Culligan®

WATER TREATMENT PRODUCTS AND PLANTS

Rely on a world leader
for water treatment in commerce and industry

Culligan®

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Culligan has been providing innovative water treatment solutions in a wide range of markets and sectors for 80 years.

Culligan has expertise in the production of all types of plants, from classic treatment for drinking water to the very latest methods of water reuse.
From design and development of a plant, to installation, commissioning and after-sales service, Culligan is the global reference point in water treatment solutions for commercial and industrial use.

Culligan's philosophy has always been based on the idea that only a global approach to the problems of water, from its collection to its return to nature, can enable smart and far-sighted solutions for the exploitation of this vital resource.

Thanks to many years of experience in water treatment in all sectors, from water softening to filtration, reverse osmosis and dosing systems, Culligan has developed a range of products dedicated to each treatment, in order to facilitate the choice after sizing which is easily determined via the technical documentation available.
This long experience has also enabled the creation of highly reliable and efficient equipment which, constantly upgraded with new technologies, is the best available on the market.
All the components used, such as the hydraulic valves, pilot, microprocessor programmers and many other more or less important accessories, have undergone lengthy testing, and were designed and developed internally to ensure complete independence from third parties.
This catalog includes the full range of standard equipment dedicated to the Commercial/ Industrial sector, specifying the main features and thereby allowing a preliminary sizing, with overall dimensions, and then drafting of the final project in cooperation with our technicians.

Culligan can also study and develop specific treatment processes, and design complete systems for all types of water treatment in accordance with the current regulations in the various sectors and in the various user countries of use.
With its highly specialized team, our technical department can carry out the projects in compliance with the various regulatory requirements, for specific applications and markets.

The main markets that Culligan has addressed over the years include:

- **MUNICIPAL OR LOCAL** water companies for the production of drinking water.
- **INDUSTRIAL** for the production of water intended for the food, energy, precision electronics, paint, service, agriculture, irrigation and oil sectors.
- **HOSPITALS** with the production of water intended for hemodialysis departments, laboratories and production of steam.
- **COMMERCIAL** intended for tourist facilities.
- **EMERGENCY PLANTS** for public bodies (army, civil defense, Red Cross, etc.) able to operate in critical conditions according to the highest international standards.
- **PLANTS FOR THE RECOVERY** of wastewater for irrigation and industrial uses.

Potabilization plant

Skid-mounted demineralization plant with "polishing" column

Skid-mounted demineralization plant with pretreatment

Reverse Osmosis plant for the production of process water

Mobile containerized potabilization plant for Civil Defense

Desalination/potabilization plant

Culligan has always believed in the importance of offering its customers a complete service, with technical assistance nationwide and internationally: Culligan has a vast commercial and technical network, to locally meet the needs of customers, and to ensure prompt assistance.

In addition to ISO 9001:2008 Quality Certification for the "design, manufacture, marketing, installation and assistance of water treatment and purification plants, equipment and systems" our company has obtained SOA, UDT, GOST and Medical Device CE0434 certification in order to participate in tenders for public works in most of the world.

Electrodeionization plant

Ultrafiltration plant for reuse of wastewater

Arsenic removal plant for municipal water supply

Filtration plant for municipal water supply

Skid-mounted seawater potabilization plant with pretreatment

Surface water filtration plant for municipal water supply

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WATER SOFTENING AND DENITRIFICATION

Softening means removing from water the hardness mainly due to Calcium and Magnesium salts, exchanging them with Sodium salts, which do not precipitate or form scale.
To obtain the ion exchange, the water is made to pass through a bed of resins previously loaded with Sodium, using Sodium Chloride (common table salt) as a regenerant.
Culligan uses Cullex food-grade exchange resins, which feature high resistance to mechanical wear, long life, high exchange capacity and low consumption of salt.
For regeneration, Potassium Chloride can also be used for specific applications.

NOTE:
Using appropriate selective resins, the water softeners can be converted into NITRATE REMOVAL UNITS, whose selection and sizing must be done with the help of the technicians.

MODELS

Culligan water softeners come in the following models:

- **HE & HE TWIN**, for professional and semi-industrial applications, for flow rates up to 8.4 m^3/h with pressure loss at 1.7 bar
- **CTM**, for professional, semi-industrial and industrial applications, for flow rates up to 24 m^3/h
- **ULTRA LINE**, HA and HB lines, for industrial applications, for flow rates up to 227 m^3/h

NOTE: The available versions are given in the table, each with their own dimensional characteristics, with different exchange capacities and flow rates.

MATERIALS USED

Depending on the model, the HE and HE Twin line resin containers are in "Quadra-Hull" or composite material with PE liner coated in glass fiber and epoxy resin.
The Culligan patented Quadra Hull® containers consist of a reinforced fiberglass body with food-grade inner lining; the outer covering in ABS is moisture and UV resistant.
The Hi-Flo 3e line tanks are in composite material with PE liner coated in fiberglass and epoxy resin, whereas in the Ultra Line FRP HA HB are in anti-corrosion reinforced fiberglass.
The Ultra Line HA and HB tanks are in polyester-coated carbon steel; the inside is protected by a layer of epoxy resins, suitable for contact with water intended for human consumption and food substances.
The valve assembly is in plastic material for all HE, HE Twin and Ultra Line models up to 1550, and is in bronze for the Hi-Flo 3e models.
In the Ultra Line models from 1700 the distribution unit has cast iron valves and flanged steel pipes, coated internally and externally with epoxy paint.

OPERATION

All Culligan water softeners are fully automatic.
the HE, HE Twin and Hi-Flo 3e line models have a motorized piston or rotary distribution valve and a specific multifunction programmer that manages their various operation phases (service, wash and regeneration). All Ultra Line models are equipped with a distribution unit complete with diaphragm valves, and their various operation phases (service, wash and regeneration) are controlled by an electronic controller which activates the valves via a specific distributor pilot.
The water softening system can also have volumetric operation, which activates the regeneration phase according to the amount of water delivered. The volume of treated water is measured by an impulse emitter turbine or by a meter, and the electronic control panel controls regeneration when the preset volume is reached. Regeneration can also be started manually, without interfering with the preset automatic mechanism.
A Duplex and/or Triplex version is also available, which allows one or two water softening columns to be automatically put into service when the resins of the softener in operation are depleted, while the first switches to regeneration. There is also a Progressive Flow version available for HE models, for managing several softening columns in parallel cascade operation, to cover treated water demand peaks without having to oversize the actual water softener.
With these functions it is possible to have an uninterrupted flow of softened water.

On request, the Culligan softener can be supplied with a complete self-disinfection system.

All the water softeners can be supplied with Brine System (brine container) of different sizes and capacities, to be chosen according to available space and operating conditions.

MAIN APPLICATIONS

- Cooling plants
- Hot water producers
- Low pressure steam generators
- Textile industry
- Food industry
- Ceramic industry
- Pharmaceutical industry
- Professional kitchens
- Hotels
- Restaurants
- Bakeries
- Professional laundries
- Car washes
- Poultry and livestock farms

HE

MODEL	FITTINGS in/out Ø "	EXCHANGE CAPACITY max.★ m³ • °f	CULLEX liters	SERVICE FLOW RATE @ PRESSURE LOSS m³ @ bar	DIMENSIONS resin cont. Ø mm	DIMENSIONS resin cont. height mm	DIMENSIONS salt cont. Ø mm	WEIGHT in oper. kg	WEIGHT for shipment kg
HE 20	1	150	20	2.8 @ 1	229	1067	457	260	55
HE 40	1	356	40	2.8 @ 1	254	1372	457	290	77
HE 60	1	401	56	2.8 @ 1	305	1321	610	490	115
HE 90	1	589	85	2.8 @ 1	356	1651	610	560	152
HE 60	1½	395	56	8.4 @ 1.7	356	1321	610	525	112
HE 90	1½	621	85	8.4 @ 1.7	406	1321	610	550	135
HE 120	1½	887	113	8.4 @ 1.7	406	1651	610	735	170
HE 150	1½	977	142	8.4 @ 1.7	533	1346	762	1030	240
HE 210	1½	1521	198	8.4 @ 1.7	533	1575	762	1180	295

★ The exchange capacity is calculated on the treatment of water having a total hardness of 40°f (400 ppm $CaCO_3$) and with salinity of 500 ppm, free of oil and turbidity, colorless and delivered with the flow rate foreseen for continuous service; however, it can vary according to other parameters such as Chloride content, available hydraulic pressure, discontinuous drawing of treated water, purity and type of regenerant used.

NOTE: Weights are approximate. • The above dimensions can vary by ± 2%.
Also available in Duplex version.

HE TWIN

MODEL	FITTINGS in/out Ø "	EXCHANGE CAPACITY max. ★TANK m³ • °f	CULLEX FOR TANK liters	SERVICE FLOW RATE @ PRESSURE LOSS m³ @ bar	DIMENSIONS FOR TANK resin cont. Ø mm	DIMENSIONS FOR TANK resin cont. height mm	DIMENSIONS FOR TANK salt cont. Ø mm	WEIGHT in oper. kg	WEIGHT for shipment kg
HE 60	1	401	56	2.8 @ 1	305	1321	610	630	215
HE 90	1	589	85	2.8 @ 1	356	1651	610	765	290
HE 60	1½	395	56	8.4 @ 1.7	356	1321	610	690	206
HE 90	1½	621	85	8.4 @ 1.7	406	1321	610	710	250
HE 120	1½	887	113	8.4 @ 1.7	406	1651	610	960	315
HE 150	1½	977	142	8.4 @ 1.7	533	1346	762	1560	450
HE 210	1½	1521	198	8.4 @ 1.7	533	1571	762	1600	555

★ The exchange capacity is calculated on the treatment of water having a total hardness of 40°f (400 ppm $CaCO_3$) and with salinity of 500 ppm, free of oil and turbidity, colorless and delivered with the flow rate foreseen for continuous service; however, it can vary according to other parameters such as chloride content, available hydraulic pressure, discontinuous drawing of treated water, purity and type of regenerant used.

NOTE: Weights are approximate. • The above dimensions can vary by ± 2%.

CTM

MODEL	FITTINGS in/out Ø "	EXCHANGE CAPACITY max ★ m³ • °f	CULLEX litri	SERVICE FLOW RATE m³/h	DIMENSIONS FOR TANK Resin tank Ø mm	Resin tank altezza mm	Brine System size inch(")	WEIGHT in oper. kg	WEIGHT for shipment kg
CTM 60	2	388	56	11.6	356	1791	24x50	500	125
CTM 90	2	583	85	13	407	1791	24x50	600	150
CTM 120	2	777	113	12.5	407	2121	24x50	720	180
CTM 150	2	972	142	13.4	762	1270	30x50	1120	280
CTM 210	2	1360	198	14.8	762	1270	30x50	1248	312
CTM 300	2	1944	283	15.9	610	2299	30x50	1680	420
CTM 450	2	2916	425	17.3	762	2299	42x50	2620	655
CTM 600	2	3888	566	18.6	915	2299	42x50	3592	898

★ The exchange capacity is calculated on the treatment of water having a total hardness of 40°f (400 ppm $CaCO^3$) and with salinity of 500 ppm, free of oil and turbidity, colorless and delivered with the flow rate foreseen for continuous service; however, it can vary according to other parameters such as chloride content, available hydraulic pressure, discontinuous drawing of treated water, purity and type of regenerant used.

NOTA: Weights are approximate. • The above dimensions can vary by ± 2%.
For the Duplex CTM models, technical specs are referred to the single softener.
Duplex models are composed by two tank with a control valve for each column and a single brine system.

ULTRA LINE FRP HA - HB

MODEL	FITTINGS in/out Ø "	TANK Ø (")	m³ x °f min / max	BRINE SYSTEM Cat. No.
HA 200 FRP	1½	21	734/1188	760609
HA 230 FRP	1½	21	838/1359	760610
HA 290 FRP	2	24	1047/1698	760610
HA 320 FRP	2	24	1150/1869	760610
HA 430 FRP	2	30	1570/2550	760611
HA 510 FRP	2	30	1887/3060	760612
HA 770 FRP	2	36	2827/4587	760612
HA 850 FRP	2	36	3141/5097	760612
HA 1200 FRP	2	48	4503/7136	760660
HA 1400 FRP	2	48	5235/8325	760660
HB 770 FRP	2½	36	2830/4587	760612
HB 850 FRP	2½	36	3141/5097	760612
HB 1200 FRP	2½	48	4503/7136	760660
HB 1400 FRP	2½	48	5235/8325	760660
HB 1550 FRP	2½	55	5549/8825	760660

24-110-230 V - 50/60 Hz
(Without Brine System and Meter)

ULTRA LINE FRP HB 3″

MODEL	FITTINGS in/out Ø ″	TANK Ø (″)	m^3 x °f min / max	BRINE SYSTEM Cat. No.
HB 770 FRP	3	36	2830/4587	760612
HB 850 FRP	3	36	3141/5097	760612
HB 1200 FRP	3	48	4503/7136	760660
HB 1400 FRP	3	48	5235/8325	760660
HB 1550 FRP	3	55	5549/8825	760660

24-110-230 V - 50/60 Hz
(Without Brine System and Meter)

ULTRA LINE HA

MODEL	FITTINGS in/out Ø ″	EXCHANGE CAPACITY max.★ m^3 • °f	CULLEX liters	SERVICE FLOW RATE m^3/h	DIMENSIONS FOR TANK resin cont. Ø mm	DIMENSIONS FOR TANK resin cont. height mm	DIMENSIONS FOR TANK salt cont. Ø mm	WEIGHT in oper. kg	WEIGHT for shipment kg
HA 200	1½	1188	198.2	18	500	1915	715	495	395
HA 230	1½	1359	226.5	18	500	1915	715	530	425
HA 290	2	1698	283	26	600	1930	850	715	570
HA 320	2	1868	311	26	600	1930	850	750	600
HA 430	2	2550	424.5	30	750	1980	1025	1080	860
HA 510	2	3060	510	30	750	1980	1025	1160	930
HA 770	2	4587	764	34	950	2056	1070	1830	1470
HA 850	2	5097	849	34	950	2056	1070	1940	1550
HA 1200	2	7136	1217	34	1200	2172	1580	2800	2240
HA 1400	2	8325	1415	34	1200	2172	1580	3000	2420

★ The exchange capacity is calculated on the treatment of water having a total hardness of 40°f (400 ppm $CaCO_3$) and with salinity of 500 ppm, free of oil and turbidity, colorless and delivered with the flow rate foreseen for continuous service; however, it can vary according to other parameters such as chloride content, available hydraulic pressure, discontinuous drawing of treated water, purity and type of regenerant used.

