Technische Information
TI 217C/07/en/06.02
Nr. 51502596

Retractable Assembly for pH/Redox Measurement *CleanFit P CPA 471*

Compact Retractable Assembly for Installation of pH/Redox Electrodes in Tanks or Pipelines

Application

- Chemical industry
- Effluent treatment
- Plant design
- Tanks and process vats
- Pipelines or pipes

This compact retractable assembly permits replacement of the electrode while the tank is full or under process conditions with pressures of up to 10 bar. In connection with the complete system TopCal S CPC 300 you can automatically clean and calibrate the electrodes. The material in contact with the medium is stainless steel.

Your Benefits

- Compact design
- Electrode can be cleaned and calibrated without interrupting the process; electrode life is extended
- Reliable separation from process by stop bolt and O-ring seals
- Simple removal and installation of electrode during ongoing process
- Adaptation to process requirements by great variety of materials and designs available
- Can be automated with a pneumatic or electric control system

Quality made by Endress+Hauser
ISO 9001

Endress+Hauser
The Power of Know How

Function and System design

Function

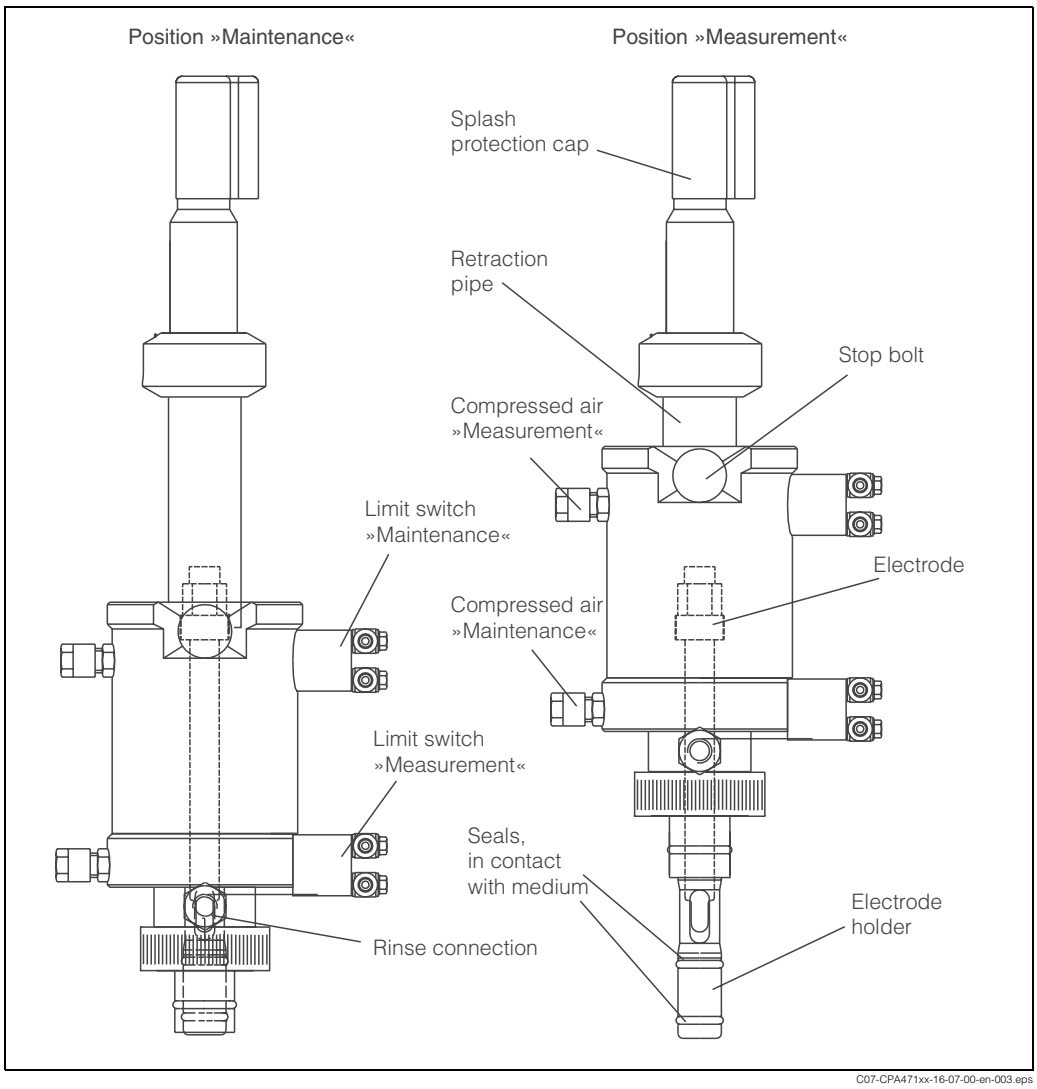
The retractable assembly CleanFit P CPA 471 is intended for reliable in-process measurement of pH value and Redox. This assembly has been designed as a compact retractable assembly for the chemical industry, for plant design and for industrial effluent treatment. Without having to interrupt the process, the electrode can be

