

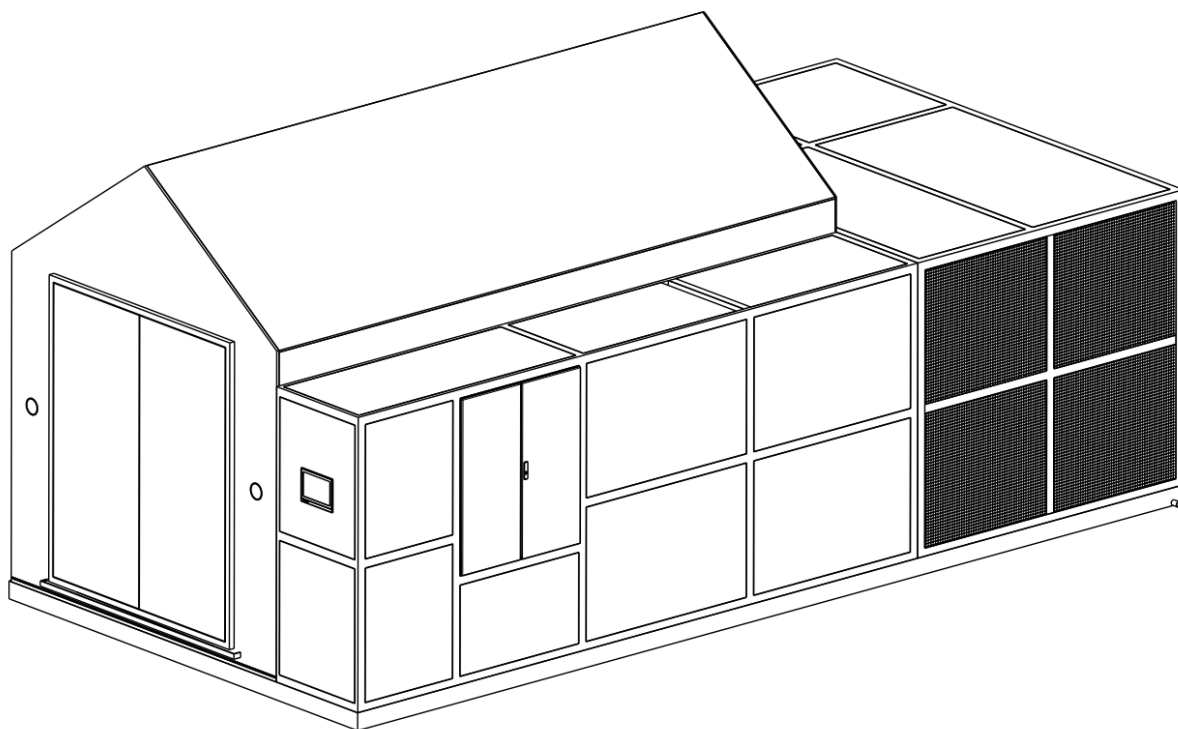
## Corrosion walk in chamber **HKB**

Corrosion test system for carrying out atmospheric corrosion tests according to the following test specifications:

- DIN EN ISO 9227
- DIN EN 60068-2-11
- ASTM B 117

### Highlights

- New control system for Industry 4.0
- PVDF nozzles
- Your desired dimensions
- Patented moisture sensor



Distribué par Brant-Industrie -14 bis Place de la République 59260 HELLEMMES  
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## Basic configuration

The system already has all the necessary components to carry out a salt mist test in the basic configuration according to ISO 9227/NS/ASS/CASS. Despite the variable size of the chamber, any configuration can be realized in consultation.

## Technical description

### Outer housing

The frame construction is made of stainless steel V2A and is characterized by high value, strength and durability.

### Test chamber

The test chamber is a container made of polypropylene and its properties make it excellent for almost all tests. The dimensions of the chamber can be agreed and customized.

### Test chamber heating

Indirect heating of the test chamber takes place via externally mounted heating mats. Various safety measures protect the test chamber from overheating.

### Air humidifier

In order to ensure a reproducible quality of the salt mist, the compressed air must be heated and moistened. This is done in a compressed air humidifier made of stainless steel. Demineralized water is heated with an immersion boiler. As a safety measure, the fill level of the humidifier is monitored at all times. If the fill level falls too low, new demineralized water will automatically be added.

