



WTI-400 / WTI-400 DUPLEX

Automatic industrial softener for drinking and industrial water

Rev. 1 - 06/24



CHARACTERISTICS

One of the crucial problems in hot water production systems is the formation of limescale encrustations. Limescale deposits on pipes, boilers and exchange surfaces, thus reducing their efficiency, increasing energy costs and maintenance costs. Calcium and magnesium salts negatively interfere with many industrial and food processes and it is, therefore, necessary to remove them from water.

Softening represents the best solution for preventing limescale deposits. Thanks to an ion exchange process, calcium and magnesium ions are selectively retained by specific resins which release sodium ions into the water. As a consequence, the resin runs out and must be regenerated by washing with a concentrated solution of sodium chloride (brine) which returns the resin to its initial conditions ready for a new treatment cycle.

WTI-400 is a double body water softener (resin containment tank and brine tank) designed to treat large flow rates, completely automatic and capable of autonomously managing the work and regeneration phases. WTI-400 water softeners are suitable for the treatment of water intended for human consumption, technological or process use.

The WTI-400 water softeners use a strong gelular polystyrene cationic resin with high exchange capacity supported by a layer of extremely pure quartzite. Using a water softener means enjoying the following benefits:

- savings on energy costs;
- reduction of costs for repairs and maintenance;
- no negative interference with production processes;
- equipment and systems free from encrustations and deposits.

The water softening systems of the WTI-400 line can be single column or in the DUPLEX – Double column version.

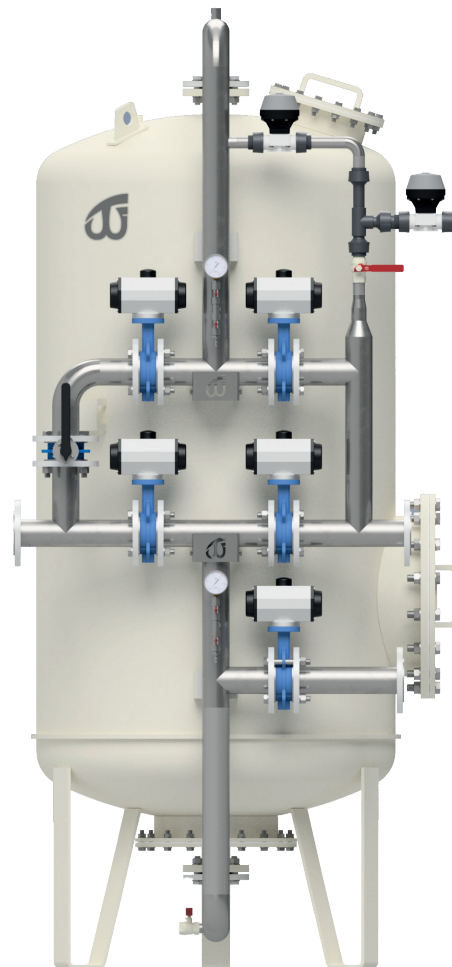
To manage DUPLEX systems, two containment tanks and a connection PIPING KIT must be used - See the dedicated table

The WTI-400 water softeners are made with cylindrical tanks in S235JR carbon steel finished with a special internal coating with epoxy resin suitable for food use and externally treated with RAL 9010 white powder coating.

The STANDARD model tanks are internally equipped with an upper plate distributor and a lower perforated plate equipped with a set of distributor nozzles. There are:

#3 hatches for inspection and loading/unloading of filtering material.

The STANDARD model tanks are equipped with #3 hatches (top, side and bottom) for loading/unloading the filter material.



SOFTENING

RAL 5012 (blue) and RAL 6018 (green) available on request. The tanks can be supplied entirely in AISI 304 or AISI 316 stainless steel.

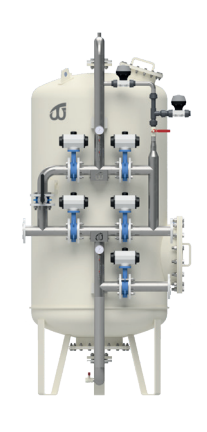
The connecting hydraulic pipes are made of AISI 304 stainless steel.

In the standard versions with diameters of 550 mm up to 1600 mm, the inlet pipe is connected to the upper dome while, in the softeners with larger diameters, the pipe inlet is lateral on the shell.

