

Oxidation filter system fermaliQ:MA

Intended use

The oxidation filter system fermaliQ:MA is designed for the treatment of well and spring water. During the treatment process, the following substances contained in the water are reduced fully automatically:

- Iron
- Manganese
- Ammonium
- Solid particles
- Turbidities
- Unpleasant odours (e.g. hydrogen sulphide)

An additional effect of the treatment is a moderate deacidification of the raw water.

If the oxidation filter system fermaliQ:MA is used for drinking water treatment, the provisions of DIN 2001-1, DIN EN 1988 as well as DIN EN 1717 must be complied with.

Depending on the raw water quality, the fermaliQ:MA might require a run-in period of several weeks.

Application limits

Manganese	≤ 1.0 mg/l
Iron	≤ 15.0 mg/l
pH range	6.5 – 8.5
Ammonium	≤ 3.0 mg/l

Function

Filling the tank

A raw water pump provided by the client on site delivers the raw water to the filter tank where it is atomised.

At the same time, ambient air filtered by means of a ventilator is blown into the tank.

Filtration

By means of a pressure booster system, the raw water is drawn off through the filter layers and a star-shaped nozzle assembly.

The generated filtrate is delivered into a pressurised water tank or a diaphragm expansion tank with the following functions provided by client on site:

- Buffer to compensate for short-term peak consumptions
- Backwash of the filter tank with stored filtrate volume

Flushing the system

During the backwash, the filter material is loosened, and deposited contaminants are removed and flushed to the drain via the overflow funnel.

Thanks to the pressure cushion of the pressurised water tank/diaphragm expansion tank, the filtrate is distributed via the star-shaped nozzle assembly and the support layer.

The backwash is supervised by means of an automatic backwash monitoring.

Discharge of filtrate

After backwashing, the filtrate is automatically discharged for the following purposes:

- Compression of the filter material
- Prevention of particulate matter/turbidities from entering the filtrate

Design

- Dip-galvanised steel filter tank, including lid, built-in parts, filter materials, drain siphon and connection for exhaust air to the outside
- Anodised aluminium rack with adjustable feet
- Internal piping made of PE/PP plastic (suitable for drinking water) including installed control fittings
- 3-way ball valves to redirect the water
- Ventilator for supplying atmospheric oxygen, with backflow flap to intercept humid air, and air filter box
- Speed-controlled filtrate pump (constant pressure control) with flow-through diaphragm expansion tank
- Flame-sterilisable sampling valves

