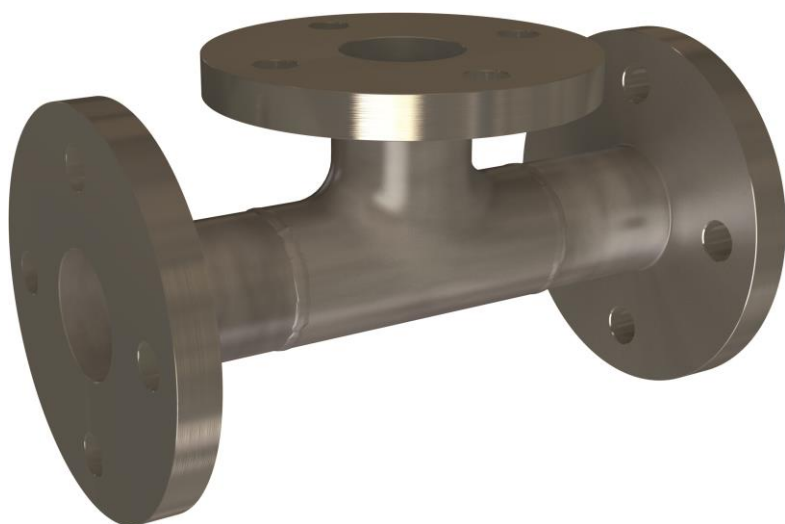


## OPERATING MANUAL



# CHEMFLOW

FLOW UNIT

SI Analytics  
a **xylem** brand



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**Status at time of printing**

Advanced technology and the high quality of our products are guaranteed by a continuous development. This may result in differences between this operating manual and your product. We cannot exclude mistakes. We are sure you understand that no legal claims can be derived from the information, illustrations and descriptions.

A potentially more recent version of this manual is available on our internet website at [www.si-analytics.com](http://www.si-analytics.com). The German version is the original version and binding in all specifications.

**Guarantee**

We provide guarantee for our process holders of one year from the date of purchase. This guarantee covers manufacturing faults being discovered within the mentioned period of one year. Claim under guarantee covers only the sensor itself, not any further claim for damages or financial loss. Warranty claims shall not include minor deviation from the agreed quality, of only minor impairment of usefulness, of usual wear and any damage that occurs after the transfer of risk from faulty handling, excessive strain, unsuitable equipment or due to special external influences.

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# 1 Security and safety measures

## 1.1 General safety instructions

The flow unit CHEM<sub>FLOW</sub> is designed in such a way that the product does not present any risk if the operating instructions are adhered to.

- ▶ Read the operating instructions first.
- ▶ Only install the flow unit if you have read and understood all notes on safe and proper use.
- ▶ Keep the operating instructions in order to consult it any time.
- ▶ Only operate the flow unit and its accessories if they are in an impeccable condition.
- ▶ In addition, also observe the laws, ordinances, regulations and standards applicable in the country of use and at the place of use.

## 1.2 Intended use

The flow unit CHEM<sub>FLOW</sub> is built in in pipes. The flow unit serves for mounting a sensor in such a way that it immerses into the process fluid in order to measure chemical or physical characteristics.

The material characteristics of the flow unit, the gaskets, the sensors and the housing must be chosen depending on the process characteristics.

The flow unit must be maintained on a regular basis.

- ▶ Establish a maintenance plan which is adjusted to your process.
- ▶ The flow unit may only be modified after consulting the manufacturer.
- ▶



The manufacturer does not assume any liability for damages arising from improper or unintended use.

### 1.3 Danger zones and residual dangers

Flow units are connected to pipes which can be pressurized. Process fluid can only escape in case of gross negligence or improper operation.

- ▶ Ensure prior to start-up and after every maintenance work that all gaskets and all connections are complete and able to function.
- ▶ Take appropriate protection measures before touching the unit since parts of the flow unit can have process temperature.

### 1.4 Resources

Only use checked and approved accessories and resources.

