

CleanFit P CPA 477

Retractable Assembly for pH/Redox Measurement

Rugged retractable Assembly for Installation of pH/ORP Electrodes in Tanks or Pipelines



This retractable assembly permits automatic cleaning, calibration and replacement of the electrode while the tank is full or under process conditions with pressures of up to 6 bar.

Areas of application

- Paper industry, chemical industry, waste water treatment
- Tanks and process vats
- Pipelines or pipes

Benefits at a glance

- Extremely rugged industrial assembly
- Electrode can be cleaned and calibrated without interrupting the process
- Extended electrode service life
- Reliable separation from process by ball valve without dead space
- Simple removal and installation of sensor during ongoing process
- Electrode is automatically kept wet
- With replaceable electrode holder for gel and liquid KCl electrodes
- Fully automatable

Endress + Hauser

The Power of Know How



Area of application

Area of application

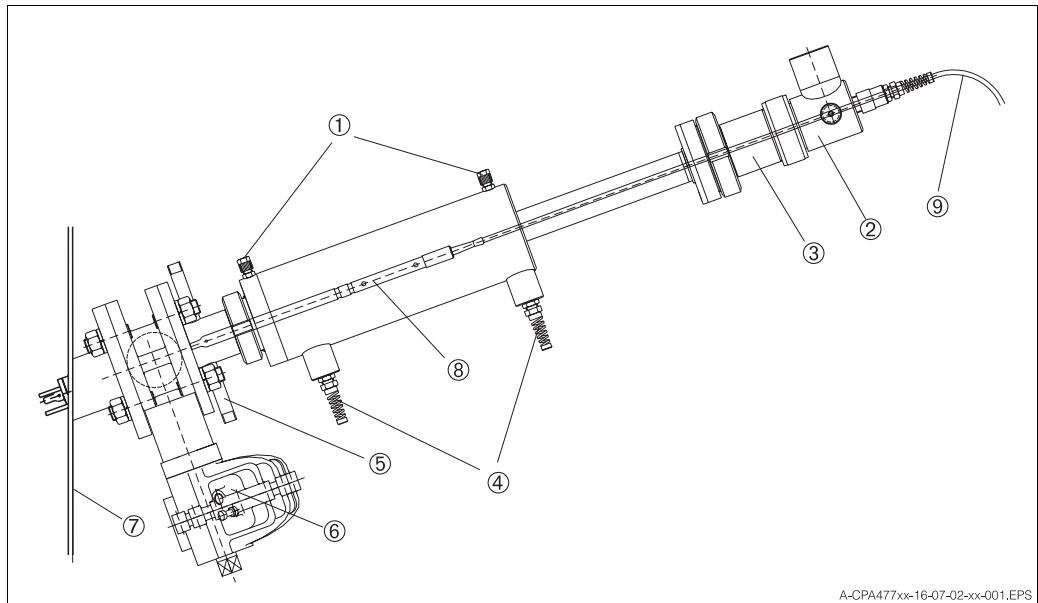
The retractable assembly CleanFit P CPA 477 has been designed specifically for pH measurement in the chemical industry, the paper industry (in backwater and low-density bleaching) and for effluent treatment stations or the foodstuffs industry. Without having to interrupt the process, the electrode can be

- separated from the process and moved to a rinse chamber pneumatically via a ball valve;
- rinsed with water or cleaning solution;
- kept moist during interruptions in operation;
- removed;
- sterilised; or
- calibrated.

The replaceable measuring insert in a pressure-resistant enclosure guarantees easy calibration and electrode replacement and prevents leakage in the event of electrode breakage.

Function and construction

Function



Retractable assembly CleanFit P CPA 477

- | | |
|---|---|
| 1 | Compressed air connections for cylinder control |
| 2 | Pressure head |
| 3 | KCl reservoir |
| 4 | Limit switches |
| 5 | Rinse fitting |
| 6 | Ball valve drive |
| 7 | Tank wall |
| 8 | Measuring electrode (pressurised, flooded) |
| 9 | pH cable |

Auxiliary energy / connections

(if equipped accordingly)

