

# Oxiperm® 164 and 166

Automated preparation of chlorine dioxide



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# Mission

- It is our mission - the basis of our existence - to successfully develop, produce and sell high-quality pumps and pumping systems worldwide, contributing to a better quality of life and a healthy environment



Bjerringbro, Denmark



Fresno, California



Olathe, Kansas



Monterrey, Mexico



Allentown, Pennsylvania



Oakville, Ontario

- One of the 3 largest pump companies in the world
- The second largest manufacturer of submersible motors in the world
- World headquarters in Denmark
- North American headquarters in Kansas City - Manufacturing in Fresno, California
- 72 companies in 41 countries
- More than 10 million motors and pumps produced annually worldwide
- North American companies operating in USA, Canada and Mexico
- Continuous reinvestment in growth and development enables the company to **BE** responsible, **THINK** ahead, and **INNOVATE**

## Introduction

The Grundfos Oxiperm® name stands for highly effective, compact chlorine dioxide preparation systems and user-friendly, ergonomic design. Smart electronics and sensor technology combined with unique calibration technology ensure optimum precision and process reliability.

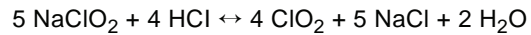
No matter which type of system you choose, the precise dosing technology, optimum component mixing and complete chemical reaction in a minimum of time enable you to generate your chlorine dioxide both reliably and precisely while at the same time reducing your costs. Compact in design and functionality, Oxiperm systems offer user-friendly operation, monitoring and maintenance: all control elements and all system components requiring regular maintenance are very easily accessible when required.

As a special feature on Oxiperm systems the whole process is visualized in two ways:

- LEDs, arranged in a clear flowchart, enable disruptions to be localized immediately and definitively and allow convenient monitoring of the operating state. All operating states and messages also appear on the plain-text display.
- Remote communication is also optionally available with this system — by connecting the bus interface to primary integration and process control systems.

## Oxiperm OCD / OCC 164

The Oxiperm 164 systems use the hydrochloric acid/ sodium chlorite method for generating chlorine dioxide:



The Oxiperm OCD-164 uses diluted components and offers a capacity range up to 2000 g/h (4.4 lb/h). The Oxiperm OCC -164 uses concentrated chemicals. The capacity range of these systems can go up to 10 kg/h (22 lb/h).

## Oxiperm OCG-166

The Oxiperm 166 system uses the chlorine gas / sodium chlorite method for generating chlorine dioxide:



In addition to cutting-edge sensor technology, these liquid/gas systems also feature a precision programmable controller with interactive graphic display. Depending on the application, Oxiperm OCG-166 allows you to select from six capacity levels of dosing quantities up to 10 kg/h (22 lb/h).

## Selection

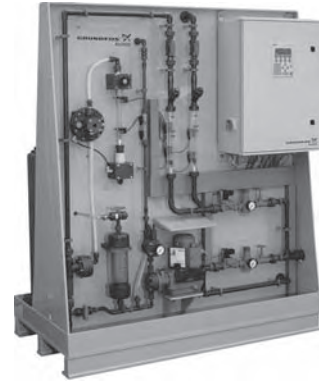
HCl / NaClO <sub>2</sub>						chlorine / NaClO <sub>2</sub>		
Diluted Oxiperm OCD 164			Concentrated Oxiperm OCC 164			Oxiperm OCG 166		
ClO <sub>2</sub> Capacity		Type	ClO <sub>2</sub> Capacity		Type	ClO <sub>2</sub> Capacity		Type
[lb/h]	[g/h]		[lb/h]	[g/h]		[lb/h]	[kg/h]	
0.066	30	164-030D	0.33	150	164-150C	1.65	0.75	166-007G
0.26	120	164-120D	1.00	450	164-450C	3.3	1.5	166-015G
0.48	220	164-220D	1.65	750	164-750C	5.5	2.5	166-025G
0.77	350	164-350D	2.86	1,300	164-1300C	11	5	166-050G
1.54	700	164-700D	5.50	2,500	164-2500C	16.5	7.5	166-075G
2.20	1,000	164-1000D	8.80	4,000	164-4000C	22	10	166-100G
3.30	1,500	164-1500D	13.20	6,000	164-6000C	-	-	-
4.40	2,000	164-2000D	16.50	7,500	164-7500C	-	-	-
-	-	-	22.00	10,000	164-10000C	-	-	-



TM04 4853 2109



TM04 4854 2109



TM04 4856 2109



# Oxiperm<sup>®</sup> 164 D

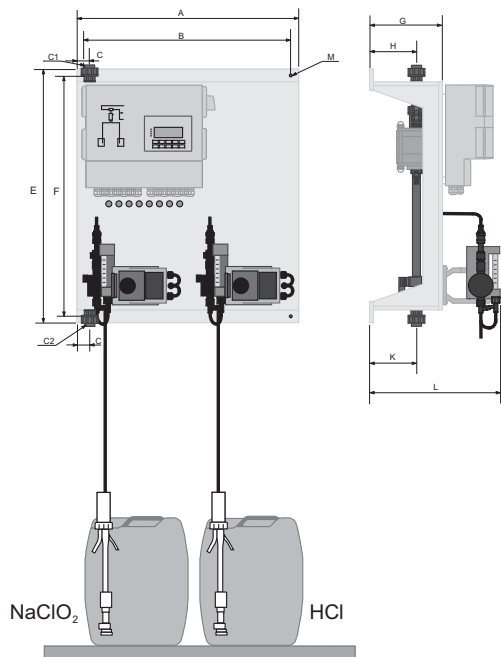
For 30 to 2000 g/h (0.066 to 4.4 lb/h)

Preparation of chlorine dioxide  
from dilute solutions

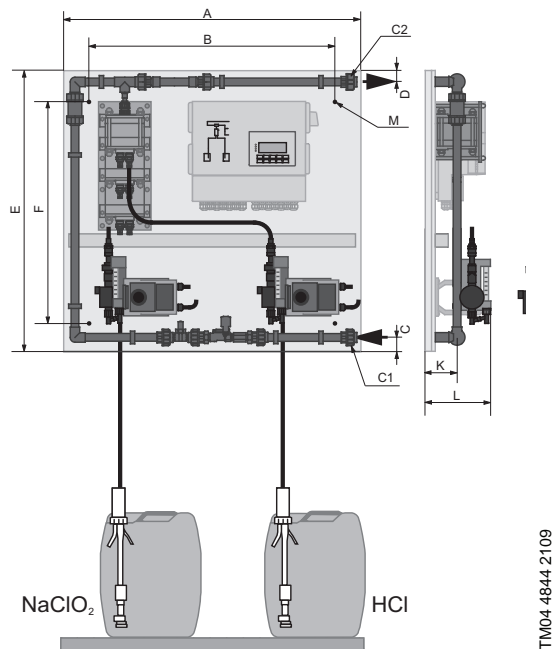


## Measurements

Oxiperm 164 D - Standard system



Front installation system 164-xxxDFI



A	B	C	E	F	G	H	K	L	M (∅)	Connections C1 and C2 Option: DN20	Type
[in (mm)]											
27 5/8 (700)	25 5/8 (650)	1 5/8 (40)	31 1/2 (800)	30 (760)	9 1/8 (230)	5 7/8 (148)	5 7/8 (148)	16 1/4 (410)	1/2 (11)	NPT 3/4"	164-030D
27 5/8 (700)	25 5/8 (650)	1 5/8 (40)	31 1/2 (800)	30 (760)	9 1/8 (230)	5 7/8 (148)	5 7/8 (148)	16 1/4 (410)	1/2 (11)	NPT 3/4"	164-120D
27 5/8 (700)	25 5/8 (650)	1 5/8 (40)	31 1/2 (800)	30 (760)	9 1/8 (230)	5 7/8 (148)	5 7/8 (148)	16 1/4 (410)	1/2 (11)	NPT 3/4"	164-220D
37 1/2 (950)	31 1/8 (790)	1 7/8 (45)	35 1/2 (900)	28 (710)	-	-	4 1/8 (102)	8 1/2 (213)	1/2 (11)	NPT 3/4"	164-030DFI
37 1/2 (950)	31 1/8 (790)	1 7/8 (45)	35 1/2 (900)	28 (710)	-	-	4 1/8 (102)	8 1/2 (213)	1/2 (11)	NPT 3/4"	164-120DFI
37 1/2 (950)	31 1/8 (790)	1 7/8 (45)	35 1/2 (900)	28 (710)	-	-	4 1/8 (102)	8 1/2 (213)	1/2 (11)	NPT 3/4"	164-220DFI
30 (760)	27 5/8 (700)	2 7/8 (70)	39 7/8 (1010)	38 1/4 (970)	10 5/8 (268)	5 3/8 (135)	7 1/4 (181)	18 5/8 (470)	1/2 (11)	NPT 3/4"	164-350D
30 (760)	27 5/8 (700)	2 7/8 (70)	39 7/8 (1010)	38 1/4 (970)	10 5/8 (268)	5 3/8 (135)	7 1/4 (181)	18 5/8 (470)	1/2 (11)	NPT 3/4"	164-700D
30 (760)	27 5/8 (700)	2 7/8 (70)	39 7/8 (1010)	38 1/4 (970)	49 5/8 (1260)	5 3/8 (135)	7 1/4 (181)	18 5/8 (470)	1/2 (11)	NPT 3/4"	164-1000D
30 (760)	27 5/8 (700)	2 7/8 (70)	39 7/8 (1010)	38 1/4 (970)	49 5/8 (1260)	5 3/8 (135)	7 1/4 (181)	18 5/8 (470)	1/2 (11)	NPT 3/4"	164-1500D
30 (760)	27 5/8 (700)	2 7/8 (70)	39 7/8 (1010)	38 1/4 (970)	49 5/8 (1260)	5 3/8 (135)	7 1/4 (181)	18 5/8 (470)	1/2 (11)	NPT 3/4"	164-2000D