- |                      |                                                                                                                                                                                                                                                |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Gaskets</b>       | <ul style="list-style-type: none"><li>▶ Choose the material properties of the process gaskets depending on the process medium.</li><li>▶ Consider the swelling capacity and the acid or alkali resistance of the gasketing material.</li></ul> |
| <b>Sensor / unit</b> | <ul style="list-style-type: none"><li>▶ Choose a suitable sensor or a suitable unit and note the information in the section "technical data".</li></ul>                                                                                        |

### 1.5 Staff

- |                                  |                                                                                                                       |
|----------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| <b>Qualification</b>             | Only trained skilled workers may install and maintain the flow unit!                                                  |
| <b>Protective clothing</b>       | The operating personnel must wear suitable protective clothing during start-up and maintenance work.                  |
| <b>Accident prevention rules</b> | Observe the rules and regulations concerning safety at work applicable in the country of use and at the place of use! |

## 1.6 Disposal

Observe regulations and rules for waste disposal applicable in the operator's country and at the site of use.

## 1.7 Symbols and pictograms

Pictograms and symbols are used in the operation manual to provide better orientation.

---

**DANGER!**

The safety note with the **DANGER!** signal indicates the risk of personal danger and high material damage in case of failure to observe the instructions.

---

**CAUTION!**

The safety note with the **CAUTION!** signal indicates the risk of material damage in case of failure to observe the instructions.



Indicates an important note!



This sign indicates that the operations should be carried out in the specified order.

## 2 Product description

### 2.1 Flow unit CHEMFLOW

#### Components

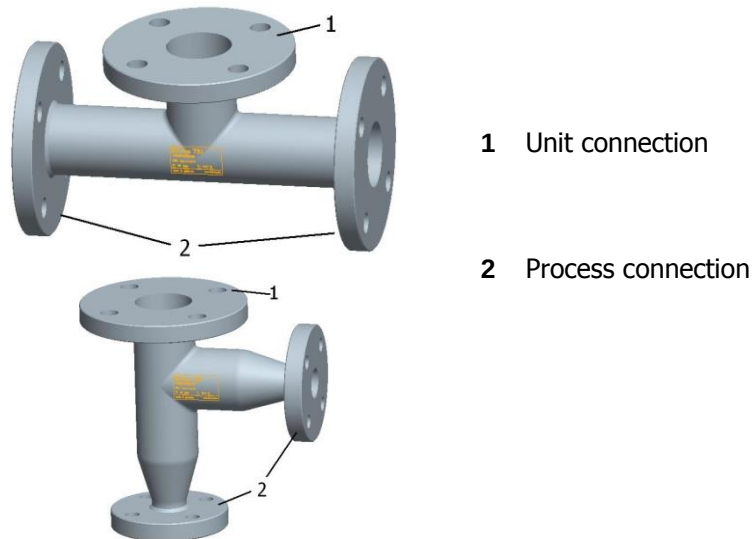


Fig. 1 Flow unit CHEMflow

**Variants** In order to integrate the flow unit CHEMFLOW into the process, you can choose between different process connections, flow directions (90° or 180°) and nominal widths. In order to respect the diverse process characteristics, the flow unit CHEMFLOW is made of stainless steel or of plastic.

**CHEMtrac 830** CHEMtrac 830 is a retractable holder made of stainless steel for hygienic installation of Ø12 sensors on tanks or pipelines

- For all kind of Ø12/225mm or Ø12/280mm sensors with thread PG13.5 (pH-glass- and ISFET sensors, conductivity- or temperature sensors, turbidity and other optical sensors)
- Food
- Pharmaceuticals
- Requirement of automated sensor cleaning or calibration

**Drive** Compressed air is supplied via the pneumatic connections on the drive unit. The drive unit inserts the insertion rod in the process medium up to the maximal insertion depth. For safety reasons this is only possible with a sensor installed.



|                               |                                                                                                                           |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| <b>Unit / sensor</b>          | The flow unit CHEM <sub>FLOW</sub> is integrated into the process pipe and houses a unit in which the sensor is built in. |
| <b>Transmitter</b>            | The sensor is connected to a transmitter and can thus transfer its measuring results.                                     |
| <b>Process control system</b> | The transmitter can be connected with a process control system.                                                           |

