

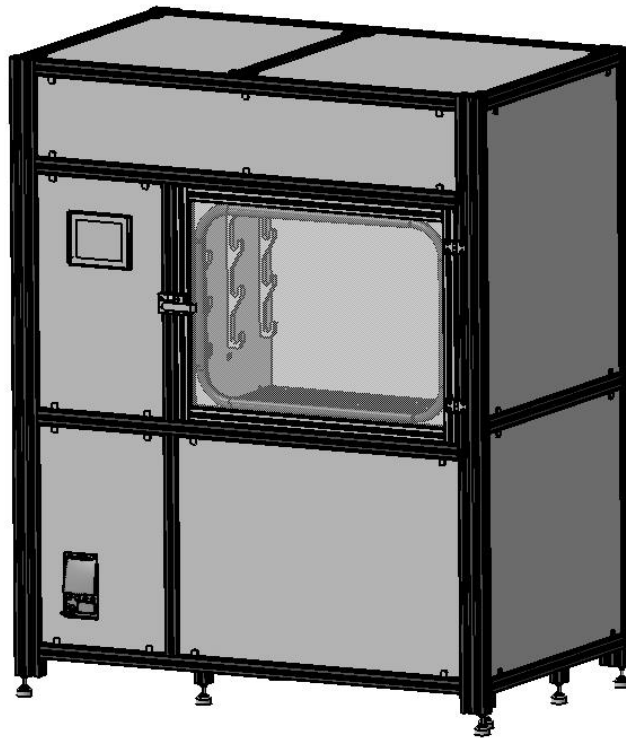
Corrosion test cabinets HKS

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

- JUMO Controller
- PVDF nozzles
- Transparent disc



(Example: HKS 1000 Basic-LINE basic system without extensions; Control configuration dependent!)

The **HKS** family (basic series)

HKS 500 BASIC-LINE

Volume 500 liters

Test chamber dimensions

Width 1000 mm

Depth 580 mm

Height 850 mm

Exterior dimensions

Width 1700 mm

Depth 1000 mm

Height 2070 mm

Weight ca. 400 kg

HKS 1000 BASIC-LINE

Volume 1000 Liter

Test chamber dimensions

Width 1000 mm

Depth 880 mm

Height 1080 mm

Exterior dimensions

Width 1700 mm

Depth 1300 mm

Height 2370 mm

Weight ca. 500 kg

HKS 2000 BASIC-LINE

Volume 2000 Liter

Test chamber dimensions

Width 2000 mm

Depth 880 mm

Height 1080 mm

Exterior dimensions

Width 2700 mm

Depth 1300 mm

Height 2370 mm

Weight ca. 600 kg

HKS 3000 BASIC-LINE

Volume 3000 Liter

Test chamber dimensions

Width 3000 mm

Depth 880 mm

Height 1080 mm

Exterior dimensions

Width 3700 mm

Depth 1300 mm

Height 2370 mm

Weight ca. 700 kg

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.

Technical description

Outer housing

The framework structure consists of anodized aluminum strut profiles and is characterized by high flexibility, stability and modular construction.

Test chamber

The test chamber is a container made of polypropylene, suited for almost any test due to its superb properties. The fully transparent acrylic hood with a cover incline of 30° provides a very good view into the interior. Support rods for test pieces can be positioned anywhere in the test chamber.

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

Manual or program-controlled rapid ventilation consists of the discharge of salt mist from the test chamber using compressed air.

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 250-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, 230V/50Hz

Compressed air connection Connection: Quick coupling for compressed air
Pressure: 6 to 8 bar
Consumption: 2.5 Nm³/h to 3Nm³/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=50mm
(500l to 1000l)
Pipe socket d=75mm
(2000l to 3000l)

Condensate drain Pipe socket d=32mm

Brine backup tank External 140l/250l/500l tank
(Note: The volume of the reservoir varies between the above sizes depending on the design and configuration of the system).

JUMO dTRON 304

- ✓ Math and logic function
- ✓ Modular structure
- ✓ Four limit value monitoring
- ✓ Up to two configurable analog inputs
- ✓ RS485 Interface

The dTRON 304 is used for the test standard ISO 9227 and ISO 6270-2



JUMO DICON Touch

- ✓ Math and logic function
- ✓ Modular structure
- ✓ Four limit value monitoring
- ✓ Up to four configurable analog inputs
- ✓ Graphical TFT color display
- ✓ Operation is intuitive by Touch

