

## Adsorber TB-RV

### Section 1: Information on the manufacturer

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### Section 2: Product overview



Sizes

<b>Size series 3</b>	<b>TB-RV 3M / TB-RV 3L</b>
<b>Size series 5</b>	<b>TB-RV 5M / TB-RV 5L / TB-RV 5XL</b>

#### Materials used

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

#### REACH Notice

No ingredients subject to mandatory naming according to Regulation (EC) No. 1907/2006.

## Section 3: Structure and materials

<b>Usage</b>	Reusable
<b>Housing material</b>	Acrylic glass, PA, aluminum
<b>Adsorbent</b>	GIEBEL Xdry®, activated carbon
<b>Particle filter</b>	Filter element with 2 µm separation efficiency
<b>Sealing material</b>	FKM
<b>Operating temperature</b>	-40°C - +80°C
<b>Connection</b>	DIN42562 flange, DIN42567A/B flange, DIN42567C G3/4" / G1" female

## Section 4: Technical data



	TB-RV 3M	TB-RV 3L	TB-RV 5M	TB-RV 5L	TB-RV 5XL
Total weight [kg]	2,7	3,4	4,8	6,2	7,7
Adsorbent [kg]	1,0	1,5	2,4	3,4	4,6
Color-change capacity (ml):	350	525	840	1190	1610
Height [mm]	273	373	311	411	511
Case diameter [mm]	110	110	150	150	150
Total diameter [mm]	150	150	181	181	181
Connection	DIN42562 DIN42567A DIN42567B DIN42567C	DIN42562 DIN42567A DIN42567B DIN42567C	DIN42562 DIN42567A DIN42567B DIN42567C	DIN42562 DIN42567C	DIN42562
Valves [IN-OUT]	2 – 2	2 – 2	3 – 3	3 – 3	3 - 3

## Section 5: Assembly and commissioning

1. Lightly oil the connection before screwing it in if it is the female threaded version.
2. Screw the adsorber together with the pre-installed valve part (ready for installation) to the system.

If the valve part has been unscrewed, make sure that the O-rings 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 well hand-tight.



## Section 6: Maintenance

Once the desiccant is completely saturated, a replacement kit must be used.



0% → 100%

If the color of the desiccant has completely turned over according to the color indicator used, it must be replaced.

1. Securely grasp the adsorber section and detach it from the lid using the clamps.
2. Remove the gasket in the lid and replace it with the new one.
3. Remove the filter disk and activated carbon disc and empty the desiccant.
4. Remove the lower foam disc as well.
5. Insert the new foam disc.
6. Fill with fresh desiccant. When filling the desiccant, lightly tap the housing with a soft object (e.g., ball of the hand) to compact the filling.
7. Insert new activated carbon disc.
8. Insert the new filter disc and then reattach the adsorber section to the lid using the clamps.
9. Replace the O-rings between the valve part and the adsorber part, after unscrewing the valve part. Make sure that the O-rings are seated in the groove provided for this purpose.
10. Screw the valve part back onto the adsorber part hand-tight.



## Section 7: Spare parts and storage

Adsorber	Spare parts kit	Spare Filling
TB-RV 3M TB-RV 3L	ET TB-R 3	1kg bag
TB-RV 5M TB-RV 5L TB-RV 5XL	ET TB-R 5	4kg canister



*Example representation of the spare parts kit*

### Spare parts kit

- activated carbon
- filter disc
- Seals



### Desiccant

- silica gel
- Airtight packaging*

### Ordering spare parts

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

The time required for a complete color change and thus the service life of the adsorber depend on various factors:

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

### 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

### Regeneration

In practice, the most common regeneration method is temperature increase. When desorbing water vapor from silica gel, the temperature must be above 100°C. For silica gel with color indicators, a regeneration temperature of 120°C should be maintained to avoid damaging the applied color indicator.

It is nevertheless recommended to use fresh silica gel.

### Disposal

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

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

Silica gel orange is not classified as a hazardous substance according to European Union legislation (Regulation EC No. 1272/2008). It does not require labeling according to EC Directive (67/548/EEC or 1999/45/EC). GIEBEL Xdry® is not classified as hazardous to health or the environment.

## Section 9: Risk and hazard analysis

### 1. Humid air flows into the system

#### Porous seals

Moist air can flow into the adsorber or into the system at the porous points. As a result, complete drying is not possible and moist air enters the system.

#### Adsorber part, or O-ring is not seated correctly on the valve part

If the adsorber part is not tight enough (well hand-tight) on the valve part, or the outer O-ring of the valve part is not seated in the groove, moist air may enter the system at the leaking points.

#### Saturated desiccant

If the desiccant is saturated, it can no longer absorb moisture. As a result, moist air enters the system.

## Too much air flow

If the air flow rate is too high, the contact time between moist air and desiccant is too short. As a result, moist air can flow into the system.

## Oil on the desiccant

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

## Ambient temperature too high

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

## **2. Overpressure or underpressure builds up in the system**

### Air flow rate too high

Excessive air flow can cause overpressure or underpressure to build up in the system.

### Filter element contaminated

The filter unit can become clogged with dirt particles and can thus build up pressure in the system.

### Oil on the desiccant

If oil particles get into the adsorber, the gaps in the filling can be filled with oil and the filling can 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 vessel 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 system can damage the adsorber.

## Pressure range of the system

The adsorber should not be exposed to overpressure or underpressure of more than 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 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 (2 in total) and in the lid should be checked for brittleness.

Cycle Semi-annual

Measures In case of existing damages, a new spare part kit, or a new adsorber should be used.



## 2. Check filter disc for contamination

Check Remove the lid and take out the filter disc. This should be checked for contamination and should be free of dirt for smooth operation.

Cycle Semi-annual

Measures The filter disc is part of the spare parts kit and should be replaced if contaminated.

## 3. Visual control of the desiccant

Check Visually inspect the adsorber to determine the loading condition of the silica gel. 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 or colorless.

If there are oil particles on the desiccant, they close the pores and the adsorption capacity is reduced. This causes the desiccant to discolor more slowly and unevenly.

Cycle Semi-annual

Measures If the desiccant is loaded or damaged by oil, a new spare parts kit or a new adsorber with fresh desiccant should be used.

## 4. Visual inspection of the adsorber

Check The adsorber, incl. connection must be visually checked for damage. Damage can occur due to various environmental or operating conditions.

Cycle Annual

Measures If the adsorber is damaged, it must be completely replaced to ensure full functionality.

## 5. Replacing the wearing parts

Check wearing parts, in particular the seals, the desiccant as well as the adsorber housing, must be checked with regard to their condition.

Cycle Biennial

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.