Adsorber VV-RV

Section 1: Information on the manufacturer

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Section 2: Product overview

Sizes	
Size 1	**VV-RV 1L**
Size 2	**VV-RV 2M / VV-RV 2L**
Size 3	**VV-RV 3M / VV-RV 3L**
Size 5	**VV-RV 5M / VV-RV 5L / VV-RV 5XL**

Materials used

Acrylic glass, polyamide (PA), galvanized steel, aluminum, FKM, GIEBEL Xdry®, activated carbon

REACH Note

No ingredients requiring disclosure under Regulation (EC) No 1907/2006.

Instructions

according to regulation DIN 82079 v.06.23

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www.giebel-adsorber.com
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Section 3: Construction and materials

Use	Reusable
Housing material	Acrylic glass, PA, aluminium
Adsorbents	GIEBEL Xdry®, activated carbon
Particulate filter	Filter element with 3 µm separation efficiency
Seal material	FKM
Operating temperature	-30°C - +70°C
Connection	BSP / NPT / Metric / Slipfit

Section 4: Technical data

	VV-RV 1L	VV-RV 2M	VV-RV 2L	VV-RV 3M	VV-RV 3L	VV-RV 5M	VV-RV 5L	VV-RV 5XL
Total weight [kg]	0,3	1,0	1,3	1,9	2,7	3,9	5,3	6,8
Adsorbent [kg]	0,15	0,3	0,5	0,75	1,3	2,0	3,15	4,3
Color-change capacity [ml]	53	105	175	263	455	700	1103	1505
Height [mm]	143	217	275	294	394	332	432	532
Housing diameter [mm]	60	90	90	110	110	150	150	150
Screw-in diameter [mm]	63	121	121	141	141	181	181	181
Connection	BSP, NPT, Metric	BSP, NPT, Metric, Slipfit	BSP, NPT, Metric, Slipfit	BSP, NPT, Metric, Slipfit	BSP, NPT, Metric, Slipfit	BSP, NPT, Metric, Slipfit	BSP, NPT, Metric, Slipfit	BSP, NPT, Metric, Slipfit
Valves [IN-OUT]	1 – 1	1 – 1	1 – 1	2 - 2	2 - 2	3 - 3	3 - 3	3 - 3

Section 5: Assembly and commissioning

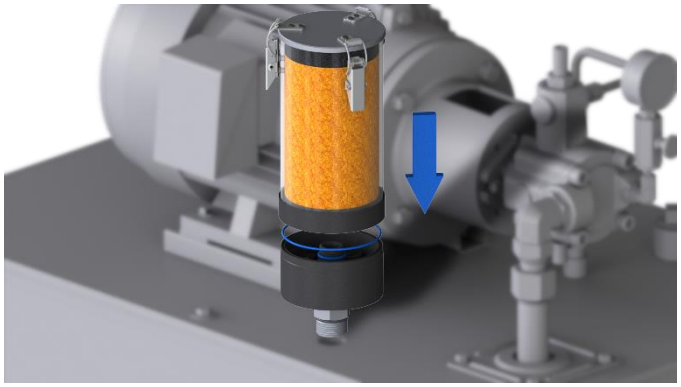
1. If it is a metal connection, the thread must be slightly oiled before screwing in.

2. Screw the adsorber together with the valve section (ready for installation) onto the system.
   The torque should be 5Nm and not exceed 10Nm. "hand-tight"

If the valve part has been unscrewed, make sure that the O-rings (highlighted blue in the picture) are in the correct position.
The outer O-ring must be in the groove of the valve part and the inner O-ring in the groove below the thread.

Screw tightly by hand.

Adsorbers of the VV-RV 1L series do not have a valve part since the valves are already installed in the cartridge.



Section 6: Maintenance

0% → 100%

If the color of the desiccant has completely changed according to the color indicator used, it must be replaced. It's also recommended to use a spare parts kit to replace the wearing parts.

1. Unscrew the adsorber section from the valve section.
   Adsorbers of the VV-RV 1L series are completely screwed off the system, as they have no extra valve part.
2. Open the lid using the clamps.
3. Remove the seal in the cover and replace it with the new one.
4. Remove the activated carbon disc and empty the desiccant.
5. Pull out the filter element.
6. Remove the lower foam disc as well.
7. Insert new foam disk.
8. Insert a new filter element and then fill in fresh desiccant. When filling in the desiccant, lightly tap the housing with a soft object (e.g. the ball of your hand) to compact the filling.
9. Insert a new activated carbon disc and then close the lid again using the clips.
10. Replace O-rings between valve part and adsorber part. Ensure that the O-rings are seated in the groove provided.
11. Place the adsorber section back on the valve section and screw it on tightly by hand.

Section 7: Spare parts and storage

Adsorber	Spare parts kit	Desiccant
VV-RV 1L	ET VV-R 1	Spare Filling Xdry 1 kg
VV-RV 2M VV-RV 2L	ET VV-R 2	Spare Filling Xdry 1 kg
VV-RV 3M VV-RV 3L	ET VV-R 3	Spare Filling Xdry 1 kg Spare Filling Xdry 4 kg
VV-RV 5M VV-RV 5L VV-RV 5XL	ET VV-R 5	Spare Filling Xdry 4 kg

Exemplary representation of the spare parts set

Spare parts kit

- GIEBEL Xdry®
- Activated carbon
- Filter discs
- Filter element
- Seal kit

Desiccant

- GIEBEL Xdry®

Airtight packaging

Order of spare parts

For a constant operational readiness of the adsorber and thus the plant, make sure that a spare parts kit or spare adsorber is always in stock.

