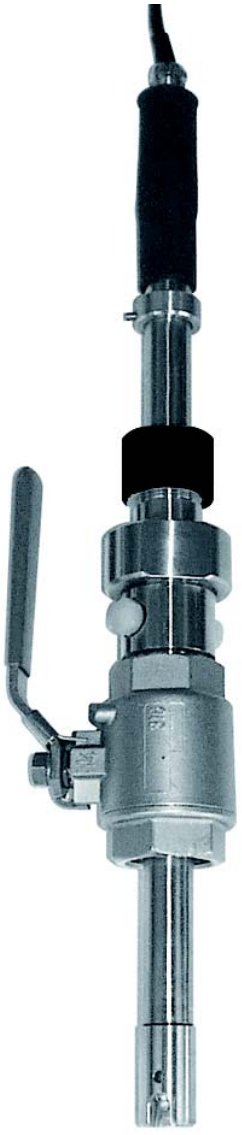
Level Pressure Flow Temperature Liquid Analysis Registration Systems Components Services Solutions

Technical Information

Cleanfit W CPA450

Retractable assembly for 12 mm sensors for DO/pH/ORP measurement



Application

- Pulp and paper industry
- Chemical industry
- Measurement in fibrous or coating media
- Tanks and process vessels
- Pipelines
- Power plants
- Wastewater treatment

The retractable assembly permits replacement of pH/ORP or oxygen sensors while the tank is full or under process conditions.

Your benefits

- Easy installation and removal of the DO/pH/ORP sensor for easy service
- Sensor cleaning and calibraton without process interruption
- Process is sealed off reliably by a ball valve made of stainless steel
- Installation also for customer supplied ball valves
- Uses standard and ISFET sensors of 120 mm length
- 3 immersion depths up to 700 mm (27.5"), adjustable
- Safety equipment for operation up to 12 bar (175 psi)
- Integrated rinse and calibration connections
- Available as stainless steel, alloy C4 and titanium version

TI183C/24/ae/11.09

Endress+Hauser

People for Process Automation

Function and system design

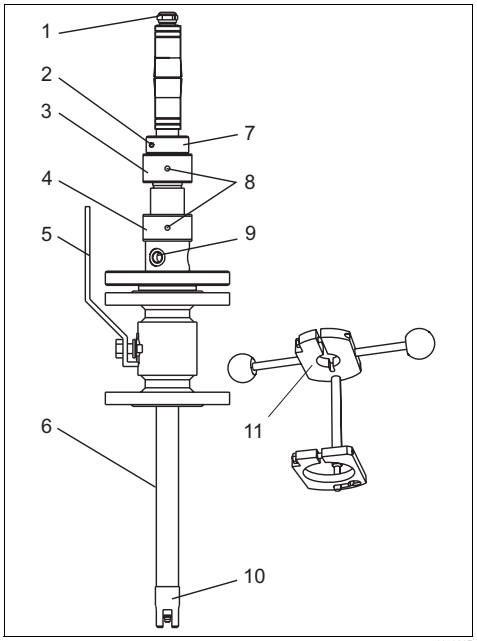
Function principle

The assembly is manually operated.

Caution!
The rinse connections are in open contact with the medium in the measuring position and are thus exposed to the process pressure. Make sure that the rinse connections are closed during measurement and when moving the assembly.