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

The CleanFit P CPA 471 assembly is available with stainless steel as the material in contact with the medium, and in a housing made of stainless steel or polyamide (PA). Depending on the application, you can choose

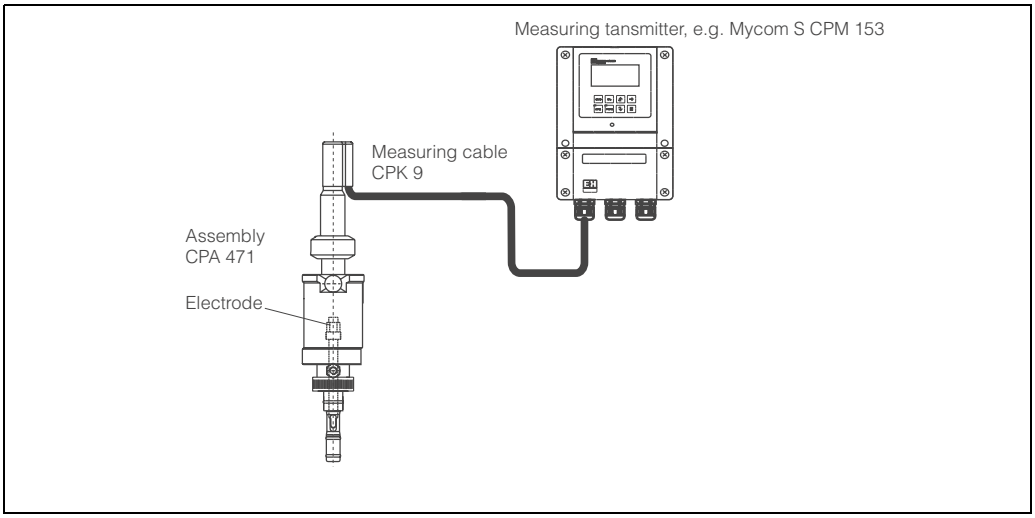
- the short assembly version (for use with 120 mm gel electrodes or 225 mm liquid KCl electrodes, immersion depth up to 101 mm) or
- the long assembly version (for use with 225 mm gel electrodes or 425 mm liquid KCl electrodes, immersion depth up to 208 mm).

The most commonly used process connections are available (see section Process connections).



Complete measuring system

Measuring sytem without control



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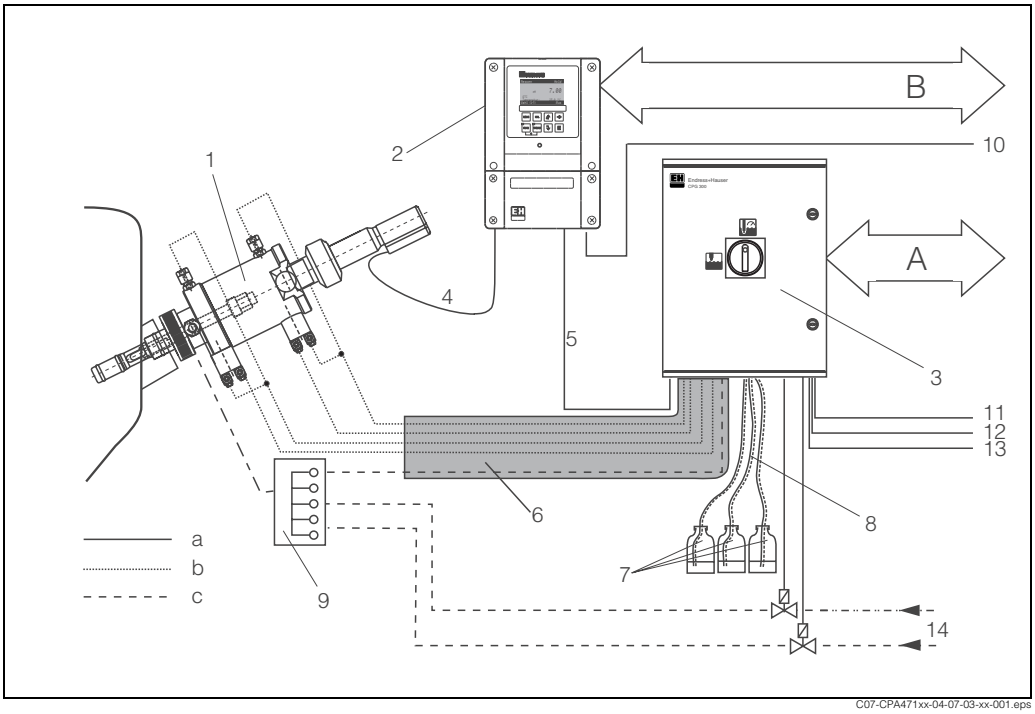
Measuring system with pneumatic control



