Oxiperm® Pro

Safe, reliable, on-site generation and dosing of chlorine dioxide for water disinfection

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1. Product introduction

Introduction

Oxiperm Pro systems produce chlorine dioxide using dilute solutions of sodium chlorite ($NaClO_2$ 7.5 %) and hydrochloric acid (HCl 9 %). The systems are available in four size ranges, producing a maximum of 5, 10, 30 and 55 g/h of chlorine dioxide, respectively. The largest unit is capable of generating chlorine dioxide in an amount sufficient to treat up to 660 gpm (150 m³/h) of potable water at the maximum admissible concentration of 0.8 mg/l ClO_2. Chlorine dioxide is produced on demand from diluted solutions using sodium chlorite/hydrochloric acid.

The chlorine dioxide solution produced is stored in either an integrated or external batch tank, while the required addition of the disinfectant to the water line is accomplished via either an integrated or external dosing pump.

Chlorine dioxide is highly effective against a wide variety of pathogens. Additionally, it demonstrates a prolonged residence time in piping systems, eliminating the requirement for re-dosing downstream.

A significant advantage of chlorine dioxide over other disinfectants is its effectiveness against biofilms. Biofilm is a slimy layer on the inside of water pipes or on process equipment, where pathogens build up and reproduce. Chlorine dioxide destroys the existing biofilm, thus removing a primary area for the growth of pathogens, while preventing recurrent biofilm buildup.

Applications

Oxiperm Pro OCD-162-5 and -10 systems are designed for small or medium-sized systems with water flows up to 110 gpm (25 m³/h). Oxiperm Pro OCD-162-30 and -60 systems are suited for medium or large-sized systems; and disinfection tasks in waterworks or applications in the food and beverage industry. All four units are ideal for use in cooling tower or chilled loop disinfection for systems of various sizes.

Ideal applications for Oxiperm Pro include combating pathogens such as legionella pneumophilia (cause of Legionaires disease) in building, cooling tower, industrial and municipal water systems.

No chance for pathogens

Legionella are rod-shaped bacteria that enter drinking water systems and start to reproduce. Legionella reproduce especially quickly in temperatures between 85 °F (29 °C) and 105 °F (41 °C).

The bacteria can enter the lungs when a person inhales aerosols containing legionella while showering or in cooling tower drift. They can cause a life-threatening form of pneumonia known as legionellosis (Legionaires disease).

Biofilms are an ideal breeding ground for legionella in drinking water systems. Legionella also establish themselves in amoebae, which offer them protection against conventional disinfection methods.

Typically, disinfection is the first step of pathogen reduction within continuing operations of a drinking water installation. An ideal means of ensuring safe drinking water is to use chlorine dioxide as a disinfectant.

In addition to its use as a primary disinfectant for potable and process water, chlorine dioxide is often used in the food and beverage industries for CIP (clean in place) and bottle washing. This is due to the fact that the use of chlorine dioxide does not alter the smell or taste of the treated water. This results in the elimination of concerns having to do with alteration of the food product's characteristics.

Effectiveness diagram

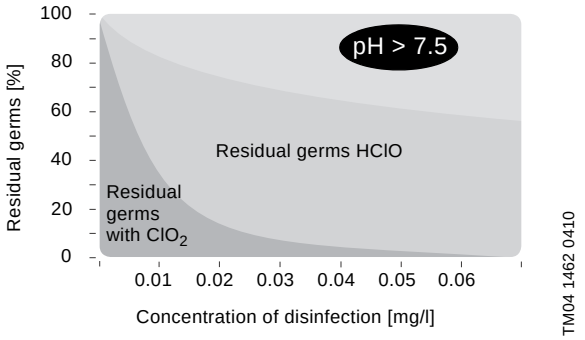

Fig. 1 Effectiveness diagram: HCIO = hypochlorous acid, ClO_2 = chlorine dioxide

Features and benefits

Compact system
Oxiperm Pro can also be installed in tight or restrictive spaces, as operation and maintenance are performed exclusively from the front.

Low operating costs
This intelligent method for producing chlorine dioxide functions with minimal need for chemicals and thus saves up to 67 % of hydrochloric acid over other systems on the market with comparable capacity. In comparison with thermal disinfection, up to 90 % of the operating costs can be saved.

Stable product solution
With a chlorine dioxide concentration of 2 g/l (2000 ppm), the product solution can be stored for several days. The low concentration makes the solution safe to handle.

Integrated measurement value logging device (optional)
The chlorine dioxide control unit can be easily retrofitted, as the connection for a measuring device for chlorine dioxide as well as pH or Redox (measuring cell) is already in place in the system control.

Little installation work
Optional accessories simplify assembly and start-up. In fact, the system can be connected and taken into operation without even interrupting the building's water supply. This represents a decisive cost factor when it comes to decontaminating hospitals or nursing homes.

Robust design
Oxiperm Pro's robust design ensures high operational reliability and lower maintenance costs. Furthermore, the newly designed control system makes for straightforward and user-friendly operation and opens up a number of application areas for discrete disinfection of drinking water installations.

Wide field of applications
Besides continuous operation, the optional external batch tank allows the use of Oxiperm Pro for shock disinfection, in cleaning applications, such as CIP, or for multi-point injection.