NOTE: Weights are approximate. • The above dimensions can vary by ± 2%.

ULTRA LINE HB

MODEL	FITTINGS in/out Ø "	EXCHANGE CAPACITY max.★ m³ • °f	CULLEX liters	SERVICE FLOW RATE m³/h	DIMENSIONS FOR TANK resin cont. Ø mm	resin cont. height mm	salt cont. Ø mm	WEIGHT in oper. kg	WEIGHT for shipment kg
HB 770	2½	4587	764	50	950	2056	1070	1840	1480
HB 850	2½	5097	849	50	950	2056	1070	1950	1550
HB 1200	2½	7136	1217	50	1200	2172	1580	2810	2250
HB 1400	2½	8325	1415	50	1200	2172	1580	3010	2430
HB 1550	2½	8825	1500	60	1400	2392	1580	4200	2580
HB 1700	4	10430	1568	114	1500	2620	1580	6105	3355
HB 2100	4	11390	1904	114	1500	2620	1580	6354	3644
HB 2500	4	16050	2296	114	1800	2660	BRINE MAKER ⧫	8480	4500
HB 3000	4	18480	2632	114	1800	2660	BRINE MAKER ⧫	8760	4790
HB 4500	6	28500	4032	227	2100	3030	BRINE MAKER ⧫	13080	7300
HB 6600	6	42900	6020	227	2500	3100	BRINE MAKER ⧫	19585	10485

★ The exchange capacity is calculated on the treatment of water having a total hardness of 40°f (400 ppm $CaCO_3$) and with salinity of 500 ppm, free of oil and turbidity, colorless and delivered with the flow rate foreseen for continuous service; however, it can vary according to other parameters such as chloride content, available hydraulic pressure, discontinuous drawing of treated water, purity and type of regenerant used.

⧫ The dimensions of the Brine Maker in given in the executive drawings.

NOTE: Weights are approximate. • The above dimensions can vary by ± 2%.

FRP NITRATE REMOVAL UNITS

MODEL	FITTINGS in/out Ø "	TANK Ø (")	EXCHANGE CAPACITY g NO_3 / Kg salt	BRINE SYSTEM Cat. No.
HB 200 FRP	2	24	3000/40	760610
HB 350 FRP	2	30	5200/70	760610
HB 600 FRP	2½	36	9000/120	760612
HB 1000 FRP	2½	48	15000/200	760660
HB 1700 FRP	2½	55	23250/310	760659

OPERATION DATA

	HE / HE TWIN	HI-FLO 3e	ULTRA LINE HA and HB	NITRATE REMOVAL UNITS
Minimum operating pressure	1.4 bar for model 1" 1.7 bar for model 1.5"	2 bar	2 bar	2 bar
Maximum operating pressure	8.6 bar for model 1" 8.3 bar for model 1.5"	8.5 bar	7 bar for models 200 to 2100 5 bar for later models 10 bar for FRP version	7 bar for models up to 1700 5 bar for model 2500 10 bar for FRP version
Operating temperature	0 - 49° for model 1" 4.4 - 38° for model 1.5"	1 - 40 °C	1 - 40 °C	2 - 40 °C
Power supply	230/24 V - 50/60 Hz	230/24 V - 50/60 Hz	110/230/24 V - 50/60 Hz	110/230/24 V - 50/60 Hz
Installed power	8.4 - 21.61 Hz	20 W	20 W	10 W
Pressure loss	from 0.8 to 1 bar for model 1" from 1 to 1.7 bar for model 1.5"	~0.5 bar at average flow rate ~1.5 bar at max. flow rate	~0.5 bar at average flow rate ~1.5 bar at max. flow rate	0.3 - 0.6 bar

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FILTRATION

Filtering means removing turbidity, from the coarsest to the colloidal, from the water, adsorbing unpleasant tastes, smells and colors, as well as harmful inorganic and organic micro pollutants, eliminating Iron, Manganese, Arsenic and other heavy metals, and neutralizing the acidity.
These results are achieved with an adequate filtration system, in some cases assisted by pre-oxidation and chemical conditioning.
With biological filtration it is possible to remove Ammonia by nitrification.

MATERIALS USED

The models available, with 1" to 3" fittings, are in carbon steel, painted externally, for non-aggressive or non-corrosive waters.

OPERATION

The Dynamic Separator exploits the centrifugal movement of the water to separate the solid parts from the liquid.
The water enters tangentially at the top and is conveyed, through holes that are also tangential, inside a pipe where separation of the solid particles occurs.
The water runs through the pipe with strong centrifugal energy that allows the separation of parts of higher specific weight.
These descend by gravity and are collected in the lower accumulation chamber, whereas the clarified water flows upwards, along the middle part of the pipe, to the upper outlet.

DYNAMIC SEPARATORS

MODEL	FLOW RATE		FITTINGS		COLLECTION CHAMBER CAPACITY	DIMENSIONS	WEIGHT	
	min.	max.	in/out	discharge		diameter x height	in operation	for shipment
	m³/h	m³/h	"	"	liters	mm	kg	kg
DSA 1	4.5	7.5	1	¾	1.2	152x762	17	11
DSA 1.5	10.5	16	1½	¾	1.2	152x762	18	11
DSA 2	14.5	24	2	¾	3	219x854	45	22
DSA 2.5	21.5	35	2½	¾	4.7	219x940	50	25
DSA 3	33.5	66	3	¾	8.3	73x1067	80	46

Max. operating temperature: 70 °C • Minimum operating pressure: 1 bar • Max. pressure: 8 bar.

NOTE: Weights are approximate. • The above dimensions can vary by ± 2%.

SELF-CLEANING FILTERS

The Self-cleaning Filters are designed to reduce the turbidity of the water, while eliminating the operations necessary for replacing the filter cartridge.
They are available in semi-automatic and automatic versions and, depending on the models, are used for small and high flow rates. In the 1" to 2½" models the cartridge consists of an AISI 316 stainless steel mesh, fitted with a rotor that periodically eliminates the retained impurities with a backwashing action. The cartridge is available from 50 to 500 µ.
For high flow rates there are EASY MAX self-cleaning filters provided with 2" (threaded) and DN 65-80-100 (flanged) fittings. In the semi-automatic models washing is obtained by turning a knob; in the automatic industrial series the backwash cycles are timed, programmable at intervals of 1 to 999 hours, with reduced water consumption.
EASY MAX filters are CE compliant, compatible with the directive on machinery and building materials, and electromagnetic compatibility.

SELF-CLEANING FILTER

EASY

EASY A

MODEL	FLOW RATE at 0.2 bar m³/h	FITTINGS Ø "	DIMENSIONS Ø X height mm	WEIGHT for shipment kg
EASY semi - automatic	6	1	110x300	2.8
EASY semi - automatic	8	1½	110x300	3.4
EASY semi - automatic	9.5	2	110x300	3.7
EASY A automatic	6	1	110x380	4.3
EASY A automatic	8	1½	110x380	4.9
EASY A automatic	9.5	2	110x380	5.2

NOTE: Maximum operating pressure: 16 bar • Maximum water/ambient temperature: 5° / 40 °C
Power supply: 220/24 V - 50 Hz

EASY MAX

MODEL	FLOW RATE at 0.2 bar m³/h	FITTINGS Ø "	DIMENSIONS Ø X height mm	WEIGHT for shipment kg
EASY MAX semi - automatic	30	2"	317X332	10.5
EASY MAX semi - automatic	38	DN 65	252X332	13.5
EASY MAX semi - automatic	50	DN 80	252X344	13.5
EASY MAX semi - automatic	52	DN 100	252X344	14.5
EASY MAX/A automatic	30	2"	317X346	11
EASY MAX/A automatic	38	DN 65	252X346	13
EASY MAX/A automatic	50	DN 80	252X358	14
EASY MAX/A automatic	52	DN 100	252X358	15

NOTE: Maximum operating pressure: 16 bar • Maximum water/ambient temperature: 80° / 40 °C
Power supply: 220/24 V - 50 Hz

- GARD SYSTEM

Single or multiple filters with ¾", 1" and 1¾" fittings. A highly versatile modular system allowing the combination in different configurations (parallel, series, series-parallel, parallel-series) of turbidity filters of different finenesses, activated carbon filters, dissolvers for the prevention of corrosion. Gard System cartridges come in the following versions:

- STRAINER, with washable steel mesh filtering element, to remove suspended solids up to 10 µ.
- MONOSTAGE or MULTISTAGE, with food-grade polypropylene filtering element, for the selective removal of turbidity.

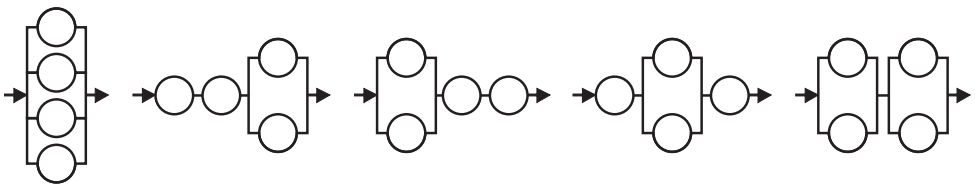
The purity of the filtrate varies from 1 to 80 µ, depending on the type of cartridge.

- IO-CHEM SP12, phosphate crystal cartridge, for preventing corrosion.
- CULLAR D, activated carbon cartridge, for adsorption of organic substances and dechlorination.

- FGX3

Multiple cartridge filters, with satin finish AISI 316 stainless steel container and UNI 338 male threaded inlet/outlet connections, for medium flow rates. The system allows the fitting of cartridges of different filtration fineness (1 - 5 - 20 µ) using standard lengths of 10, 20, 30, 40 inches (250, 500, 750, 1000 mm). Cartridge replacement is quick, thanks to the "bell" opening system. The filter comes complete with tripod support for ground installation.

GARD SYSTEM



The diagram shows some of the possible combinations obtainable with 2, 3 and 4 elements.

NOTE: For the Gard System technical data refer to the separate datasheet.

FGX3

MODEL	FLOW RATE l/h	CARTRIDGES number	FITTINGS Ø "	DIMENSIONS Ø mm	DIMENSIONS maximum height with support* mm	WEIGHT for shipment kg
FGX3 125	7.5	3x500 mm	2 gas	168.3	1115	20
FGX3 150	9	3x750 mm	2 gas	168.3	1365	22
FGX3 250	15	3x1000 mm	2 gas	168.3	1620	24
FGX3 415	24.9	7x750 mm	2½ gas	219.1	1371	27
FGX3 580	34.8	7x1000 mm	2½ gas	219.1	1630	34
FGX3 750	45	9x1000 mm	3 gas	273	1780	44

*Variable heights for support tripod adjustment.

NOTE: Operating pressure: 8 bar
Test pressure: 11.4 bar

FILTERS

For each type of Culligan filter it is possible to choose the most suitable filter bed from a complete range of minerals. To address any specific problem, refer to the diagram on the next page.
The available versions are:

- FILTR-CLEER
A multi-layer filter whose typical application is the removal of turbidity, suspended solids and small quantities of heavy metals (mainly Iron and Manganese).
The minerals used are "Cullcite", a low-density granular anthracite, forming the top layer, and "Cullsan", a pure silica sand, chemically inert and of almost unlimited duration.

- CULLAR
Whose typical application is the removal of Chlorine and unpleasant tastes and odors.
Cullar is a granular activated carbon characterized by high porosity, which gives it a high adsorbing capacity.

- CULLNEU
Whose typical application is the demineralization-neutralization of acidic waters, in order to inhibit aggression and increase hardness. Cullneu is a Calcium carbonate-based granular mineral, which dissolves in proportion to the acidity neutralized, and must therefore be regularly topped up.

- SUPER IRON
A multilayer filter using a selective mineral with catalytic effect on Iron, Manganese and Arsenic, reactivatable with various types of oxidants.

- G.A.C.
G.A.C., granular activated carbon, specific for adsorbing organohalogenated compounds, antiparasitics, heavy metals and other substances harmful to health.

- BIOFILTER
A special filter for removing Ammonia, where the main function of the quartzite filtering media is to support the nitrification biomass consisting of two strains of aerobic bacteria (Nitrosamonas and Nitrobacter). The Biofilter can also oxidize and remove appreciable concentrations of Iron and Manganese when present in the water.

