

Electrode Steam Humidifier

HyLine



HYL.EN
E-8881100

A Word about Water Quality

The mode of operation of all electrode steam humidifiers is based on the fact that water contains minerals and is therefore conductive.

- "normal" tap water is ideal.
- but what is "normal" tap water exactly?

Users of HygroMatik units in the most diverse areas consider their tap water "normal."

HygroMatik typically defines "normal" as feed water with a conductivity between 200 and 500 $\mu\text{S}/\text{cm}$ (microSiemens per centimeter) at 15° C.

Some areas, however, are supplied with tap water whose quality is outside the parameters specified by HygroMatik. If the HygroMatik steam humidifier's control is not adjusted correctly in these areas, the unit cannot perform optimally. For example, the electrodes could wear out particularly quickly or the steam production could be too low.

The operational parameters set by HygroMatik in the factory are intended for normal tap water. However, they can very easily be reprogrammed to fit the special requirements of a particular area. In addition, it is possible to install a plastic star in the cylinder in order to increase the life span of the electrodes or to provide a flushing mechanism to extend maintenance intervals.

Because of this you should monitor your new unit during initial operation. Make sure that it has been properly installed and is operating to your satisfaction.

Consult your HygroMatik specialists. We will test the quality of your water and advise you on installation and initial operation. Your HygroMatik steam humidifier will be carefully adapted to your particular application.

Certain computer programs contained in this product [or device] were developed by HygroMatik GmbH ("the Work(s)").

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HyLine [03.07.2017]

Current version of this manual can be found at: www.hygroamatik.co.uk

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

⚠ WARNING

Risk of electrical shock!

Hazardous electrical high voltage!

All electrical work to be performed by certified expert staff (electricians or expert personnel with equivalent training) only.

1. Introduction	5
1.1 Typographic Distinctions	5
1.2 Documentation	5
1.3 Symbols in Use	6
1.3.1 Specific Symbols related to Safety Instructions	6
1.3.2 General Symbols	6
1.4 Intended Use	6
2. Safety Instructions	8
2.1 Guidelines for Safe Operation	8
2.1.1 General	8
2.1.2 Unit control	8
2.1.3 Unit operation	8
2.1.4 Mounting, dismantling, maintenance and repair of the unit	9
2.2 Electrical	10
2.2.1 Disposal after dismantling	10
3. Transport	11
3.1 Overview	11
3.2 Packing	11
3.3 Interim Storage	11
3.4 Check for Complete and Correct Delivery of Goods	11
4. Operation and Installation	12
4.1 Mode of Operation	12
4.2 Installation and Operation	12
5. Installation	15
5.1 Steam Humidifier Operating Environment	15
5.1.1 Fitting measures	17
5.1.2 Unit Dimensions HY05-HY45	19
5.1.3 Unit Dimensions HY60-HY116	20
5.2 Fan Unit (optional)	21
5.2.1 Fan Unit Type VG	21
5.2.2 Fan Unit Cover	22
5.3 Absorption Distance BN	23
5.3.1 Determining the Absorption Distance	23
5.3.2 Absorption Distance Nomogram	25
5.4 Steam Manifold	26
5.4.1 Notes on Installation	26
5.5 Steam Line	30
5.6 Cover Plate	31
5.7 Condensate Hose	32
5.8 Types of Installation	32
5.9 Steam Solenoid Valves	34
5.10 Unit Installation Check	34

6. Water Installation	35
6.1 Operation with Softened Water	36
6.2 Water Supply	37
6.3 Water discharge	38
6.4 HyFlow Provision (Special Model)	40
6.5 Water Installation Check	41
7. Electrical Connection	42
7.1 Electrical Installation	42
7.2 Cable Connections	45
7.3 Fan Unit	46
7.4 Safety Interlock	47
7.5 Wiring Diagram	47
7.6 Electrical Installation Checklist	47
8. Commissioning	48
9. Maintenance	50
9.1 Maintenance Work	51
9.2 Access to Electrical Enclosure	52
9.3 Removing and Cleaning the Steam Cylinder	52
9.4 Electrode wear	59
9.4.1 Original Electrode Lengths	59
9.4.2 Uneven Electrode Wear	60
9.5 Replacing Electrodes	60
9.6 Cleaning the Blow- down pump	61
9.7 Cleaning the Water Inlet Solenoid Valve	63
9.8 Cleaning the Water Inlet Solenoid Valve and HyFlow System Separator (special models only)	64
9.9 Checking Cable Connections and Electrode Cables	65
9.10 Checking Hoses	65
9.11 Checking Operation	65
9.12 Dismantling	65
10. EC-Declaration of Conformity	66
11. Spare Parts	67
12. Fax Form - Order for spare parts	72
13. Technical Specification	74
14. Exploded View	76
15. View of housing	77

1. Introduction

Dear Customer,

Thank you for choosing a HygroMatik steam humidifier.

HygroMatik steam humidifiers represent the latest in humidification technology.

In order to operate your HygroMatik steam humidifier safely, properly and efficiently, please read these operating instructions.

Employ your steam humidifier only in sound condition and as directed. Consider potential hazards and safety issues and follow all the recommendations in these instructions.

If you have additional questions, please contact us:

Tel.: +49-(0)4193 / 895-0 (Main Number)

Tel.: +49-(0)4193 / 895-293 (Technical Support Hotline)

Fax: +49-(0)4193 / 895-33

e-mail: hotline@HygroMatik.de

For all technical questions or spare parts orders, please be prepared to provide unit type and serial number (see name plate on the unit).

1.1 Typographic Distinctions

- preceded by a bullet: general specifications
- » preceded by an arrow: Procedures for servicing or maintenance which should or must be performed in the indicated order
- Installation step which must be checked off
- italics* Terms used with graphics or drawings

1.2 Documentation

Retention

Please retain these operating instructions in a secure, always accessible location. If the product is resold, turn the documentation over to the new operator. If the documentation is lost, please contact HygroMatik.

Versions in Other Languages

These operating instructions are available in several languages. If interested, please contact HygroMatik or your HygroMatik dealer.

1.3 Symbols in Use

1.3.1 Specific Symbols related to Safety Instructions

According to ANSI Z535.6 the following signal words are used within this document:

⚠ DANGER

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION

CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury.

1.3.2 General Symbols

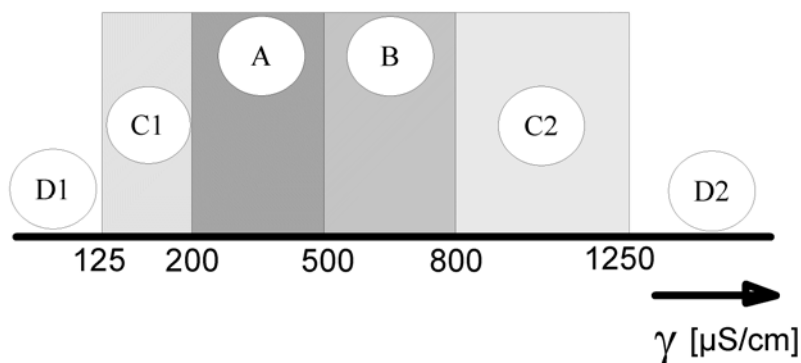
Please note

This symbol is used whenever a situation requires special attention beyond the scope of safety instructions.

1.4 Intended Use

The HygroMatik steamgenerator serves for steam production based on various water qualities or partially softened water (valid for all of the HygroMatik humidifier models). With the HeaterLine, HeaterCompact/Kit and HeaterSlim family of products, also fully desalinated water/cleaned condensate may be used.

Only use supply water featuring a conductivity of 125 to 1250 $\mu\text{S}/\text{cm}$.



D1: Lower threshold

C1: Range of reduced conductivity (adjustments recommended)

A: Normal tap water

B: Range of heightened conductivity

C2: Range of high conductivity (adjustments recommended)

D2: Upper threshold

Proper usage also comprises the adherence to the conditions specified by HygroMatik for:

- installation
- dismantling
- reassembly
- commissioning
- operation
- maintenance
- disposal.

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 Instructions and especially the chapter 2. „Safety Notes“. Additionally, operating personnel must be informed of any possible dangers. You should place a copy of the Operation and Maintenance Instructions at the unit’s operational location (or near the unit).

By construction, HygroMatik steam humidifiers are not qualified for exterior application.

▲ WARNING

Risk of scalding!

Steam with a temperature of up to 100 °C is produced.

Do not inhale steam directly in order to avoid respiratory damage!

2. Safety Instructions

These safety instructions are required by law. They promote workplace safety and accident prevention.

2.1 Guidelines for Safe Operation

2.1.1 General

Comply with the accident prevention regulation „DGUV Regulation 3“ to prevent injury to yourself and others. Beyond that, national regulations apply without restrictions.

2.1.2 Unit control

Do not perform any work which compromises the safety of the unit. Obey all safety notes and warnings present on the unit.

In case of a malfunction or power grid disruption, switch off the unit immediately and prevent a restart. Repair malfunctions promptly.

▲ WARNING

Restricted use.

This unit is not designed for the use by persons (also children) with limited physical, sensory and mental abilities - or without knowledge and experience - unless they are supervised or trained by a person, who is responsible for their safety.

Supervise children in order to ensure that they will not play with the unit.

2.1.3 Unit operation

▲ WARNING

Risk of scalding!

In case of leaking or defective components, hot steam may exit in an uncontrolled manner.

In case of malfunction or electrical power disruption, switch off the unit immediately and prevent from restart.

NOTICE

Risk of material damage!The unit may be damaged if switched on repeatedly following a malfunction without prior repair. Rectify defects immediately!

The unit must not be operated on a DC power supply.

The unit may only be used connected to a steam pipe that safely transports the steam (not valid device type MiniSteam).

Regularly check that all safety and monitoring devices are functioning normally. Do not remove or disable safety devices.

2.1.4 Mounting, dismantling, maintenance and repair of the unit

NOTICE

The HygroMatik steam humidifier is IP20 protected. Make sure that the unit is not object to dripping water in the mounting location.

When installation is made in a room without a drain, safety precautions must be taken in order for to shut off the humidifier's water supply in event of a leak.

Use genuine spare parts only.

After any repair work, have qualified personnel check the safe operation of the unit.

Attaching or installing of **additional components** is permitted only with the **written consent** of the manufacturer.

2.2 Electrical

▲ WARNING

Risk of electrical shock! Hazardous electrical high voltage. Any work on the electrical system may only be performed by qualified personnel. Disconnect unit components from electrical power supply prior to work. After electrical installation or repair work, test all safety mechanisms (such as grounding resistance).

NOTICE

Use only original fuses with the appropriate amperage rating. Regularly check the unit's electrical equipment. Promptly repair any damage such as loose connections or burned wiring. Responsibility for intrinsically safe installation of the HygroMatik steam humidifiers (steam generators) is incumbent on the installing specialist company.

2.2.1 Disposal after dismantling

NOTICE

The operator is responsible for the disposal of unit components as required by law.

3. Transport

3.1 Overview

Please note Proceed carefully when transporting the steam humidifier in order to prevent damage due to stress or careless loading and unloading.

3.2 Packing

Please note Pay attention to the icons affixed to the packing box.

3.3 Interim Storage

Store the unit in a dry place and protect from frost.

3.4 Check for Complete and Correct Delivery of Goods

Upon receipt of the unit, confirm that:

- model and serial number on the name plate match those specified in the order and delivery documents and
- the equipment is complete and all parts are in perfect condition

Please note In case of damage during shipment or missing parts, immediately notify the carrier or supplier in writing.

Time limits for filing freight claims with shipping companies are*:

Shipping company	After receipt of goods
Carriers	no later than 4 days
Parcel service	immediately

* Time limits for some services subject to change.

4. Operation and Installation

4.1 Mode of Operation

The HygroMatik steam humidifier utilizes the conductivity normally present in tap water for steam production. Electrodes inside an enclosed steam cylinder are immersed directly into the tap water. They are connected to the alternating current.

The conductivity of the water generates an electric current between the electrodes. In this way, the electric power supplied is converted directly into heat without energy loss.

The amperage is a function of the available voltage, the immersed electrode surface area, the average distance between the electrodes and the water conductivity. The steam output of the humidifier is determined by electric power usage, which is regulated by increasing or decreasing the immersed surface area of the electrodes.

Concurrently, a self-regulating control keeps conductivity within a specified range.

The steam produced has a temperature of about 100°C with minimal excess pressure ("pressureless steam"). It is largely free of minerals and germ-free. Mineral deposits typically remain behind in the cylinder.

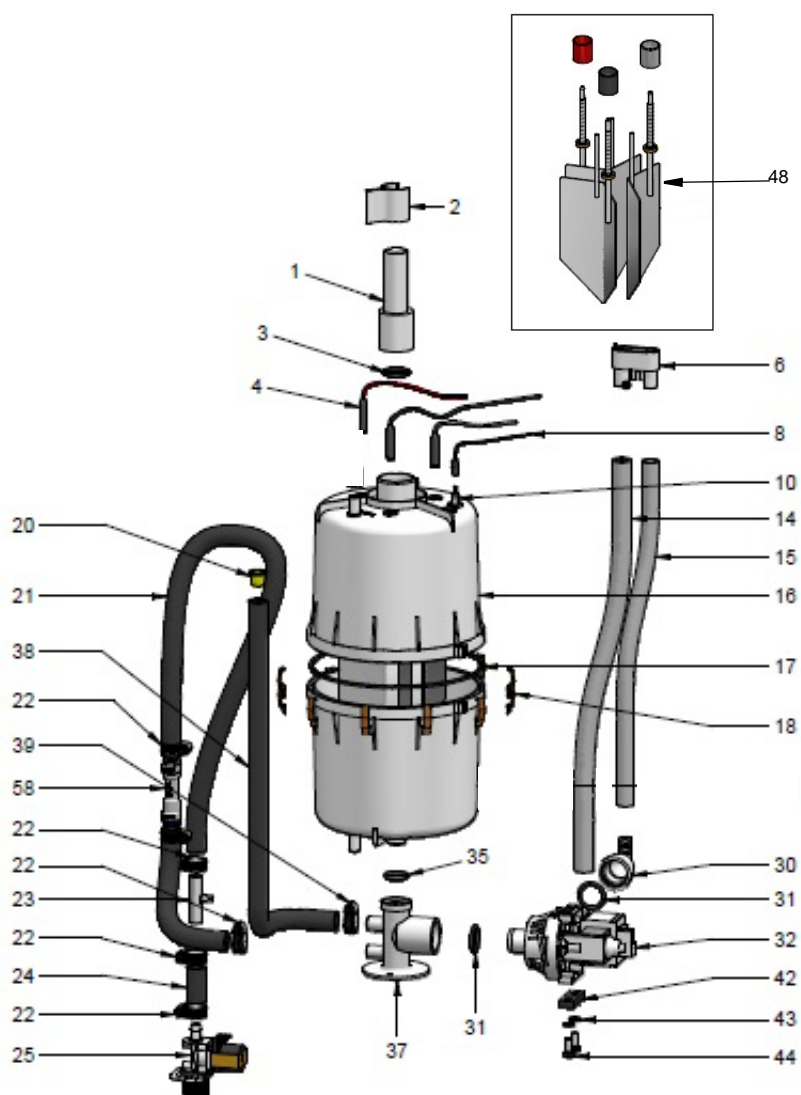
4.2 Installation and Operation

By pressing the control switch („Pos. I”) the humidifier is turned on. When the controller specifies an increase in humidity, the main contactor is switched on and the electrodes (48) are supplied with power. The water inlet solenoid valve (25) feeds water into the steam cylinder (16+19).

As soon as the electrodes are immersed, the current begins to flow. The water is now heated. When the pre-selected output is reached, the control turns off the solenoid valve and interrupts the water supply.

After a short heating up period, the water between the electrodes begins to boil and vaporize. The vaporization lowers the water level in the steam cylinder, reducing the output provided. The inlet solenoid valve, equipped with a fine mesh filter, intermittently admits fresh water.

Humidifier power usage is continuously monitored. With a cold start-up, the nominal current increases to 125% in order to achieve quick-start output parameters. This activates the electronic overflow limiter which causes a partial draining of the cylinder. This reduces the immersed surface area of the electrodes, lowering power usage.



Please also see Section „Exploded View“.

