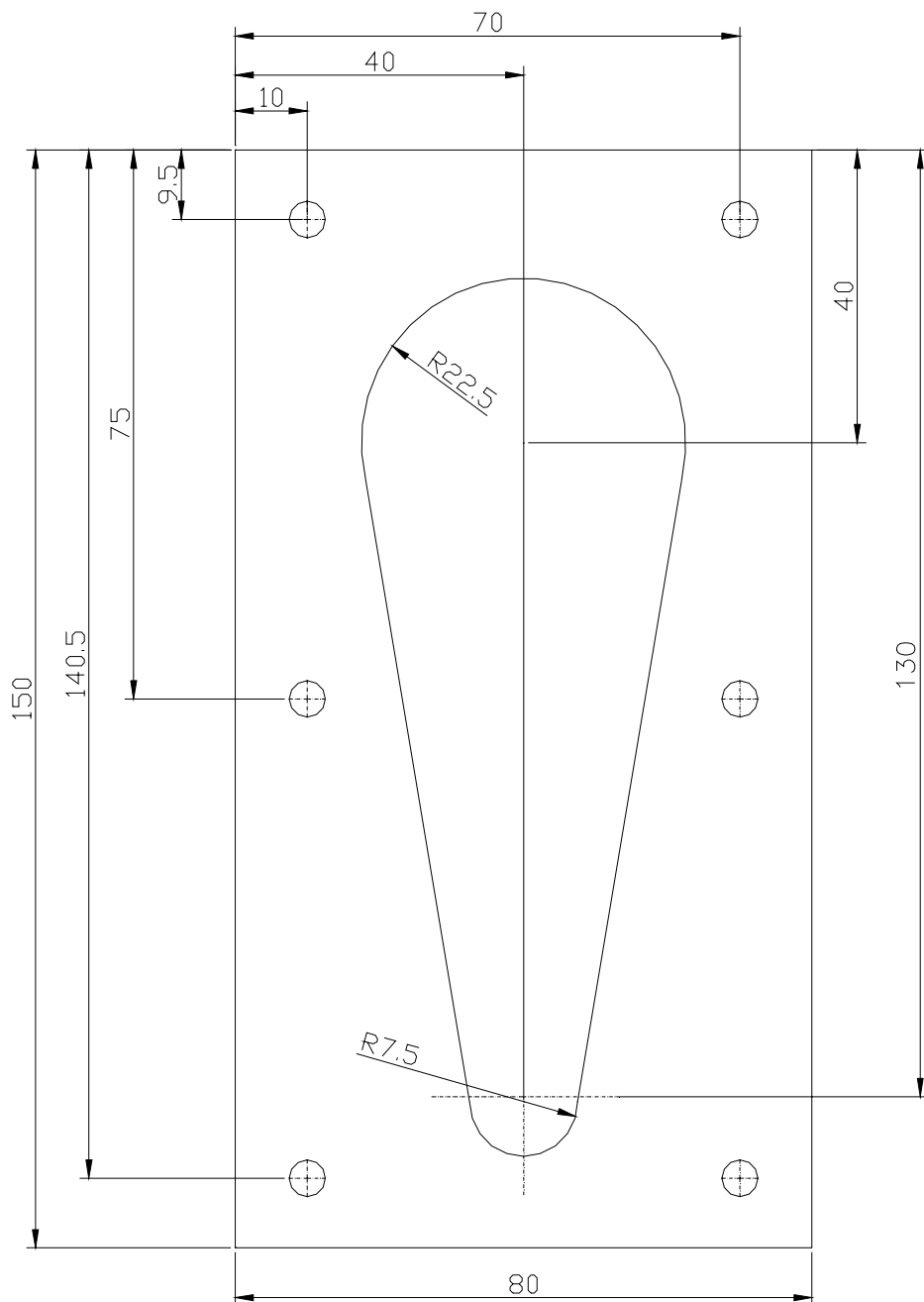
2.9 Drill Pattern

2.9.1 Drill Pattern DN25



depending on print medium there could be dimension inaccuracies

2.9.2 Drill Pattern DN40



depending on print medium there could be dimension inaccuracies

**CompactLine Electrode Steam Humidifiers
for Use with Tap Water**

Technical Documentation

Plumbing

3. Water Installation2

3.1 Operation with Softened Water2

3.2 Water Supply2

3.3 Water Discharge.....3

3.4 Checking.....3

3. Water Installation



Attention: During installation please observe:

- All work must be carried out by qualified personnel.
- Switch off the unit beforehand.
- Observe local regulations of water works or municipalities.
- Do not connect softened water or water with additives and only use water with a conductivity between 50 and 800 $\mu\text{S}/\text{cm}$. Feed water with a conductivity higher than 800 $\mu\text{S}/\text{cm}$ (max. 1200 $\mu\text{S}/\text{cm}$) requires special adjustments – please contact HYGROMATIK.
- Inlet water temperature may be up to 60 °C.
- Water inlet pressure: 1-10 bar
- The discharge shall flow freely into the drain.

3.1 Operation with Softened Water



Attention: Operation with softened water is generally not advisable, because one of the following problems could occur:

- Unacceptably high conductivity
- Salt bridge formation between the electrodes and bushings on the inside of the top part of the cylinder
- Foaming in steam cylinder.

Salt bridges create electrical arcing, indicated by black grooves. The top part of the cylinder must then be replaced, otherwise material will be further damaged and short circuits occur, leading to main fuses blowing.

The foam touches the max. level sensor and triggers a signal indicating that the cylinder is full when it is not and the rated current has not yet been reached.



Note: When the HYGROMATIK steam humidifier is fed with softened water, please contact HYGROMATIK.

- if a water softening system has been installed it is advised to use a mixture of softened water and normal tap water so that the water hardness will be 4 to 8 °dH.

- Usually the conductivity of blended water (mixture of softened water and normal tap water) will be higher than just the tap water at a temperature of 100°C.

The time between an electrode exchange can be prolonged by installing the HYGROMATIK "Cylinder Star".

3.2 Water Supply

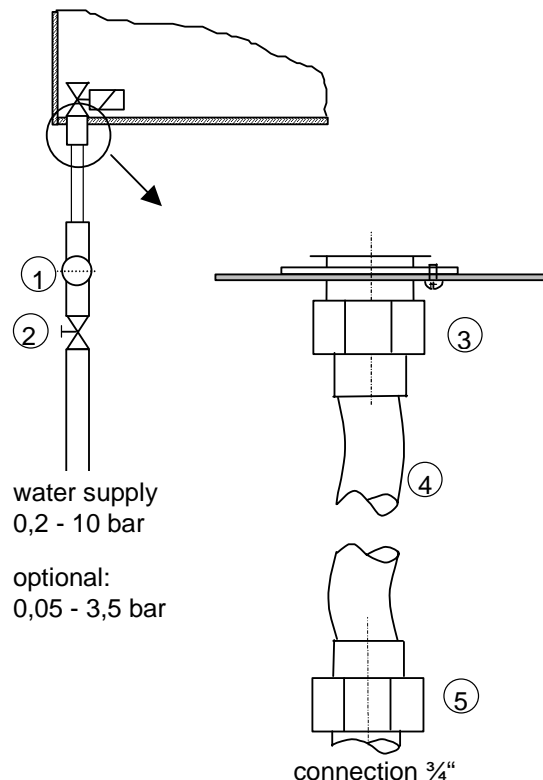
» Install a shut-off valve (2) in the supply hose.

» Install a water filter (1) if the water quality requires it.



Note: Shut-off valve (2) and water filter (1) have to be provided by the customer.

For water supply you can use the delivered water connection hose (3,4,5) with cap nuts on both sides.



Inlet connection of water solenoid valve extends through the bottom tray.

» Screw on cap nut (3) including sealing.