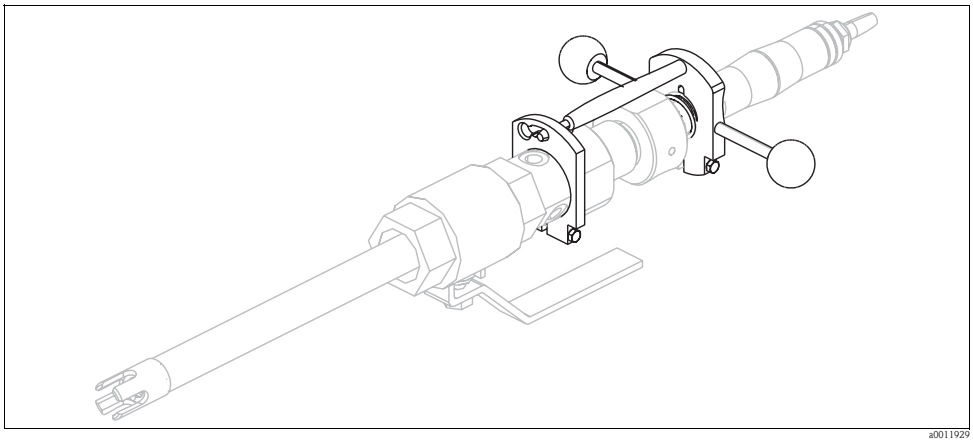
In the "Service" status (sensor moved back into the assembly and **ball valve closed**), the ball valve seals the assembly off from the process. This means that cleaning and calibration can take place and sensors can be changed under process conditions. In this "Service" status it is possible to clean the tank or pipe with a pressure up to 12 bar (175 psi).

Caution!
Manually moving the assembly under process conditions is only advised at a process pressure up to 4 bar (58 psi).



Assembly in "measuring" position (ball valve open)

1 Cable gland Pg 11
2 Allen screw M5
3 Compression fitting (black)
4 Lock ring (metal)
5 Manual lever for ball valve opening and closing
6 Immersion tube
7 Setting collar for adjustment of immersion depth
8 Drill holes for hook wrench
9 G¼ rinse connection
10 Sensor holder with protecting cage
11 Locking device safety kit



Assembly with safety kit

Suitable sensors

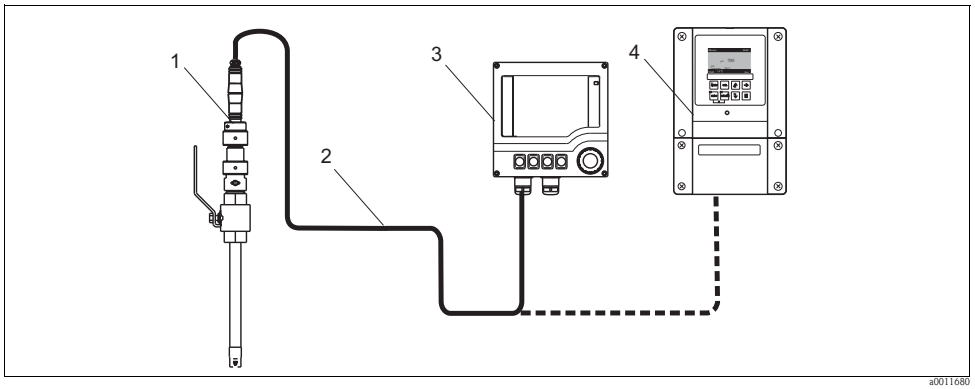
The following sensors are suitable for installation in the CPA450:

- Digital sensors with Memosens technology, length 120 mm / 4.72"
- pH/ORP glass electrodes, length 120 mm / 4.72"
- ISFET sensors: only sensors listed in "Accessories" chapter
- DO sensors, length 120 mm / 4.72"
- For the conductivity sensor CLS15 a modification is available

Measuring system

A complete measuring system consists of:
- Cleanfit W CPA450 assembly
- DO/pH/ORP sensor, length 120 mm (4.72"), e.g. Orbisint CPS11D
- Transmitter, e.g. Liquiline M CM42 or Mycom S CPM153
- Measuring cable, e.g. CYK10 or CPK9

Optional:
- RM junction box for use with extension cable (see chapter "Accessories")
- CYK81 measuring cable for extended cable runs