## Spraying pressure control

A constant pressure controller is installed so that the spraying pressure can be kept consistent. This can compensate for on-site pressure fluctuations. A pressure gauge on the front indicates the current pressure.

## Brine flow

The brine flow is controlled via a precision metering pump. As a result, a very stable supply of the solution and reproducibility of the salt mist can be assured irrespective of the spraying pressure and the brine level in the storage tank. The amount of precipitation can be adjusted between 0.5-3.0 ml/h. The PVDF spraying nozzle ensures optimum mist density at all times.

## Ventilation function

With manual or programme-controlled rapid ventilation, salt mist is blown out of the test room with the aid of room air (radial fan).

## Brine supply

The standard is to store the brine in an external brine tank, where the brine solution can also be mixed. An optional agitator is recommended for that purpose. The location of the storage tank is freely selectable due to the self-priming dosing pump. The pump can be connected to the tank with a flexible hose over a distance of up to 10 meters. A 500-liter brine storage tank is included in the scope of delivery.

## Technical information

*(Technical data is partly dependent on add-on options)*

Temperature range room temperature to +55°C (131°F)

Temperature constancy ± 0.5K temporal

Power supply 16A, 400V/50Hz

Compressed air connection Connection: Quick coupling for compressed air  
Pressure: 6 to 8 bar  
Consumption: 2.5 Nm<sup>3</sup>/h to 3Nm<sup>3</sup>/h  
*(Note: All salt spray standards require oil-free and particle-free compressed air)*

Water connection  
*(Demineralized water)* Connection: ½" AG  
Pressure: 2.0 to 5.0 bar  
Quality: fully demineralized water (conductivity ≤ 20μS/cm)  
*(Note: Demineralized water is required to refill the humidifier)*  
*(Note: For devices equipped with the expansion pack for cyclic corrosion tests, demineralized water is also used for the flushing device, as well as for the automatic refill of the test chamber floor during condensation tests)*

Mist outlet Pipe socket d=75mm

Condensate drain Pipe socket d=32mm

Brine backup tank External 500l tank  
(Ø=820mm, H=1190mm)  
*(Note: Sufficient for approx. 200 h spraying operation, brine requirement during salt spraying: approx. 0.4 l to 0.5 l per hour)*

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## Patented humidity sensor *(only for humidity control)*

- ✓ Coated sensor
- ✓ Plug-in circuit board
- ✓ Up to six times the service life compared to conventional sensors
- ✓ User-friendly maintenance and low maintenance costs



## New control system

- ✓ Windows 10 installed
- ✓ Multi-touch panel with 12.1"
- ✓ graphical display for temperature and humidity curves
- ✓ Pre-programmed and customizable tests
- ✓ Exportable as CSV or image
- ✓ Ethernet interface for Industry 4.0



## Safety devices

Overtemperature protection for all installed heaters  
(Safety temperature limiter STB according to DIN EN 14597:2015-02)

Constant pressure reducer with return control and maximum pressure limiter  
(Pressure fluctuations in the spray air can be compensated by using the constant pressure reducer.)

Pressure relief valve for humidifier  
(Safety pressure relief valve with TÜV certificate as proof of the correct set pressure. This prevents the pressure in the humidifier from rising above the permissible setting range of 1.8 bar.)

Protection against dry running  
(Overheating of the chamber and humidifier is prevented by the built-in dry-running protection, should there be a lack of water.)

## On-site services

- Indoor installation                      Ambient temperature: 18°C to 25°C  
    Environmental humidity: 85% non-condensing
  
- Install exhaust air pipe with a constant slope to avoid water bags due to condensation  
Exhaust air connection:                      75 mm
  
- Condensate drain near the bottom, max. 150 mm height  
Drain connection:                              32 mm
  
- Compressed air connection:            6 to 8 bar  
The compressed air must be free of dirt, oil and other impurities.  
Reference point for permitted residual contamination from the replaced DIN 50 021:  
Maximum 0.2mg/m<sup>3</sup> in the form of oil and dust (< 5µm)
  
- Water connection/supply with demineralized water: 2.0 to 5.0 bar
  
- Grid connection with air conditioning function:                      Cekon CEE 16A

## Special notes

Company-specific instructions for device use or internal company standards are **not** taken into account. However, these can be offered as an option with coordination. Clearing up any issues with local authorities such as TÜV, EVU or the Trade Inspectorate etc. must be provided on site by the customer. Possible costs incurred are **not** included in the offer total!