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Fig. 2 Oxiperm Pro systems

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2. Components

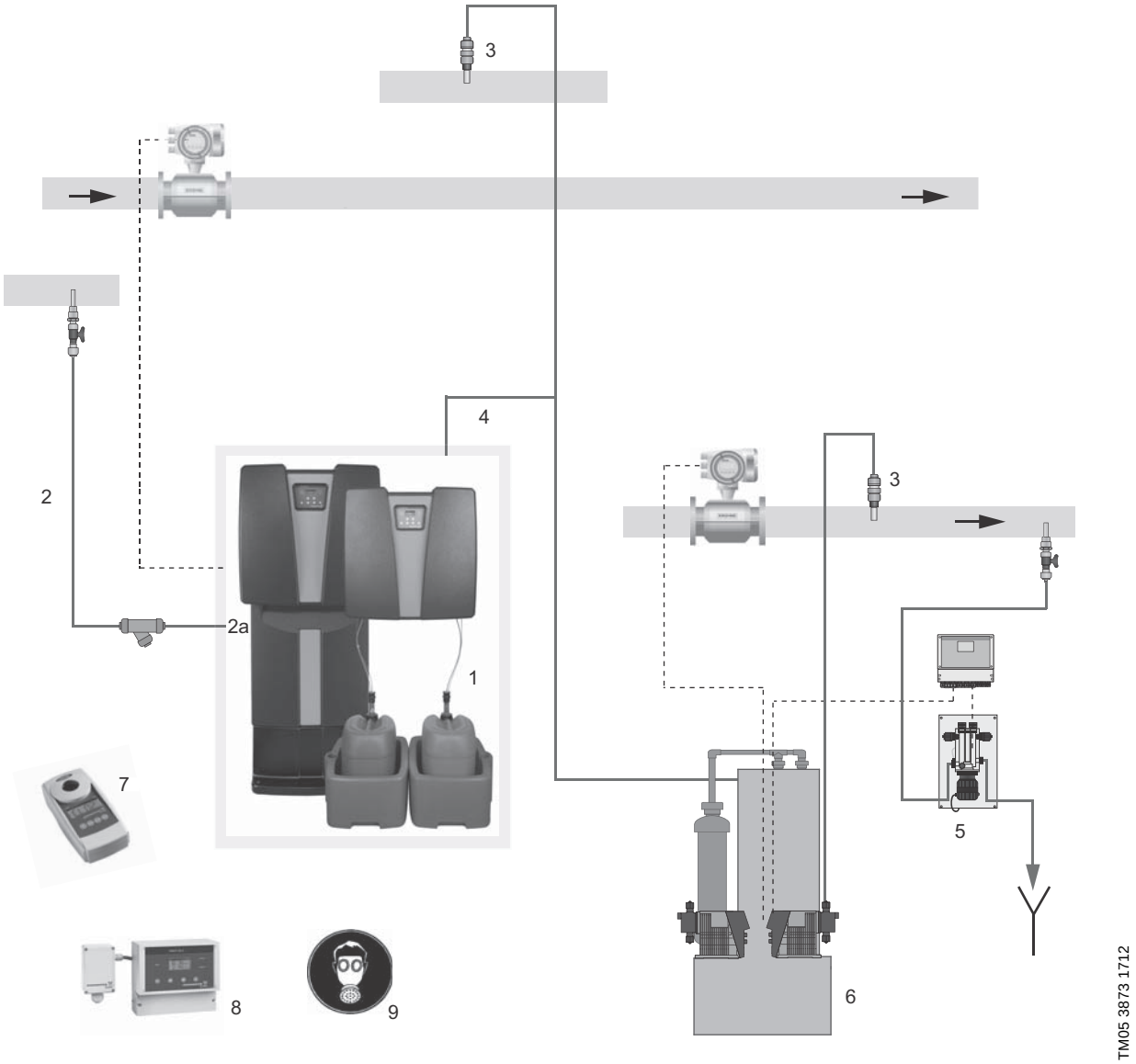

Fig. 3 Components of an installation for chlorine dioxide preparation

Checklist of installation components

No.	Component	Page
	Basic unit	
1	Oxiperm Pro chlorine dioxide preparation system	9
	Dilution water for Oxiperm Pro	
2	PE hose 1/4" x 3/8" for dilution water connection	13
2a	Alternative 1/2" NPT connection	19
	Dosing of chlorine dioxide	
3	Injection valve for the direct dosing of chlorine dioxide into the water pipe Inlet: 1/4", 3/8", 1/2" tube; 1/2" NPT Discharge: 1/2" NPT	19
4	ClO_2 line 162 5 and 10: 1/8" ID x 1/4" OD tubing connection 162 30 and 60: 1/4" ID x 3/8" OD tubing connection	13
	1/2" NPT connections available for all sizes	19
	Chlorine dioxide measurement	
5	ClO_2 measuring cell, 3/8" x 1/2" tubing inlet/discharge	20
6	External batch tanks	
7	Hand photometer with reagents for calibrating ClO_2 controller	20
	Safety equipment	
8	Gas warning unit	20
9	Personal protective equipment (gloves, apron, goggles), warning signs	
	Maintenance	
	Annual maintenance kit	

3. Identification

Type key

Example: Type key Oxiperm Pro OCD-162-30-P/H3

Oxiperm Pro		**OCD-162**	**-30**	**-P**	**/H**	**3**
Max. Capacity						
5	5 g/h					
10	10 g/h					
30	30 g/h					
60	55 g/h					
Operation mode						
D	integrated mechanical dosing pump, DMX					
P	integrated Digital Dosing pump DDI					
S	integrated SMART Digital Dosing pump DDA					
N	without integrated ClO2 dosing pump					
Supply voltage						
G	230-240 V / 50-60 Hz					
H	110-120 V / 50-60 Hz					
Suction line						
	for 7.9 gal (30 liter) chemical tank, with 4.3 ft (1.3 m) of tubing					
1	for 15.6 gal (60 liter) chemical tank, with 9.8 ft (3.0 m) of tubing					
2	for 52.8 gal / 264.2 gal (200 liter / 1000 liter) chemical tank, with 19.7 ft (6.0 m) of tubing					
3	for 55 gal drum, with 9.8 ft (3.0 m) of tubing					