Measuring system with CPA450

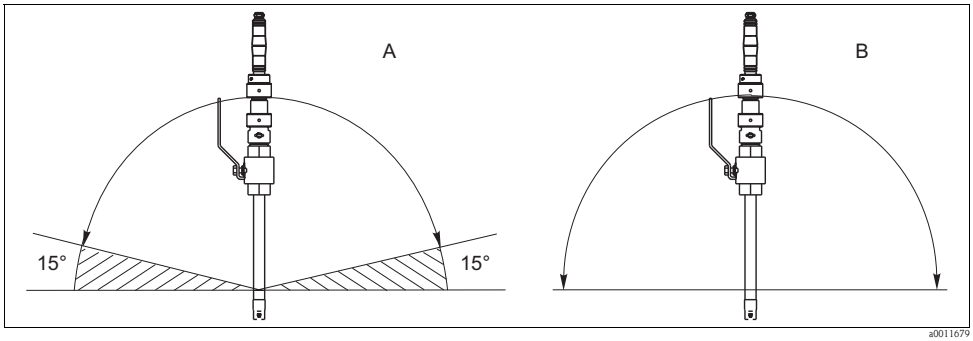
1 Cleanfit assembly with sensor
2 Measuring cable
3 Liquiline M CM42
4 Mycom S CPM153

Installation

Installation instructions

The permissible installation angle of the assembly depends on the sensor:

- Glass electrodes and digital sensors with Memosens technology:
  Install the assembly at an angle of at least 15° from the horizontal.
- ISFET sensors:
  When using an ISFET sensor, there are, in principle, no restrictions to the installation. An installation angle between 0° and 180° is, however, recommended.



Installation angle of the assembly

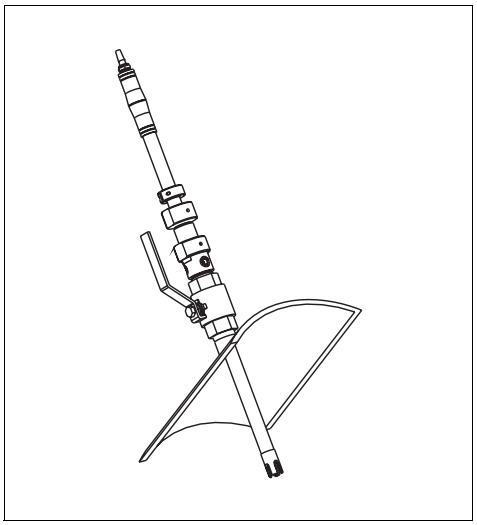
A Glass sensors: 15° to horizontal
B ISFET sensors 0 to 180° recommended

Install the assembly so that the sensor is kept wet at all times.

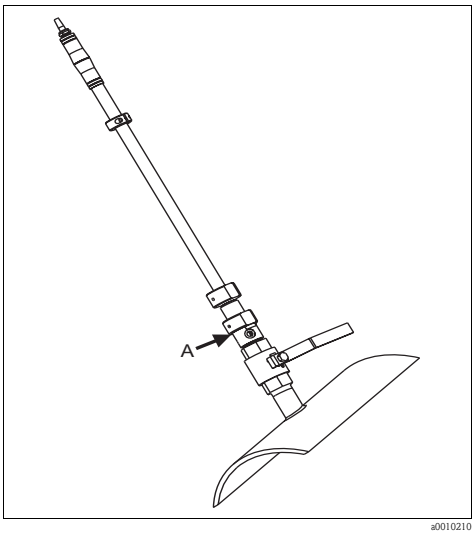
Installation with ball valve

When replacing the sensor without switching off the process a ball valve is needed. The ball valve is part of the assembly (according to product structure) or has to be installed by the customer.

Note!
When used without ball valve switch off the process before removing the immersion tube or replacing the sensor. Danger of spraying liquid.



Assembly in inserted position = measuring mode (ball valve open)



Assembly in retracted position for electrode replacement, calibration, rinsing (ball valve closed)

A Top of adapter

Note!
Please note that a mounting clearance of min. 700 or 1150 mm (27.6" or 45.3") from the top of the adapter is required depending on assembly version.

Environment

Ambient temperature

0 to 80 °C (32 to 176 °F)

Process

Process pressure

max. 12 bar at 100 °C (175 psi at 212 °F)

