



Assembly and maintenance instructions

according to regulation DIN 82079

Version 06.20
Date: 21.10.2021
Name: Manual_MA-RV_EN



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 |
| Size 7 | MA-RV 7XXL |

Materials used

Aluminium, stainless steel, acrylic glass, polyoxymethylene (POM), FKM, EPDM, silica gel orange, activated carbon

REACH Note

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



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Section 3: Construction and materials

| | |
|------------------------------|--|
| Use | Reusable |
| Housing material | Aluminium |
| Adsorbents | Silica gel, activated carbon |
| Particulate filter | Filter element with 3 µm separation efficiency |
| Seal material | FKM / EPDM |
| Operating temperature | -40°C - +80°C |
| Connection | 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 | MA-RV 7XXL |
|----------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| Total weight [kg] | 1,8 | 3,0 | 3,9 | 5,6 | 7,1 | 8,6 | 16,0 |
| Adsorbent [kg] | 0,5 | 0,9 | 1,4 | 2,3 | 3,3 | 4,5 | 9,7 |
| Max. Water absorption (ml) | 200 | 360 | 560 | 1000 | 1320 | 1800 | 3880 |
| Height [mm] | 210 | 305 | 405 | 335 | 435 | 535 | 635 |
| Housing diameter [mm] | 90 | 90 | 110 | 110 | 150 | 150 | 190 |
| Screw-in diameter [mm] | 120 | 140 | 140 | 180 | 180 | 180 | 220 |
| Connection | BSP, NPT, Metric, Slipfit |
| Valves [IN-OUT] | 1 - 1 | 1 - 1 | 1 - 1 | 2 - 2 | 2 - 2 | 2 - 2 | 3 - 3 |



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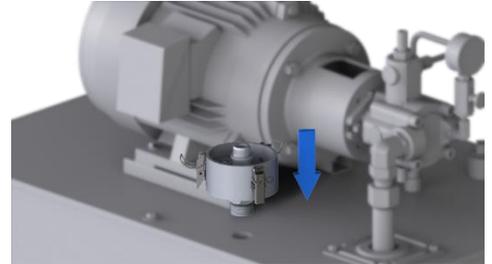
Section 5: Assembly and commissioning

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.

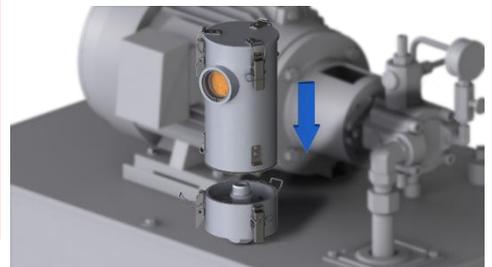
1. Lightly oil the thread of the valve part and then screw it onto the system.

Remove the safety plugs from the clamps.

Lightly lubricate the thread before assembly or use assembly paste.
Gewinde vor der Montage leicht einölen oder Montagepaste verwenden.
Lubrifier légèrement le fil avant l'assemblage ou utiliser la pâte d'assemblage.
Lubrique ligeramente la rosca antes del montaje o use pasta de ensamblaje.
Lubrificar ligeramente a rosca antes da montagem ou usar a pasta de montagem.
Слегка смажьте нить перед сборкой или используйте монтажную пасту.

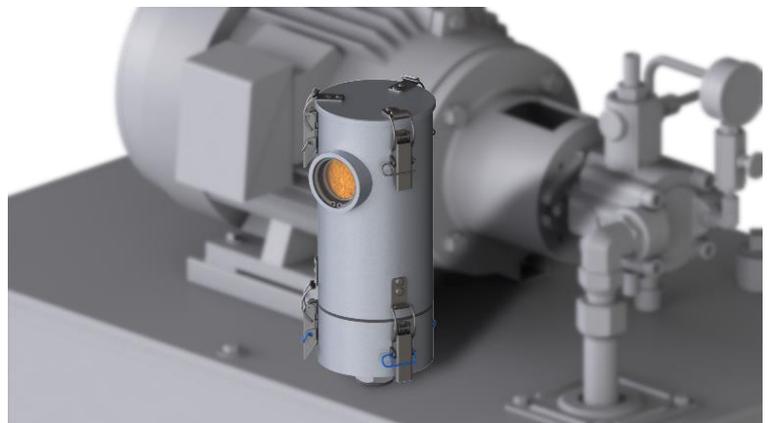


2. Remove the protective foil on the underside of the adsorber section and place the adsorber section on the valve section.



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).





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Section 6: Maintenance

Once the silica gel is completely saturated, a spare parts kit must be used.



0% → 100%

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

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.





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Section 7: Spare parts and storage

| Adsorber | Spare parts kit* | Desiccant | * also as EPDM version |
|-----------------------------------|------------------|-----------|------------------------|
| MA-RV 1L | ET MA+ME-R 1L | SOG 4 kg | |
| MA-RV 2L | ET MA-R 2 | SOG 4 kg | |
| MA-RV 3M MA-RV 3L | ET MA-R 3 | SOG 4 kg | |
| MA-RV 5M MA-RV 5L MA-RV 5XL | ET MA-R 5 | SOG 4 kg | |



Exemplary representation of the spare parts set

Spare parts kit

- Silica gel
- Activated carbon
- Filter discs
- Filter element
- Seal kit



Desiccant

- Silica gel
- 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 colour 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

All articles filled with desiccant are packed airtight. To avoid damage to the desiccant, it must also be stored in dark and dry rooms at -10°C to +30°C.



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Section 8: Disposal

Regeneration

In practice, the most common regeneration method used is the temperature increase. When desorbing water vapour from silica gel, the temperature must be above 100°C. For silica gel with colour indicators a regeneration temperature of 120°C should be maintained in order not to damage the applied colour indicator.

It is nevertheless recommended to use fresh silica gel.

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 Silicagel Orange can be disposed of in household waste.

Silicagel Orange 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). Silicagel Orange is 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.



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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.



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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. Failure to lubricate the threads can lead to the thread rubbing and is not a reason for complaint.



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 silica gel

Check The loading condition of the silica gel must be determined by visual inspection of the adsorber. The colour orange indicates that the silica gel can still adsorb water and air is dehumidified. When the silica gel is completely saturated, the colour changes to green or colourless.

If there are oil particles on the silica gel, these close the pores and the adsorption capacity is reduced. This causes the silica gel to discolour more slowly and unevenly.

Cycle Half-yearly



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Measures If the silica gel is loaded or damaged by oil, a new spare parts kit or a new adsorber with fresh silica gel 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 silica gel as well as the adsorber housing, must be checked with regard to 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.