Location	Designation
1	adapter
6	vent pipe
10	max. water level sensor electrode
14	water drain, discharge
16	steam cylinder
17	o-ring cylinder flange
18	cylinder flange and o-ring
25	solenoid valve water inlet
32	blow-down pump
35	o-ring
37	cylinder base
48	electrodes

The concentration of dissolved salts increases over time, which can lead to a rise in the conductivity of the water. If this continues, conductivity may increase until a short circuit occurs. This could damage the unit, but in any case would significantly reduce the life span of the electrodes.

For this reason, regular, periodic blow-downs of some of the concentrated water are very important. Following this procedure as recommended provides stable cylinder water conductivity as well as minimal water loss for the expected service life of the cylinder.

Water blow-down is performed by a blow-down pump (32). The functioning of the blow-down pump is continuously monitored during operation. If the pump is damaged, the steam humidifier shuts down.

With normal water quality, the blow-down loss rate is between 7% and 15% of the amount of steam produced. The steam cylinder requires complete drainage every 3-8 days, regardless of the water quality.

Mineral deposits settle in the open area below the electrodes and are removed through periodic maintenance. The blow-down pump itself has wide openings and can flush out smaller pieces of mineral deposit. This extends the service life of the unit and reduces the required maintenance interval.

During blow-downs, water flows from the pump into the drainage system.

A sensor electrode (10) monitors the maximum water capacity of the cylinder. When the water level reaches the sensor electrode, the water supply is interrupted. This can occur when the water has low conductivity or when the electrodes are worn out. In the case of low water conductivity, however, this state usually lasts only a short time. The built-in control and the large area electrodes combine to produce a rapid rise in conductivity by increasing the concentration of the water.

The steam cylinder consists of a top (16) and lower (19) part joined with a cylinder flange. The seal between the cylinder and cylinder base (37), as well as between the top and lower part of the cylinder, is maintained using o-rings (35+17).

For maintenance the cylinder can be drained by pressing the control switch „Pos.II“.

5. Installation

⚠ WARNING

Installation of this unit to be accomplished only by qualified personnel (persons with completed training in the plumbing field and in the field of electrical installation work, respectively) !

Obey all safety notes and warnings present on the unit.

⚠ WARNING

Risk of electrical shock Hazardous electrical voltage! During installation the unit must be disconnected from power supply.

HygroMatik accepts no liability for damage due to faulty installation.

Attaching or installing additional components is permitted only with the written consent of the manufacturer, or else the warranty is void.

⚠ WARNING**Risk of foot injuries!**

Unit may drop during mounting involving a single person. Helping hand of a second person is required.

5.1 Steam Humidifier Operating Environment

Please note When selecting the installation site for the steam humidifier, take the following in account:

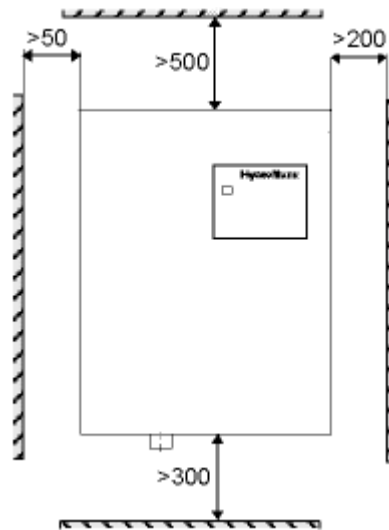
- Place the steam humidifier so that the unit is easily accessible with sufficient space to perform maintenance
- Ambient temperature must lie between +5 and +40 °C
- Relative humidity must not exceed 80% RH
- Installation in a closed room requires aeration and, eventually, temperature conditioning in order to meet the a.m. environmental conditions
- The minimum clearances indicated in the diagram below must be observed; these are necessary to ensure adequate ventilation for the housing

- HygroMatik humidifiers are not suitable for direct outdoor installation
- The steam humidifier should be installed as close as possible to the steam manifold. Optimal performance is guaranteed only with short lengths of steam and condensate hose
- Hoses must be laid at a consistent 5 - 10% incline to prevent sagging and kinking
- The rear panel of the steam humidifier heats up during operation (to a maximum of 70 °C). Take care that the construction on which the unit is mounted is not made of temperature-sensitive material

- Place the steam humidifier so that the unit is easily accessible with sufficient space to perform maintenance
- Protection class IP 20

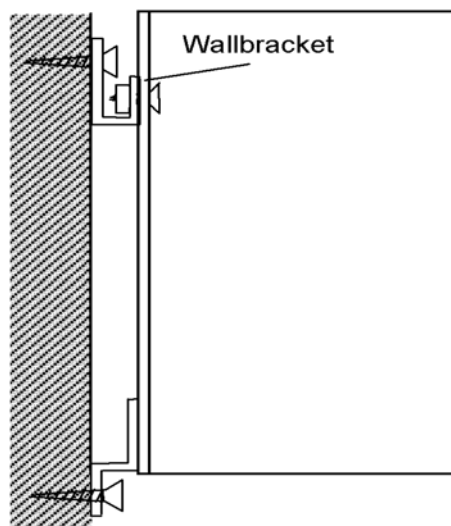
5.1.1 Fitting measures

Clearances



Please note When choosing the site for the steam humidifier, consider the location of existing water installations (feed and drain lines).

Mounting Fixtures (for HY45 to HY116)



The unit should be mounted on a stable wall.

Please note **Note:** To achieve a uniform immersed surface area for the electrodes, the humidifier must be installed plumb and level.

to Install Units Type HY05- HY30:

- » Place the steam humidifier in its intended location, use a level to adjust position, and secure. See chapter "Unit Dimensions".
- » Attach the unit to the lower mounting fixtures.

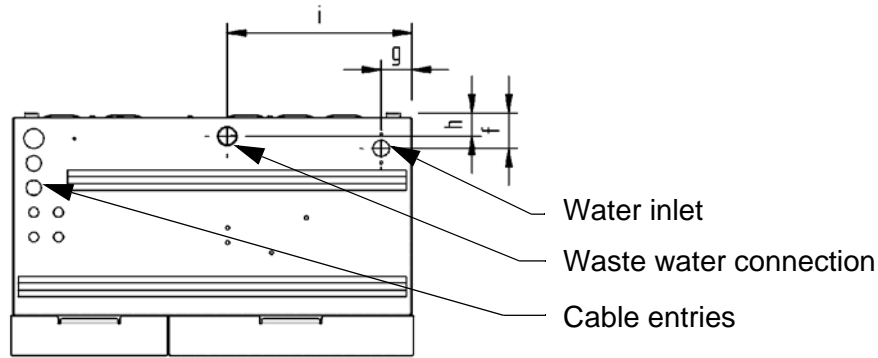
to Install Units HY45- HY116:

- » Fix bracket at the intended location. See chapter "Unit Dimensions".
- » Mount the unit, adjust position using a level, and screw tightly into the mounting fixtures.
- » Attach the unit to the lower mounting fixtures.

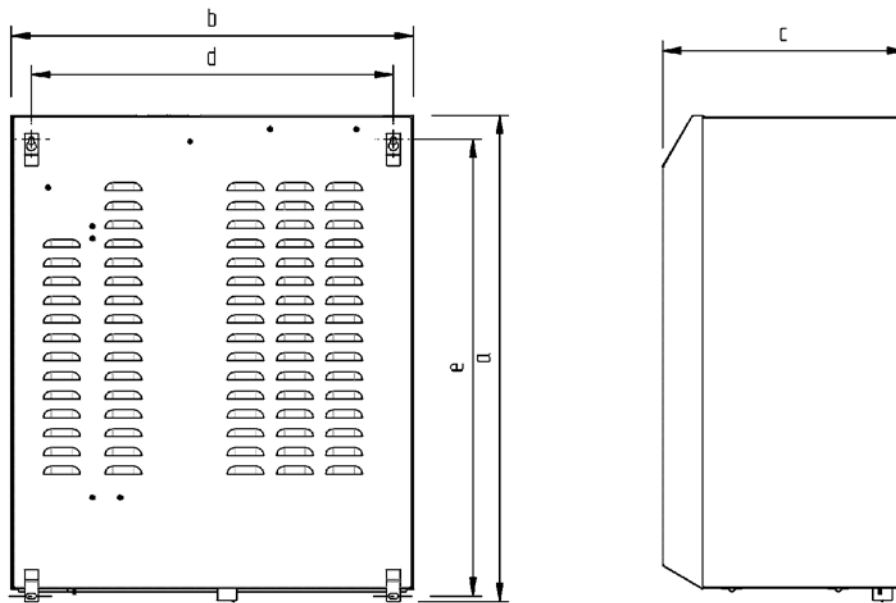
Mount the unit on a stable and thermoresistive, preferably solid wall offering the bearing capacity required (s. unit technical specifications). If no adequate wall the is available, we recommend the construction of a free-standing console anchored to the floor.

5.1.2 Unit Dimensions HY05-HY45

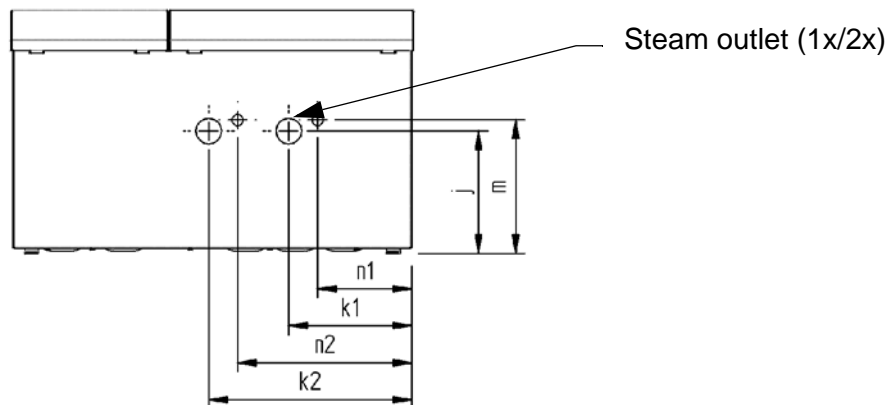
View from below



Rear view



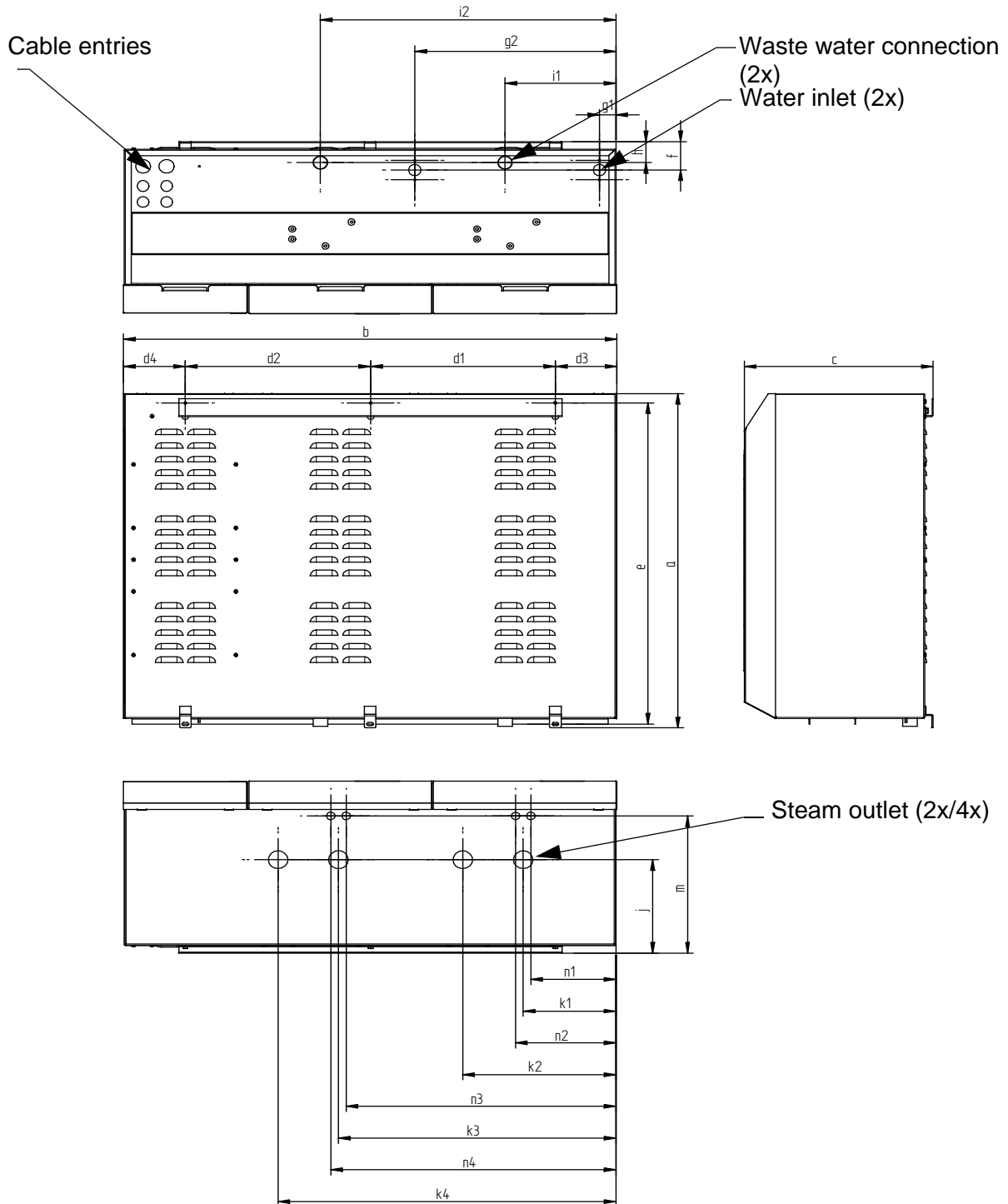
View from top



Type / Dimensions	a	b	c	d	e	f	g	h	i	j	k1	k2	m	n1	n2
HY05-HY08	480	449	251	409	436	65	40	40	174	156	133	-	195	85	-
HY13-HY23	651	522	301	481	608	65	50	40	220	170	136	-	228	62	-
HY30	708	561	344	519	665	65	50	45	250	190	160	-	245	60	-
HY45	788	654	403	608	742	65	50	45	300	208	200	330	316	182	218

Specifications in (mm)

5.1.3 Unit Dimensions HY60-HY116



Type / Dims.	a	b	c	d1	d2	d3	d4	e	f	g1	g2	h	i1	i2	j
HY60	709	927	334	342	342	120	120	678	66	46	376	47	248	579	183
HY90-HY116	788	1061	403	390	390	139	139	756	66	41	432	48	300	705	218
Type / Dims	k1	k2	k3	k4	m	n1	n2	n3	n4						
HY60	157	-*	488	-*	245	61	-	392	-						
HY90-HY116	199	329	597	727	324	183	216	580	613						

Specifications in (mm);

* HY60 only one steam outlet per cylinder

5.2 Fan Unit (optional)

Please note The fan unit should be positioned in a way that drafts are avoided. In general, a minimum height of 2 m above floor is sufficient. Install the fan unit directly on a wall.

▲ WARNING

Risk of skin burning or scalding!

During operation and some time afterwards the steam nozzles are hot. Do not touch!

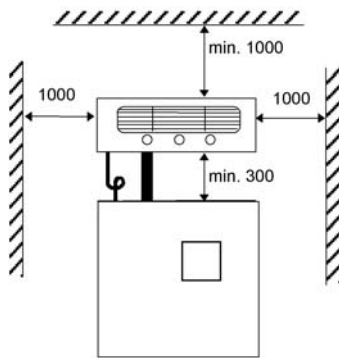
During operation hot steam discharges from the nozzles. Avoid any contact in the field of the visible steam cloud!

Due to improper installation or contamination hot water may drip from the steam nozzles. Do not reside within the area directly under the nozzles.

▲ WARNING

Rotating parts!

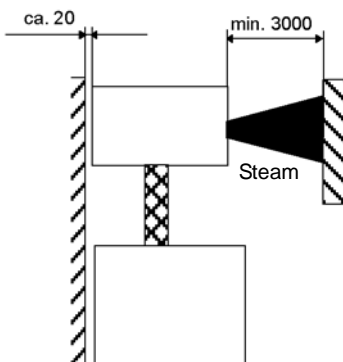
During operation the cross-flow fan rotates. Do not touch! Do not introduce any matter through the fan grid!