- UFX
A filter using a specific mineral to adsorb Arsenic and Vanadium. The mineral cannot be regenerated on site, therefore it must be replaced when depleted; for this reason its use is not recommended for the removal of high concentrations. Ideal for "polishing" water previously treated with another more economical process.

- OFSY®
An exclusive Culligan dual-stage filtration system, ideal for removing high amounts (or variable amounts) of turbidity and suspended solids. The special feature of the system is that of being able to directly treat highly loaded waters, therefore without any settling or clarification pre-treatment.

CHOOSING THE MOST EFFECTIVE FILTER BED

	Filtr-Cleer UF		Cullar UR		Cullneu UU		Super Iron UFP		UFX	FHT	Bio - Filtro BF	GAC	OFSY
	HE CTM HF6	HF9	HE CTM HF6	HF9	HE CTM HF6	HF9	HE CTM HF6	HF9	HF9				
Turbidity	●●	●●								●●			●●●
High and/or variable turbidity	●●	●●											●●●
Tastes			●	●●								●●●	
Odors			●	●●								●●●	
Colors			●	●●								●●●	
Atrazine and similar				●								●●●	
Tri + tetrachlorethylene and similar				●								●●●	
Acidity	●	●●					●●	●●●		●●	●●		●●●
Iron	●	●●					●●	●●●					●●●
Manganese		●					●	●●	●●●		●		●●
Arsenic and Vanadium		●						●	●●●				●●
Ammonia											●●●		

● Acceptable ●● Good ●●● Excellent

NOTE: In addition to the standard production, for higher flow rates there are specific treatment plants as well as plants pre-assembled on skids or in containers for special applications, and plants to DIN standards, ASME, RINA, etc.

MATERIALS USED

Manufactured entirely at the Culligan works, the standard filters are in steel with corrosion protection consisting of a thick layer (250-300 µ) of food-grade epoxy resins inside and an 80-100 µ layer of protection on the outside.
Exceptions are the HE Series filters, the FHT manual filters and the FRP Series, whose tank is in anti-corrosion reinforced fiberglass (or Culligan Quadra-Hull® system for HE filters only).

OPERATION

Automatic operation of the filters is regulated by a group of hydraulic diaphragm valves actuated by a multi-port pilot which, controlled by an electronic programmer, alternates the service and wash phases.
Culligan HE Series filters are controlled by a multi-piston valve, which ensures easy maintenance and longer life. The installation of a communication kit (optional) is used for alerting if the filter needs servicing.

The Culligan Controller, included in the entire range of filters, allows easy control of the plant and its operation.

Flow rates in the various service and wash phases are controlled by automatic flow regulators that prevent leakage of the minerals during the backwash and optimize
filter efficiency in the service phase.

NOTE: The standard versions and ranges available are given in the technical specifications, on the following pages.

HE

MODEL	FLOW RATE max. service m³/h	FLOW RATE counter-current m³/h	FITTINGS in/out Ø "	DIMENSIONS width mm	DIMENSIONS depth mm	DIMENSIONS height mm	WEIGHT in operation kg	WEIGHT for shipment kg
FILTR-CLEER (turbidity)								
UF 12	2.6	2.3	1½	356	610	1575	190	148
UF 14	3.6	3.4	1½	356	610	1905	250	179
UF 16	4.7	4.5	1½	406	610	1905	340	255
UF 21	8.1	6.8	1½	533	610	1600	470	322
CULLAR (taste - odor - color)								
UR 12	1.8	1.8	1½	356	610	1575	165	123
UR 14	2.5	2.3	1½	356	610	1905	250	179
UR 16	3.2	3.4	1½	406	610	1905	315	231
UR 21	5.4	5.7	1½	533	610	1600	395	247
CULLNEU (acidity)								
UU 12	1.8	1.8	1½	356	610	1575	165	115
UU 14	2.5	2.3	1½	356	610	1905	225	145
UU 16	3.2	3.4	1½	406	610	1905	290	197
UU 21	5.4	6.8	1½	533	610	1600	434	286
SUPER IRON (Iron - Manganese)								
UFP 12	1.8	1.8	1½	356	610	1575	190	140
UFP 14	2.1	3.4	1½	356	610	1905	300	220
UFP 16	2.5	3.4	1½	406	610	1905	365	272
UFP 21	3	6.8	1½	533	610	1600	484	336

NOTE: Weights are approximate. • The above dimensions can vary by ± 2%.

CTM

MODEL	FLOW RATE service max. m³/h	FLOW RATE counter-current m³/h	FITTINGS in/out Ø "	DIMENSIONS width mm	DIMENSIONS depth mm	DIMENSIONS height mm	WEIGHT in operation kg	WEIGHT for shipment kg
FILTR-CLEER (turbidity)								
UF 21	5.4	6,8	2	21x62	533	2045	570	335
UF 24	7.3	11	2	24x72	610	2299	890	522
UF 30	11.3	16	2	30x72	762	2299	1195	702
CULLAR (taste - odor - color))								
UR 21	2,7	6,8	2	21x62	533	2045	400	235
UR 24	3,6	11	2	24x72	610	2299	720	422
UR 30	5,7	16	2	30x72	762	2299	1156	680
SUPER IRON (Iron - Manganese)								
UFP 21	1,5	6,8	2	21x62	533	2045	615	360
UFP 24	2,2	7,9	2	24x72	610	2299	975	572
UFP 30	3,5	11,3	2	30x72	762	2299	1500	880
CULLAX (Arsenic - Vanadium)								
UFX 21	2	3,4	2	21x62	533	2045	655	385
UFX 24	3,4	4,5	2	24x72	610	2299	975	572
UFX 30	4,5	6,8	2	30x72	762	2299	1585	930

NOTE: Weights are approximate. • The above dimensions can vary by ± 2%.

FHT

MODEL	FLOW RATE service max. m³/h	FLOW RATE counter-current m³/h	FITTINGS in/out Ø "	DIMENSIONS width mm	DIMENSIONS depth mm	DIMENSIONS height mm	WEIGHT in operation kg	WEIGHT for shipment kg
FHT 500	0.5	1.5	¾	250	-	680	-	70
FHT 1000	1	3	¾	330	-	980	-	90
FHT 2500	2.5	4	1½	700	850	1010	-	-

NOTE: Weights are approximate. • The above dimensions can vary by ± 2%.

HI-FLO 6

MODEL	FLOW RATE		FITTINGS	DIMENSIONS			WEIGHT	
	service max. m^3/h	counter-current m^3/h	in/out Ø "	width mm	depth mm	height mm	in operation kg	for shipment kg
FILTR-CLEER (turbidity)								
UF 60	36.2	61.3	80	1500	1760	2200	4640	3290
UF 72	52	90.8	100	1800	2150	2282	6455	4655
UF 84	70.4	129.4	100	2100	2450	2340	8325	5825
UF 90	81.6	147.7	100	2300	2630	2350	12250	7250
UF 100	101.2	174.9	150	2500	2950	2614	13445	9145
UFe 100	101.2	174.9	100	2500	2850	2564	13445	9145
UF 120	145	250	150	3000	3490	2890	27000	15500
CULLAR (taste - odor - color)								
UR 60	36.2	27.3	80	1500	1760	2200	4395	2795
UR 72	52	40.9	80	1800	2100	2282	6025	3875
UR 84	70.4	52.2	100	2100	2450	2340	8190	5190
UR 90	81.6	65	100	2300	2630	2350	11200	6080
UR 100	101.2	79.5	100	2300	2850	2564	12250	7750
UR 120	145	114	150	3000	3490	2890	25000	13400
CULLNEU (acidity)								
UU 60	22.7	61.3	80	1500	1760	2200	4640	3290
UU 72	32.7	90.8	80	1800	2150	2282	6455	4655
UU 84	40.9	129.4	100	2100	2450	2340	8325	5825
UU 90	47	147.7	100	2300	2630	2350	12290	7250
UU 100	59	174.9	150	2500	2950	2614	13445	9145
UUe 100	59	174.9	100	2500	2850	2564	13445	9145
UU 120	80	250	150	3000	3490	2890	27000	15500
SUPER IRON (Iron - Manganese)								
UFP 60	28	52.2	80	1500	1760	2200	4800	3310
UFP 72	40	68	100	1800	2150	2282	6750	4750
UFP 84	52	95.5	100	2100	2450	2340	8600	6100
UFP 90	58	114	100	2300	2630	2350	12500	7500
UFP 100	79	143	150	2500	2950	2614	12900	9500
UFPe 100	79	143	100	2500	2850	2564	12900	9500
UFP 120	112	200	150	3000	3490	2890	27250	15750

NOTE: Weights are approximate. • The above dimensions can vary by ± 2%.

HI-FLO 6 TWIN

MODEL	FLOW RATE service max. m³/h	FLOW RATE counter-current m³/h	FITTINGS in/out Ø "	DIMENSIONS width mm	DIMENSIONS depth mm	DIMENSIONS height mm	WEIGHT in operation kg	WEIGHT for shipment kg
TWIN - FILTR-CLEER (turbidity)								
UF 248	41	41	65	2600	1536	2125	9000	5500
UF 260	72.4	61.8	100	3300	1880	2140	9300	6600
UF 272	104	90.8	100	3900	2110	2260	12930	9350
UF 284	140.8	129.4	150	4580	2360	2385	16500	11700
UF 290	163.8	150	150	4950	2600	2460	24530	14550
UF 2100	202.4	274.9	150	5300	2970	2640	26900	18300
UF 2120	290	250	150	6400	3395	2845	54000	31000
TWIN - CULLAR (taste – odor – color)								
UR 248	41	18.2	65	2600	1536	2125	8100	4600
UR 260	72.4	29	100	3300	1880	2140	8800	5600
UR 272	104	40.9	100	3900	2110	2260	12070	7770
UR 284	140.8	52.2	150	4580	2360	2385	16400	10400
UR 290	163.2	68	150	4980	2600	2460	22420	12200
UR 2100	202.4	79.5	150	5300	2970	2640	24530	15530
UR 2120	290	114	150	6400	3395	2845	50030	26850
TWIN - SUPER IRON (Iron – Manganese)								
UFP 248	36	31.9	65	2600	1536	2125	9100	5700
UFP 260	56	52.2	100	3300	1880	2140	9550	6800
UFP 272	80	68	100	3900	2110	2260	13200	9600
UFP 284	104	95.5	150	4580	2360	2385	17200	12000
UFP 290	116	114	150	4980	2600	2460	25000	15000
UFP 2100	158	143	150	5300	2970	2640	17500	19000
UFP 2120	224	200	150	6400	3395	2845	55000	31500

NOTE: Weights are approximate. • The above dimensions can vary by ± 2%.

HI-FLO 9 FRP

MODELS					FITTINGS (")
FILTER-CLEER	CULLAR	SUPER IRON	CULLNEU	UFX	
UF 21	UR 21	UFP 21	UU 21	UFX 21	½
UF 24	UR 24	UFP 24	UU 24	UFX 24	½
UF 30	UR 30	UFP 30	UU 30	UFX 30	½
UF 36	UR 36	UFP 36	UU 36	UFX 36	2
UF 48		UFP 48	UU 48		2½ x2x2½
	UR 48			UFX 48	2
UF 55		UFP 55	UU 55		2½
	UR 55			UFX 55	2½ x2x2½

NOTE: 24-110-230 V - 50/60 Hz

HI-FLO 9

MODEL	FLOW RATE		FITTINGS	DIMENSIONS			WEIGHT	
	service max. m^3/h	counter-current m^3/h	in/out Ø "	width mm	depth mm	height mm	in operation kg	for shipment kg
FILTR-CLEER (turbidity)								
UF 20	4.7	7.9	1½"	710	735	1950	770	470
UF 24	6.7	10.9	1½"	710	835	1985	1100	680
UF 30	11	15.9	1½"	765	985	2050	1700	1030
UF 36	17	27.3	2"	975	1215	2131	2980	1910
UF 48	27	40.9	2½	1258	1436	2235	4490	2790
UF 54	37	56	2½	1432	1632	2367	4800	3100
UF 60	42	61.3	DN80	1500	1760	2700	5500	4050
UF 72	60	90.8	DN100	1800	2150	2782	6400	5450
UF 84	80	129.4	DN100	2100	2450	3090	10650	7700
UF 90	86	147.7	DN100	2300	2630	3100	12450	9010
UF 100	117	174.9	DN150	2500	2950	3364	16100	11700
UFe 100	117	174.9	DN100	2500	2850	3314	16100	11700
UF 120	170	250	DN150	3000	3490	3600	32000	18880
CULLAR (taste - odor - color)								
UR 20	4.7	3.4	1½"	710	735	1950	760	460
UR 24	6.7	4.5	1½"	710	835	1985	1030	600
UR 30	11	6.8	1½"	765	385	2050	1600	930
UR 36	17	10.9	2"	975	1215	2131	2720	1650
UR 48	27	18.2	2"	1258	1465	2235	3500	2410
UR 54	37	25	2½"	1432	1626	2367	4250	2950
UR 60	42	27.3	DN 80	1500	1760	2700	4500	3350
UR 72	60	40.9	DN 80	1800	2100	2782	5550	4600
UR 84	80	52.2	DN 100	2100	2450	3090	8100	5900
UR 90	86	61.8	DN 100	2450	2630	3100	9806	7600
UR 100	117	79.5	DN 100	2630	2850	3314	11100	9400
UR 120	170	114	DN 150	2850	3490	3600	29000	15250
SUPER IRON (Iron - Manganese)								
UFP 20	3	5.7	1½"	710	735	1950	770	470
UFP 24	4.5	7.9	1½"	710	835	1985	1100	680
UFP 30	7	13.6	1½"	765	985	2050	1700	1030
UFP 36	11	20.5	2"	975	1215	2130	2980	1910
UFP 48	18	31.9	2½"	1258	1436	2235	4490	2790
UFP 54	25	45.8	2½"	1432	1632	2367	4800	3100
UFP 60	28	52.2	DN 80	1500	1760	2700	5700	4300
UFP 72	40	68	DN 100	1800	2150	2780	7000	5900
UFP 84	52	95.5	DN 100	2100	2450	3090	11700	8700
UFP 90	58	114	DN 100	2300	2630	3100	14000	10560
UFP 100	79	143	DN 150	2500	2950	3364	17900	13200
UFPe 100	79	143	DN 100	2500	2850	3314	17900	13200
UFP 120	112	200	DN 150	3000	3490	3600	34600	20500

NOTE: Weights are approximate. • The above dimensions can vary by ± 2%.