• Product Data Sheet

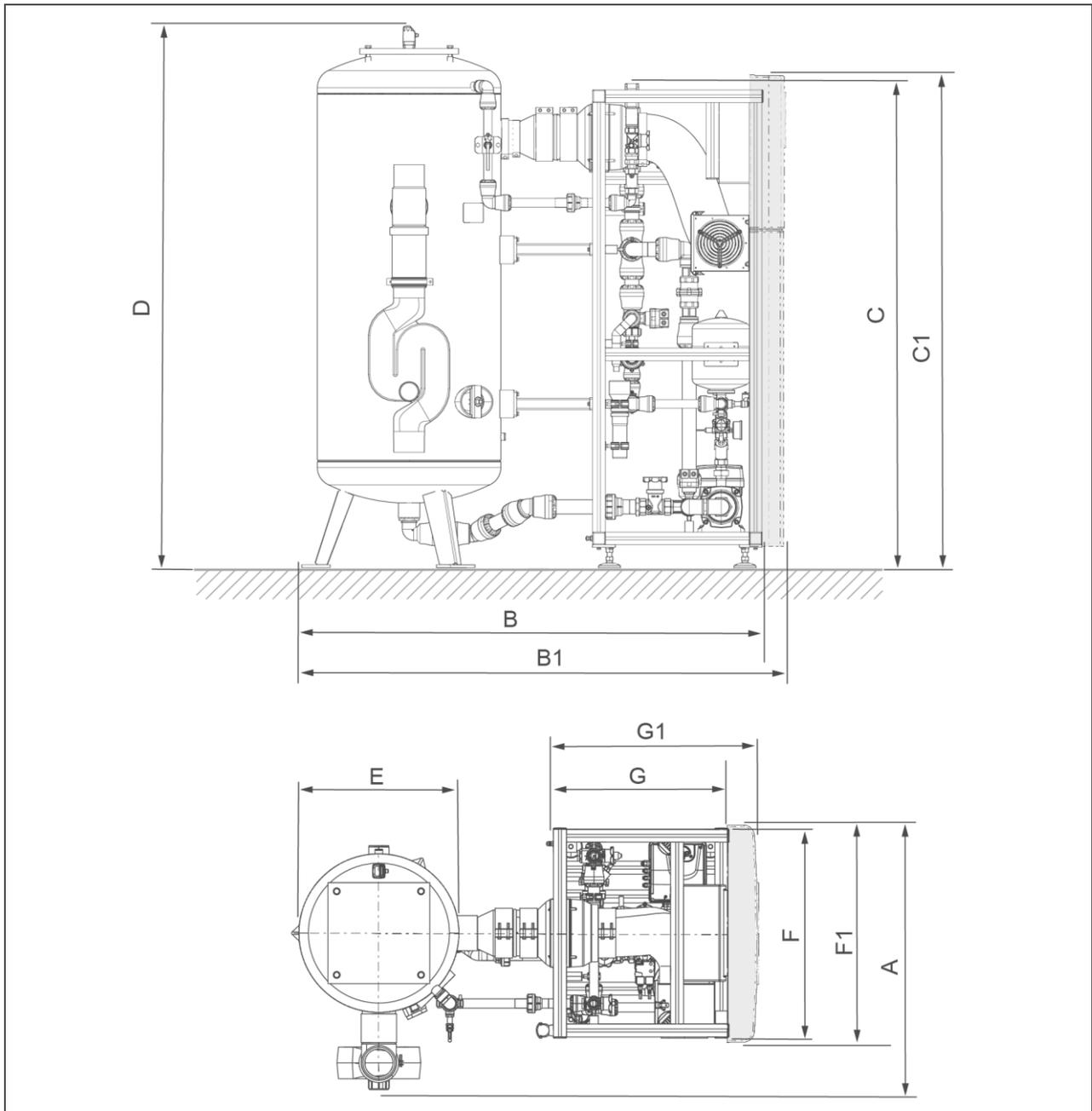
Oxidation filter system fermalQ:MA

- Vortex flow sensor to show the actual flow and to archive the total flow
- Level control to switch the raw water pump provided by client on site and the ventilator on and off, and to control the dry-run protection of the filtrate pump
- Electric switch box with control electronics "Siemens LOGO! 12/24RCE" and display for fully automatic control of the filter system as well as indication of the operating state

Scope of supply

- Oxidation filter system fermalQ:MA – complete with internal piping, wiring and workshop testing
- Operation manual

Technical specifications I



Dimensions and weights		MA2000	MA3000	MA5000	MA10000	
A	Width of overall system	mm	880	920	1060	1340
B	Depth of overall system	mm	1540	1630	1800	2430
B1	Depth of overall system with front cover	mm	1600	1690	1860	2490
C	Height of system rack	mm	1730			
C1	Height of system rack with front cover	mm	1750			
D	Height of filter tank	mm	1700	1940	1920	2120
E	Outside diameter of filter tank	mm	550	650	800	1100
F	Width of system rack	mm	720			
F1	Width of system rack with front cover		750			
G	Depth of system rack	mm	600	600	600	990
G1	Depth of system rack with front cover	mm	660	660	660	1050
	Operating weight of filter tank, approx.	kg	500	800	1200	2300
	Empty weight of filter tank, approx.	kg	90	110	130	330
	Weight of system rack, approx.	kg	100	100	100	120