The system is **not** suitable for tests with explosive, toxic or readily flammable substances, or with test material that produces or releases these substances.

The technical design of the device complies with the relevant basic safety and health requirements of the following directives and standards:

### **Guidelines and laws:**

Machinery Directive 2006/42/EC

Low Voltage Directive 2014/35/EU

EMC Directive 2014/30/EU

Pressure Equipment Directive 2014/68/EU

### **Mechanical standards:**

DIN EN ISO 13857 (edition 06/2008)

DIN EN 378-1,-2 (edition 041/2018)

(only for appliances with refrigeration systems)

DIN EN 378-3,-4 (edition 03/2017)

(only for appliances with refrigeration systems)

DIN EN ISO 13732-1 (edition 12/2008)

(only for devices with higher temp.)

DIN EN ISO 12100 (edition 03/2011)

AD2000 A2 (edition 04/2015)

(Safety valves on pressure vessels)

### **Electrical standards:**

DIN EN ISO 13849-1 (edition 12/2016)

DIN EN ISO 13849-2 (edition 02/2013)

DIN EN IEC 61000-6-2 (edition 11/2019)

DIN EN IEC 61000-6-3 (edition 06/2022)

DIN EN 61010-1 (edition 03/2020)

DIN EN 61010-2-010 (edition 10/2018)

DIN VDE 0100-410 (edition 10/2018)

DGUV regulation 3

## storage

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### **Continuous condensation test ISO 6270-2**

Extends the device by the condensation water function and enables cyclic corrosion tests in which the device automatically switches between salt mist, condensation and ventilation phases (ventilation with compressed air).

Refilling with demineralized water and emptying of the test chamber takes place automatically.

*(No retrofitting option)*

2

### **Condensation water temperature range expansion to 70°C (158°F)**

Temperature range extension of the condensation function (EK1001) from +50°C to +70°C (122°F to 158°F). We have seen cases of elastic deformation of the polypropylene test chamber at the higher temperatures.

*(No retrofitting option)*

3

### **Test chamber flushing system**

The test chamber walls can be rinsed with demineralized water for an automatic cleaning of the test chamber walls and the floor after a salt mist phase. The flushing system can also be used to cool the test chamber walls in to reach rapid temperature changes in the chamber.

*(No retrofitting option)*



4

**Test chamber ventilation with ambient air**

The test chamber is ventilated with ambient air via a radial fan. The compressed air ventilation included in the basic configuration is then omitted. The air volume can be adjusted between 50 and 200m<sup>3</sup>/h via electronic frequency converters.

*(No retrofitting option)*

*(Device width extension by +670mm)*

5

**Standard air conditioning module for test chamber climate control**

Air conditioning is carried out via a circulating air system and a controllable dehumidification section with the aid of a refrigeration system at 23±2 °C. / 50±5%. Measuring and controlling are done with a patented humidity sensor, which is encapsulated from the test chamber air during non-climate-controlled phases. The special sensor delivers more than triple the service life due to its special coating.

*(No retrofitting option)*

*(Device width extension by +670mm)*

6

**Air conditioning module and steam generator for advanced test specifications**

Climatic conditions in the range of +23°C to +50°C (73°F to 122°F) and 30% to 95% (± 5%) can be generated at a dew point between +9°C (48°F) and +50°C (122°F) in the test chamber using this module. The air passes through tube dehumidifiers and becomes properly conditioned with the aid of a recirculating air system. Measuring and controlling are done with a patented humidity sensor, which is encapsulated from the test chamber air during non-climate-controlled

phases. Due to the special coating of the sensor, the service life is increased sixfold.

*(No retrofitting option)*

*(Device width extension by +900mm)*

7

### **Moist air storage with steam generator extension module**

Air conditioning is carried out via a circulating air system and a controllable humidification section to 40°C (104°F) ±2°C. / 93°C (199°F) +2/-3%. Measuring and controlling are done with a patented humidity sensor, which is encapsulated from the test chamber air during non-climate-controlled phases. The special sensor delivers more than triple the service life due to its special coating.

*(No retrofitting option)*

*(Device width extension by +670mm)*

8

### **Extension option for SWAAT tests**

This option facilitates the SWAAT test. In the SWAAT test, the test chamber floor is continuously covered with water.

