

GRUNDFOS ALLDOS DATA BOOKLET

Conex[®] DIS-PR, DIS-D

**Measuring amplifiers and controllers
Preassembled systems
one parameter (Cl_2 , ClO_2 , O_3 , pH, ORP)**



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Conex® DIS

Measuring amplifiers and controllers for instrumentation specialists

The Conex® DIS (Dosing Instrumentation Standard) are simple, cost-efficient units for amplifying and control. Fitted with a powerful 16-bit microprocessor system and offering a choice of settings, the DIS models ensure high water quality while reducing the volumes of chemicals dosed. Simplicity and efficiency combined.

Conex® DIS-PR

Measuring amplifier and controller for pH or redox (ORP)

The Conex® DIS-PR is designed for pH or redox (ORP) measurement and control. The compact and cost-efficient unit is intended for users who are familiar with measuring and control processes and prefer to use numerical programming to manage them. The DIS-PR has integrated temperature compensation for the pH value (manual or automatic with Pt100) for increased reliability.

Monitoring and control parameters

- pH
- redox (ORP).



Fig. 1 Conex® DIS-PR

TM04 1822 1108

Conex® DIS-D

Measuring amplifier and controller for disinfection

The Conex® DIS-D is designed to control disinfection processes that use chlorine, chlorine dioxide or ozone.

To ensure reliable operation, the DIS-D can be supplied with a separate sample water sensor that will immediately detect any shortage of sample water and give an alarm.

Monitoring and control parameters

- chlorine
- chlorine dioxide
- ozone.



Fig. 2 Conex® DIS-D

In the following chapters, the Conex® DIS-PR and DIS-D measuring amplifiers and controllers are simply referred to as "controllers".

TM04 1819 1108

Conex® DIS preassembled systems

Our preassembled systems take our tried-and-tested electrodes and Conex® controllers, combine them to suit specific applications and mount them on a plate ready for quick installation.

Each combination is available with a choice of measuring cells and cleaning methods.

Conex® DIS preassembled systems can be fitted with one of these controller types:

- Conex® DIS-PR
- Conex® DIS-D.



TM04 1820 1108

Fig. 3 Conex® DIS preassembled system

Conex® DIS-PR-A preassembled system for pH or redox (ORP)

Features

- With sensors for pH or redox (ORP) measurement
- Mounted on a base plate and wired, ready for connection
- With prepared cable sets
- With temperature compensation.
- Incorporates temperature sensor, with 1-metre cable (optional)
- Incorporates pH single-rod probe, with 1-metre cable and ceramic or PTFE diaphragm, or redox (ORP) single-rod probe, with 1-metre cable and ceramic or PTFE diaphragm.

Conex® DIS-D-A preassembled system for chlorine (Cl_2), chlorine dioxide (ClO_2) and ozone (O_3)

The system is equipped with one of these AquaCells:

- D1, pressure-proof, with cleaning motor
- D2, pressure-proof, with hydro-mechanical cleaning
- D3, pressureless, with hydro-mechanical cleaning.

Features

- Mounted on a base plate and wired, ready for connection.
- With prepared cable sets
- With electrode for Cl_2 , ClO_2 and O_3
- With a measuring range of 0-20 mg/l for Cl_2 , ClO_2 or O_3
- With optional water sensor (1 metre of prepared cable).

Note: For details on AquaCells and other measuring cells, single-rod probes and electrodes, see separate data booklet, "Measurement and Control Accessories".

Type key, Conex® DIS controllers

Example: DIS-D 1-D W-G

Example:	DIS-D	1-D	-W	-G
Measuring amplifier and controller				
DIS-PR	Dosing Instrumentation Standard for pH or redox (ORP) measurement			
DIS-D	Dosing Instrumentation Standard for Cl ₂ , ClO ₂ or O ₃			
Input parameter 1				
P	pH			
R	Redox (ORP)			
D	Chlorine (Cl ₂), chlorine dioxide (ClO ₂) or ozone (O ₃)			
Mounting				
W	Wall-mounted			
Voltage				
G	1 x 230 V, 50/60 Hz			
H	1 x 120 V, 50/60 Hz			
I	24 VDC			