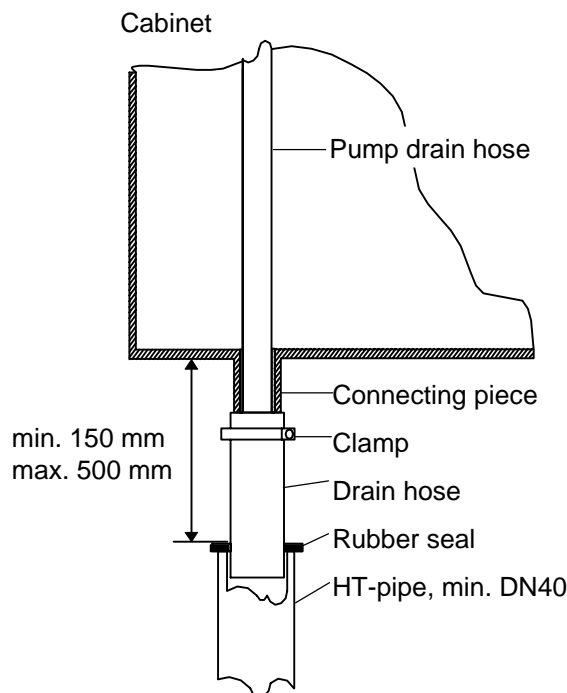


Note: Tightening too much will destroy the fitting.

The strainer must be inside the solenoid valve.

- » Use cap nut (5) (internal thread $\frac{3}{4}$ ") with sealing inside for external water connection.

3.3 Water Discharge



Attention: Discharged water must flow freely!

For the water drain, we recommend using a drain hose (flexible hose).

Attention:

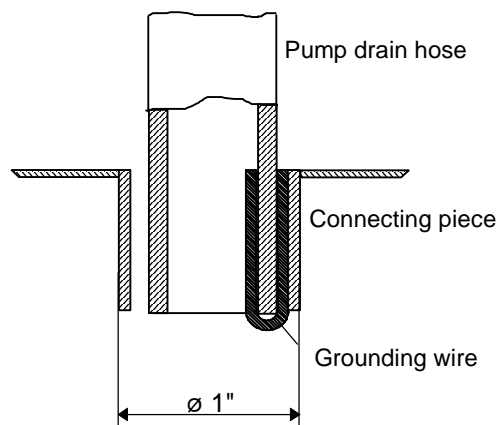
- Do not bend, shorten or lengthen the discharge hose.
- Water drain shall withstand temperatures up to 95°C.

Install water drain system as follows

- Drain hose 1" extending 150 - 500 mm from the outlet of the housing, so that the discharge can flow freely into a pipe having a minimum inside diameter of 40 mm. Place a rubber seal between pipe and hose.
- Push drain hose 1" over pump drain hose and fasten at the connecting piece.

On the inside of the connecting piece there is a grounding wire. The end of the pump drain hose is pushed over the grounding wire. During blow-down the grounding wire will be in direct contact with the water. Any residual currents are thereby grounded.

Between the discharge hose and the inside of the connecting piece there is a clearance. In the case of water collecting on the base plate, it will flow through the clearance into the draining system.



3.4 Checking

Please check the installation according to the following:

- ☐ Are the screws and clamps tightened?
- ☐ Is the water supply connection correctly installed and can the water discharge flow freely?
- ☐ Are the water supply and discharge hoses free from any leakage?
- ☐ Is the water supply pipe flushed ?



Attention: The water supply pipe should be flushed before connection at the solenoid valve, particularly in the case of a newly installed one. This measure prevents possible early damage.

**CompactLine Electrode Steam Humidifiers
for Use with Tap Water**

Technical Documentation

Electrics

4. **Electrical Installation2**

4.1 **Installation2**

4.2 **Fan Unit.....2**

4.3 **Safety Interlock2**

4.4 **Checking.....3**



ATTENTION: All work must be done by qualified personnel.
All electrical installations and work on electrical components of this unit must be carried out by a qualified electrician.
Switch power off beforehand!

