

## Adsorber MA-RV

### Section 1: Information on the manufacturer

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### Section 2: Product overview



Sizes	
Size 2	MA-RV 2L
Size 3	MA-RV 3M / MA-RV 3L
Size 5	MA-RV 5M / MA-RV 5L / MA-RV 5XL

#### Materials used

Aluminum, stainless steel, acrylic glass, FKM, EPDM, GIEBEL Xdry®, activated carbon

#### REACH Note

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

## Section 3: Construction and materials

<b>Use</b>	Reusable
<b>Housing material</b>	Aluminum
<b>Adsorbents</b>	GIEBEL Xdry®, activated carbon
<b>Particulate filter</b>	Filter element with 3 µm separation efficiency
<b>Seal material</b>	FKM / EPDM
<b>Operating temperature</b>	-40°C - +80°C
<b>Connection</b>	BSP / NPT / Metric / Slipfit

## Section 4: Technical data



	MA-RV 2L	MA-RV 3M	MA-RV 3L	MA-RV 5M	MA-RV 5L	MA-RV 5XL
Total weight [kg]	1,7	2,7	3,7	5,1	6,8	8,5
Adsorbent [kg]	0,55	0,85	1,45	2,1	3,3	4,6
Color-change capacity [ml]	193	298	508	735	1155	1610
Height [mm]	233	291	391	321	421	521
Housing diameter [mm]	90	110	110	150	150	150
Screw-in diameter [mm]	120	140	140	180	180	180
Connection	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	2 - 2

## Section 5: Assembly and commissioning

Adsorbers of the MA-RV 2L series do not have an extra valve part and are therefore screwed directly onto the system. The following points are skipped in this case.

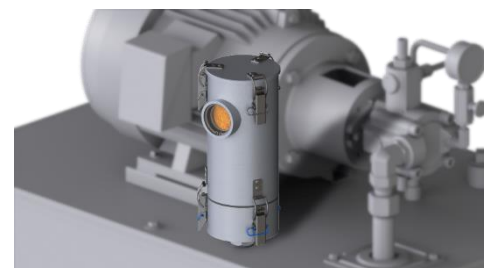
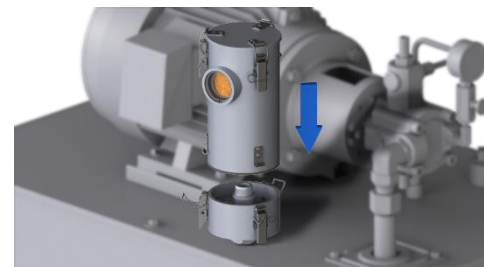
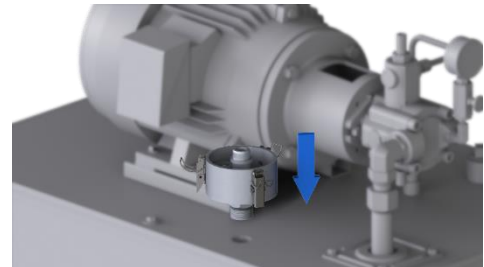
1. Lightly oil the thread of the valve part and then screw it onto the system.  
The torque should be 5Nm and not exceed 10Nm. "hand-tight"

Remove the safety plugs from the clamps.

2. Remove the protective foil on the underside of the adsorber section and place the adsorber section on the valve section.

3. Hook the clamping bracket into the closing hooks and press the clamping levers down.

Secure the clamping lever again with the safety plugs (highlighted **blue** in the picture).



## Section 6: Maintenance

Once the color of the desiccant has completely changed according to the color indicator used, it must be replaced. All wear parts are replaced at the same time to ensure optimum use.



0% → 100%

1. Remove the adsorber part by opening the closing clamps.  
*Adsorbers of the series MA-RV 2L are completely screwed off the plant, because they do not have an 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. Loosen the locking ring on the window, remove the window and the flat seal. Insert a new window and flat gasket and remount the retaining ring.
8. Remove the flat gaskets on the bottom of the adsorber section and replace them with the new ones.
9. Insert new foam disk.
10. 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 bulk material.
11. Insert a new activated carbon disc and then close the lid again using the clips.  
*In the case of an adsorber of the MA-RV 2L series, maintenance is now complete and the adsorber is screwed back onto the system.*
12. Place the adsorber section back on the valve section and close it using the clips.



## Section 7: Spare parts and storage

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

\* also as EPDM version



*Exemplary representation  
of the spare parts set*

### Spare parts kit

- Activated carbon discs
- 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 in accordance with EC Directive (67/548/EEC or 1999/45/EC). GIEBEL Xdry® not considered to be 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 plant.

#### Flat gaskets do not sit properly on the adsorber part

If the flat gaskets at the bottom of the adsorber part are not seated correctly, moist air can enter the system at the leaking points.

Adsorbers of the series MA-RV 2L 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**

### Valves are jammed / blocked

If the functionality of the valves is impaired by impurities, the pressure in the system increases.

### 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 positive or negative pressure above 1.0 bar, otherwise the housing may be damaged.

## Thread of the adsorber and accessories is damaged

When mounting the adsorber on the system, the threads must be slightly moistened with oil, else it could be damaged and get stuck.



## **Section 10: Maintenance plan**

### **1. Check seals for wear**

Check The flat gaskets and O-rings installed on the adsorber must be checked for perfect condition. For this purpose the seals in the lid, on the filter and on the connection should be checked for brittleness.

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 contamination 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 it is contaminated.



### 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. When 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 desiccant to discolor more slowly and unevenly.

Cycle Half-yearly

Measures If the desiccant is loaded or damaged by oil, a new spare filling or a new adsorber with fresh GIEBEL Xdry® should be used.

### 4. Check valves for jamming

Check The adsorber must be checked visually for contamination and damage. To ensure long-term functionality, the valves in the adsorber should be checked. For this purpose, the adsorber is removed from the valve section and the valves are checked for proper functioning.

Cycle Yearly

Measures If the valves do not open and close, replace the adsorber with a new one to ensure full functionality.

### 5. 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.

### 6. Replacing the wearing parts

Check The wearing parts, in particular the seals, the desiccant as well as 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.