Measurement and control

Accessories

Electrodes, measuring cells, flow armatures for Conex DIA, DIS, DIP

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GRUNDFOS

Table of contents

1. Product introduction

Measuring cells, single-rod measuring chains, electrodes and sensors

Grundfos measuring cells and electrodes for dosing and disinfection applications are made especially for tasks in water treatment, such as:

- drinking water
- boiler feed water
- pure water
- swimming pool water
- food industry (e.g. dairies and breweries)
- industrial process water
- waste water (for effluent disinfection)

For applications where heavily soiled water can get into the measuring cell, we recommend to install external filters (cascaded if necessary) in the sample water line.

AquaCells for chlorine, chlorine dioxide, or ozone

AquaCells are modular potentiostatic measuring cells that have been especially developed for disinfection processes.

- AQC-D11: pressure-proof measuring cell with electrical cleaning motor
- AQC-D12: pressure-proof measuring cell with hydromechanical cleaning
- AQC-D13: pressureless measuring cell with hydromechanical cleaning

AquaCells feature integrated water filters, regulating devices and temperature measurement.

Parameters:

- Chlorine
- Chlorine dioxide
- Ozone
- pH
- Redox potential (ORP)
- Temperature

Electrodes and sensors

In addition to the AquaCells, Grundfos offers a wide range of sensors and electrodes for specific measuring requirements.

Parameters:

- pH
- Redox potential (ORP)
- Temperature
- Hydrogen peroxide
- Peracetic acid

Electrode holders and accessories

Grundfos offers a wide range of equipment suitable for your processes: single armatures or complete electrode holders and flow-through fittings with electrode cables. Other accessories include buffer solutions, starting reagents, etc.

Accessories for the measurement of:

- Hydrogen peroxide
- Peracetic acid
- pH
- Redox potential (ORP)
- Temperature

2. AquaCells for chlorine, chlorine dioxide or ozone

AQC-D11 with electric cleaning motor

Features

- Pressure-proof measuring cell made of acrylic glass
- Integrated electrode for free chlorine, chlorine dioxide or ozone
- Electrode material: gold or platinum
- Sample water filter and regulating device
- With sampling cock for comparative measurement for calibration
- Connections for sample water inlet and outlet
- Locations for pH single-rod measuring chain and redox potential (ORP) electrode, temperature sensor and water sensor
- Mounted on a plate, including fixing material
- Suitable for closed cycles: No loss of sample water due to sample-water return

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Fig. 1 AQC-D11 measuring cell

Components

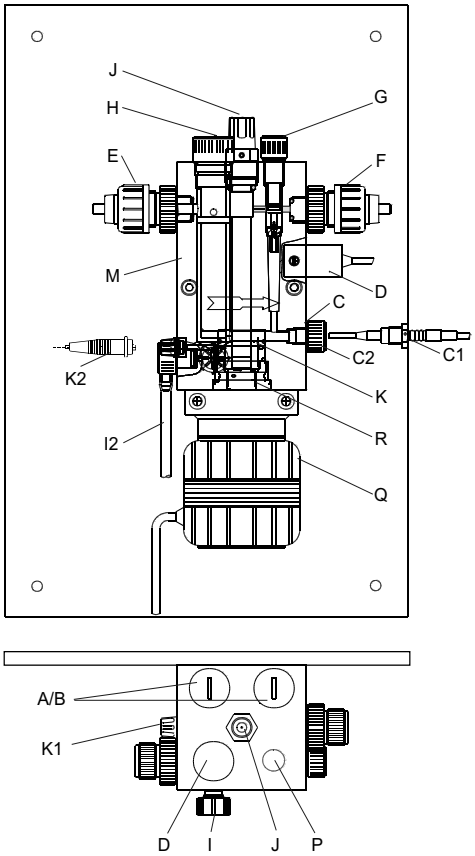

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Fig. 2 Components of AQC-D11

Legend

Pos.	Component
A	pH single-rod measuring chain/ location for pH single-rod measuring chain
B	Redox potential electrode / location for redox potential electrode
C	Location for temperature sensor Pt 100
C1	Temperature sensor Pt 100
C2	Plug for variants without temperature sensor Pt 100
D	Water sensor
E	Connection for sample water inlet
F	Connection for sample water outlet
G	Regulation of sample water quantity
H	Sample water filter
I	Sampling cock
I2	Outlet of sampling cock
J	Measuring electrode for chlorine, chlorine dioxide, ozone
K	Counter electrode for chlorine, chlorine dioxide, ozone
K1	Contact of counter electrode
K2	Plug of counter electrode
M	Flow armature
P	Location for sample water regulation
Q	Cleaning motor
R	Screwed part with magnetic stirring stone

Measuring data

Measuring parameters chlorine, chlorine dioxide, ozone	
Measuring range	0.03 - 50 mg/l
Measuring sensitivity	< 20 ppb
Measuring accuracy	< ± 5 % of upper limit of measuring range
Repeatability	< ± 3 %
Response time t_{90}	60 s

Measuring parameter pH	
Measuring range	pH 0.00 - 14.00

Measuring parameter redox potential (ORP)	
Measuring range	-1500 to + 1500 mV

Technical data

Measuring parameters	• Free chlorine, chlorine dioxide or ozone • pH • Redox potential (ORP) • Temperature (compensation of temperature variations during pH and chlorine measurement)
Sample water	• Temperature: 0-40 °C • pH value: pH 4.5 - 8.2 • Admission pressure: 0.2 - 3 bar • Counterpressure: max. 3 bar • Pressure difference: approx. 0.2 bar • Free from solids
Admissible ambient temperature	0-45 °C
Sample water flow	Approx. 20-45 l/h
Parts in contact with sample water	PMMA, PVC, PTFE, EPDM, glass, PEI
Material of electrodes	Gold or platinum (electrode chlorine, chlorine dioxide, ozone), stainless steel
Connections water inlet / outlet	for PVC hose 6/12 for PVC pipe 12 x 1.2
Weight	Approx. 2 kg

Dimensions

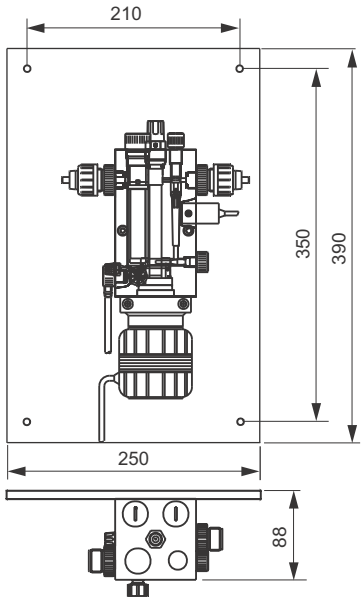

Fig. 3 Dimensions of AQC-D11

AQC-D12 with hydromechanical cleaning

Features

- Pressure-proof measuring cell made of acrylic glass
- Integrated electrode for free chlorine, chlorine dioxide or ozone
- Electrode material: gold or platinum
- Integrated water sensor
- Sample water filter and regulating device
- With sampling cock for comparative measurement for calibration
- Connections for sample water inlet and outlet
- Locations for pH single-rod measuring chain and redox potential (ORP) electrode, temperature sensor and water sensor
- Mounted on a plate, including fixing material
- Suitable for closed cycles: No loss of sample water due to sample-water return