4. Electrical Installation



Attention: please pay attention to the following while installing:

- All electrical installation and work on electrical components of this unit must be carried out by qualified electricians.
- Observe local regulations regarding the installation of electrical appliances or equipment.
- Switch power off beforehand and secure against restart.
- Check that the unit is off.
- Switch power before installing or dismantling the electronics assembly. Refer also to chapter 1.5.8 "Access Electric Compartment".
- Electrical connections must be done by qualified personnel.
- Electrical connections shall correspond to the wiring diagrams.
- For ratings over 33 kW only a permanent connection to a permanently laid installation is allowed (German regulation).
- Ensure that all cable connections are tight.

4.1 Installation

- » Safety fuses require a contact aperture of min. 3 mm. per pole.
- » Each steam cylinder requires its own main power connection including fuses, main breaker, etc.
- » Potential equalisation is to be connected to the threaded bolt M5 outside the cabinet.
- » Main power supply: 1 x 400V/3Phases/N

Other voltages are available upon request.

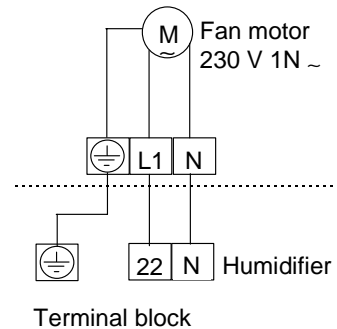
Select fuses with quick or medium blow characteristics (applicable only for the above voltage).

Fuse protection:

Type	Nominal Current	Fuses
C6	6,5 A	3 x 10 A
C10	10,8 A	3 x 16 A
C17	18,4 A	3 x 20 A
C30	32,5 A	3 x 35 A
C45	48,8 A	3 x 63 A
C58	62,8 A	3 x 63 A

4.2 Fan Unit

» Connect fan unit in accordance with the wiring diagram.



Fan unit is operated parallel to humidification demand.



Note: Terminal 22 is only supplied in the unit if the fan unit is ordered at the same time as the humidifier. In other cases (e.g. upgrading) the fan phase can also be connected to terminal 2.

4.3 Safety Interlock

Floating interlock contacts of a safety chain, such as maximum hygrostat, flow control switch, pressure switch etc. are to be installed in series between terminals 1 and 2.



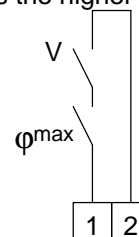
Attention: We recommend to use a maximum hygrostat. In case of a malfunction of the humidity sensor an installed maximum hygrostat will avoid damage by too high humidity.



Attention: terminals 1 and 2 require potential free contacts. No power is to be supplied to 1+2.



Attention: Main contactors are wearing parts and have a guaranteed endurance of 150000 stress cycles. The less a main contactor switches the higher its lifetime is.



4.4 Checking

All work - especially electrical - must be carried out by properly qualified personnel in accordance with the safety regulations.

- ☐ The supply voltage must correspond to the specified voltage on the name plate.
- ☐ All electrical connections must correspond to the wiring diagrams.
- ☐ Cable connections as well as plugs and their connections must be tightened.

- ☐ The unit must be connected to ground.

You can now switch on the steam humidifier.



Note: Refer to the corresponding Operation Instruction of the L-, EMP-or DS-electronic for commissioning, control, operation, faults and wiring diagrams.

