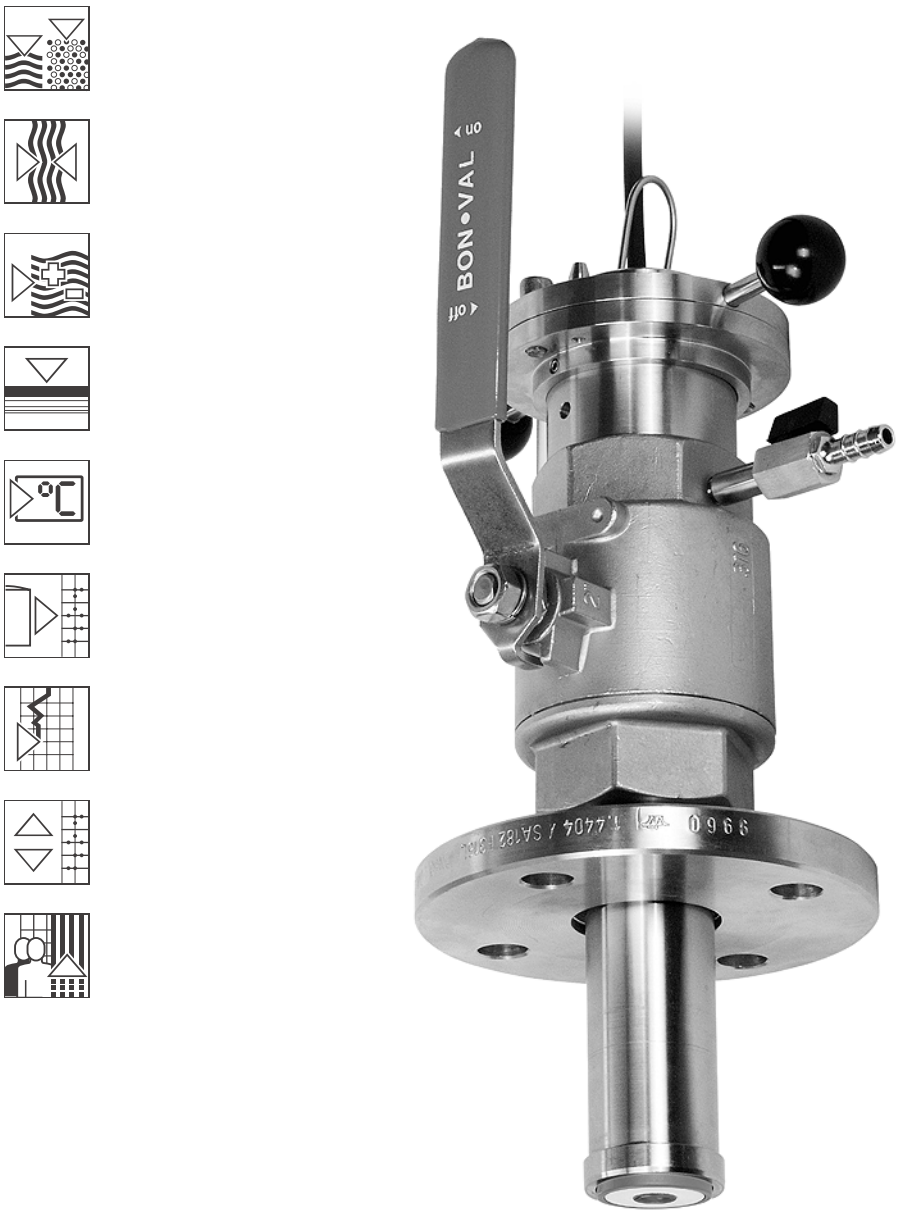
Technical Information
TI 343C/07/en/11.03
51510921

# Retractable Assembly
# *CleanFit CPA 451*

## Manually operated stainless steel assembly with ball valve for pH and ORP electrodes




### Application

- Industrial and communal waste water treatment
- Water conditioning
- Condensate cleaning

### Your benefits

- Safety:
  - Safe and reliable process termination possible under nearly all conditions
  - Process pressure up 10 bar (145 psi), manually operated up to 2 bar (29 psi)
- Comfortable operation:
  - Cleaning possible due to rinse water connection
  - Rinse water connection can be used as sealing water inlet
  - Sensor monitoring and cleaning without process interrupt

Quality made by Endress+Hauser

ISO 9001

Endress+Hauser

The Power of Know How

# Function and system design

**Function**

The assembly is manually operated.