## System types

ClO <sub>2</sub> preparation capacity		P <sub>max</sub> 60 Hz		Consumption of components HCl and NaClO <sub>2</sub>		Consumption of bypass (generator) water (input pressure < p <sub>max</sub> )						Weight		Type
[lb/h]	[g/h]	[psi]	[bar]	[gal/h]	[l/h]	Continuous operation		batch operation *)				[lb]	[kg]	
						[gal/h]	[l/h]	0.5 - 2 g/l gal/h	0.5 - 2 g/l l/h	2 - 3.3 g/l gal/h	2 - 3.3 g/l l/h			
0.066	30	145	10	.18	.7	111	420	3.7	0.01	3.7 - 2.0	0.01 - 0.004	72.6	33	164-030D (DFI)
0.26	120	87	6	.77	2.9	111	420	14.5	0.03	14.5 - 8.2	0.03 - 0.018	74.8	34	164-120D (DFI)
0.48	220	102	7	1.37	5.2	111	420	26.4	0.06	26.4 - 14.8	0.06 - 0.033	74.8	34	164-220D(DFI)
0.77	350	131	9	2.19	8.3	111	420	42.3	0.09	42.3 - 23.5	0.09 - 0.052	125.4	57	164-350D
1.54	700	131	9	4.36	16.5	237.8	900	84.5	0.19	84.5 - 47.3	0.19 - 0.104	136.4	62	164-700D
2.20	1000	131	9	6.34	24	237.8	900	118.9	0.26	118.9 - 68.2	0.26 - 0.150	145.2	66	164-1000D
3.30	1500	131	9	9.25	35	237.8	900	179.7	0.40	179.7 - 101.2	0.40 - 0.223	167.2	76	164-1500D
4.40	2000	87	6	12.68	48	237.8	900	237.8	0.52	237.8 - 136.6	0.52 - 0.301	180.4	82	164-2000D

\*) In batch operation the concentration is freely adjustable between 0.5 and 3.3 g/l.

Between 2 and 3.3 g/l the system operates at full capacity. From 2 down to 0.5 g/l the system reduces the capacity continuously, because the dosing quantity of the chemical components is regulated if the bypass water quantity is set to constant.

These systems are also available as front installation variants. Their designation is 164-xxxDFI.

## Technical data

Adjustment of the preparation capacity	Manual by menu-controlled operator prompting, automatic by input signals
Protection level	• IP 65 Electronics, dosing pumps, solenoid valve
	• IP 44 Bypass pump (option)
	• IP 67 Dosing controller
Admissible concentration of chemicals	HCl 9 % by weight
	NaClO <sub>2</sub> 7.5 % by weight
Admissible	
• ambient temperature	37 to 105 °F (5 to 40 °C)
• operation water temperature	35 to 85 °F (2 to 30 °C)
• chemicals temperature	35 to 85 °F (2 to 30 °C)
Admissible relative air humidity	Max. 80% at 105 °F (40 °C)
Connection dilution water inlet	PVC pipe 3/4" NPT male thread/option: DN20
Connection ClO <sub>2</sub> solution	PVC pipe 3/4" NPT male thread/option: DN20
Safety equipment	Dual monitoring of dosing pump capacities via dosing controller
Material	Supporting rack PP
	Supporting rack Stainless steel
	Supporting rack PVC grey, lacquered Stainless steel
	Supporting rack PVC grey
	Supporting rack PVC grey
	Supporting rack FPM/PTFE

## Electrical and electronic data

- Mains voltage 115 V / 60 Hz or 230 V/50 Hz
- Control: PLC, S7
- 4-line plain text display
- Menu-controlled operator prompting
- Flow-scheme with LED display showing mode and error signal

<b>Power consumption</b>	<ul style="list-style-type: none"><li>• up to 220 g/h approx 300 VA</li><li>• from 350 g/h approx 650 VA</li></ul>
<b>Analog inputs</b>	0(4) - 20 mA input or free configuration, charge 50 Ohm
<b>Digital inputs</b>	<ul style="list-style-type: none"><li>• Contact water meter, 1 to 45 pulses/sec. for control *)</li><li>• MIN contact for main water</li><li>• Remote On/Off</li><li>• Error gas warning unit</li><li>• Preparation tank ClO<sub>2</sub>: overflow, MAX, MIN, dry run</li></ul>
<b>Analog outputs</b>	0(4) - 20 mA output or free configuration, max. charge 500 Ohm
<b>Potential-free outputs</b>	<ul style="list-style-type: none"><li>• Error messages</li><li>• Pre-alert: chemicals empty</li><li>• Dry Run ClO<sub>2</sub> solution tank (batch systems)</li><li>• Automatic/manual operation, max. charge 250 V, 6A, max 550 VA</li></ul>

\* Note: The water meter has to be designed in a way that the number of input pulses for the control is between 1 - 45 pulses/sec.

## Versions

### Check valve (reactor)

- System backpressure less than 45 psi (3 bar)
- System backpressure more than 45 psi (3 bar)
- Wall mounted system

### Options

- With solenoid valve, with / without exhaust system
- For batch operation, with / without exhaust system
- With internal bypass pump, with / without exhaust system
- With external centrifugal pump (provided by the customer), with / without exhaust system

### Bus system

- Modbus (RS 232 / RS 485) (on request)
- Profibus DP module (on request)
- Ethernet TCP / IP module (on request)

### Operating languages

- Standard: English
- Other languages can be selected with the software:  
German, French, Spanish, Italian

## Suction line systems

- 2 suction lines with 2 tank covers
- With empty signal and pre-alert

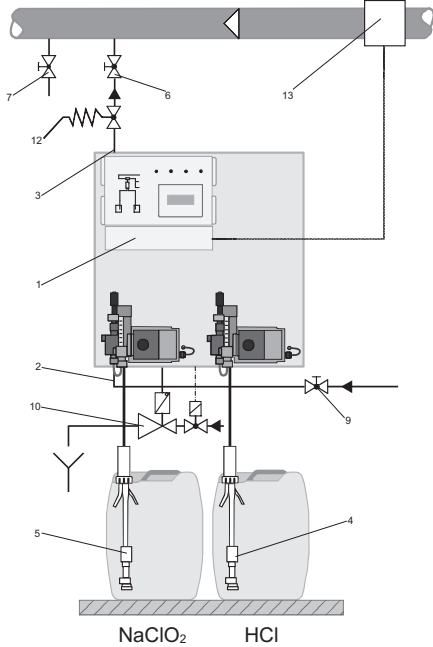
Tank size	∅ tank opening	Suction line
7.9 gal (30 liter)	1.77 - 1.81 in (45 - 46 mm)	4.3, 8.2, 16.4 ft (1.3 m, 2.5 m, 5 m)
15.9 gal (60 liter)	1.81 in / 2.24 - 2.30 in (45-46 / 57-58.5 mm)	4.3, 8.2, 16.4 ft 1.3 m, 2.5 mm, 5 m
52.8 gal (200 liter)	2.20 in (56 mm)	8.2, 16.4 ft (2.5 m, 5 m)

## Spare parts sets

for Oxiperm®	System pressure	
	less than 45 psi (3 bar)	more than 45 psi (3 bar)
164-030D/120D	553-720	553-720.1
164-220D	553-745	553-745.1
164-350D	553-722	553-722.1
164-700D	553-723	553-723.1
164-1000D	553-724	553-724.1
164-1500D	553-725	553-725.1
164-2000D	553-726	553-726.1

