



Assembly and maintenance instructions

according to regulation DIN 82079

Version 10.21
Date: 09.03.2022
Name: Manual_ES-R_EN



Adsorber ES-R

Section 1: Information on the dealer

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Section 2: Product overview



Sizes

Size 1	ES-R_S (R130)
Size 2	ES-R_M (R450)
Size 3	ES-R_L (R700)

Materials used

Aluminum, stainless steel, polypropylene (PP), polymethylmethacrylat (PMMA), silica gel orange

REACH Note

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



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Section 3: Construction and materials

Use	Refillable
Housing material	Aluminum, stainless steel, PP
Adsorbents	Silica gel
Operating temperature	-40°C – +100°C
Connection	None

Section 4: Technical data



	ES-R S (R130)	ES-R M (R450)	ES-R L (R700)
Total weight [kg]	0,2	0,8	1,0
Adsorbent [kg]	0,1	0,35	0,55
Height [mm]	75	101	109
Housing diameter [mm]	52	84	96



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Section 5: Assembly and commissioning

1. Turn off the system.
2. Unbox the Adsorber and place it inside the System.



Section 6: Maintenance

Procedure for regeneration

1. Turn off the system.
2. Remove the Adsorber.
3. The ES-R can be regenerated as a complete unit.
4. Adjust the oven to **max. 100°C** (max.) circulating air and place the ES-R in the middle of the oven.
5. Once the silica gel is completely orange again, the ES-R is completely regenerated.
6. Be careful when removing it from the oven. Hot!
7. While cooling down, the ES-R should be packed airtight.
8. After the Adsorber cooled down, it can be placed back into the system.

Procedure for refilling

1. Turn off the system.
2. Remove the Adsorber.
3. Open the cover and empty the desiccant.
4. Fill in fresh desiccant. While filling the desiccant, easily beat with a soft object (eg the hand) against the housing to compress the silica gel bulk.
5. Close the cover.
6. Place the adsorber back in the system.



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Section 7: Spare parts and storage

If the Adsorber is completely saturated, it must be refilled, regenerated, or replaced.

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

At the end of its useful life, the device must be disposed of in accordance with the relevant legal regulations.

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 in the system

Saturated drying agent

When the desiccant is saturated, it can no longer absorb moisture. This allows moist air to increase in 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. As a result, the incoming ambient air is only dried to a limited extent.

2. Adsorber is damaged

Material resistance

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

If the adsorber is being used, or regenerated, at temperatures higher than 100°C, the housing material will take damage!

Improper handling

Incorrect or improper handling can damage the adsorber. Please pay attention to the recommended installation.

Strong vibrations

Strong vibrations in the system can damage the adsorber.

Cleaning of the adsorber

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



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Section 10: Maintenance plan

1. Visual inspection of the silica gel

Check The loading condition of the silica gel must be determined by visual inspection of the adsorber. The color orange indicates that the silica gel can still adsorb water and air is dehumidified. If the silica gel is completely saturated, the color changes to green or colorless, depending on the color indicator used.

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

Cycle Half-yearly

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

2. Visual inspection of the adsorber

Check The adsorber, 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 completely replaced to ensure full functionality.