5.2.1 Fan Unit Type VG

- Install the fan unit above the steam humidifier
- When employing multiple fan units, do not exceed a max. distance of 5 m from the steam humidifier
- Observe the clearances specified in the figures

Wall installation front view
(all measures in mm)



Wall installation side view

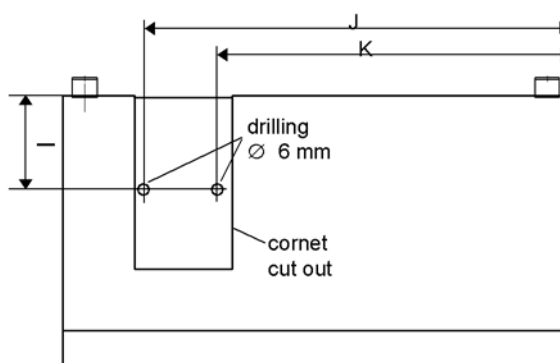
Technical Specifications Fan Unit VG

Fan Unit	VG08	VG17	VG30
Quantity of Steam [kg/h]	8	17	30
Steam Inlet [mm ϕ]	25	25	40
Condensate Outlet [mm ϕ]	14	12	12
Nominal Output [W]	26	35	67
Nominal voltage [V]	220-240		
Dimensions	W [mm]	441	507
	H [mm]	171	171
	D [mm]	180	237
Weight [kg]	3,6	6	7
Sound Level (1m distance to the source of noise) [dB(A)]	52	54	57

5.2.2 Fan Unit Cover

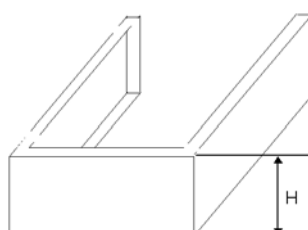
Covers for humidifier types HY05 and HY30 are optionally available to protect the steam and condensate hoses between the steam humidifier and the fan unit. The vertical distance between the humidifier and the fan unit is determined by the height of the cover (see table of dimensions, H).

- » Drill two holes in the housing as specified in the following diagram.



Unit type	H [mm]	I [mm]	J [mm]	K [mm]
HY05- HY08	175	80	373	266,5
HY13-HY23	280	105	422	310
HY30	280	105	452	340

- » Install the steam humidifier and fan unit on the wall at a distance given by the front cover (measure H).



- » Secure the steam hose between the humidifier and fan unit with hose clamps.
- » Also using a hose clamp, attach the condensate hose to the fan unit.
- » Run condensate hose along the rear of the unit to the water discharge (see also chapter "Water Discharge").
- » Lay the condensate hose with a 200 mm loop directly over the drain. The loop acts as a vapor barrier.

Please note

Condensate cannot be fed back into the steam cylinder.

- » Slide cover between humidifier and fan unit.
- » Fasten cover with the two screws supplied. Screw from the steam panel outwards.

5.3 Absorption Distance B_N

The "absorption distance" (B_N) is defined as the distance from the steam feed to where the steam is completely absorbed in the treated air. Within the absorption distance, steam is visible as mist in the air stream.

Condensation may occur on anything installed within the absorption distance.

Although steam outside the absorption distance (B_N) is completely absorbed, it is not yet evenly diffused in the duct. If you plan to install any parts or devices inside the absorption distance, such as sensors or elbows, we recommend increasing the absorption distance using the formulae below. The absorption distances required for certain installed fittings are distinguished by separate symbols and calculated as a multiplier of the absorption distance B_N .

Absorption Distance	
B_N	for normal obstructions, such as sensors, ventilators, outlets
$B_C = (1,5...2) \times B_N$	for fine filters, heat registers
$B_S = (2,5...3) \times B_N$	for particle filters
$B_D = (3...5) \times B_N$	for humidity sensors, duct humidistats

The absorption distance has no fixed value, but depends on many factors. These are depicted in the absorption distance nomogram below.

5.3.1 Determining the Absorption Distance

To determine the absorption distance, the following parameters are required:

- Air humidity before humidification x_1 in g/kg.
- Air temperature after humidification t_2 in °C (with steam humidifiers the change in air temperature due to humidification may be disregarded t_1 or t_2).
- Specific increase in humidity Δx in g/kg (can be determined in the h,x diagram)
- quantity of steam introduced $\overset{o}{m}_D$ in kg/h.
- air speed w_L in m/s in air duct
- Total length l_D of the steam manifold installed in the air duct

Length l_D of the usable steam manifold depends on the dimensions of the air duct. The length of the absorption distance can be reduced by using multiple steam manifolds (also see section on the steam manifold).

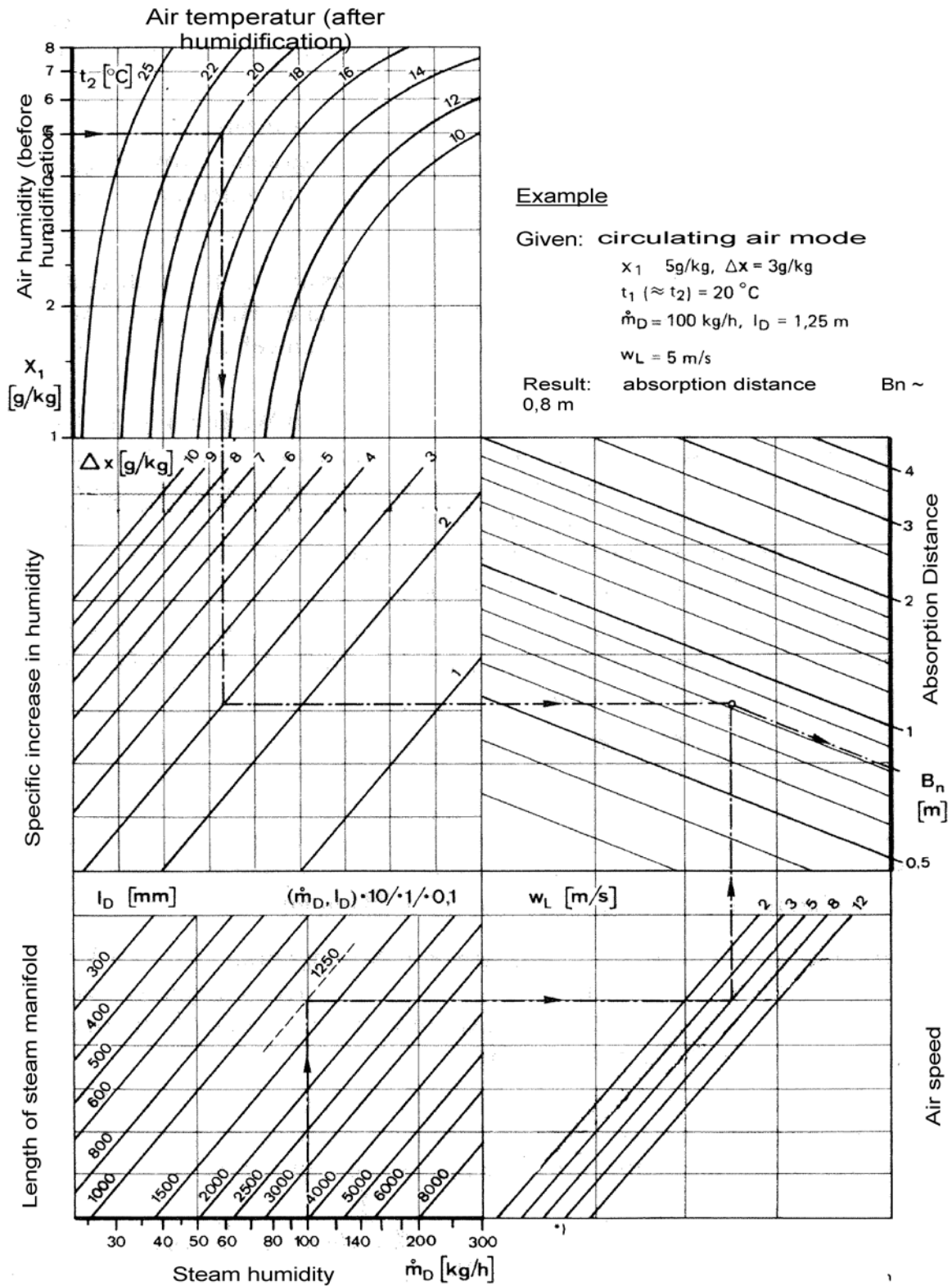
Method:

Graphically determine absorption distance B_N using the absorption distance nomogram (also see Section „Absorption Distance Nomogramm“). Enter the value of the parameters enumerated above into the respective quadrants. The resulting point of intersection indicates the value of the desired absorption distance B_N .

Notes:

- Air humidity before humidification x_1 : _____ [g/kg]
- Air temperature after humidification t_2 : _____ [°C]
- Specific increase in humidity Δx : _____ [g/kg]
- quantity of steam introduced m_D^o : _____ [kg/h]
- air speed w_L : _____ [m/s]
- Total length of the steam manifold l_D : _____ [mm]

5.3.2 Absorption Distance Nomogram



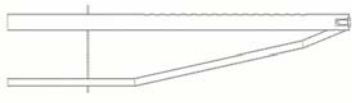
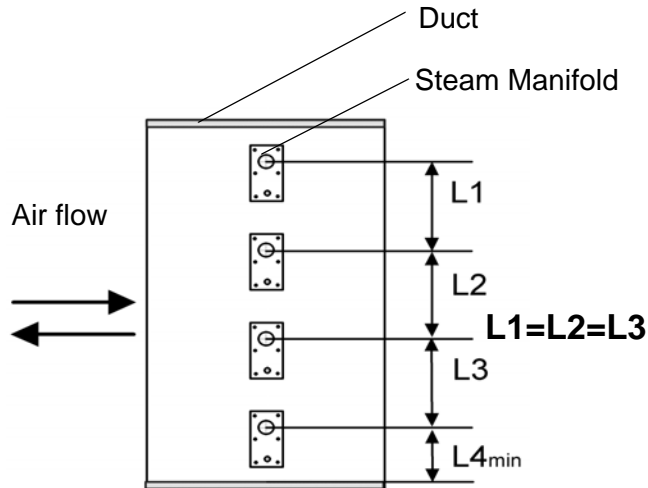
Source: Henne, Erich: Luftbefeuchtung (Air Humidification), 3rd Edition 1984 (Page 101), Oldenbourg Industrieverlag, Munich

5.4 Steam Manifold

5.4.1 Notes on Installation

Horizontal installation of steam manifold

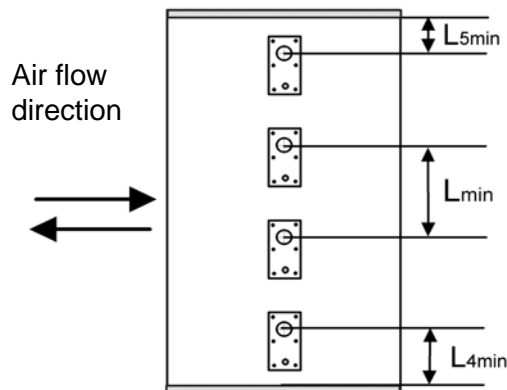
These notes are based on a homogeneous Standard steam manifold installation:



Steam Manifold

An even distribution of steam manifolds ensures a uniform steam distribution.

Please use the total height of the duct!

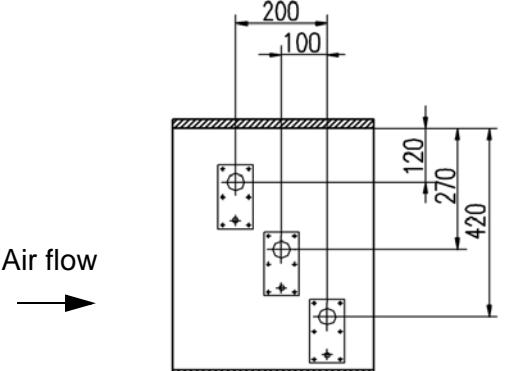
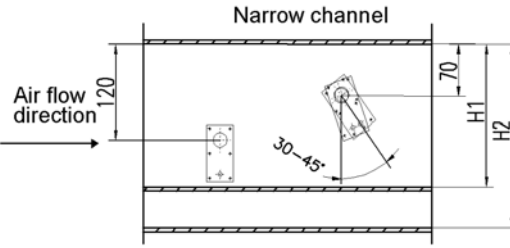


Minimum distances in order to avoid condensation:

L_{min} = 210mm: distance „ steam manifold - next steam manifold“

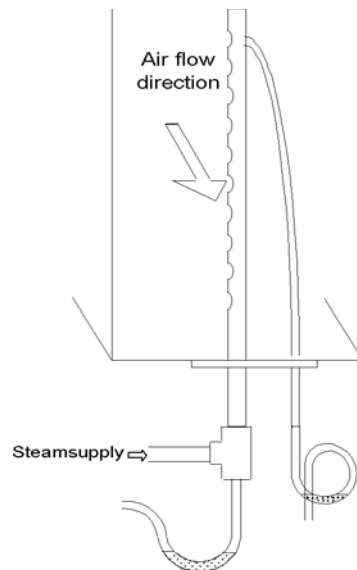
L_{4min} = 120mm: distance „lowest steam manifold - duct bottom“

L_{5min} = 120mm: distance „highest steam manifold - duct ceiling“
Installations depending on special designs of air ducts

Air duct	Positioning of steam manifolds	Sample
flat	Staggered vertically and laterally	
very flat	By tilting the steam manifold 30 - 45° towards the air flow direction, the minimum upper clearance can be reduced to 70mm. min. distances: H1[mm] H2[mm] 30° 45° DN25 182 168 225 DN40 193 179 230	very flat duct 
narrow, high	Identical lengths one on top of the other. Staggered laterally if possible.	
square	Identical lengths, staggered vertically and laterally	
low, very wide	facing each other	

Vertical installation of steam manifold

Steam manifold placement:



Horizontal installation of the steam manifolds is preferred. However, installation from below into the air duct is possible.

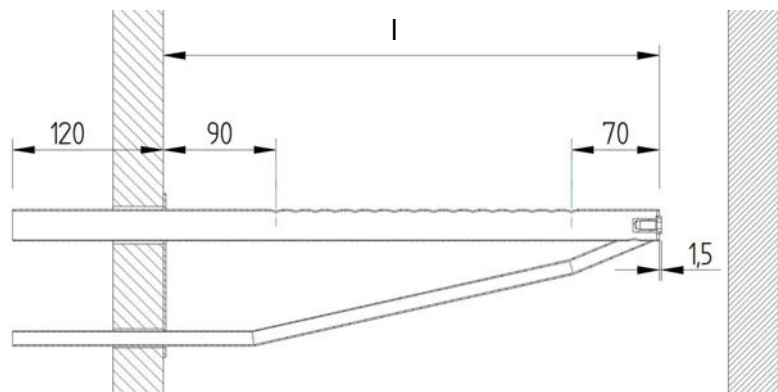
Please note

- Install the steam manifold horizontal with it ensure a clean steam out.
- Maximum allowable pressure in the air duct is 1200 Pa. For Hy05 and Hy08 the maximum allowable pressure is 1000 Pa.
- On the return side, the maximum allowable negative air pressure is 500 Pa. Placement of the steam manifold on the supply side of the air duct is preferred.
- With high-pressure air-conditioning systems, the unit's drain hose system must be modified depending on the over pressure. When this is the case please consult HygroMatik.
- Install the steam manifold as close as possible to the steam humidifier in order to minimize steam loss through condensation.
- Shown installation and position dimensions are based on experimental values. Special environmental conditions could require adjustments.
- Install a water drain within the absorption distance inside the air duct. For steam bath applications: Install the steam manifold safe from contact with people in order to prevent injuries or burns. Do not install the steam manifold near a temperature sensor or inaccurate readings may result. Air flow rates over 3m/s can possibly lead to condensate drainage problems at the steam manifolds which may require adaptation measures.

Length of steam manifold [mm]*:

I	220	400	600	900	1200	1450
DN25	x	x	x	x	x	x
DN40	x	x	x	x	x	x

* special lenght on request



installed steam manifold

The number and size of appropriate steam manifolds, as well as the nominal width of their respective steam and condensate hoses, are found in the tables below.