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Fig. 4 AQC-D12 measuring cell

Components

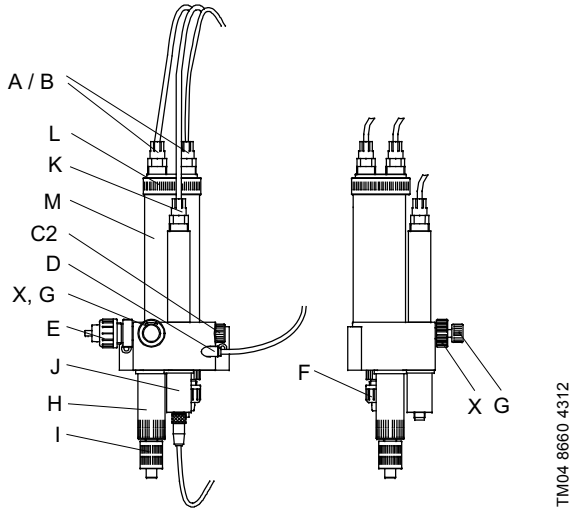

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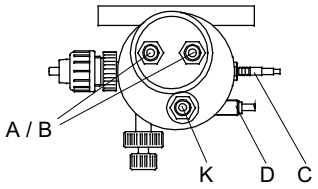
Fig. 5 Components of AQC-D12



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Legend

Pos.	Component
A	pH single-rod measuring chain/ location for pH single-rod measuring chain
B	Redox potential electrode / location for redox potential electrode
C	Pt-100 temperature sensor
C2	Location for temperature sensor with screw plug
D	Water sensor
E	Connection for sample water inlet
F	Connection for sample water outlet
X	Sample water shut-off valve
G	Regulation of sample water quantity
H	Sample water filter
I	Sampling cock
J	Measuring electrode for chlorine, chlorine dioxide, ozone
K	Reference electrode for chlorine, chlorine dioxide, ozone / location for reference electrode
L	Cover with threaded ring
M	Cylindrical acrylic glass housing

Measuring data

Measuring parameters chlorine, chlorine dioxide, ozone	
Measuring range	0.05 - 50 mg/l
Measuring sensitivity	< 20 ppb
Measuring accuracy	< ± 5 % of upper limit of measuring range
Repeatability	< ± 5 %
Response time	60 s

Measuring parameter pH	
Measuring range	pH 0.00 - 14.00

Measuring parameter redox potential (ORP)	
Measuring range	-1500 to +1500 mV

Technical data

Measuring parameters	• Free chlorine, chlorine dioxide, ozone • pH • Redox potential (ORP) • Temperature (compensation of temperature variations during pH and chlorine measurements)
Sample water	• Temperature: 0-40 °C • pH value: pH 4.5 - 8.2 • Admission pressure: 0.2 - 3 bar • Counterpressure: max. 3 bar • Pressure difference: approx. 0.2 bar • Free from solids
Admissible ambient temperature	0-45 °C
Sample water flow	Approx. 20-45 l/h
Parts in contact with the sample water	PMMA, PVC, EPDM
Material of electrodes	Gold or platinum (electrode chlorine, chlorine dioxide, ozone), PVC, nickel, glass
Connections water inlet / outlet	For PVC hose 6/12 For PVC pipe 12 x 1.2
Weight	Approx. 2 kg

Dimensions

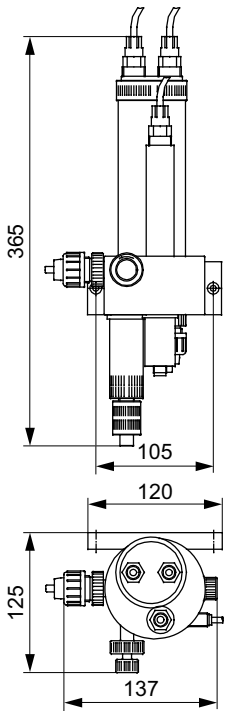

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Fig. 6 Dimensions of AQC-D12

AQC-D13 with hydromechanical cleaning

Features

- Pressureless measuring cell made of acrylic glass
- Integrated electrode for free chlorine, chlorine dioxide or ozone
- Electrode material: gold or platinum
- Sample water filter and regulating device
- Connections for sample water inlet and outlet
- Locations for pH single-rod measuring chain and redox potential (ORP) electrode, temperature sensor and water sensor
- Mounted on a plate, including fixing material
- With free sample water outlet

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Fig. 7 AQC-D13 measuring cell

Components

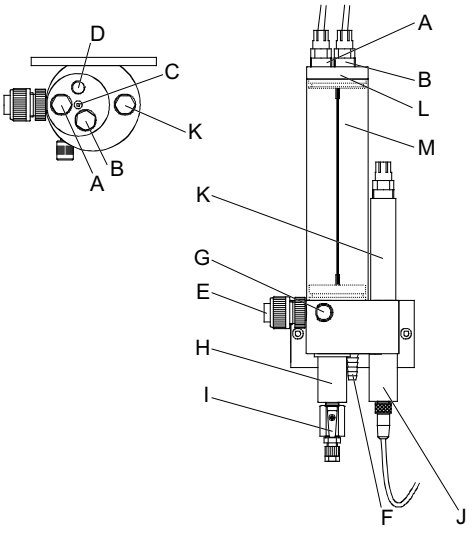

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Fig. 8 Components of AQC-D13

Legend

Pos.	Component
A	pH single-rod measuring chain/ location for pH single-rod measuring chain
B	Redox potential electrode / location for redox potential electrode
C	Pt-100 temperature sensor / location for temperature sensor
D	Water sensor / location for water sensor
E	Connection for sample water inlet
F	Connection for sample water outlet
G	Regulation of sample water quantity
H	Sample water filter
I	Sampling cock
J	Measuring electrode for chlorine, chlorine dioxide, ozone
K	Reference electrode for chlorine, chlorine dioxide, ozone / location for reference electrode
L	Cover
M	Cylindrical acrylic glass housing