Identification

Conex® DIS-PR, DIS-D

Type key, Conex® DIS, preassembled systems

Example: DIS-D-A D1-X-PT-QS-T W-G

Example:	DIS-D	-A	D1	-X	-PT	-QS	-T	W	-G
Measuring amplifier and controller									
DIS-PR	Dosing Instrumentation Standard for pH or redox (ORP) measurement								
DIS-D	Dosing Instrumentation Standard for Cl ₂ , ClO ₂ or O ₃								
Assembly									
A	Preassembled								
Cell type									
D1	Pressure-proof, with cleaning motor								
D2	Pressure-proof, with hydro-mechanical cleaning								
D3	Pressureless, with hydro-mechanical cleaning								
P/R	pH or redox (ORP) only								
P	With pressure-retention valve								
X	Without pressure-retention valve								
Disinfection electrodes (only for Conex® DIS-D)									
AU	Gold (for cell types D1, D2 and D3 only)								
PT	Platinum (for cell types D1, D2 and D3 only)								
Other electrodes (only for Conex® DIS-PR)									
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								
RCB	Redox (ORP), ceramic diaphragm, with buffer solution								
RTB	Redox (ORP), PTFE diaphragm, with buffer solution								
RCX	Redox (ORP), ceramic diaphragm, without buffer solution								
RTX	Redox (ORP), PTFE diaphragm, without buffer solution								
X	No electrode								
Flow sensor									
QS	Flow sensor integrated								
X	No flow sensor								
Temperature sensor									
T	With Pt100								
X	No temperature sensor								
Mounting									
W	Wall-mounted								
P	Panel-mounted								
Voltage									
G	1 x 230 V, 50/60 Hz								
H	1 x 120 V, 50/60 Hz								
I	24 VDC								

Functions

Conex® DIS-PR, DIS-D

Conex® DIS controllers

	Conex® DIS-PR	Conex® DIS-D
Input parameter 1		
pH	●	
Redox (ORP)	●	
Chlorine (Cl ₂)		●
Chlorine dioxide (ClO ₂)		●
Ozone (O ₃)		●
Variant		
Flow sensor		●
Flow compensation		
Remote on/off		
Mounting options		
Wall-mounted	●	●
Panel-mounted		
Voltage		
1 x 230 V, 50/60 Hz	●	●
1 x 120 V, 50/60 Hz	●	●
24 VDC	●	●

Conex® DIS preassembled systems

	Conex® DIS-PR-A	Conex® DIS-D-A
Cell type		
Pressure-proof, with cleaning motor	●	
Pressure-proof, with hydro-mechanical cleaning	●	
Pressureless, with hydro-mechanical cleaning	●	
pH or redox (ORP) only	●	
Electrodes		
Gold (disinfection only)	●	
Platinum (disinfection only)	●	
pH	●	
Redox (ORP)	●	
Variant		
Flow sensor		●
Temperature sensor		
Pt100	●	
Voltage		
1 x 230 V, 50/60 Hz	●	●
1 x 120 V, 50/60 Hz	●	●
24 VDC	●	●

Technical data

Conex® DIS-PR, DIS-D

Conex® DIS controllers and preassembled systems

General data



TM04 1822 1108



TM04 1819 1108

Electronics	Powerful 16-bit microprocessor
Display	One-line display
Indication mode	Measured value as a physical variable
Controllers	PI
	250 V max. load 1 A
Relay output	<ul style="list-style-type: none"> • Limit monitor, pulse-pause controller or pulse-frequency controller • Alarm relay (change-over contact)
Current output	<ul style="list-style-type: none"> One analog output (0-20 mA or 4-20 mA); max. load: 400 Ohm: • continuous controller or • measured value
Temperature compensation	Manually or automatically by Pt100 temperature sensor, measuring range 0 to 100°C (Conex® DIS-PR only)
Enclosure class	Wall-mounted: IP 65
Permissible temperature	Operation: 0 to 50°C Storage: -20 to +65°C
Permissible relative air humidity	Max. 90% (non-condensing)
Mains voltage	230/240 V -10 %/+10 %, (50/60 Hz) or 115/120 V -10 %/+10 %, (50/60 Hz) or 24 VDC
Power consumption	Approx. 10 VA
Weight	Approx. 1 kg

Measuring parameters

	Possible measuring ranges *	Conex® DIS-PR	Conex® DIS-D
Chlorine (Cl_2) chlorine dioxide (ClO_2) ozone (O_3)	0.00 - 2.00 mg/l 0.0 - 20.0 mg/l * *		●
pH	pH 0.0 - 14.00 pH 2.0 - 12.00 pH 5.00 - 9.00	●	
Redox (ORP)	0 - 1000 mV 0 - 1500 mV	●	

*) As regards preassembled systems, the lower limit of the measuring range can be different, depending on the type of measuring cell.

