



LEADING IN PRODUCTION EFFICIENCY

## OPERATING INSTRUCTIONS

### **Ecoclean® EcoCWave Automated Cleaning System**

**Customer:** W.O.M. World of Medicine GmbH  
Alte Poststrasse 11  
96337 Ludwigsstadt  
GERMANY

**Serial number:** 16320

**Order number:** FK.523493 (FU.807559)

**Year of manufacture:** 2017

Translation of the original Operating Instructions  
Edition: 10/2017  
Released on: 10.10.2018

[www.durr.com](http://www.durr.com)

### 3 Machine Description / Technical Data

#### 3.1 Technical data

##### 3.1.1 Machine version

- Basic configuration of the system
- Optional equipment available in the system
- Optional equipment *not* available in the system

	MMA	Designation
●	111	Housing
●	121	Control desk
●	131	Working tank
●	134	Flood tank 2 – electrically heated
●	135	Flood tank 3 – electrically heated
●	141	Frame with floor pan
●	153	Sliding door with inspection glass
●	336	Front wall bearing
●	411	IFW nozzles
●	554	Heating flood tank 2
●	555	Heating flood tank 3
●	643	Exhaust air
●	707	Draining unit
●	710	Piping - general
●	940	Pneumatic
●	981	Control cabinet
■	112	Paneling upper part with system roof
■	132	Flood tank 1 – steam-heated
□	133	Flood tank 1 – electrically heated
□	142	Rack upper part with system roof
■	161	Aquaclean
■	162	Condensate tank
■	179	Leak detector
■	223	Manual loading, 3-position without lifting device



MMA	Designation
<input type="checkbox"/>	224 Manual loading, 3-position with lifting device
<input type="checkbox"/>	241 Parts basket
<input type="checkbox"/>	281 Automatic 1-track conveyor
<input checked="" type="checkbox"/>	282 Automatic 2-track conveyor
<input type="checkbox"/>	311 Rotating base rigid 1x670x480x300
<input type="checkbox"/>	312 Rotating base autom. 1x670x480x300
<input type="checkbox"/>	313 Rotating base autom. 2x530x320x200
<input type="checkbox"/>	315 Rotating base autom. 2x480x320x200
<input type="checkbox"/>	316 Rotating base rigid 2x530x320x200
<input checked="" type="checkbox"/>	317 Opening device rotating base
<input type="checkbox"/>	321 Bearing - rotary drive
<input checked="" type="checkbox"/>	331 Bearing - rotary drive with frequency converter
<input type="checkbox"/>	441 Ultrasonic 3kW
<input type="checkbox"/>	442 Ultrasonic 6kW
<input type="checkbox"/>	449 Without ultrasonic
<input checked="" type="checkbox"/>	553 Heating flood tank 1
<input type="checkbox"/>	611 Hot-air drying
<input checked="" type="checkbox"/>	642 Steam condenser
<input type="checkbox"/>	653 Vacuum unit
<input checked="" type="checkbox"/>	701 Fresh water
<input checked="" type="checkbox"/>	703 Fresh water with main shutoff valve
<input checked="" type="checkbox"/>	711 Pump flood tank 1
<input checked="" type="checkbox"/>	712 Pump flood tank 2
<input checked="" type="checkbox"/>	713 Pump flood tank 3
<input type="checkbox"/>	714 Pump flood tank 1 with frequency converter
<input type="checkbox"/>	715 Pump flood tank 2 with frequency converter
<input type="checkbox"/>	716 Pump flood tank 3 with frequency converter
<input checked="" type="checkbox"/>	725 Oil separator
<input type="checkbox"/>	731 Dosing device flood tank 1
<input type="checkbox"/>	732 Dosing device flood tank 2
<input type="checkbox"/>	733 Dosing device flood tank 3
<input type="checkbox"/>	750 Magnetic insert
<input checked="" type="checkbox"/>	751 Filtration flood tank 1 - bag filter