Measuring data

Measuring parameters chlorine, chlorine dioxide, ozone	
Measuring range	0.05 - 50 mg/l
Measuring sensitivity	< 10 ppb
Measuring accuracy	< ± 5 % of upper limit of measuring range
Repeatability	< ± 5 %
Response time t_{90}	60 s

Measuring parameter pH	
Measuring range	pH 0.00 - 14.00

Measuring parameter redox potential (ORP)	
Measuring range	-1500 to +1500 mV

Technical data

Measuring parameters	• Free chlorine, chlorine dioxide, ozone • pH • Redox potential (ORP) • Temperature (compensation of temperature variations during pH and chlorine measurements)
Sample water	• Temperature: 0-40 °C • pH value: pH 4.5 - 8.2 • Admission pressure: 0.2 - 6 bar • No counterpressure • Free from solids
Admissible ambient temperature	0-45 °C
Sample water flow	Approx. 15 l/h
Parts in contact with the sample water	PMMA, PVC, EPDM
Material of electrodes	Gold or platinum (electrode chlorine, chlorine dioxide, ozone), PVC, nickel, glass
Connection water inlet	For PVC hose 6/12 For PVC pipe 12 x 1.2
Connection water outlet	For PVC hose 6/12 (free water outlet)
Weight	Approx. 2 kg

Dimensions

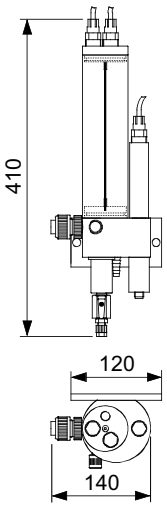

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Fig. 9 Dimensions of AQC-D13

Type key, AquaCell

Type key example: AQC-D11, P-AU-PCB-RCB, QS-T-G

Example:	AQC	-D11	-P	AU-PCB-RCB	QS	-T	-G

Model

AQC	AquaCell

AquaCell type

D11	Pressure-proof, with cleaning motor (chlorine, chlorine dioxide, ozone)
D12	Pressure-proof, with hydromechanical cleaning (chlorine, chlorine dioxide, ozone)
D13	Pressureless, with hydromechanical cleaning (chlorine, chlorine dioxide, ozone)

P	With pressure retention valve
X	Without pressure retention valve

Electrodes for disinfection parameters

AU	Gold
PT	Platinum

Electrodes for pH

PCB	pH, ceramic diaphragm, with buffer solution
PTB	pH, PTFE diaphragm, with buffer solution
PKB	pH, KCl filling, with buffer solution
PGB	pH, gel filling, with buffer solution
PCX	pH, ceramic diaphragm, without buffer solution
PTX	pH, PTFE diaphragm, without buffer solution
PKX	pH, KCl filling, without buffer solution
PGX	pH, gel filling, without buffer solution
X	Without electrode

Electrodes for redox potential (ORP)

RCB	Redox potential (ORP), ceramic diaphragm, with buffer solution
RTB	Redox potential (ORP), PTFE diaphragm, with buffer solution
RRB	Redox potential (ORP), without reference system, with buffer solution
RCX	Redox potential (ORP), ceramic diaphragm, without buffer solution
RTX	Redox potential (ORP), PTFE diaphragm, without buffer solution
RRX	Redox potential (ORP), without reference system, without buffer solution
X	Without electrode

Water sensor

QS	With water sensor
X	Without water sensor

Temperature sensor

T	With Pt100 temperature sensor
X	Without temperature sensor

Voltage

G	230/240 V, 50/60 Hz
H	115/120 V, 50/60 Hz
I	24 V DC
X	Without power supply

3. Measuring cells for hydrogen peroxide and peracetic acid

Diaphragm-covered measuring cells for hydrogen peroxide and peracetic acid

Parameters:

- Hydrogen peroxide
- Peracetic acid (PAA)

Diaphragm-covered measuring cells are particularly suitable for disinfection in bottling plants (beverages and liquid food).

They consist of a flow-type armature and a diaphragm-covered measuring cell, and include cable and plug.

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Fig. 10 Diaphragm-covered measuring cell

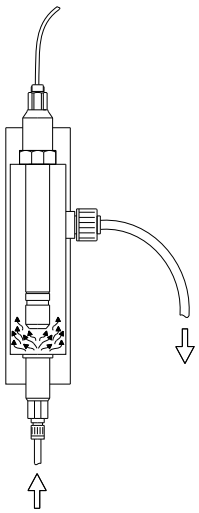

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Fig. 11 Flow direction, diaphragm-covered measuring cell

Technical data

Description	Hydrogen peroxide	Peracetic acid
Disturbances: no disturbances caused by surfactants	Strong disturbances by PAA	Negligible disturbances by hydrogen peroxide selectivity factor of 0.005
Response time, T_{90}	~ 5 minutes	~ 3 minutes
Permissible ambient temperature	0-45 °C	0-50 °C
Sample water temperature	0-55 °C	
Sample water flow	minimum 30 l/h	
Enclosure material	PVC, polycarbonate, stainless steel and silicone rubber, resistant to tensides and common water additives	
Connections, inlet	For 6/8 mm hose	
Weight	Approx. 100 g	
Resolution	1 mg/l	
Temperature drift	Negligible	
Repeatability	2 %	2 % +/- 3 ppm
Accuracy	2 %	2 % +/- 5 ppm
Measuring range	0-2000 mg/l (according to controller settings)	

Order data

Description	Product number
Measuring cell for hydrogen peroxide	95701376
Measuring cell for peracetic acid	95701375

For spare parts see page 23

4. Sensors for pH, redox potential (ORP), and temperature

pH electrodes

- Single-rod measuring chains
- In a ∅12 glass shaft with threaded socket
- Ag/AgCl reference and derivation system, zero point at pH 7
- Measuring range: pH 1-12 (max. pH 14 briefly)
- Temperature: -5 to +80 °C
- Connection: screw head Pg 13.5 (S8)
- Active component: universal glass

GrA1046

Fig. 12 pH single-rod measuring chain and reference electrode

Technical data

Description	Diaphragm	Pressure [bar]	Length [mm]	Product number
pH single-rod measuring chain with ceramic diaphragm (with salt reserve*)	Ceramic (zirconium dioxide) diaphragm	0-10 (50 °C)	120	96609158
pH single-rod measuring chain with PTFE diaphragm (with salt reserve*)	Large-surface ring diaphragm, PTFE	0-10 (50 °C)	120	96609159
pH single-rod measuring chain with perforated diaphragm (reference system of solid plastic, containing KCl with solid electrolyte, with salt reserve*)	Perforated diaphragm for open transition between solid electrolyte and the liquid	0-10 (50 °C)	120	96609161
Set (see fig. 13) comprising: • pH single-rod measuring chain, • KCl connection, • KCl reservoir	3 ceramic (zirconium dioxide) diaphragms	0-6 (25 °C)	• Installation length: 120 • Total length: 180	95707720
pH single-rod measuring chain with 3 diaphragms and hose clip for KCl connection	3 ceramic (zirconium dioxide) diaphragms	0 - 0.5	120	96609160

* A salt reserve helps to increase the service life of the Ag/AgCl reference electrode, especially if the combined electrode is used in media with fewer ions or at high flow rates.