HI-FLO 9

MODEL	FLOW RATE		FITTINGS	DIMENSIONS			WEIGHT	
	service max. m^3/h	counter-current m^3/h	in/out Ø "	width mm	depth mm	height mm	in operation kg	for shipment kg
CULLAX (Arsenic-Vanadium)								
UFX 20	3	3	1½"	710	735	1950	760	460
UFX 24	4.5	4.5	1½"	710	835	1985	1020	600
UFX 30	6.8	6.8	1½"	765	985	2050	1590	930
UFX 36	10.9	10.9	2"	975	1215	2131	2550	1650
UFX 48	17	17	2"	1258	1465	2235	4060	2410
UFX 54	25	25	2½"	1432	1626	2367	5050	2950
UFX 60	27.3	27.3	DN 80	1500	1760	2700	5970	3350
UFX 72	40	40	DN 80	1800	2100	2782	8350	4600
UFX 84	52.2	52.2	DN 100	2100	2450	3090	11150	5900
UFX 90	61.8	61.8	DN 100	2300	2630	3100	13900	7600
UFX 100	75	75	DN 100	2500	2850	3364	16900	9400
UFX 120	105	105	DN 100	3000	3490	3600	24750	13250
BIOFILTERS (Ammonia - Iron - Manganese)								
BF 48	17	36	2"	1285	1465	2235	4150	2500
BF 54	22.5	47	2½"	1432	1626	2367	5150	3050
BF 60	26	54	DN 80	1500	1760	3200	6325	3700
BF 72	38	80	DN 80	1800	2100	3282	8650	4900
BF 84	52	108	DN 100	2100	2450	3590	11350	6100
BF 90	62	126	DN 100	2300	2630	3660	14200	7900
BF 100	72	144	DN 100	2500	2850	3814	17300	9800
BF 120	106	216	DN 100	3000	3490	4100	25200	13700
CULLNEU (acidity)								
UU 20	3	7.9	1½"	710	735	1950	830	530
UU 20	4.5	10.9	1½"	710	835	1985	1150	725
UU 30	7	15.9	1½"	765	985	2050	1780	1110
UU 36	11	27.3	2"	975	1215	2131	3030	1955
UU 48	18	40.9	2½"	1258	1436	2235	4785	3085
UU 54	25	25	2½"	1432	1632	2367	5100	3250

NOTE: Weights are approximate. • The above dimensions can vary by ± 2%.

HI-FLO 9 TWIN

MODEL	FLOW RATE service max. m³/h	FLOW RATE counter-current m³/h	FITTINGS in/out Ø "	DIMENSIONS width mm	DIMENSIONS depth mm	DIMENSIONS height mm	WEIGHT in operation kg	WEIGHT for shipment kg
TWIN - FILTR-CLEER (turbidity)								
UF 260	72.4	61.9	100	3300	1880	2610	10900	7500
UF 272	104	90.8	100	3900	2110	2760	12700	10700
UF 284	140.8	129.4	150	4580	3135	3135	21200	15300
UF 290	163.2	150	150	4980	3210	3210	29074	17800
UF 2100	202.4	174.9	150	5300	3390	3390	31500	22700
UF 2120	290	250	150	6400	3595	3595	63300	36900
TWIN - CULLAR (taste – odor – color)								
UR 260	72.4	29	100	3300	1880	2610	8900	6600
UR 272	104	40.9	100	3900	2110	2760	11000	9100
UR 284	140.8	52.2	150	4580	3135	3135	16100	11700
UR 290	163.2	61.2	150	4980	3210	3210	18760	13650
UR 2100	202.4	79.5	150	5300	3390	3390	21500	18100
UR 2120	290	114	150	6400	3595	3595	57300	29800
TWIN - SUPER IRON (Iron – Manganese)								
UFP 260	56	52.2	100	3300	1880	2610	11300	8000
UFP 272	80	68	100	3900	2110	2760	13900	11500
UFP 284	104	95.5	150	4580	3135	3135	23200	17000
UFP 290	116	114	150	4980	3210	3210	27800	20500
UFP 2100	158	143	150	5300	3390	3390	35500	26000
UFP 2120	224	200	150	6400	3595	3595	67500	40000

NOTE: Weights are approximate. • The above dimensions can vary by ± 2%.

OFSY

MODEL	FLOW RATE service max. m³/h	FLOW RATE counter-current m³/h	FITTINGS in/out Ø "	DIMENSIONS width mm	DIMENSIONS depth mm	DIMENSIONS height mm	WEIGHT in operation kg	WEIGHT for shipment kg
OFSY 20	4.5	7.9	1½"	1100	880	1960	1320	1050
OFSY 24	5.7	10.9	1½"	1200	980	2000	1820	1400
OFSY 30	9.1	15.9	1½"	1600	1130	2050	2820	2110
OFSY 36	13.6	27.3	2½"	2010	1480	2130	4350	3400
OFSY 48	21.8	40.9	2½"	2500	1730	2235	7800	5600
OFSY 54	29.6	56.9	2½"	2920	1930	2367	8800	6000
OFSY 60	36.3	61.3	DN 80	3200	1760	2150	10500	7200
OFSY 72	50	90.8	DN 100	3750	2150	2150	15000	10500
OFSY 84	68.1	129.4	DN 100	4350	2450	2160	20000	14000
OFSY 90	82	159	DN 100	4750	2600	2250	25000	17000
OFSY 100	100	174.9	DN 150	5200	2950	2370	29500	21000
OFSY 120	139	250	DN 150	6300	3430	2890	54000	31000

NOTE: Weights are approximate. • The above dimensions can vary by ± 2%.

G.A.C.

MODEL	FLOW RATE service max. m³/h	FLOW RATE counter-current m³/h	FITTINGS in/out Ø "	DIMENSIONS width mm	DIMENSIONS depth mm	DIMENSIONS height mm	WEIGHT in operation kg	WEIGHT for shipment kg
G.A.C. 20	3	3.4	1"	500	660	2480	640	400
G.A.C. 24	4.5	4.5	1"	600	760	2515	800	500
G.A.C. 30	7	7	1½"	750	1020	2585	1000	600
G.A.C. 36	10.8	11	1½"	950	1217	2650	1500	950
G.A.C. 48	18	20.5	2½"	1200	1470	2770	2700	1600
G.A.C. 54	23	20.5	2½"	1400	1670	2870	3200	1900
G.A.C. 60	27	28	2½"	1500	1770	3000	3500	2500
G.A.C. 72	40	41	DN 80	1800	2100	3110	4900	3500
G.A.C. 84	54	55	DN 80	2100	2400	3160	6500	4500
G.A.C. 90	60	60	DN 100	2300	2705	3370	7000	5000
G.A.C. 100	80	80	DN 100	2500	2850	3420	8500	6500
G.A.C. 120	108	113	DN 100	3000	3430	3890	15000	9000

NOTE: Weights are approximate. • The above dimensions can vary by ± 2%.

OPERATION DATA

	HE	CTM	FHT	HI-FLO 6 / HI-FLO 9 / TWIN / OFSY / G.A.C.
Minimum operating pressure	2 bar	2.4 bar	4 bar	1.5 bar
Maximum operating pressure	8.3 bar	8.6 bar	4 bar	7 bar up to model 60" 5 bar for later models 10 bar for FRP version
Operating temperature	0.5 - 49 °C	4.4 - 49°C	5 - 50°C	5 - 40°C
Power supply	230/24 V 50/60 Hz	230/24 V 50/60 Hz	only model 2500 230 V/50-60 Hz	110/230/24 V 50/60 Hz
Installed power	22 W	22 W	only model 2500 10 W	10 W
Pressure loss	0.1- 0.9 bar	Between 0.3 and 0.8 bar, depending on the model and the type of filter	- -	Hi-Flo 6, Hi-Flo 9, TWIN: UF: 1 bar; UR: 0.3 bar; UU and UFP: 0.5 bar OFSY and G.A.C. 0.5 bar

MATERIALS USED

Aeration Tower models 400, 600, 1000 and 1400 are entirely in Polypropylene PP, whereas model 1800 is entirely in steel, protected inside by epoxy paint and outside by two layers of anti-rust paint.
The filling bodies are in polypropylene (for all models).

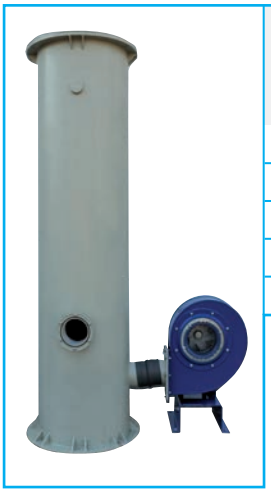
OPERATION

The Aeration Towers are equipped with one or more fans which force air upwards to the water spray which descends, taking the gases collected from the fragmented water towards the discharge flue.
A siphon at the bottom of the Aeration Tower prevents the air produced by the electric fan from being dispersed downwards.

OPTIONAL ACCESSORIES

In some cases, in order to optimize the efficiency of the Aeration Towers, the following accessories are available for the entire PP line:

- DROP-STOP FILTERS, to reduce the "aerosol" effect or, more simply, to improve separation of the water droplets in the forced air flow; they are installed immediately before the gas outlet flue.
- SPRAY NOZZLES, able to obtain maximum stripping of the unwanted gases; they are installed on the distribution pipes of the water to be treated inside the tower.



MODEL	WATER FLOW RATE*		ELECTRIC FAN 220/380V - 50 Hz - 3 ph		AIR FLOW RATE	DIMENSIONS			WEIGHT	
	(1)	(2)	Power	Max. head		Width	Depth	Height	in operation	weight
	m^3/h	m^3/h	kW	mm H_2O	m^3/min	mm	mm	mm	kg	kg
F.D.A. 400	4	10	0.55	-140	13	560	1180	2620	220	110
F.D.A. 600	9	22	1.5	-140	29	780	1475	2620	350	148
F.D.A. 1000	24	60	3	-140	80	1120	1920	2620	1000	335
F.D.A. 1400	50	120	5.5	-140	160	1545	2400	2620	1600	540
F.D.A. 1800	80	200	11	-140	260	1960	2785	3310	3000	1400

* Operating temperature: 5-60 °C • (1) Hydrogen Sulphide and Trihalomethanes • (2) Carbon Dioxide and Methane.

NOTE: – Weights are approximate. • The above dimensions can vary by ± 2%.
– In addition to the standard models indicated, larger Aeration Towers expressly designed according to the required removal of gas can also be supplied.

Culligan

Reverse Osmosis (R.O.) exploits the ability of semi-permeable membranes to separate the water from the substances dissolved in it. Applying a pressure, the water is forced through the membrane: pure water (permeate) will thus be separated from the water containing salts (reject).

The osmosis membrane, which implements the highest possible level of filtration, acts as a barrier against salts and inorganic substances as well as organic substances with molecular weight above 100 Dalton: it is therefore also an excellent defense against micro-pollutants, pesticides, pyrogens, viruses and bacteria.

Reverse Osmosis is a physical process not requiring the use of chemical regenerants. Reverse osmosis technology offers a total guarantee thanks to its versatility, efficiency and ease of use.

Over the years, the types of membranes available have increased, up to the latest energy-efficient types, and their quality and reliability are now guaranteed even for those specifically designed for targeted applications.

MODELS

The range of Reverse Osmosis desalters includes the following standard lines:

- E1, G1 SERIES for flow rates of 40 to 350 l/h
- AQUA-CLEER PROFESSIONAL (designed for dental laboratories) for flow rates of 12 l/h
- AQUA-CLEER SB 200 for flow rates up to 200 l/h
- AQUA-CLEER NFC SERIES (designed to feed industrial dishwashers) for flow rates of 180 l/h
- AQUA-CLEER MFP 4-44 SERIES for flow rates of 400 to 3600 l/h
- AQUA-CLEER RO² for flow rates of 410 to 1650 l/h
- AQUA CLEER IW EVO SERIES for flow rates of 5000 to 40000 l/h
- AQUA-CLEER SW SERIES for flow rates of 4000 to 40000 l/h
- S.D.S. SERIES for flow rates of 80 to 100 l/h
- AQUA-CLEER R.O. SERIES² MD * for flow rates of 450 to 2700 l/h
- AQUA-CLEER R.O. SERIES² BIO for flow rates of 1000 to 3800 l/h
- AQUA-CLEER R.O. SERIES² BIO THERMO for flow rates of 730 to 3200 l/h
- PHARMA (for producing pure water for laboratories) for flow rates of 35 to 160 l/h

*The R.O.² Series plants are also available in "Medical Device" version.