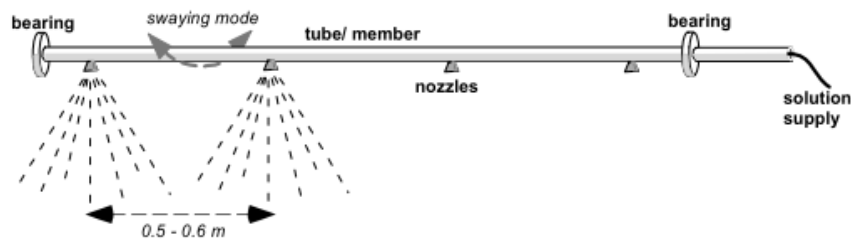
Cycle: Spraying for 30 minutes, resting at +50°C (122°F) for 90 minutes.

*(No retrofitting option)*

9

### **Irrigation with swivel motion, fan nozzles**

Sprinkler system with motorized swiveling spray rake.  
Flow control via a precision dosing pump (adjustable 0 to 63l/h)  
The test solution is sprayed via fan nozzles of type "UNI Jet 800050VP" as specified in the standard. Precipitation is 15 mm/h  $\pm$ 5mm/h



*(Retrofit possible).*

10

### ***Irrigation without movement, full cone jets***

The test solution is sprayed over the entire surface of the test chamber using full cone jets, which are mounted under the hood/roof. The flow rate can be adjusted via a compressed air diaphragm pump.

*(Retrofit possible).*

11

### ***Electronic gas measurement***

The device operates according to the capillary dosing method. The inlet pressure SO<sub>2</sub> is measured before and during dosing at a time interval of 0.2 s. The pressure difference and the temperature measured at the same time determine the metered volume SO<sub>2</sub>, which is measured continuously. As soon as the predetermined dosing volume is reached, the magnetic valves are closed and the dosing process stops. The device works independently of a PC, but can be configured via a supplied terminal program and store data online (USB connection).

*(Retrofit possible).*



12

***Hood insulation at 60 to 70°C (140 to 158°F)***

Hood insulation is recommended for devices with higher temperatures. In that case, removable insulation is placed over the acrylic hood. This ensures that the desired temperatures are reached quickly and safely.

*(Retrofit possible).*

13

***Load capacity extension for the test chamber***

For this, prefabricated reinforced struts are installed on the test chamber floor. These ensure better stability and a maximum load capacity of 500kg for the test chamber.

*(No retrofitting option)*

**Cable feedthrough**

Cable entry with sealing cover.  
Nominal width 110 mm  
*(Retrofit possible).*



**Brine tank and accessories**

<i>Designation</i>	<i>Order no.</i>	<i>Space requirement</i>
140l tank (PE-natural/transparent)		D=500mm, H=860mm
250l tank (PE-natural/transparent)		D=650mm, H=1100mm
500l tank (PE-natural/transparent)		D=820mm, H=1190mm
Agitator for 140l tank		Mounted on tank
Agitator for 250l tank		Mounted on tank
Agitator for 500l tank		Mounted on tank
Creeper dolly for 140l tanks		Round, under tank H=80mm
Creeper dolly for 250l tanks		Round, under tank H=80mm
Creeper dolly for 500l tanks		Round, under tank H=80mm



*(The dosing tank is used for storing liquid media. The dosing tank is suitable for all media which PE (polyethylene) is resistant against within the material boundaries. The tank is not suitable for use in EX areas. The tank must be depressurized to be operated. Tanks cannot be stacked. The tank is not suitable for carrying loads. Take into account the load-bearing capacity of the installation surface on which the tank will stand. The installation surface must be flat and free of foreign objects.)*

**Note:** Experience shows that storage volumes that are too large can lead to problems. Storage volumes for 1 to 2 weeks have proven successful.

**Note:** A tank that is suitable for the device is already included in the basic equipment.

Black tanks are available upon request.

## Additional Accessories

15

### *Air compressor*

Air compressor including fine filter and pressure gauge for independent operation.

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### *Compressed air filter unit*

Pre- and fine filter for a compressed air supply low in oil and solid contaminants according to DIN EN ISO 9227:2017-07.

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### *Water desalination device*

Mixed bed cartridge including conductivity meter and magnetic valve for producing a fully desalinated water supply connection to the domestic water network. Capacity 1000 l/h, capacity 2,800 liters at 10° dH.