Item	Code	Description
<input checked="" type="checkbox"/>	792	Filtration flood tank 3 – bag filter
<input checked="" type="checkbox"/>	793	Filtration flood tank 1 – bag filter
<input type="checkbox"/>	798	Reverse osmosis
<input type="checkbox"/>	797	De-ionizing unit with activated carbon
<input checked="" type="checkbox"/>	794	Demineralisation cartridge
<input type="checkbox"/>	791	Filtration flood tank 1 – cartridge filter
<input type="checkbox"/>	792	Filtration flood tank 2 – cartridge filter
<input type="checkbox"/>	793	Filtration flood tank 3 – cartridge filter
<input type="checkbox"/>	811	Sampling with membrane filter flood tank 1
<input type="checkbox"/>	812	Sampling with membrane filter flood tank 2
<input type="checkbox"/>	813	Sampling with membrane filter flood tank 3
<input type="checkbox"/>	821	Conductivity measurement flood tank 1
<input type="checkbox"/>	822	Conductivity measurement flood tank 2
<input type="checkbox"/>	823	Conductivity measurement flood tank 3
<input type="checkbox"/>	831	Ph value measurement flood tank 1
<input type="checkbox"/>	832	Ph value measurement flood tank 2
<input type="checkbox"/>	833	Ph value measurement flood tank 3



3.1.4 Materials

Tank	Stainless steel panels
Floor pan	Stainless steel panels
Housing	Steel galvanized, outside painted / safety glass
Control cabinet	Painted steel
Pipelines	Stainless steel, forming gas welded
Rotating base	Stainless steel
Fittings / valves	Stainless steel
Insulation	Armaflex / steel wool with paneling



3.1.6

Performance data		
Batch size (max., approximately)	670 x 480 x 300	mm
Load weight max.	150	kg
Throughput (approximately)	5 - 8	Loads / hour
Cycle time (approx.)	7,5 - 12	min
Conveyor height (approx.)		
	860	mm
Filling volume total (approx.)		
	1650	Liter
Filling volume work tank (approx.)		
	320	Liter
Filling volume flood tank 1 (approx.)		
	430	Liter
Filling volume flood tank 2 (approx.)		
	430	Liter
Filling volume flood tank 3 (approx.)		
	430	Liter
Aquaclean filling volume (approximately)		
	280	Liter
Oil separator filling volume (approximately)		
	135	Liter
Condensate tank filling volume (approximately)		
	8	Liter

The wash program can be adjusted.

The throughput depends on:

- goods
- contamination
- processes required
- necessary process time



## 3.1.6 Energy data

Connected load (approximately)	70	kW
Electrical connection	3 x 400V +N+PE+50Hz	
Current (approximately)	110	A
	41	kW
Total heating capacity (approximately)	9,75	kW
Heating capacity flood tank 1 (approx.)	9,75	kW
Heating capacity flood tank 2 (approx.)	9,75	kW
Heating capacity flood tank 3 (approx.)	27	kW
Heating capacity hot air drying (approximately)	14	kW
Aquaclean heating capacity (approximately)		
Vacuum pump	290 m <sup>3</sup> /h / 5,5kW	
Draining unit	12,5 m <sup>3</sup> /h / 0,55 kW	
Pump FT1	45 m <sup>3</sup> /h / 2,5bar / 5,5 kW	
Pump FT2	45 m <sup>3</sup> /h / 2,5bar / 5,5 kW	
Pump FT3	45 m <sup>3</sup> /h / 2,5bar / 5,5 kW	
Oil separator pump	2,4 m <sup>3</sup> /h / 0,37 kW	
Dosing pump FT1	n.v.	
Dosing pump FT2	n.v.	
Dosing pump FT3	n.v.	
Steam condensor fan	n.v.	
System roof exhaust air fan	n.v.	
De-ionizing unit	n.v.	
Reverse osmosis	n.v.	
Ultrasonic power	2 x 1,5	kW
Compressed air	5	bar
Compressed air consumption (approximately)	35 - 65	Std. liter / minute
Compressed air capacity required (max. approx.)	12	Std. liter / second

**3.1.8 Approved cleaning products**

**Approved cleaning products**

The Automated Cleaning System EcoCBass W3 is designed for the use of water mixed with standard aqueous (sprayable/low foaming) cleaning products with a maximum concentration of 5%.