The WTI-400 water softener is equipped with 5 butterfly valves with ductile iron body and AISI 316 stainless steel lens controlled by a pneumatic actuator

+ #1 manual butterfly shut-off valve; brine line:

Models 55/140: #2 diaphragm valves and #1 ejector; models 160/180: #1 diaphragm valve and #1 pump.



STANDARD TANK

It complies with UNI EN 13445-3

- STANDARD model TANK with upper lateral hatch and central flanged pipe connection; side and lower hatch with central flanged pipe connection.
- STAINLESS STEEL 304 connection PIPING
- AUTOMATIC butterfly control VALVES with pneumatic actuator with ductile iron body and AISI 316 stainless steel lens.
- PIPING connecting brine line, diaphragm valves and ejector; for models 160/180, diaphragm valves and pump.
- Pressure drop monitoring control pressure gauges, sample taps at the inlet and outlet of the filter, ball valve for filter discharge, manual butterfly valve for outlet shut-off and filter ball vent valve

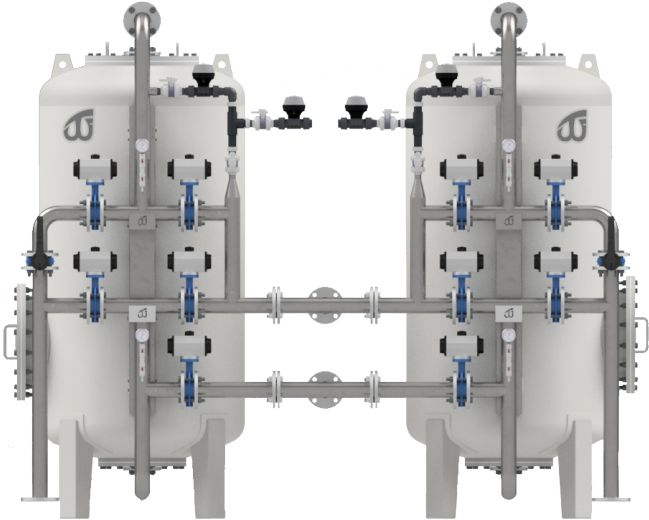
Exclusions: by-pass kit

1 + 1 DUPLEX SOFTENER MANAGEMENT

For the management of double column water softeners, DUPLEX version, the following must be adopted:
 -#2 tanks complete with #2 brine tanks.

The two columns are joined by a dedicated piping kit:
 #2 T-fittings in AISI 304 stainless steel, including flanges for the hydraulic connection.

- Optional:
- #1 control panel for managing the DUPLEX water softener
 - #2 pilot solenoid valve control panels
 - #1 pulse meter to manage the volume operation of the softener
 - #2 Geko resin disinfection dosing stations



indicative image

| Parameters to be treated | WTI-400 |
|--------------------------|---------|
| Turbidity | - |
| Flavors | - |
| Odors | - |
| Atrazine and the like | - |
| Tri+tetrachlorethylene | - |
| Iron | minimum |
| Manganese | - |
| Hardness | optimal |

TECHNICAL DATA Referred to a single column

| Code | | WT0000692 | WT0000693 | WT0000694 | WT0000695 |
|---|-------|------------|------------|------------|-------------|
| Model | | WTI-400 55 | WTI-400 65 | WTI-400 80 | WTI-400 100 |
| Fittings | DN | 40 | 40 | 50 | 65 |
| Nominal flow rate, 0 °fr* | m³/h | 7,0 | 10,5 | 15,0 | 23,5 |
| Short peak range, 0 °fr** | m³/h | 12,0 | 16,5 | 25,0 | 39,0 |
| Resin volume | litri | 250 | 350 | 500 | 800 |
| Cyclic capacity | m³x°f | 1500 | 2100 | 3000 | 4800 |
| Salt consumption for regeneration | kg | 38 | 53 | 75 | 120 |
| Brine tank volume | litri | 500 | 1000 | 1500 | 1500 |
| Brine tank volume | litri | - | - | - | - |
| Salt brine tank contents | kg | 450 | 900 | 1350 | 1350 |
| Number of regenerations | n. | 10 | 15 | 15 | 9 |
| Min./max. water temperature | °C | +5 / +40 | | | |
| Min./max. ambient temperature | °C | +5 / +40 | | | |
| Min./max. water pressure | bar | 1,5 / 6 | | | |
| Power supply | V-Hz | 230 / 50 | | | |
| Working pneumatic power supply | bar | 3 - 8 | | | |
| Electrical protection degree (referring to the control panel) | | IP65 | | | |
| Brine line pump | m³/h | - | | | |
| Brine line pump power | kW | - | | | |