The DICON Touch is used for the test standard PV1210 is used



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 28°C (64.4 to 82.4°F)
 Environmental humidity: 85% non-condensing
- Install exhaust air pipe with a constant slope to avoid water bags due to condensation
 Exhaust air connection: 50 mm (500l to 1000l)
 75 mm (2000l to 3000l)
- 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/m³ in the form of oil and dust (< 5µm)
- Water connection/supply with demineralized water: 2.0 to 5.0 bar
- Grid connection without air conditioning function: 16A Schuko
 (Type F safety contact) plug - [adapter or refitting needed for US outlets]
- 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

configurations

1

Continuous condensation test ISO 6270-2

4/2022-SW

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)

4/2022-KW70

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 room ventilation with room air PV1210

4/2022-PBR

The test chamber is ventilated by compressed air. This allows the PV1210 test standard to be implemented.

Attention: no active climate control (only room air)

(Retrofit not possible)

4

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

4/2022-HI

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).

5

Load capacity extension for the test chamber

4/2022-TEP

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)

6

Cable feedthrough

4/2022-KD

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)	2592522	D=500mm, H=860mm
250l tank (PE-natural/transparent)	2592527	D=650mm, H=1100mm
500l tank (PE-natural/transparent)	2592526	D=820mm, H=1190mm
Agitator for 140l tank	2592523	Mounted on tank
Agitator for 250l tank	2592528	Mounted on tank
Agitator for 500l tank	2592525	Mounted on tank
Creeper dolly for 140l tanks	2599375	Round, under tank H=80mm
Creeper dolly for 250l tanks	2599375	Round, under tank H=80mm
Creeper dolly for 500l tanks	on request	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******4/2022-DK***

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

16***Compressed air filter unit******4/2022-DFE***

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

17***Water desalination device******2592420***

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******2592430***

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

Other accessories

19

Hydrometer

2592621

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



20

Digital refractometer

2593232

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



21

PH value meter

2593233

To easily measure and monitor the pH value in the brine.

Shows in the text display: pH value and temperature of the solution



22

Precipitation gauges

4/2022-NSM

1 set (2 pieces) hopper according to DIN EN ISO 9227

Diameter=100mm,
Collection area=80cm²
Measuring volume =50ml



23

Glass or stainless steel S-hook

Bestell-Nr.

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

2592620
2592622

24

Test plates

Order no.

Test plate set according to ISO 9227, steel CR4

4/2022-PSS

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

4/2022-PSZ

5 sample plates 100x50x1mm

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

25

Sikkens scoring set

4/2022-RSS

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>Order no.</i>	<i>Description</i>
Support rod, GRP pipe	4/2022- AGFKR	Diameter 20 mm Load capacity approx. 12 kg



Support rod,
plastic GRP

4/2022-
AGFKS

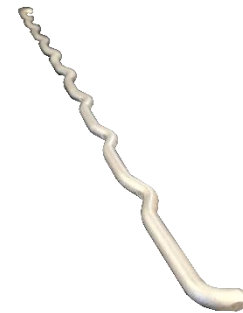
Diameter 12 mm,
load capacity approx.
8 kg



Support rod, solid
rod, special
stainless steel

4/2022-
ASE

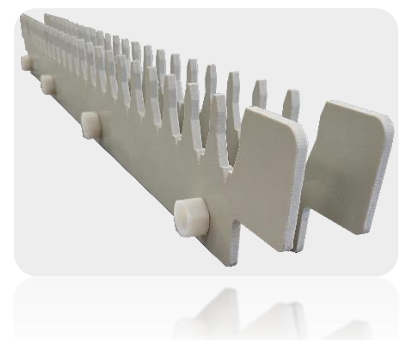
Diameter 8 mm, load
capacity approx.
16 kg



Test plate carrier,
horizontal

4/2022-
PTW

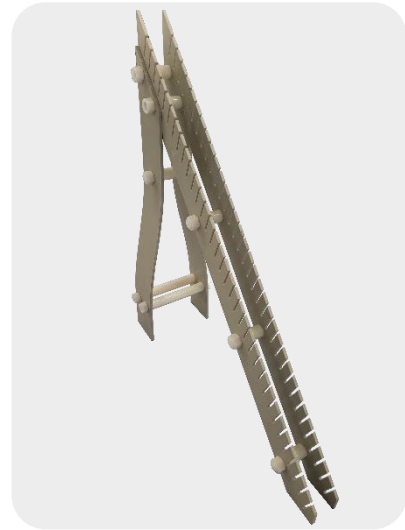
for holding approx. 24
test plates, 150 x
70 mm



Test plate carrier,
diagonal

4/2022-
PTD

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



Support grate

4/2022-
AG25

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



Support grate

4/2022-
AG50

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

