

# Installation instructions for the spiral membrane module

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# 1. INTRODUCTION:

The installation instructions contain the most important instructions and information for the use of the product. Keep the installation instructions safely so that they are accessible for all users and available to any new owner of the product.

*The German installation instructions* can be found in the internet at: [www.spiraltecgbmh.com/de/download](http://www.spiraltecgbmh.com/de/download). *The English installation instructions* can be found in the internet at: [www.spiraltecgbmh.com/en/downloads-en](http://www.spiraltecgbmh.com/en/downloads-en).

## 1.1 Product-specific datasheet:

A *product-specific datasheet* with information for the product is enclosed with every product. These instructions must be observed. The „General safety instructions“ must also be observed. If you no longer have the datasheet, you can find it in the internet at: [www.spiraltecgbmh.com/en/downloads-en](http://www.spiraltecgbmh.com/en/downloads-en).

## 1.2 Terminology:

The term „product“ or „spiral membrane module“ in these instructions always stands for the series WD-AR10 spiral membrane module from Spiraltec GmbH. The term „system“ in these instructions always stands for the peripheral equipment provided by the operator for the supply and operation of the spiral membrane modules.

## 1.3 Presentation:

The following presentation styles are used in these instructions:

### DANGER!



**Warns of immediate danger!**  
**Disregard results in death or severe injuries.**

### WARNING!



**Warns of a potentially dangerous situation.**  
**Disregard can result in serious injuries or death.**

### CAUTION!



**Warns of a potential hazard.**  
**Disregard can result in moderate or minor injuries.**

### NOTE:

(Warns of property damage).

**REFERS TO INFORMATION IN THESE INSTALLATION INSTRUCTIONS OR IN OTHER DOCUMENTATION.**

- Indicates a general explanation.
- > Indicates an instruction for avoiding a hazard, which you must observe.

## WARNING!



**Important information for safety. Read through the installation instructions carefully. First and foremost, observe the „Proper intended use“ and „Basic safety instructions“ chapters.**

**The installation instructions must be read and understood.**

## 2. PROPER INTENDED USE:

In the event of improper use of the WD-AR10 spiral membrane module, this could represent a hazard for persons, systems in the vicinity and for the environment.

- The product is designed for the separation of metallic salts from free acids from process baths.
- > Observe the data and conditions of operation and service in the *contractual documentation* and in the *product-specific datasheet*.
- > Prerequisites for the faultless and safe operation are proper transportation, storage and installation as well as careful operation and maintenance.
- > Only use the product in accordance with its proper intended use.

## 3. BASIC SAFETY INSTRUCTIONS:

These safety instructions do not take into account

- Coincidental or random eventualities that could arise during the installation, operation or maintenance of the product.
- Location-specific safety provisions where the operator is responsible for compliance, also in relation to operating personnel.

## DANGER!



**Danger of injury through high pressure in the system/product.**

- > Before working on the system or product, shut off the pressure and empty the product and lines.



## DANGER!

### **Intoxication, chemical burns, contamination due to media escape.**

- > Check the product for leaks before commissioning.
- > With hazardous media, ensure that corresponding protective measures are implemented and wear personal protective equipment in accordance with the requirements of the media.
- > Before loosening lines, ensure that the medium has been flushed out of the whole system.

### **General hazard situations:**

#### **The following must be observed to avoid injuries:**

- > The product/system shall not be operated unsupervised.
- > Installation work shall be performed only by authorised specialist personnel with suitable tools.
- > After an interruption in the diffusion dialysis processes, a controlled re-start of the system must be assured.
- > Comply with general good engineering practise when operating the product.

#### **The following must be observed to avoid damage to the product:**

- > Protect the product from UV radiation and frost.
- > Ensure that the product does not come into contact with organic substances.
- > Do not subject the product to hard shocks.
- > Always keep the interior of the product moist after filling.
- > Do not exceed the maximum operating pressure.
- > Avoid pressure surges.
- > Avoid pressure being applied on a single side.
- > Do not exceed the maximum operating temperature.
- > Do not carry out any external alterations to the product.
- > Do not apply mechanical loads to the product (e.g. do not use it as a step).
- > Only media listed in chapter 5.3 shall be fed into the media connections. Use of unlisted media is the sole responsibility of the user.
- > Avoid mixing up the media connections.

## 4. GENERAL INFORMATION:

### 4.1 Contact address: Spiraltec GmbH

Heinzenberger Weg 34  
74343 Sachsenheim  
Germany

Technical Support: +49 7147 9670 204  
E-Mail: [info@spiraltecgbmh.de](mailto:info@spiraltecgbmh.de)

[www.spiraltecgbmh.com](http://www.spiraltecgbmh.com)

### 4.2 Warranty:

Prerequisite for the warranty is the proper use of the product and compliance with the specified operating conditions.

### 4.3 Information in the Internet:

*Installation instructions* and *product-specific datasheets* can be found in the internet at:  
[www.spiraltecgbmh.com/en/downloads-en](http://www.spiraltecgbmh.com/en/downloads-en).