4. Construction

Oxiperm Pro OCD-162-5 and OCD-162-10

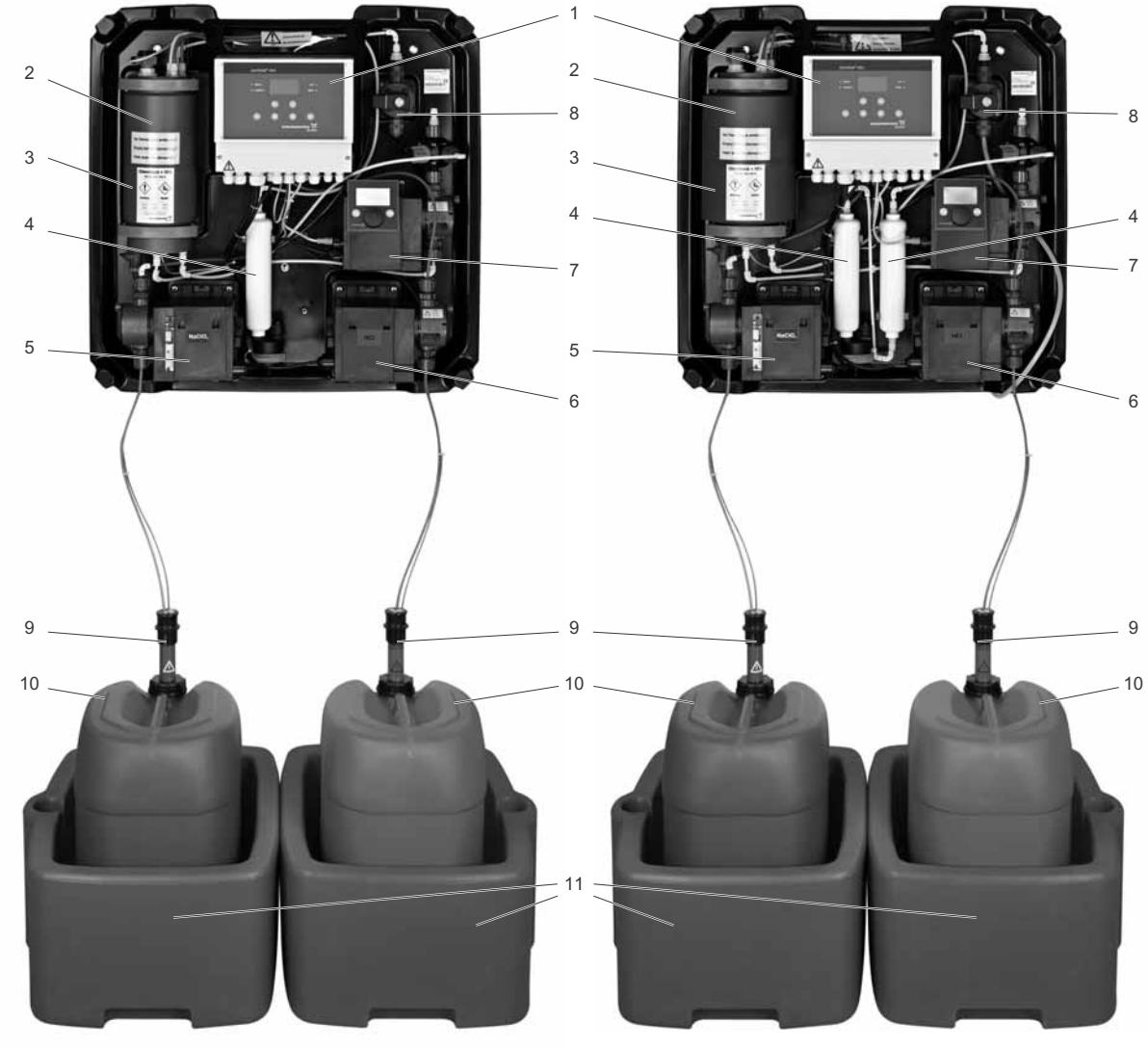

Fig. 4 Oxiperm Pro OCD-162-5 (left) and Oxiperm Pro OCD-162-10 (right) with open housing

Legend

1	Measuring and control unit
2	Reaction tank
3	Reservoir tank
4	Adsorption filter
5	Dosing pump, 7.5% Sodium Chlorite
6	Dosing pump, 9% Hydrochloric Acid
7	Chlorine Dioxide dosing pump
8	Solenoid valve for dilution water
9	Suction lance
10	Chemical container (not in standard delivery)
11	Collecting tray (not in standard delivery)

Oxiperm Pro OCD-162-30 and OCD-162-60

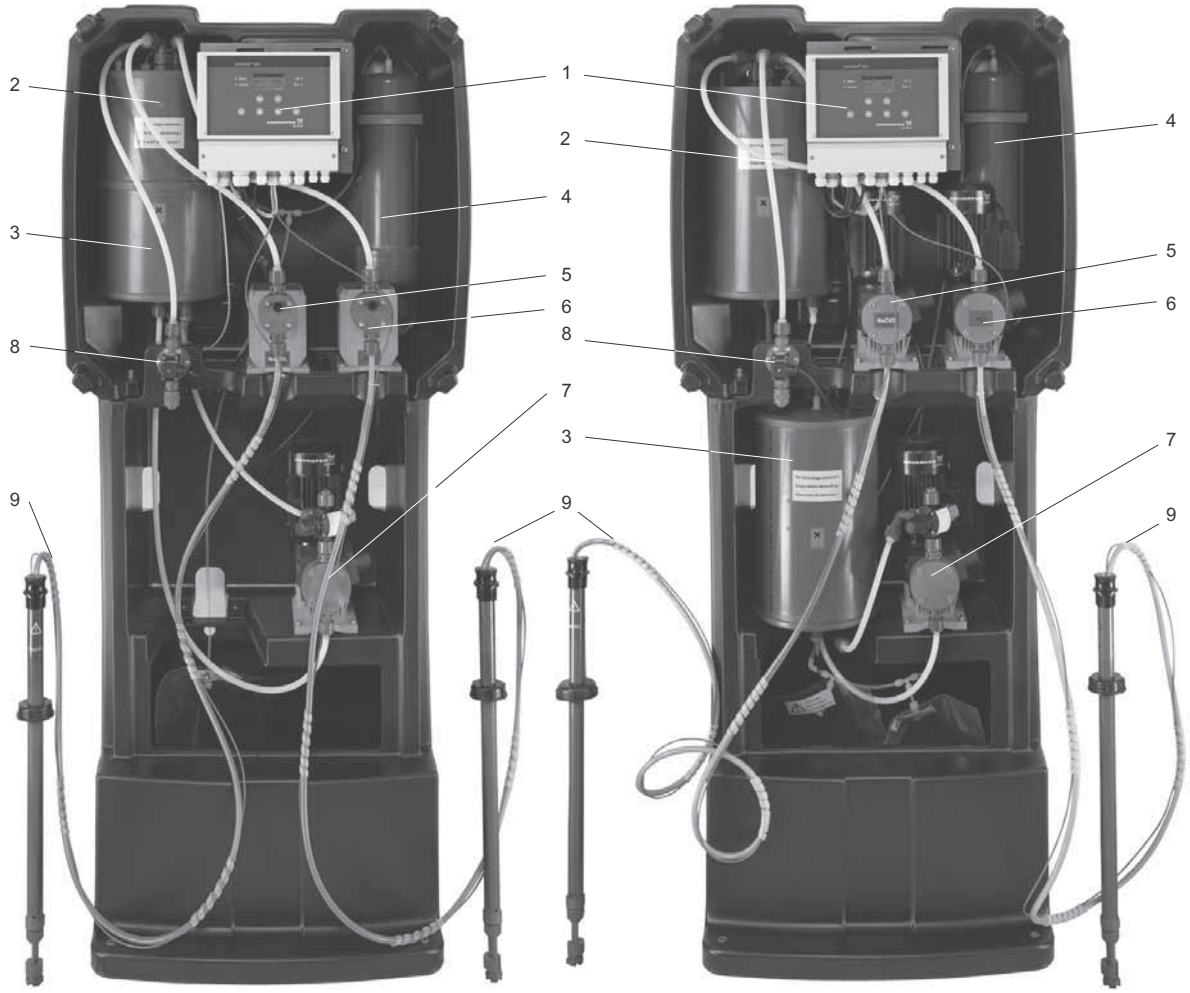

Fig. 5 Oxiperm Pro OCD-162-30 (left) and Oxiperm Pro OCD-162-60 (right) with open housing

Legend

1	Measuring and control unit
2	Reaction tank
3	Reservoir tank
4	Adsorption filter
5	Dosing pump, 7.5% Sodium Chlorite
6	Dosing pump, 9% Hydrochloric Acid
7	Chlorine Dioxide dosing pump
8	Solenoid valve for dilution water
9	Suction lance