The time until the complete color change and thus the service life of the adsorber depends on various factors:

- Number and duration of flow and loading intervals.
- Air flow volume and flow velocity, relative humidity of ambient air.
- Temperature of the ambient air and the medium to be ventilated.

Storage of adsorbers

This product can be stored for up to **two years** in dark and dry environments. The temperatures for storage should be between -10° and 30°C.

Section 8: Disposal

At the end of its useful life, the device must be disposed of in accordance with the relevant legal regulations. Metal and plastic parts should be separated and disposed of separately.

The loaded desiccant GIEBEL Xdry® can be disposed of in household waste.

GIEBEL Xdry® is not classified as a hazardous substance under European Union legislation (Regulation EC No 1272/2008). It is not subject to compulsory labelling according to EC Directive (67/548/EEC or 1999/45/EC). GIEBEL Xdry® is not classified as a substance hazardous to health or the environment.

Section 9: Risk and hazard analysis

1. Moist air flows into the system

Porous seals

Moist air can flow into the adsorber or into the plant at the porous points. This means that complete drying is not possible and moist air enters the system.

Adsorber part, or O-ring does not fit properly on the valve part

If the adsorber part is not seated firmly enough (well hand-tight) on the valve part, or if the outer O-ring of the valve part is not seated in the groove, moist air can enter the system at the leakage points.
Adsorbers of the VV-RV 1L series are excluded.

Saturated drying agent

When the desiccant is saturated, it can no longer absorb moisture. This allows moist air to enter the system.

Air flow rate too high

If the air flow rate is too high, the contact time between moist air and desiccant is too short. This allows moist air to flow into the system.

Oil on the drying agent

If too many oil particles enter the adsorber, the oil particles close the pores of the desiccant and thus prevent adsorption.

Ambient temperature too high

If the ambient temperature exceeds 80°C, the binding forces in the desiccant decrease. This means that the incoming ambient air is only dried to a limited extent.

2. Positive or negative pressure builds up in the system

Air flow rate too high

Too high an air flow rate can cause over- or underpressure in the system.

Contaminated filter element

The filter unit can be clogged by dirt particles and can therefore build up pressure in the system.

Oil on the drying agent

If oil particles get into the adsorber, the spaces in the fill can be filled with oil and the fill will stick together. This can cause pressure to build up in the system.

3. Adsorber is damaged

Material resistance

When selecting the adsorber, the ambient and operating conditions should be considered. An aggressive environment or liquid in the container can damage the adsorber.

Temperature range

The ambient and operating temperatures should not exceed or fall below the specified range, otherwise the adsorber may be damaged.

Improper handling

Incorrect or improper handling can damage the adsorber. The recommended installation must be observed.

Strong vibrations

Strong vibrations of the plant can damage the adsorber.

Pressure range of the system

The adsorber should not be exposed to over- or underpressure above 0.5 bar, otherwise the housing may be damaged.

Cleaning of the adsorber

For cleaning the adsorber, the use of a mild soap in combination with water is recommended. The use of brake cleaner will damage the adsorber.

Thread of the adsorber and accessories is damaged

When mounting the adsorber on the system, the threads must be slightly moistened with oil. If the threads are not oiled, this can lead to the thread rubbing off and getting stuck.

Section 10: Maintenance plan

1. Check seals for wear

Check	The O-rings installed on the adsorber must be checked for perfect condition. For this purpose, the seals on the valve part (3 in number), in the cover and on the filter should be checked for brittleness. If it is an adsorber of the VV-RV 1L series, only the O-ring at the connection must be checked.
Cycle	Half-yearly
Measures	In case of existing damage, a new spare parts kit or a new adsorber should be used.

2. Check filter unit for impurities

Check	Take off the lid and remove the activated carbon disc. Then empty the desiccant. The filter unit can then be removed. This should be checked for impurities and should be free of dirt for smooth operation.
Cycle	Half-yearly
Measures	The filter element is part of the spare parts kit and should be replaced if contamination is present.

3. Visual inspection of the desiccant

Check	The loading condition of the desiccant must be determined by visual inspection of the adsorber. The color orange indicates that the desiccant can still adsorb water and air is dehumidified. If the desiccant is completely saturated, the color changes to green. If there are oil particles on the desiccant, these close the pores and the adsorption capacity is reduced. This causes the GIEBEL Xdry® to discolor more slowly and unevenly.
Cycle	Half-yearly
Measures	If the desiccant is loaded or damaged by oil, the desiccant should be replaced.

4. Visual inspection of the adsorber

Check	The adsorber, including the connection, must be visually checked for damage. Damage can occur due to various environmental or operating conditions.
Cycle	Yearly
Measures	If the adsorber is damaged, it must be replaced completely to ensure full functionality.

5. Replacing the wearing parts

Check	The wearing parts, in particular the seals, the GIEBEL Xdry® and the adsorber housing, must be checked regarding their condition.
Cycle	Every two years
Measures	Regardless of the result of the test, it is recommended to replace the wearing parts by using the spare parts kit or a new adsorber to ensure smooth operation.