Product selection

		96609158	96609159	96609161	95707720	96609160
Controller						
Conex DIA, Conex DIS		•	•	•	•	•
DIP		•	•	•	•	•
Water conductitivy						
min. 50-100 µS/cm		•	•	•		
min. 10-100 µS/cm					•	•
Water type	**Application**					
Clear water without solids, very little turbidity	Drinking water Swimming pool water Brewing water (intake) Process water (intake)	•				•
Water with solids, slight turbidity	Water from wells Raw water (intake) Brewing water Surface water (from rivers or lakes) Effluent reuse		•			
	Cooling tower water Slightly contaminated waste water		•	•		
	Industrial water Process water Cleaning processes where particles are left in the water (cuttings or swarf) Slightly contaminated waste water Brewery flush water		•	•	•	
	Water containing proteins			•		
Non-transparent water with suspended solids (for effluent disinfection)	Municipal waste water Industrial waste water Sewage treatment plant water (intake)		•	•		

Set 95707720 comprising:

Description	Product number
pH single-rod measuring chain with 3 ceramic diaphragms and screwing for KCl connection, pressure-proof up to 6 bar	9570938
KCl connection	95727421
KCl reservoir, pressure-resistant, for wall-mounting	95727422

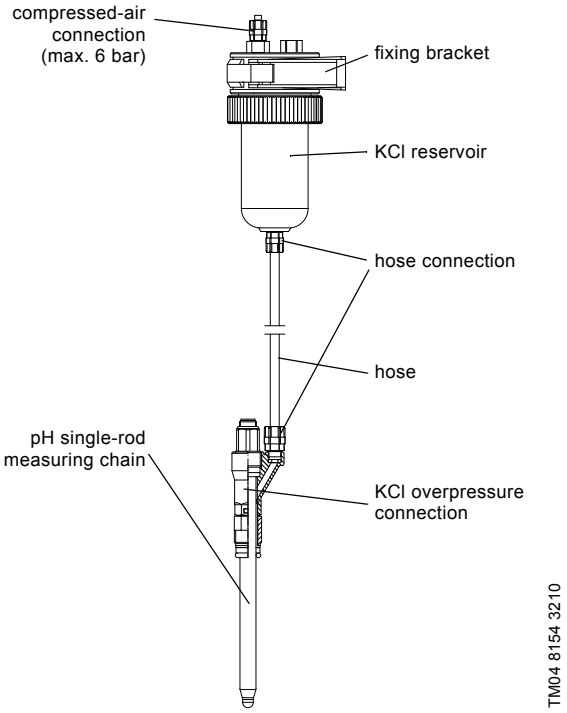

Fig. 13 Set: 95707720

Redox potential (ORP) electrodes

- Single-rod measuring chains
- In a ∅12 glass shaft with threaded socket
- Ag/AgCl reference and derivation system (except product no. 96622944 (313-105))
- Connection: screw head Pg 13.5 (S8)
- Active component: platinum
- Measuring range: +/- 2000 mV
- Temperature: -5 to +80 °C
- Length: 120 mm

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Fig. 14 Redox potential (ORP) electrode

Technical data

Description	Diaphragm	Pressure [bar]	Product number
Redox potential (ORP) single-rod measuring chain with ceramic diaphragm (with salt reserve*). The Ag/AgCl reference electrode and the sensing Pt are combined in one shaft.	Ceramic (zirconium dioxide) diaphragm	0-10 (50 °C)	96609162
Redox potential (ORP) single-rod measuring chain with PTFE diaphragm (with salt reserve*)	Large-surface ring diaphragm, PTFE	0-10 (50 °C)	96609163
Redox potential (ORP) electrode Important: only for use in combination with DIP and a pH single-rod measuring chain. Has no reference or derivation system)	-	0-6 (25 °C) 0-1 (80 °C)	96622944

* A salt reserve helps to increase the service life of the Ag/AgCl reference electrode, especially if the combined electrode is used in media with fewer ions or at high flow rates.

Product selection

		96609162	96609163	96622944*
Controller				
Conex DIA, Conex DIS		•	•	
DIP				•
Water conductivity				
min. 50-100 µS/cm		•	•	•
Water type	**Application**			
Clear water without solids, very little turbidity	Drinking water Swimming pool water Brewing water (intake) Process water (intake)	•		
Water with solids, slight turbidity	Water from wells Raw water (intake) Brewing water Surface water (from rivers or lakes) Effluent reuse		•	
	Cooling tower water Slightly contaminated waste water		•	
	Industrial water Process water Cleaning processes where particles are left in the water (cuttings or swarf) Slightly contaminated waste water Brewery flush water		•	
	Water containing proteins		•	
Non-transparent water with suspended solids (for effluent disinfection)	Municipal waste water Industrial waste water Sewage treatment plant water (intake)		•	

* This redox potential (ORP) electrode is only used in combination with pH single-rod measuring chains. Its application depends on the application of the respective pH single-rod measuring chain.

Sensors for temperature measurement and compensation

Description	Product number
Pt-100 for temperature measurement with Pg 13.5 N screw plug	96623001

Connection cables

Cables for measuring sensors (for pH, redox potential (ORP), temperature, conductivity, gas)

Note: If the length of the cable between controller and pH/ORP electrode exceeds 3 metres, an impedance converter is necessary.

Description	Length [m]	Product number
Special cable (coaxial), single-screening, N screw plug for pH, redox potential (ORP) or reference electrode	1	96609182
	3	96609183
	10	96701441
	25	95703576
Standard cable, single-screening, 2-wire, for the connection of 0/4-20 mA lines	1	96687719
	2	96725671
	10	96725670
	20	96725672
	50	96725673
Standard cable, single-screening, 4-wire, for the connection of the sensor interface to Conex (control panel mounted)	1	96635553
	5	96611925
	15	96611928
	25	96611929
CAN cable, single screening, 4-wire, for the connection of DIP, PLC	10	96725684
	20	96725685
	50	96725686
Special cable (coaxial) with double screening (extension for pH and redox potential (ORP) measurement)	1	91835293
Distribution box with cable entry		91835294

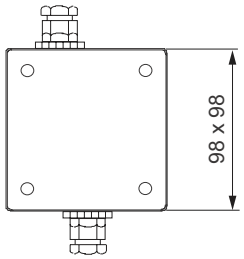

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Fig. 15 Distribution box

Impedance converter for pH and redox potential (ORP)

- An impedance converter is necessary, if the length of the cable between controller and electrode exceeds 3 metres.
- Connection: N cap
- The plug connector suits the Grundfos electrode caps with cable socket N and most of the usual electrode caps.
- Installed between the electrode and the cable.
- Internal power supply by a lithium battery (can be replaced), CR-1/3N-P (or equivalent). Service life: at least 5 years (at 25 °C). The service life can be affected by external factors, such as fluctuating temperatures during operation and storage.