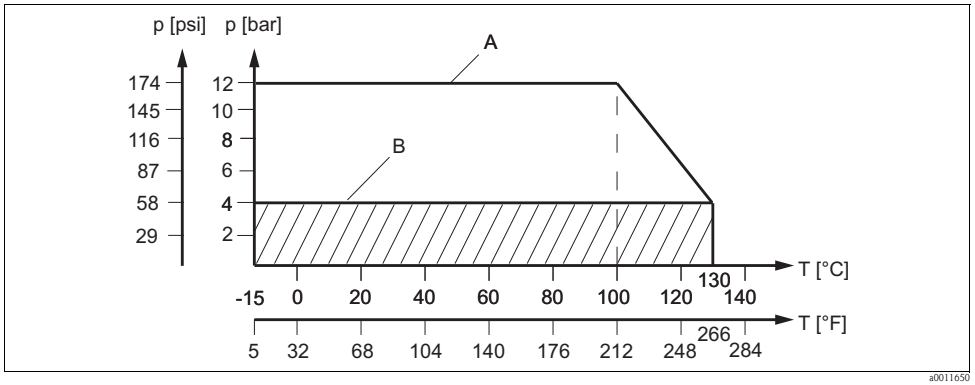
Caution!
- The maximum advised pressure for assembly movement is 4 bar (58 psi)!
- Consider the process conditions of the applied sensor!

Process temperature

-15 to 130 °C (5 to 266 °F)

Caution!
Consider the maximum process temperature of the sensor!