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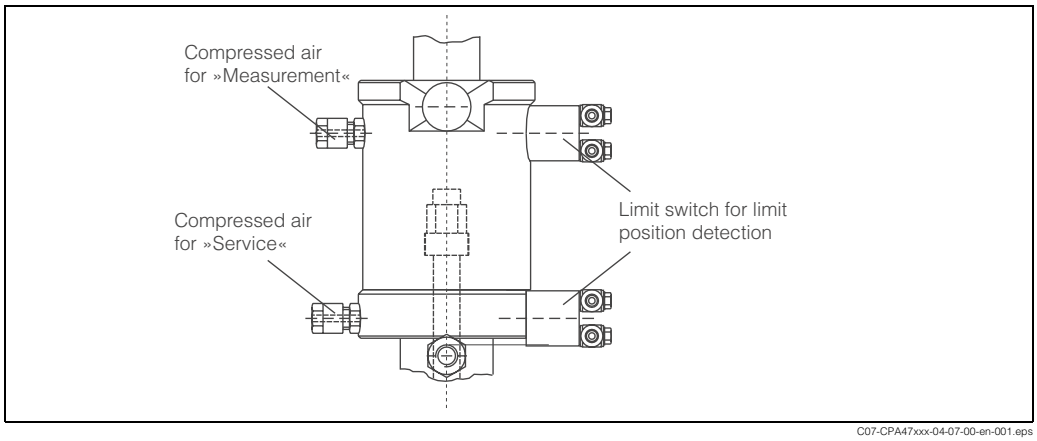
In connection with the complete system TopCal S CPC 300 you can automate the pH measurement / cleaning / calibration.

1 *Assembly CleanFit P CPA 471*
2 *Transmitter Mycom S CPM 153*
3 *Control unit CPC 300 of the TopCal S system*
4 *pH measuring cable*
5 *Power supply/control cable*
6 *Multihose*
7 *Canister for cleaning agent, buffer solutions*
8 *Hoses CPG 300 for canisters*
9 *Rinsing block (optional)*
10 *Power supply for CPM 153*
11 *Power supply for CPG 300*
12 *Pressurised air*
13 *Water*
14 *Superheated steam / water / other cleaning agents (optional)*

Auxiliary energy / connections

Pneumatic connections for automatic assembly actuation

(if equipped accordingly)



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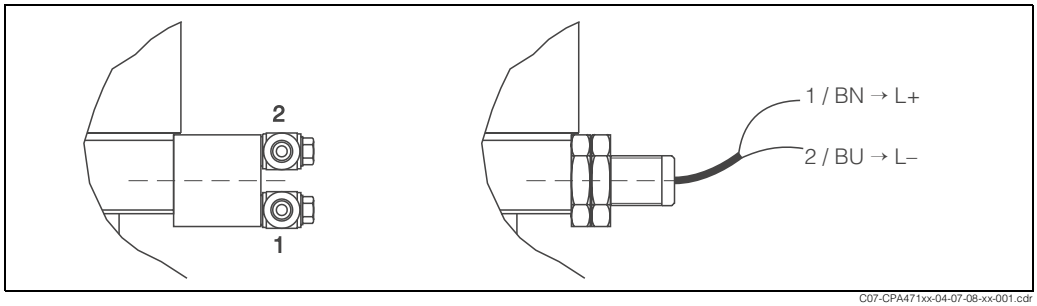
The CleanFit P CPA 471 assembly is operated with an air pressure of 4 to 8 bar. The air must be filtered (40 µm) and free from water and oil. There is no continuous pressure demand.
The air lines must have a minimum nominal diameter of 4 mm.