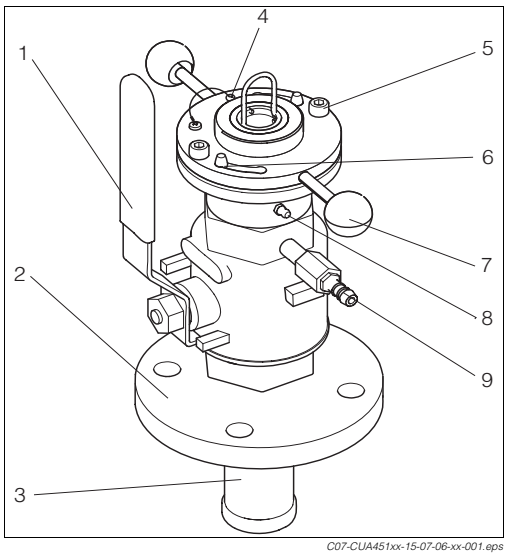
Caution!
The air relief valve and the rinse connections (if used) are in open contact with the medium in the measuring position, or at least when moving, and are thus exposed to the process pressure. Make sure that, the air relief valve and the rinse connections (if used) are closed when moving the assembly .

**General sequence when moving the retractable assembly**

- from position "Service" to position "Measure"
  - Open the ball valve (see fig. below, pos. 1)
  - Move the sensor into the process: press down the handle (pos. 6) of the sensor holder (pos.3)
  - Close the bayonet joint (pos. 5)
  - Fasten the fastening screws (pos. 4)
- from position "Measure" to position "Service"
  - Loosen the fastening screws
  - Open the bayonet joint
  - Move the sensor off the process: pull up the sensor holder by means of the handle
  - Close the ball valve

In the "Service" status (sensor moved back into the assembly and **ball valve closed**), the ball valve seals the assembly off from the process. This means that cleaning and calibration can take place and electrodes can be changed without interrupting the process.

Caution!
Manually moving the assembly under process conditions is only possible at a process pressure up to 2 bar (29 psi).

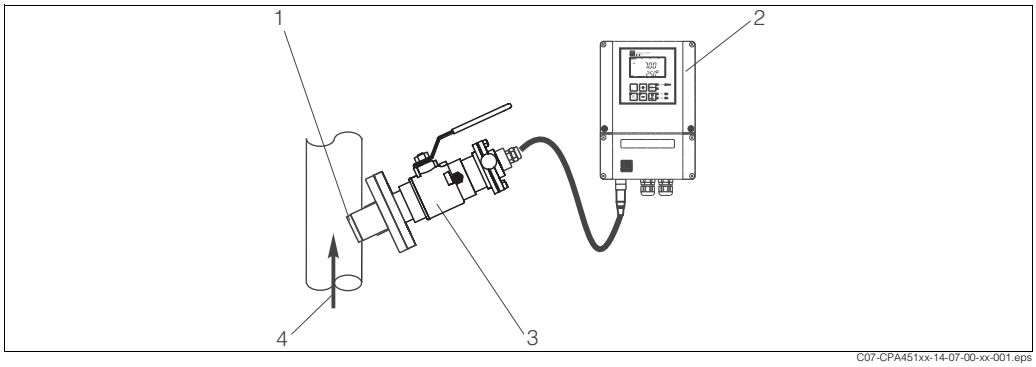



*Assembly in measuring mode (ball valve open)*

*1 Hand lever for ball valve open/close*
*2 Process connection (Flange DN 50 / PN 16)*
*3 Outer sleeve*
*4 Locking pin*
*5 Fastening screws*
*6 Bayonet joint*
*7 Handle*
*8 Lubricator nipple*
*9 Air relief valve resp. rinse water connection*

**Measuring system**

A complete measuring system comprises:
- CleanFit CPA 451 assembly
- OrbiPac W CPF 81/82 pH/ORP electrode
- Liquisys M CPM 223/253 transmitter