Pressure-temperature load curve

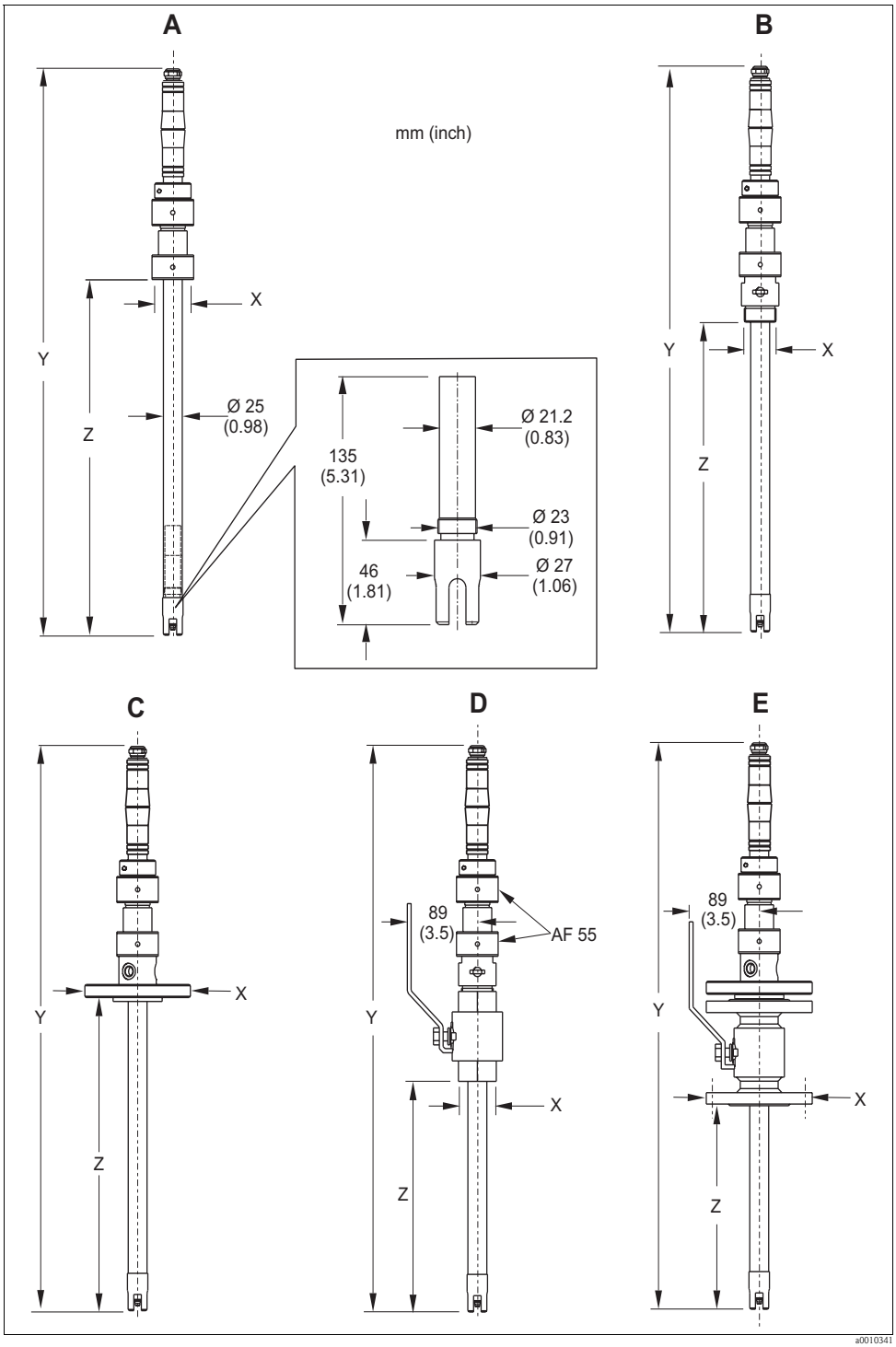


Pressure-temperature diagram

A Maximum process operating pressure (static), only for completely installed assembly
B Advised upper insertion/retraction pressure (functional)

Mechanical construction

Design, dimensions



Dimensions (see the following table)

AF 55 = 55 mm flats

Type	Assembly	Immersion depth mm (inch)	X Adapter	Y mm (inch)	Z mm (inch)
A	CPA450-*A***	100 (3.94) 250 (9.84) 700 (27.5)	G1½ internal	543 (21.4) 693 (27.2) 1143 (45.0)	285 (11.2) 435 (17.1) 885 (34.8)
B	CPA450-*B***	100 (3.94) 250 (9.84) 700 (27.5)	G1¼ external	543 (21.4) 693 (27.2) 1143 (45.0)	230 (9.06) 380 (14.9) 830 (32.6)
B	CPA450-*C***	100 (3.94) 250 (9.84) 700 (27.5)	NPT 1¼" external	543 (21.4) 693 (27.2) 1143 (45.0)	230 (9.06) 380 (14.9) 830 (32.6)
C	CPA450-*D***	100 (3.94) 250 (9.84) 700 (27.5)	Flange DN32	543 (21.4) 693 (27.2) 1143 (45.0)	230 (9.06) 380 (14.9) 830 (32.6)
C	CPA450-*E***	100 (3.94) 250 (9.84) 700 (27.5)	Flange ANSI 1¼"	543 (21.4) 693 (27.2) 1143 (45.0)	230 (9.06) 380 (14.9) 830 (32.6)
D	CPA450-*F*** and CPA450-*G***	100 (3.94) 250 (9.84) 700 (27.5)	G1¼ internal	543 (21.4) 693 (27.2) 1143 (45.0)	135 (5.31) 285 (11.2) 735 (28.9)
D	CPA450-*H***	100 (3.94) 250 (9.84) 700 (27.5)	NPT 1¼" internal	543 (21.4) 693 (27.2) 1143 (45.0)	135 (5.31) 285 (11.2) 735 (28.9)
E	CPA450-*I***	100 (3.94) 250 (9.84) 700 (27.5)	Flange DN32	543 (21.4) 693 (27.2) 1143 (45.0)	100 (3.94) 250 (9.84) 700 (27.5)
E	CPA450-*K***	100 (3.94) 250 (9.84) 700 (27.5)	Flange ANSI 1¼"	543 (21.4) 693 (27.2) 1143 (45.0)	100 (3.94) 250 (9.84) 700 (27.5)
B	CPA450-*M*** and CPA450-*Q***	700 (27.5)	M-NPT 1½ external	1143 (45.0)	830 (32.6)
C	CPA450-*N*** and CPA450-*R***	700 (27.5)	Flange ANSI 2"	1143 (45.0)	830 (32.6)

Weight

Without ball valve:	2 kg (4.4 lb.)
With threaded ball valve:	5 kg (11 lb.)
With flanged ball valve:	10 kg (22.1 lb.)