Note!
If pressure increases to above 8 bar are likely (including short peak pressures), a pressure reducer *must* be installed. A pressure reducer is recommend for lower pressures as well for a softer starting of the assembly.

Connections for limit position detection



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left: pneumatic limit switch (1: compressed air inlet, 2: compressed air outlet)

right: inducte limit switch (NAMUR)

The lower limit switches are always used for the "Measurement" function, the upper switches for the "Maintenance" function.

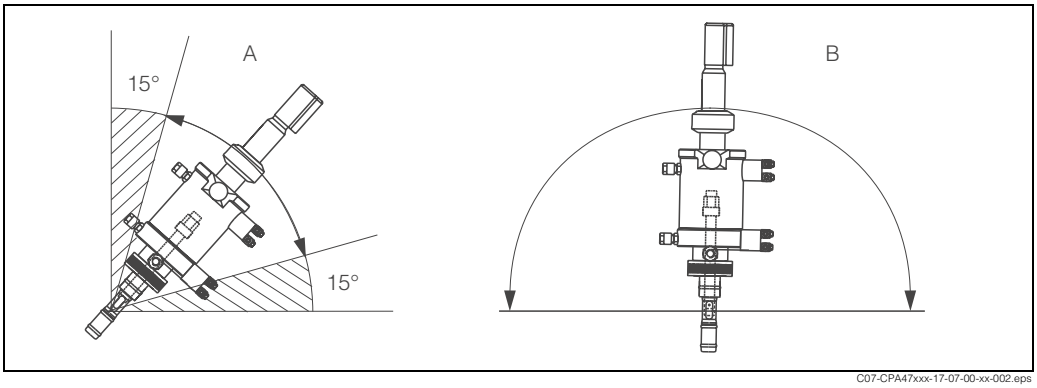
Installation

The CleanFit P CPA 471 assembly is suitable for mounting on tanks or pipelines. Appropriate sockets are to be provided.

Orientation

A Glass electrode: Installation angle of at least 15° from the horizontal and the vertical

B IsFET pH sensor TopHit: 'No restrictions, 0 ... 180° recommended



Valid orientation depending on the sensor used

Note!
- Pipe installation of the assembly requires a nominal diameter of at least DN 80.
- A flow chamber is to be used for smaller pipe diameters. The flow chamber is available as an accessory (DN 25, stainless steel 1.4404, AISI 316L; order no. see section Accessories).

Environment

Ambient temperature range

The maximum permissible temperature for the limit switches (NAMUR type) is 90 °C.
The ambient temperature must not drop below 0 °C.

Process

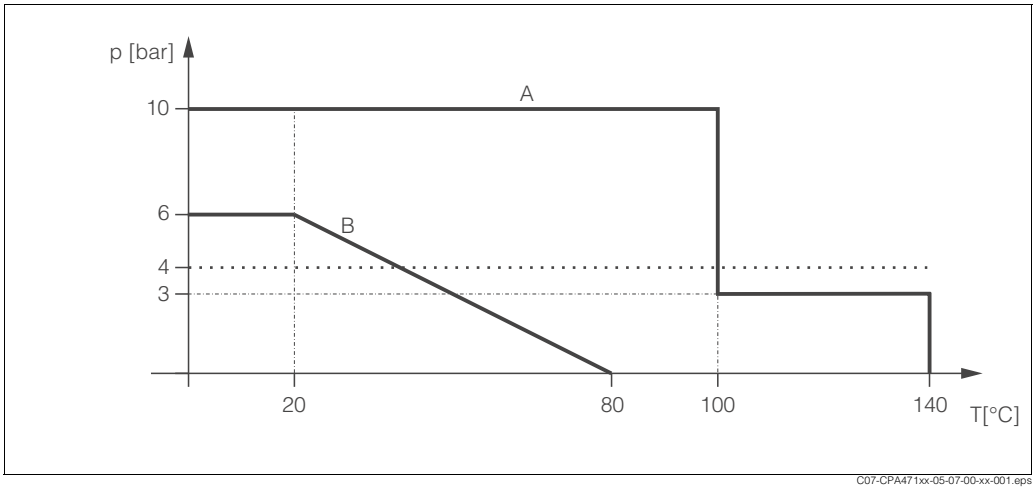
Process temperature range

0 ... 80 °C (depending on material selected and process pressure)
up to 140 °C for version with stainless steel housing