HyLine:

Type	Steam Manifold	Steam Hose	Condensate hose
HY05-HY17	1xDN25	DN25	DN12
HY05DS - HY17DS (for SPA)	1xDN40	DN40	DN12
HY23-HY30	1xDN40	DN40	DN12
HY45-HY60	2xDN40	2xDN40	2xDN12
HY90-HY116	4xDN40	4xDN40	4xDN12

CompactLine:

Type	Steam Manifold	Steam Hose	Condensate Hose
C01-C06	1xDN25	DN25	DN09
C06-C17	1xDN25	DN25	DN12
C10-DS, C17DS (for SPA)	1xDN40	DN40	DN12
C22, C30	1xDN40	DN40	DN12
C45**	2xDN40	DN40	DN12
C58	2xDN40	2xDN40	2xDN12

HeaterCompact/Kit:

Type	Steam Manifold	Steam Hose	Condensate Hose
HC02/Kit	1 xDN25	DN25	DN12
HC03-12*	1xDN25	DN25	DN12
HC03-12/Kit	1xDN40	DN40	DN12
HC16-27/Kit	1xDN40	DN40	DN12
HC3-27 (for SPA)	1xDN40	DN40	DN12

HeaterLine:

Type	Steam Manifold	Steam Hose	Condensate Hose
HL 6-12 *	1xDN25	DN25	DN12
HL 6-12 (for SPA)	1xDN40	DN40	DN12
HL 18-30	1xDN40	DN40	DN12
HL 36-45 **	2xDN40	1xDN40	1xDN12
HL 60-90 ***	2x(2xDN40)	2x(1xDN40)	2x(1xDN12)

CompactLineKit:

Type	Steam Manifold	Steam Hose	Condensate Hose
C01 Kit - C06 Kit	1x25	DN25	DN9
C10 Kit - C17 Kit	1x25	DN25	DN12
C22 Kit / C30 Kit	1x40	DN40	DN12
C45 Kit	2x40	DN40	DN12

* For units HL 6 - 12 and HC3-12 HygroMatik delivers one adapter DN40 / 25 (but not for SPA applications).** For units HL 36 - 45 HygroMatik delivers one t-connector for separating the steam on two steam manifolds.

***HI 60.-90 are double units and consist of HI 30-45 units.

5.5 Steam Line

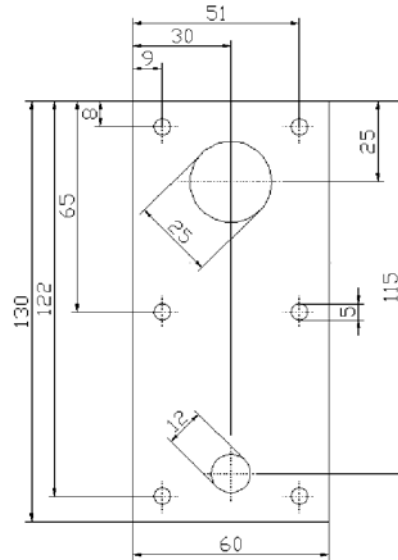
Please note When installing the steam hose, please pay attention to the following:

- Because of the high requirements on hose material under the operating conditions given, it is recommended to use genuine HygroMatik hoses only
- 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 sags will be formed)
- The steam hose should be as short as possible
- Run steam pipe lengths over 5m as hard piping
- The hose clamp for fixing the steam hose on the steam hose adapter should not be tightened too hard since the steam hose adapter is made of plastic
- In the case that steam output is distributed on two steam manifolds, the Y-pieces for the steam and condensate hose should be installed near the manifolds. If the installation is carried out in this way, since only one steam hose is necessary for the main part, loss of condensate will be decreased. In deviation of this the y-piece that is delivered ex works with a humidifier type C45, HL36, HL45 should be installed near the humidifier
- Depending on how the hose is laid, hose clips should be set at intervals of approx. 500 mm
- Allow easy access to the steam hose, so that it can be inspected later. In case of straight lengths of several meters, it is recommended to lay 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
- Device output, steam line installation, and the duct itself all influence pressure condition in the duct. Such, in a particular situation, this could mean that optimisation of the steam line installation will be required
- Allow for minimum bending radii:
Steam hose DN25: $R_{min} = 200 \text{ mm}$
Steam hose DN40: $R_{min} = 400 \text{ mm}$
Steam hose DN 40: $R_{min} = 400 \text{ mm}$

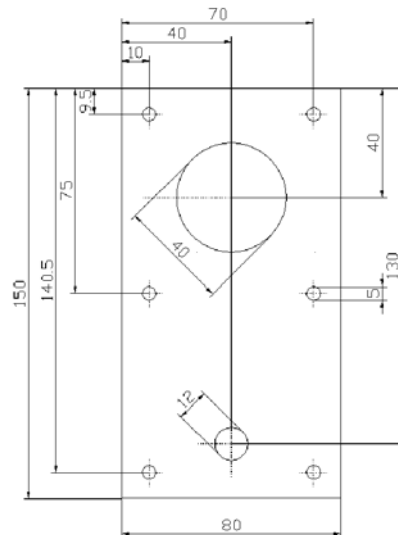
5.6 Cover Plate

HygroMatik flange plates may be used to neatly complete installation of the steam humidifier in the air duct.

Two-piece flange plates are available for the DN25 and DN40 steam manifolds.



flange plate DN25 E-2604260



flange plate DN40 E-2604410

5.7 Condensate Hose

NOTICE

To keep condensate from accumulating in the duct, ensure that the condensate drains freely.

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

- » Bore up the connection stub on the upper steam cylinder part (Diameter: 8mm; for units type C01 and C06: 5mm).
- » Lay the condensate hose at an approximate incline of 5-10% to the steam cylinder connection fitting, to allow the condensate to drain freely.

Please 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. The loop should be filled with water before commissioning.

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

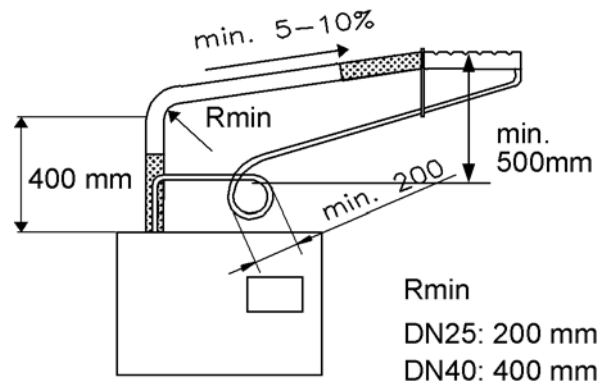
- » The condensate must be drained separately.
- » To prevent steam loss, lay a loop at least 200 mm in diameter. The loop should be filled with water before commissioning.
- » To ensure condensate drainage, place the loop (vapor trap) as far away as possible below the steam manifold connection.
- » The condensate connection on the steam cylinder must be closed with a sealing cap.
- » Place hose clamps at intervals of at least 500 mm, depending on how the hose is laid.

5.8 Types of Installation

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

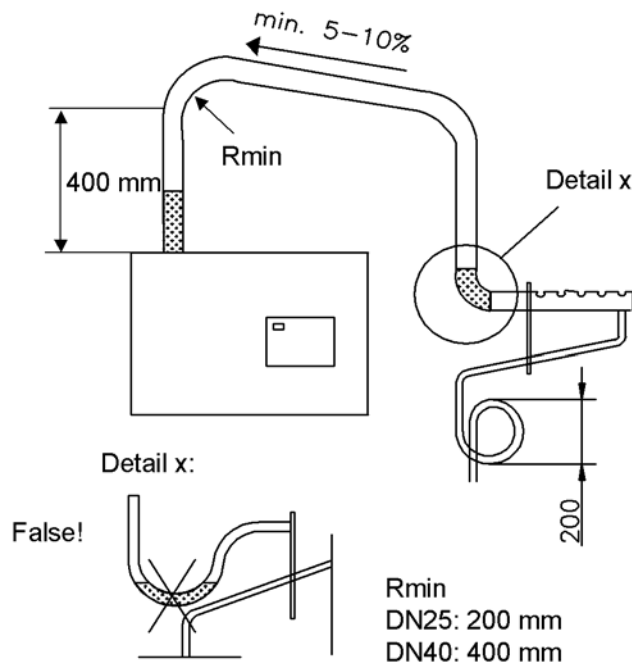
- » Lay the steam hose at a height of at least 400 mm above unit and then connect to the steam manifold with a constant rise or fall.
- » Lay condensate hose with a slope to the steam cylinder.

- » If enough space is available, lay a loop as a vapor trap. The steam manifold must be at least 500 mm from the loop.



If the steam manifold is positioned lower than 500 mm above 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 (vapour trap) to the drain. The distance between vapour trap and steam manifold should have at least 500mm.

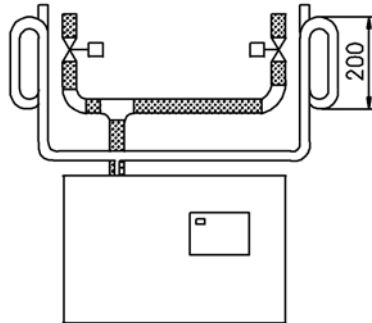


- » Lay the loop of condensate hose 200 mm directly above the drain. Detail x

5.9 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



Steam solenoid valve installation principle

5.10 Unit Installation Check

⚠ WARNING

Improper unit handling hazard! This unit may only be brought into operation by qualified personnel.

Before start-up, please check proper unit installation following the list below:

- Is the unit perpendicularly aligned in both the vertical and horizontal axis?
- Have all clearances been obeyed?
- 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?

6. Water Installation

⚠ WARNING

Risk of scalding!

Very hot water on the humidifier drain side!

Have all work performed by professional staff to avoid risk of scalding by inadequate water flow.

⚠ WARNING

Risk of electrical shock!

Hazardous electrical high voltage!

Before starting installation work ensure yourself that the unit is not connected to the power grid.

General rules

- Obey local public utility regulations
- Verify that necessary safety measures have been taken – in compliance with either German Technical and Scientific Association for Gas and Water (DVGW) guidelines (DIN EN1717) or local regulations – to eliminate backflow of polluted water into drinking water treatment facilities. This may require the installation of a system separator and free discharge into the drainage system. Within the humidifier, a double check valve (58) is located in the water supply line. It prevents - in accordance with DIN EN 61770 - the backflow of water. Alternatively, units are available that feature the DVGW-conform HyFlow system separator making further safety measures obsolete
- Use feed water without chemical additives and with a conductivity between 200 and 800 $\mu\text{S}/\text{cm}$ only. Beyond conductivity levels of 800 $\mu\text{S}/\text{cm}$ up to a maximum of 1250 $\mu\text{S}/\text{cm}$ and below conductivity levels of 200 $\mu\text{S}/\text{cm}$ to a minimum of 125 $\mu\text{S}/\text{cm}$, special adjustments are required. In this case please contact your specialist-dealer
- Supply water temperature must not exceed 40° C.
- Allowable range of water pressure: 1 - 10 bar (100 x 10³ to 100 x 10⁴ pascal)
- Blow-down water must be able to drain

6.1 Operation with Softened Water

NOTICE

Do not use softened water unless special measures are taken!

When feeding softened water into the HygroMatik steam humidifier, the aspects outlined below must be taken into account.

Softened water may cause

- unacceptably high conductivity
- the formation of salt bridges between the electrodes and the electrode leads on the inner surface of the top part of the steam cylinder
- foaming in the steam cylinder

Salt bridges cause electrical arcs. These are indicated by the presence of black grooves in the top part of the cylinder. The cylinder part must then be replaced to prevent further damage to the cylinder material, as well as short circuits which trip main circuit breakers.

Foam comes into contact with the maximum water level sensor electrode and triggers a signal indicating the cylinder is filled to capacity, even though this is false and the nominal current has

6.2 Water Supply

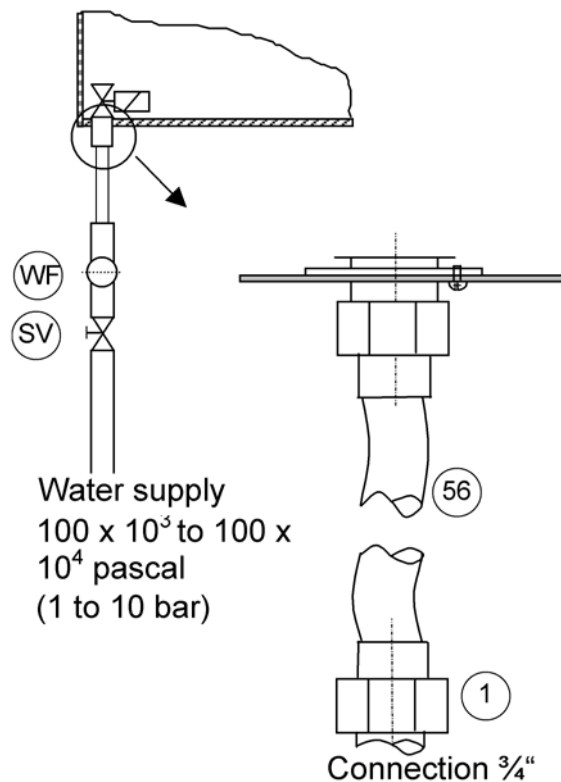
NOTICE

Foreign material in water supply pipe may cause premature damage to the solenoid valve!

Flush the water supply pipe before making connection to the solenoid valve. This is of particular importance in case of a newly installed pipe.

Please note In case of no safety device for drinking water protection according to DIN EN 1717 present in the house installation system, a system separator at least of the CA type is mandatory. Alternatively, a humidifier special model featuring the HyFlow provision may be used.

- » Install a shut-off valve (SV) in the supply line.
- » Install a water filter (WF) if necessary.



Please note Shut-off valve (SV) and water filter (WF) are not supplied with the unit. HygroMatik provides a water hose (56) with a cap nut at both ends which can be used for water installation.

- » Check presence of solenoid valve strainer (29) and insert strainer, if not yet in place.
- » Screw one of the cap nuts with its inner seal ring onto the connection stud protruding from the humidifier housing and tighten.

NOTICE**Do not overtighten the cap nut!**

Excessive tightening will destroy the fitting.

- » Screw the other hose end cap nut with its inner seal on a customer-provided water tap (cup nut internal thread is $\frac{3}{4}$ ").

6.3 Water discharge

▲ WARNING**Risk of scalding!**

During blow down up to 0.3 l/sec are being drained with a temperature of about 95° C.

Wastewater must drain freely and pressureless.

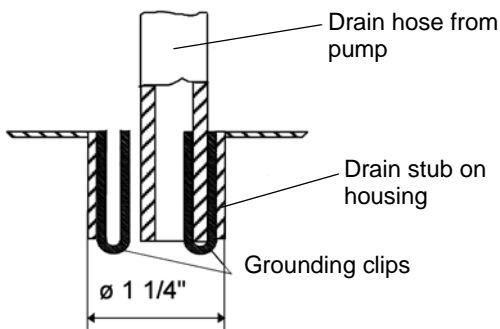
Avoid contact in order not to burn skin.

Please note With the optional wastewater cooling system **HyCool**, HygroMatik offers an option for limiting the wastewater temperature of the steam humidifier in order to protect thermosensitive wastewater pipe lines. By blending with cold water during the blow-down and rinse process, it is ensured that the wastewater always has a temperature below 60°C.

Please note Humidifier installation location and wastewater discharge must be on the same pressure level.

Install water discharge as follows (use of a flexible water drain-hose is recommended:

- » Do not buckle the drain hose.
- » Install discharge line and drain pipe made from temperature resistant material (up to 95° C).
- » Run a 1 1/4 " drain hose of 250 - 1000 mm length into a pressure-free outlet and according to DIN EN 1717. The hose must be guided sideways of the humidifier to prevent ascending vapor from condensating on the humidifier`s housing.
- » Fit water drain hose over the pump drain hose and fasten to the housing drain connection.



Two grounding clips are attached to the inner surface of the housing drain stub. The end of the pump drain hose is pushed into one of these clips. The overflow hose of the HyFlow system separator - if present - is pushed into the other clip. During blow-down, the grounding clip is in direct contact with water and shunts potential residual electric currents away from the housing.

There is a 3mm-wide crack between the pump drain hose jacket and the inner surface of the housing drain connection. If water collects on the base plate, it will flow through this crack into the floor drain.