## 5. TECHNICAL DATA:

### 5.1 Product data:

Please refer to the *product-specific datasheet* for product data.

### 5.2 Conditions for operation and service:

#### NOTE:

- > The operating conditions (flow rates, operating pressures) are dependent on the respective application and should be defined and optimised at laboratory and pilot scale!
- > The limit values for operating pressure and operating temperature shall not be exceeded.
- > Ambient temperature not higher than operating temperature, always frost-free.

Please refer to the *product-specific datasheet* for further information on the conditions for operation and service.

### 5.3 Suitable media:

If using media that are not cited on the *product-specific datasheet*, please consult with a representative of Spiraltec GmbH beforehand. In the event of unlisted media being used without prior consultation, the responsibility lies with the operator and the warranty for the product is voided!

### 5.4 Forbidden media:

- Organic liquids
- Alkalis
- Oxidants
- Liquids with particles > 10 µm
- There may be additional media on the *product-specific datasheet*

## 6. INSTALLATION AND COMMISSIONING:



### Danger!

#### **Intoxication, chemical burns, contamination due to media escape.**

- > Check the product for leaks before commissioning.
- > With hazardous media, ensure that corresponding protective measures are implemented and wear personal protective equipment in accordance with the requirements of the media.
- > Before loosening lines, ensure that the medium has been flushed out of the whole system.



#### **Danger of injury through high pressure in the system/product.**

- > Before working on the system or product, shut off the pressure and empty the lines.

#### **Risk of injury due to improper operation.**

Improper operation can lead to injuries as well as damage to the product and its surroundings.



*> Before commissioning, it is necessary to guarantee that the operating personnel are familiar with the content of the installation instructions and that they understand these fully.*

*> The safety instructions and the proper intended use must be observed.*

- > Only appropriately trained personnel are permitted to commission the system/product.



## Warning!



### Risk of injury with improper installation.

- > Installation work shall be performed only by authorised specialist personnel with suitable tools.

### Danger of injury through switching the system on unintentionally and uncontrolled re-start.

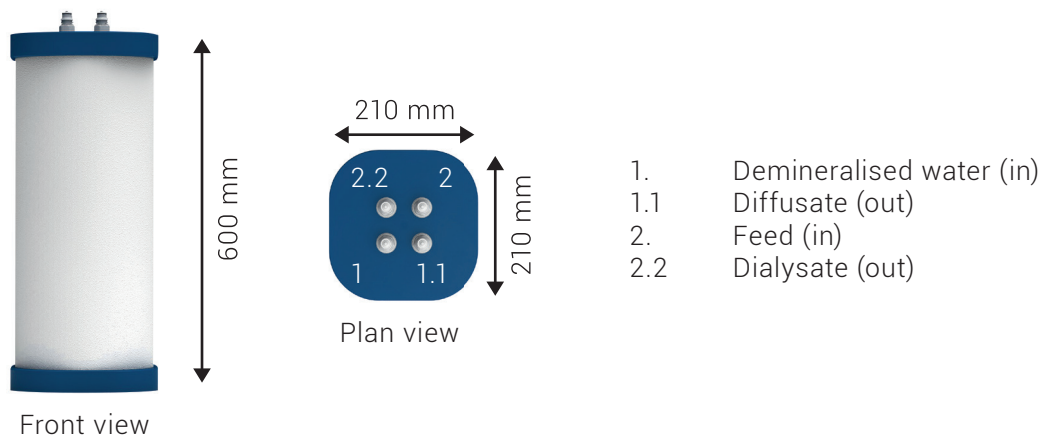
- > Secure the system from unintentional actuation.
- > After the installation, ensure that the re-start is carried out in a controlled manner.

### 6.1 Before installation:

- > Check the product for external mechanical damage.
- > New spiral membrane modules are delivered dry.
- > The cover caps on the media connections should be removed immediately before installation and should be kept safely. The EPDM seals used can be screwed into suitable connections (not included).

### 6.2 Installation of the spiral membrane modules:

Integrate the product into the system assembled by the operator in accordance with the connections described. The operator must ensure that the system is operating safely.



- > Ensure that the spiral membrane module is connected in accordance with the labelling.
- > Ensure that the diffusate (connection 1.1) and the dialysate (connection 2.2) are able to flow out without pressure. Observe the geodetic altitude when carrying out piping work.
- > Install the spiral membrane modules only in a vertical position with the connections upwards.

### **6.3 Before commissioning:**

**It is necessary to ensure that NO organic substances (for example, oils) and NO particles > 10 µm can enter the spiral membrane module. The operator must provide suitable pre-filtering upstream of the inlet to the spiral membrane module.**

#### **6.3.1 Filling the spiral membrane modules:**

- > The demineralised water channel (connection 1) and the feed channel (connection 2) must be filled simultaneously.
- > Avoid pressure surges when filling.
- > Venting the modules: The displaced air must be able to escape without hindrance via the connections 1.1 and 2.2.
- > The spiral membrane module must be left filled for approx. 48 hours to condition the membrane film. In doing so, it is essential that the outlets remain open. Otherwise, pressure will build up in the spiral membrane module and this will destroy the module.
- > After the initial filling, the interior of the spiral membrane module must remain damp throughout the whole of its service life.