5. Installation

Preparation

One dosing point

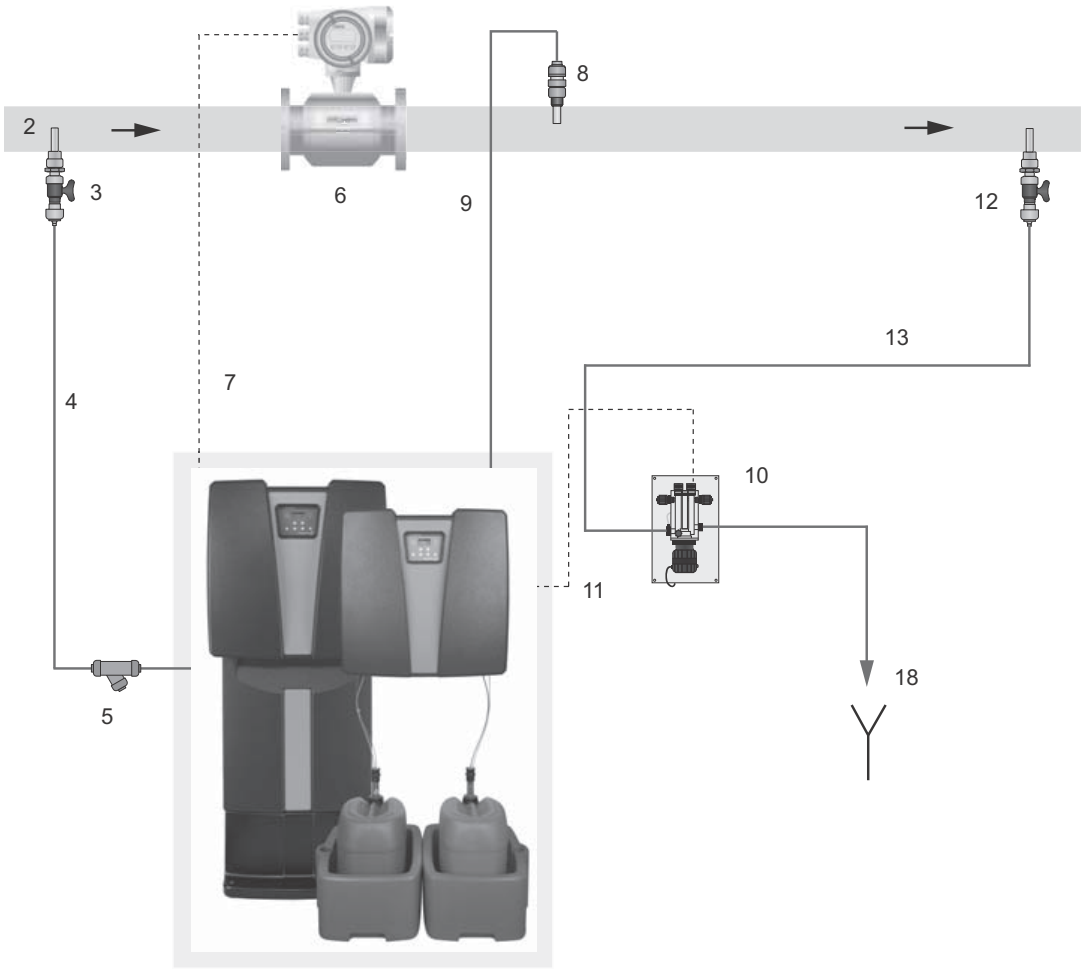

Fig. 6 Oxiperm Pro basic module with optional measuring cell for chlorine dioxide in cold water

Legend

1	Oxiperm Pro OCD-162-5, -10, -30, or 60
2	Main water pipe
3	Dilution water extraction point
4	Dilution water pipe
5	Y-Strainer
6	Flow measurement
7	Signal line flow measurement
8	Injection unit
9	Dosing line
10	Chlorine dioxide measuring cell
11	Signal line chlorine dioxide measurement
12	Sample water extraction point (minimum distance of approx. 17 ft (5 m) from ClO_2 injection point)
13	Sample water line to measuring cell
18	Sample water drain line

Several dosing points with batch tank

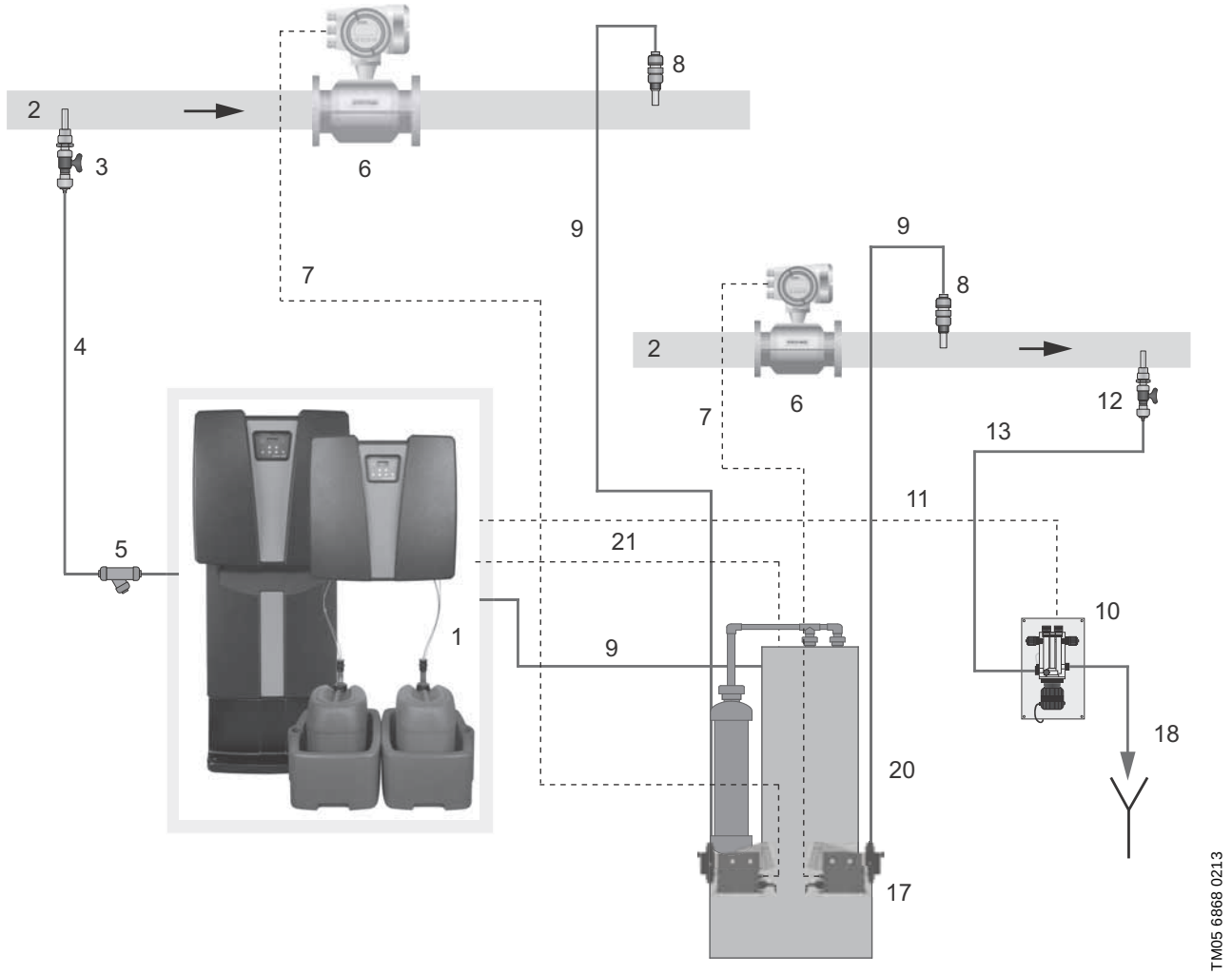

Fig. 7 Oxiperm Pro basic module with additional dosing pumps on a batch tank and optional chlorine dioxide measurement