18

### *Spare cartridge for water desalination device*

Mixed bed cartridge  
Capacity 1000 l/h, capacity 2,800 liters at 10° dH

## Other accessories

19

### *Aerometer*

For measuring and monitoring the brine concentration  
Density can be read on scale.



20

### *Digital refractometer*

For easy measurement and monitoring of the  
brine concentration.  
Readout in the text display: Density and salinity  
of the solution



21

### *PH value meter*

To easily measure and monitor the pH value in the brine.  
Shows in the text display: pH value and temperature of the solution

22

### *PH value meter*



Hopper according to DIN EN ISO 9227

Diameter=100mm,  
Collection area=80cm<sup>2</sup>  
Measuring volume =50ml



23

### **Glass or stainless steel S-hook**

Glass hook, S-shape, d=2mm  
Stainless steel hook, S-shape, d=2mm

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### **Test plates**

Test plate set according to ISO 9227, steel CR4  
5 sample plates 150x70x1mm

*The corresponding European steel quality is supplied (German designation DC04 according to DIN EN ISO 1013 as described in DIN 50 021)*

Test plate set according to ISO 9227, pure zinc  
5 sample plates 100x50x1mm

*(Pure zinc with a purity of 99.975%, maximum copper content of 0.002%)*

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**Sikkens scoring set**

For the exact creation of score lines during corrosion tests. Version with 0.5 mm or 1 mm cutting edge.

*(Delivered in a case)*



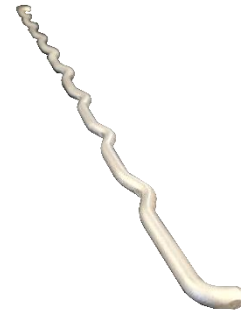
**Test piece holders, support rods and support grids**

<i>Designation</i>	<i>Description</i>
Support rod, GRP pipe	Diameter 20 mm Load capacity approx. 12 kg
Support rod, plastic GRP	Diameter 12 mm, load capacity approx. 8 kg
<i>Designation</i>	<i>Description</i>



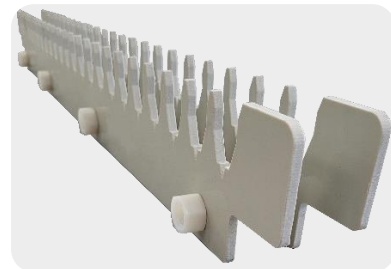
Support rod, solid rod, special stainless steel

Diameter 8 mm, load capacity approx. 16 kg



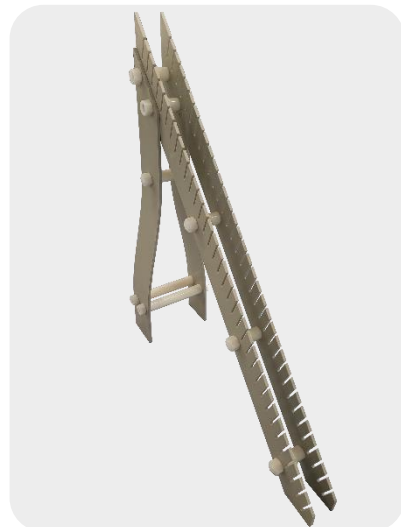
Test plate carrier, horizontal

for holding approx. 24 test plates, 150 x 70 mm



Test plate carrier, diagonal

for holding approx. 15 test plates, 150 x 70 mm

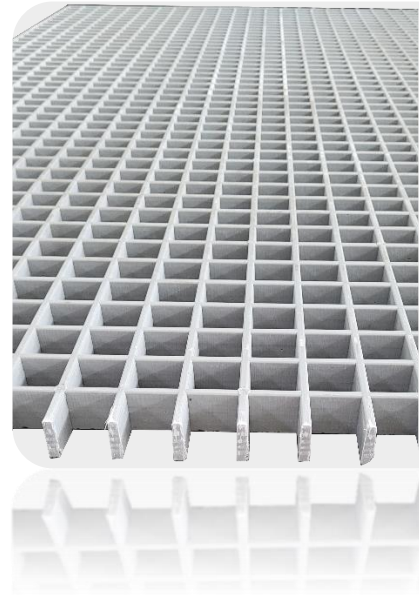


### **Designation**

### **Description**

Support grate

Load capacity: 50 kg  
Width: 25 cm  
Depth: same as test chamber



Support grate

Load capacity: 50 kg  
Width: 50 cm  
Depth: same as test chamber

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