## Oxiperm® 164 D

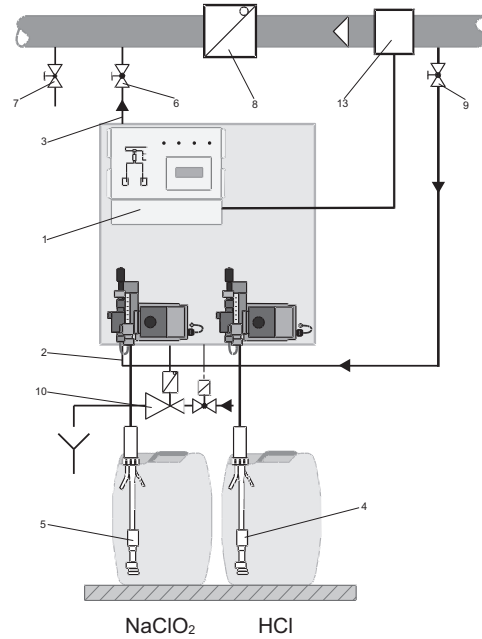
with solenoid valve



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## Oxiperm® 164 D

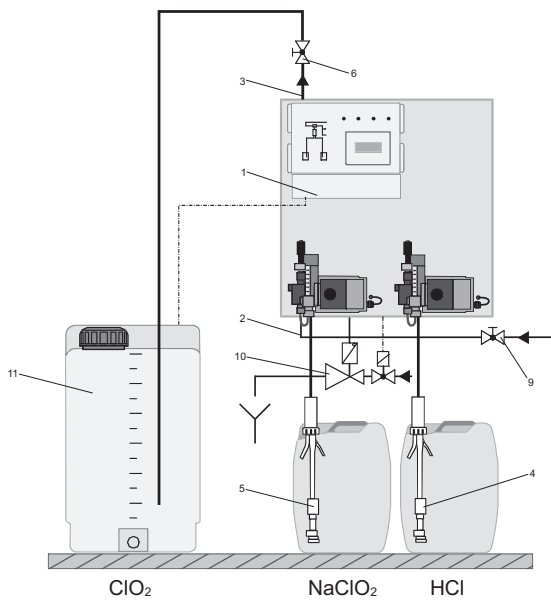
with internal bypass pump



TM04 4842 2109

## Oxiperm® 164 D

Batch operation



TM04 4841 2109

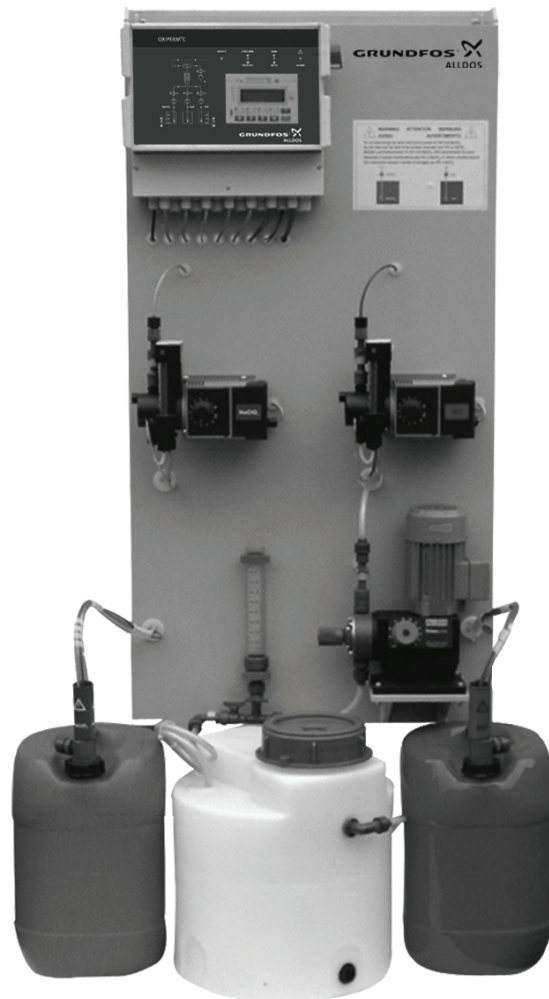
1. Oxiperm® 164 D electronics
2. Connection for bypass water input (generator water)
3. Connection for the ClO<sub>2</sub> solution line output to the injection unit
4. Suction line for the HCl dosing pump
5. Suction line for NaClO<sub>2</sub> dosing pump
6. Shut-off valve (by customer)
7. Sample extraction (by customer)
8. Check valve (by customer),  
**for operation with an internal bypass pump**
9. Shut-off valve for bypass water (generator water) extraction (by customer)
10. Exhaust system for supporting rack (optional)
11. Dilution tank with level monitoring (optional)  
**for batch operation**
12. Pressure loading valves (by customer) for system backpressures < 15 psi (1 bar)
13. Inductive flowmeter 4-20 mA or contact water meter for proportional control of the system

Note: For protection of the drinking water supply, the customer has to provide an **isolation valve**.

# Oxiperm<sup>®</sup> 164 C

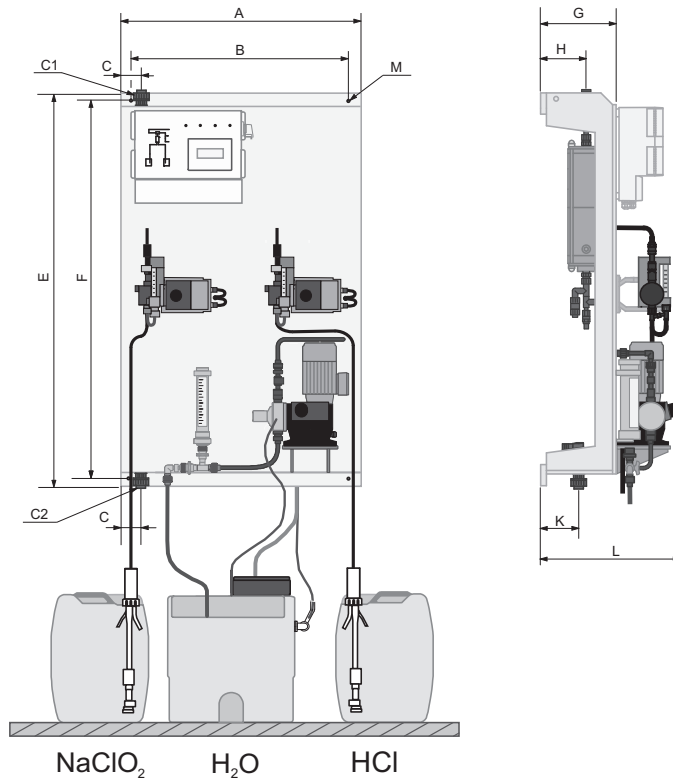
For 150 to 2500 g/h (0.33 to 5.5 lb/h)

Preparation of chlorine dioxide  
from concentrated solutions



## Measurements

Oxiperm 164 C - 150 to 2500 g/h (0.33 to 5.5 lb/h)



TM04 4831 2109

A	B	C	E	F	G	H	K	L	M (Ø)	Connections C1 and C2 Option: NPT 3/4"	Type
[in (mm)]											
32 3/8 (820)	30 (760)	2 7/8 (70)	52 7/8 (1340)	51 1/4 (1300)	10 1/4 (258)	6 1/4 (156)	5 1/8 (130)	18 3/4 (475)	1/2 (11)	NPT 3/4"	164-150C
32 3/8 (820)	30 (760)	2 7/8 (70)	52 7/8 (1340)	51 1/4 (1300)	10 1/4 (258)	6 1/4 (156)	5 1/8 (130)	18 3/4 (475)	1/2 (11)	NPT 3/4"	164-450C
32 3/8 (820)	30 (760)	2 7/8 (70)	52 7/8 (1340)	51 1/4 (1300)	10 1/4 (258)	6 1/4 (156)	5 1/8 (130)	18 3/4 (475)	1/2 (11)	NPT 3/4"	164-750C
33 1/2 (850)	31 1/8 (790)	2 7/8 (70)	57 1/2 (1460)	56 (1420)	-	-	5 1/2 (139)	23 5/8 (599)	1/2 (11)	NPT 3/4"	164-1300C
33 1/2 (850)	31 1/8 (790)	2 7/8 (70)	57 1/2 (1460)	56 (1420)	-	-	5 1/2 (139)	23 5/8 (599)	1/2 (11)	NPT 3/4"	164-2500C