CompactLine Electrode Steam Humidifiers
for Use with Tap Water

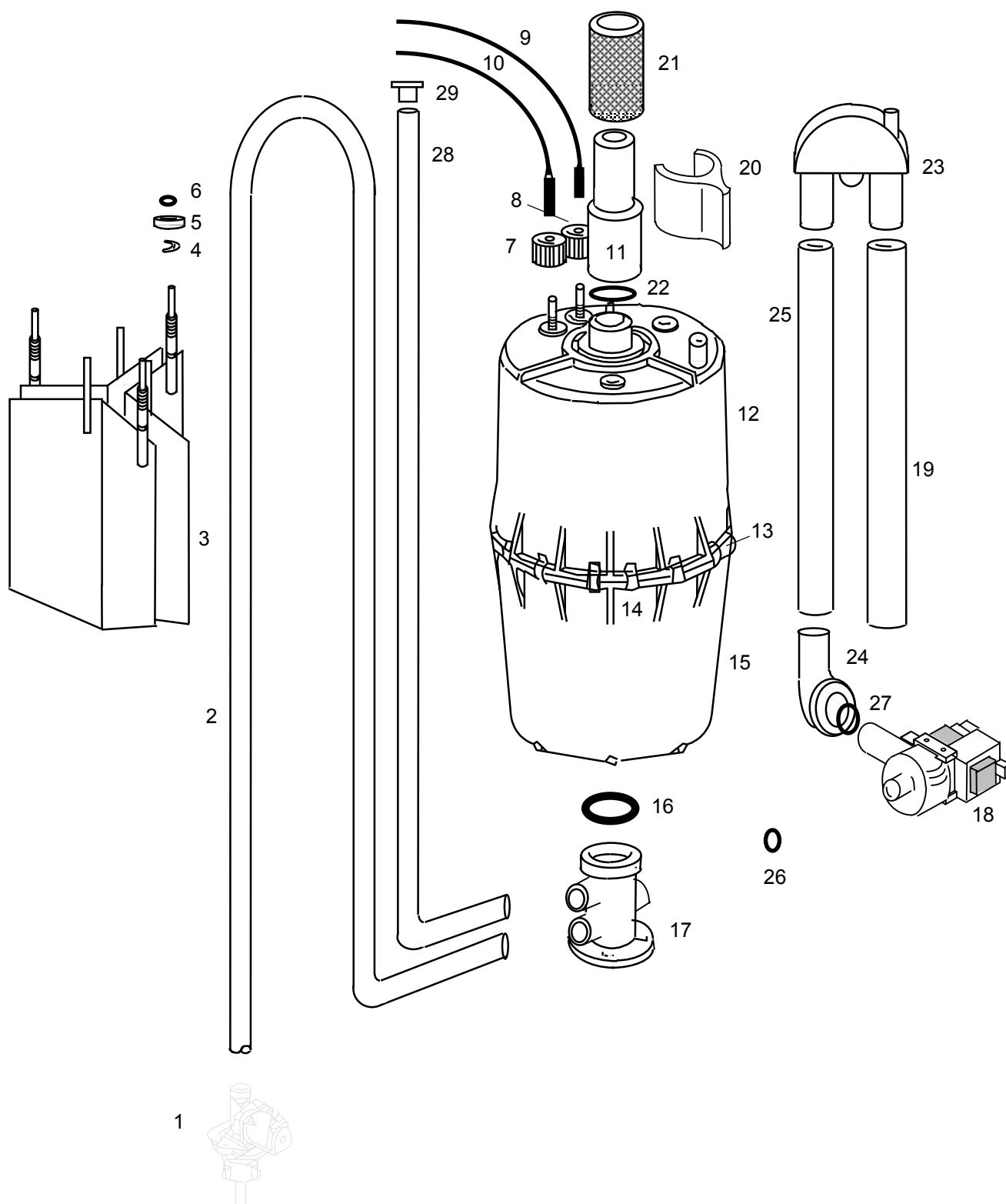
Technical Documentation

Spare Parts

5.1 Exploded View Illustration2

5.2 Spare Parts3

5.1 Exploded View Illustration



*	C6	C10	C17	C30	C45	C58	Article No.	Description
Steam generation								
	1	1	1	1	1	1	B-3216067	Steam cylinder CY4 compl. with electrodes and hand nuts *
							B-3204031	Steam cylinder CY8 compl. with electrodes and hand nuts *
							B-2204101	Steam cylinder CY17 compl. with electrodes and hand nuts *
							B-2204111	Steam cylinder CY17 DN40 compl. with electrodes and hand nuts *
							B-2204105	Steam cylinder CY30 compl. with electrodes and hand nuts *
							B-2204109	Steam cylinder CY45 compl. with electrodes and hand nuts *
12	1						E-3216043	Top part of steam cylinder CY4 DN 20/9, empty
12		1					E-3226005	Top part of steam cylinder CY8 DN 25/12, empty
12			1				E-2206068	Top part of steam cylinder CY17 DN 25/12, empty
12				1			E-2206082	Top part of steam cylinder CY17 DN 40/12, empty
12					1		E-2206069	Top part of steam cylinder CY30 DN 40/12, empty
12						1	E-2207001	Top part of steam cylinder CY45 DN 40/12, empty
15	1						B-3216044	Lower part of steam cylinder compl. with strainer *
15		1					B-3216007	Lower part of steam cylinder compl. with strainer *
15			1	1			B-2206046	Lower part of steam cylinder compl. with strainer *
15					1		B-2206071	Lower part of steam cylinder compl. with strainer *
15						1	B-2207002	Lower part of steam cylinder compl. with strainer *
13	1						E-3216042	O-ring seal for cylinder flange, transparent cylinder
13		1					E-3216010	O-ring seal for cylinder flange, transparent cylinder
13			1	1			E-2206050	O-ring seal for cylinder flange, transparent cylinder
13					1		E-2206051	O-ring seal for cylinder flange, transparent cylinder