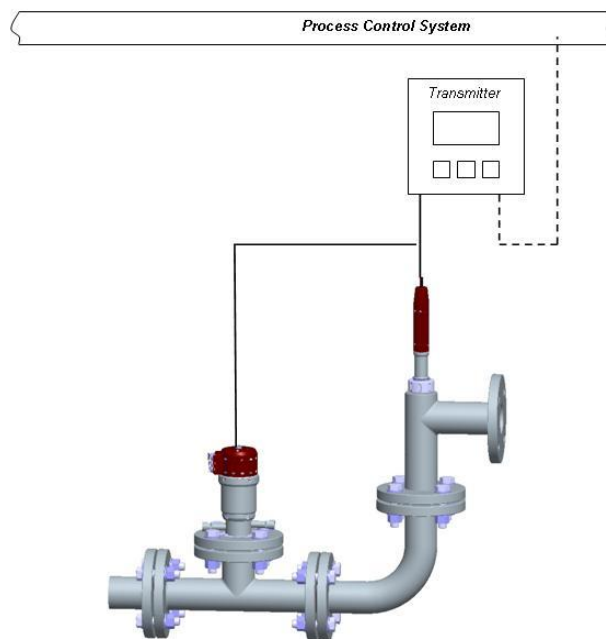


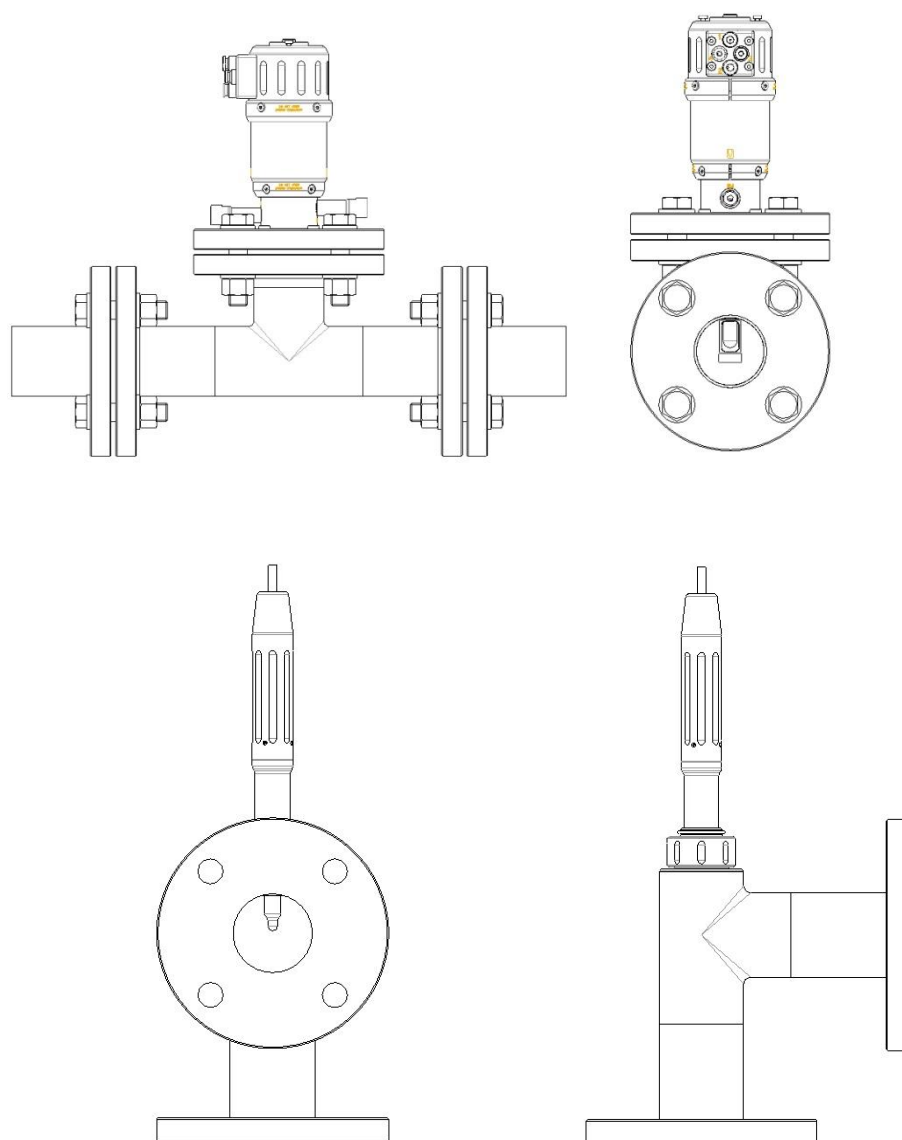
Fig. 2 Process flow

|                    |                                                                                                                                                                                                                                                                                                                                              |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Pressure</b>    | The pressure and the temperature conditions of the process are relevant for choosing the suitable flow unit. Depending on the temperature, the flow unit of stainless steel can be used up to a pressure of 16 bar, the flow unit of plastic can be used up to a pressure of 6 bar. The process temperature must lie between -10° and 140°C. |
| <b>Temperature</b> |                                                                                                                                                                                                                                                                                                                                              |



Pay attention to the pressure and the temperature diagrams!

|                              |                                                                                                                                                            |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Installation position</b> | Principally, the unit may be installed in any position. In order to get reliable measuring results, the characteristics of the chosen sensor are relevant. |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|



**Total measuring  
position**

Combine the flow unit CHEMflow with suitable installation units in order to get a complete measuring unit. Thus, you obtain optimal measuring results.

## 3 Delivery

### 3.1 Scope of delivery

The flow unit is inspected in the factory and delivered ready for installation in a packaging which optimally protects the flow unit.

The delivery consists of:

- flow unit CHEM<sub>FLOW</sub>
- operating instructions

Additionally included for the unit CHEM<sub>FLOW</sub> 710 is a

- material certificate



Keep the unit in the packaging. There, it is protected best until being installed.

### 3.2 Delivery inspection



Before releasing the flow unit for installation, you must ensure that:

packaging and unit are in an impeccable condition.

the identification plate of the flow unit corresponds to the data in the order form.

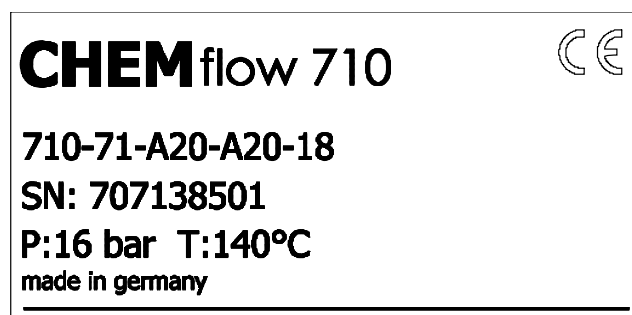


Fig. 3 Data plate

**In case of further inquiries please directly contact your dealer.**

## 4 Installation

### 4.1 Preparing the system



Ensure that

there is enough working space for operating the flow unit.

the process is switched off.

the pipes are pressure-free, empty and clean.

the connecting flange and the flanges of the pipe fit together.

a process gasket is inserted between the flanges.

the nominal widths of the pipes fit together at the weld ends.

### 4.2 Installing the unit



First ensure that:

the plant has been prepared (section 4.1).

#### **How to mount the unit:**

1. Insert the flow unit into the prepared installation position and, if necessary, insert a gasket.
2. Connect the process connection and tighten.  
In case of weld ends, weld the flow unit in.

## 5 Maintenance

### 5.1 Important notes on maintenance

Maintenance work may only be carried out by skilled personnel.

Always wear protective clothing during maintenance work.

Only carry out maintenance work or repair which is described in the operating instructions!

Constructional modifications may only be carried out after consulting the manufacturer.

The pipes or containers must be pressure-free, empty and clean prior to disconnecting the unit from the process.

### 5.2 Regular maintenance work

Make up a special maintenance plan, depending on the process conditions.



**Check on a regular basis whether process fluid escapes.**

### 5.3 Disposal

**Unit** Make sure that the unit is free of hazardous and toxic substances. The individual components must be disposed of separately corresponding to their material.