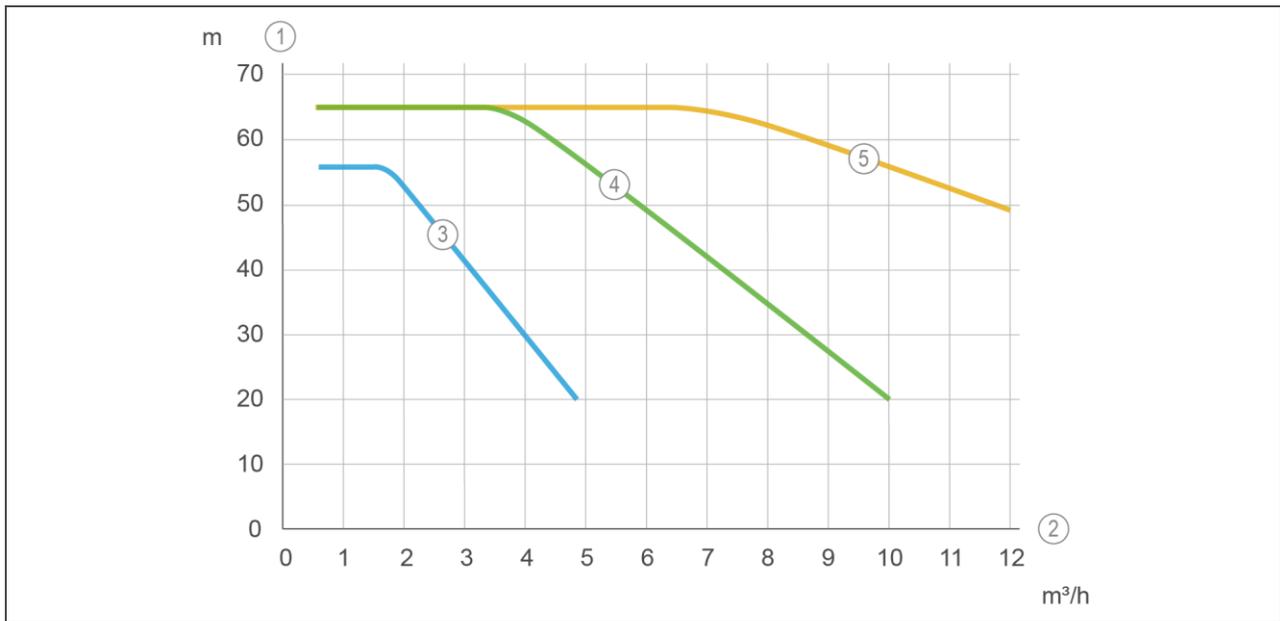
Technical specifications II

Connection data		MA2000	MA3000	MA5000	MA10000
Raw water inlet	DN	25 (1" male thr., brass)	25 (1" male thr., brass)	32 (1¼" male thr., brass)	40 (1½" male thr., brass)
Filtrate outlet/backwash water inlet	DN	40 (1½" male thr., brass)	40 (1½" male thr., brass)	50 (2" male thr., brass)	65 (2" male thr., brass)
Backwash water to drain (HT pipe)	DN	100 (PE)			
Discharge of filtrate to drain (HT pipe)	DN	50 (PP)	50 (PP)	50 (PP)	100 (PP)
Supply air D _o	mm	160			
Exhaust air	DN	100 (PE)			
Connected load, approx.	kW	1.0	1.5	1.5	3.0
Power supply	V/Hz	230/50			
Protection/protection class		IP 54/Ⓜ			

Performance data		MA2000	MA3000	MA5000	MA10000
Nominal flow (subject to the raw water quality)	m³/h	2.0	3.0	5.0	10.0
Backwash volume flow	m³/h	5.7	7.9	12.5	18.2
Well water volume flow	m³/h	3.0 – 4.0	4.5 – 6.0	7.5 – 10.0	15.0 – 20.0
Operating pressure of well water	bar	2.0 – 5.5			
Operating pressure of filtration	bar	3.5 – 5.5			
Operating pressure of backwash	bar	3.5 – 5.5			
Required dimensioning of pressurised water tank (for backwash)	l	≥ 500	≥ 750	≥ 1000	≥ 2000 or 2 x 1000