Legend

1	Oxiperm Pro
2	Main water pipe
3	Dilution water extraction point
4	Dilution water pipe
5	Y-Strainer
6	Flow measurement
7	Signal line flow measurement
8	Injection unit
9	Dosing line
10	Chlorine dioxide measuring cell
11	Signal line chlorine dioxide measurement
12	Measuring water extraction point (min. distance to injection unit approx. 17 ft (5 m))
13	Sample water pipe
17	Additional ClO_2 dosing pumps
18	Sample water drain
20	Batch tank
21	Signal line batch tank

6. Technical data

Chlorine dioxide generator			OCD model			
			162-5	162-10	162-30	162-60
ClO_2 production	[lbs/day (grams/hr)]		0.26 (5)	0.53 (10)	1.59 (30)	2.9 (55)
ClO_2 concentration	[ppm]		2000			
Max continuous ClO_2 dosing feed rate* (i.e. max. ClO_2 pump output at 20mA)	[gal/hr (l/hr)]		0.66 (2.5)	1.32 (5)	3.96 (15)	7.26 (27.5)
Consumption data	[gal/hr (l/hr)]	$NaClO_2$	0.044 (0.17)	0.097 (0.37)	0.232 (0.88)	0.41 (1.57)
		HCl	0.036 (0.14)	0.079 (0.3)	0.227 (0.86)	0.39 (1.49)
		H_20	0.607 (2.3)	1.268 (4.8)	3.909 (14.8)	7.87 (29.79)
Precursor concentration by weight		HCl	9 %			
		$NaClO_2$	7.5 %			
Precursor safety equipment			Capacity monitored via level control			
Temperature range	[°F (°C)]	Ambient	40 to 95 °F (5 to 35 °C)			
		Dilution H_20	50 to 85 °F (10 to 30 °C)			
		HCl & $NaClO_2$	50 to 95 °F (10 to 35 °C)			
Dilution water pressure	[psi (bar)]		44 to 87 psi (3 to 6 bar)			
Admissible relative air humidity			max. 80 %, not condensing			
Total volume - reaction tank	[gal (liters)]		0.26 (1.0)	0.48 (1.8)	1.6 (6.1)	3.5 (13.4)
Total volume - reservoir tank (up to max level alarm)	[gal (liters)]		0.26 (1.0)	0.48 (1.8)	1.85 (7.0)	3.67 (13.9)
Filling volume - reaction tank	[gal (liters)]		0.23 (0.87)	0.44 (1.67)	1.46 (5.52)	3.16 (11.96)
Filling volume - reservoir tank (up to max level alarm)	[gal (liters)]		0.23 (0.87)	0.44 (1.67)	1.72 (6.5)	3.43 (13.0)
Materials of construction	System rack		Polypropylene			
	Fastening sleeves		Stainless steel			
	Solenoid valve		PVC			
	Reaction/reservoir tank		PVC			
	Internal hoses		PTFE			
	Gaskets		FPM			
Connections	ClO_2 dosing line		1/8" ID x 1/4" OD tube		1/4" ID x 3/8" OD tube	
	Dilution water		1/4" ID x 3/8" OD tube			
	NPT adaptor		1/2" NPT connector - see *8. Accessories* on page 19.			
Full text menu control	Commissioning		Yes			
	Operation parameters		Yes			
	Flush / rinsing		Yes			
	Maintenance		Yes			
Approvals	Electrical safety		Conforms to ANSI/UL 61010-1			
	NSF 61 PWT		Chlorine Dioxide Generator model numbers OCD-162-5, OCD-162-10, OCD-162-30 and OCD-162-60 are certified to NSF 61-2011 requirements found in clause 3.3.2. (a) These chemical generators are certified for use exclusively at public water treatment facilities. Products installed at public water treatment facilities are considered to be used in high flow applications. (b) Certification of this product has been performed to the health effects requirements of NSF/ANSI 61, which assesses the acceptability of potential extractants from the chemical generator. No evaluation has been performed on the strength or efficacy of the chemical generated under this certification. The generated chemical has not been certified by UL to NSF/ANSI 60. The operation, maintenance, and the consistency of the source ingredients may affect the performance of the chemical generator and by-products in the chemical being generated. Consult the manufacturer's product literature for proper usage.			

*Derated suggested maximum pump output for continuous ClO_2 feed.

Electrical and electronic data

Chlorine dioxide generator		OCD model			
		162-5	162-10	162-30	162-60
Mains connection		110/120 V/ 50-60 Hz (230/240 V / 50-60Hz also available)			
Enclosure rating		IP65			
Power consumption		50 VA		180 VA	320 VA
Analog inputs		input 0(4)-20 mA (water/flow meter), Load: 50 Ω			
		ClO_2 controller, pH/ORP and temperature sensor			
Digital inputs		contact/pulse flow meter (min. 3 pulses/min., max. 50 pulses/sec.)			
		remote Start/Stop			
		Gas warning alarm			
Analog outputs		(0)4-20mA control of ClO_2 pump			
		ClO_2 measured value (0)4-20mA			
Potential-free outputs	Alarm relay	250 V/6 A, max. max. 550 VA			
		ClO_2 Alarm (upward / downward violations)			
		Chemicals-empty signal			
		Dosing time monitoring			
		Preparation process time monitoring			
		Wire-break current output			
	Warning relay	250 V/6 A, max. max. 550 VA			
		Chemicals-low level signal			
		Maintenance / Service			