Observe the rules and regulations relating to waste disposal which are applicable in the country of use and at the place of use.

## 6 Technical data

### 6.1 Standards

Pressure equipment directive

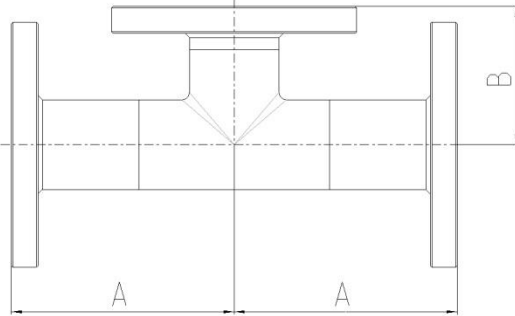
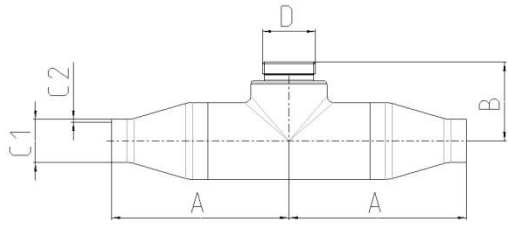
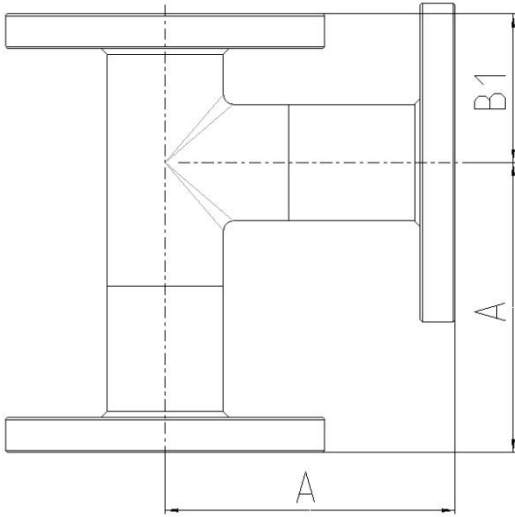
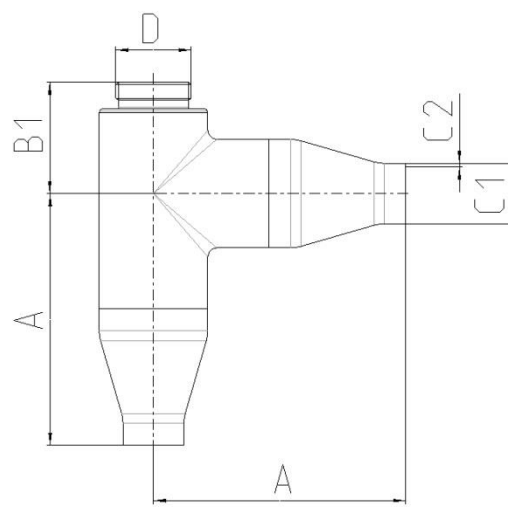
### 6.2 Material

| Components with contact with the medium |                 |                                |         |
|-----------------------------------------|-----------------|--------------------------------|---------|
| Unit                                    |                 |                                |         |
| CHEMFLOW                                | Stainless steel |                                | Plastic |
| 710                                     | 1.4571/316L     | 1.4404/316L<br>lined with ETFE |         |
| 720                                     |                 |                                | PVDF    |

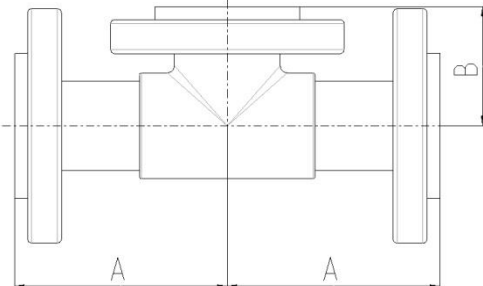
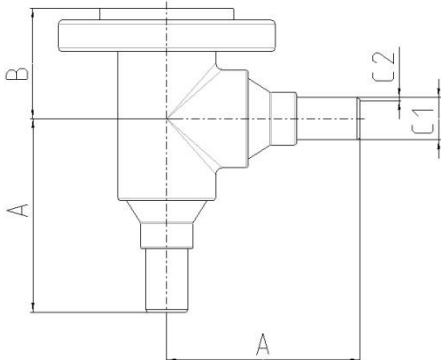


Pay attention to the pressure and the temperature diagrams!