## System types

ClO <sub>2</sub> preparation capacity		Pmax 60 Hz		Consumption of components HCl and NaClO <sub>2</sub>				Consumption of bypass (generator) water (input pressure < pmax)				Weight		Type		
[lb/h]	[g/h]	[psi]	[bar]	HCl [gal/h]	HCl [l/h]	Dil H <sub>2</sub> O [gal/h]	Dil H <sub>2</sub> O [l/h]	Continuous operation		batch operation *)					[lb]	[kg]
								[gal/h]	[l/h]	0.5 - 2 g/l [gal/h]	0.5 - 2 g/l [l/h]	2 - 3.3 g/l [gal/h]	2 - 3.3 g/l [l/h]			
0.33	150	87	6	0.26	1.0	1.45	5.5	111	420	18.5	70	18.5 - 10.3	70 - 40	127.6	58	164-150C
0.99	450	87	6	0.74	2.8	4.23	16	111	420	52.8	200	52.8 - 30.6	200 - 116	136.4	62	164-450C
11.65	750	87	6	1.27	4.8	7.13	27	237.8	900	89.8	340	89.8 - 51.0	340 - 193	149.6	68	164-750C
2.86	1300	87	6	2.17	8.2	12.15	46	237.8	900	155.9	590	155.9 - 88.8	590 - 336	198	90	164-1300C
5.5	2500	87	6	4.23	16	23.78	90	237.8	900	303.9	1,150	303.9 - 171.7	1150 - 650	242	110	164-2500C

\*) In batch operation the concentration is freely adjustable between 0.5 and 3.3 g/l. Between 2 and 3.3 g/l the system operates at full capacity. From 2 down to 0.5 g/l the system reduces the capacity continuously, because the dosing quantity of the chemical components is regulated if the bypass water quantity is set to constant.

## Technical data

<b>Adjustment of the preparation capacity</b>	Manual by menu-controlled operator prompting, automatic by input signals	
<b>Protection level</b>	<ul style="list-style-type: none"> <li>• IP 65</li> <li>• IP 44</li> <li>• IP 67</li> </ul>	Electronics, dosing pumps, solenoid valve (option), flowmeter Bypass pump (option) Dosing controller
<b>Admissible concentration of chemicals</b>	<ul style="list-style-type: none"> <li>• HCl</li> <li>• NaClO<sub>2</sub></li> </ul>	33 percent by weight 24.5 percent by weight
<b>Admissible</b>	<ul style="list-style-type: none"> <li>• ambient temperature</li> <li>• operation water temperature</li> <li>• chemicals temperature</li> </ul>	37 to 105 °F (5 to 40 °C) 35 to 85 °F (2 to 30 °C) 35 to 85 °F (2 to 30 °C)
<b>Admissible relative air humidity</b>	Max. 80 % at 105 °F (40 °C, not condensing)	
<b>Connection dilution water inlet</b>	PVC 3/4" NPT male thread/option: DN20	
<b>Connection ClO<sub>2</sub> solution</b>	PVC 3/4" NPT male thread/option: DN20	
<b>Safety equipment</b>	Dual monitoring of dosing pump capacities via dosing controller and internal Hall sensor signal	
<b>Material</b>	Supporting rack	PP
	Fastening	Stainless steel
	Reactor	PVC grey, lacquered stainless steel
	Post mixer	PVC grey
	Pipes	PVC grey
	Gaskets	FPM/PTFE

## Electrical and electronic data

- Mains voltage 115 V / 60 Hz or 230 V/50 Hz
- Control: PLC
- 4-line plain text display
- Menu-controlled operator prompting
- Flow-scheme with LED display showing mode and error signal

<b>Power consumption</b>	<ul style="list-style-type: none"><li>• up to 750 g/h approx 550 VA</li><li>• 1300 g/h approx 900 VA</li><li>• 2500 g/h approx 1100 VA</li></ul>
<b>Analog inputs</b>	0(4) - 20 mA input or free configuration, charge 50 Ohm
<b>Digital inputs</b>	<ul style="list-style-type: none"><li>• Contact water meter, 1 to 45 pulses/sec. for control *)</li><li>• MIN contact for main water</li><li>• Remote On/Off</li><li>• Error gas warning unit</li><li>• Preparation tank ClO<sub>2</sub>: overflow, MAX, MIN, dry run</li></ul>
<b>Analog outputs</b>	0(4) - 20 mA output or free configuration, max. charge 500 Ohm
<b>Potential-free outputs</b>	<ul style="list-style-type: none"><li>• Error messages</li><li>• Pre-alert: chemicals empty</li><li>• Dry Run ClO<sub>2</sub> solution tank (batch systems)</li><li>• Automatic/manual operation, max. charge 250 V, 6A, max 550 VA</li></ul>

\* Note: The water meter has to be designed in a way that the number of input pulses for the control is between 1 - 45 pulses/sec.

## Versions

### Check valve (reactor)

- System backpressure less than 45 psi (3 bar)
- System backpressure more than 45 psi (3 bar)

### System completely for wall mounting

### Options

- With solenoid valve, with / without exhaust system
- For batch operation, with / without exhaust system
- With internal bypass pump, with / without exhaust system
- With external centrifugal pump (provided by the customer), with / without exhaust system

### Bus system

- Modbus (RS 232 / RS 485) (on request)
- Profibus DP module (on request)
- Ethernet TCP / IP module (on request)

### Operating languages

- Standard: English
- Other languages can be selected with the software:  
German, French, Spanish, Italian



## Suction line systems

- 2 suction lines with 2 tank covers
- With empty signal and pre-alert

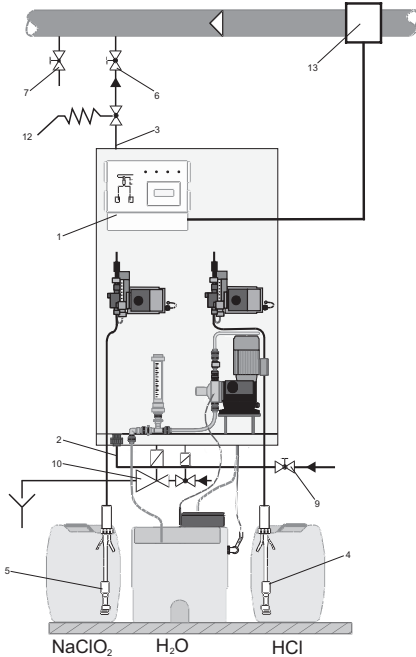
Tank size	Ø tank opening	Suction line
7.9 gal (30 liter)	1.77 - 1.81 in (45 - 46 mm)	4.3, 8.2, 16.4 ft (1.3 m, 2.5 m, 5 m)
15.9 gal (60 liter)	1.81 in / 2.24 - 2.30 in (45-46 / 57-58.5 mm)	4.3, 8.2, 16.4 ft (1.3 m, 2.5 m, 5 m)
52.8 gal (200 liter)	2.20 in (56 mm)	8.2, 16.4 ft (2.5 m, 5 m)

## Spare parts sets

for Oxiperm®	System pressure	
	less than 45 psi (3 bar)	more than 45 psi (3 bar)
164-150C	553-740	553-740.1
164-450C	553-741	553-741.1
164-750C	553-742	553-742.1
164-1300C	553-743	553-743.1
164-2500C	553-744	553-744.1