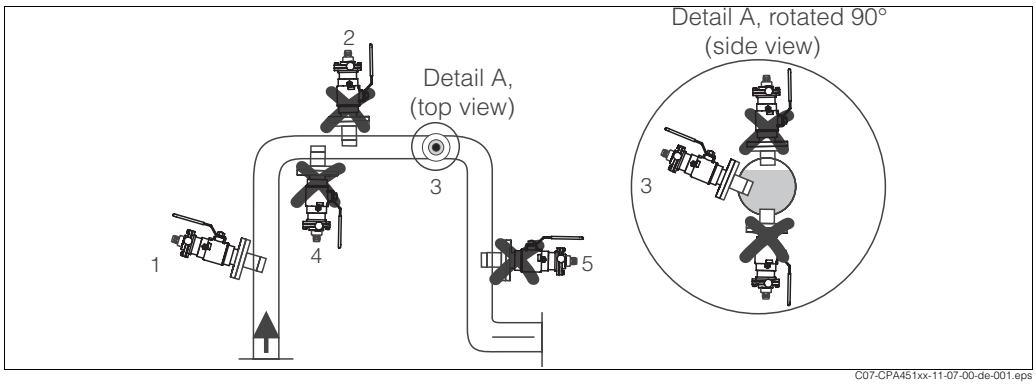

*Measuring system*

*1 OrbiPac W CPF 81/82 pH / Redox electrode*
*2 Liquisys M CPM 223/253*
*3 CleanFit CPA 451*
*4 Medium flow direction*

# Installation

**Installation conditions**

Install the assembly at places with constant flow. The minimum pipe diameter is DN 80.

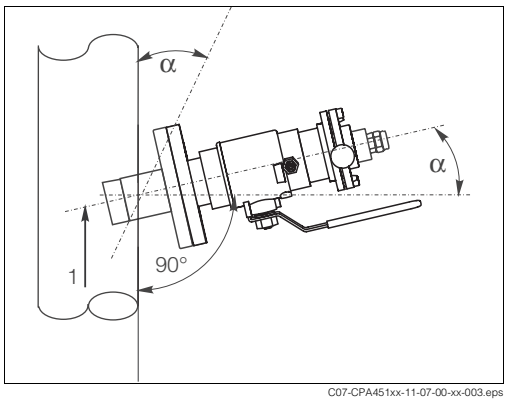



*Permissible and impermissible sensor installation positions*

*1 Ascending pipe, best position*
*2 Horizontal pipe, sensor top down, impermissible due to air cushion or foam bubble forming*
*3 Horizontal pipe, installation with permissible emitting angles (acc. to sensor version)*
*4 Overhead installation, impermissible due missing electrolyte contact of the internal lead*
*5 Down pipe, impermissible*

Note!
- Do not install the assembly at places, where air cushions or foam bubbles can be formed or where suspended particles can settle on the sensor optics (→ Fig. ).
- Measuring errors can occur, if:
  – the electrode is not immersed into the medium
  – suspended particles are settled on the glass membrane of the electrode
  – the electrode is installed horizontal or overhead (the min. installation angle is 15° for the internal lead to have electrolyte contact).

**Orientation**



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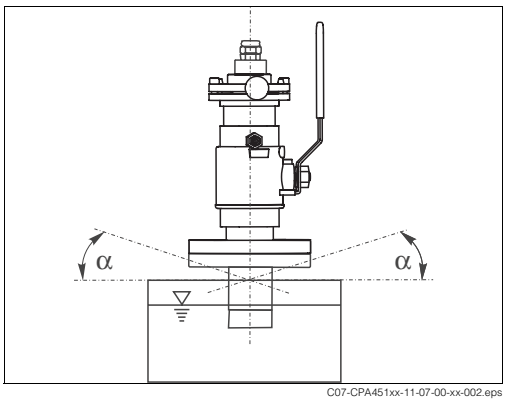
*Ascending pipe and tank side installation*

α *min. 15°*
*1 Medium flow direction*



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*Tank top installation*

α *min. 15°*
*1 Medium flow direction*

# Environment

**Ambient temperature range**

0 ... 50 °C (32 ... 122 °F)

# Process

**Medium pressure**

max. 10 bar (145 psi)