Description	pH	Redox potential (ORP)	Product number
Impedance converter for pH/redox potential (ORP) measurement. • Permissible ambient temperature: -10 to +60 °C • Permissible storage temperature: -10 to +60 °C	•	•	95704730

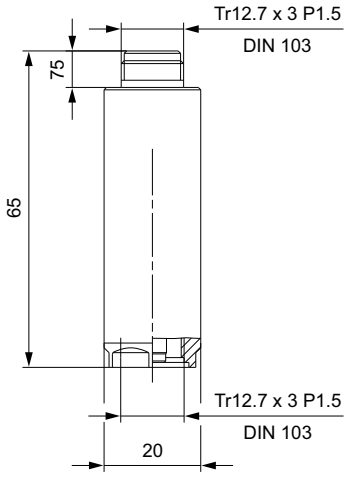

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Fig. 16 Impedance converter

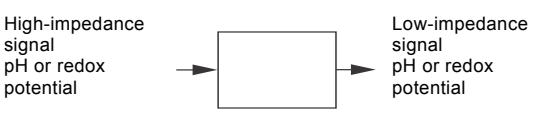

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Fig. 17 Block diagram impedance converter

Accessories for pH, redox potential (ORP), and temperature measurement

Description		Product number
Immersion electrode holder, PP, for up to three electrodes (pH or redox potential or temperature), length adjustable from 250 to 1000 mm (fig. 18)		96627432
Immersion electrode holder, PP, for up to three electrodes (pH or redox potential or temperature), length adjustable from 250 to 2000 mm (fig. 18)		96627433
Moistening shell (with automatic hinge mechanism) for the immersion electrode holders 322-210 (96627432) and 322-220 (96627433) for keeping the electrodes moist if the tank is empty (fig. 19)		95706027
Flow-type electrode holder, PVC, for one electrode (pH or redox potential or temperature), electrode protection, DN 20 connection, PN 10, max. 50 °C (fig. 20)		96609169
Process fitting for pH/redox potential/temperature electrode The process fitting makes it possible to change or calibrate the electrode without stopping the process. By turning the union nut the electrode is withdrawn from the process cycle, so that the electrode can be taken out of the fitting (fig. 21)		95701690
Parts in contact with the liquid:	Stainless steel DIN 1.4571, and FKM	
Permissible temperature:	-30 to +135 °C	
Safe pressure:	up to 10 bar	
Seal:	FKM	
Enclosure class:	IP65	
Electrode holder:	Pg 13.5 thread	
Please also note the maximum operating data for the sensor used!		

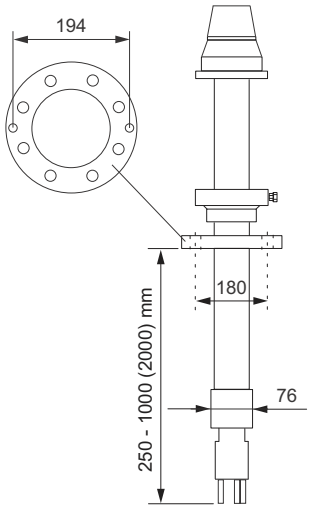


Fig. 18 Immersion electrode holder

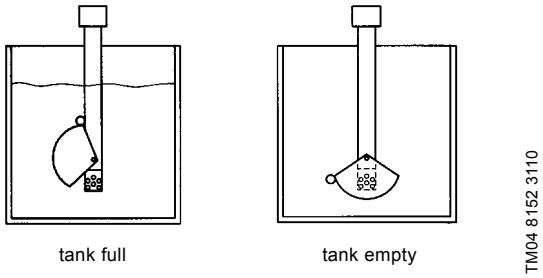


Fig. 19 Moistening shell with hinge mechanism

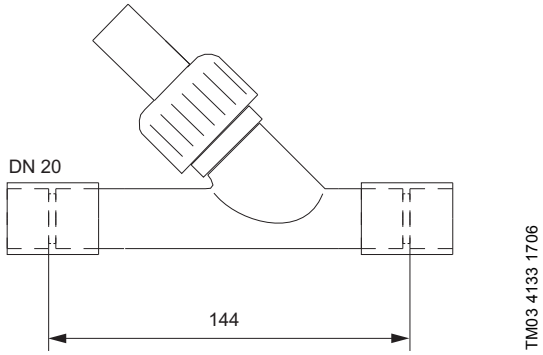


Fig. 20 Flow-type electrode holder

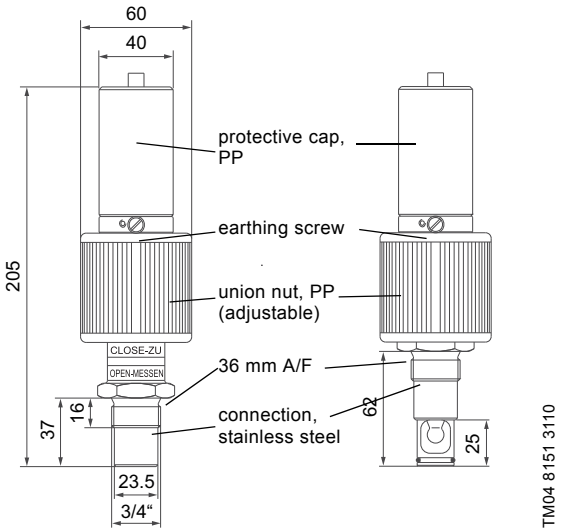
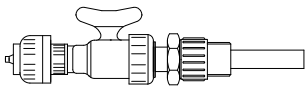


Fig. 21 Process fitting, left: electrode not in the process, right: electrode in the process

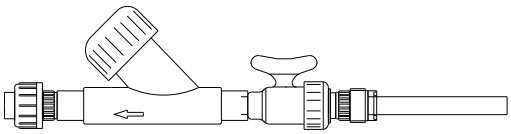
Sample water extraction from tubing systems