Materials in contact with medium

Immersion tube:	stainless steel 1.4404 (AISI 316L)
Rinse connection plugs:	PVDF
O-rings:	EPDM / Viton / Kalrez
Ball valve:	stainless steel 1.4404 (AISI 316L) or 1.4408 (AISI CF-8M)
Ball valve sealings:	PTFE

Materials not in contact with medium

Screws:	stainless steel 1.4401 (AISI 316)
Compression fitting:	PA66GF
Clamping ring:	PEEK
Handle:	PVC
Cable gland:	nickel-plated brass

Rinse connections

3 x G ¼ (for NPT connection ask your US-representatives)

Ordering information

Product structure

	Immersion depth; locking device					
	0	Immersion depth max. 100 mm (3.93")				
	1	Immersion depth max. 250 mm (9.84")				
	2	Immersion depth max. 700 mm (27.56")				
	3	Immersion depth max. 250 mm (9.84"); with locking device (safety kit)				
	4	Immersion depth max. 700 mm (27.56"); with locking device (safety kit)				
	5	Immersion depth max. 250 mm (9.84"); with hand crank (allows insertion/retraction of the assembly by pressures up to 12 bar (175 psi))				
		Process connection; ball valve				
		B	Thread G 1¼ external, 1.4404 (AISI 316L); (ball valve provided by customer)			
		C	Thread NPT 1¼" external, 1.4404 (AISI 316L); (ball valve provided by customer)			
		D	Flange DN 32 PN 16 EN 1092-1, 1.4404 (AISI16L); (ball valve provided by customer)			
		E	Flange ANSI 1¼", 150 lbs, 1.4404 (AISI16L); (ball valve provided by customer)			
		F	Thread G 1¼ internal, 1.4404 (AISI 316L); ball valve 1.4408 (AISI CF-8M)			
		G	Thread G 1¼ internal, 1.4404 (AISI 316L); ball valve 1.4404 (AISI 316L) three part version			
		H	Thread NPT 1¼" internal, 1.4404 (AISI 316L); ball valve 1.4408 (AISI CF-8M)			
		I	Flange DN 32 PN 16 EN 1092-1, 1.4404 (AISI 316L); ball valve 1.4408 (AISI CF-8M)			
		K	Flange ANSI 1¼" 150 lbs, 1.4404 (AISI 316L); ball valve 1.4408 (AISI CF-8M)			
		M	Thread M-NPT 1½"external, 3.7035/titanium, only for 700 mm (27.56") immersion depth; (ball valve provided by customer)			
		N	Flange ANSI 2" 150 lbs, 3.7035/titanium, only for 700 mm (27.56") immersion depth; (ball valve provided by customer)			
		Q	Thread M-NPT 1½" external, 2.4610 (AISI alloy C4), only for 700 mm (27.56") immersion depth; (ball valve provided by customer)			
		R	Flange ANSI 2" 150 lbs, 2.4610 (AISI alloy C4), only for 700 mm (27.56") immersion depth; (ball valve provided by customer)			
				Seals		
				1	EPDM	
				2	FPM, Viton	
				3	FFKM, Kalrez	
					Cable entry	
					10	Gland Pg 13.5
					20	Gland Pg 13.5 desiliconized
					30	Certificate EN 10204 3.1 (only for CPA450-*G***)
CPA450-						complete order code

Scope of delivery

The scope of delivery includes:
- Cleanfit W CPA450 assembly (ordered version)
- PMC (potential matching) mounting kit
- Hook wrench (safety relevant)
- Operating Instructions (English)

If you have any question, please contact your supplier or your local sales representative.

Accessories

Assembly

Hose nozzles for rinse connections G¼, DN 12
- SS 1.4404 (AISI 316L), 2 pieces
- Order no.: 51502808

Hose nozzles for rinse connections G¼, DN 12
- PVDF, 2 pieces
- Order no.: 50090491

Manometer
- Installation in rinse connection for checking the process pressure
- 0 to 16 bar (0 to 232 psi); G¼
- Order no.: 71082362