Process pressure range

0 ... max. 4 bar overpressure for manual actuation
0 ... 6 bar overpressure for pneumatic actuation and PA housing
0 ... 10 bar overpressure for pneumatic actuation and stainless steel housing

Pressure temperature diagram

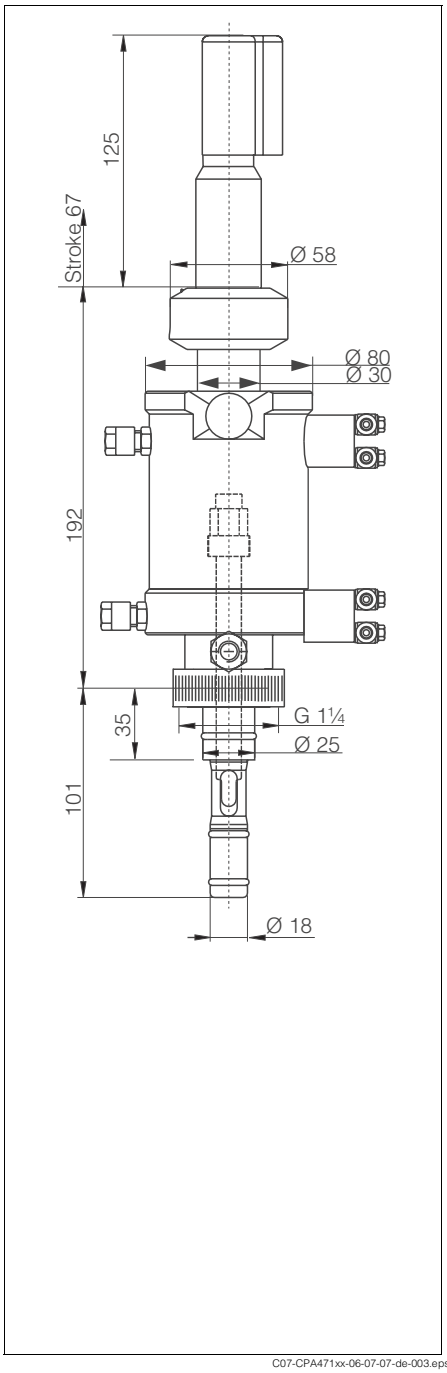


Pressure temperature diagram depending on the assembly material (overpressure)

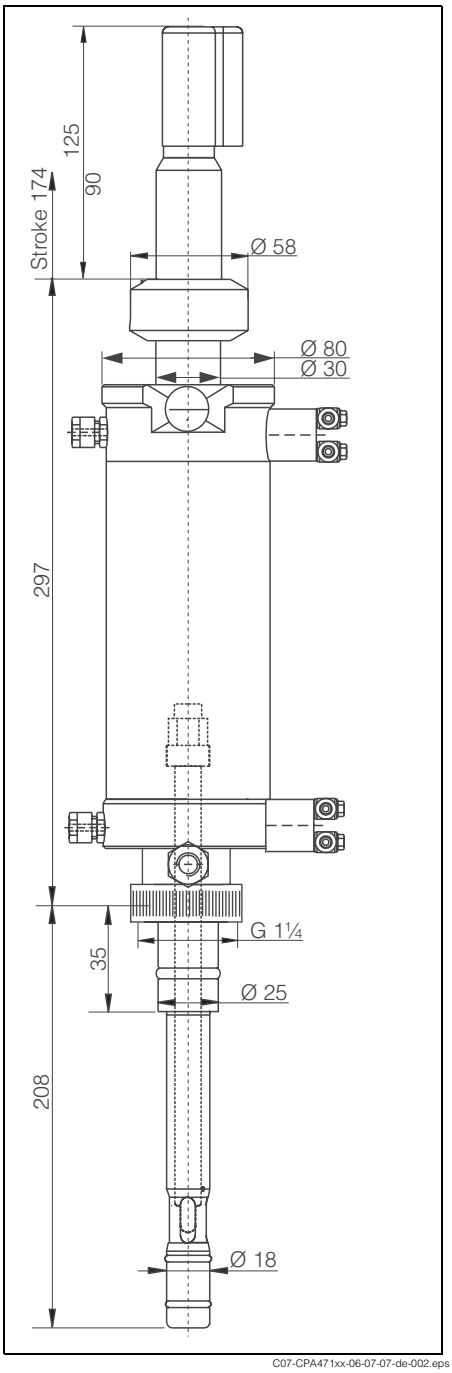
A stainless steel housing 1.4404 (AISI 316L)
B housing PA