NOTE: R.O.² Series plants operate with double Osmosis in series, or alternatively in single pass with alternating operation. They are particularly suitable for the hemodialysis sector and for the most sophisticated uses.
"Custom" plants with higher flow rates are possible in addition to the standard systems.

MATERIALS USED

The heart of an R.O. desalter is the osmosis membrane. Aqua-Cleer systems normally use spiral membranes, selected according to the feed water characteristics and the required quality of the treated water.
SW Series desalters use membranes suitable for treating sea water with salinity up to 45000 ppm. The materials used for their construction, in particular for the parts in contact with water, are highly resistant to corrosion (AISI 316 stainless steel, PVC and Polyethylene) and food-grade.

AUTOMATION AND ACCESSORIES

All Aqua-Cleer desalters have automated systems for controlling all operating and quality parameters, with respective indicators, and safety.
Various specific accessories for dialysis are available to complete the installation, based on our experience and designed according to the current regulations, including the specific device to prevent the rise of bacteria and any possible backflow between the discharge pipe and the artificial kidney.
The device is made of steel, with internal siphon, and is complete with quick connector.
In addition to the above, there is also a hot water producer for thermal sanitization of the distribution loop, as well as a cover panel for soundproofing the R.O. plant.

Soundproof booth for Bi-Osmosis Medical Device

Hot water producer for sanitization

PLC electric panel

Kidney discharge device

MAIN APPLICATIONS

When water of high chemical and bacteriological quality is required, with the advantage (compared to demineralization) of not having problems regarding regeneration discharges and handling chemicals:

- desalination and potabilization of brackish and sea water
- feeding of medium and high pressure steam generators
- humidification systems
- electronics industry, for cleaning microchips
- cosmetic and pharmaceutical industry
- textile industry
- food industry
- catering, to optimize the results of automatic dishwashers
- pretreatment with deionization system and boiler
- drinking water for making ice
- offset printing centers, to improve efficiency and reduce waste
- chemical laboratories, for washing instruments and glassware
- floriculture
- in the preparation of water for dialysis, with the "Medical Device" version, in conformity with Standard ISO 13485 by the Notified Body CE 0434
- ... and whenever specific water is needed

E1 G1 SERIES

E1 WALL SERIES

G1 WALL SERIES

G1 FLOOR SERIES

MODEL	INSTALLED POWER	FITTINGS		NOMINAL FLOW RATE ★	DIMENSIONS	
		in feed Ø	out product Ø		width	depth
	kW	mm	mm	l/h	mm	mm
DESALTERS FOR BRACKISH WATER						
E1 SERIES						
E1-1S	0.25	10	10	40	885	312
E1-2S	0.25	10	10	80	885	312
E1-3S	0.25	10	10	120	885	312
E1-2L	0.56	10	10	190	885	312
E1-3L	0.56	10	10	270	885	312
E1-4L	0.56	10	10	350	979	312
G1 SERIES						
G1-2S	0.25	10	10	80	995	312
G1-3S	0.25	10	10	120	995	312
G1-2L	0.75	10	10	190	995	312
G1-3L	0.75	10	10	270	995	312
G1-4L	0.75	10	10	350	1048	312

★ Average values calculated under the following conditions: water temperature 25 °C; raw H_2O salinity 500 ppm NaCl; product H_2O pressure 0 bar; new modules.

NOTE: Available for WALL or FLOOR installation

AQUA-CLEER PROFESSIONAL

MODEL	INSTALLED POWER	FITTINGS		NOMINAL FLOW RATE ★	DIMENSIONS			WEIGHT
		in feed Ø	out product Ø		width	depth	height	for shipment
	kW	mm	mm	l/h	mm	mm	mm	kg
SYSTEM FOR DRINKING WATER								
Professional	-	¼	¼	12	410	310	565	10

★ Average values calculated under the following conditions: water pressure 6.2 bar with booster pump; water temperature 25 °C - TDS 500 mg/l, without backpressure and with new membrane.

NOTE: Weights are approximate. • The above dimensions can vary by ± 2%.

AQUA-CLEER SB 200

MODEL	INSTALLED POWER kW	FITTINGS in feed Ø mm	FITTINGS out product Ø mm	NOMINAL FLOW RATE ★ l/h	DIMENSIONS width mm	DIMENSIONS depth mm	DIMENSIONS height mm	WEIGHT for shipment kg
SYSTEM FOR DRINKING WATER								
SB 200	1.5	1	½	200	800	650	1600	221

★ Average values calculated under the following conditions: water temperature 20 °C; raw H_2O salinity 500 ppm NaCl; product H_2O pressure 0 bar; new modules.

NOTE: Weights are approximate. • The above dimensions can vary by ± 2%.

NFC SERIES

MODEL	INSTALLED POWER kW	FITTINGS in feed Ø mm	FITTINGS out product Ø mm	NOMINAL FLOW RATE ★ l/h	DIMENSIONS width mm	DIMENSIONS depth mm	DIMENSIONS height mm	WEIGHT for shipment kg
SYSTEM FOR DRINKING WATER								
NFC 99	0.42	½	½	180	570	460	605	48

★ Average values calculated under the following conditions: water temperature 20 °C; raw H_2O salinity 500 ppm NaCl; product H_2O pressure 0 bar; new modules.

NOTE: Weights are approximate. • The above dimensions can vary by ± 2%.

MFP 4-44

MODEL	INSTALLED POWER kW	FITTINGS in feed Ø "	FITTINGS out product Ø "	NOMINAL FLOW RATE ★ l/h	DIMENSIONS width mm	DIMENSIONS depth mm	DIMENSIONS height mm	WEIGHT for shipment kg
DESALTERS FOR BRACKISH WATER								
400	1.5	1	½	400	500	660	1550	115
800	1.5	1	½	800	500	660	1550	140
1200	2.2	1	½	1200	500	660	1550	170
1600	2.2	1	½	1600	500	660	1550	190
2200	4	1	¾	2000	500	660	1800	220
2800	4	1	¾	2400	500	660	1800	250
3300	4	1	¾	2800	500	660	1800	280
3600	4	1	¾	3200	500	770	1800	280
4000	4	1	¾	3600	500	770	1800	280

★ Average values calculated under the following conditions: water temperature 20 °C; operating pressure 200 or 261 psi (14 or 18 bar); recovery ratio percentage 75%; raw H_2O salinity 500 ppm NaCl; product H_2O pressure 0 bar; new modules.

NOTE: Weights are approximate. • The above dimensions can vary by ± 2%.

AQUA-CLEER RO²

MODEL	INSTALLED POWER kW	FITTINGS in feed Ø "	FITTINGS out product Ø "	NOMINAL FLOW RATE ★ l/h	DIMENSIONS width mm	DIMENSIONS depth mm	DIMENSIONS height mm	WEIGHT for shipment kg
DOUBLE PASS REVERSE OSMOSIS								
RO² 400	1.6	1	1½	410	1000	700	1850	220
RO² 800	1.6	1	1½	820	1000	700	1850	260
RO² 1200	3.2	1	1½	1230	1000	700	1850	310
RO² 1600	4.2	1	1½	1650	1000	700	1850	350

★ average values calculated at the following conditions: water temperature 20 °C; raw H_2O salinity 500 ppm NaCl; product H_2O pressure 0 bar; new modules.

IW EVO SERIES

MODEL	INSTALLED POWER kW	FITTINGS in feed Ø "	FITTINGS out product Ø "	NOMINAL FLOW RATE ★ l/h	DIMENSIONS width mm	DIMENSIONS depth mm	DIMENSIONS height mm	WEIGHT for shipment kg
DESALTERS FOR FRESH AND BRACKISH WATER • 380/660 V - 50 Hz								
IW05 EVO	4	1½	1½	5000	4850	1200	1900	650
IW08 EVO	7.5	2	2	8000	3850	1200	1940	710
IW12 EVO	11	2	2	12000	3850	1200	1940	950
IW16 EVO	15	3	2	16000	6750	1250	1985	1280
IW24 EVO	15	3	2½	23000	6750	1250	2130	1370
IW32 EVO	22	4	3	32000	6750	1250	2130	1600
IW40 EVO	22	4	3	36000	6750	1250	2130	1850

★ average values calculated under the following conditions: water temperature 20 °C; raw H_2O salinity 1500 ppm NaCl; product H_2O pressure 0 bar; new modules.

NOTE: Weights are approximate. • The above dimensions can vary by ± 2%.

(Basic machine consisting of frame, pressurizing pump, pre-filter, FGX3 - 5µ, vessels and membranes. WITHOUT instrumentation and control).

The automatic configurator is available: please contact the Cadriano premises

SW

MODEL	INSTALLED POWER kW	FITTINGS in feed Ø "	FITTINGS out product Ø "	NOMINAL FLOW RATE ★ l/h	DIMENSIONS width mm	DIMENSIONS depth mm	DIMENSIONS height mm
DESALTERS FOR SEAWATER							
SW 04 K EVO	22	1½	1	4000	6900	1340	2070
SW 08 K EVO	24	2½	1½	8000	6900	1340	2070
SW 12 K EVO	35.5	3	2	12000	6900	1340	2070
SW 16 K EVO	48	4	2	16000	6900	2150	2170
SW 20 K EVO	56	4	2½	20000	6900	2150	2170
SW 24 K EVO	66	4	2½	24000	6900	2150	2170
SW 32 K EVO	93.5	5	3	32000	6900	2200	2190
SW 40 K EVO	108.5	6	3	40000	6900	2200	2190

★ Average values calculated under the following conditions: water temperature 20 °C; raw H_2O salinity 36000 ppm NaCl; product H_2O pressure 0 bar; new modules.

NOTE: Weights are approximate. • The above dimensions can vary by ± 2%.

S.D.S.

MODEL	INSTALLED POWER kW	FITTINGS in feed Ø mm	FITTINGS out product Ø mm	NOMINAL FLOW RATE l/h	DIMENSIONS width mm	DIMENSIONS depth mm	DIMENSIONS height mm	WEIGHT for shipment kg
HOME DIALYSIS								
S.D.S.	0.39	8	6	80 - 100	375	365	900	50

NOTE: Weights are approximate. • The above dimensions can vary by ± 2%.

AQUA-CLEER RO² MD

MODEL	INSTALLED POWER kW	FITTINGS in feed Ø "	FITTINGS out product Ø "	NOMINAL FLOW RATE ★ l/h	DIMENSIONS width mm	DIMENSIONS depth mm	DIMENSIONS height mm	WEIGHT for shipment kg
DOUBLE PASS REVERSE OSMOSIS								
RO² 400	1.6	1	1½	410	1000	700	1850	220
RO² 800	1.6	1	1½	820	1000	700	1850	260
RO² 1200	3.2	1	1½	1230	1000	700	1850	310
RO² 1600	4.2	1	1½	1650	1000	700	1850	350
RO² 2800	4.2	1	1½	2200	1000	700	1850	390
RO² 3300	4.2	1	1½	2700	1000	700	1850	430

★ average values calculated at the following conditions: water temperature 20 °C; raw H_2O salinity 500 ppm NaCl; product H_2O pressure 0 bar; new modules.

R.O.2 BiO

MODEL	INSTALLED POWER kW	FITTINGS in feed Ø "	FITTINGS out product Ø "	NOMINAL FLOW RATE ★ l/h	DIMENSIONS width mm	DIMENSIONS depth mm	DIMENSIONS height mm	WEIGHT for shipment kg
DOUBLE PASS REVERSE OSMOSIS								
R.O.² BiO 1E	3x3	1	1	1000	1800	800	1900	565
R.O.² BiO 2E	3x3	1	1	1425	1800	800	1900	590
R.O.² BiO 3E	4x4	1	1	2500	1800	800	1900	665
R.O.² BiO 4E	4x4	1	1	3800	1800	800	1900	730
DOUBLE PASS REVERSE OSMOSIS WITH THERMAL SANITIZATION								
R.O.² BiO 1 THERMO	2x3	1	1	730	1800	800	1900	750
R.O.² BiO 2 THERMO	2x5,5	1	1	1450	1800	800	1900	820
R.O.² BiO 3 THERMO	2x5,5	1	1	2600	1800	800	1900	910
R.O.² BiO 4 THERMO	2x7,5	1	1	3200	1800	800	1900	950

★ Average values calculated under the following conditions: water temperature 20 °C; raw H_2O salinity 500 ppm NaCl; product H_2O pressure 0 bar; new modules.

NOTE: Weights are approximate. • The above dimensions can vary by ± 2%.
Thermal sanitization can be supplied separate

PHARMA

MODEL	INSTALLED POWER kW	FITTINGS in feed Ø mm	FITTINGS out product Ø mm	NOMINAL FLOW RATE ★ l/h	DIMENSIONS width mm	DIMENSIONS depth mm	DIMENSIONS height mm	WEIGHT for shipment kg
FOR PRODUCTION OF PURE WATER FOR LABORATORIES								
Pharma 20	0.25	10	6	35	380	440	920	80
Pharma 45	0.42	12	8	80	500	500	1450	123
Pharma 80	0.42	12	8	120	500	500	1450	130
Pharma 120	0.42	12	8	160	500	500	1450	140

NOTE: Weights are approximate. • The above dimensions can vary by ± 2%.