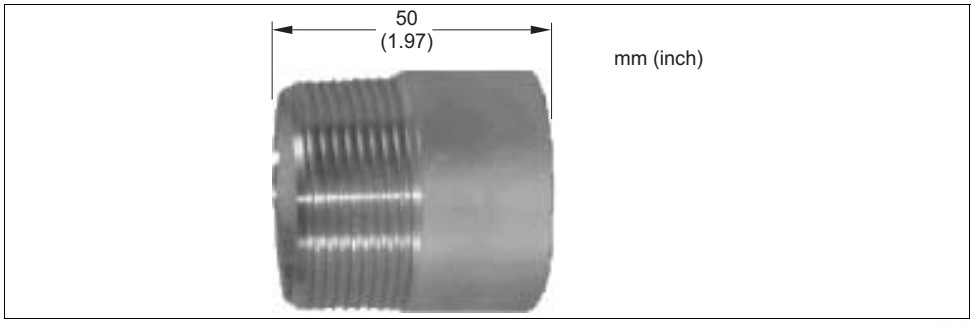
Drain ball-valve for rinse chamber
- To drain residual medium; G¼; stainless steel 1.4408 (AISI CF-8M)
- Order no.: 71083041

Hook wrench DIN 1810 design B
- D 58 - 68 mm
- Order no.: 50090687

a0010362

Process connection adapter

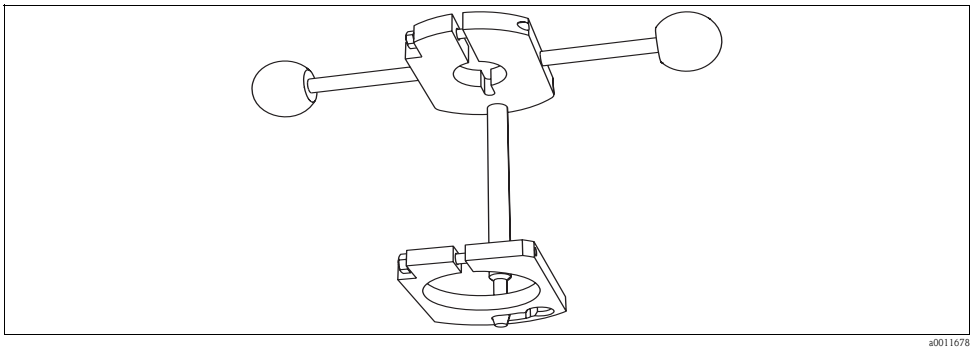
Welding socket G 1¼ straight
- For process connections F and G
- Material: stainless steel 1.4571 (AISI 316Ti)
- Order no.: 51502284



a0010396

Locking device safety kit

Locking device safety kit
- Mechanical lock of the measuring position
- For applications in dusty or sooty areas
- For applications with vibrations or pressure surges
- Order no.: 71098681



a0011678

Sensors

Glass electrodes

Note!
When ordering electrodes, please note that only electrodes with a shaft length of 120 mm (4.72") and diameter of 12 mm (0.47") are suitable for the CPA450 assembly. The most common sensors are listed below.

Orbisint CPS11/CPS11D
- pH electrode for process applications, with PTFE diaphragm
- Memosens functionality as option
- Ordering acc. to product structure, see Technical Information (TI028C/24/ae)

Orbisint CPS12/CPS12D
- ORP electrode for process applications, with PTFE diaphragm
- Memosens functionality as option
- Ordering acc. to product structure, see Technical Information (TI367C/24/ae)

Ceragel CPS71/CPS71D
- pH electrode with double chamber reference system and integrated bridge electrolyte
- Memosens functionality as option
- Ordering acc. to product structure, see Technical Information (TI245C/24/ae)

Ceragel CPS72/CPS72D
- ORP electrode with double chamber reference system and integrated bridge electrolyte
- Memosens functionality as option
- Ordering acc. to product structure, see Technical Information (TI374C/24/ae)

Orbipore CPS91/CPS91D
- pH electrode with open aperture for media with high dirt load
- Memosens functionality as option
- Ordering acc. to product structure, see Technical Information (TI375C/24/ae)

ISFET sensors for CPA450

Tophit CPS471D
- Sterilisable and autoclavable ISFET sensor with Memosens technology for food and pharmaceutical industries, process technology, water treatment and biotechnology
- Ordering acc. to product structure, see Technical Information (TI283C/24/ae)

Tophit CPS491D
- ISFET sensor with Memosens technology, open aperture for media with high dirt load
- Ordering acc. to product structure, see Technical Information (TI377C/24/ae)