Mechanical construction

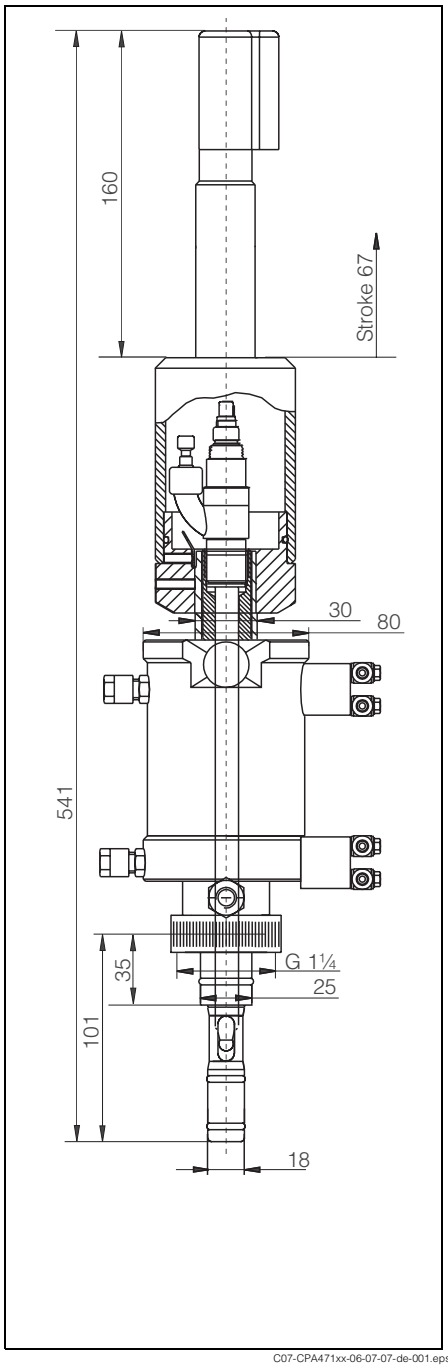
Design, dimensions



CleanFit P CPA 471 in short version (for electrode length of 120 mm, gel electrodes CPS 11/ CPS 71)



CleanFit P CPA 471 in long version (for electrode length of 225, gel electrodes CPS 11/ CPS 71)



CleanFit P CPA 471 in short version with 225 mm liquid KCl electrode CeraLiquid P CPS 41 (with hose connection for refilling with KCl)

Weight

Short version approx. 2.5 kg
Long version approx. 9 kg

Materials in contact with medium

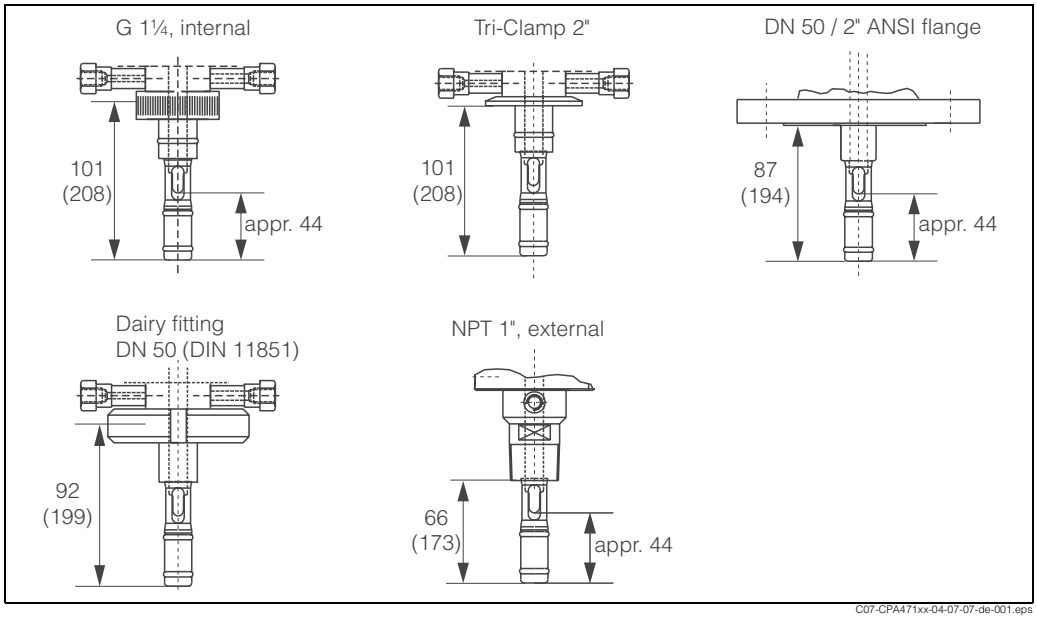
Electrode holder, standard:	stainless steel 1.4404 (AISI 316L)
Seals:	EPDM, FPM, KALREZ®, PTFE