* *) For ozone, the measuring range is limited to max. 5.00 mg/l

Control functions

Setpoint	Adjustable within the measuring range, with the resolution of the measured value
Alarm setpoints	Adjustable within the measuring range
Hysteresis	0 to 50 % of the measuring range limit value
Control response	Pulse-pause or pulse-frequency control (P, PI), limit monitor
Proportional band, X_P (pulse-pause controller, pulse-frequency controller, continuous controller)	Adjustable from 0.0 to 3000 % resolution 0.1 % for range 0.1 to 100.0 % resolution 1 % for range 101 to 3000%
Reset time, T_N (pulse-pause controller, pulse-frequency controller, continuous controller)	Adjustable from 0 to 3000 s, resolution 1 s
Control direction	Adjustable: Upward or downward control
Pulse + pause time (pulse-pause controller)	Adjustable from 1 to 100 s, resolution 1
On-time, T_{\min} (pulse-pause controller)	Initial pulse adjustable between 0.1 and 10.0 s, resolution 0.1 s
Max. frequency (pulse-frequency controller)	Adjustable from 1 to 220 pulses/min., one pulse width = 50 ms
Continuous controller	0-20 mA or 4-20 mA

Technical data

Conex® DIS-PR, DIS-D

Dimensions

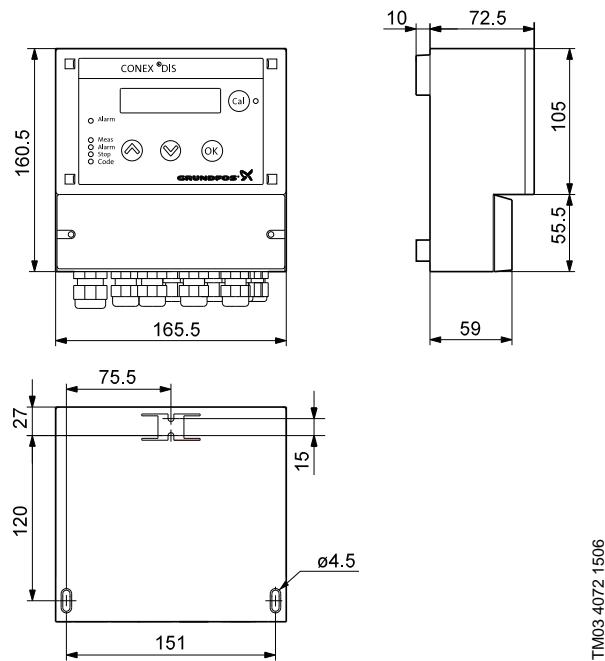


Fig. 4 Dimensions, Conex® DIS-PR and Conex® DIS-D controllers

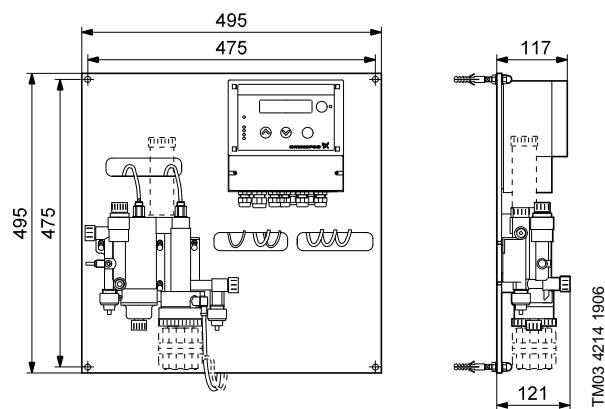


Fig. 5 Dimensions, Conex® DIS-D preassembled system for Cl₂, ClO₂ or O₃

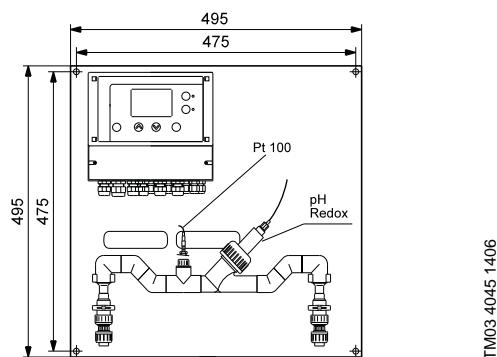


Fig. 6 Dimensions, Conex® DIS-PR preassembled system for pH or redox (ORP)