Description	Product number
Max. 3 bar, PVC, connection for female thread, R 1/2, consisting of extraction pipe and ball valve (Fig. 22)	96729302
Max. 3 bar, PVC, connection for female thread, R 1/2, consisting of extraction pipe, shut-off valve and filter (Fig. 23)	96729301
Max. 3 bar, brass, connection for female thread, R 1/2, consisting of extraction pipe, shut-off valve and filter (Fig. 24)	96729300
Max. 10 bar, brass, connection for female thread, R 1/2, consisting of extraction pipe, shut-off valve, filter, pressure reducing valve and manometer (Fig. 25)	96698139



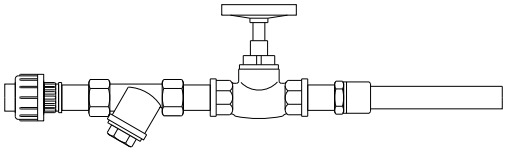
TM04 2173 2108

Fig. 22 Sample water extraction



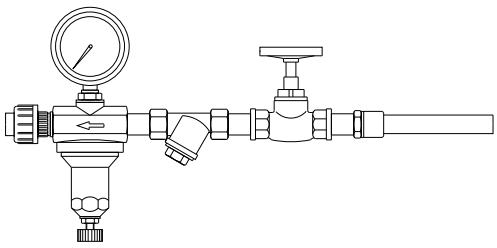
TM04 2172 2108

Fig. 23 Sample water extraction



TM04 2170 2108

Fig. 24 Sample water extraction



TM04 2171 2108

Fig. 25 Sample water extraction

Sample water extraction pump

Description			Product number
Sample water extraction pump, up to 2.8 m^3/h, only flooded suction, type T5-58/550 P			95706977
	max. head	0.58 bar	
	temperature of sample water	0-60 °C	
	max. system pressure	1.0 bar	
	pipe connection thread	R 3/4 male	
	mains voltage and frequency	230 V, 50 Hz	
	power consumption	99 W	
	max. current consumption	0.5 A	
	enclosure class	IP54	
Sample water extraction pump, up to 35 l/h			95701524
	connection	DN 8	
	mains voltage and frequency	220 V, 50 Hz	
	power consumption	approx. 40 W	

5. Product selection

AquaCell (AQC) for disinfection parameters

- Additional measurement of pH and/or ORP as an option

Standard range

AQC-D11, pressure-proof, with cleaning motor, 230/240 V

- Measurable disinfection parameters: free chlorine, chlorine dioxide or ozone
- Basic version: with temperature sensor and pressure retention valve

Electrode type				Type designation*	Product number	
Disinfection parameters	pH, ceramic diaphragm	ORP, ceramic diaphragm	With water sensor		Code AU Gold electrode (disinfection)	Code PT Platinum electrode (disinfection)
•	•	•	•	AQC-D11, P-**AU**-PCB-RCB, QS-T-G	95737678	95737683
•	•	•		AQC-D11, P-**AU**-PCB-RCB, X-T-G	95737666	95737684
•	•		•	AQC-D11, P-**AU**-PCB-X, QS-T-G	95737679	95737685
•	•			AQC-D11, P-**AU**-PCB-X, X-T-G	95737680	95737686
•			•	AQC-D11, P-**AU**-X-X, QS-T-G	95737681	95737687
•				AQC-D11, P-**AU**-X-X, X-T-G	95737682	95737688

* Also available with platinum electrode **PT**

AQC-D11, pressure-proof, with cleaning motor, 115/120 V

- Basic version: with temperature sensor and pressure retention valve

Electrode type				Type designation*	Product number	
Disinfection parameters	pH, ceramic diaphragm	ORP, ceramic diaphragm	With water sensor		Code AU Gold electrode (disinfection)	Code PT Platinum electrode (disinfection)
•			•	AQC-D11, P-**AU**-X-X, QS-T-H	95737670	95737676
•	•		•	AQC-D11, P-**AU**-PCB-X, QS-T-H	95737668	95737674
•	•	•	•	AQC-D11, P-**AU**-PCB-RCB, QS-T-H	95737665	95737672
•				AQC-D11, P-**AU**-X-X, X-T-H	95737671	95737677
•	•			AQC-D11, P-**AU**-PCB-X, X-T-H	95737667	95737675
•	•	•		AQC-D11, P-**AU**-PCB-RCB, X-T-H	95737669	95737673

* Also available with platinum electrode **PT**

AQC-D12, pressure-proof, hydromechanical cleaning

- Basic version: with temperature sensor, water sensor and pressure retention valve

Electrode type				Type designation*	Product number	
Disinfection parameters	pH, ceramic diaphragm	ORP, ceramic diaphragm	With water sensor		Code AU Gold electrode (disinfection)	Code PT Platinum electrode (disinfection)
•				AQC-D12, P-**AU**-X-X, QS-T-X	95737691	95737694
•	•			AQC-D12, P-**AU**-PCB-X, QS-T-X	95737690	95737693
•	•	•		AQC-D12, P-**AU**-PCB-RCB, QS-T-X	95737689	95737692

* Also available with platinum electrode **PT**

AQC-D13, pressureless, hydromechanical cleaning

- Basic version: with temperature sensor

Electrode type				Type designation*	Product number	
Disinfection parameters	pH, ceramic diaphragm	ORP, ceramic diaphragm	With water sensor		Code AU Gold electrode (disinfection)	Code PT Platinum electrode (disinfection)
•			•	AQC-D13, X-**AU**-X-X,QS-T-X	95727354	95701417
•	•		•	AQC-D13, X-**AU**-PCB-X, QS-T-X	95737697	95737701
•	•	•	•	AQC-D13, X-**AU**-PCB-RCB, QS-T-X	95737695	95737699
•				AQC-D13, X-**AU**-X-X, X-T-X	95701419	95737703
•	•			AQC-D13, X-**AU**-PCB-X, X-T-X	95737698	95737702
•	•	•		AQC-D13, X-**AU**-PCB-RCB, X-T-X	95737696	95737700

* Also available with platinum electrode **PT**

Non-standard range

Pressure retention valve	Electrodes			Water sensor	Temperature sensor	Voltage
	Disinfection	pH	ORP			
P: with X: without	AU: gold PT: platinum	PCB: ceramic diaphragm, with buffer solution PTB: PTFE diaphragm, with buffer solution PKB: KCl filling, with buffer solution PGB: gel filling, with buffer solution PCX: ceramic diaphragm, without buffer solution PTX: PTFE diaphragm, without buffer solution PKX: KCl filling, without buffer solution PGX: gel filling, without buffer solution X: without electrode	RCB: ceramic diaphragm, with buffer solution RTB: PTFE diaphragm, with buffer solution RRB: without reference system, with buffer solution RCX: ceramic diaphragm, without buffer solution RTX: PTFE diaphragm, without buffer solution RRX: without reference system, without buffer solution X: without electrode	QS: with X: without	T: with X: without	G: 230/240 V, 50/60 Hz H: 115/120 V, 50/60 Hz I: 24 V DC X: no voltage