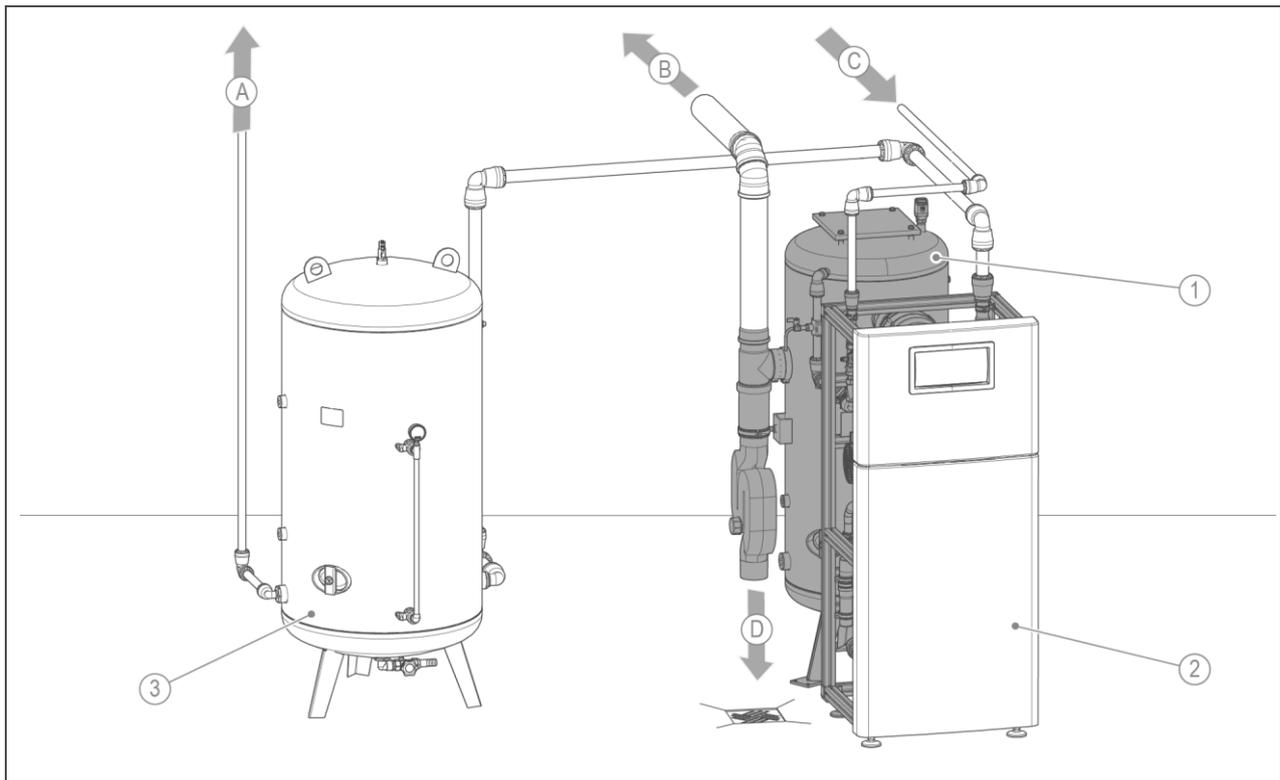
General data		MA2000	MA3000	MA5000	MA10000
Water temperature (drinking water)	°C	5 – 20			
Ambient temperature (drinking water)	°C	5 – 25			
Water temperature (technical applications)	°C	5 – 35			
Ambient temperature (technical applications)	°C	5 – 35			
pH value of raw water		6.5 – 8.5			
Humidity (non-condensing)	%	≤ 70			
Order no.		530 500	530 510	530 520	530 530

Characteristic curves of pressure booster systems



Item	Designation	Item	Designation
1	Delivery head in m	2	Delivery rate in m³/h
3	Characteristic curve of fermaliQ:MA2000	4	Characteristic curve of fermaliQ:MA3000/MA5000
5	Characteristic curve of fermaliQ:MA10000		

Installation example: fermalIQ:MA3000



Item	Designation	Item	Designation
1	Oxidation filter system fermalIQ:MA3000	2	Front cover of fermalIQ:MA (option)
3	Pressurised water tank		

Item	Designation	Item	Designation
A	Outlet to consumer	B	Exhaust air
C	Inlet to raw water pump	D	Outlet to drain