| Code | | WT0000696 | WT0000697 | WT0000698 | WT0000699 |
|---|-------|-------------|-------------|-------------|-------------|
| Model | | WTI-400 120 | WTI-400 140 | WTI-400 160 | WTI-400 180 |
| Fittings | DN | 65 | 80 | 100 | 125 |
| Nominal flow rate, 0 °fr* | m³/h | 34,0 | 46,0 | 60,0 | 76,0 |
| Short peak range, 0 °fr** | m³/h | 56,0 | 77,0 | 100,0 | 127,0 |
| Resin volume | litri | 1150 | 1550 | 2025 | 2550 |
| Cyclic capacity | m³x°f | 6900 | 9300 | 12150 | 15300 |
| Salt consumption for regeneration | kg | 173 | 233 | 304 | 383 |
| Brine tank volume | litri | 2000 | 2000 | 2000 | - |
| Brine tank volume | litri | - | - | - | 4300 |
| Salt brine tank contents | kg | 1800 | 1800 | 1800 | 4100 |
| Number of regenerations | n. | 9 | 6 | 5 | 9 |
| Min./max. water temperature | °C | +5 / +40 | | | |
| Min./max. ambient temperature | °C | +5 / +40 | | | |
| Min./max. water pressure | bar | 1,5 / 6 | | | |
| Power supply | V-Hz | 230 / 50 | | | |
| Working pneumatic power supply | bar | 3 - 8 | | | |
| Electrical protection degree (referring to the control panel) | | IP65 | | | |
| Brine line pump | m³/h | - | - | 2,5 | - |
| Brine line pump power | kW | - | - | 1,5 | - |

Key: *Pressure drop: ΔP=approximately 0.5 bar - **Pressure drop: ΔP=approximately 1.0 bar

FILTER MATERIAL FILLING TABLE - Single column

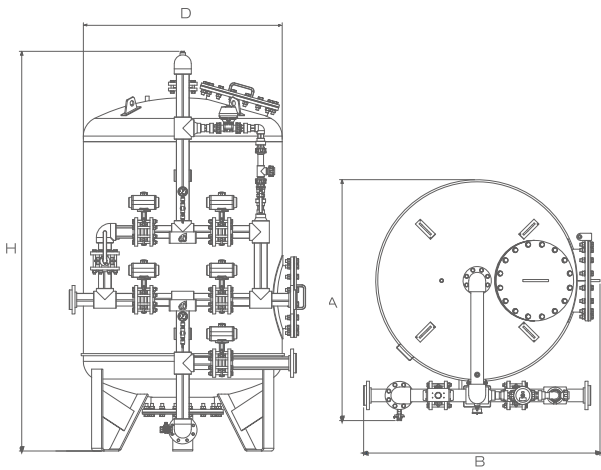
| Modello | u.m. | Resin | u.m. | Quartzite, grain size 2,0 - 3,0 |
|----------------|-------------|--------------|-------------|--|
| WTI-400 55 | Lt | 250 | Kg | 75 |
| WTI-400 65 | Lt | 350 | Kg | 100 |
| WTI-400 80 | Lt | 500 | Kg | 175 |
| WTI-400 100 | Lt | 800 | Kg | 250 |
| WTI-400 120 | Lt | 1150 | Kg | 375 |
| WTI-400 140 | Lt | 1550 | Kg | 500 |
| WTI-400 160 | Lt | 2025 | Kg | 675 |
| WTI-400 180 | Lt | 2550 | Kg | 850 |