## Oxiperm® 164 C

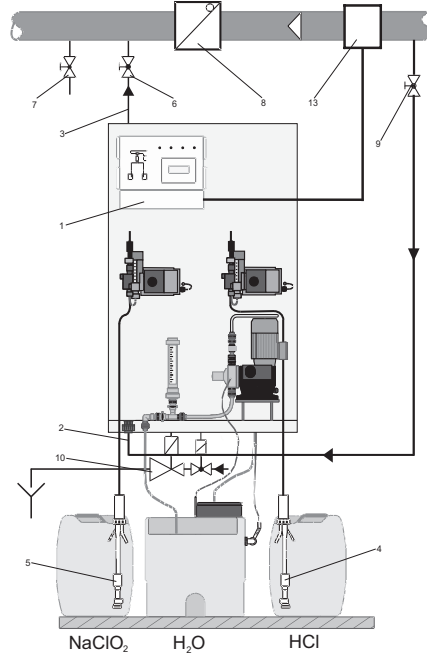
with solenoid valve



TM04 48342109

## Oxiperm® 164 C

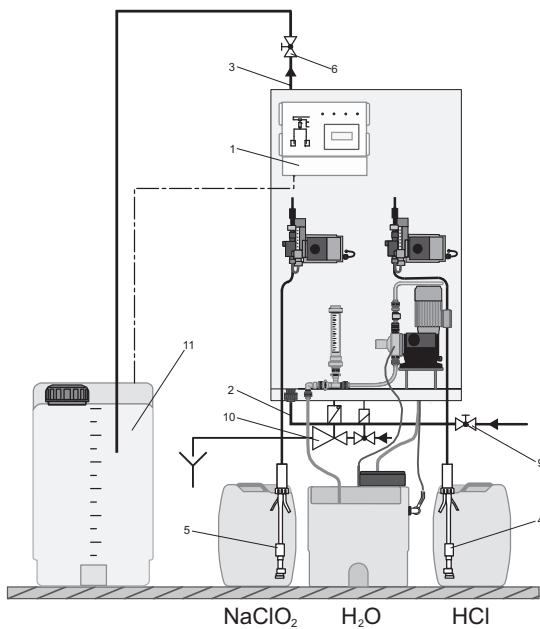
with internal bypass pump



TM04 4833 2109

## Oxiperm® 164 C

Batch operation



TM04 4832 2109

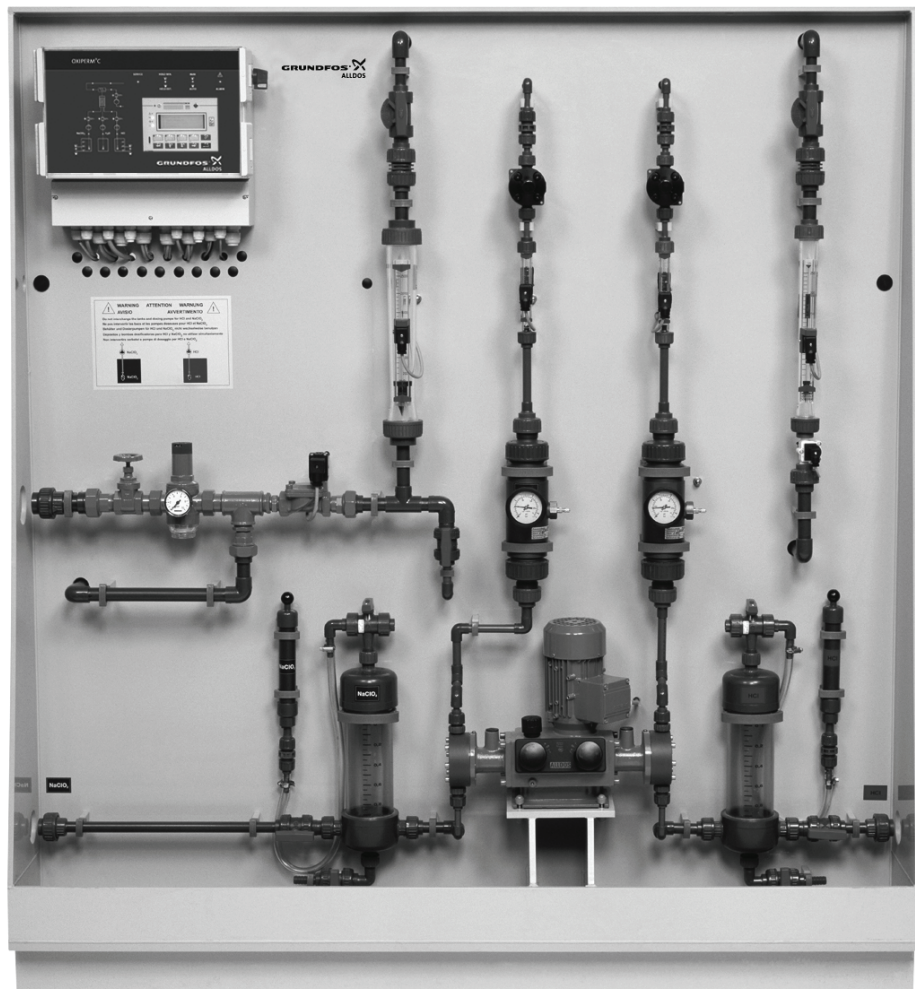
1. Oxiperm® 164 C electronics
2. Connection for bypass water input (generator water)
3. Connection for the ClO<sub>2</sub> solution line output to the injection unit
4. Suction line for the HCl dosing pump
5. Suction line for NaClO<sub>2</sub> dosing pump
6. Shut-off valve (by customer)
7. Sample extraction (by customer)
8. Check valve (by customer),  
**for operation with an internal bypass pump**
9. Shut-off valve for bypass water (generator water) extraction (by customer)
10. Exhaust system for supporting rack (optional)
11. Dilution tank with level monitoring (optional)  
**for batch operation**
12. Pressure loading valves (by customer) for system backpressures < 15 psi (1 bar)
13. Inductive flowmeter 4-20 mA or contact water meter for proportional control of the system

Note: For protection of the drinking water supply, the customer has to provide an **isolation valve**.

# Oxiperm<sup>®</sup> 164 C

For 4 to 10 kg/h (8.8 to 22 lb/h)

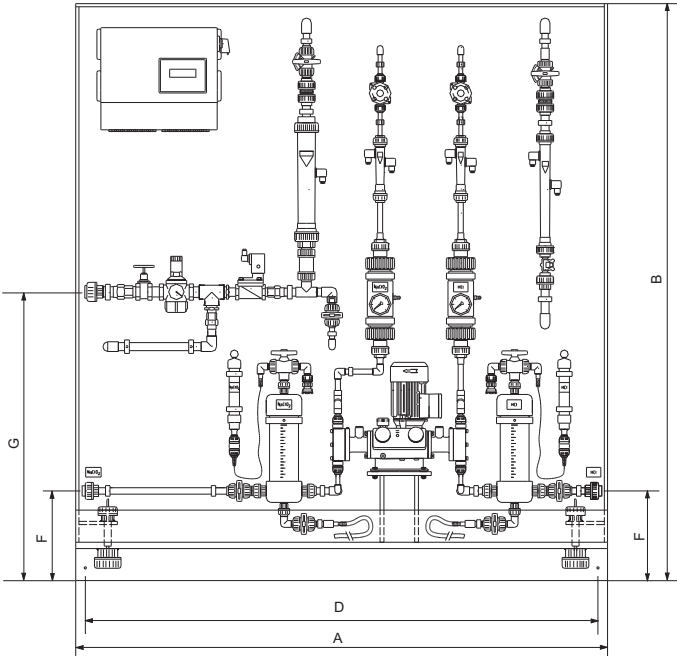
Preparation of chlorine dioxide  
from concentrated solutions



## Measurements

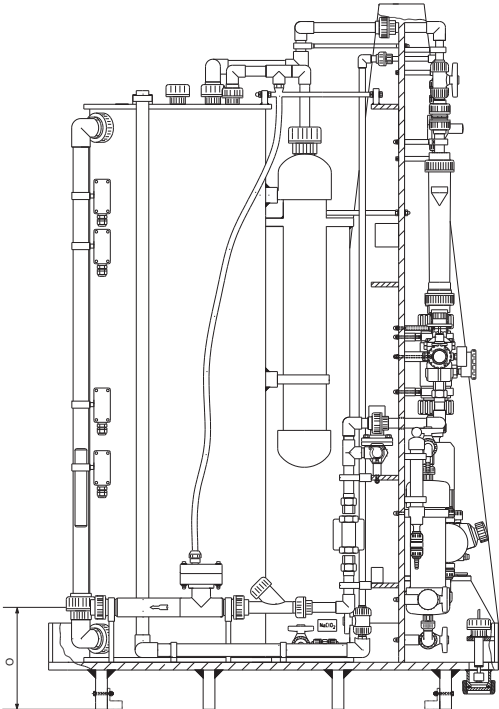
Oxiperm 164 C - 8.8 to 22 lb/h (4 to 10 kg/h)