13						1	E-2207011	O-ring seal for cylinder flange, transparent cylinder
16	1	1					E-3216011	O-ring seal for cylinder base
16			1	1	1	1	E-2204022	O-ring seal for cylinder base
3	1						B-3216061	Electrodes compl. with hand nuts, set=3pc. for CY4
3		1					B-3204019	Electrodes compl. with hand nuts, set=3pc. for CY8
3			1				B-2204081	Electrodes compl. with hand nuts, set=3pc. for CY17
3				1	1		B-2204083	Electrodes compl. with hand nuts, set=6pc. for CY45 DN 40
3						1	B-2204085	Electrodes compl. with hand nuts, set=6pc. for CY17, CY30 DN40
	1						B-3204037	Sensor electrode compl. with hand nut
		1					B-3204027	Sensor electrode compl. with hand nut
			1	1	1	1	B-2204075	Sensor electrode compl. with hand nut
	1	1	1	1	1		E-3216025	Plug-in contact with insulating hose for sensor electrode
	3	3					E-3216024	Plug-in contact with insulating hose for steam generating electrodes
			3	6	6		E-2206059	Plug-in contact with insulating hose for steam generating electrodes
						6	E-2207016	Plug-in contact with insulating hose for steam generating electrodes
14	12	12	18	18	24	36	E-3216022	Cylinder flange clamp
17	1	1					E-3220000	Cylinder base DN 20/25i/15/12
17			1	1	1	1	E-2206086	Cylinder base DN 40/25i/15/12
	1	1	1	1	1	1	B-3216023	Mounting set for cylinder base
11	1						E-3221000	Adapter DN20/25 for steam hose DN25
11		1					E-3221002	Adapter for steam hose DN25
11			1				E-2209000	Adapter for steam hose DN25
11				1			E-2209004	Adapter for steam hose DN40
11					1		E-2209006	Adapter for steam hose DN40
11						2	E-2209008	Adapter for steam hose DN40
	1						B-3216077	maintenance kit for cylinder**
		1					B-3216079	maintenance kit for cylinder**
			1				B-2207029	maintenance kit for cylinder**
				1			B-2207031	maintenance kit for cylinder**
					1		B-2207033	maintenance kit for cylinder**
						1	B-2207035	maintenance kit for cylinder**