### 6.3 Dimensions CHEMflow 710

| Dimensions CHEMFLOW 710 |                                                                                    |         |                |         |                                                                                     |        |           |        |
|-------------------------|------------------------------------------------------------------------------------|---------|----------------|---------|-------------------------------------------------------------------------------------|--------|-----------|--------|
|                         | Process Connection<br>Flange                                                       |         |                |         | Process Connection<br>Welding pipe                                                  |        |           |        |
|                         | DN25 / ANSI 1"                                                                     |         | DN50 / ANSI 2" |         | DN25 / 1"                                                                           |        | DN50 / 2" |        |
| 180°                    |   |         |                |         |   |        |           |        |
|                         |  |         |                |         |  |        |           |        |
| Dimensions              | Holder Connection<br>Flange DN50 / ANSI 2"                                         |         |                |         | Holder Connection<br>G1 1/4"                                                        |        |           |        |
|                         | DN25                                                                               | ANSI 1" | DN50           | ANSI 2" | DN25                                                                                | 1"     | DN50      | 2"     |
| A [mm]                  | 150                                                                                | 150     | 150            | 150     | 140                                                                                 | 140    | 137       | 137    |
| B [mm]                  | 93                                                                                 | 93      | 93             | 93      | 62                                                                                  | 62     | 62        | 62     |
| B1 [mm]                 | 77                                                                                 | 77      | 77             | 77      | 62                                                                                  | 62     | 62        | 62     |
| C1 [mm]                 | -                                                                                  | -       | -              | -       | 33.7                                                                                | 33.7   | 60.3      | 60.3   |
| C2 [mm]                 | -                                                                                  | -       | -              | -       | 2                                                                                   | 2      | 2         | 2      |
| D [mm]                  | G1 1/4                                                                             | G1 1/4  | G1 1/4         | G1 1/4  | G1 1/4                                                                              | G1 1/4 | G1 1/4    | G1 1/4 |

## 6.4 Dimensions CHEMflow 720

| Dimensions CHEMFLOW 720 |                                                                                   |         |                |         |                                                                                    |     |           |     |
|-------------------------|-----------------------------------------------------------------------------------|---------|----------------|---------|------------------------------------------------------------------------------------|-----|-----------|-----|
|                         | Process Connection<br>Flange                                                      |         |                |         | Process Connection<br>Welding pipe                                                 |     |           |     |
|                         | DN25 / ANSI 1"                                                                    |         | DN50 / ANSI 2" |         | DN25 / 1"                                                                          |     | DN50 / 2" |     |
| 180°<br><br>90°         |  |         |                |         |  |     |           |     |
|                         |                                                                                   |         |                |         |                                                                                    |     |           |     |
| Dimensions              | Holder Connection<br>Flange DN50 / ANSI 2"                                        |         |                |         |                                                                                    |     |           |     |
|                         | DN25                                                                              | ANSI 1" | DN50           | ANSI 2" | DN25                                                                               | 1"  | DN50      | 2"  |
| A [mm]                  | 150                                                                               | 150     | 150            | 150     | 147                                                                                | 147 | 147       | 147 |
| B [mm]                  | 84                                                                                | 84      | 84             | 84      | 84                                                                                 | 84  | 84        | 84  |
| C1 [mm]                 | -                                                                                 | -       | -              | -       | 32                                                                                 | 32  | 63        | 63  |
| C2 [mm]                 | -                                                                                 | -       | -              | -       | 2.4                                                                                | 2.4 | 2         | 2   |