Product selection

Conex® DIS-PR, DIS-D

Conex® DIS controllers

Controller	Voltage	Controller mounting	Enclosure material	Enclosure class	Input parameter			Variant	Type designation	Product number
					1	2	3		Type designation	
	24 VDC 115/220 V 230/240 V	Panel-mounted Wall-mounted	Noryl (enclosure) ABS (sensor interface)	IP 65	IP 54 (enclosure), IP65 (sensor interface)	Chlorine (Cl_2), chlorine dioxide (ClO_2) or ozone (O_3)	pH Redox (ORP) Hydrogen peroxide (H_2O_2) Peracetic acid (PAA) Fluoride (F^-) Conductivity, conductive Conductivity, inductive	pH Redox (ORP) Fluoride (F^-) Redox (ORP)	Flow compensation	
Conex® DIS-PR	● ● ●	● ● ● ● ● ●	● ● ●	● ● ●	● ● ● ● ● ●				DIS-PR, 1P/R, W-I DIS-PR, 1P/R, W-H DIS-PR, 1P/R, W-G	96609124 (347-2000-10001) 96609123 (347-2000-10002) 96609122 (347-2000-10000)
Conex® DIS-D	● ● ●	● ● ● ● ● ●	● ● ●	● ● ●					DIS-D, 1-D, W-I DIS-D, 1-D, W-H DIS-D, 1-D, W-G	96622394 (346-2000-10001) 96622393 (346-2000-10002) 96622392 (346-2000-10000)

Product selection

Conex® DIS-PR, DIS-D

Conex® DIS preassembled systems

Controller	Voltage	Cell type	Electrode		Sensor	Type designation	Product number
			1	2			
Conex® DIS-PR-A	24 VDC	D1, pressure-proof with cleaning motor					
	115/120 V	D2, pressure-proof with hydro-mechanical cleaning	●		●	DIS-PR-A, P/R-PCB-X-T, W-I	96622812 (314-177-10012)
	230/240 V	D3, pressureless with hydro-mechanical cleaning	●		●	DIS-PR-A, P/R-PCB-X-X, W-I	96622817 (314-177-10015)
		pH or redox (ORP) only			●	DIS-PR-A, P/R-RCB-X-X, W-I	96622825 (314-177-10021)
		With pressure-retention valve			●	DIS-PR-A, P/R-RCB-X-T, W-I	96622822 (314-177-10018)
		Without pressure-retention valve			●	DIS-PR-A, P/R-PCB-X-T, W-H	96622811 (314-177-10011)
		Gold (Cl ₂ , ClO ₂ , O ₃) (disinfection)	●		●	DIS-PR-A, P/R-PCB-X-X, W-H	96622815 (314-177-10014)
		Platinum (Cl ₂ , ClO ₂ , O ₃) (disinfection)			●	DIS-PR-A, P/R-RCB-X-T, W-H	96622821 (314-177-10017)
		Fluoride (F ⁻)			●	DIS-PR-A, P/R-RCB-X-X, W-H	96622824 (314-177-10020)
		pH ceramic diaphragm			●	DIS-PR-A, P/R-PCB-X-T, W-G	96622810 (314-177-10004)
Conex® DIS-D-A		Redox (ORP) ceramic diaphragm			●	DIS-PR-A, P/R-PCB-X-X, W-G	96622814 (314-177-10003)
		Flow sensor			●	DIS-PR-A, P/R-RCB-X-T, W-G	96622820 (314-177-10008)
		Temperature sensor			●	DIS-PR-A, P/R-RCB-X-X, W-G	96622823 (314-177-10002)
					●	DIS-D-A, D1-P-AU-QS-X, W-I	96622525 (314-336-10008)
						DIS-D-A, D1-P-AU-X-X, W-I	96622531 (314-336-10014)
					●	DIS-D-A, D1-P-PT-QS-X, W-I	96622528 (314-336-10011)
					●	DIS-D-A, D1-P-PT-X-X, W-I	96622535 (314-336-10017)
					●	DIS-D-A, D2-P-AU-QS-X, W-I	96622724 (314-936-10008)
					●	DIS-D-A, D2-P-PT-QS-X, W-I	96622727 (314-936-10011)
					●	DIS-D-A, D3-X-AU-QS-X, W-I	96622666 (314-636-10006)