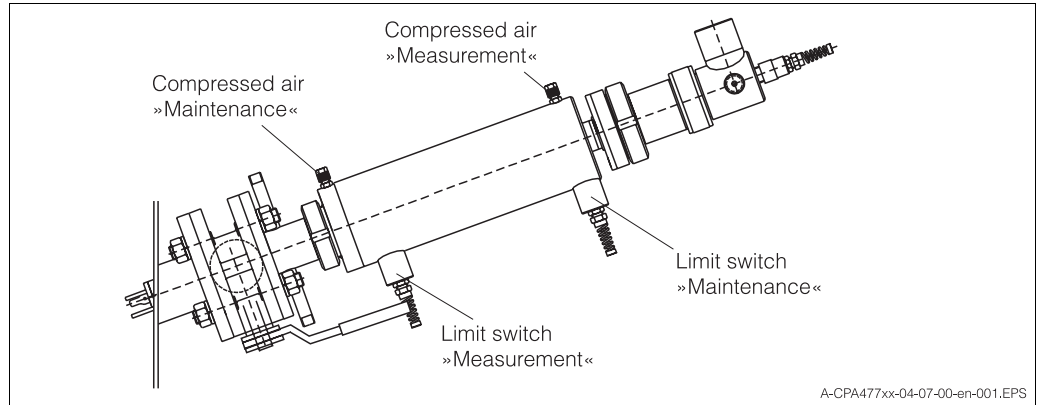
The CleanFit P CPA 477 assembly is operated with an air pressure of 4 to 8 bar. The air must be filtered (40 µm) and free from water and oil. There is no continuous pressure demand. The air lines must have a minimum nominal diameter of 4 mm.



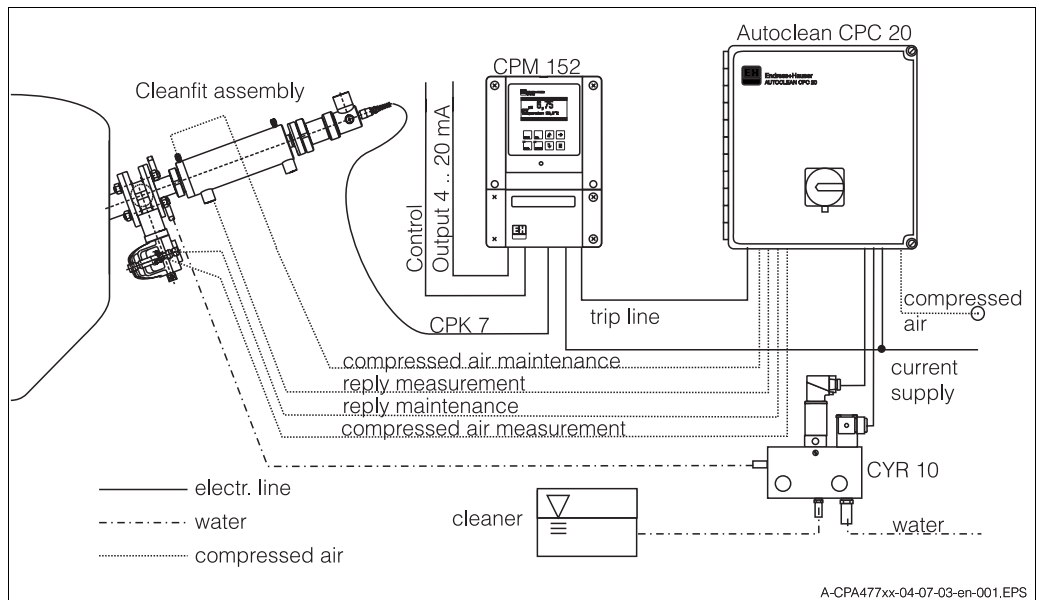
Note:

If pressure increases to above 8 bar are possible (including short peak pressures), a pressure reducer must be installed.