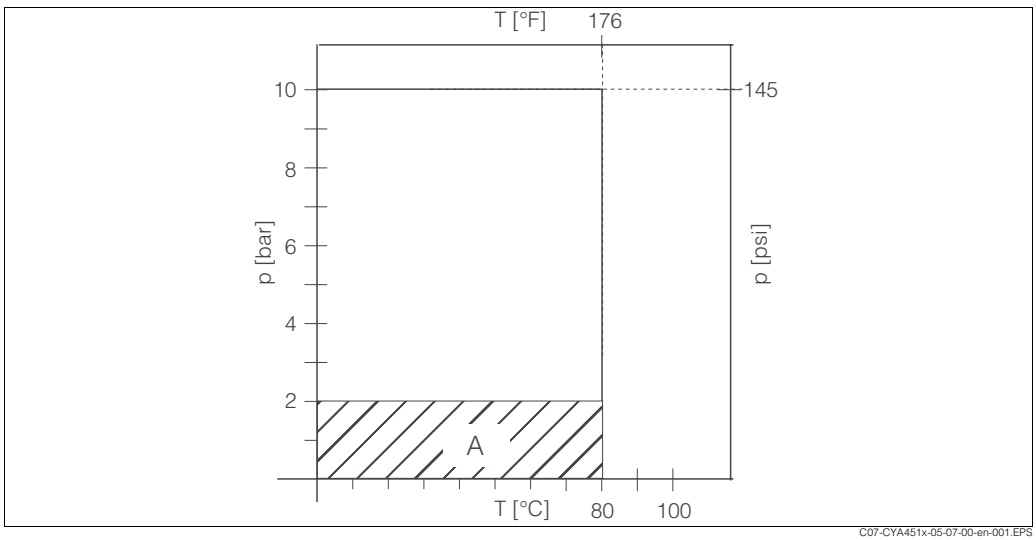
Caution!
- The maximum process pressure is 2 bar (29 psi) for manual assembly operation!
- Please consider the sensor process conditions!

**Medium temperature**

0 to 80 °C (32 to 176 °F)

Caution!
Please consider the maximum sensor process temperature!

**Pressure-temperature diagram**



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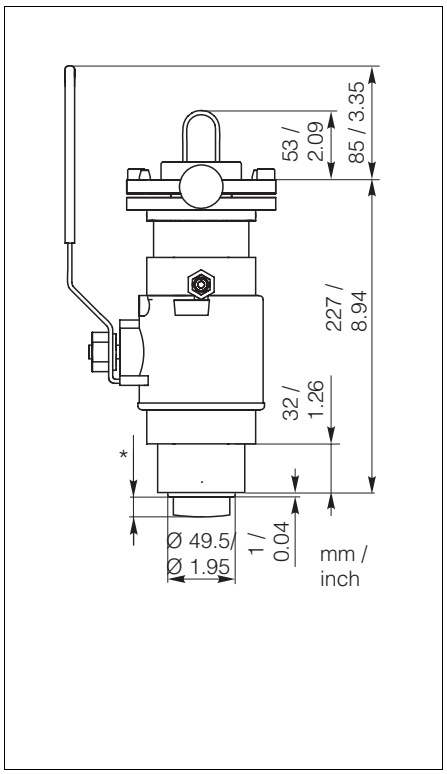
*Pressure-temperature diagram*