Materials not in contact with medium

Housing:	Polyamide (PA), stainless steel 1.4404 (AISI 316L)
Limit switches (NAMUR type):	fore-part PBT, cable PVC

Process connection

G 1¼ internal thread, Tri-Clamp 2", DN 50 flange, 2" ANSI flange, dairy fitting (DIN 11851), NPT 1" external thread



The immersion depth in mm is specified for each connection type (values in brackets are for long assembly version)

Rinse connection nozzles

none
2 x G ¼ (inside),
2 x NPT ¼" (inside)

Pneumatic requirements

Pressure 4 ... 8 bar overpressure.
Filtered air (40 µm), water-free, oil-free.
The air hoses must have a minimum nominal diameter of 4 mm. For pressures above 6 bar pressure reducer are recommended to reduce the drive's stroke.

Limit switches

Pneumatic 3/2-way valve
Inductive limit switches (NAMUR type)

Electrode placement

Short version:	gel electrodes	120 mm
	KCl electrode with KCl refilling:	225 mm
Long version	gel electrodes:	225 mm
	KCl electrode with KCl refilling:	425 mm

Certificates and approvals

Electric limit switches

The inductive limit switches meet the requirements of the DIN EN 60 947-5-6 (NAMUR).

Ordering information

Product structure for CleanFit P CPA 471

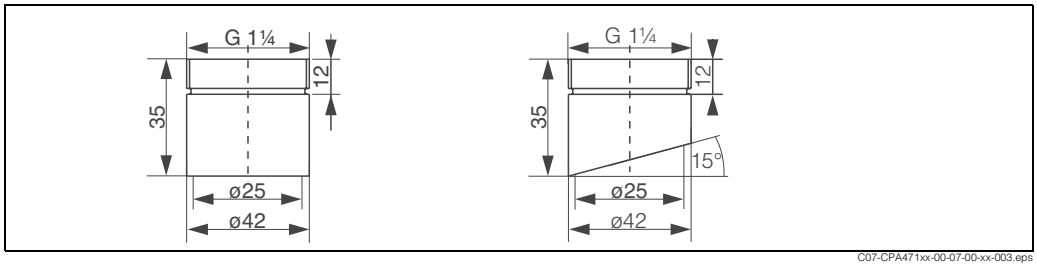
Compact retractable process assembly for pH / redox electrodes. For manual or pneumatic operation.

Drive type and limit switches									
A	Manual (cannot be converted to pneumatic)								
B	Pneumatic without limit switches (suitable for retrofitting)								
C	Pneumatic with 2 pneumatic limit switches								
D	Pneumatic with 2 electric limit switches (max. 90 °C)								
E	Pneumatic with 2 electric Ex limit switches (max. 90 °C)								
	Assembly version								
	1	Standard version							
		Electrode holder							
		A	For gel electrodes / IsFET sensor CPS 401 with Pg 13.5						
		B	For liquid KCl electrodes with Pg 13.5 hose connection head						
			Immersion depth						
			1	Short version: up to 101 mm (depending on process connection) (possible electrode lengths: A = 120 mm, B = 225 mm)					
			2	Long version: up to 208 mm (depending on process connection) (possible electrode length: A = 225 mm, B = 425 mm)					
			9	Special version acc. to customer					
				Assembly material (in contact with medium)					
				A	1.4404 (AISI 316L) in contact with medium, with PA housing (max. 6 bar)				
				B	1.4404 (AISI 316L) in contact with medium, with stainless steel 1.4404 (AISI 316L) housing (max. 10 bar)				
				C	1.4404 (AISI 316L) in contact w. medium, with test cert. 3.1B acc. to EN10204, with PA housing				
				D	1.4404 (AISI 316L) in contact w. medium, with test certificate 3.1B acc. to EN10204, with 1.4404 (AISI 316L) housing				
					Seal material (in contact with medium)				
					1	EPDM (preferred for food application)			
					2	FPM (Viton®, preferred for process application)			
					3	KALREZ®			
						Process connection			
						A	G 1¼ internal thread (union)		
						B	NPT 1" external thread		
						C	Tri-Clamp 2" flange		
						D	Dairy pipe NW 50 (acc to. DIN 11 851)		
						G	DN 50 flange		
						H	2" ANSI flange		
							Optional equipment		
							1	Without rinse connection (retrofitting not possible)	
							3	With rinse fitting 2 x G ¼ internal thread	
							4	With rinse fitting 2 x NPT ¼" internal thread	
CPA 471-									complete order code