## 6.5 Process conditions CHEMFLOW 710

maximally admissible pressure PS: 16 bar

maximally admissible temperature TS: 140 °C

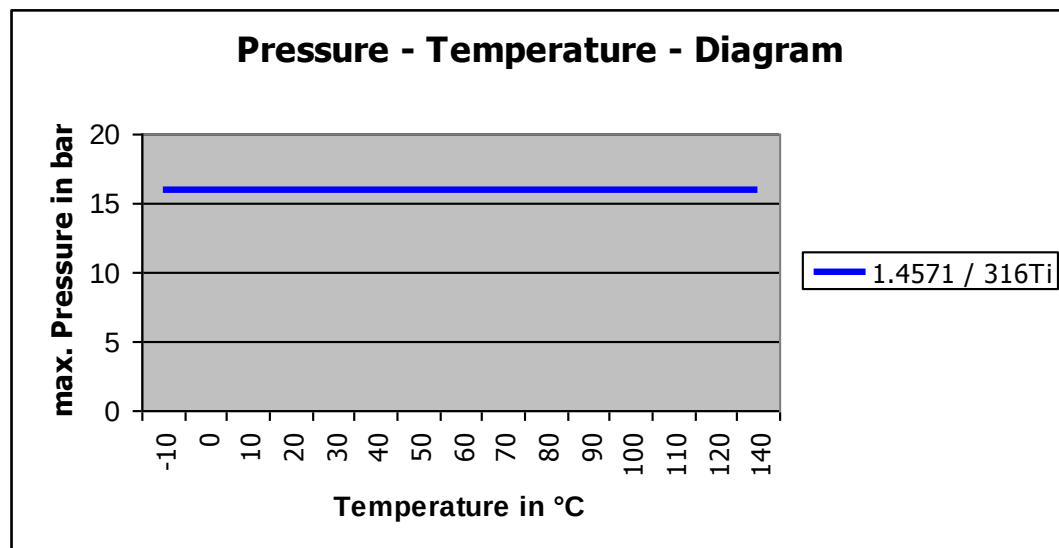


Fig. 4 Pressure-temperature-diagram of CHEMFLOW 710

## 6.6 Process conditions CHEMFLOW 720

maximally admissible pressure PS 6 bar

maximally admissible temperature TS 120° C

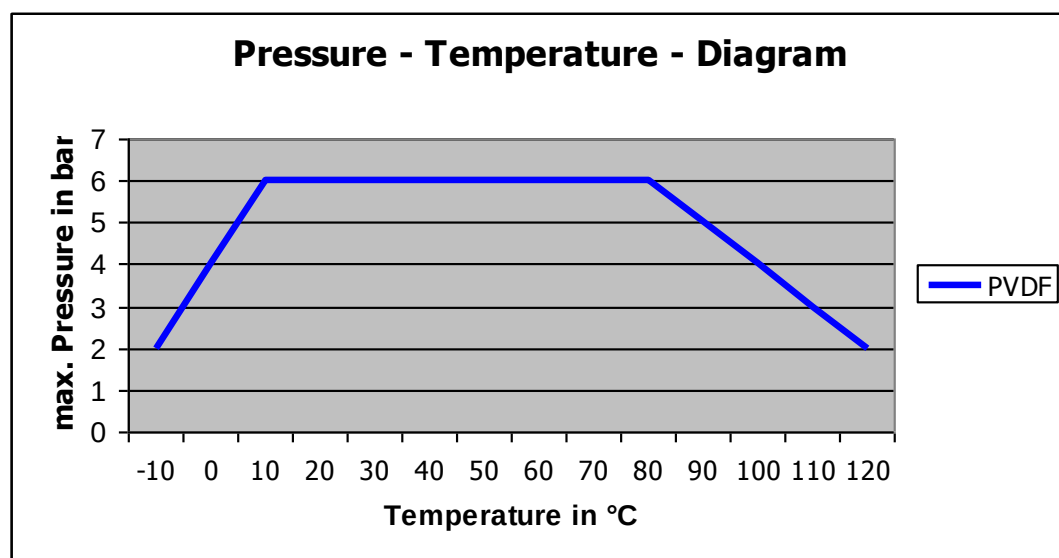


Fig. 5 Pressure-temperature-diagram of CHEMFLOW 7





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