Front view



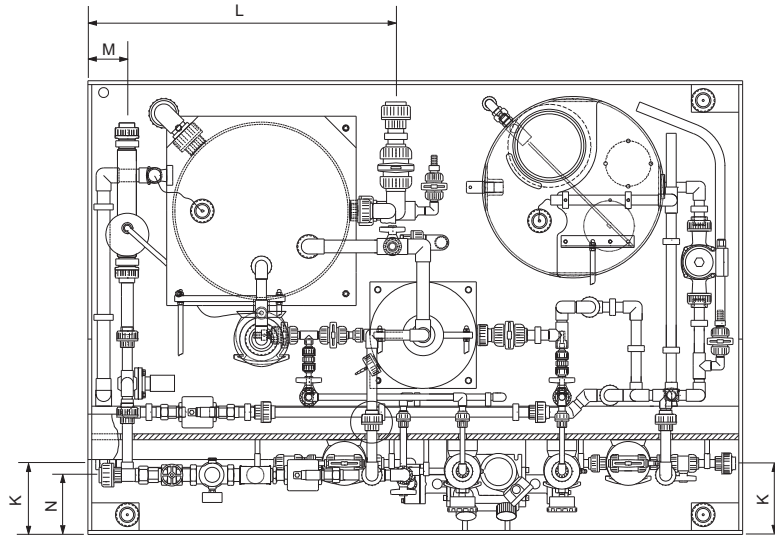
TM04 4838 2109

View left side



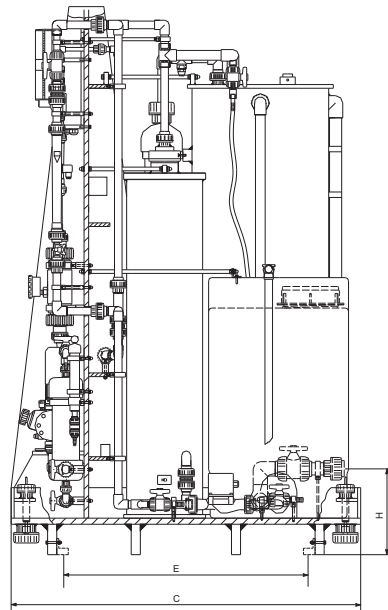
TM04 4836 2109

Top view



TM04 4839 2109

View right side



TM04 4837 2109

A	B	C	D	E	F	G	H	K	L	M	N	O	Bypass	ClO <sub>2</sub>	HCl NaClO <sub>2</sub>	Exhaust injector	Type
[in (mm)]																	
65 3/8 (1660)	70 7/8 (1800)	45 3/8 (1150)	63 (1600)	31 3/4 (804)	11 (280)	35 1/2 (900)	11 1/8 (282)	7 1/8 (180)	30 3/4 (780)	4 (100)	6 (150)	10 1/4 (260)	DN 25	DN 32	DN 20	DN 25	164 - 4000C
65 3/8 (1660)	70 7/8 (1800)	45 3/8 (1150)	63 (1600)	31 3/4 (804)	11 (280)	35 1/2 (900)	11 1/8 (282)	7 1/8 (180)	30 3/4 (780)	4 (100)	6 (150)	10 1/4 (260)	DN 25	DN 32	DN 20	DN 25	164 - 6000C
70 7/8 (1800)	70 7/8 (1800)	53 1/4 (1350)	68 1/2 (1740)	41 1/8 (1044)	11 (280)	35 1/2 (900)	11 1/8 (282)	7 1/8 (180)	36 5/8 (930)	4 (100)	5 5/8 (140)	10 1/4 (260)	DN 32	DN 40	DN 20	DN 25	164 - 7500C
70 7/8 (1800)	70 7/8 (1800)	53 1/4 (1350)	68 1/2 (1740)	41 1/8 (1044)	11 (280)	35 1/2 (900)	11 1/8 (282)	7 1/8 (180)	36 5/8 (930)	4 (100)	5 5/8 (140)	10 1/4 (260)	DN 32	DN 40	DN 20	DN 25	164 - 10000C

## System types

(max. operating pressure 75 psi (5 bars))

ClO <sub>2</sub> preparation capacity		Consumption of components		Consumption of process water						Total consumption		Weight		Type
		HCl - NaClO <sub>2</sub>		Bypass		Dilution		Exhaust injector		For 3 g/l in batch tank	For 2 g/l in batch tank	[lb]	[kg]	
[lb/h]	[kg/h]	gal/h	l/h	gal/h	l/h	gal/h	l/h	gal/h	l/h					
8.8	4	6.3	23.8	304	1151	37	140	370	1400	711	898	495	225	164-4000C
13.2	6	9.8	37.1	454	1719	57	216	502	1900	1013	1295	539	245	164-6000C
16.5	7.5	12.4	46.9	568	2150	70	265	608	2300	1246	1585	638	290	164-7500C
22	10	16.6	62.8	756	2862	94	356	819	3100	1668	2114	693	315	164-10000C

## Technical data

<b>Adjustment of the preparation capacity</b>	Manual by menu-controlled operator prompting, automatic by input signals
<b>Protection level</b>	<ul style="list-style-type: none"> <li>• IP 65 Electronics, dosing pumps, solenoid valve, flowmeter</li> <li>• IP 44 Pump for pre-dilution</li> </ul>
<b>Admissible concentration of chemicals</b>	<ul style="list-style-type: none"> <li>• HCl 33 percent by weight</li> <li>• NaClO<sub>2</sub> 24.5 percent by weight</li> </ul>
<b>Admissible</b>	
• ambient temperature	37 to 105 °F (5 to 40 °C)
• operation water temperature	35 to 85 °F (2 to 30 °C)
• chemicals temperature	35 to 85 °F (2 to 30 °C)
<b>Admissible relative air humidity</b>	Max. 80 % at 105 °F (40 °C, not condensing)
<b>Connections</b>	
• water supply	PVC pipe DN 25 or DN 32
• chemicals	PVC pipe DN 20
• ClO <sub>2</sub> solution	PVC pipe DN 32 pr DN 40
<b>Safety equipment</b>	<ul style="list-style-type: none"> <li>• Monitoring of capacity (water, chemicals) via MIN/MAX contacts</li> </ul>
	Supporting rack PP
	Fastening Stainless steel
<b>Material</b>	
	Reactor PVC
	Post mixer PVC
	Pipes PVC
	Gaskets FPM

## Electrical and electronic data

- Mains tension 115 V / 60 Hz or 230 V/50 Hz
- Control: PLC
- 4-line plain text display
- Menu-controlled operator prompting
- Flow-scheme with LED display showing mode and error signal

<b>Power consumption</b>	<ul style="list-style-type: none"><li>• 8.8 - 13.2 lb/h (4 - 6 kg/h ) approx 400 VA</li><li>• 16.5 - 22 lb/h (7.5 - 10 kg/h) approx 500 VA</li></ul>
<b>Digital inputs</b>	<ul style="list-style-type: none"><li>• MIN contact for water supply</li><li>• Remote On/Off</li><li>• Error gas warning unit</li></ul>
<b>Potential-free outputs</b>	<ul style="list-style-type: none"><li>• Error messages</li><li>• Pre-alert: chemicals empty</li><li>• Dry Run ClO<sub>2</sub> solution tank</li><li>• Automatic/manual operation, max. charge 250 V, 6A, max 550 VA</li></ul>

## Options

### Bus system

- Modbus (RS 232 / RS 485) (on request)
- Profibus DP module (on request)
- Ethernet TCP / IP module (on request)

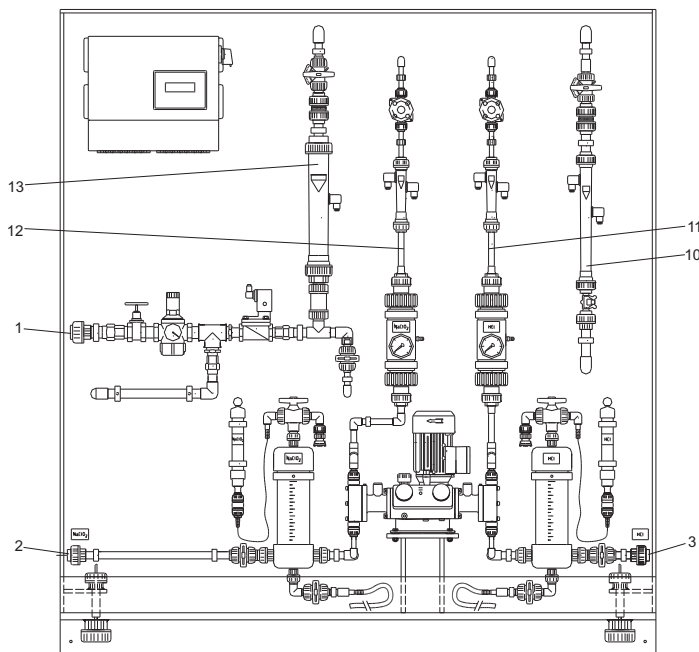
### Operating languages

- Standard: English
- Other languages can be selected with the software:  
German, French, Spanish, Italian