AQC-D11

Pressure retention valve	Electrodes			Water sensor	Temperature sensor	Voltage
	Disinfection	pH	ORP			
P X	AU PT	PCB PTB PKB PGB PCX PTX PKX PGX X	RCB RTB RRB RCX RTX RRX X	QS X	X	G H I X

AQC-D12

Pressure retention valve	Electrodes			Water sensor	Temperature sensor	Voltage
	Disinfection	pH	ORP			
P X	AU PT	PCB PTB PKB PGB PCX PTX PKX PGX X	RCB RTB RRB RCX RTX RRX X	QS	X	X

AQC-D13

Pressure retention valve	Electrodes			Water sensor	Temperature sensor	Voltage
	Disinfection	pH	ORP			
X	AU PT	PCB PTB PKB PGB PCX PTX PKX PGX X	RCB RTB RRB RCX RTX RRX X	QS X	X	X

Armatures

pH, redox potential (ORP), hydrogen peroxide, PAA

Description	DIA-1	DIA-2	DIA-2Q	DIP	DIS-PR	Product number
Flow-type electrode holder, PVC, for pH/redox potential electrode	●	●	●		●	96609169
Process fitting, stainless steel, for pH/redox potential electrode	●	●	●		●	95701690
Immersion electrode holder, PP, for up to three electrodes (pH/redox potential), length adjustable from 250 to 1000 mm	●	●	●		●	96627432
Immersion electrode holder, PP, for up to three electrodes (pH/redox potential), length adjustable from 250 to 2000 mm	●	●	●		●	96627433
Flow-type electrode holder for PAA/hydrogen peroxide measuring cell	●	●	●			91835359

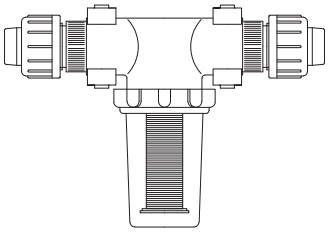
Sensors

pH, redox potential (ORP), hydrogen peroxide, PAA

Description	DIA-1	DIA-2	DIA-2Q	DIP	DIS-PR	Product number
PAA measuring cell, diaphragm-covered	●		●			95701374
Hydrogen peroxide measuring cell, diaphragm-covered	●	●	●			95701111
pH single-rod measuring chain with 3 ceramic diaphragms and hose clip for KCl connection, for pressureless applications	●	●	●	●	●	96609160
pH single-rod measuring chain with ceramic diaphragm	●	●	●	●	●	96609158
pH single-rod measuring chain with 3 ceramic diaphragms and screwing for KCl connection, pressure-proof up to 6 bar	●	●	●	●	●	95709387
pH single-rod measuring chain with perforated diaphragm	●	●	●	●	●	96609161
pH single-rod measuring chain with PTFE diaphragm	●	●	●	●	●	96609159
Redox potential (ORP) electrode, DIP only				●		96622944
Redox potential (ORP) single-rod measuring chain with ceramic diaphragm	●		●		●	96609162
Redox potential (ORP) single-rod measuring chain with PTFE diaphragm	●		●		●	96609163

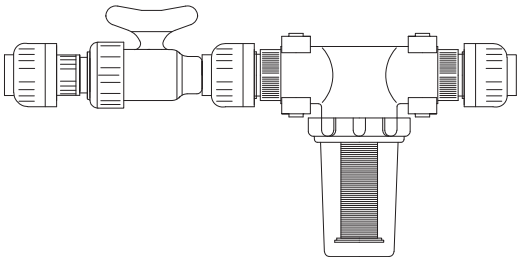
6. Accessories and spare parts

Accessories for AQC-D11, -D12, -D13



TM04 8390 1011

Fig. 26 External water filter



TM04 8391 1011

Fig. 27 External water filter with ball valve

Description	Product number		
	AQC-D11	AQC-D12	AQC-D13
External water filter for AQC, with ball valve	96622995	96622995	96622995
External water filter for AQC, without ball valve	95709473	95709473	95709473
3-molar potassium chloride solution, 250 ml	96688696	96688696	96688696
Pressure loading valve	96609179	96609179	-

Spare parts for AQC-D11, -D12, -D13

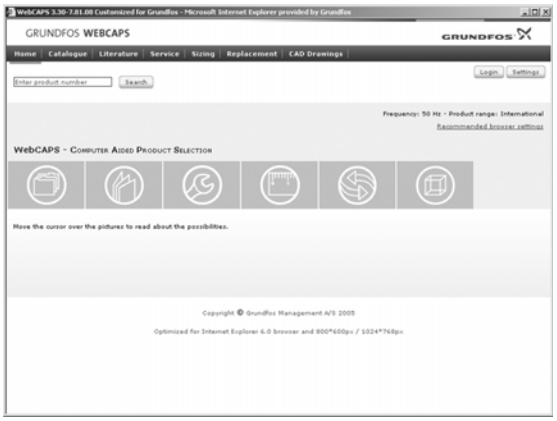
Description	Product number		
	AQC-D11	AQC-D12	AQC-D13
Cable for measuring and reference electrode, pH or redox single-rod measuring chain, 1 m	96609182	96609182	96609182
Cable for measuring and reference electrode, pH or redox single-rod measuring chain, 3 m	96609183	96609183	96609183
Water sensor with cable, 1 m	96609172	96609172	96687939
Water sensor with cable, 3 m	96609173	96609173	91835355
Pt-100 temperature sensor with cable, 1 m	96687987	96687987	96697322
Pt-100 temperature sensor with cable, 3 m	91835373	91835373	91834712
Measuring electrode, gold	91835242	96690373	91835855
Measuring electrode, platinum	91835244	96688868	96688836
Cable for counter electrode, 1 m	96687765	-	-
Cable for counter electrode, 3 m	91835333	-	-
Cleaning motor 230/240 V (50/60 Hz)	96680749	-	-
Cleaning motor 115/120 V (50/60 Hz)	91834708	-	-
Cleaning motor 24 V DC	96680750	-	-
Regulation of sample water quantity	96680719	-	-
O-ring 7 x 1.5 for regulation	91835592	-	-
Stopper RD 15 for regulation	96680721	-	-
Pg 13.5 plug for location of pH or redox electrode	96681110	-	-
O-ring 20 x 2.0 for plug	96609178	-	-
Sampling cock with outlet	96708939	-	-
Installation set	96708940	-	-
Filter	96681072	-	-
Spare parts set for AQC-D11: 15 glass balls, magnetic stirring stone, slide disk and gasket	91835822	-	-
Spare parts set for AQC-D12: cleaning wing, O-rings	-	96690372	-
Filter holder	-	96681096	-
O-ring	-	91835569	-
Installation set for sample water shut-off valve	-	95727420	-
Cable for measuring electrode, 1.2 m	-	96687722	96687722
Cable for measuring electrode, 2 m	-	96687723	96687723
Reference electrode	-	96609174	96609174
Filter	-	91834713	91834713
Spare parts set for AQC-D13: cleaning wing, O-rings	-	-	96657349