6.4 HyFlow Provision (Special Model)



As special models, HygroMatik humidifiers are available featuring the HyFlow system separator made of plastic (DVGW CERT AS-0625CP0094 for HyLine and DVWG CERT AS-0625CP0095 for C-Line).

The functions of the HyFlow cup are:

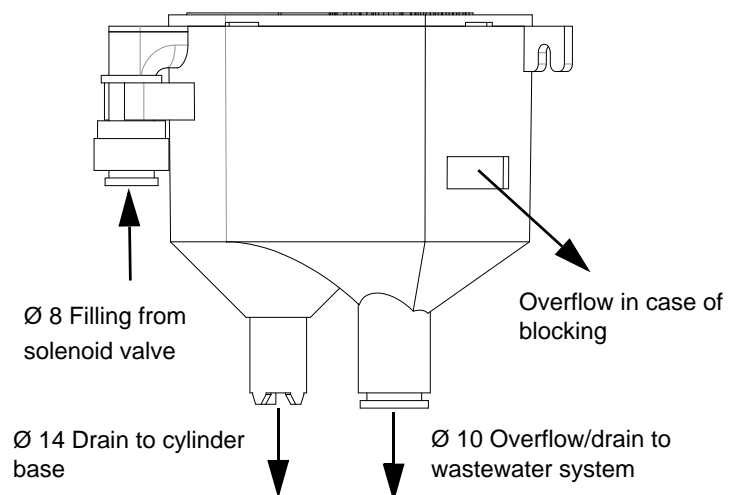
- cylinder filling
- separation of feed water supply and cylinder water , according to DIN EN 1717
- overflow protection in case of cylinder intake blocking

Cylinder filling

When the solenoid valve opens, water flows through the HyFlow cup into the cylinder base. The cylinder is filled by the static pressure of the water column.

Overflow protection

If the water level in the HyFlow cup gets too high, water flows over a partition panel into the draining system. In the unlikely case of both the cylinder intake and the drain being blocked, the water flows out through the overflow breakout and leaves the device through the wastewater hose. Contamination of the drinking water is thus excluded.



6.5 Water Installation Check

Go down the following water installation checklist:

- Are all screws and clamps properly tightened?
- Is the water supply pipe flushed?
- Was the water installation correctly installed?
- Can the blow-down water drain freely?
- Was the water discharge correctly installed?
- Is there no leakage from the water supply pipe and water discharge?

7. Electrical Connection

⚠ WARNING

Risk of electrical shock!

Hazardous high voltage!

All work related to electrical installation to be performed by authorized personnel only (electricians or professionals with equivalent training).

Please note

The customer is responsible for checking qualifications.

Do not connect the steam humidifier to the live power grid before all installation work has been completed!

General installation rules

- All wiring must confirm to CEC, NEC and local electrical codes.
- Install the electrical connections according to the wiring diagram.
- Only a permanent connection to permanent wiring is allowable (UL998 CSA Std 222.2).
- Electric connector cables to be laid professionally

NOTICE

Take care of ESD protection!

The electronic components of the humidifier control are very sensitive to electrostatic discharges. In order to protect these components during any type of installation, steps must be taken to guard against damage from electrostatic discharge.

7.1 Electrical Installation

- » Fuses must have a contact gap of at least 3mm per pole.
- » Install a separate main connection for each steam cylinder, complete with main contactor, main switch, etc.
- » Connect potential equalization to the outer ground bolt.
- » Observe VDE 0100 when selecting wire cross-sections.
- » Verify that all terminals have been tightened

Power supply connections

Make connections as shown in the table:

Type	Standard Main Power Supply
HY05 - HY45	1 x 400V/3Phase/N
HY60 - HY116	2 x 400V/3Phase/N
C01, C02	1 x 230V/1Phase/N
C06 - C58	1 x 400V/3Phase/N
MS5, MS10	1 x 400V/3Phase/N
MS5	1 x 230V/1Phase/N
C01Kit, C02Kit	1 x 230V/1Phase
C06Kit - C45Kit	1 x 400V/3Phase/N

Other voltages are available on request.

Fusing

We recommend employing medium blow main fuses (applicable only to the grid voltages indicated in the table below). The tables below show power usage and the circuit protection required for the various HygroMatik humidifier models. When using fault current circuit breakers pls. use a dedicated current circuit breaker for the humidifier.

HyLine:

Type	Power Usage	Circuit Protection*)
HY05	5,4 A	3 x 6A
HY08	8,7 A	3 x 10A
HY13	14,1 A	3 x 16 A
HY17	18,4 A	3 x 20 A
HY23	24,9 A	3 x 35 A
HY30	32,5 A	3 x 35 A
HY45	48,8 A	3 x 63 A
HY60	2 x 32,5 A	6 x 35 A
HY90	2 x 48,8 A	6 x 63 A
HY116	2 x 62,8 A	6 x 63 A

CompactLine:

Type	Power Usage	Circuit Protection*)
C01	3,3A	1 x 6A
C02	6,5A	1 x 10A
C06	6,5 A	3 x 10 A
C10	10,8 A	3 x 16 A
C17	18,4 A	3 x 20 A
C22	23,8	3 x 35 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

MiniSteam:

Type	Power Usage	Circuit Protection*)
MS5, 230V/1/N	15,7 A	1 x 16 A
MS5, 400V/3/N	5,4 A	3 x 6 A
MS10, 400V/3/N	10,8 A	3 x 16 A

CompactLine KIT:

Type	Power Usage	Circuit Protection*)
C01KIT, 230V/1/N	3,3 A	1 x 6 A
C02KIT, 230V/1/N	6,5 A	1 x 10 A
C06KIT, 400V/3/N	6,5 A	3 x 10 A
C10KIT, 400V/3/N	10,8 A	3 x 16 A
C17 KIT, 400V/3/N	18,4 A	3 x 25 A
C30KIT, 400V/3/N	32,5 A	3 x 35 A
C45KIT, 400V/3/N	48,8 A	3 x 63 A

Please note

*) After full blow down, power input is 1.3 times higher than in normal operation. The circuit protection recommended takes this into account. However, should problems arise when using expulsion fuses close to their specific limit, it is recommended to employ fuses with a higher range.

7.2 Cable Connections

The table below shows the number and size of the cable connections provided in the various electrode steam humidifiers:

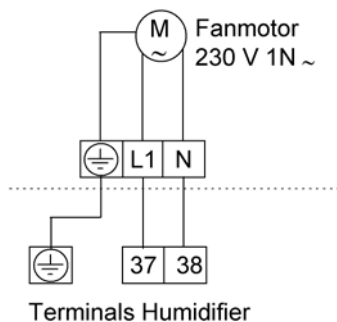
Unit type	Connection M16	Connection M25	Connection M32
HY05, HY08	4	3	-
HY13, HY17, HY23, HY30, Hy45	4	2	1
HY60, HY90, HY116	-	4	2
C01, C02	3	2	-
C6	3	2	-
C10	3	3	-
C17, C22, C30	4	3	-
C45, C58	4	2	1
MS05, MS10	-	2	-

Characteristics of metric cable connections:

Thread	across-flats dimensions [mm]	for cable diameter [mm]
M16x1,5	19	4,5 - 10
M25x1,5	30	9 - 17
M32x1,5	36	11 - 21

7.3 Fan Unit

- » Connect fan unit according to the wiring diagram.



The fan unit operates in parallel with the humidifier.

Please note Terminals 37 and 38 are only installed if the option „fan unit“ is ordered.

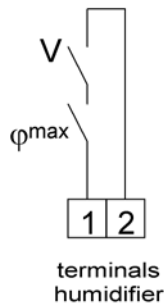
7.4 Safety Interlock

Please note Install contact interlocks, i.e. a max. hygrostat, vane relay, pressure controllers, air interlock devices, etc. in series across terminals 1 and 2.

NOTICE

Use max.-hygrostat for protection!

A max-hygrostat should be installed in the safety interlock. The max-hygrostat acts as a safety device in case the humidity sensor malfunctions.



terminals
humidifier

NOTICE

Contacts across terminals 1 and 2 must be potential-free and properly rated!

Rating must comply with the control voltage in use (24 VAC or 208-240 VAC, see technical data on the unit's name plate).

7.5 Wiring Diagram

Please remove the wiring diagram from the technical manual supplied with the control used with your humidifier. Every steam humidifier comes with one technical manual for the unit and one for the control.

7.6 Electrical Installation Checklist

Perform electrical installation checks in compliance with customer site requirements and public power utility regulations:

- Is the power grid voltage compatible with the voltage on the name plate?
- Have all electrical connections been made according to the terminal connection diagram?
- Have all electrical cable and plug connections been properly tightened?
- Are all electrical socket connections secure?
- Is the unit grounded?

On the successful completion of all of the checks the unit is ready for switching on.

⚠ WARNING

Ensure proper grounding of unit cover!

The unit cover must be in place and the lock must be engaged (applies only to humidifier types HyLine and MiniSteam).

8. Commissioning

▲ WARNING**Risk of operating error!**

Start-up of the unit is restricted to expert staff only (electricians or expert personnel with equivalent training).

Step 1: Check of mechanical integrity

- » Check cylinder seating.
- » Check steam and condensate hose clamps.

Step 2: Check of electrical wire connections

- » Check that all electrical wire connections, including heater element wire connections, are tight and secure.

Step 3: Switching on the steam humidifier

- » Switch on main breaker.
- » Open water supply stopcock (operating pressure should be 1bar min., 10bar max./14.5 psi min., 145 psi max.).
- » Switch on unit by setting control switch to “I”.
- » For initial operation check, set control unit in a way that a humidity demand results.

Step 4: The unit performs a self-test

- If the control includes a display, the message “self-test” is displayed.

Please note For the next steps, control must be set in a way that permanent steam demand is requested.

Step 5: Normal operation starts

- the water solenoid valve opens and feeds water into the steam cylinder
- Initiation of steam production may take up to 20 minutes
- » Let all electrically-driven operations run to completion. As soon as the solenoid valve begins replenishing the water periodically, the steam humidifier operates at steady nominal output and the cold start sequence is complete.

Step 6: Monitor unit for leaks

- » Let unit operate for 15 to 30 minutes.
- » If leaks appear, switch off the unit.

 WARNING**Risk of electrical shock!**

Hazardous electrical high voltage!

Follow safety instructions for work on live components.

Step 7: Repair leaks

- » Repair leaks.
- » Check again.

9. Maintenance

The HygroMatik steam humidifier is easy to maintain. However, inadequate or improper maintenance can lead to operational malfunctions. Perform regular maintenance to give your unit a long life span.

▲ WARNING

The unit is only to be serviced by qualified personnel!

All safety instructions must be observed.

After maintenance work, have qualified personnel check that the unit is operating safely.

▲ WARNING

Risk of electrical shock by hazardous voltage!

Switch off the unit before maintenance and protect against restart.

NOTICE

Take care of ESD protection!

The electronic components of the humidifier control are very sensitive to electrostatic discharges. In order to protect these components during maintenance, steps must be taken to guard against damage from electrostatic discharge.

The steam humidifier's performance and maintenance intervals primarily depend on water quality (carbonate hardness, conductivity) and the quantity of steam produced since the last maintenance. Abnormal water quality can shorten or lengthen maintenance intervals. Ongoing maintenance intervals can be estimated based on the amount and type of residue found in the steam cylinder.

Cylinder maintenance is required the latest if the following conditions apply:

Control	Indicator
Basic	Maintenance message: red and green LEDs are blinking: Unit has switched itself off automatically.
Comfort Comfort Plus	Maintenance message on display (red and green LED are blinking). Unit has switched itself off automatically.

9.1 Maintenance Work

Mineral deposits precipitate and crystallize very differently in different types of water, even when two types have the same conductivity and hardness levels (the various constituents in the water interact differently).

Instructions on maintenance and cleaning intervals, or on electrode service life, are based entirely on empirical data. Seals are wearing parts. As such, checking and replacing seals if required is mandatory in the scope of periodical maintenance.

Cycle	Maintenance Work
4 Weeks after initial operation (with normal water quality)	Visual inspection of electrical and mechanical connections Remove mineral deposits from steam cylinder, water drain hose and blow-down pump Check electrodes for erosion
Semiannually (with normal water quality and "normal" operation = 8h/day)	Visual inspection of electrical and mechanical connections Remove mineral deposits from steam cylinder, water drain hose and blow-down pump. Check electrodes for erosion

In most cases, the conductivity levels given in the "Directions for Use" section of this manual may be considered as typical values. Individual parameter settings as part of the control software may be necessary.

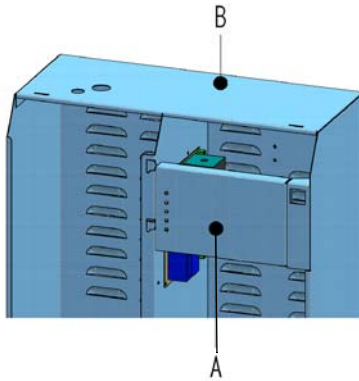
In extreme cases, water pretreatment may be necessary (softening by dilution to approx. 4 - 8 °dH; decarbonization/partial desalination to achieve target reductions in carbonate hardness). For any questions with regard to water treatment systems pls. contact HygroMatik.

9.2 Access to Electrical Enclosure

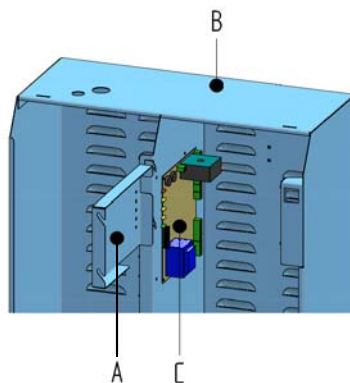
⚠ WARNING

Risk of electrical shock by hazardous voltage!

Make sure the unit is switched off before installing or removing the display panel.



- » Remove cover from humidifier (B) and lift display panel (A) off guiding.
- » Turn display panel by 90 degrees (see fig. on the left) and attach display panel to the humidifier cabinet by placing the two guide pins in the corresponding slots.
- » The basic PCB (C) is now accessible.



9.3 Removing and Cleaning the Steam Cylinder

⚠ WARNING

Risk of skin burning!

Hot steam cylinder during operation and for some time afterwards.

Drain steam cylinder before any maintenance work is commenced.

Switch off unit and protect against restart.

After that, wait approx. 10 mins before starting maintenance work.

Check steam cylinder temperature by cautious approximation with hand (do not touch!)

Please note

After being in use for a long time some mechanical cylinder shrinkage may occur. While this has no effect on the device function, it may cause a problem when only one half of the cylinder is exchanged. Such, it is generally advisable to exchange the complete cylinder.

▲ CAUTION

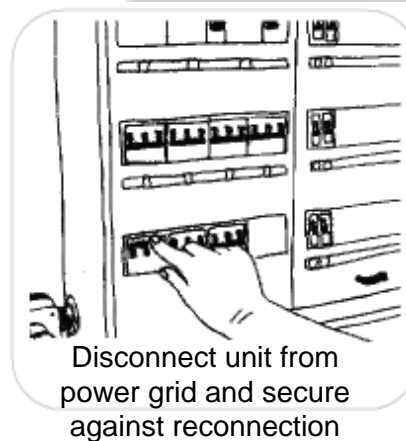
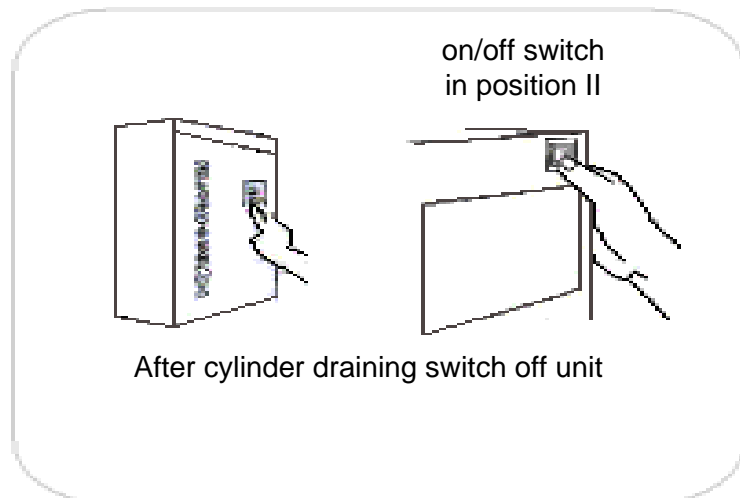
Risk of injuries to the eyes!
Cylinder clips may jump off due to pretension.
Wear proper PPE (Personal Protection Equipment)!