*	C6	C10	C17	C30	C45	C58	Article No.	Description
Steam generation								
	1						E-3216021	Condensate plug DN 9
		1	1	1	1	1	E-2204035	Condensate plug DN 12
20	1	1	1				E-3221004	Clip for adapter DN25
20				1	1	2	E-2209002	Clip for adapter DN40
22	1						E-3216011	O-ring for adapter DN20/25
22		1	1				E-3221006	O-ring for adapter DN25
22				1	1	2	E-2204022	O-ring for adapter DN40
Water feed								
2	0,60	0,60	0,60	0,60	0,60	1,90	E-2604014	Connecting hose, solenoid valve - cylinder base, per m
1	1						B-2304081	Solenoid valve, servo controlled, straight type, 0,2 - 10 bar, 1,2 l/min
1		1					B-2304083	Solenoid valve, servo controlled, straight type, 0,2 - 10 bar, 2,5 l/min
1			1	1	1	1	B-2304085	Solenoid valve, servo controlled, straight type, 0,2 - 10 bar, 3,0 l/min
	1	1	1	1	1	1	B-2304031	Hose for water connection, 3/4" cap nuts on both sides
	1	1	1	1	1	1	E-2305002	Sealing for hose for water connection
	0,40	0,40	0,60	0,60	0,60	0,80	E-2604010	Manual water drain
	1	1	1	1	1	1	E-2604062	Stopper, conical, lock for hose E-2604010
Water drain								
	1						B-3401015	Pump-drain-hose-system (Pos.19,23,24,25,27)
		1					B-3401017	Pump-drain-hose-system (Pos.19,23,24,25,27)
			1	1			B-3401019	Pump-drain-hose-system (Pos.19,23,24,25,27)
					1		B-3401013	Pump-drain-hose-system (Pos.19,23,24,25,27)
						1	B-3401021	Pump-drain-hose-system (Pos.19,23,24,25,27)
27	1	1	1	1	1	1	E-3220005	O-ring for adapter pump - drain hose
	1	1	1	1	1	1	E-2404024	O-ring for drain pump (cover-motor)
18	1	1	1	1	1	1	B-2404027	Drain pump without mounting set
	1	1	1	1	1	1	B-2424014	Mounting set for drain pump
Electronic universal								
	1	1					E-2501005	Main contactor 16A, 230V
			1				E-2501006	Main contactor 24 A, 230 V
				1			E-2505007	Main contactor 40 A, 230 V
					1	1	E-0505009	Main contactor 63 A, 230 V
	1	1	1	1	1	1	E-2505206	Control fuse 1,6 A, 5x20 mm
10	1	1					B-3526017	Connecting cables for electrodes with plug-in contact, set=3pc
10			1				B-2524019	Connecting cables for electrodes with plug-in contact, set=6pc
10				1			B-2524017	Connecting cables for electrodes with plug-in contact, set=6pc
					1		B-2524015	Connecting cables for electrodes with plug-in contact, set=6pc
10						1	B-2524139	Connecting cables for electrodes with plug-in contact, set=6pc
9	1	1					B-2525051	Connecting cable for sensor electrode with plug-in contact, 630mm
9			1	1	1	1	B-2525055	Connecting cable for sensor electrode with plug-in contact, 1150mm
L3-electronic								
	1	1	1	1	1	1	B-3504071	L3-electronic pcb compl. without module holder
	1	1	1	1	1	1	E-2502412	Control switch 24x21, double pole, middle position "0"
	1	1	1	1	1	1	B-2120851	Mounting plate for electronics with foil
EMP-electronic								
	1	1	1	1	1	1	B-2525177	EMP-electronic with display and control unit
	1	1	1	1	1	1	E-2502414	Control switch 24x21, double pole
	1	1	1	1	1	1	B-2120853	Mounting plate for electronics with foil