FILTER MATERIAL FILLING TABLE - DUPLEX version

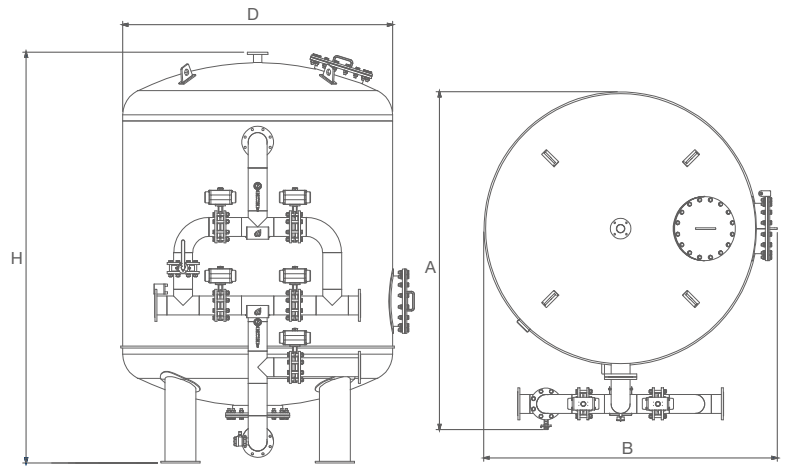
| Modello | u.m. | Resin | u.m. | Quartzite, grain size 2,0 - 3,0 |
|----------------|-------------|--------------|-------------|--|
| WTI-400 55 | Lt | 500 | Kg | 150 |
| WTI-400 65 | Lt | 700 | Kg | 200 |
| WTI-400 80 | Lt | 1000 | Kg | 350 |
| WTI-400 100 | Lt | 1600 | Kg | 500 |
| WTI-400 120 | Lt | 2300 | Kg | 750 |
| WTI-400 140 | Lt | 3100 | Kg | 1000 |
| WTI-400 160 | Lt | 4050 | Kg | 1350 |
| WTI-400 180 | Lt | 5100 | Kg | 1700 |



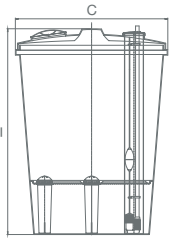
OVERALL DIMENSIONS Referred to a single column



Models 55/160



Model 180



SOFTENING

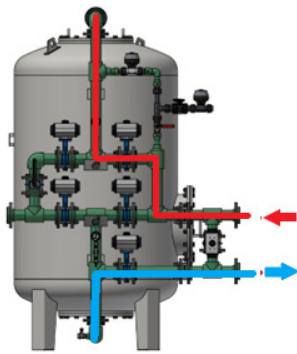
| Code | A | B | D | H | C | I | Empty eight |
|------------------|------|------|--------|------|------|------|-------------|
| | | | | | | | automatic |
| | mm | mm | mm | mm | mm | mm | Kg |
| WT0000692 | 800 | 1000 | Ø 550 | 2360 | 840 | 1335 | 194 |
| WT0000693 | 900 | 1000 | Ø 650 | 2390 | 1080 | 1460 | 219 |
| WT0000694 | 1080 | 1080 | Ø 800 | 2530 | 1240 | 1575 | 335 |
| WT0000695 | 1300 | 1250 | Ø 1000 | 2680 | 1240 | 1575 | 530 |
| WT0000696 | 1500 | 1400 | Ø 1200 | 2770 | 1360 | 1690 | 659 |
| WT0000697 | 1710 | 1600 | Ø 1400 | 2810 | 1360 | 1690 | 1016 |
| WT0000698 | 1950 | 1800 | Ø 1600 | 2980 | 1360 | 1690 | 1188 * |
| WT0000699 | 2350 | 2010 | Ø 1800 | 3380 | - | - | 1746 * |

Overall dimensions may be subject to changes without notice

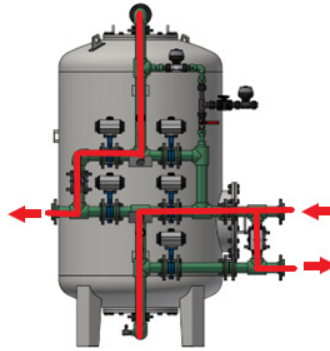
Notes:

1. Empty weight does not include tank/brine tank
2. The brine tank is not provided for the WTI-400/180 model softener; a special tank with a minimum capacity of 4300 liters must be prepared by the customer.