**Cleaning chemical requirements**

The cleaning chemicals must have the following characteristics:

- Sprayable for all single-chamber machines and machines designed for spray cleaning
- Low foaming for inline immersion machines with IFW application
- pH 6-10.5 in the application solution (other pH ranges only in agreement with Dürr)

**Typical cleaning product components**

Typical machine content using standard cleaning products e.g.:

- Tenside (anionic, non ionic or cationic)
- Phosphate, Phosphonate
- Inhibitors
- Amine
- Salts, organic acids
- Additives (attention, Silicate is not allowed)

**Appropriate use**

Any other uses are considered inappropriate.

The manufacturer may under no circumstances be held responsible for damage to the parts to be cleaned or the cleaning system itself resulting from such use.

Cleaning products and disintegration products used must not chemically aggress the system. Furthermore, attention must be paid to ensure that all risk of explosion or fire due to this medium is totally excluded.

Seek the advice of Dürr before using cleaning products other than those defined for appropriate use.

**Cleaning products with any of the following properties are prohibited**

Cleaning products with any of the following properties are prohibited:

- Emulsion cleaners or emulsion preservatives (e.g. containing mineral oil)
- Silicate cleaners (e.g. sodium silicate)
- Acidic cleaners pH<6 (e.g. phosphoric acid, citric acid, sulfamic acid)
- Alkaline cleaners pH>10.5 (e.g. potassium hydroxide, sodium hydroxide)
- Mineral acids (hydrogen chloride, sulfuric acid, nitric acid, hydrofluoric acid, etc.)
- The approval of Dürr is required for these cleaning products.





Cleaning products with any of the following properties are always prohibited

Cleaning products with any of the following properties are always prohibited:

- Flammable solvents
- Cleaning solutions with demulgators containing flammable components with FP < 115°C
- Halogenated and not halogenated solvents (e.g. Dowclene, Perchlorethylene)
- Suspensions containing e.g. blast shot or other abrasive solids

**Disposal instructions**

The appropriate means of disposal and attribution of a waste disposal number is agreed between the operator and the certified waste disposal company.

Waste to be disposed of usually includes:

- Aqueous cleaning fluids
- Old oil emulsion (halogen free)
- Chips and metal scrap
- Filter linings, filter cartridges and other filter materials
- Machine cleaning products
- Cleaning concentrates
- Tenside
- Soiled packaging such as cleaning product canisters

**Water quality Information**

Whether you can use deionized water, soft water or municipal water depends on the cleaning requirements, and is determined in a preliminary test. The concentration of the cleaning chemicals increases as the water hardness increases. Please ask the supplier of the chemicals for advice.

Irrespective of conductivity and salt content, the water used here must have the following properties:

- Pleasant smell
- < 30 mg/l chloride content
- < 0.3 mg/l free chlorine
- Free of clouding substances and floating particles
- Free of iron particles
- Free of abrasive substances
- Free of bacteria and free of bacterial residues which could lead to foaming
- Water up to a maximum of 10° dH is best. Higher values require hardness absorption measures.
- Calculation °dH from the specifications of a water analysis:

$$^{\circ}\text{dH} \approx 0.14 \times \text{Ca} \left[ \frac{\text{mg}}{\text{l}} \right] + 0.23 \times \text{Mg} \left[ \frac{\text{mg}}{\text{l}} \right]$$

Municipal water of drinking water quality usually satisfies the above-mentioned requirements.