*A Manual operation range*

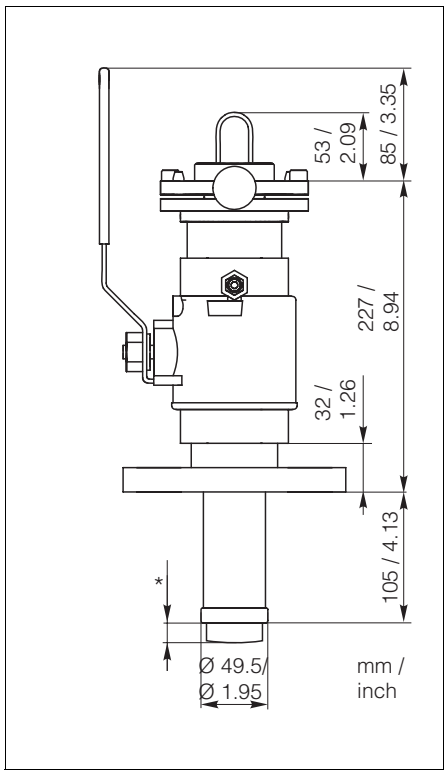
# Mechanical construction

**Design, dimensions**



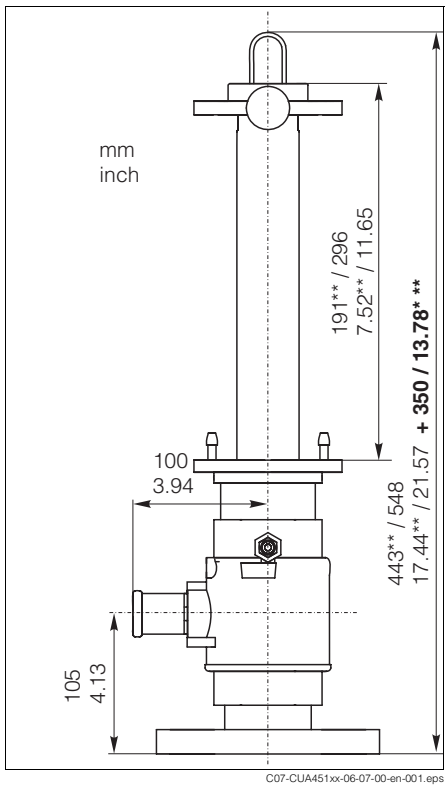

*Assembly with welding neck (short lift)*

* *Dimensions depend on sensor, see below*




*Assembly with flange connection (long lift)*

* *Dimensions depend on sensor, see below*




*Assembly in service position*

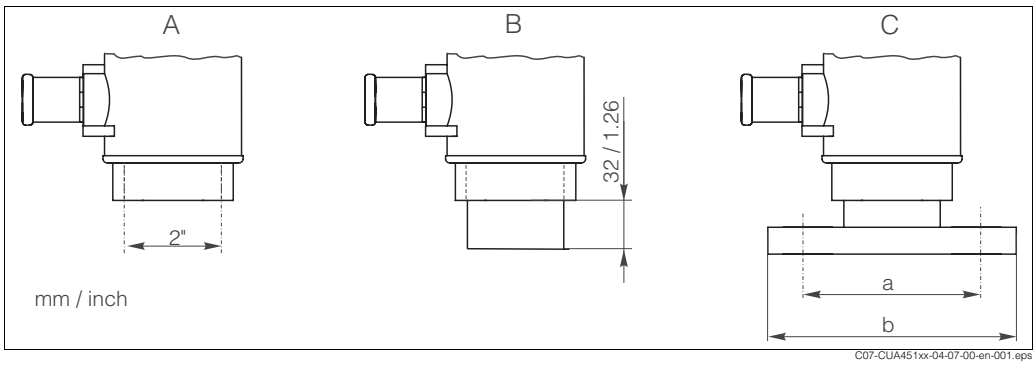
** *Assembly version with short lift (see product structure)*

*** There must be additional space of 350 mm (13.78") for sensor installation!

** Dimension acc. to sensor type:*
*CPF 81-xx2: 6 mm (0.24")*
*CPF 81/82-xx1: 17 mm (0.67")*

| | | |
|---|---|---|
| **Fitted sensors** | CPF 81 / CPF 82<br>not applicable: CPF 81 / 82 -xx3 with 58 mm (2.28") immersion depth | |
| **Weight** | 8 - 11 kg (17.6 ... 24.3 lb) depending on the assembly version | |
| **Materials** | In contact with medium: | Viton (seals)<br>stainless steel 1.4404 (AISI 316L)<br>nickeled brass (air relief valve resp. rinse connection) |
| | Not in contact with medium: | stainless steel 1.4404 (AISI 316L) |

**Process connections**




*Process connections*

*A Internal thread G2*
*B Internal thread G2 with welded fitting*
*C Flange DN 50 / PN 16 and Flange ANSI 2" / 150 lbs*
*a: DN 50: Ø 125 (4.92"), ANSI 2": Ø 120.7 (4.75")*
*b: DN 50: Ø 165 (6.50"), ANSI 2": Ø 152.4 (6.00")*

**Rinse connection fitting**

2 x G1/8 (internal)

Connection options:
– 2 x ball valve with hose connection OD 9 mm (0.35"), see accessories
(One ball valve is in the scope of delivery. When used alone, it is an air relief valve.)
– customer specific solution, rinse connections with G1/8 external thread

**Air relief valve**

Hose connection OD 9 mm (0.35")