Accessories

Welding socket

G1¼, straight, stainless steel 1.4404 (AISI 316L); order no.: 51502798
G1¼ inclined 15°, stainless steel 1.4404 (AISI 316L); order no.: 51502799



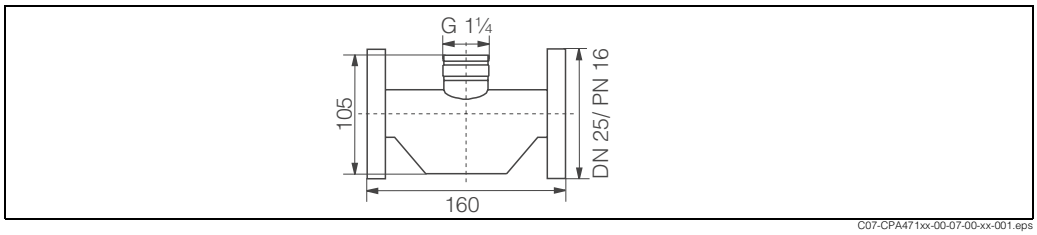
Welding socket straight or inclined

Blind plug for G 1¼ process connection

Stainless steel 1.4404 (AISI 316L) with FPM (VITON®) seal, G 1¼ connection, internal thread; order no.: 51502800

Flow chamber

DN 25, G 1¼ external thread, stainless steel 1.4404 (AISI 316L); order no.: 51502801



Flow chamber with DN 25 / PN 16 flange

Further flow chambers e.g. with / without sight glass, lined with PFA, in sizes DN 24, DN 50, DN 80, are available on request.

Rinse connection adapter

With the CPR 40, several media can be conveyed into a retractable assembly's rinse chamber.

Set of seals for contact with medium

Electrode holder standard version:	EPDM; order no.: 51502802 FPM (VITON®); order no.: 51502803 KALREZ®; order no.: 51502804 (not for flange connection) KALREZ® for flange connection; order no.: 51503472

pH/Redox combination electrodes, length 120 / 225 mm

Gel electrode OrbiSint W CPS 11/12, CeraLiquid CPS 71/72
IsFET sensor TopHit H CPS 401 (PEEK shaft; only 120 mm)

pH/Redox combination electrodes, length 225 / 425 mm

KCl liquid electrode CeraLiquid P CPS 41/42 (with ESS head)

Oxygen sensor, 120 mm

OxyMax H COS 21

Hose nozzles for rinse connections	G ¼, DN 12, stainless steel 1.4404 (AISI 316L) (2 pcs.); order no.: 51502808 G ¼, DN 12, PVDF (2 pcs.); order no.: 50090491
Retrofit Kit limit switches	pneumatic limit switches (2 pcs.); order no.: 51502874 electric limit switches (ex or non-ex) (2 pcs.); order no.: 51502873
Protection cap	On request

Supplementary documentation

- ❑ Technical Information Rinse connection adapter CPR 40, TI 342C/07 (order no. 51510059)
- ❑ Technical Information OrbiSint W CPS 11/12/13 TI 028C/07 (order no. 50052557)
- ❑ Technical Information CeraLiquid P CPS 41/42/43 TI 079C/07 (order no. 50058726)
- ❑ Technical Information TopHit H CPS 401, TI 283C/07 (order no. 51506685)
- ❑ Technical Information OxyMax H COS 21, TI 244C/07 (order no. 51505857)
- ❑ Technical Information CeraGel P CPS 71/72, TI 245C/07 (order no. 51505837)

Deutschland

Der schnelle und kompetente Kontakt

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  – Information
  – Auftrag
  – Bestellung

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