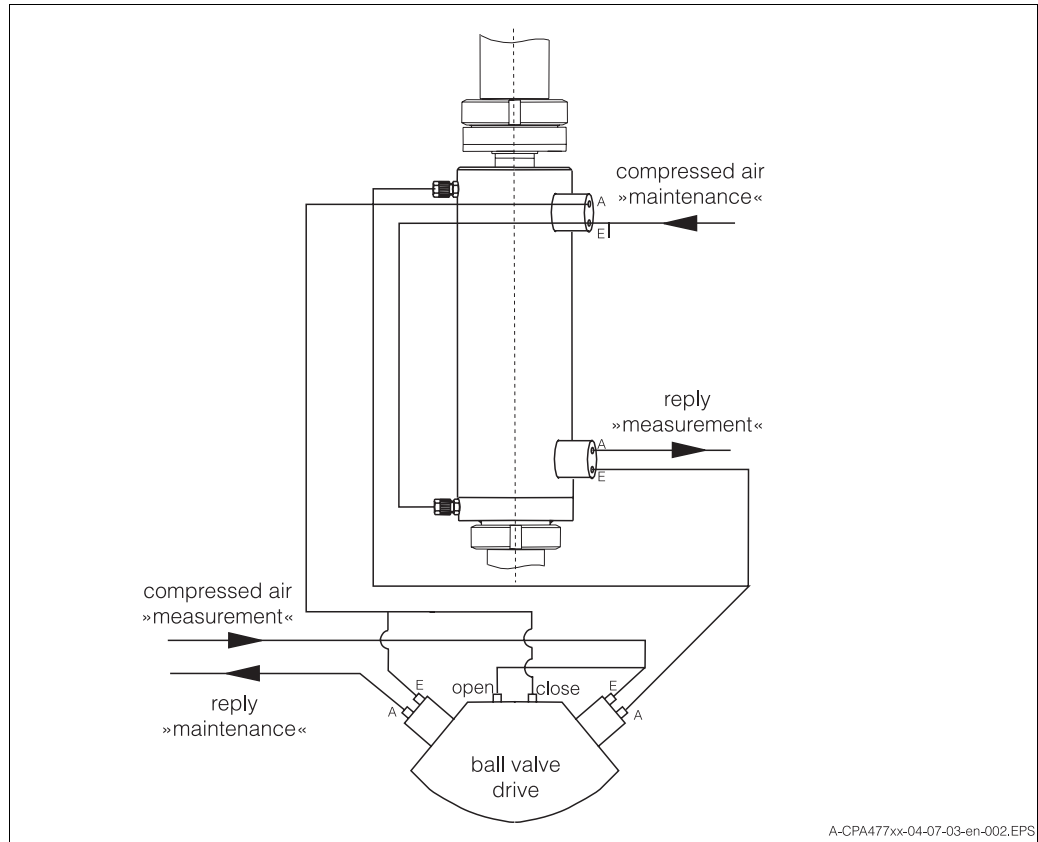
Auxiliary energy connections for manually actuated assembly



Auxiliary energy connections for assembly with pneumatic ball drive



Overview over the connections to the CleanFit P assembly CPA 477 with force controlled drive



pneumatic connections to the CleanFit P assembly CPA 477 with force controlled drive

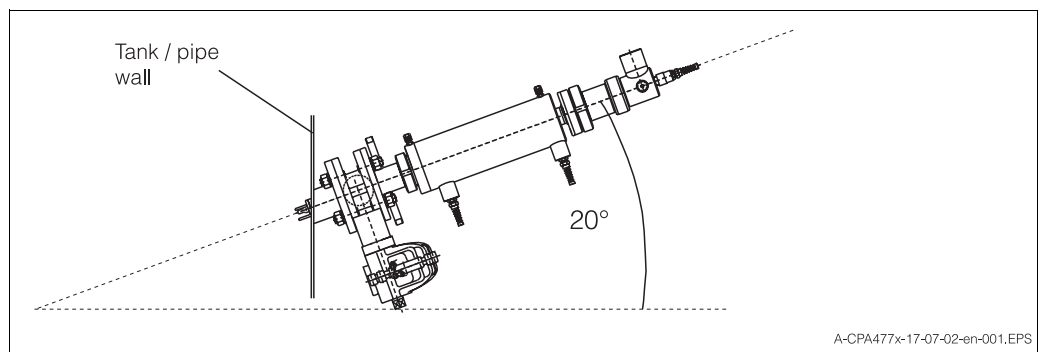
E: input

A: output

Operating conditions (installation)

Place of installation

The CleanFit P CPA 477 assembly is suitable for mounting on tanks or pipelines. The installation angle from the horizontal should be at least 20°.