Dimensions

Oxiperm Pro OCD-162-5 and OCD-162-10

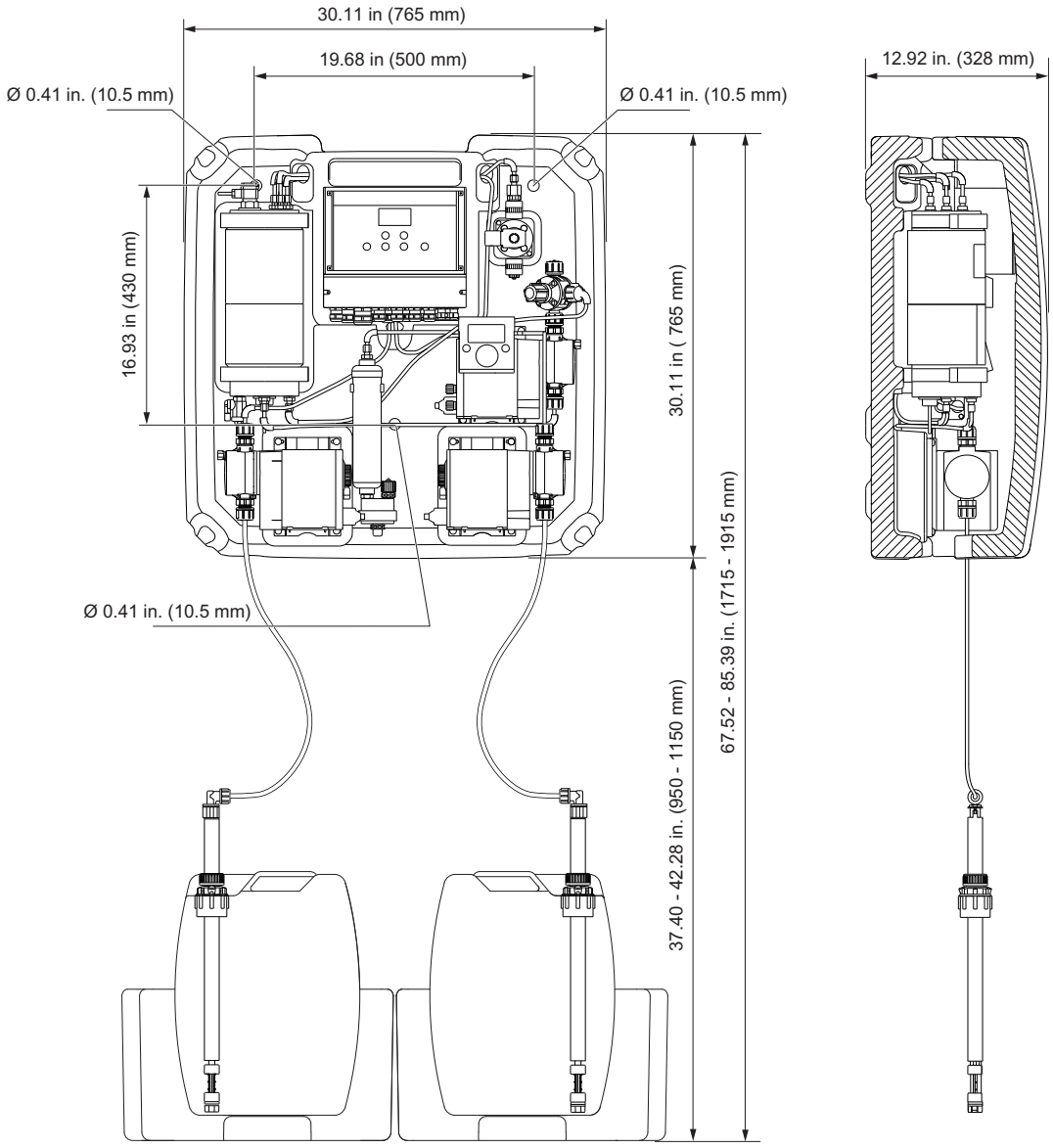

Fig. 8 Dimensional sketch, Oxiperm Pro OCD-162-5 and OCD-162-10

Oxiperm Pro OCD-162-30 and OCD-162-60

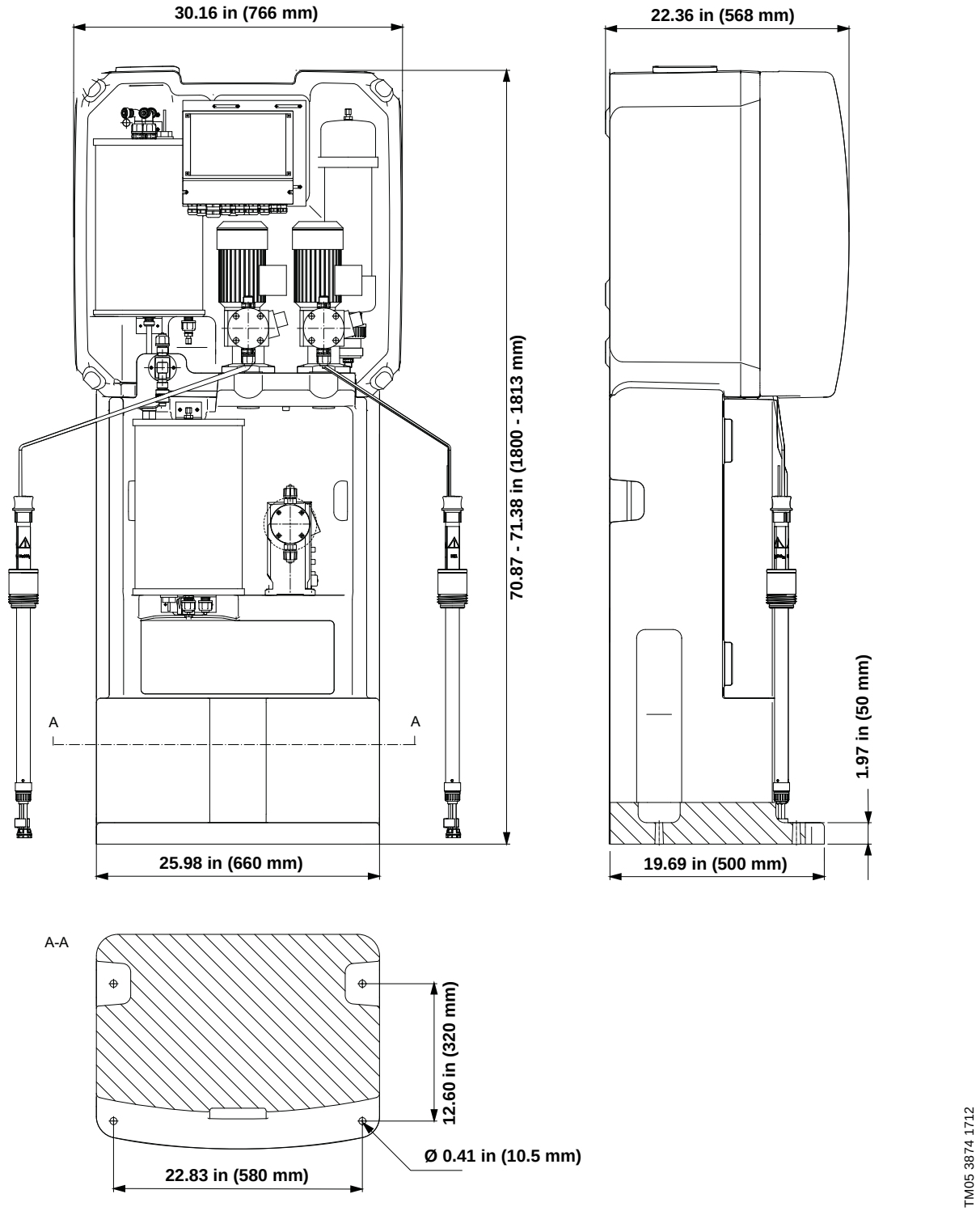

Fig. 9 Dimensional sketch, Oxiperm Pro OCD-162-30/-60

Suction lance adaptors for chemical containers

The adaptor suitable for the respective container is included with the suction lance.