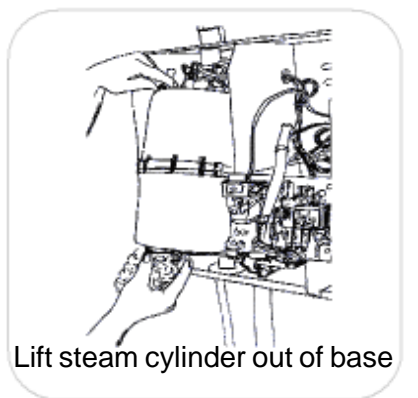
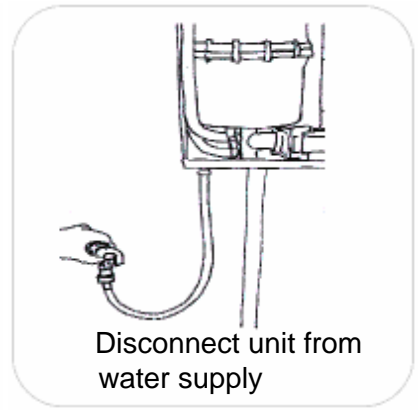
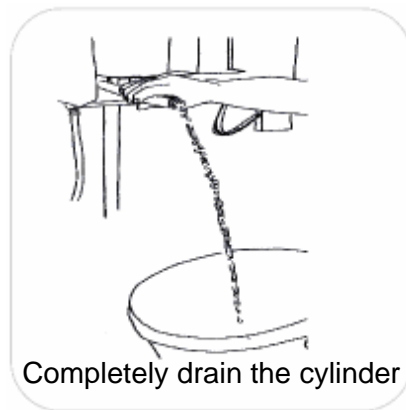
▲ CAUTION

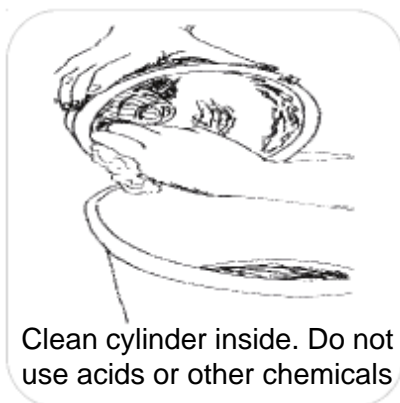
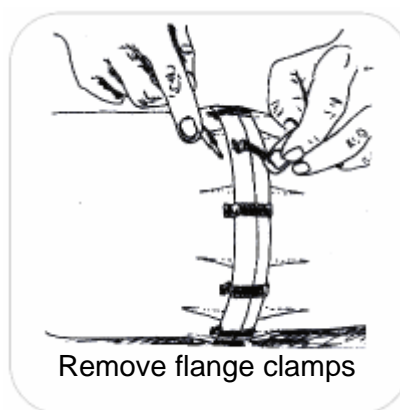
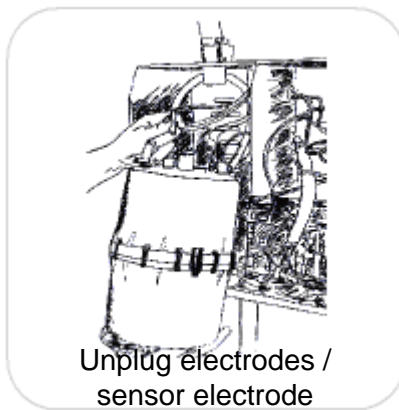
Risk of cut injuries!
Both the clips that fix the steam cylinder halves and the electrodes have sharp edges and angles.
Wear proper PPE (Personal Protection Equipment)!

▲ WARNING

Risk of electrical shock by hazardous voltage!
Disconnect the appliance from power supply before removing cover.





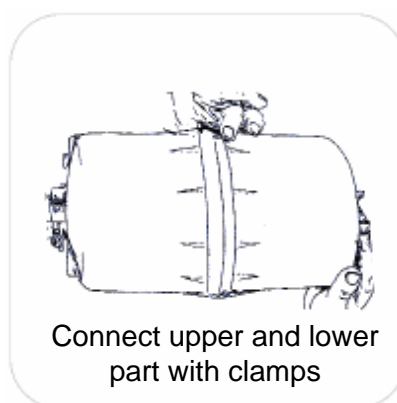


- » Check the inside of the top part of steam cylinder for crust build-up and possible salt bridges (black grooves between the electrode leads). If present, wash away completely.

Please note

If electrical arcs have burned deep grooves into the material, the top part of the cylinder (better: the complete cylinder, s. above) must be replaced.

- » Clean the sensor electrode until it is metallically bright.

**Please note**

When re-assembling the cylinder, the joints and reinforcements of both sections must fit together snugly.



- » Before attaching the electrode plugs please make sure that they are free of corrosion.
- » If corrosion is found, replace relevant electrode plug.
- » Connect plugs to the correct electrodes.

NOTICE**Ensure proper plug seating on electrode!**

The plug must be pressed down onto the electrode as far as it will go.

Please note

Wiring color corresponds with the color of the knurled nut.

Please note

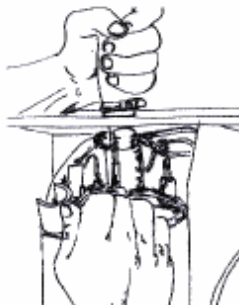
The condensate connection must be showing towards the front on the left hand side.



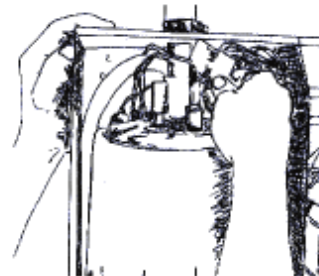
Connect plug to level sensor / electrodes



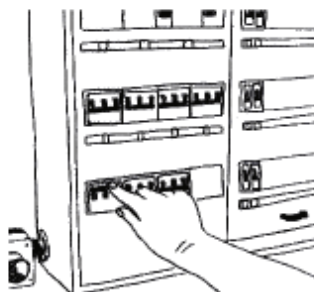
Place cylinder vertically into cylinder base



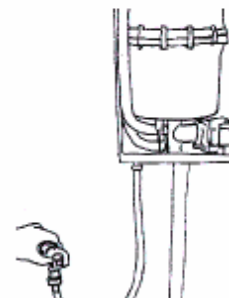
Attach adapter to steam outlet



Hold adapter in place with clip



Reconnect to power grid

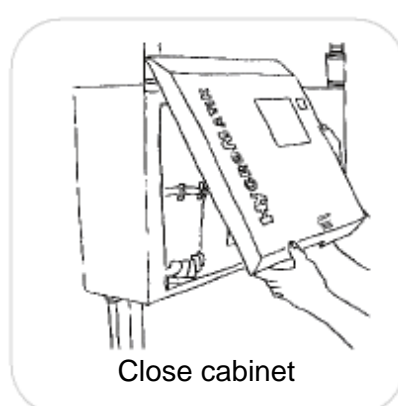


Open water supply

▲ WARNING**Risk of electrical shock by hazardous high voltage!**

Obey safety instructions for work on live equipment.

- » switch on unit and monitor for leakage during 15-30 minutes of operating.
- » In case of leakage switch of unit and redeem leakage(s).
- » Monitor again; repeat procedure until no more leakages are detected.

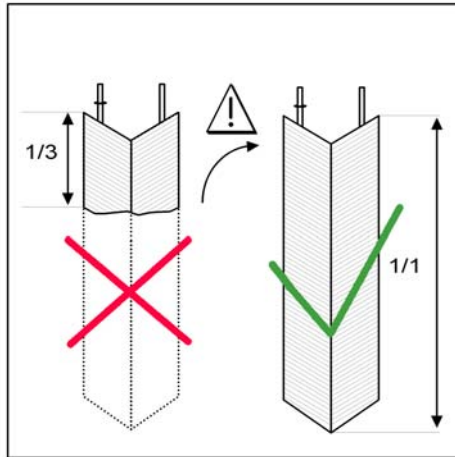
**▲ WARNING**

Ensure proper unit grounding! In order for the unit cover to be safely grounded, the cover must be fully closed and the lock must be engaged (this refers only to humidifier types HyLine and MiniSteam).

9.4 Electrode wear

Electrode wear depends on:

- feed water composition and conductivity
- the quantity of steam produced



NOTICE

Monitor electrode lengths!

When the electrodes are less than 1/3 to 1/2 of their original length, they should be replaced. At the latest, the replacement should be carried out when a maintenance message is displayed asking for replacement. This maintenance message will appear after one hour of operation at maximum water level. The humidifier operation will then stop.

9.4.1 Original Electrode Lengths

Initial lengths of HygroMatik large area stainless-steel electrodes are as indicated in the tables below.

HyLine:

Type	HY05-HY08	HY13-HY60	HY90-HY116
Length [mm]	155	235	300
[inch]	6.1	9.25	11.8

CompactLine:

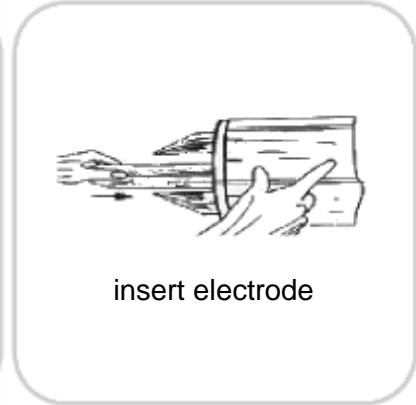
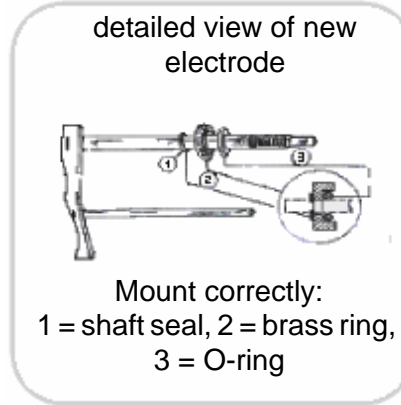
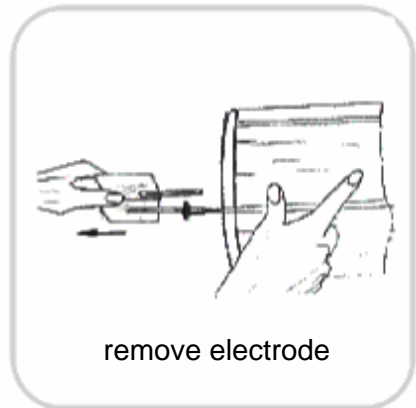
Type	C6	C10	C17-45	C58
Length [mm]	125	155	235	300
[inch]	4.9	6.1	9.25	11.8

9.4.2 Uneven Electrode Wear

In most case, the longer electrode(s) were not supplied with power for a period of time and thus did not underlie any wear. The cause of the problem, such as a tripped circuit breaker, may have been resolved already. However, since the shorter electrode(s) have a greater specific load, the electrodes continue to wear unevenly.

Please note Replace electrodes with significantly uneven wear. Check the power supply (circuit breaker, voltage drop). Also see operating manual of the relevant HygroMatik control, section "Faults and Messages."

9.5 Replacing Electrodes



- » Remove and open cylinder, as described in Section 8.3 "Removing and Cleaning Steam Cylinder."
- » Loosen knurled nuts (5) and remove electrodes (48).
- » Install new electrodes and hand tighten the nuts.
- » Use solvent-free, HygroMatik-quality o-rings (for flange, cylinder base and steam hose adapter).
- » Assemble steam cylinder and place it into cylinder
- » Connect plugs (4) directly to the electrodes (48) (with gray, red and black knurled nuts). It is not necessary to detach the knurled nuts!

NOTICE

Ensure proper plug seating on electrode!

The plug must be pressed down onto the electrode as far as it will go.

Please note

Connect plugs to the correct electrodes. Pay attention to the color of the associated knurled nuts.

- » Attach plug (8) to the sensor electrode. (Knurled nut (9) - gray)
- » Switch breaker back on.
- » Switch on the unit and check for leaks after 15-30 minutes of operation.
- » If leakage occurs, switch off power supply and eliminate leakage following safety instructions for work on live components.

Please note

Water conductivity is too high or water is not decanted oftenly enough if the following phenomina are observed:

- electrodes must be frequently replaced,
- black slime collects inside the cylinder, or
- there is "lightning" in the cylinder.

In all of these cases please contact HygroMatik.

9.6 Cleaning the Blow- down pump

- » Remove cylinder
- » Detach e-cable from pump.
- » Detach adapter (30) from pump.
- » Unscrew screws (44) and remove pump from base.
- » Open pump (bayonet lock).
- » Remove residues from drain hoses and pump (if necessary replace o-ring (33) or housing (34) if these components are no longer in excellent condition).
- » Reassemble pump.

- » Moisten o-ring (31) and insert into cylinder base horizontal stub.
- » Push pump into cylinder base and mount tightly with screws (44).
- » Moisten o-ring (31) and insert in adapter (30).
- » Slide adapter (30) over stub on pump side.
- » Connect e-cable to pump.
- » Install cylinder.
- » Switch on unit and check for leaks during operation.

▲ WARNING**Hazardous voltage! Risk of electrical shock!**

Follow safety instructions for work on live components.

- » In case of leakage turn off power supply and secure against being switched on again.
- » Redeem leakage.
- » Check again.

9.7 Cleaning the Water Inlet Solenoid Valve

Removal

- » Shut off water supply and loosen water installation hose connection.
- » Remove cylinder.
- » Remove connecting hose (21) from cylinder base.
- » Detach electrical cable from solenoid valve.
- » Unscrew solenoid valve mounting screws and remove solenoid valve from housing.
- » Clean solenoid valve intake area
- » Remove mesh filter (29) from solenoid valve and clean. Replace if required.

Installation

- » Insert fine mesh filter.
- » Reinsert solenoid valve with seal in unit housing opening and bolt down.
- » Screw on water installation hose.
- » Connect electrical cable to solenoid valve.
- » Attach connecting hose (21) to cylinder base.
- » Install cylinder.
- » Turn on water tap.
- » Switch on unit and check for leaks during operation.

▲ WARNING

Hazardous voltage! Risk of electrical shock!

Follow safety instructions for work on live components.

- » In case of leakage turn off power supply and secure against being switched on again.
- » Eliminate leakage.
- » Check again.

9.8 Cleaning the Water Inlet Solenoid Valve and HyFlow System Separator (special models only)

Removal

- » Shut off water supply and open water installation hose connection.
- » Remove cylinder.
- » Remove grounding sleeve (62) from solenoid valve (63). To do so, push the collet into the John-Guest connection fitting and pull out the grounding sleeve with the HyFlow connecting hose attached.
- » Remove connecting hose from HyFlow to cylinder base.
- » Detach electrical cable from solenoid valve (63).
- » Remove solenoid valve and HyFlow mounting screws.
- » Remove solenoid valve and HyFlow from the housing.
- » Clean inlet section of solenoid valve.
- » Open and clean HyFlow.

Installation

- » Reinsert solenoid valve with seal in the unit housing opening and bolt down.
- » Screw on water supply hose.
- » Connect electrical cable to the solenoid valve.
- » Attach HyFlow with screw.
- » Attach connecting hose (21) to the base. Squeeze the John Guest connections firmly.
- » Install steam cylinder.
- » Turn on water tap.
- » Switch on the unit and check for leaks during operation.

▲ WARNING

Hazardous voltage! Risk of electrical shock!

Follow safety instructions for work on live components.

- » In case of leakage turn off power supply and secure against being switched on again.
- » Eliminate leakage(s).
- » Check again.

9.9 Checking Cable Connections and Electrode Cables

- » Make sure that no cable and plug connections are loose.

NOTICE

Ensure proper plug seating on electrode!

The plug must be pressed down onto the electrode as far as it will go. Loose cable connections cause excessive contact resistance and overheating of contact surfaces.

- » Check electrode plug isolation, replace plugs as needed.

Please note Electrode plugs wear out when removed and reinstalled for several times. Replace plugs when required.

9.10 Checking Hoses

Since steam and condensate hoses are also subject to wear they have to be checked regularly.

9.11 Checking Operation

Start up the unit and operate for a few minutes at maximum output if possible.

- » Check safety devices.
- » Check hose connections for possible leaks.

