

## System for separating the metal salts from free acids from process baths

<b>Flow:</b>	<b>15 - 30 l/h</b> (depending on the flow limiters used, the composition of the media and the operating pressure)
<b>Recommended operating pressure:</b>	<b>1,8 - 2,2 bar (overpressure before the flow limiters)</b>
<b>Minimum pre-pressure:</b>	<b>1,0 bar (overpressure)</b>
<b>Maximum pressure:</b>	<b>2,5 bar (overpressure)</b>
<b>Pressure loss:</b>	<b>Equivalent to operating pressure</b>
<b>Operating temperature:</b>	<b>5 °C - 30 °C</b>
<b>Weight when empty:</b>	<b>Approx. 150 kg (incl. empty modules)</b>
<b>Fill volume:</b>	<b>Approx. 20 L (per channel without storage container)</b>
<b>Storage container:</b>	<b>Max. 75 L per container</b>

Installation: Connecting up the containers (see installation instructions)

### Conditions of operation and use:



#### Suitable media:

sulphuric acid (up to 30%); phosphoric acid (up to 30%)

#### Forbidden media:

nitric acid; hydrochloric acid, hydrofluoric acid; organic liquids; alkalis; oxidation agents; liquids with particles > 10 microns

Hazards could arise when working with corrosive substances!

**Before commissioning, ensure that the safety data sheets of the media used have been observed!**

**NO organic substances (e.g. oils) and NO particles > 10 microns are permitted to enter pilot system PP2-DB. The operator must provide suitable pre-filtering upstream before entry in the corresponding storage containers.**

## Performance parameters of diffusion dialysis system PP2-DB:

The following flow rates are available in each spiral membrane module and can be combined in any desired order (two spiral membrane modules are installed in the system):

9 l/hr; 12 l/hr; 15 l/hr; 18 l/hr

Details relate to DI water (25°C) and have a tolerance of  $\pm 20\%$ .

All other performance parameters are dependent on the spiral membrane modules that are used, the volumetric flow rates and the composition of the feed! More detailed information can be found in the technical data sheet of the spiral membrane module that are used.

## Dimensions:



## Filling/emptying the storage containers:

The storage containers must be filled and emptied manually in accordance with their designation. **The fill levels of these containers are not monitored. Because of this, the pilot system can only be operated under supervision.**

### 1. Starting the system:

1. Actuate the main switch on the left side of the switch cabinet by turning it to ON. This starts up the electronics, the system is booted and the homepage appears on screen. Follow the instructions on the display.
2. Actuating button F1 starts the pumps, and the green indicator lamp lights up. The display now shows the operating pressures for DI water and feed. Ensure that these operating pressures never rise above 2.2 bar and do not drop below 1.0 bar.
3. The system is now operating.

### 2. Take a sample (diffusate and dialysate):

1. Hold a suitable sample extraction container under the blue cock.
2. Open the blue sample cock.
3. Close the red ball cock located below it. It takes approx. 10 - 15 seconds before fluid starts to flow out.
4. Draw off the required volume of sample.
5. Re-open the red ball cock.
6. Close the blue sample cock again.

#### **Notices:**

**Wear personal protective equipment (PPE) when taking samples.**

To ensure that the samples taken provide substantive results, they must be extracted once the system has reached its stationary operating point. This occurs approximately 90 minutes after the pumps start up. The performance capability is dependent on the volumetric flow rates set and is subject to fluctuations. If the metal salt content of the diffusate rises significantly, the corresponding spiral membrane module needs to be replaced.

### 3. Running down the pilot plant:

Pressing button F2 stops the pumps, and the green indicator lamp goes out. The pilot plant is now shut down. Control voltage to the system is switched off by turning the main switch into the OFF position.

## Shutdown/Storage:

The connecting hoses to the storage containers must not be disconnected because otherwise pressure can build up in the spiral membrane modules that may destroy them. Used spirale membrane modules must be kept damp at all times. We recommend preserving the spirale membrane modules inside the system at a storage temperature of 5 °C - 30 °C. Refer to the installation instructions for more detailed information:

**9. Shutdown/Storage**

## After use:

After use, the entire system must be rinsed out and sent to a professional disposal facility. Refer to the operating instructions for more detailed information: **8. Removal**

## Further information:

Please refer to the installation instructions for more detailed information.