# Ordering information

**Product structure**

| | | | | | |
|---|---|---|---|---|---|
| | **Sensor lift / Immersion depth** | | | | |
| | A | Short lift, Immersion depth approx. 170 mm / 6.69" (process connections A and B only) | | | |
| | B | Long lift, Immersion depth approx. 270 mm / 10.63" | | | |
| | | **Sensor type / Connection** | | | |
| | | 3 | For CPA 81/82* with NPT ¾", Sensor length approx. 140 mm / 5.51" | | |
| | | | **Process connection** | | |
| | | | A | G2 internal thread | |
| | | | B | G2 internal thread with welded fitting h = 50 mm / 1.97" | |
| | | | C | Flange DN 50 / PN 16 acc. to EN 1092/1 | |
| | | | D | Flange ANSI 2" / 150 lbs | |
| CPA 451- | | | | | complete order code |

* not applicable: CPF 81/82-xx3 with 58 mm (2.28") immersion depth

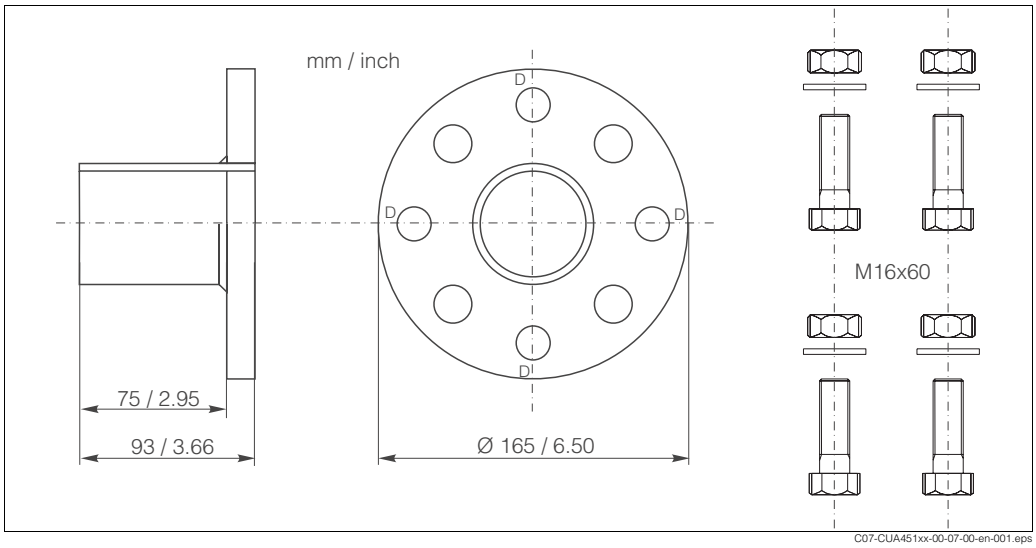
# Accessories

**Assembly**

❑ Ball valve for rinse connection; order no. 51512982
❑ O-ring set, Viton; order no. 51512981

**Process connection adapter**

❑ Welded fitting for pipe diameters of more than 80 mm (3.15"), with combination flange DN 50 / ANSI 2":
– Bore holes for DN 50 flange: 4 x 90° Ø18 (0.71") on hole circle Ø125 (4.92")
– Bore holes for ANSI 2" flange: 4 x 90° Ø19 (0.75") on hole circle Ø121 (4.76")
Flange seal, 4 screws M16x60, 4 nuts M16 incl. washers, stainless steel 1.4571 (AISI 316Ti); order no. 50080249



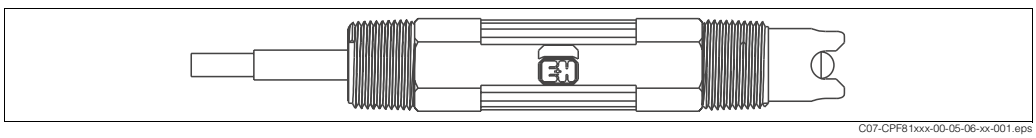

*Welded fitting*

*D: Marks for the bore holes of the DN 50 flange*

**Sensors**

❑ OrbiPac W CPF 81/82
compact electrode for pH and ORP measurements
Application: wastewater treatment, drinking water and condensate conditioning
ordering acc. to product structure, see Technical Information

✎ Hinweis!
The following versions are not applicable:
– CPF81-xx3 with 58 mm (2.28") immersion depth
– CPF82-xx3 with 58 mm (2.28") immersion depth




*OrbiPac W CPF 81*

**Profiling plates**

❑ Profiling plates for welded fittings;
order no. 51513623

# Documentation

❑ Operating Instructions CleanFit CPA 451, BA 369C/07 (order no. 51512512)
❑ Technical Information OrbiPac W CPF 81/82, TI 191C/07 (order no. 51500045)

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