CPS471-ESA
- pH sensor with ISFET technology, ceramic diaphragm, chip seal: perfluorelastomer
- TOP68 / ESA plug-in head, 120 mm / 4.72"
- Order no.: 51513079

CPS491-ESA
- pH sensor with ISFET technology, open aperture, chip seal: perfluorelastomer
- TOP68 / ESA plug-in head, 120 mm / 4.72"
- Order no.: 51512562

Oxygen sensors

Oxymax H COS21D
- Sterilizable sensor for dissolved oxygen, with Memosens technology
- Ordering acc. to product structure, see Technical Information (TI402C/24/ae)

Cables

CPK1 special measuring cable
- For pH/ORP electrodes with GSA plug-in head
- Ordering acc. to product structure, see Technical Information (TI118C/07/en)

CPK9 special measuring cable
- For sensors with TOP68 plug-in head, for high-temperature and high-pressure applications, IP 68
- Ordering acc. to product structure, see Technical Information (TI118C/07/en)

CPK12 special measuring cable
- For pH/ORP glass electrodes and ISFET sensors with TOP68 plug-in head
- Ordering acc. to product structure, see Technical Information (TI118C/07/en)

CYK10 Memosens data cable
- For digital sensors with Memosens technology
- Ordering according to product structure, see Technical Information (TI376C/07/en)

CYK71 measuring cable
- Non-terminated cable for the connection of pH sensors and COS41 oxygen sensor or the extension of sensor cables
- Sold by the meter, order number:
  - non-Ex version, black: 50085333
  - Ex version, blue: 51506616

CYK81 measuring cable
- Non-terminated measuring cable for extension of sensor cables of e.g. Memosens sensors, CUS31/CUS41
- 2 wires, twisted pair with shield and PVC-sheath (2 x 2 x 0.5 mm^2 + shield)
- Sold by the meter, order no.: 51502543

Junction box VBA
- For cable extension of pH/ORP sensors
- 10 terminals, protection class: IP 65 (≙ NEMA 4X)
- Cable entries: 2 x Pg 13.5, 2 x Pg 16
- Material: polycarbonate
- Order no.: 50005276

Junction box RM
- For cable extension (e.g. for Memosens sensors or CUS31/CUS41)
- 5 terminals
- Cable entries: 2 x Pg 13.5
- Material: PC
- Ingress protection: IP 65 (≙ NEMA 4X)
- Order no.: 51500832

Transmitters

Liquiline M CM42
- Modular two-wire transmitter, stainless steel or plastic, field or panel instrument
- Various Ex approvals (ATEX, FM, CSA, Nepsi, TIIS)
- HART, PROFIBUS or FOUNDATION Fieldbus available
- Ordering acc. to product structure, see Technical Information (TI381C/24/ae)

Liquisys M CPM223/253
- Transmitter for pH and ORP, field or panel-mounted housing
- HART or PROFIBUS available
- Ordering acc. to product structure, see Technical Information (TI194C/24/ae)

Mycom S CPM153
- Transmitter for pH and ORP, one or two channel version, Ex or non-Ex
- HART or PROFIBUS available
- Ordering acc. to product structure, see Technical Information (TI233C/24/ae)

United States	Canada	Mexico
Endress+Hauser, Inc. 2350 Endress Place Greenwood, IN 46143 Tel. 317-535-7138 Sales 888-ENDRESS (888-363-7377) Service 800-642-8737 fax 317-535-8498 inquiry@us.endress.com www.us.endress.com	Endress+Hauser Canada 1075 Sutton Drive Burlington, ON L7L 5Z8 Tel. 905-681-9292 800-668-3199 Fax 905-681-9444 info@ca.endress.com www.ca.endress.com	Endress+Hauser, México, S.A. de C.V. Fernando Montes de Oca 21 Edificio A Piso 3 Fracc. Industrial San Nicolás 54030. Tlalnepantla de Baz Estado de México México Tel: +52 55 5321 2080 Fax +52 55 5321 2099 eh.mexico@mx.endress.com www.mx.endress.com

TI183C/24/ae/11.09

Endress+Hauser

People for Process Automation