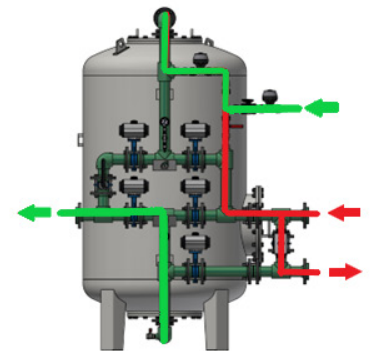
OPERATING DIAGRAMS



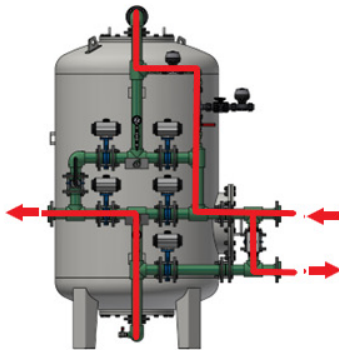
WORKING PHASE



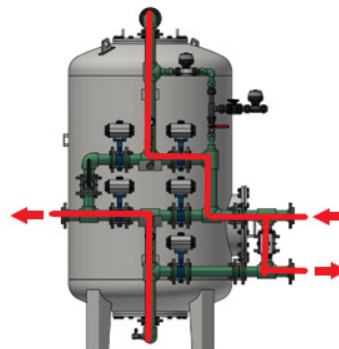
BACKWASHING PHASE



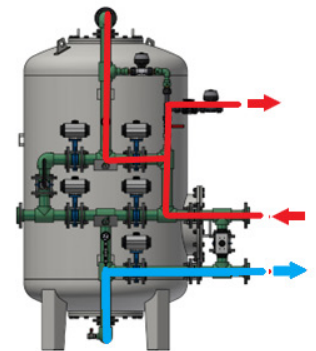
SUCTION PHASE



MOVEMENT PHASE



RINSING PHASE



BRINE REPLACEMENT PHASE

— HARD WATER

— SOFTENED WATER

— BRINE



EQUIPMENT AND SUPPLY SPECIFICATIONS

Standard or duplex WTI-400 is supplied complete with brine tank, without filter material (to be ordered separately) and without optional accessories;

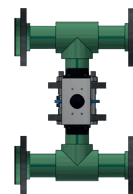
instruction - maintenance manual in Italian

(including declaration of conformity). Shipping managed on one or more pallets.



OPTIONAL ACCESSORIES

• BY-PASS KIT FOR SINGLE COLUMN



A by-pass kit is available that can be installed on the single column, always ensuring the supply of unsoftened water, during the regeneration phase of the softener.

Suitable for cases where you do not want to interrupt the water supply to the users.

The by-pass kit is supplied in AISI 304 steel with a manual valve (indicative image).

The by-pass kit must not be used in the WTI-400 DUPLEX version as the water supply is never interrupted

COD. WT0002640
 COD. WT0002641
 COD. WT0002642
 COD. WT0002643
 COD. WT0002644
 COD. WT0002645

By-pass DN40
 By-pass DN50
 By-pass DN65
 By-pass DN80
 By-pass DN100
 By-pass DN125

• VALVE CONTROL PANEL WITH PILOT SOLENOID VALVE CONTROL PANEL



The water softener is equipped with a control panel provided with a micro-PLC which allows the management of the different work phases. It is possible to set the regeneration of the resins at regular time intervals or upon reaching a settable maximum volume or upon reaching the maximum volume but delayed in time. Finally, it is always possible to start a manual regeneration simply by pressing a button on the front panel.



The panel is equipped with clean contacts for the management (through electrical panels not included) of any auxiliary utilities (i.e., resin disinfectant solution dosing station, auxiliary contact for management of exchange/bypass systems, etc.).

Finally, the panel contains the air pilot solenoid valves for the

control of pneumatic valve actuators.

Single column softener management panel with:

- #5 butterfly valves with single-acting pneumatic actuator (flow management in the operation and regeneration phases), of which two N.O. valves. (V1 and V4) and three N.C. valves.

- #2 N.C. diaphragm valves (brine line and driving water management)

Duplex water softener management panel with:

- #10 butterfly valves with single-acting pneumatic actuator (flow management in the operating and regeneration phases), of which two N.O. valves. (V1 and V4) and three N.C. valves.

- #4 N.C. diaphragm valves (brine and driving water line management)

Available options:

- butterfly valve management with single-acting pneumatic actuator for automatic by-pass (the valve is supplied as an optional; see "BY-PASS" kit).

- hardness regulation/mixing system via Oventrop valve (the valve is supplied as an optional; see "HARDNESS CALIBRATION" kit)

Panel controls:

- 0-1 selector (start-stop)
- regeneration start button
- selection button (service-regeneration)
- advance button (regeneration phases)

Panel complete with alarm warning light and emergency enabled.

