



Assembly and maintenance instructions

according to regulation DIN 82079

Version 06.20
Date 21.10.2021
Name: Manual_VV-R_EN



Adsorber VV-R

Section 1: Information on the manufacturer

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Section 2: Product overview



Sizes

Size 1	VV-R 1M / VV-R 1L
Size 2	VV-R 2M / VV-R 2L
Size 3	VV-R 3M / VV-R 3L
Size 5	VV-R 5M / VV-R 5L / VV-R 5XL

Materials used

Acrylic glass, aluminium, galvanised steel, polyamide (PA), polyvinyl chloride (PVC), FKM, 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	Acrylic glass, PA, aluminium
Adsorbents	Silica gel, 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-R 1M	VV-R 1L	VV-R 2M	VV-R 2L	VV-R 3M	VV-R 3L	VV-R 5M	VV-R 5L	VV-R 5XL
Total weight [kg]	0,2	0,3	0,9	1,2	1,7	2,3	3,7	5,1	6,6
Adsorbent [kg]	0,1	0,2	0,3	0,5	0,8	1,4	2,2	3,3	4,6
Max. Water absorption (ml)	40	80	120	200	320	560	880	1320	1840
Height [mm]	97	141	152	210	226	326	264	364	464
Housing diameter [mm]	60	60	90	90	110	110	150	150	150
Screw-in diameter [mm]	63	63	121	121	141	141	181	181	181
Connection	BSP, NPT, Metric	BSP, NPT, Metric	BSP, NPT, Metric, Slipfit						
Valves [IN-OUT]	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0	0 - 0



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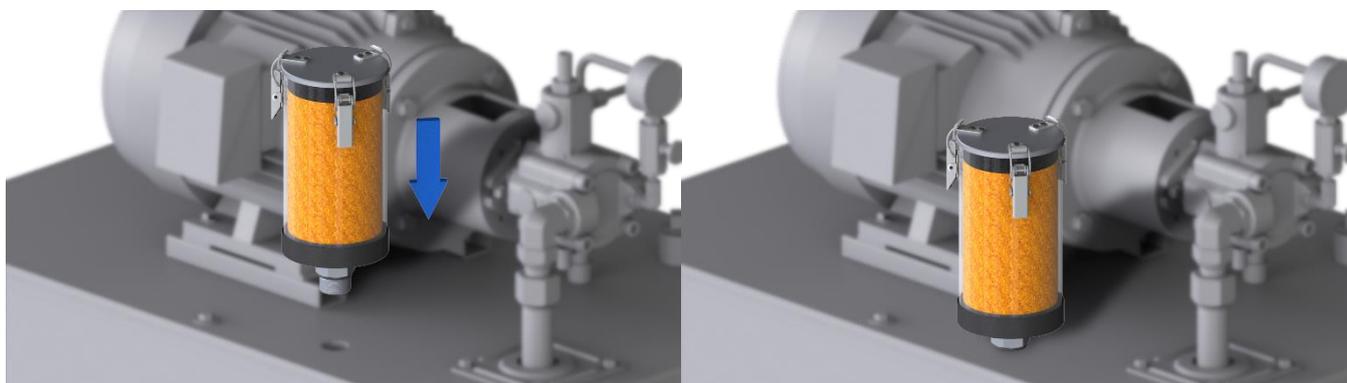
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Section 5: Assembly and commissioning

1. Remove the protective plug on the bottom of the adsorber.
2. Lightly oil the thread.
3. Screw the adsorber onto the system.



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 ensamble.
Lubrificar ligeramente a rosca antes da montagem ou usar a pasta de montagem.
Слегка смажьте нить перед сборкой или используйте монтажную пасту.



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.



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1. Unscrew the adsorber from the system.
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 new activated carbon discs and then close the lid with the clips.
10. Screw the adsorber back onto the system.



Section 7: Spare parts and storage

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



Exemplary representation of the spare parts kit

Spare parts kit

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



Desiccant

- Silica gel
- Airtight packaging.*



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Order of spare parts

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

The time until the complete colour change from 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. In order to avoid damage to the desiccant, they must also be stored in dark and dry rooms at -10°C to $+30^{\circ}\text{C}$.

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 colour indicator applied.

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 according to EC Directive (67/548/EEC or 1999/45/EC). Silicagel Orange is not classified as a substance hazardous to health or the environment.



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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. As a result, complete drying is not possible and moist air enters the system.

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 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. 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.



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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. Please pay attention to the recommended installation.

Strong vibrations

Strong vibrations of the plant can damage the adsorber.

Pressure range of the system

The adsorber should not be exposed to a positive or negative pressure 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 and is no reason for complaint.

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 individual thread rubbing and is not a reason for complaint.



Section 10: Maintenance plan

1. Check seals for wear

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

Zyklus Half-yearly

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



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2. 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. If 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

Measures If the silica gel is loaded or damaged by oil, a new adsorber with fresh silica gel should be used.

3. 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.

4. Visual inspection of the adsorber

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

Cycle Yearly

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

5. 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.