9.12 Dismantling

When end-of-life, de-installation of the steam humidifier for dismantling (demolish or scrap) has to follow the installation procedures in reverse order.

▲ WARNING

Risk of electrical shock!

Hazardous electrical high voltage!

Electrical dismantling must only be performed by certified expert staff (electricians or expert personnel with equivalent training).

Please note With regard to disposal, pay special attention to the safety instructions provided in section 2 of this manual.

10. EC-Declaration of Conformity

EG-Konformitätserklärung EC Declaration of Conformity

Hersteller: **HygroMatik GmbH**
Manufacturer: *HygroMatik GmbH*

Anschrift: Lise-Meitner-Straße 3
Address: *D-24558 Henstedt-Ulzburg / Germany*

Produktbezeichnung / Product description:

Hy-Line: HY05, HY08, HY13, HY17, HY23, HY30, HY45, HY60, HY90, HY116

C-Line: C01, C02, C06, C10, C17, C22, C30, C45, C58

MiniSteam: MS05, MS10

In den Ausführungen / Type: Basic, Comfort, Comfort Plus, Dampfbad / *Steam bath (DS)*

Die bezeichneten Produkte stimmen in der von uns in Verkehr gebrachten Ausführung mit den Vorschriften folgender Europäischer Richtlinien überein:

The products described above in the form as delivered are in conformity with the provisions of the following European Directives:

2004/108/EG Richtlinie des Rates zur Angleichung der Rechtsvorschriften der Mitgliedstaaten über die elektromagnetische Verträglichkeit.

Council Directive on the approximation of the laws of the Member States relating to electromagnetic compatibility.

2006/95/EG Richtlinie des Rates zur Anleitung der Rechtsvorschriften der Mitgliedstaaten betreffend elektrische Betriebsmittel zur Verwendung innerhalb bestimmter Spannungsgrenzen.

Council Directive on the approximation of the laws of the Member States related to electrical equipment designed for use within certain voltage limits.

Die Konformität mit den Richtlinien wird nachgewiesen durch die Einhaltung folgender Normen:

Conformity to the Directives is assured through the application of the following standards:

Referenznummer: <i>Reference number:</i>	Ausgabedatum: <i>Edition:</i>	Referenznummer: <i>Reference number:</i>	Ausgabedatum: <i>Edition:</i>
DIN EN 55022	2008-05	DIN EN 60335-1	2007-02
DIN EN 61000-4-2	2001-12	DIN EN 60335-1/A13	2009-05
DIN EN 61000-4-3	2008-06	DIN EN 60335-2-98	2009-04
DIN EN 61000-4-4	2005-07	DIN EN 62233	2008-11
DIN EN 61000-4-5	2007-06	DIN EN 62233 Ber.1	2009-04
DIN EN 61000-4-6	2008-04		

Die Anforderungen des Geräte- und Produktsicherheitsgesetzes GPSG) §4 Abs. 1 bis 3 werden eingehalten. Eine vom Lieferzustand abweichende Veränderung des Gerätes führt zum Verlust der Konformität. *The requirements of the German Appliance and Product Safety Law (GPSG) paragraph 4 clause 1 to 3 are met. Product modifications after delivery may result in a loss of conformity.*

Henstedt-Ulzburg, den / the 04.10.2011

HygroMatik GmbH



Dirc Menssing
General Manager



Dr. Andreas Bock
Technical Manager

Diese Erklärung bescheinigt die Übereinstimmung mit den genannten Richtlinien, ist jedoch keine Zusicherung von Eigenschaften. Die Sicherheitshinweise der mitgelieferten Produktdokumentation sind zu beachten. *This declaration certifies the conformity to the specified directives but contains no assurance of properties. The safety documentation accompanying the product shall be considered in detail.*

11. Spare Parts

*	HY05	HY08	HY13	HY17	HY23	HY30	HY45	HY60	HY90	HY116	Articel No.	Description
											E-1702042	Lock for cover
												Steam generation
16	1										B-3204031	Steam cylinder CY8 compl. with electrodes and hand nuts **
16	1										B-2204231	Steam cylinder CY8 DN40 compl. with electrodes and hand nuts **, for SPA applications since 04.2010
16			1								B-2204101	Steam cylinder CY17 DN 25 compl. with electrodes and hand nuts **
16			1								B-2204103	Steam cylinder CY17 DN 40 compl. with electrodes and hand nuts **, for SPA applications since 04.2010
16				1							B-2204111	Steam cylinder CY17 DN 40 compl. with electrodes and hand nuts **
16					1			2			B-2204105	Steam cylinder CY30 compl. with electrodes and hand nuts **
16						1		2	2		B-2204109	Steam cylinder CY45 compl. with electrodes and hand nuts **
17	1										E-3216010	O-ring seal for cylinder flange CY8, transparent cylinder
17			1	1							E-2206050	O-ring seal for cylinder flange CY17, transparent cylinder
17					1			2			E-2206051	O-ring seal for cylinder flange CY30, transparent cylinder
17						1		2	2		E-2207011	O-ring seal for cylinder flange CY45, transparent cylinder
35	1										E-3216011	O-ring seal for cylinder base
35			1	1	1	1	2	2	2		E-2204022	O-ring seal for cylinder base
48	1										B-3204019	Electrodes compl. with hand nuts (M6), set=3pc. for CY8
48			1								B-2204081	Electrodes compl. with hand nuts (M8), set=3pc. for CY17
48				1							B-2204083	Electrodes compl. with hand nuts (M8), set=6pc. for CY17 DN40
48					1			2			B-2204095	Electrodes compl. with hand nuts (M8), set=6pc. for CY30 DN40
48						1		2	2		B-2204085	Electrodes compl. with hand nuts (M10), set=6pc. for CY45 DN40
10	1										B-3204027	Sensor electrode compl. with hand nut
10			1	1	1	1	2	2	2		B-2204075	Sensor electrode compl. with hand nut
10	1	1	1	1	1	1	2	2	2		E-3216025	Plug-in contact with isolating hose for sensorelectrode
4	3										E-3216024	Plug-in contact with isolating hose for steam generating electrodes
4			3	6	6			12			B-2206065	Plug-in contact with isolating hose for steam generating electrodes
4						6		12	12		E-2207016	Plug-in contact with isolating hose for steam generating electrodes
18	12	18	18	24	24	48	48	48			E-3216022	Clamp for flange of transparent cylinder
37	1										E-3220000	Cylinder base DN20/25/15/12
37			1	1	1	1	2	2	2		E-2206086	Cylinder base DN40/25/15/12
	1										B-3216023	Mounting set for Cylinder base
			1	1	1	1	2	2	2		B-2214023	Mounting set for Cylinder base
1	1										E-3221002	Adapter for steam hose DN25, CY8
1	1										E-3221008	Adapter for steam hose DN40, CY8, for SPA applications since 04.2010
1			1								E-2209000	Adapter for steam hose DN25, CY17
1			1								E-2209004	Adapter for steam hose DN40, CY17, for SPA applications since 04.2010
1				1							E-2209004	Adapter for steam hose DN40, CY17
1					1			2			E-2209006	Adapter for steam hose DN40, CY 30
1						2		4	4		E-2209008	Adapter for steam hose DN40, CY 45

*	HY05	HY08	HY13	HY17	HY23	HY30	HY45	HY60	HY90	HY116	Articel No.	Description
1			1								E-2209014	Adapter steam outlet DN40/25
2	1	1									E-3221004	Clip for adapter DN25
2				1	1	2	2	4	4		E-2209002	Clip for adapter DN40
3	1	1									E-3221006	O-ring for adapter DN25
3	1	1									E-2204022	O-ring for adapter DN40, for SPA applications since 04.2010
3				1	1	2	2	2	2		E-2204022	O-ring for adapter DN40
	1										B-3216073	O-ring set CY8 (Pos. 3, 17, 35)
	1										B-3216099	O-ring set CY8 DN40 (Pos. 3, 17, 35), for SPA applications since 04.2010
			1								B-2207021	O-ring set CY17 DN25 (Pos. 3, 17, 35)
			1								B-2207023	O-ring set CY17 DN40 (Pos. 3, 17, 35), for SPA applications since 04.2010
					1						B-2207023	O-ring set CY17 DN40 (Pos. 3, 17, 35)
						1		2			B-2207025	O-ring set CY30 (Pos. 3, 17, 35)
							1	2	2		B-2207027	O-ring set CY45 (Pos. 3, 17, 35)
												Water feed
21	0,9	1,6	1,6	1,6	1,9	1,6	1,9	1,9			E-2604002	Connecting hose solenoid valve - cylinder base, per m
25	1										B-2304021	Solenoid valve, servo controlled, straight type, 0,2-10bar, 2,5l/min.(at 4 bar)
25		1	1	1	1	2	2	2			B-2304023	Solenoid valve, servo controlled, straight type, 0,2-10bar, 3,5l/min. (at 4 bar)
	1	1	1	1	1	2	2	2			E-2304036	Sealing for solenoid valve/unit
56	1	1	1	1	1	2	2	2			B-2304031	Hose for water connection, 3/4" cap nuts on both sides, seal included
	1										E-3320400	Flow rate controller 2,5 l/min, for Pos. 25
		1	1	1	1	2	2	2			E-2321100	Flow rate controller 3,5l /min, for Pos. 25
	1										B-2304055	Double solenoid valve for Super flush applications, 2.5l/min (at 4bar)
		1	1	1	1	2	2	2			B-2304057	Double solenoid valve for Super flush applications, 3.5l/min (at 4bar)
29	1	1	1	1	1	2	2	2			E-2304024	Fine filter in the inlet fitting of solenoid valve
38	0,4	0,7	0,7	0,7	0,8	0,7	0,8	0,8			E-2604004	Hose for manual water drain, per m
20	1	1	1	1	1	1	1	1			E-2604066	Stopper, conical, lock for hose
22	4	4	4	4	4	8	8	8			E-2304015	Hose clamp 10-16mm
24	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07			E-2604002	Connecting hose solenoid valve - bush for earthing
23	1	1	1	1	1	2	2	2			E-2304080	Bush for earthing
58	1	1	1	1	1	2	2	2			E-2604094	double check valve
64	1	1	1	1	1	2	2	2			B-3320403	HyFlow with air-vent
60	0,4	0,5	0,5	0,6	0,6	0,6	0,6	0,6			E-7600186	Connecting hose: bush for earthing-HyFlow
61	1	1	1	1	1	2	2	2			E-7600094	Connecting piece, straight
62	1	1	1	1	1	2	2	2			E-2304078	Bush for earthing (HyFlow)
63	1										E-2304064	Solenoid valve, (HyFlow), servo controlled, straight type, 0,2-10bar, 2,3l/min. (at 10bar), John-Guest connection 8mm
63		1	1	1	1	2	2	2			E-2304064	Solenoid valve, (HyFlow) servo controlled, straight type, 0,2-10bar, 3,4l/min. (at 10bar), John-Guest connection 8mm
65	0,4	0,6	0,6	0,7	0,8	0,7	0,8	0,8			E-2604004	Connecting hose HyFlow-cylinder base
66	0,4	0,6	0,6	0,7	0,8	0,7	0,8	0,8			E-7600224	Connecting hose HyFlow-drain
67	2	2	2	2	2	4	4	4			E-8501064	Hose clamp 12-20mm

*	HY05	HY08	HY13	HY17	HY23	HY30	HY45	HY60	HY90	HY116	Articel No.	Description
												Water drain
	1										B-3401017	Drain-hose-system (Pos. 6, 14, 15, 30, 31)
		1	1								B-3401019	Drain-hose-system (Pos. 6, 14, 15, 30, 31)
				1				2			B-3401013	Drain-hose-system (Pos. 6, 14, 15, 30, 31)
						1		2	2		B-3401021	Drain-hose-system (Pos. 6, 14, 15, 30, 31)
31	1	1	1	1	1	1	2	2	2		E-3220005	O-ring for pump-adapter
31	1	1	1	1	1	1	2	2	2		E-3220005	O-ring for cylinder base -pump
33		1	1	1	1	1	1	1	1		E-2404024	O-ring for drain pump (cover-motor)
32	1	1	1	1	1	1	2	2	2		B-2404027	Drain pump without mounting set
	1	1	1	1	1	1	2	2	2			Mounting set for drain pump (pos. 42-44)
6	1	1	1	1	1	1	2	2	2		E-2425004	Elbow with vent pipe
57	1	1	1	1	1	1	2	2	2		E-2420423	Drain hose 1 1/4"
39	1	1	1	1	1	1	2	2	2		E-8501064	Hose clamp 12-20mm
38	0,5	0,7	0,7	0,7	0,8	2x0,7	2x0,8	0,8			E-2604004	Manual drain hose
												Control
												universal
	1										E-2501005	Main contactor 16 A, 230 V
		1									B-2507041	Main contactor 20 A, 230 V
			1	1			2				B-2507061	Main contactor 35 A, 230 V
								2			B-2507071	Main contactor 50 A, 230 V
						1			2		B-2507081	Main contactor 65 A, 230 V
	1	1	1	1	1	1	2	2	2		E-2505206	Control fuse (fast acting) 1,6 A, 5x20 mm
4	1										B-3526019	Connecting cables for electrodes with plug-in contact, set=3pc
4		1									B-2524201	Connecting cables for electrodes with plug-in contact, set=3pc
4			1								B-2524205	Connecting cables for electrodes with plug-in contact, set=6pc
4				1							B-2524209	Connecting cables for electrodes with plug-in contact, set=6pc
4					1						B-2524213	Connecting cables for electrodes with plug-in contact, set=6pc
4							2				B-2524217	Connecting cables for electrodes with plug.,set=6pc
4								2	2		B-2524225	Connecting cables for electrodes with plug., set=6pc
8	1	1	1								B-2525051	Connecting cable sensor electrode with plug
8					1	1	1				B-2525053	Connecting cable sensor electrode with plug (HY 60 = for right cylinder)
8								1			B-2525057	Connecting cable sensor electrode with plug (HY60 = for left cylinder)
8									1	1	B-2525055	Connecting cable sensor electrode with plug (HY90/HY116 = for right cylinder)
8									1	1	B-2525059	Connecting cable sensor electrode with plug (HY90/HY116 = for left cylinder)
												Steam generation with electrical supply higher than 500V
		1	1								E-2206054	O-ring CY17, silicone, for cylinder flange
				1			2				E-2206056	O-ring CY30, silicone, for cylinderflange
					1			2	2		E-2207014	O-ring CY45, silicone, for cylinderflange
		1									B-2208007	Cylinder star CY17/3
			1								B-2208013	Cylinder star CY17/6
				1			2				B-2208009	Cylinder star CY 30
					1			2	2		B-2208011	Cylinder star CY 45
		2,5	5	8			16				E-9000110	Cable H07V-K2,5 [m] for electrode connecting cable
		3	6	6			12				B-2206065	Plug-in contact for electrode 35A
					8			16	16		E-9000132	Cable H07V-K6,0 [m] for electrode connecting cable
					6			12	12		E-2207016	Plug-in contact for electrode 63A

*	HY05 HY08	HY13 HY17	HY23	HY30	HY45	HY60	HY90	HY116	Articel No.	Description
	x	x	x	x	x				E-0605228	Temperature sensor TF104
	x	x	x	x	x				B-2505207	Holder for temperature sensor TF104 incl. mounting set
	x	x	x	x	x				E-2505206	Fuse for light, fan, essence injector 1.6A, 5x20mm
	x	x	x	x	x				E-2504039	Fuse for transformer 5A, 5x20mm
	x	x	x	x	x				E-2504200	Transformer 230/24V/130VA
										Essence injection
	x	x	x	x	x				B-2604091	Peristaltic pump DSP9911; 230V/50Hz; 50ml/min
	x	x	x	x	x				E-2604072	Hose for peristaltic pump DSP9431 (until 06/2002)
	x	x	x	x	x				E-2604074	Hose for peristaltic pump DSP9111 (since 07/2002)
	x	x	x	x	x				E-2604076	hose connector for silicon hoses, 6mm
	x	x	x	x	x				E-2604070	Hose for essence injection; silicon 6x1,5
	x	x	x	x	x				B-2604067	T-piece for essence injection (DN25)
	x	x	x	x	x				B-2604069	T-piece for essence injection (DN40)
										Accessoires
	x	x							E-2604012	Steam hose DN 25, per m
	x	x							E-2604013	Steam hose DN 40, per m, for SPA application since 04.2010
	x	x	x	x	x	x	x	x	E-2604013	Steam hose DN 40, per m
	x	x	x	x	x	x	x	x	E-2604002	Condensate hose DN 12, per m
	x	x							E-2404004	Steam hose clamp DN 25
	x	x							E-2604016	Steam hose clamp DN 40, for SPA application since 04.2010
			x	x	x	x	x	x	E-2604016	Steam hose clamp DN 40
	x	x	x	x	x	x	x	x	E-2304015	Condensate hose clamp
	x	x							B-2604025	Steam solenoid valve 0-0,4 bar, cpl. for steam hose DN 25
	x	x							B-2604040	Steam solenoid valve 0-0.4 bar, cpl. for steam hose DN 40, for SPA application since 04.2010
			x	x	x	x	x	x	B-2604040	Steam solenoid valve 0-0.4 bar, cpl. for steam hose DN 40
	x	x							E-2604042	Steam connector, T-piece DN 25, stainless steel
	x	x							E-2604023	Steam connector, T-piece DN 40, stainless steel, for SPA application since 04.2010
			x	x	x	x	x	x	E-2604023	Steam connector, T-piece DN 40, stainless steel
	x	x	x	x	x	x	x	x	E-2604021	Connectors for condensate T-piece DN 12
	x								B-2208005	Cylinder star, complete
		x							B-2208007	Cylinder star, complete
			x						B-2208013	Cylinder star, complete
				x		x			B-2208009	Cylinder star, complete
					x		x	x	B-2208011	Cylinder star, complete
	x								B-2304063	Super flush, upgrade kit
		x	x	x	x	x	x	x	B-2304065	Super flush, upgrade kit
	x	x	x	x	x	x	x	x	B-2304067	Nozzle for Super Flush
	x	x	x	x	x	x	x	x	B-2304031	Water connection hose, flexible, 0.6 m 3/4", with connector

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

* see Exploded View

** If the Super Flush System is installed, consider to order also a new nozzle (B-2304079), please.
The nozzle will be already installed in the lower part of steam cylinder.