Installation requirements

- Raw water pump including pressure switch (for emergency operation) provided by client on site
- Pressurised water tank (refer to accessories) provided by client on site
- Exhaust air piping to the outside (DN 100) provided by client on site
- Supply air piping from the outside provided by client on site (after consultation with Grünbeck)
- The system must be accessible for maintenance and repair work. In addition to the depth/width of the overall system and the height of the filter tank, the operating aisles and operating heights required must be kept clear:
 - Front: 800 mm
 - Left: 1000 mm
 - Height: 400 mm
- The installation site must provide protection from the impacts below:
 - Damp, moisture, environmental impacts such as wind, rain, snow, etc.
 - Frost, direct sunlight, severe heat exposure
 - Chemicals, dyes, solvents and their vapours
- The installation site must be sufficiently ventilated
- An adequately dimensioned floor drain must be present (refer to connection data, Technical specifications II) If no floor drain is available, the client must install a backwash water tank including waste water lifting system on site.
 - Floor drains that discharge to a lifting system do not work in case of a power failure.
 - Lifting systems must be secured against power failure.

Accessories

Filter filling for deferrisation/demanganisation

Filter filling fermaliQ:MA2000, FE/MN
Order no. 530 501

Filter filling fermaliQ:MA3000, FE/MN
Order no. 530 511

Filter filling fermaliQ:MA5000, FE/MN
Order no. 530 521

Filter filling fermaliQ:MA10000, FE/MN
Order no. 530 531

Filter filling for solid particle filtration

Filter filling fermaliQ:MA2000, FIL
Order no. 530 502

Filter filling fermaliQ:MA3000, FIL
Order no. 530 512

Filter filling fermaliQ:MA5000, FIL
Order no. 530 522

Filter filling fermaliQ:MA10000, FIL
Order no. 530 532

Pressurised water tank

As a supplement to an existing pressurised water tank or, in case of a new installation, to carry out the backwash process and to maintain the water supply during the backwash process of the oxidation filter system.

Pressurised water tank 150 l, 6 bar
Order no. 530 505

Pressurised water tank 300 l, 6 bar
Order no. 530 515

Pressurised water tank 500 l, 6 bar
Order no. 530 525

Pressurised water tank 750 l, 6 bar
Order no. 530 535

Pressurised water tank 1000 l, 6 bar
Order no. 530 545

Diaphragm expansion tank DD 33, G $\frac{3}{4}$
Order no. 890 60 304

To prevent water hammer if a pressurised water tank provided by the client on site is used to store the filtrate.

Diaphragm expansion tank

As a supplement to an existing diaphragm expansion tank or, in case of a new installation, to carry out the backwash process and to maintain the water supply during the backwash process of the oxidation filter system.

Diaphragm expansion tank DT5 300, Rp 1 $\frac{1}{4}$
Order no. 535 155

Diaphragm expansion tank DT5 500, Rp 1 $\frac{1}{4}$
Order no. 535 165

Water test kit for iron
Order no. 170 150

Measuring range 0 – 0.8 mg/l and 1 – 10 mg/l
(30 determinations)

Water test kit for manganese
Order no. 170 097

Measuring range 0.03 – 0.5 mg/l
(100 determinations)

Refill pack of reagents for water test kit for manganese
Order no. 170 193

Water test kit for pH value
Order no. 170 148

Measuring range 4.5 – 10
(100 test strips)

Optional accessories

Front cover of fermaliQ:MA
Order no. 530 508

Fine dust filtration for fermaliQ:MA
Order no. 530800000000

For the fine dust filtration of the intaken ambient air

Consumables

Spare air filter LFV
Order no. 530529000001

Air particle filter for filtration of intake ambient air

Packing unit: 5 pcs

Pocket air filter LFT
Order no. 100009890001

Air particle filter for fine dust filtration

Packing unit: 1 pcs

Contact

Grünbeck Wasseraufbereitung GmbH
Josef-Grünbeck-Str. 1
89420 Hoehstaedt
GERMANY

+49 (0)9074 41-0

+49 9074 41-100

info@gruenbeck.com
www.gruenbeck.com