DUAL BOX

In hospital facilities a plant solution that reduces the time and space required for installation is often an advantage.
DUAL BOX is the simple and logical answer to this need: two different boxes in satin finish steel house the pretreatment systems and Bi-Osmosis device, pre-assembled and connected hydraulically and electrically. The equipment is thus operational as of delivery: simply carry out the inlet, outlet and water drain connections, and electrically connect the plant. The Bi-Osmosis box houses an electric panel with PLC for complete management of the system. The boxes have a tamper proof lock.

OPERATION DATA	E1 - G1 SERIES AQUA-CLEER PROFESSIONAL AQUA-CLEER SB 200 NFC SERIES	MFP 4-44 / R.O.^{2} / SW IW EVO	S.D.S. / PHARMA
Minimum inlet water pressure	E1 - G1 Series: 1.4 bar Aqua-Cleer Professional: 2.8 bar Aqua-Cleer SB 200: 2 bar NFC Series: 1 bar	2 bar 3 bar SW	S.D.S.: 1bar Pharma: 1.5 bar
Operating pressure	E1 - G1 Series: 10.5 bar Aqua-Cleer Professional: 6.2 bar Aqua-Cleer SB 200: 13 bar NFC Series: 12 bar	MFP and R.O.^{2}: 14 bar up to model 1600; 18 bar for other models. SW: 62 bar - IW EVO: ≤ 16 bar	S.D.S.: 1bar Pharma: 1.5 bar
Power supply	E1 - G1 Series: 230 V - 50 Hz Aqua-Cleer Professional: 24/230 V - 50 Hz Aqua-Cleer SB 200: 380 V - 50 Hz NFC Series: 24/230/110 V - 50 Hz	380 V - 50 Hz	380 V - 50 Hz
Inlet salinity	500 ppm	MFP and R.O.^{2}: 3000 ppm up to model 1600; 1500 ppm other models. IW EVO: 1500ppm÷4500ppm SW EVO: 36000ppm÷42000ppm	1500 ppm
Recovery ratio	E1- G1 Series: 40-50% Aqua-Cleer Professional: 25% Aqua-Cleer SB 200: 75% NFC Series: 20-60%	75% max SW: 40%	S.D.S.: 50% Pharma 20: 20-25% Pharma 45-80-120: 20-30%

Culligan

ULTRAFILTRATION

Ultrafiltration is a separation process under pressure, able to divide the insoluble particles from the water and totally eliminate suspended solids.
The heart of the Ultrafiltration system consists of the modules that perform the actual separation process: they have a high retention capacity for colloids, silt, bacteria and for most viruses.

MODELS

The Ultrafiltration systems come in various models, with capacities of 6 to 112 m^3/h. The modules offer high resistance to mechanical stress from rubbing and consist of a double layer of hollow fibers (capillaries) in PVDF.

OPERATION

The fully automated system carries out programmed washes during the production cycle. It also has pressure differential, able to detect a possible excessive pressure loss (caused by clogging of the membranes) and start the wash cycle.
To manage the plant's automation there is an electric panel complete with PLC, and instrumentation for control and manual command of several plant functions (such as flow meters or pressure transducers) by the operator.

MAIN APPLICATIONS

- Filtration of water contaminated by turbidity, suspended solids and microbiological impurities.
- Production of drinking water from surface water, spring or well water.
- Pretreatment for Reverse Osmosis plants.
- Tertiary filtration plants for reusing non-potable water.

MODEL	MODULES no.	FLOW RATE m^3/h	HYDRAULIC CONNECTIONS	DIMENSIONS (length x width x height) mm
ULF 10	1	3	DN 40	1800 X 2150 X 2350
ULF 20	2	6	DN 40	1800 X 2150 X 2350
ULF 40	4	12	DN 50	1800 X 2150 X 2350
ULF 60	6	18	DN 65	2300 X 2150 X 2350
ULF 80	8	24	DN 80	2300 X 2150 X 2350
ULF 100	10	30	DN 80	2750 X 2150 X 2350
ULF 120	12	36	DN 80	2750 X 2150 X 2350
ULF 140	14	42	DN 80	3200 X 2150 X 2150
ULF 160	16	48	DN 100	3200 X 2150 X 2150
ULF 180	18	54	DN 100	3400 X 2150 X 2350

NOTE: Power supply 380 V - 50 Hz 3 ph + ground.

Culligan

DEMINERALIZATION

Demineralization (or deionization or) is a process able to almost completely remove the salinity of the water, through an ion exchange carried out via resins.
The positively charged ions are called "cations", those negatively charged are "anions".
The exchange can occur through successive steps on cation and anion resins, or in a single step on intimately mixed resins, with "mixed bed", each of which able to produce different quality levels of treated water.
When the resins are saturated it is necessary to carry out a regeneration with hydrochloric acid and caustic soda, to restore the exchange capacity.

EDI

EDI (Continuous electrodemineralization) has been studied for the particular and delicate high quality water production market. It is a demineralization system whose operation cycle does not require the use of regenerants such acid and soda, typical of demineralization systems with ion-exchange resins. To obtain very high quality standards the EDI plant uses electricity, selective membranes and ion exchange resins.

MODELS

EDI line models are designed and manufactured to the highest standards of quality, safety and quiet operation. EDI provides for an electric panel complete with PLC which makes it autonomous in management, and a brine injection system complete with tank and recirculating pump. Lastly, the front panel complete with flow and pressure measurers makes the system a complete and compact.

MATERIALS USED

The construction materials used, and in particular those of the parts in contact with water, are all of proven corrosion resistance and do not give rise to phenomena of transfer.

OPERATION

Electrodeionization can produce ultrapure water through the use of spiral wound membranes, combined with ion exchange resins. A continuous electrical current source connected to an anode and a cathode keeps the resins activated and also, by means of the electric field formed between the anode and cathode, favors the electrolysis of water and separates the ions dissolved in it. This process enables the production of very high quality water (18 MOhms) starting from previously demineralized feed water with double osmosis step or with double bed of exchange resins.

MAIN APPLICATIONS

- Electronics
- Boilers
- Painting
- Printing
- Distilleries
- Pharmaceutical
- Cosmetics
- Replenishing water

EDI

MODEL	MODULES	FLOW RATE	POWER	HYDRAULIC CONNECTIONS				DIMENSIONS (length x width x height)
				Feed	Product	Electronics	Concentrate	
	no.	m³/h	kW					mm
EDI 10	1	2.2	2	1½″	1″	tube Ø 6	1″	1700 x 1200 x 1500
EDI 20	2	4.5	3.5	2″	1″	tube Ø 6	1″	1700 x 1200 x 1500
EDI 30	3	6.5	5	2″	1″	tube Ø 6	1″	1700 x 1200 x 1500
EDI 40	4	9	7	2″	1½″	tube Ø 6	1″	1700 x 1550 x 1500
EDI 60	6	13	10	2″	1½″	tube Ø 6	1″	1700 x 1550 x 1500

NOTE: The above dimensions can vary by ± 2%.

PEDI

PEDI (Portable electrodemineralization) includes small ion exchange demineralization systems featuring easy management, and using a resin not regenerated on site.

MODELS

PEDI line systems come in the following standard models:
- Deionizer D 25 P, MB 9 and MB 16 with mixed bed resins.
- Refill Line with a disposable cartridge of high exchange capacity resins, ideal for medium/low flow rates.
- Pharma for the production of ultrapure water, to meet the most demanding needs of analysis laboratories.

MATERIALS USED

The containers of the Deionizer D and MB Series line are in fiberglass; only the MB Series container is covered externally with neutral color plastic.
The containers of the Refill Line can be supplied in steel or PVC.
Pharma is a compact, transportable and silent system. All the hydraulic components used are in food and medical-grade corrosion resistant materials and designed to amply withstand the foreseen operating conditions.

OPERATION

All Culligan demineralizers are fully automatic, with programmable logic systems for control of the service and regeneration phases. D and MB Series deionizers can be connected to the water supply via the flexible fittings supplied. A quality control device signals depletion of the resins, which are regenerated at the Culligan service center. Pharma has been rationally designed, considering a feed with drinking water and using (in the final "polishing" phase) 'disposable' resins that offer exchange capacities higher than the normal regenerated resins, and avoid the hassle and cost of handling containers for the periodic regeneration. A device for partial recirculation and stop timing allows either continuous or intermittent use, keeping the quality of the product water always at the highest levels. A second timer signals (with an audible and visual alarm) when it is advisable to replace the pre-filtration cartridges. The quality of the treated water is continuously monitored by a conductivity meter that detects the purity of the final treated water or, optionally, the osmotized water.

MAIN APPLICATIONS

- Pharmaceutical
- Cosmetics
- Boilers
- Laboratories
- Printing
- Distilleries

DEIONIZER D

MODEL	EXCHANGE CAPACITY PER CYCLE	SERVICE FLOW RATE	FITTINGS	DIMENSIONS		WEIGHT	
			in/out Ø	Ø	height	in operation	for shipment
	kg ($CaCO_3$)	l/min	"	mm	mm	kg	kg
D 25 P	0.16	3	¼	190	600	20	16.2

NOTE: The above dimensions can vary by ± 2%.

DEIONIZER MB

MODEL	EXCHANGE CAPACITY PER CYCLE	SERVICE FLOW RATE	FITTINGS	DIMENSIONS		WEIGHT	
			in/out Ø	Ø	height	in operation	for shipment
	kg ($CaCO_3$)	l/min	"	mm	mm	kg	kg
MB 9	0.7	15	½	255	1450	80	58.5
MB 16	2.2	50	½	406	1620	200	150

NOTE: The above dimensions can vary by ± 2%.

REFILL LINE

QUANTITY OF RESINS OR CARBON	EXCHANGE CAPACITY PER CYCLE	SERVICE FLOW RATE	TREATED WATER QUALITY	OPERATING LIMITS
liters	kg ($CaCO_3$)	l/min		drinking water
MIXED BED				
10 l resin	220	250 ★	≥ 2Ω 80% of cycle - 0.5Ω end of cycle	TDS ≥ 500 ppm
20 l resin	450	500 ★	≥ 2Ω 80% of cycle - 0.5Ω end of cycle	TDS ≥ 500 ppm
WATER SOFTENER				
10 l resin	600	500	TH < 5 °f	TDS ≥ 35 °f
20 l resin	1200	1000	TH < 5 °f	TDS ≥ 35 °f
ACTIVATED CARBON				
10 l carbon	according to load	400	Chlorine free	Chlorine ≥ 3 ppm
20 l carbon	according to load	1200	Chlorine free	Chlorine ≥ 3 ppm

★ By feeding the appliance with osmotized water the flow rate can be doubled. Also the quality of the treated water will be higher.

NOTE: The above dimensions can vary by ± 2%.

PHARMA

MODEL	EXCHANGE CAPACITY PER CYCLE	SERVICE FLOW RATE	DIMENSIONS			WEIGHT FOR SHIPMENT
			width	depth	height	
	kg ($CaCO_3$)	l/min	mm	mm	mm	kg
PHARMA 20	0.22	35	380	440	920	80
PHARMA 45	0.22	80	500	500	1450	123
PHARMA 80	0.22	120	500	500	1450	130
PHARMA 120	0.22	160	500	500	1450	140

NOTE: The above dimensions can vary by ± 2%.

AUTOMATIC DEMINERALIZATION

The automatic demineralization systems are often a component integrated into Culligan Matrix Solutions systems where large volumes of high quality water are required to be treated.

MODELS

- **Deionizer DS** with separate beds (cation and anion column), for flow rates with automatic regeneration in current.
- **Deyolit NRC**, with separate beds and counter-current regeneration, for producing high quality water with low consumption of regenerants.
- **Deyolit AMB**, with mixed bed, able to completely remove the water salinity (ideal for "polishing" the quality of water produced by demineralizers with separate beds or R.O. desalters).

MATERIALS USED

The containers of the Deionizer DS Series line are in fiberglass.
The containers of the Deyolit line are in carbon steel, coated internally with a layer of ebonite and painted externally with anti-corrosive enamel. The group in PVC with valves in Noryl can withstand extreme pH conditions over a wide pressure range.

OPERATION

All Culligan demineralizers are fully automatic, with programmable logic systems for control of the service and regeneration phases. DS Series Deionizers have two programmers: one for the cation column and one for the anion column. The Deyolit line has a command and control panel (comprising an electronic conductivity meter) which ensures automation of the various operating phases by controlling resin washing and regeneration when the quality of the product water deviates from the predetermined value.

MAIN APPLICATIONS

- Electronics
- Boilers
- Painting
- Printing
- Distilleries
- Pharmaceutical
- Cosmetics
- Replenishing water

DEIONIZER DS

MODEL	EXCHANGE CAPACITY PER CYCLE kg ($CaCO_3$)	SERVICE FLOW RATE m^3/h	FITTINGS in/out Ø "		DIMENSIONS width mm	depth mm	height mm	WEIGHT in oper. kg	for shipment kg
DS50	2	1.6	1	2400	680	1600	300	154	1
DS 100	4	2.5	1	2450	785	1855	520	300	1
DS 200	6.5	3.4	1	2450	785	1850	750	450	1

NOTE: Weights are approximate. • The above dimensions can vary by ± 2%.