12. Fax Form - Order for spare parts

HygroMatik GmbH
 Lise-Meitner-Str. 3
 24558 Henstedt-Ulzburg
 Tel. +4904193/895-0

<p>Fax Form</p> <p>Please copy, fill in and fax to</p> <p>Fax.No. +49(0)4193/895-31</p>

Order of 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 (delivery adress)
date/signature

* Order can only be processed if unit type and unit serial no. are filled in.

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13. Technical Specification

Technical Specifications Steam Humidifier HyLine					
Type	HY05	HY08	HY13	HY17	HY23
Steam output [kg/h]	5	8	13	17	23
Power supply *	400V/3~/N/50-60 Hz				
Power Usage [kW]	3,8	6,0	9,8	12,8	17,3
Input [A]	5,4	8,7	14,1	18,4	24,9
Circuit Protection [A]***	3x6	3x10	3x16	3x20	3x35
Control	Basic, Comfort, Comfort Plus				
Control voltage	230 V				
Steam hose connection [mm]	1x25	1x25	1x25	1x25	1x40
Condensate hose connection [mm]	1x12	1x12	1x12	1x12	1x12
empty weight [kg]	12,0	12,0	19,0	19,0	20,0
operating weight [kg]	16,8	16,8	32,2	32,2	33,2
dimensions****	height [mm]	480	480	650	650
	width [mm]	449	449	522	522
	depth [mm]	251	251	301	301
Water Installation	100 x 10 ³ to 100 x 10 ⁴ pascal with 3/4" connection for external thread				
* Other voltages on request. ** Not included with delivery. *** Multiply power input by 1.3 after full blow-down. Note overload capacity of automatic breakers. If necessary, select the next higher rating. **** Outer dimensions of width and depth. Hight incl. drain connection.					

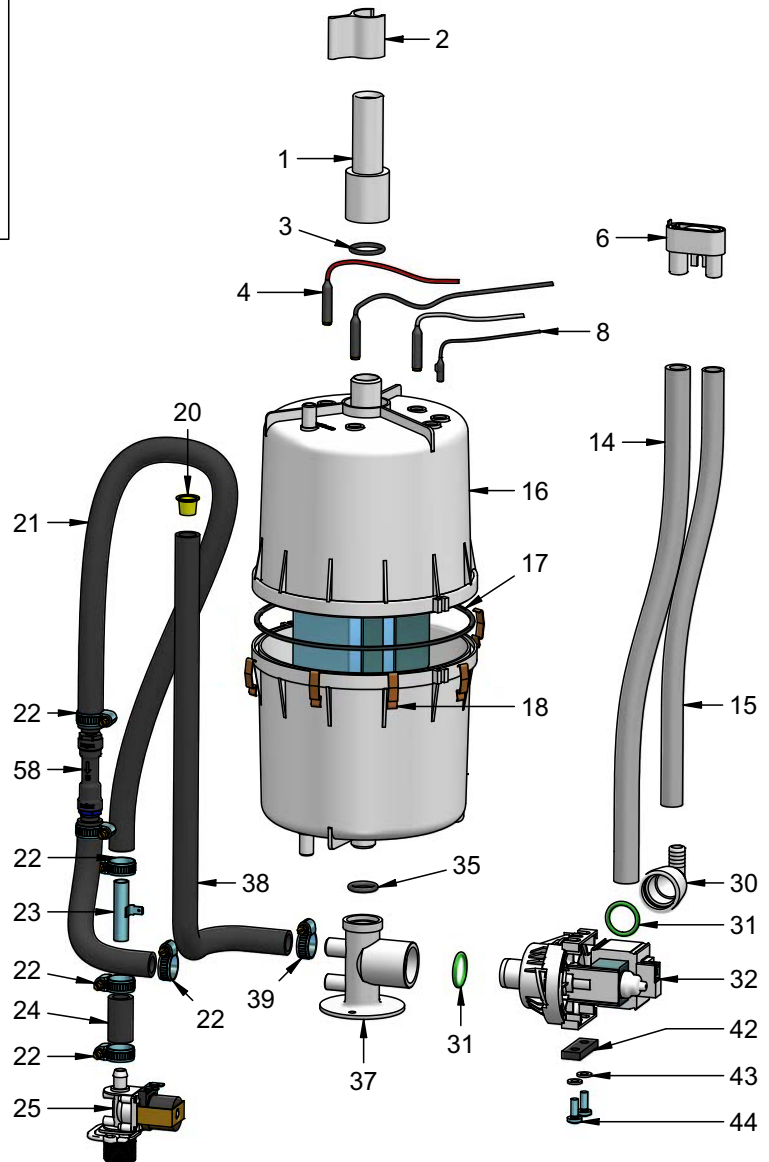
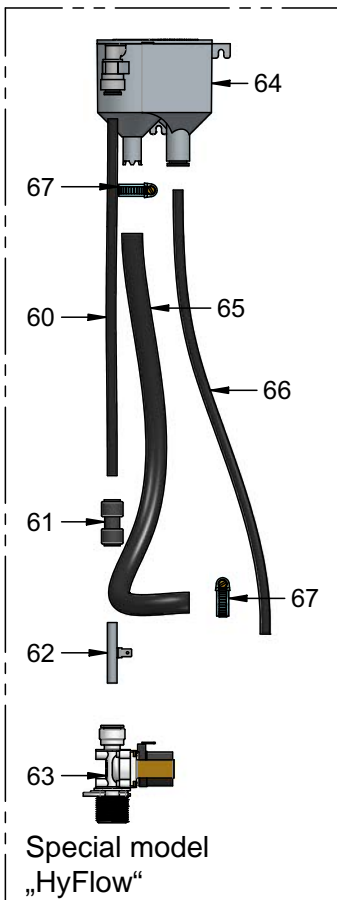
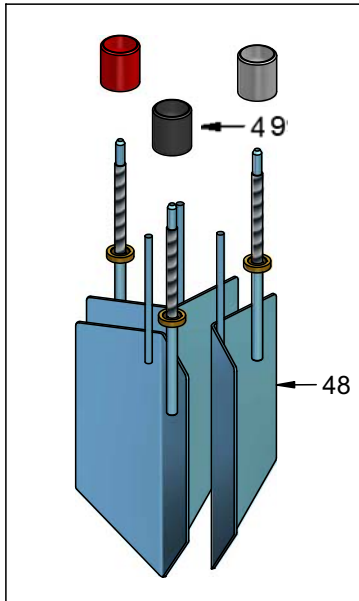
Technical Specifications Steam Humidifier HyLine					
Type	HY30	HY45	HY60	HY90	HY116
Steam output [kg/h]	30	45	60	90	116
Power supply *	400V/3/N/50-60 Hz				
Power Usage [kW]	22,5	33,8	2x22,5	2x33,8	2x43,5
Input [A]	32,5	48,8	2x32,5	2x48,8	2x62,8
Circuit Protection [A]***	3x35	3x63	6x35	6x63	6x63
Control	Basic, Comfort, Comfort Plus				
Control voltage	230 V				
Steam hose connection [mm]	1x40	2x40	2x40	4x40	4x40
Condensate hose connection [mm]	1x12	2x12	2x12	4x12	4x12
empty weight [kg]	23,0	32,0	43,9	61,0	61,0
operating weight [kg]	43,9	67,7	85,7	132,4	132,4
dimensions****	height [mm]	708	788	709	788
	width [mm]	561	654	927	1061
	depth [mm]	344	403	334	403
Water Installation	100 x 10 ³ to 100 x 10 ⁴ with 3/4" connection for external thread				
* Other voltages on request. ** Not included with delivery. *** Multiply power input by 1.3 after full blow-down. Note overload capacity of automatic breakers. If necessary, select the next higher rating. **** Outer dimensions of width and depth. Hight incl. drain connection.					

Technical Specification

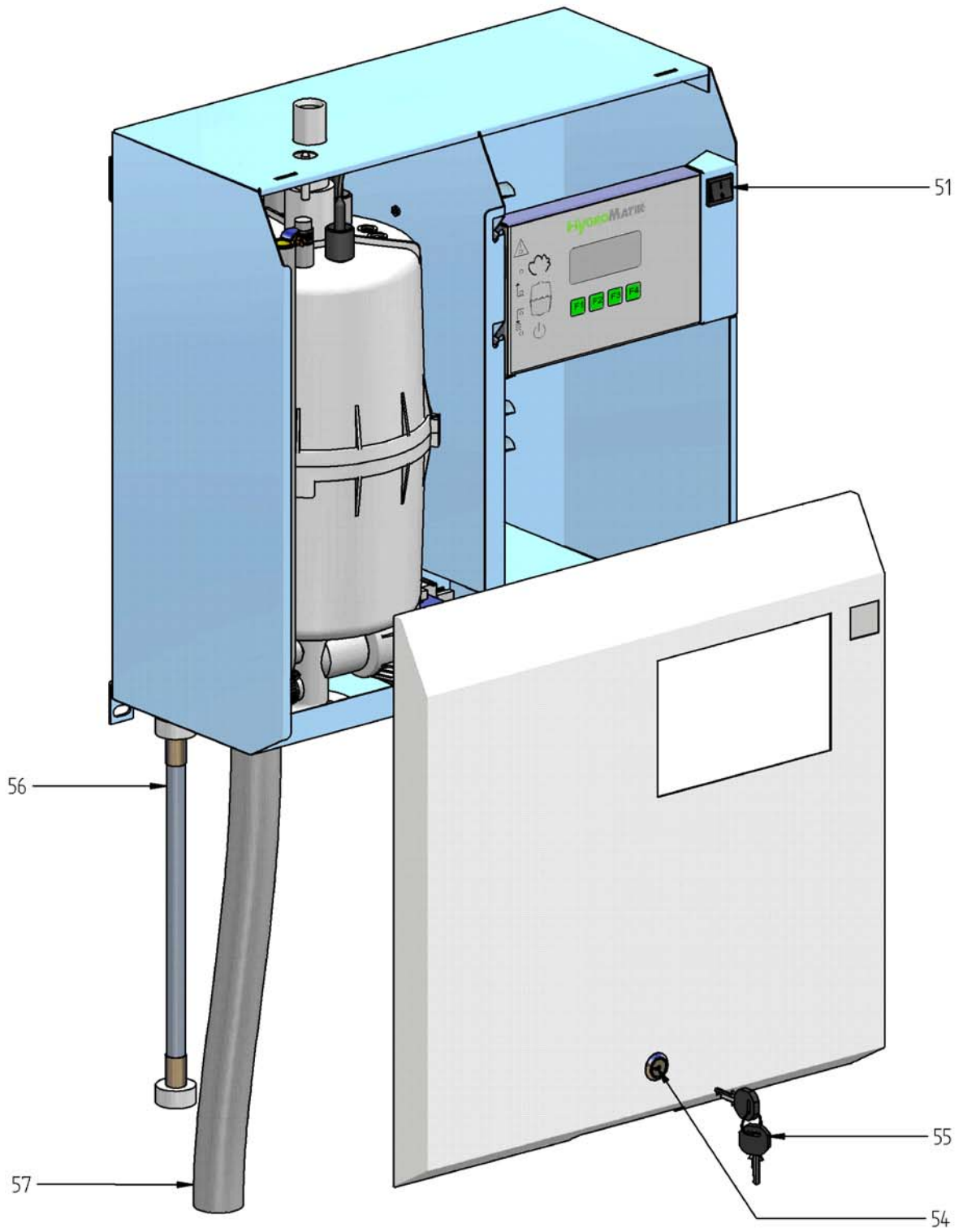
Technical Specifications Steam Humidifier HyLine for SPA					
HY05..-DS - HY23..-DS					
Type	HY05	HY08	HY13	HY17	HY23
Steam output [kg/h]	5	8	13	17	23
Power supply *	400V/3~/N/50-60 Hz				
Power Usage [kW]	3,8	6,0	9,8	12,8	17,3
Input [A]	5,4	8,7	14,1	18,4	24,9
Circuit Protection [A]***	3x6	3x10	3x16	3x20	3x35
Control	Basic-DS, Comfort-DS, Comfort Plus-DS				
Control voltage	230 V				
Steam hose connection [mm]	1x40	1x40	1x40	1x40	1x40
Condensate hose connection [mm]	1x12	1x12	1x12	1x12	1x12
empty weight [kg]	12,0	12,0	19,0	19,0	20,0
operating weight [kg]	16,8	16,8	32,2	32,2	33,2
dimensions****	height [mm]	480	480	650	650
	width [mm]	449	449	522	522
	depth [mm]	251	251	301	301
Water Installation	100 x 10 ³ to 100 x 10 ⁴ pascal with 3/4" connection for external thread				
<small>* Other voltages on request. ** Not included with delivery. *** Multiply power input by 1.3 after full blow-down. Note overload capacity of automatic breakers. If necessary, select the next higher rating. **** Outer dimensions of width and depth. Hight incl. drain connection.</small>					

Technical Specifications Steam Humidifier HyLine for SPA					
HY30..-DS - HY116..DS					
Type	HY30	HY45	HY60	HY90	HY116
Steam output [kg/h]	30	45	60	90	116
Power supply *	400V/3~/N/50-60 Hz				
Power Usage [kW]	22,5	33,8	2x22,5	2x33,8	2x43,5
Input [A]	32,5	48,8	2x32,5	2x48,8	2x62,8
Circuit Protection [A]***	3x35	3x63	6x35	6x63	6x63
Control	Basic-DS, Comfort-DS, Comfort Plus-DS				
Control voltage	230 V				
Steam hose connection [mm]	1x40	2x40	2x40	4x40	4x40
Condensate hose connection [mm]	1x12	2x12	2x12	4x12	4x12
empty weight [kg]	23,0	32,0	43,9	61,0	61,0
operating weight [kg]	43,9	67,7	85,7	132,4	132,4
dimensions****	height [mm]	708	788	709	788
	width [mm]	561	654	927	1061
	depth [mm]	344	403	334	403
Water Installation	100 x 10 ³ to 100 x 10 ⁴ with 3/4" connection for external thread				
<small>* Other voltages on request. ** Not included with delivery. *** Multiply power input by 1.3 after full blow-down. Note overload capacity of automatic breakers. If necessary, select the next higher rating. **** Outer dimensions of width and depth. Hight incl. drain connection.</small>					

14. Exploded View



15. View of housing





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