Spare parts for measuring cells for hydrogen peroxide and peracetic acid

Description	Product number	
	Peracetic acid	Hydrogen peroxide
Peracetic acid: diaphragm cap with electrolyte	96622962	-
Peracetic acid: electrolyte for measuring cell (100 ml)	96622966	-
Hydrogen peroxide: diaphragm cap with electrolyte	-	96622974
Hydrogen peroxide: electrolyte for measuring cell (100 ml)	-	96622975

7. Further product information

WebCAPS

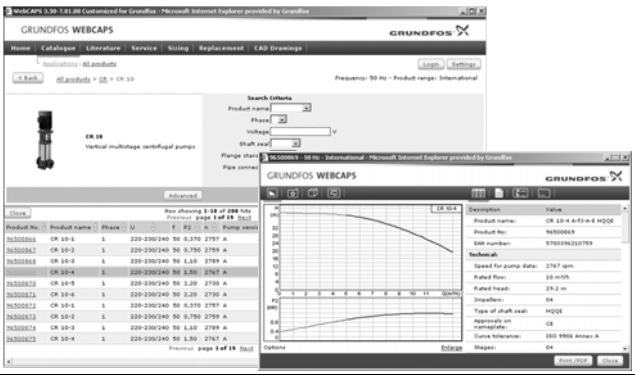


WebCAPS is a **Web**-based **C**omputer **A**ided **P**roduct **S**election program available on www.grundfos.com.

WebCAPS contains detailed information on more than 220,000 Grundfos products in more than 30 languages.

Information in WebCAPS is divided into six sections:

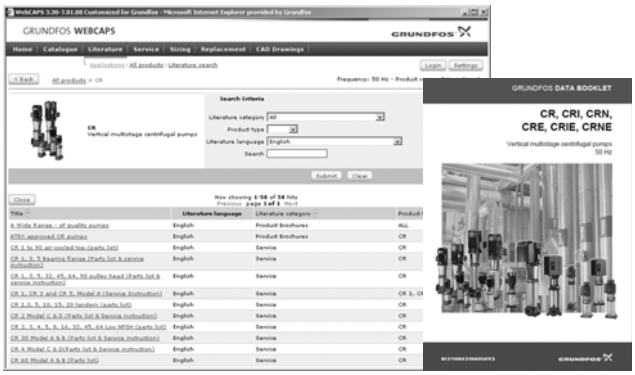
- Catalogue
- Literature
- Service
- Sizing
- Replacement
- CAD drawings.



Catalogue

Based on fields of application and pump types, this section contains the following:

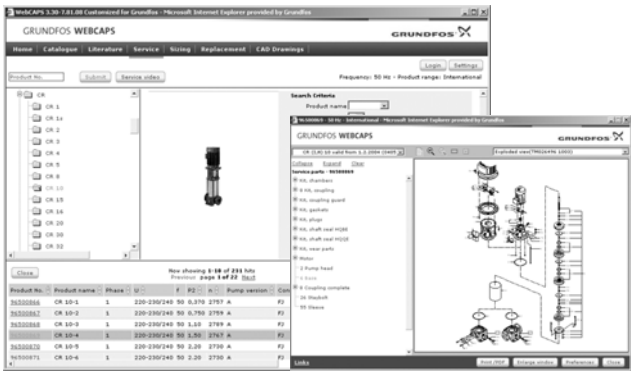
- technical data
- curves (QH, Eta, P1, P2, etc.) which can be adapted to the density and viscosity of the pumped liquid and show the number of pumps in operation
- product photos
- dimensional drawings
- wiring diagrams
- quotation texts, etc.



Literature

This section contains all the latest documents of a given pump, such as

- data booklets
- installation and operating instructions
- service documentation, such as Service kit catalogue and Service kit instructions
- quick guides
- product brochures.



Service

This section contains an easy-to-use interactive service catalogue. Here you can find and identify service parts of both existing and discontinued Grundfos pumps.
Furthermore, the section contains service videos showing you how to replace service parts.

Sizing

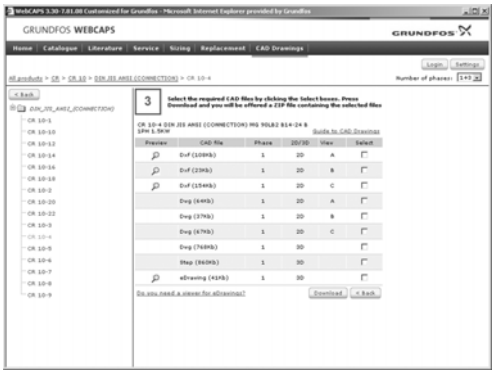
This section is based on different fields of application and installation examples and gives easy step-by-step instructions in how to size a product:

- Select the most suitable and efficient pump for your installation.
- Carry out advanced calculations based on energy, consumption, payback periods, load profiles, life cycle costs, etc.
- Analyse your selected pump via the built-in life cycle cost tool.
- Determine the flow velocity in wastewater applications, etc.

Replacement

In this section you find a guide to selecting and comparing replacement data of an installed pump in order to replace the pump with a more efficient Grundfos pump.
The section contains replacement data of a wide range of pumps produced by other manufacturers than Grundfos.

Based on an easy step-by-step guide, you can compare Grundfos pumps with the one you have installed on your site. When you have specified the installed pump, the guide will suggest a number of Grundfos pumps which can improve both comfort and efficiency.



CAD drawings

In this section, it is possible to download 2-dimensional (2D) and 3-dimensional (3D) CAD drawings of most Grundfos pumps.

These formats are available in WebCAPS:

2-dimensional drawings:
- .dxf, wireframe drawings
- .dwg, wireframe drawings.

3-dimensional drawings:
- .dwg, wireframe drawings (without surfaces)
- .stp, solid drawings (with surfaces)
- .eprt, E-drawings.

WinCAPS

Fig. 28 WinCAPS DVD

WinCAPS is a **Win**dows-based **C**omputer **A**ided **P**roduct **S**election program containing detailed information on more than 220,000 Grundfos products in more than 30 languages.

The program contains the same features and functions as WebCAPS, but is an ideal solution if no internet connection is available.

WinCAPS is available on DVD and updated once a year.

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GRUNDFOS A/S
DK-8850 Bjerringbro . Denmark
Telephone: +45 87 50 14 00
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