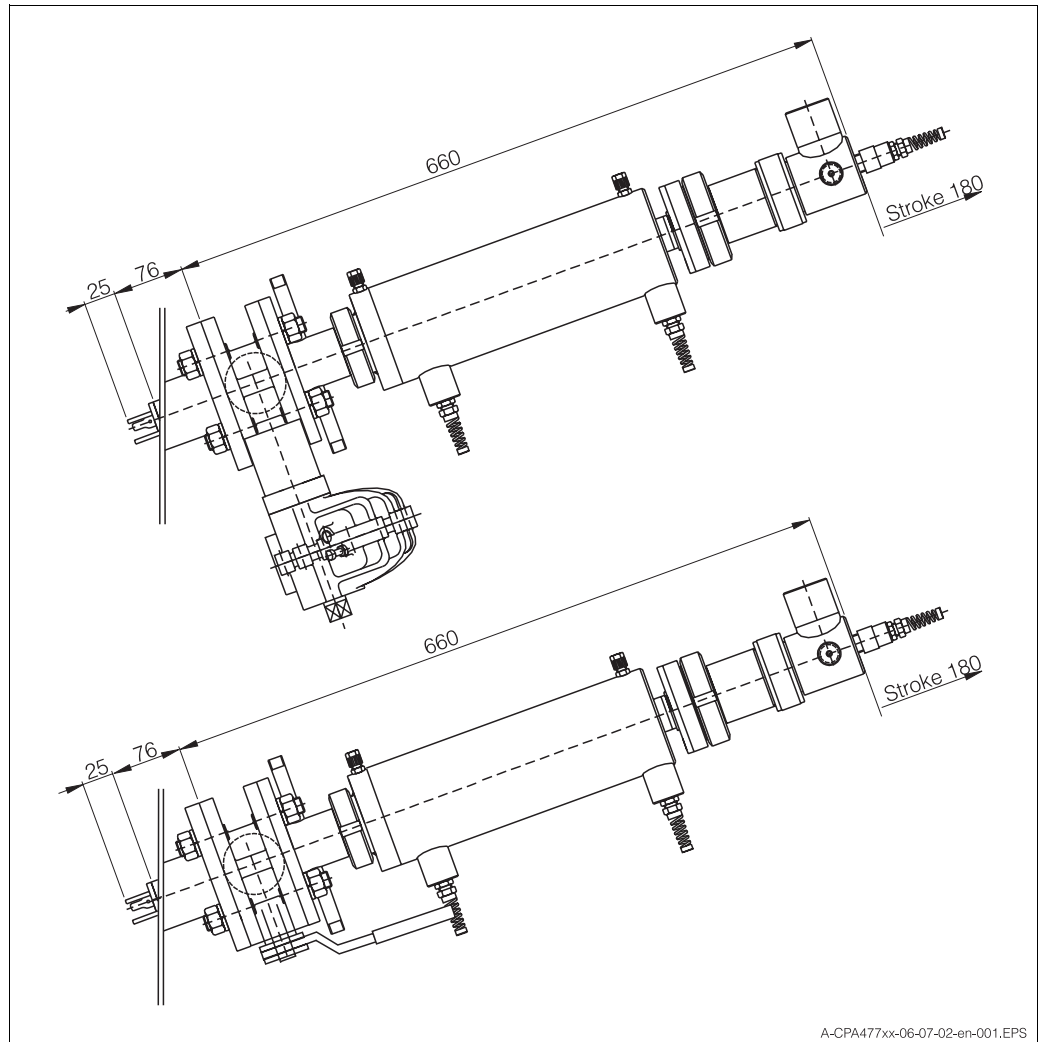
Operating conditions (process)

Process temperature range 5 °C ... 90 °C

Process pressure 0 ... 6 bar

Design

Design, dimensions



A-CPA477xx-06-07-02-en-001.EPS

Top: CleanFit P CPA 477 with pneumatic ball valve drive in measuring position

Bottom: CleanFit P CPA 477 with manually actuated ball valve in measuring position



Note:

A minimum clearance of 1,510 mm for installation is to be assured when designing the measuring point!

Materials in contact with medium

Rinse chamber:	stainless steel 316Ti
Ball valve:	stainless steel 316Ti
Electrode holder:	stainless steel 316Ti
Seals:	VITON [®] , EPDM