PLC controls:

- wash display / parameter setting regeneration
- display/mode setting button regeneration
- treated water meter display button (produced water totalizer).

Available regeneration modes:

- timed (this phase is not present in the duplex version),
- at immediate volume,
- with volume delayed at a pre-set time,
- by volume with time forcing.

All volume regeneration modes require the installation of a pulse counter. Flushing function for prolonged inactivity.

Regeneration cycle with 5 settable phases:

- Backwash
- Brine suction
- Slow wash
- Quick rinse
- Brine replenishment

Functions manageable from the panel:

- #1 pulse counter
- #1 minimum water inlet pressure switch
- #1 maximum water inlet pressure switch
- #1 water outlet pressure control
- #1 air supply pressure control
- #1 chlorine dosing pump complete with level control
- #1 brine pump complete with level control
- #1 by-pass valve
- #1 remote start consent
- #1 system status clean contact (operation / regeneration)

Other technical data

Supply voltage: 240 Vdc - 50 Hz Auxiliary voltage: 24 Vdc

IP65 protection degree

Dimensions WxDxH: 340×160×460 mm

COD. WT0000253 **basic panel for water softener single column**

COD. WT0000254 **basic panel for water softener DUPLEX vesion**

COD. WT0000248 **Pilot solenoid valve control panel**

• PULSE LAUNCHE LITER METER VOLUME OPERATION OF THE SOFTENER



Axial reel meter (Woltmann) with dry dial for detecting the consumption of drinking water for residential or industrial use by direct reading on numbered rollers.

The meter is designed to signal the dosing frequency to an external tool as a function of the flow rate detected thanks to the pulse sensor positioned on the dial. To operate the duplex version softener, 1 meter is required.

COD. 9900424063

Pulse counter DN50

COD. 9900424066

Pulse counter DN65

COD. 9900424069

Pulse counter DN80

COD. 9900424072

Pulse counter DN100

COD. 9900424074

Pulse counter DN125

COD. 9900424077

Pulse counter DN150

• **1" 1/4 CONNECTOR BOOST VALVE**



The boost valve is used in systems that can work with significant variations in flow rate; In case of high water demand (simultaneous use) the bypass circuit is activated ensuring the required flow rate.

The adjustment is performed after installation, manually adjusting the compression of the valve's internal spring, using the appropriate upper knob; In this way the intervention pressure of the valve is adjusted which, in case of boost, opens the shutter allowing the passage of water; Body in CW617N brass - EPDM gaskets and seals -

TECHNICAL DATA:

IN connections: 1"1/4 F - OUT connections: 1"1/4 M - Calibration range: 1/6 bar - Max. flow rate: 10 mc/h - Max. operating pressure: 10 bar - Min-max temperature: 0-110 bar

COD. 31015900

• **HARDNESS CALIBRATION VALVE 1"1/2 CONNECTIONS**



The hardness calibration valve is a balancing valve that allows you to adjust the hardness level of the water coming out of the softener; in the case of water intended for human consumption, it is always advisable not to supply completely softened water but mixed at least at 10 °f. The adjustment is carried out by manually acting on the valve knob that controls the movement of a shutter that regulates the passage of water. CW602N brass body - EPDM gaskets and seals

TECHNICAL DATA:

IN/OUT connections: 1"1/2 F - Max. flow rate: 13.7 mc/h - Max. operating pressure: 16 bar - Max. temperature: 120 bar

COD. 31015904

• **GEKO DISINFECTION RESIN DOSING STATION**



Complete dosing station for resin disinfection equipped with:

- 25 lt tank with black HDPE containment tank
- suction lance and level probe
- digital dosing pump suitable for dosing disinfectant chemicals, complete with 6x4 PVC crystal suction pipe and 6x4 PE delivery pipe

The TCK pump of the dosing station must be connected directly to the softener control valve with the product injection point in the brine tank.