DEYOLIT NRC

MODEL	EXCHANGE CAPACITY PER CYCLE kg ($CaCO_3$)	SERVICE FLOW RATE m^3/h	FITTINGS in/out Ø "	DIMENSIONS width mm	depth mm	height mm	WEIGHT in oper. kg	for shipment kg
NRC 12/12	12	6.5	2	2000	1000	2950	1625	1300
NRC 20/20	20	11	2	2100	1100	3000	3063	2450
NRC 30/30	30	16	2	2280	1270	3050	4500	3600
NRC 50/50	50	23	2	2480	1470	3100	7000	5600
NRC 80/80	80	40	2½	2980	1720	3250	10500	8400

NOTE: Weights are approximate. • The above dimensions can vary by ± 2%.

DEYOLIT AMB

MODEL	EXCHANGE CAPACITY PER CYCLE kg ($CaCO_3$)	RAW WATER FLOW RATE m^3/h	DEMINERAL. WATER FLOW RATE m^3/h	FITTINGS in/out Ø "	DIMENSIONS width mm	depth mm	height mm	WEIGHT in oper. kg	for shipment kg
AMB 3000	3	3.4	7.9	1½	830	750	2710	600	350
AMB 5000	5	4.5	10.9	2	1000	850	2800	700	400
AMB 7500	7.5	6.8	15.9	2	1000	1000	3200	880	500

NOTE: Weights are approximate. • The above dimensions can vary by ± 2%.

OPERATION DATA

	EDI	D 25 P - MB 9-16	DS	NRC	AMB
Minimum operating pressure	2.5 bar	2 bar	2.8 bar	3 bar	2 bar
Maximum operating pressure	4.1 bar	7 bar	5.5 bar	5 bar	5 bar
Operating temperature	10 - 38° C	4 - 35° C	5 - 40° C	5 - 40° C	3 - 35° C
Power supply	230 V - 50 Hz	230 V - 50 Hz	230/24 V - 50/60 Hz	230 V - 50 Hz	230 V - 50 Hz
Installed power	-	-	3 - 35 W	50W	250W

Culligan

WASTEWATER PURIFIERS

A complete treatment solution must take into account the possibility of reducing water consumption through the reuse of wastewater.
Less wastage means better efficiency, reduced costs and lower environmental impact.
Culligan offers water recovery, reuse and recycling solutions, for the "less noble" uses of this important resource: recycled water is good for irrigation, and for some technological uses in the industrial context (cooling systems, fire prevention systems, industrial washing, etc.).

MODELS

• DUPLOX: the purification plants of this line are designed to treat civil wastewaters polluted by biodegradable organic substances.
Culligan offers four different basic models, to serve settlements of 60 to 250 inhabitants. The size of each unit is based on "population equivalent".

• OFSY-WGR: a system consisting of two filtration units arranged in series. Available in five models in the version with threaded fittings, and four models in the version with flanged fittings.

• MBR: Membrane BioReactors (MBR) combine conventional biological treatment technology with membrane filtration to offer superior organic and suspended solids removal. MBR technology eliminates the need for a clarifier stage reducing footprint whilst providing superior performance. Thanks to the compact size of these units they can also be offered as a containerized solution, ideal for remote installations.

MATERIALS USED

DUPLOX mainly consists of a tank, in which the wastewaters undergo intense aeration, with stay times of about 20 hours.
Aeration occurs through the blowing of compressed air by an electric blower. A submersible pump allows the purified product to be transferred to the discharge.
All the equipment outside the tank is placed in a galvanized steel booth.
The filters making up the OFSY-WGR system are in steel, protected internally against corrosion by a thick layer (250-300 µ) of specific epoxy resins and externally with a 80-100 µ layer.

OPERATION

DUPLOX works according to two different plant principles: through repetition of cycles or with continuous flow. Biological treatment concentrates, in short times and in small volumes, the purification processes carried out in nature by microorganisms. The biological plant can be considered a "farm" of microorganisms that reproduce using atmospheric Oxygen dissolved in the water. Organic pollution is expressed as BOD. The microorganisms are separated from the purified water and recirculated in the treatment water.

The Omnifiltration system (OFSY-WGR) consists of two filtration units arranged in series, whose operation is regulated by 8 diaphragm valves, activated by an electronic controller and by a pilot distributor that manages their opening and closing, implementing the Service and Wash phases. During the Service phase, the water to be filtered passes downward through the filter minerals and comes out free of unwanted elements. When a certain pressure loss is reached, the filter is backwashed and rinsed using raw water.

DUPLOX

MODEL	FLOW RATE		POPULATION EQUIVALENT	LOAD RANGE	DIMENSIONS			WEIGHT	
	max. daily	counter - current			Ø cistern	Total length	Max. daily	in oper.	for shipment
	m^3/g	mm	N.	kg BOD_5/g	mm	mm	mm	kg	kg
DC 6	12	1.7	60	2.7 - 5.4	2100	5580	3800	19000	2500
DC 12	24	3	120	4.7 - 9.4	2100	8580	3800	28000	2800
DC 20	40	4.9	200	7.8 - 14	2500	10000	4200	46000	3200
DC 25	50	6	250	7.8 - 14	2500	12000	4200	60000	4000

NOTE: Weights are approximate. • The above dimensions can vary by ± 2%.

OFSY-WGR

MODEL	FLOW RATE		FITTINGS	DIMENSIONS			WEIGHT	
	max daily	counter - current	in/out Ø	Ø cistern	Total length	Max. height	in oper.	for shipment
	m^3/h	mm		mm	mm	mm	kg	kg
OFSY 20 WGR	2.5	9.1	1½"	1100	880	1960	1230	960
OFSY 24 WGR	3.4	13.6	1½"	1200	980	2000	1720	1300
OFSY 30 WGR	6.1	20.4	1½"	1600	1130	2050	2720	2010
OFSY 36 WGR	9.1	40.9	2½"	2010	1480	2130	4150	3200
OFSY 48 WGR	15.9	56	2½"	2500	1730	2235	7450	5250
OFSY 60 WGR	24.9	79.3	DN 80	3200	1760	2150	10500	7200
OFSY 72 WGR	34	118	DN 100	3750	2150	2150	15000	10500
OFSY 84 WGR	50	159	DN 100	4350	2450	2160	20000	14000
OFSY 100 WGR	68.1	225	DN 100	5200	2950	2370	29500	21000

NOTE: Weights are approximate. • The above dimensions can vary by ± 2%.

OPERATION DATA

	DUPLOX	OFSY-WGR
Minimum operating pressure	-	1.8 bar
Maximum operating pressure	-	7 bar up to model 60" - 5 bar for later models
Operating temperature	-	5 - 50 °C
Power supply	80 V - 50 Hz	110/230/24 V - 50/60 Hz 40
Installed power	2.2 - 4.6 W	10 W
Pressure loss	-	0.6 bar

MBR

MODEL	NOMINAL CAPACITY at water temp.20°C m^3/day	POPULATION EQUIVALENT N.	ADSORBED POWER kW	DIMENSIONS mm	MBR MEMBRANE AREA m^2
MBR 25	25	100	11	20 foot container 6058 x 2438 x H 2896	100
MBR 50	50	200	18	40 foot container 12192 x 2438 x H 2896	200

NOTE: Weights are approximate. • The above dimensions can vary by ± 2%.

U.V. (Ultraviolet) rays are generated by special lamps that "select" the most effective wavelength for killing/inactivating microorganisms.
U.V. rays are often chosen as an effective disinfection system when, for various reasons, it is best to avoid the use of chemical products for disinfection.
In other cases, they are used to enhance the characteristics of other oxidants and/or disinfectants (ozone, oxygen, etc.).

MODELS

The Ultraviolet Systems have high disinfectant power: tests have shown that at a wavelength of 254 nm (nanometers) 99.99% of the pathogens in the water are destroyed.
They come in different models, as shown in the table below. Models 40 and 60 S, and 40, 60, 80, 100 and 120 L are also available in a version with sight glass.
The Ultraviolet models are mainly used for disinfection at the point of use in water treatment circuits for sanitary use and for bactericidal protection in closed-cycle circuits.
They are also suitable for the pretreatment of systems with Reverse Osmosis, and whenever chemicals for disinfection must not be used.

ULTRAVIOLET

MODEL	MAXIMUM FLOW RATE m^3/h	POWER ABSORBED BY PLANT V	POWER OF LAMPS W	WEIGHT in operation kg	WEIGHT for shipment kg
U.V. 20S	4.0	100	2 x 40	19	15
U.V. 40S	11.5*	210	4 x 40	51	45
U.V. 60S	17.0*	300	6 x 40	60	52
U.V. 40L	23.0**	350	4 x 75	82	75
U.V. 60L	34.0**	500	6 x 75	150	102
U.V. 80L	45.5**	650	8 x 75	158	110
U.V. 100L	57.0**	800	10 x 75	215	132
U.V. 120L	68.5**	900	12 x 75	228	145
U.V. 16L	91.5**	1200	16 x 65	240	150
U.V. 20L	114.5**	1450	20 x 65	336	210
U.V. 24L	138.0**	1800	24 x 65	400	250
U.V. 32L	171.0**	2300	32 x 65	600	350
U.V. 40L/0	229.0**	2900	40 x 65	750	440
U.V. 48L	274.0**	3480	48 x 65	950	500

* For primary water with radiation 400 J/m² Transmittance T10>96%
** For primary water with radiation 400 J/m² Transmittance T10>94%

OPERATION DATA

Maximum operating pressure	8 bar
Operating temperature	ambient 4-45 °C; water 2-80 °C
Pressure loss at maximum flow rate	0.14 bar for model 20S - 0.2 bar for other models
Power supply	230V - 50/60 Hz

Culligan

CHLORINE DIOXIDE PRODUCERS

Disinfection is not just dosing chemicals, but a "system" to be integrated into the water treatment: in fact, it is necessary to take into account everything that occurs before and after the point of application of the disinfectant.
Therefore the choice of product to be dosed, the determination of dosages and selection of the equipment are done by expert technicians.
Culligan Matrix Solutions disinfection systems help to preserve the quality of the treated water in the distribution lines and at the point of use for specific applications.

In addition to UV sterilization (mentioned in the part regarding products dedicated to pre-treatment), sanitization treatments are possible with specific Culligan chemicals (e.g. Sodium hypochlorite, Calcium hypochlorite, hydrogen peroxide, peracetic acid, etc.), for chlorination, ozonization.

Chlorine is certainly the most common, cost-effective and permanent-effect disinfectant, available everywhere (sometimes it can even be generated on site).

Ozone is an unstable gas that breaks down and frees Active Oxygen in contact with water. It must be produced on site and has no permanent effect.

Chlorine Dioxide is an oxidizing agent widely used as a disinfectant in drinking water.
It is prepared with specific products, installed on site, by proportioned mixing of Hydrochloric Acid and Sodium Chlorite.
The disinfectant properties of Chlorine Dioxide remain unchanged in a rather wide range of pH (pH 4-10), unlike other Chlorine -based compounds, such as hypochlorites, that have a real disinfectant power only at pH below 7.5.
Product dosage can be by manual selection, proportional in combination with an impulse emitting meter, or interlocked with specific analysis control units via a 4-20 mA signal.

In combination with the CHLORINE DIOXIDE PRODUCERS (available in the CDP and ClO_2 series) there are also accessories for proper management of the system, including: on-line analyzers (for checking the correct dosage), a room gas detector and eyewash.
To offer the same advantages provided by chlorine dioxide in water systems also for civil users, such as hospitals, clinics, hotels, schools, etc., Culligan has completed its product range with Chem Oxide.

Chem Oxide is an innovative disinfection system able to generate a Chlorine dioxide solution with a purity above 99.9% in a liquid solution with concentration at 0.3%.
The method differs from that of conventional Chlorine dioxide production since a reactor is no longer needed, and almost completely eliminates the creation of by-products (such as Chlorides or Chlorates and Chlorites) and has a long kinetic half-life.

CDP

MODEL	PRODUCTION g/h	IINJECTION	ANALYZER INSTALLED ON BOARD
CDP 10	10	Direct	-
CDP 20	20	Direct	-
CDP 40	40	Direct	-
CDP 10-1	10	1 point	-
CDP 20-1	20	1 point	-
CDP 40-1	40	1 point	-
CDP A10-1	10	1 point	Amperometric Cell
CDP A20-1	20	1 point	Amperometric Cell
CDP A40-1	40	1 point	Amperometric Cell
CDP P10-1	10	1 point	Potentiometric Cell
CDP P20-1	20	1 point	Potentiometric Cell
CDP P40-1	40	1 point	Potentiometric Cell
CDP 10-2	10	2 points	-
CDP 20-2	20	2 points	-
CDP 40-2	40	2 points	-
CDP A10-2	10	2 points	Amperometric Cell
CDP A20-2	20	2 points	Amperometric Cell
CDP A40-2	40	2 points	Amperometric Cell
CDP P10-2	10	2 points	Potentiometric Cell
CDP P20-2	20	2 points	Potentiometric Cell
CDP P40-2	40	2 points	Potentiometric Cell
CDP 10-3	10	3 points	★
CDP 20-3	20	3 points	★
CDP 40-2	40	3 points	★

★ * Analyzer available only as an accessory for installing on external panel.