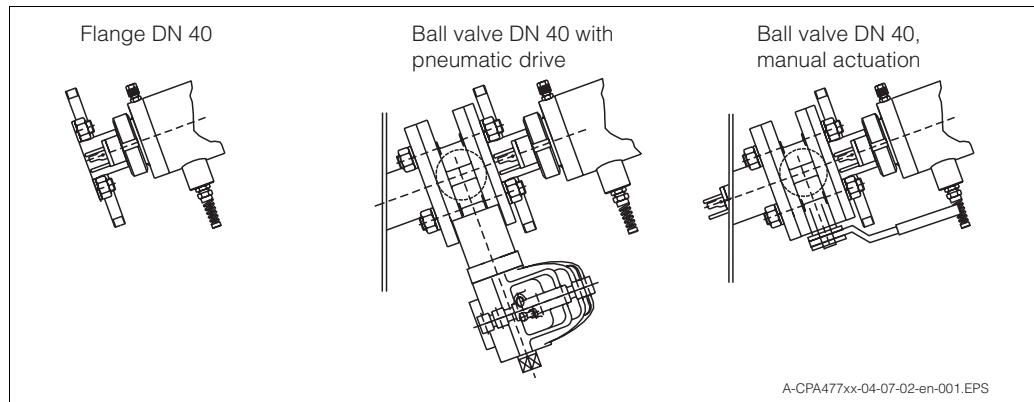
Materials not in contact with medium

Housing:	PA
KCl electrode holder:	PVDF
Gel electrode holder:	stainless steel

Rinse connections

For rinse water:	1 x G ¼ and 1 x G ½ external thread 1 x NPT ¼" and 1 x NPT ½" external thread
For rinse water and cleaning solution:	2 x G ¼ and 1 x G ½ external thread 2 x NPT ¼" and 1 x NPT ½" external thread

Pneumatic connections / requirements	2 compressed air connections on the electrode positioning cylinder 2 compressed air connections on the ball valve actuator 1 compressed air connection on the pressure head (for pressurisation of KCl electrode) Pressure 4 ... 7 bar (pressure on pressure head must be at least 0.5 bar above process pressure) Air must be water-free and oil-free
Limit switches	2 electric limit switches 2 pneumatic limit switches
Rinse medium	Warm water (approx. 60 °C or above) Min. 2 bar, max. 6 bar
Cleaning medium	To be selected depending on type and degree of soiling
Weight	21,5 kg (with pneumatic drive)
Electrodes	Gel electrode 120 mm Special pressurised KCl electrode, 270 mm
Process connection	Flange DN 40 (ball valve to be provided by the customer), ball valve DN 40 with manual actuation, pneumatic ball valve DN 40



Certificates and approvals

Ex approval	The electric limit switches are protection type EEx ia IIC T1 / T2 / T3 / T4 / T5 / T6 (approval number: PTB no. Ex - 83 / 2023 X)
CE mark	The measuring system fulfills the stipulations of the EC directives. Endress+Hauser certifies successful testing of the device by application of the CE mark.



Product overview

Product overview for CleanFit P CPA 477

Drive type assembly / limit switches	
B	Pneumatic without limit switches (suitable for retrofitting)
C	Pneumatic with 2 pneumatic limit switches
D	Pneumatic with 2 electric limit switches
Y	Special version to customer specifications
Electrode holder	
A	Stainless steel 316Ti, for gel electrodes with Pg 13.5 (length 120 mm)
B	PVDF, for special pressurised KCl electrodes (length 270 mm)
Y	Special version to customer specifications
Assembly material	
A	in contact with medium stainless steel 316Ti; housing PA
Y	Special version to customer specifications
Seal material	
1	EPDM
2	VITON®
9	Special version to customer specifications
Process connection / Shut off	
A	Flange DN 40 (ball valve to be provided by the customer)
B	Ball valve 1.4401 / 1.4408 DN 40 flange with manual actuation
C	Pneumatic ball valve 1.4401 / 1.4408 DN 40 flange with pneumatic forced control (only drive type/limit switches version C)
Y	Special version to customer specifications
Optional equipment	
2	With rinse fitting 1 x G ¼ and 1 x G ½ external thread
3	With rinse fitting 2 x G ¼ and 1 x G ½ external thread
4	With rinse fitting 1 x NPT ¼" and 1 x NPT ½" external thread
5	With rinse fitting 2 x NPT ¼" and 1 x NPT ½" external thread
9	Special version to customer specifications
CPA 477-	complete order code

Accessories

Welding socket	DN 40 flange, stainless steel 316Ti; order no.: 51502935
Calibration vessel	PP holder and plexiglass calibration vessel for electrode holder; order no.: 51502944
Measuring inserts	Electrode holder for special pressurised KCl electrode (270 mm), PVDF; order no.: 51502936 Electrode holder for gel electrode (120 mm), SS 316Ti; order no.: 51502937
Seals	Set of seals for electrode holder: EPDM; order no.: 51502938 VITON®; order no.: 51502939
pH/ORP Gel electrodes, length 120 mm	OrbiTex W CPS 21, CeraTex W CPS 31
Special pressurised electrode	Special pressurised KCl electrode (270 mm), with 10 m fixed cable; order no.: 51502943
Limit switch retrofitting sets	Pneumatic limit switch retrofitting set (2 limit switches); order no.: 51502940 Electric Ex limit switch retrofitting set (2 limit switches); order no.: 51502941

Supplementary documentation

Supplementary documentation

- TI OrbiTex W CPS 21 (order no. 50052558)
- TI CeraTex W CPS 31 (order no. 50052561)

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