Product selection

Conex® DIS-PR, DIS-D

Controller	Voltage	Cell type	Electrode		Sensor	Type designation	Product number
			1	2			
24 VDC	230/240 V	D1, pressure-proof with cleaning motor D2, pressure-proof with hydro-mechanical cleaning D3, pressureless with hydro-mechanical cleaning pH or redox (ORP) only	With pressure-retention valve Without pressure-retention valve	Gold ($\text{Cl}_2, \text{ClO}_2, \text{O}_3$) (disinfection) Platinum ($\text{Cl}_2, \text{ClO}_2, \text{O}_3$) (disinfection)	Fluoride (F^-) pH ceramic diaphragm Redox (ORP) ceramic diaphragm	Flow sensor Temperature sensor	DIS-D-A, D1-P-PT-X-X, W-H 96622533 (314-336-10005)
	●	●	●	●		●	DIS-D-A, D2-P-AU-QS-X, W-H 96622723 (314-936-10004)
	●	●	●	●		●	DIS-D-A, D2-P-PT-QS-X, W-H 96622726 (314-936-10005)
	●	●	●	●		●	DIS-D-A, D3-X-AU-QS-X, W-H 96622665 (314-636-10005)
	●	●	●	●		DIS-D-A, D3-X-AU-X-X, W-H 96622671 (314-636-10002)	
	●	●	●	●		●	DIS-D-A, D3-X-PT-QS-X, W-H 96622668 (314-636-10008)
	●	●	●	●		●	DIS-D-A, D3-X-PT-X-X, W-H 96622674 (314-636-10003)
	●	●	●	●		●	DIS-D-A, D1-P-AU-QS-X, W-G 96622523 (314-336-10006)
Conex® DIS-D-A	●	●	●	●		DIS-D-A, D1-P-AU-X-X, W-G 96622529 (314-336-10002)	
	●	●	●	●		●	DIS-D-A, D1-P-PT-QS-X, W-G 96622526 (314-336-10009)
	●	●	●	●		DIS-D-A, D1-P-PT-X-X, W-G 96622532 (314-336-10003)	
	●	●	●	●		●	DIS-D-A, D2-P-AU-QS-X, W-G 96731991 (314-936-10002)
	●	●	●	●		●	DIS-D-A, D2-P-PT-QS-X, W-G 96622725 (314-936-10003)
	●	●	●	●		●	DIS-D-A, D3-X-AU-QS-X, W-G 96622664 (314-636-10004)
	●	●	●	●		●	DIS-D-A, D3-X-AU-X-X, W-G 96622670 (314-636-10000)
	●	●	●	●		●	DIS-D-A, D3-X-PT-QS-X, W-G 96622667 (314-636-10007)
	●	●	●	●		●	DIS-D-A, D3-X-PT-X-X, W-G 96622673 (314-636-10001)

Cables

Description	DIS		Product number
	DIS-D	DIS-PR	
Special cable, 1 metre, coaxial, single screening, N screw plug for pH, redox (ORP) or reference electrode	●	●	96609182 (321-252)
Special cable, 3 metres, coaxial, single screening, N screw plug for pH, redox (ORP) or reference electrode	●	●	96609183 (321-250)
Special cable, 10 metres, coaxial, single screening, N screw plug for pH, redox (ORP) or reference electrode*		●	96701441 (321-250/10)
Special cable, 25 metres, coaxial, single screening, N screw plug for pH, redox (ORP) or reference electrode*		●	95703576 (321-250/25)

* If the length of the cable between controller and electrode exceeds 3 metres, an impedance converter is required.

Buffer solutions

for pH and redox (ORP)

Description	pH	Redox (ORP)	Product number
Buffer solutions for calibrating the pH single-rod probes 1 set per 100 ml for pH 4.01, 7.00 or 9.18	●	96609165 (549-050)	
Buffer solutions for checking the redox (ORP) single-rod probes or electrodes, 100 ml (+220 mV)	●	96609166 (549-051)	



Fig. 7 Buffer solutions

Impedance converter

for pH and redox (ORP)

Description	pH	Redox (ORP)	Product number
Impedance converter for pH or redox (ORP) measurement. If the length of the cable between controller and electrode exceeds 3 metres, the impedance converter is required.	●	●	95704730 (336-312)