## Spare parts set

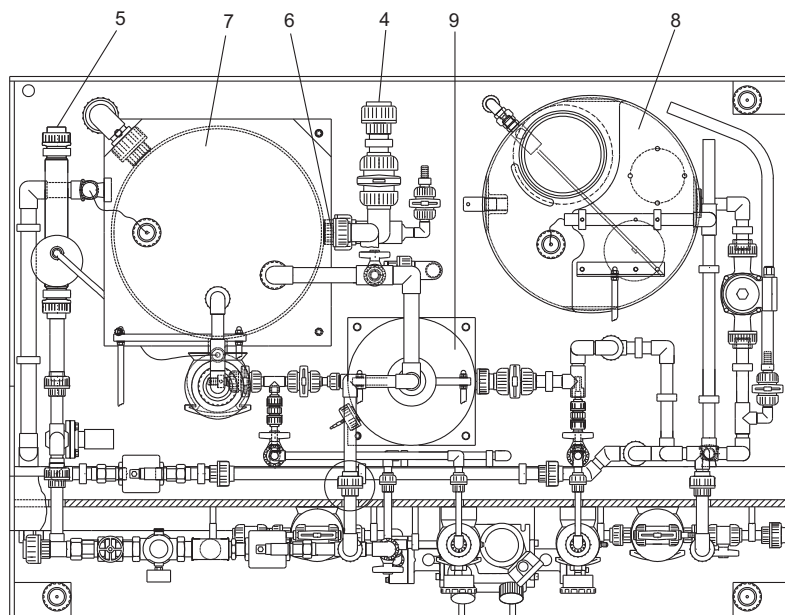
for Oxiperm®	230 V systems	115 V systems
164-4000C	553-691	553-691
164-6000C	553-691	553-691
164-7500C	553-692	553-693
164-10000C	553-694	553-694

Front view



TM04 4835 2109

Top view



TM04 4840 2109

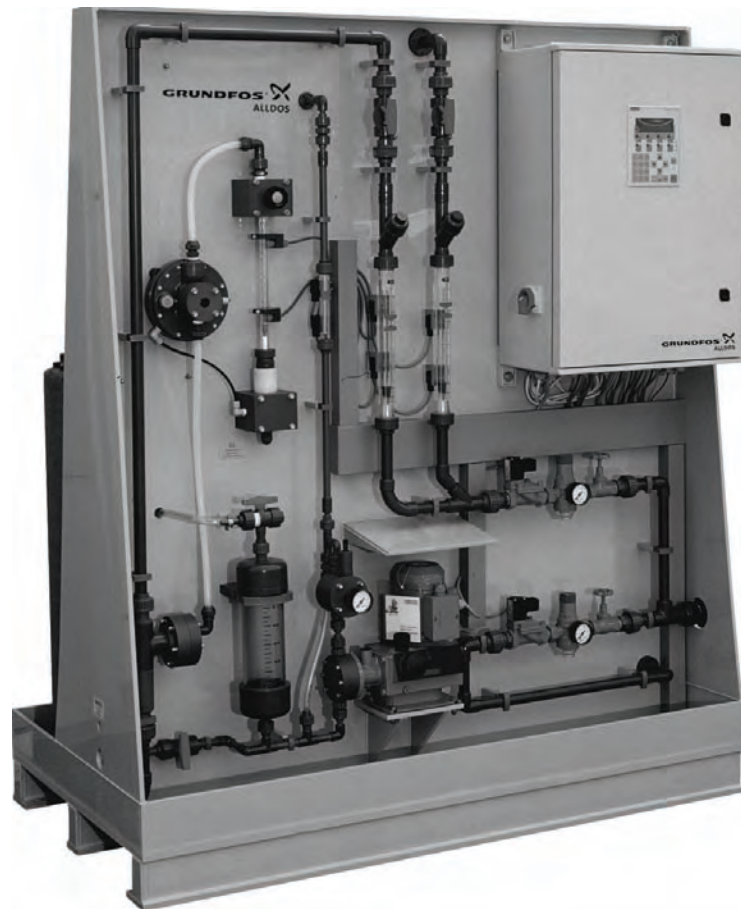
- |   |   |   |  |    |  |
|---|---|---|--|----|--|
| 1 | Water supply (bypass and dilution)        | 6 | Overflow device for solution tank, customer provides the pipework to a neutralization system | 10 | Flow of H <sub>2</sub> O for the dilution of HCl |
| 2 | Connection for NaClO <sub>2</sub>         | 7 | Solution tank  | 11 | Flow of HCl                                      |
| 3 | Connection for HCl                        | 8 | Water preparation tank for the dilution of HCl   | 12 | Flow of NaClO <sub>2</sub>                       |
| 4 | Connection for ClO <sub>2</sub>           | 9 | Reactor  | 13 | Flow of H <sub>2</sub> O, bypass water           |
| 5 | Outlet exhaust injector for solution tank |   |  |    |  |



# Oxiperm<sup>®</sup> 166

For 750 g/h to 10 kg/h (1.65 to 22 lb/h)

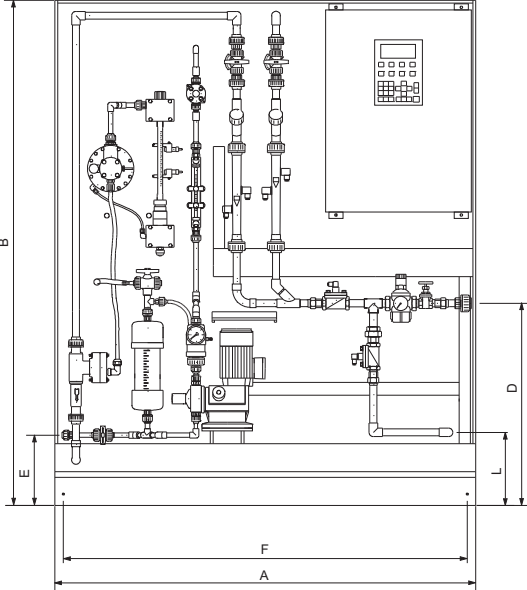
Fully automatic chlorine dioxide preparation system



## Measurements

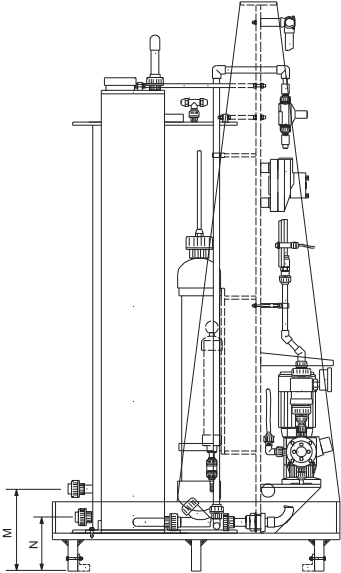
Oxiperm 166 - 750 g/h to 10 kg/h (1.65 to 22 lb/h)