ClO2

MODEL	PRODUCTION g/h	INIJECTION	ANALYZER INSTALLED ON BOARD
ClO_2 60	54	1 point	-
ClO_2 140	143	1 point	-
ClO_2 220	220	1 point	-
ClO_2 400	400	1 point	-
ClO_2 600	640	1 point	-

OPERATION DATA

	CDP	ClO_2
Operating temperature	10-40 °C	4-40 °C
Power supply	220 Vac ±10% - 50/60 Hz	210-230 Vac - 50 Hz
Installed power	200 W max	70-100 W
Protection rating	IP 56	IP 54

Culligan®

Culligan

DOSING AND INSTRUMENTATION

To complete the treatment systems, Culligan has developed specific custom dosing systems that include electromagnetic-type dosing pumps with analog interface, storage tanks, chemical products and analysis and dosage management control units.

DOSING PUMPS

A dosing pump is a device most frequently used in all types of water treatment processes. A correct dosage of chemicals is the basis of operation of every water potabilization plant, every boiler water treatment plant, the correct water conditioning for swimming pools and in general every industrial or domestic system where the specific water quality is important. Culligan dosing pumps are electromagnetic with analog interface and PVDF body; the parts in contact with the liquid to be injected are in PVDF, Viton, PTFE and ceramic.
They come in the following models:

- BASIC2, continuous operation or controlled by a regulating instrument with ON-OFF outputs.
- PROP2, continuous operation or controlled by a regulating instrument with ON-OFF outputs or controlled by a pulse-emitter.
- LOGIC2, continuous operation, or controlled by a pulse-emitter or via a 4-20 mA current signal.
- EF 160 SERIES, continuous operation or controlled by a pulse-emitter or regulator, backlit LCD and multilanguage menu.

Accessories

For each model the following are available:

- tanks of various capacities, to be chosen according to use
- minimum float level for the chemical product tank
- bracket for wall mounting
- impulse emitting meter
- antisiphoning kit

DOSING PUMPS

MODELS	Reference FLOW RATE l/h	Max. BACK PRESSURE bar	STROKE VOLUME cm^3	Max. STROKES / MINUTE	POWER ABSORBED W	WEIGHT kg
BASIC2 40 • LOGIC2 40 • PROP2 40	4	10	0.55	120	17	3.6
BASIC2 80 • LOGIC2 80 • PROP2 80	6	8	0.83	160	18	4.1
BASIC2 130 • LOGIC2 130 • PROP2 130	13	8	0.72	300	32	4.1
BASIC2 400 • LOGIC2 400 • PROP2 400	40	2	2.22	300	30	4.1

OPERATION: BASIC2 continuous or ON/OFF
PROP2 continuous or with impulses
LOGIC2 continuous or with 4-20 mA signal

MODELS	FLOW RATE l/h	FLOW RATE bar
EF160 / EF161 / EF162 - C10, with bend C10	2	20
EF160 / EF161 / EF162 - C11, with bend C11	3	6
EF160 / EF161 / EF162 - C12, with bend C12	10	2

NOTE: Single-phase power supply 110/240 V - 50/60 Hz • Protection rating IP 65

VERSIONS		INPUTS						OUTPUTS	
		Level or flow	Enable or impulses	mA	pH / RX	Chlorine cell	Chlorine cell	Relay or mA	RS232
EF160	Base	STD							
EF161	mA / Impulses	STD	STD	STD				STD	OPT
EF162	pH/RX	STD	STD		STD			STD	OPT

COOLING TOWER BLOWDOWN

The Automatic Blowdown for Cooling Towers includes a management/programming controller, conductivity meter, conductivity cell with continuous reading, motorized valve, metering pump for shock biocide dosing, sampling point, electric and hydraulic interconnections between the parts.

SPECIFICATIONS
- Power supply: 230V~ ± 10% 50-60Hz
- Power: 7VA (conductivity meter only), 40VA (conductivity meter + dosing pump), 15VA (conductivity meter + solenoid valve)
- Fluid temperature: 40 °C max
- Dimensions: 495 x 300 x 655 mm (width x depth x height)
- Shipping weight: 15 kg

PH - METERS

Model S508-pH (FOR PANEL)

SPECIFICATIONS
- Standard measurement range: 0-14 pH
- Indicator: LCD display
- Current output: n. 2, 0-20/4-20 mA d.c. load ≤ 600 Ohm
- Protection rating: IP 54

Model S507-pH (FOR WALL) • S507-pH (PANEL)

SPECIFICATIONS
- Standard measurement range: 0-14 pH
- Indicator: LCD display
- Current output: n. 2, 0-20/4-20 mA d.c. max load 600 Ohm
- Protection rating: IP 66

REDOX-METERS

Model S508-Rx (FOR PANEL)

SPECIFICATIONS
- Standard measurement range: -1000 to +1000 mV
- Indicator: LCD display
- Current output: n. 2, 0-20/4-20 mA d.c. load ≤ 600 Ohm
- Protection rating: IP 54

Model S507-Rx (FOR WALL) • S507-Rx (PANEL)

SPECIFICATIONS
- Standard measurement range: -1000 to +1000 mV
- Indicator: LCD display
- Current output: n. 2, 0-20/4-20 mA d.c. max load 600 Ohm
- Protection rating: IP 66

TURBIDITY METERS

Model S507 / S508 (FOR PANEL)
Model S507 (FOR WALL) • S507 (PANEL)

SPECIFICATIONS
- Standard measurement range: -1000 to +1000 mV
- Indicator: LCD display
- Current output: n. 2, 0-20/4-20 mA d.c. max load 600 Ohm
- Protection rating: IP 54 (FOR PANEL); IP 66 (FOR WALL)

CONDUCTIVITY METERS

Model C2 - C2000 S508 (FOR PANEL)
Model C2 - C2000 S507 (FOR WALL)

SPECIFICATIONS
- Standard measurement range: 0-2000 µS
- Indicator: LCD display
- Current output: n. 2, 0-20/4-20 mA d.c. max load 600 Ohm
- Protection rating: IP 54 (FOR PANEL); IP 66 (FOR WALL)

RESIDUAL CHLORINE METERS

Potentiostatic or Amperometric Version

Model S508 (FOR PANEL)

SPECIFICATIONS
- Standard measurement ranges:
  0.005 - 2 ppm / ClO_2; 0.05 - 20 ppm / ClO_2
- Indicator: LCD display
- Current output: n. 2, 0-20/4-20 mA d.c. max load 600 Ohm
- Protection rating: IP 54

Model S507 (FOR WALL) • S507 (FOR PANEL)

SPECIFICATIONS
- Standard measurement ranges:
  0.005 - 2 ppm / ClO_2; 0.05 - 20 ppm / ClO_2
- Indicator: LCD display
- Current output: n. 2, 0-20/4-20 mA d.c. max load 600 Ohm
- Protection rating: IP 65
- With or without filter for high temperature

CHLORINE DIOXIDE ANALYZERS

Model S508 (FOR PANEL)

SPECIFICATIONS
- Standard measurement ranges:
  0.005 - 2 ppm / ClO_2; 0.05 - 20 ppm / ClO_2
- Indicator: LCD display
- Current output: n. 2, 0-20/4-20 mA d.c. max load 600 Ohm
- Protection rating: IP 54

Model S507 (FOR WALL) • S507 (PANEL)

SPECIFICATIONS
- Standard measurement ranges:
  0.005 - 2 ppm / ClO_2; 0.05 - 20 ppm / ClO_2
- Indicator: LCD display
- Current output: n. 2, 0-20/4-20 mA d.c. max load 600 Ohm
- Protection rating: IP 65
- With or without filter for high temperature

DETECTORS

Chlorine Dioxide Detector (in room)

SPECIFICATIONS
- Power supply: 8-30 Vcd
- Dimensions: 154x166x105 mm
- Current output: 4-20 mA (closed circuit)
- Protection rating: IP 65

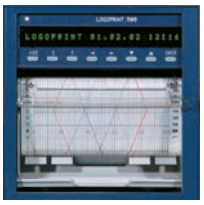
REMOTE CONTROL

RW14 remote control system via web

SPECIFICATIONS
- Cable 1.5 m
- Power supply: 240 V 50 Hz
- Sealed container: cm 20x20x11 (LxHxD)
- Protection rating: IP 56

RECORDERS

Model C500 (FOR PANEL)



SPECIFICATIONS
- Up to 3 programmable inputs
- Up to 6 programmable inputs
- Recording on paper
- Protection rating: IP 54

HARDNESS ANALYZERS

Model Duromat

SPECIFICATIONS
- Standard measurement ranges:
  0.05 - 53.57 °f; 0.18 - 5.4 °f
- Measurements at adjustable intervals
- Pressure: max 6 bar
- Temperature: max 45 °C
- Parts in contact with water in anti-corrosion material
- Protection rating: with support IP 43
  with mounting box IP 54

ELECTRONIC TIMERS

Command and control of the equipment is entrusted to two different types of timers, as required:

Electronic Timer PLF - 2K (PROGRAMMABLE LOGIC FUNCTION):
for individual devices.

Electronic Timer PLM - 2K (MULTITASK):
for multiple devices and systems.

The timers of all Culligan Commercial/Industrial Series plants use a 24 V - 50 Hz power supply.
A suitable transformer is available as an option.

CIRCULATING PUMP KIT

Pre-assembled system for recirculating hot water, with or without filter for high temperatures

SPECIFICATIONS
- Power supply: 230V 50Hz + ground
- Mounting space: 500 x 600 mm (L x H)
- Protection rating: IP 44
- Working pressure: max. 3 bar

Culligan

SERVICE

Culligan is the world leader in global water treatment solutions.
We offer a highly reliable and professional After-Sales Service.

The integrated service consists of **installation, commissioning, chemicals**, contracts for routine maintenance and for extraordinary interventions: all this has a fundamental value to offer our customers a comprehensive solution.
We operate in over 90 countries worldwide with more than 800 dealers and licensees.
In Italy we are present nationwide, with 12 branches and 94 authorized distributors. Over 300 specialized technicians are ready meet all the needs of our customers in the shortest possible time.

Culligan technicians are able to service all the water treatment plants: we can offer a range of service solutions designed to meet the individual needs of our customers. Culligan technicians are highly experienced, in having worked on many types of water treatment plants in various sectors:

- Offshore plants and platforms
- Power stations
- Plants for the pharmaceutical sector
- Plants for the marine sector *(military and commercial)*
- Manufacture of semiconductors
- Plants for the food industry

We can also offer customers fixed prices specific for multi-year assistance contracts for long-term planning.

The Culligan Service offers a wide range of services, including:

- Installation and commissioning
- Maintenance contracts
- Plant performance monitoring and reports
- RO membrane chemical cleaning
- Upgrading / renewal of existing equipment
- Troubleshooting and Problem Solving
- Energy efficiency improvements
- Plant performance improvements
- OPEX cost reduction

All the replacement parts for our Culligan plants are available through the Customer Service network.
For standard items our warehouse, supported by advanced logistics, ensures rapid deliveries throughout the country and internationally.

Genuine replacement parts ensure perfect operation. More than simply replacing "new for old", they can significantly improve the performance of your plant.
Our replacement parts are designed to prolong the life of the components and reduce maintenance costs.

In addition to that described above, the Culligan Service plan also provides for the supply of a wide and innovative range of chemicals for technological use, offering a qualified choice of applications.

Ongoing research and the experience acquired have enabled Culligan to flank the line of treatment plants with a wide range of chemicals for water conditioning.

The current standards recommend addressing water treatment in the first instance with suitable equipment (filters, water softeners, deionizers) and integrate these treatments with appropriate chemical conditioning.
The above allows the formulation of proposals that do not prioritize plant or chemical conditioning criteria, but meet the user's technical and regulatory requirements in the subsequent management phase.

ASK THE CULLIGAN EXPERTS FOR DETAILS ABOUT THE APPLICABLE SERVICE SOLUTIONS.

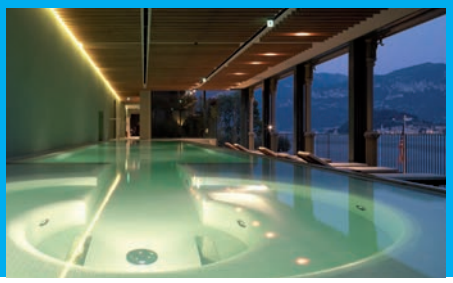
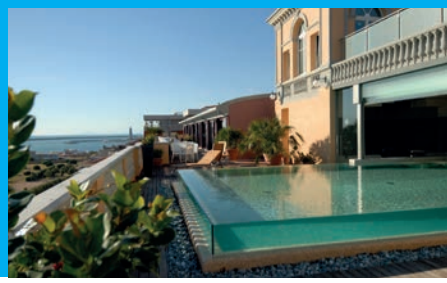
In addition to the distribution of plants for the industrial market (in all specific sectors), Culligan addresses a highly differentiated clientele, in order to offer its treatment solutions.
Culligan is renowned for its high quality swimming pools, for water softening plants for the domestic market, and for refining water at the point of use.
Furthermore, our extensive After-Sales Service allows us to offer a fast and efficient service.

SWIMMING POOLS

Private Pools

Public and semi-public swimming pools, rehabilitation and wellness centers



WATER FOR THE HOME

Water treatment for food use

Water treatment for technological use




WATER AT THE POINT OF USE

Goccione® 19-liter bottle water dispensers

Water dispensers
They connect to the water supply and can dispense natural water, at room temperature and cold, and cold carbonated water.



CULLIGAN: A SINGLE REFERENCE FOR MULTIPLE SOLUTIONS.

Culligan

Culligan is present worldwide, directly or through official distributors, with its technicians, ready to solve any problem regarding water, and the availability of components and replacement parts everywhere.

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