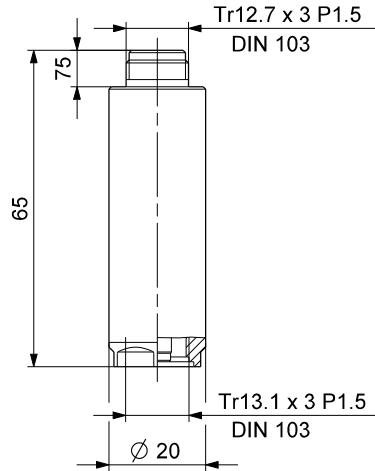


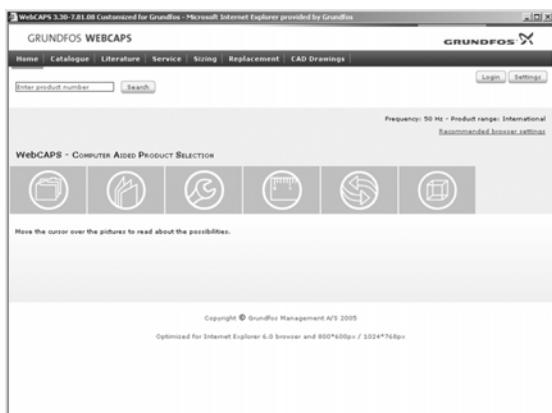
Fig. 8 Dimensions, Impedance converter

For more accessories, please see the separate Data Booklet "Measurement and control accessories".

Further product documentation

Conex® DIS-PR, DIS-D

WebCAPS



WebCAPS is a **Web-based Computer Aided Product Selection** program available on www.grundfos.com.

WebCAPS contains detailed information on more than 185,000 Grundfos products in more than 20 languages.

In WebCAPS, all information is divided into 6 sections:

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

This screenshot shows the Grundfos WebCAPS Catalogue section. It features a search interface with fields for Product name, Phase, Voltage, and Shaft rev/min. Below the search bar is a chart showing flow vs. head for a specific pump model. To the right, there is a detailed product card for the CR 10 pump, listing its description, value, product number, EAN number, technical data, and options.

Catalogue

This section is based on fields of application and pump types, and contains

- 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.

This screenshot shows the Grundfos WebCAPS Literature section. It features a search interface with fields for Product type, Language, and Search. Below the search bar is a large image of various pump models. To the right, there is a detailed product card for the CR 10 pump, listing its description, value, product number, EAN number, technical data, and options.

Literature

In this section you can access 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, etc.

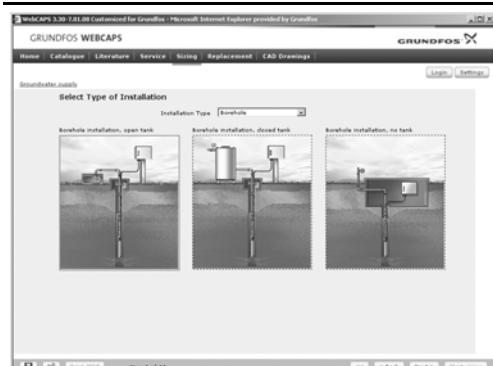
This screenshot shows the Grundfos WebCAPS Service section. It features a search interface with fields for Product No., Product name, Phase, and Pump version. Below the search bar is a detailed diagram of a pump assembly with various part numbers labeled. To the right, there is a detailed product card for the CR 10 pump, listing its description, value, product number, EAN number, technical data, and options.

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, this section contains service videos showing you how to replace service parts.

Further product documentation

Conex® DIS-PR, DIS-D



Sizing

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

- 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.

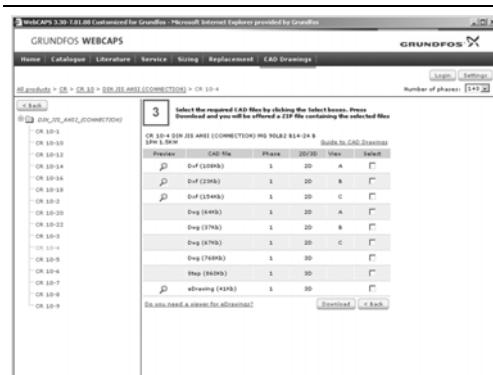


Replacement

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. 9 WinCAPS CD-ROM

WinCAPS is a **Windows-based Computer Aided Product Selection** program containing detailed information on more than 185.000 Grundfos products in more than 20 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 CD-ROM and updated once a year.

BE>THINK>INNOVATE>

Being responsible is our foundation
Thinking ahead makes it possible
Innovation is the essence

96812330 0110

Repl. 96812330 1108

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Subject to alterations.

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