Front view



TM04 4848 2109

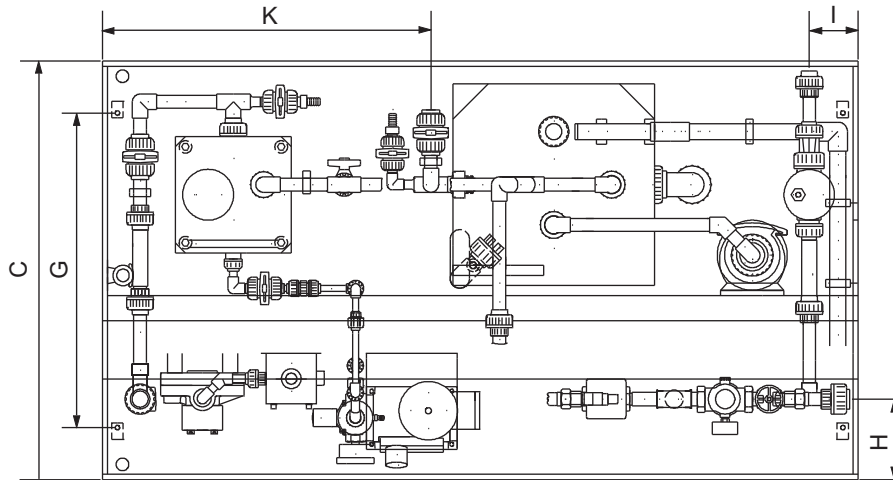
Lateral view



TM04 4847 2109

## Measurements

Top view



TM04 4849 2109

A	B	C	D	E	F	G	H	I	K	L	M	N	Cl <sub>2</sub> PE hose	ClO <sub>2</sub>	HCl NaClO <sub>2</sub>	Exhaust injector	Type
[in (mm)]																	
59 1/8 (1500)	70 7/8 (1800)	35 7/8 (910)	15 3/4 (400)	10 1/8 (255)	56 3/4 (1400)	30 (760)	6 3/8 (160)	3 7/8 (97)	23 5/8 (600)	5 5/8 (140)	10 1/4 (260)	10 1/4 (260)	8/11	DN 20	DN 10	DN 20	166-007G
59 1/8 (1500)	70 7/8 (1800)	35 7/8 (910)	15 3/4 (400)	10 1/8 (255)	56 3/4 (1400)	30 (760)	6 3/8 (160)	3 7/8 (97)	23 5/8 (600)	5 5/8 (140)	10 1/4 (260)	11 1/8 (280)	8/11	DN 32	DN 10	DN 20	166-015G
59 1/8 (1500)	70 7/8 (1800)	35 7/8 (910)	15 3/4 (400)	10 1/8 (255)	56 3/4 (1400)	30 (760)	6 3/8 (160)	3 7/8 (97)	23 5/8 (600)	5 5/8 (140)	10 1/4 (260)	11 1/8 (280)	8/11	DN 33	DN 10	DN 20	166-025G
59 1/8 (1500)	70 7/8 (1800)	55 1/8 (1400)	15 3/4 (400)	10 1/8 (255)	56 3/4 (1400)	49 1/4 (1250)	6 3/8 (160)	3 7/8 (97)	26 1/4 (665)	5 5/8 (140)	10 1/4 (260)	11 7/8 (300)	8/11	DN 34	DN 10	DN 25	166-050G
59 1/8 (1500)	70 7/8 (1800)	55 1/8 (1400)	15 3/4 (400)	10 1/8 (255)	56 3/4 (1400)	49 1/4 (1250)	6 3/8 (160)	3 7/8 (97)	26 1/4 (665)	5 5/8 (140)	10 1/4 (260)	11 7/8 (300)	10/14	DN 40	DN 10	DN 25	166-075G
59 1/8 (1500)	70 7/8 (1800)	55 1/8 (1400)	15 3/4 (400)	10 1/8 (255)	56 3/4 (1400)	49 1/4 (1250)	6 3/8 (160)	3 7/8 (97)	26 1/4 (665)	5 5/8 (140)	10 1/4 (260)	11 7/8 (300)	10/14	DN 41	DN 10	DN 25	166-100G

## System types

- Operating pressure 75 psi (5 bar)
- Concentration in the batch tank 3 g/l

ClO <sub>2</sub> preparation capacity		Consumption of					Consumption of process water						Total consumption		Weight		Type
		Cl <sub>2</sub>		NaClO <sub>2</sub>			Bypass		Dilution		Exhaust injector						
[lb/h]	[kg/h]	[lb/h]	[kg/h]	[gal/h]	[l/h]	[gal/h]	[l/h]	[gal/h]	[l/h]	[gal/h]	[l/h]	[gal/h]	[l/h]	[lb]	[kg]		
1.7	0.8	1.1	0.5	0.92	3.5	40	150	24	90	185	700	248	940	462	210	166-007G	
3.3	1.5	2	1.0	1.85	7	74	280	53	200	291	1100	418	1580	517	235	166-015G	
5.5	2.5	4	1.7	3.12	11.8	124	470	90	340	634	2400	846	3200	550	250	166-025G	
11	5	7	3.3	6.21	23.5	248	940	180	680	581	2200	1001	3790	726	330	166-050G	
16.5	7.5	11	4.9	9.25	35	370	1400	264	1000	898	3400	1533	5800	814	370	166-075G	
22	10	15	6.6	12.42	47	502	1900	343	1300	1110	4200	1955	7400	880	400	166-100G	

## Technical data

<b>Adjustment of the preparation capacity</b>	Manual by dosing pump and ball valves
<b>Protection level</b>	• IP 65    Electronics, dosing pumps, solenoid valve, flowmeter
<b>Admissible concentration of chemicals</b>	• NaClO <sub>2</sub> 24.5 percent by weight    Cl <sub>2</sub> 3 g/l (after the injector)
<b>Admissible temperature</b>	
• ambient temperature	37 to 105 °F (5 to 40 °C)
• operation water temperature	35 to 85 °F (2 to 30 °C)
• chemicals temperature (NaClO <sub>2</sub> / Cl <sub>2</sub> basis)	35 to 85 °F (2 to 30 °C)
<b>Admissible relative air humidity</b>	Max. 80 % at 105 °F (40 °C, not condensing)
<b>Connections</b>	
• water supply	PVC pipe    DN 25 or DN 32
• chemicals	
NaClO <sub>2</sub>	PVC pipe    DN 20
Cl <sub>2</sub> gas	PE hose    8/11 to dosing regulator
ClO <sub>2</sub> solution	PVC pipe    DN 32 pr DN 40
<b>Safety equipment</b>	• Monitoring of capacity (water, chemicals) via MIN/MAX contacts
<b>Material</b>	Supporting rack    PP
	Mounting parts    Stainless steel
	Reactor    PVC
	Solution tank    PVC
	Pipes    PVC
	Gaskets    FPM

## Electrical and electronic data

- Mains voltage 115 V / 60 Hz or 230 V/50 Hz
- Control: PLC
- Convenient plain text operator prompting
- Password protection
- Automatic stop in case of malfunction
- Output contacts for operation mode and error messages
- Input and display of date and time
- Remote on/off

<b>Power consumption</b>	<ul style="list-style-type: none"><li>• 166-007G</li><li>• 166-015G      Approx. 160 VA</li><li>• 166-025G</li></ul>
<b>Digital inputs</b>	<ul style="list-style-type: none"><li>• Remote On/Off</li><li>• Error gas warning unit</li><li>• Cl<sub>2</sub> group 1 + 2</li><li>• NaClO<sub>2</sub> level control</li></ul>
<b>Potential-free outputs</b>	<ul style="list-style-type: none"><li>• Error messages</li><li>• Pre-alert: chemicals empty</li><li>• Dry Run ClO<sub>2</sub> solution tank</li><li>• Automatic/manual operation</li></ul>

## Options

### Bus system

- Modbus (RS 232 / RS 485) (on request)

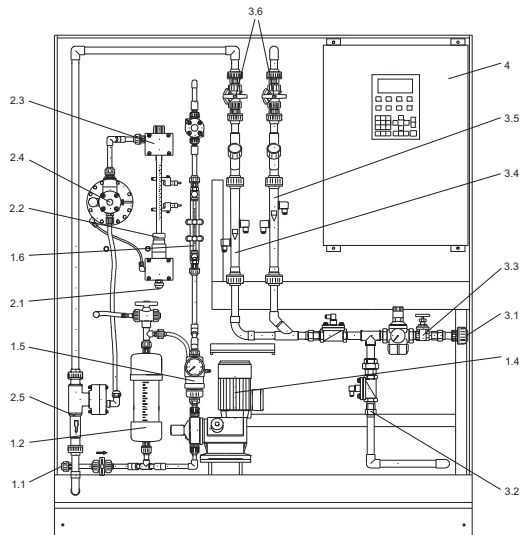
### Operating languages

- Standard: English
- Other languages can be selected with the software:  
German, French, Spanish, Italian

## Spare parts set

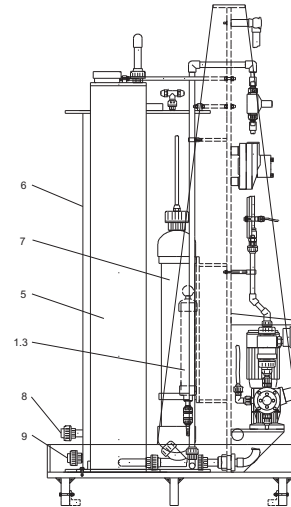
for Oxiperm®	Order number
166-007G/-025G	553-1312
166-050G/-010G	553-1313

Front view



TM04 4846 2109

Front view



TM04 4846 2109

## 1 Dosing system for NaClO<sub>2</sub>

- 1.1 NaClO<sub>2</sub> connection
- 1.2 Calibration vessel
- 1.3 Suction device
- 1.4 Piston diaphragm dosing pump, with deaeration valve
- 1.5 Pulsation damper with manometer
- 1.6 Flow meter with limit switch for NaClO<sub>2</sub>

## 2 Dosing system for chlorine gas

- 2.1 Cl<sub>2</sub> vacuum connection (of the vacuum regulator)
- 2.2 Flow meter with limit switch for Cl<sub>2</sub>
- 2.3 Cl<sub>2</sub> adjusting valve
- 2.4 Differential pressure regulator for Cl<sub>2</sub>
- 2.5 Cl<sub>2</sub> injector

## 3 Operating water supply

- 3.1 Operating water connection
- 3.2 Water supply for the exhaust injector
- 3.3 Water supply for injector and post-dilution device
- 3.4 Flow meter with limit switch for injector operating water
- 3.5 Flow meter with limit switch for post-dilution device
- 3.6 Water flow adjusting valves

## 4 Control panel for PLC and operating unit with LC display

## 5 ClO<sub>2</sub> reactor

## 6 Batch tanks with level sensors (Min., Max., dry run and overflow)

## 7 Absorption filter

## 8 Outlet suction injector for the batch tank

## 9 ClO<sub>2</sub> discharge connection



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**L-OXI-PG-01 1009**

**US**

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Subject to alterations.

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