#### **6.4 Operating the spiral membrane modules:**

- > Ensure that the diffusate (connection 1.1) and the dialysate (connection 2.2) are able to flow out without pressure.
- > The setting of the desired flow rates must be realised through external measures. The stipulated limit values for operating pressure, operating temperature and flow rates shall not be exceeded!

## **7. MAINTENANCE:**

**The spiral membrane module is maintenance-free. Notice that contaminants in the flow channel or deposits in the membrane surface can lead to reductions in performance.**

**It is not possible to flush the spiral membrane module. If there is a reduction in performance, the affected membrane spiral winding module must be replaced.**

## 8. REMOVAL:



### Danger!

#### **Intoxication, chemical burns, contamination due to media escape.**

- > With hazardous media, ensure that corresponding protective measures are implemented and wear personal protective equipment in accordance with the requirements of the media.
- > Before loosening lines, ensure that the medium has been flushed out of the whole system.



#### **Danger of injury through high pressure in the system/product.**

- > Before working on the system or product, shut off the pressure and empty the lines.

#### **Risk of injury with improper removal.**

- > Only appropriately trained personnel are permitted to remove the product.

- > Flush the whole system for 120 minutes with demineralised water. Dispose of the water used for flushing properly, in accordance with the applicable environmental conditions.
- > Empty whole system (insofar as possible).
- > Loosen connections, remove spiral membrane module.
- > Empty spiral membrane module by turning it upside-down until it stops dripping.
- > Seal the connections with the cover caps provided.
- > Store spiral membrane modules in accordance with instructions (*chapter 9*) or dispose of properly.

## 9. SHUTDOWN/STORAGE:

Used spiral membrane modules must be kept continuously moist. In order to prevent bacterial growth during downtimes or storage, the spiral membrane modules should be flushed through with diluted salt-free acid.

We recommend carrying out the preservation with the spiral membrane modules in the system.

- > **Store only in a vertical position with the connections upwards.**

## **9.1 Short-term storage:**

### **Shut-downs up to 24 hours in length:**

- > No measures necessary. Outlets must remain open to ensure that pressure cannot build up.

### **Shut-downs between 24 hours and 7 days in length:**

- > Carefully flush the whole system for 120 minutes with demineralised water.  
Dispose of the water used for flushing properly, in accordance with the applicable environmental conditions.
- > Connections 1.1 and 2.2 must remain open to ensure that pressure cannot build up.

## **9.2 Long-term storage:**

### **Shut-downs between 7 days and 6 months in length:**

- > Carefully flush the whole system for 120 minutes with demineralised water.  
Dispose of the water used for flushing properly, in accordance with the applicable environmental conditions.
- > Flush the whole system for 60 minutes with a diluted salt-free acid.  
Dispose of the water used for flushing properly, in accordance with the applicable environmental conditions.
- > Empty spiral membrane module by turning it upside-down until it stops dripping.
- > Seal connections with the cover caps provided.
- > Storage temperature 5 °C – 30 °C.

### **Shut-downs longer than 6 months:**

- > Flush the spiral membrane module through again with diluted salt-free acid for 60 minutes every 6 months.
- > Empty spiral membrane module by turning it upside-down until it stops dripping.
- > Seal connections with the cover caps provided.
- > Storage temperature 5 °C – 30 °C.

## 10. PACKAGING/TRANSPORT:

### **NOTE:**

#### **Transport damage:**

Inadequately protected products can be damaged by transport.

- > Protect the product from light, moisture and dirt and transport in impact-resistant packaging.
- > Ensure that the permissible storage temperatures are not infringed.
- > Storage temperature 5 °C - 30 °C.

#### **Environmental damage due to product parts contaminated with media:**

- > Dispose of product and packaging in an environmentally friendly manner.
- > *Observe applicable disposal regulations, transport provisions and environmental regulations.*

## 11. RETURNING A SPIRAL MEMBRANE MODULE:

If a product is to be returned, please contact a representative of Spiraltec GmbH beforehand. Prepare the spiral membrane module in accordance with long-term storage (chapter 9.2: Shut-downs between 7 days and 6 months in length). Send the spiral membrane module, well-packaged, to Spiraltec GmbH and please enclose a written description of the damage/fault along with a description of the application (media used, etc.)

- > *Observe applicable disposal regulations, transport provisions and environmental regulations.*

## 12. ACCESSORIES:

The following accessories can be obtained from Spiraltec GmbH:

1. CPC quick-couplers
2. Compression fittings

Contact a representative of Spiraltec GmbH for this.

## 13. PERSONAL NOTES:

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