*	C6	C10	C17	C30	C45	C58	Article No.	Description
21 21	1	1	1	1	1	1	B-2525187	DS-electronic DS-electronic with display and control unit
	1	1	1	1	1	1	E-2502414	Control switch, double-pole
	1	1	1	1	1	1	B-2120855	Mounting plate for electronics with foil
	x	x	x	x	x	x	E-0605228	Temperature sensor for steam bath control version V
	x	x	x	x	x	x	B-2505207	Holder for temperature sensor incl. mounting set
	x	x	x	x	x	x	E-2505206	Fuse for light, fan, essence injector 1.6A, 5x20mm
	x	x	x	x	x	x	E-3516026	Fuse for transformer (E-2504154) 2A, 5x20mm
	x	x	x	x	x	x	E-2504154	Transformer 230/24V/130VA
								ST-electronic
	1	1	1	1			E-3524100	ST-electronic pcb
	1	1	1	1			B-2120851	Mounting plate for electronics with foil
								Accessories
	x	x	x				E-2604012	Steam hose DN25, per m
				x	x	x	E-2604013	Steam hose DN 40, per m
	x	x	x	x	x	x	E-2604014	Condensate hose DN 12, per m
	x	x	x				E-2404004	Steam hose clamp DN 25
				x	x	x	E-2604016	Steam hose clamp DN 40
		x	x	x	x	x	E-2304015	Condensate hose clamp
	x	x	x				B-2604026	Steam solenoid valve 0-0,4 bar, compl. for steam hose DN 25
				x	x	x	B-2604040	Steam solenoid valve 0-0.4 bar, compl. for steam hose DN 40
	x	x	x				E-2604019	Connectors for steam distribution T-piece DN 25
				x	x	x	E-2604023	Connectors for steam distribution T-piece DN 40
	x	x	x	x	x	x	E-2604021	Connectors for condensate T-piece DN 12
	÷	1					B-2208005	Cylinder star
			1				B-2208007	Cylinder star
				1			B-2208013	Cylinder star
					1		B-2208009	Cylinder star
							B-2208011	Cylinder star
	÷	1					B-2304063	Super flush complete
			1	1	1	1	B-2304065	Super flush complete
	x	x	x	x	x	x	B-2304031	Water connection hose, flexible, 0.6 m 3/4", with connector
	x	x	x	x	x	x	B-3320406	Filling cup complete

* see diagram 5.1

If you order any spare parts, please specify type and serial number of the unit.

* If the Super Flush System is installed, consider to order also a new nozzle (B-2304079), please.

** Maintenance kit contains: Electrodes without hand nuts, O-ring for adapter, O-ring seal for cylinder base, O-ring seal for cylinder flange, Cylinder flange clamps



Lise-Meitner-Str. 3
24558 Henstedt-Ulzburg
Tel. 04193/895-0

Fax Form

Please copy, fill in and fax to

Fax.No. **+49(0)4193/895-33**

Order for spare parts

unit type _____ serial no. _____

commission: _____ order no: _____

quantity	article	article no

date of delivery _____ forwarder _____ shipment by _____

delivery address (if different from
invoice address)

company stamp (invoice address)

date/signature

Order can only be processed if unit type and unit serial number are filled in.

CompactLine Electrode Steam Humidifiers

Technical Data

Technical Data Steam Humidifiers CompactLine C6 - C58						
Type	C6	C10	C17	C30	C45**	C58
Steam Output [kg/h]	6	10	17	30	45	58
Electrical Supply*	400V/3/N/50-60 Hz					
Electrical Power [kW]	4,5	7,5	12,8	22,5	33,8	43,5
Current [A]	6,5	10,8	18,4	32,5	48,8	62,8
Fuse [A]***	3x10	3x16	3x20	3x35	3x63	3x63
Control Type	L, EMP, DS					
Control Voltage	230V					
Steam Hose Connection [mm]	1x25	1x25	1x25	1x40	1x40	2x40
Condensate Hose Connection [mm]	1x12	1x12	1x12	1x12	1x12	2x12
Number of Steam Manifolds	1	1	1	1	2**	2
Number of Cylinders	1	1	1	1	1	1
Empty Weight [kg]	10	12	19	20	22	31
Operational Weight [kg]	13	18	37	38	49	77
Dimensions	Height [mm]	416	458	628	628	771
	Width [mm]	334	370	437	437	570
	Depth [mm]	189	208	275	275	384
Water Supply	1 to 10 bar incl. connection ¾ "					
Fan Unit, wallmounted	VG 08	VG 17	VG 17	VG 30	2xVG30	2xVG30
Air Circulation of Fan Unit [m³/h]	160	185	185	350	2 x 350	2 x 350
* Other voltages on request. ** The delivery includes required T-pieces for connection of two manifolds. *** Times 1.3 power input after Full Blow Down. If expulsion fuses are used close to their specific limit we recommend to choose expulsion fuses with a higher range.						

HYGROMATIK-Lufttechnischer Apparatebau GmbH

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