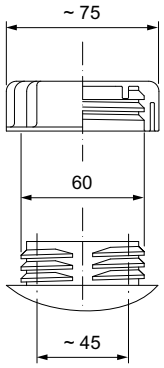

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Fig. 10 Suction lance adaptor for 30-liter container (Oxiperm Pro OCD-162-5, -10, -30)

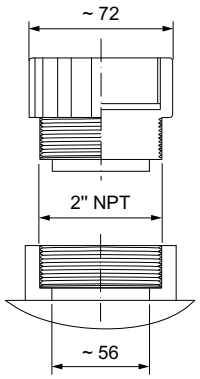

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Fig. 11 Suction lance adaptor for 55-gallon container (Oxiperm Pro OCD-162-5, -10, -30, -60)

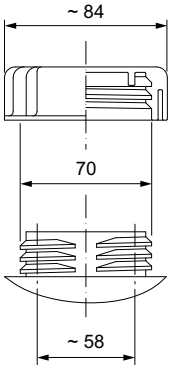

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Fig. 12 Suction lance adaptor for 60-liter container (Oxiperm Pro OCD-162-30, -60)

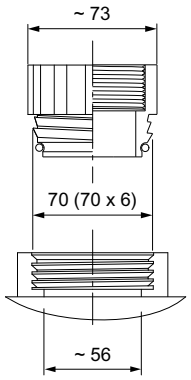

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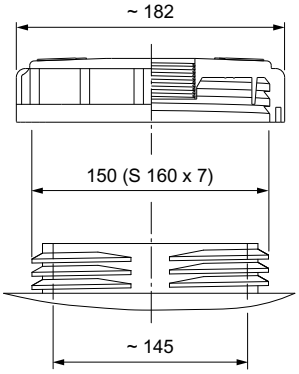
Fig. 13 Suction lance adaptor for 200-liter container (IBC) (Oxiperm Pro OCD-162-30, -60)



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Suction lance adaptor for 1000-liter container (IBC) (Oxiperm Pro OCD-162-30, -60)

7. Product selection

Preparation capacity	Back-pressure P_{max} [psi (bar)]	Consumption of components			ClO_2 dosing pump type	Weight [lbs (kg)]	Voltage / frequency	Oxiperm Pro type	Product number
		At max. capacity [gph (l/h)]		Dilution water [gph (l/h)]					
[g/h] ClO_2	60 Hz	HCl	$NaClO_2$						
5	145 (10)	0.04 (0.15)	0.04 (0.14)	0.66 (2.5)	DDA AR	58-67 (26-30)	110/120V (50-60 Hz)	OCD-162-5-S/H3	95735155
10	145 (10)	0.08 (0.31)	0.08 (0.29)	1.32 (5)	DDA AR	62-71 (28-32)		OCD-162-10-S/H3	95735163
30	145 (10)	0.23 (0.88)	0.23 (0.87)	3.91 (14.8)	DDI AR	153-155 (69-70)		OCD-162-30-P/H3	95735178
55	145 (10)	0.45 (1.71)	0.43 (1.63)	8.59 (32.5)	DDI AR	186-188 (84-85)		OCD-162-60-P/H3	95736304

Notes:
Includes suction lances for 55-gallon tank.
Batch applications require additional ClO_2 pumps and controllers for every additional injection point.

How to size Oxiperm Pro®

This is a method for determining the correct size of Oxiperm Pro unit required for a specific application.

First, accurately determine the amount of chlorine dioxide required for the application. This is usually expressed in terms of either grams or pounds per hour (or day):

Demand = Organic / Microbio + Inorganic/Metals [PPM].

Regardless of model or output, all Grundfos Oxiperm Pro chlorine dioxide generators produce a product (basically ClO_2 and water) that has a concentration of 2 grams ClO_2 per liter.

The difference between the models is the amount of solution produced per hour. The example in this section describes the relative values for each model.

For instance, the OCD 162-5 model is designed to produce 5 grams/hr of chlorine dioxide. Since the ClO_2 concentration for all units is 2 grams/l, this means that the OCD 162-5 is producing 5/2 or 2.5 liters per hour of a 2 g/l concentration.

This table illustrates this relationship for the various Oxiperm Pro generators.

Model	Can continually produce:
OCD 162-5	5g/hr ClO^2 or 2.5 l/hr of a 2 g/l solution
OCD 162-10	10 g/hr ClO^2 or 5 l/hr of a 2 g/l solution
OCD 162-30	30 g/hr ClO^2 or 15 l/hr of a 2 g/l solution
OCD 162-60	55 g/hr ClO^2 or 27.5 l/hr of a 2 g/l solution

These values represent a maximum output for each of the units.

Since it would be unusual to encounter an application that requires the exact amount of ClO_2 generated by a unit, the output must be controlled by a 4-20 mA, analog signal to the ClO_2 dosing pump.

This signal is typically generated by either a flow meter and/or instrumentation sensing the level of ClO_2 in the water to be disinfected.

A slightly oversized unit is suggested to guarantee that the application requirement can be met. The 4-20 mA signal can then be ranged accordingly.

Example:

An application requires 45 grams per hour of ClO_2.

The table in this section shows that the Oxiperm Pro model that can produce more than 45 g/hr is the OCD 162-60.

Adjust the ClO_2 dosing pump output for 20 mA to equal 45 g/hr. This would mean that the pump operating at maximum demand will provide 22.5 l/hr of a 2 g/l solution (22.5 x 2 = 45).

8. Accessories

Dosing pumps

ClO_2 dosing pumps

One pump needed for direct ClO_2 injection or transfer to a batch tank. Additional pumps required for each additional injection point.

- 100-240V, 50/60 Hz
- PVDF / PTFE / Ceramic materials of construction
- DDA inlet/discharge connections:
  U7 (0.17 x 1/4", 1/4" x 3/8" and 3/8" x 1/2" tubing)
- 1/2" NPT adaptors available as accessories
- DDI inlet/discharge connections: 1/2" NPT

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Generator size	Pump capacity	Pump model	Product number		
			Standard	Flow verification	Flow verification & measurement
162-5 and 162-10	0.00066 to 2 gph @ 232 psi	DDA 7.5-16	97722385	97722419	97722453
162-30 and 162-60	0.02 to 15.8 gph @ 145 psi	DDI 60-10	96717376	95712587	-

Note: Flow sensor requires 30 psi differential pressure.

ClO_2 pump control cables

Description	Length	Product number
4-20mA input, remote start/stop	16 ft	96609016
4-20mA output	16 ft	96632922
Alarm relay	16 ft	96609019

Multifunction valve

Back pressure/pressure relief/manual bleed-vent/ anti-siphon. Includes fittings for 1/4 in., 3/8 in. and 1/2 in. tubing.