A conductivity of <200µS is recommended for demineralized water. Not permitted is the use of

- well water, river water, water from tapping points



3.2.2 Transport

3.2.2.1 Loading and unloading

3.2.2.1.1 System dimensions and weight for transport

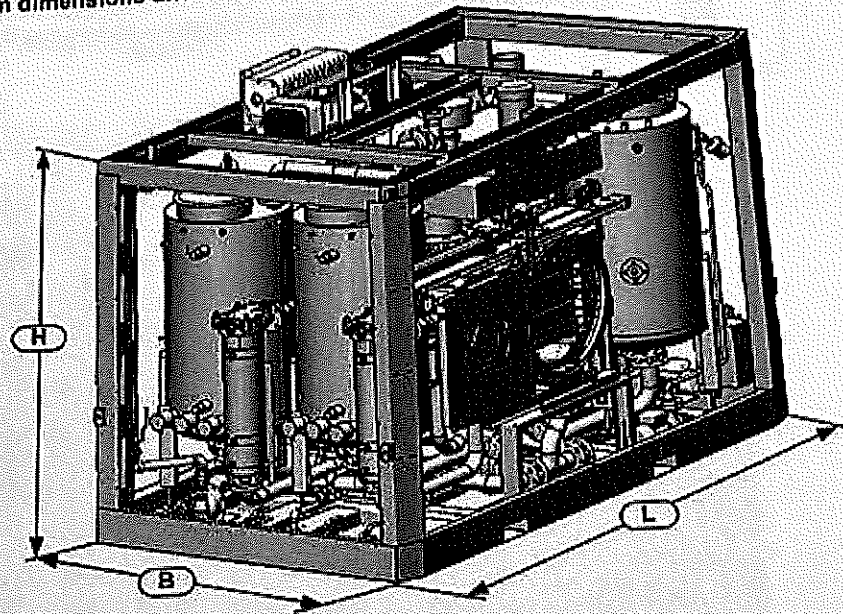
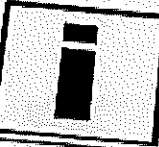


Fig. 2: System dimensions (example)

System dimensions (approximately) :

Length (L)	3450	mm
Width (B)	2000	mm
Height (H)	2600	mm
Weight (without cleaning medium approximately) :		
Basic equipment	5000	kg

3.2.2.1.2 Loading and unloading with spreaders

	<p><b>NOTE</b></p> <p>When using chains and steel ropes, ensure that the system is not damaged!</p>
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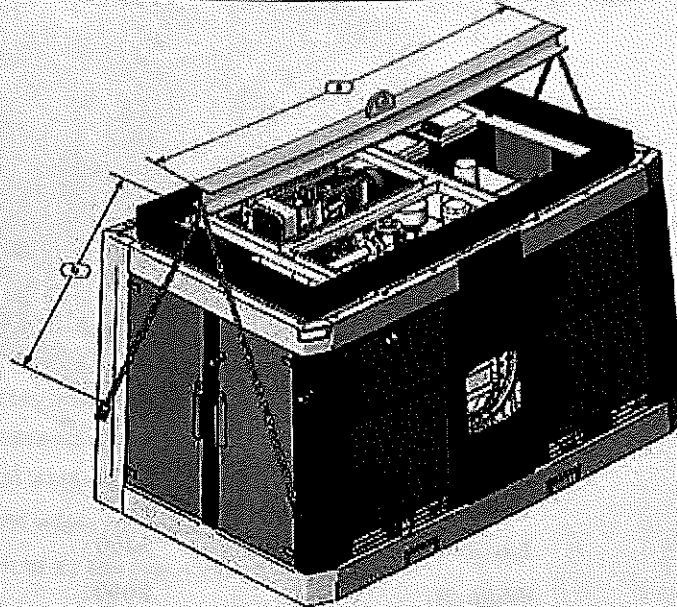


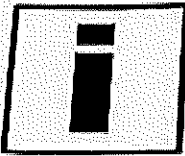
Fig. 3: Loading and unloading with spreaders (if possible)

Setting dimensions of the spreader (approx.) :

Length of spreader (dimension a)	3600 mm
Chain length (dimension b)	2450 mm



3.2.2.2 Floor-level transport



**NOTE**

Always position the means of transport under the profiles!