Description	Product number
MFV-G5/8-10 PV/T U7	95730820

Injection valve

Description	Product number
PVDF/PTFE, DN8 1/2" NPT outlet, U7 inlet (U7 = 1/4", 3/8" and 1/2" tubing connections)	95730934

Connectors

Description	Product number
1/2 NPT connectors (for hard piped installations)	97702505

Instrumentation

AQC Measuring cell	Parameter 1	Parameter 2	Product number
Measuring cell AQC-D11, P-AU-X-X, QS-T-H US (Used with 162 Oxiperm Pro generator's controller)	ClO_2		98438948

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AQC measuring cell with controller		Parameter 1	Parameter 2	Product number
Panel mounted pre-assembled system (for additional ClO_2 pumps) DIA-2Q-A, D11-P-AU-PCB-QS-T, W-H US		ClO_2	pH	98386801
	Alternate ORP probe		ORP	96609162
	ORP buffer solution			96609166
	Spare ClO_2 electrode			91835242

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Conex DIA-G gas warning unit

Description	Product number
Conex DIA-G-P,CDP-B,W-J: 110/240 V, 50-60 Hz • with potentiostatic chlorine gas sensor • measuring range 0.00 to 1.00 ppm	95700854

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Full technical details available for download at Grundfos WebCAPS, linked at www.grundfos.us.

Photometer

Compact photometer for quick determination of the concentration of chlorine dioxide and chlorite at the extraction point.

Description	Product number
DIT-L photometer with case • Chlorine dioxide measuring range: 0.02 - 11.0 mg/l • Chlorite measuring range: 0.01 - 6.0 mg/l • Supplied with: 4 batteries, 1 manual, 1 Certificate of Compliance, 3 round vials with cap and gasket, 1 cleaning brush, 1 plastic stirring rod, 1 starter kit for 100 chlorine dioxide measurements	95727743
Testing reagents for the determination of chlorine dioxide, for 250 measurements:	
• DPD No. 1 tablets	95727747
• DPD No. 3 tablets	95727750
• Glycine tablets	95727752
Additional testing reagents for the determination of chlorite, for 100 measurements (not included in DIT-L starter kit):	
• DPD Acidifying tablets	98032751
• DPD Neutralizing tablets	98032752

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Suction lines

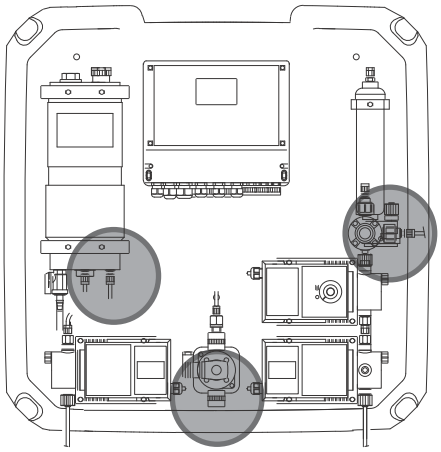
Generator size	Tank size [Gal (liter)]	Tubing connection	Material	Product number
162-5 and 162-10	208 (55)*	1/4 in. (4/6 mm)	$NaClO_2$	98163678
			HCl	98163679
162-30 and 162-60	208 (55)*	6/12 mm	$NaClO_2$	98164283
			HCl	98164286

*Included with standard generator

Connections

for	Description	Product number
PTFE hose 4/6** to dosing pump (1)	Connection to multifunction valve DN 8, G 5/8	96727601 (529-442)
PTFE hose 4/6** from batch tank to external dosing pump (DDI 209)	Connection to suction side G 3/8	91835694 (529-013)
PTFE-hose 4/6** for dosing pumps (3) (OCD-162-5/-10)	T-piece (3 x 4/6**), PVDF	95714891 (526-174)
PTFE-hose 9/12* for 2 dosing pumps (3) (OCD-162-30/-60)	T-piece (3 x 9/12), PTFE	95720337 (526-177)
PTFE-hose 9/12	PVC/FKM ball valve, DN 10, with PTFE connection 9/12	95721555 (526-178)

* Note: For connection of PTFE-hose 4/6, a connection 96727601 (529-442) has to be ordered in addition.
** 4/6 mm equivalent is 1/4"



TM04 1297 2109

Fig. 14 Overview connections

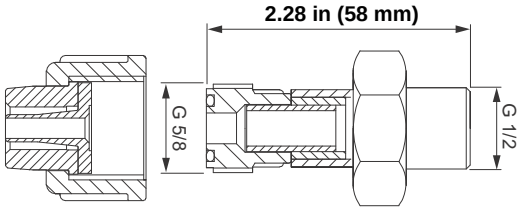


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Fig. 15 Hose connection (fig. 16) with adaptor G 1/2, G 5/8 male thread

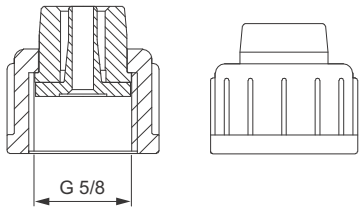

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Fig. 16 Hose connections G 5/8 female thread

Annual maintenance kits

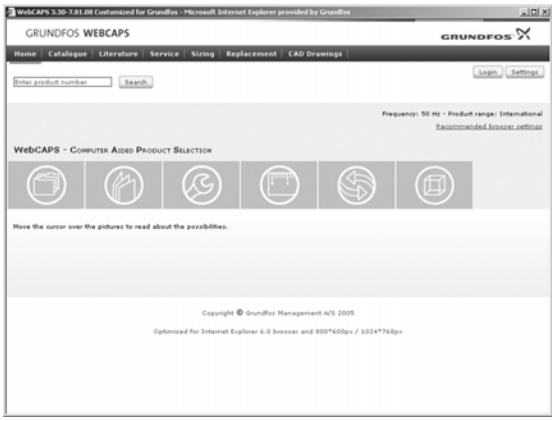
Oxiperm Pro systems with SMART Digital pumps (post June 2012)		
	System	**Kit product number**
162-5	DDA 7.5 ClO_2 pump, DDE precursor pumps	98153636
162-10	DDA 7.5 ClO_2 pump, DDE precursor pumps	98153962
162-30	DDI 60 ClO_2 pump, DDE precursor pumps	98162644
162-60	DDI 60 ClO_2 pump, DDE precursor pumps	98382087

Oxiperm Pro systems (pre-June 2012)		
	System	**Kit product number**
162-5	DDI 5.5 ClO_2 pump, DMI precursor pumps	95702445
162-10	DDI 5.5 ClO_2 pump, DMI precursor pumps	95707853
162-30	DDI 60 ClO_2 pump, DMI precursor pumps	95717916
162-60	DDI 60 ClO_2 pump, DMX precursor pumps	95717920

Note: Additional spare parts not part of the annual maintenance kit are listed in the OCD 162 Service Manual.

9. Further product documentation

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 20 languages.

In WebCAPS, all information is divided into 6 sections:

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

Catalog

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.

Literature

In this section you can access all the latest documents of a given pump, such as
- product guides/data booklets
- installation and operating instructions
- service documentation, such as Service kit catalog and Service kit instructions
- quick guides
- product brochures, etc.

Service

This section contains an easy-to-use interactive service catalog. 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.

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.
- analyze 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:

<u>2-dimensional drawings:</u>

- .dxf, wireframe drawings
- .dwg, wireframe drawings.

<u>3-dimensional drawings:</u>

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

WinCAPS

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 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.

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ECM: -

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