Longitudinal or cross transfer with heavy-duty rollers  
 4 heavy-duty rollers are necessary!  
 Position 2 heavy-duty rollers under the sections.

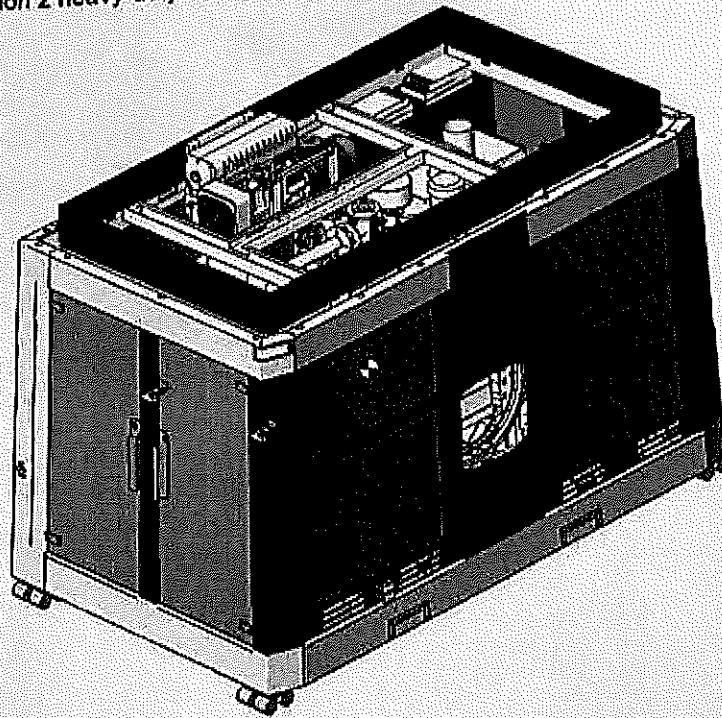


Fig. 4: Longitudinal transfer with heavy-duty rollers

To remove the heavy-duty rollers, use a crane with spreaders or hydraulic lifters at each of the 4 heavy-duty rollers.

Each hydraulic lifter must satisfy at least the following technical requirements:

Minimum carrying capacity	5500 kg
Application level	55 mm
Lifting height	180 mm



**Cross transfer with fork-lift truck**  
Place the forks of the fork-lift trucks lengthwise under the profiles.

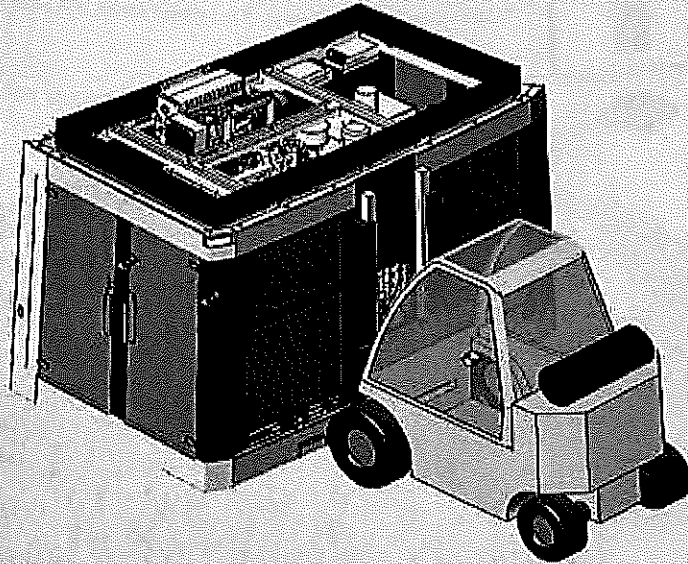


Fig. 5: Cross transfer with fork-lift truck