TCK pump dosing min/max lt/h: 4-8

TCK pump pulse frequency/minute: 160

TCK pump gasket kit: PVDF

Min/max pressure bar: 2-12

Electrical power supply: 230 V - 50/60 Hz - Cable with Schuko plug

Min/max ambient temperature °C: 5-40

Each softener column requires a dosing station

COD. SD993200

• **PRODUCT TO BE DOSED - FERROCID® 8592**



Product to be used with dosing station GEKO for resin disinfection

Ferrocid® 8592 is an aqueous solution of sodium hypochlorite suitable for use in water intended for human consumption. Ferrocid® 8592 can be added to water to facilitate the elimination of iron, manganese and ammonia from water. Thanks to its oxidizing capacity, it is also able to destroy the organic substance present in the water and is at the same time active against a wide range of algae and microorganisms present in tanks and pipes, also helping to prevent their formation. Ferrocid® 8592 is dangerous for transport

and, therefore, falls within the ADR requirements. Drinking use. - Can of Kg 20

COD. PC074



GESTIONE ADDOLCITORE DUPLEX

• **DUPLEX PIPING KIT**



The piping kit for the connection of duplex version water softeners consists of:

- n.2 AISI 304 stainless steel T-fittings including flanges for the hydraulic connection.

COD. WT0002620

COD. WT0002621

COD. WT0002622

COD. WT0002623

COD. WT0002624

COD. WT0002625

Duplex piping kit DN40

Duplex piping kit DN50

Duplex piping kit DN65

Duplex piping kit DN80

Duplex piping kit DN100

Duplex piping kit DN125

• **FILTER MATERIAL**



- Strong, food-grade cationic resin with a sulfonated polystyrene gel structure. High chemical-physical stability, high sphericity and resistance to friction guarantee resistance, longevity and low pressure drops.



- High purity siliceous quartzite (SiO2 content greater than 95%) suitable for food use. Quartzite is used as a support layer underneath the cationic resins.

FILTER MATERIAL - Drinking use -

Packaging: 25 kg bags - 900/1000 kg Big Bags

COD. 48100032

COD. 48100006

Strong cationic resin

Quartzite 2,0-3,0

• **HARDNESS ANALYSIS KIT**



Total water hardness analysis kit, colorimetric.

The analysis is expressed in French degrees (°F);

the kit includes a test tube, indicator, titrant and instructions. You will be able to evaluate whether to install a softener or if the assembled system is working.

COD. 48105001

• SALT



Claramat is specifically designed for use in water softeners for private, condominium and industrial use.

Thanks to its extremely high purity (99.8%), Claramat does not dirty the cylinder and brine tank of water softeners, always guaranteeing the best performance without variations in

the quality of the water supplied.

Its recrystallized formulation in tablets significantly increases its duration over time, while maintaining stable purification values.

Claramat water softener salt complies with the EN 973 type A regulation.

Drinking use - 25 kg bags

Cod. 48100007

• START-UP AND TESTING

Upon request, Water Treatment Industry can provide the start-up and testing service carried out by a specialized technician.

Please contact us for information on the scheduled periodic maintenance service.

COD. 84022100 Equipment filling service
daily cost quote

COD. 84022110 Equipment filling service
daily cost quote

The services do not include travel expenses related to the kilometric cost of the car according to ACI tables, as well as motorway travel.

Services refer to the national territory (excluding islands)



REFERENCE STANDARDS

Ministerial Decree No. 174/2004: Regulation concerning materials and objects that can be used in fixed systems for the collection, treatment, supply and distribution of water intended for human consumption.

Directive 2014/30/UE: concerning the approximation of the laws of the Member States relating to electromagnetic compatibility.

Directive 2014/35/UE: concerning the approximation of the laws of the Member States relating to electrical equipment intended for use within certain voltage limits.

Art. 4 Par. 3 Of Directive 2014/68/EU (PED).

UNI EN 13445-3 Pressure vessels not exposed to pflame - Part 3: Design



PRECAUTIONS AND WARNINGS

Attention! If this equipment is used for the treatment of water intended for human consumption, it requires regular periodic maintenance in order to guarantee the drinkability requirements of the treated drinking water and the maintenance of the improvements as declared by the manufacturer. In the case of filters or connecting pipes made of AISI 304 or AISI 316 stainless steel, consult the Technical Dept. in advance to verify compatibility with the chloride content of the water to be treated.



MAINTENANCE

Periodically check the correct operation of the equipment. Ordinary operation of the equipment requires periodic regeneration. Make sure that there is always a sufficient amount of salt in the brine tank (the water level in the tank must always be lower than the salt level). If there is a periodic cleaning and sanitization plan for the system, it is also necessary to include the equipment. To ensure correct management of the equipment, it is advisable to carry out at least two checks per year. Respect all the instructions given in the Use and Maintenance Manual.

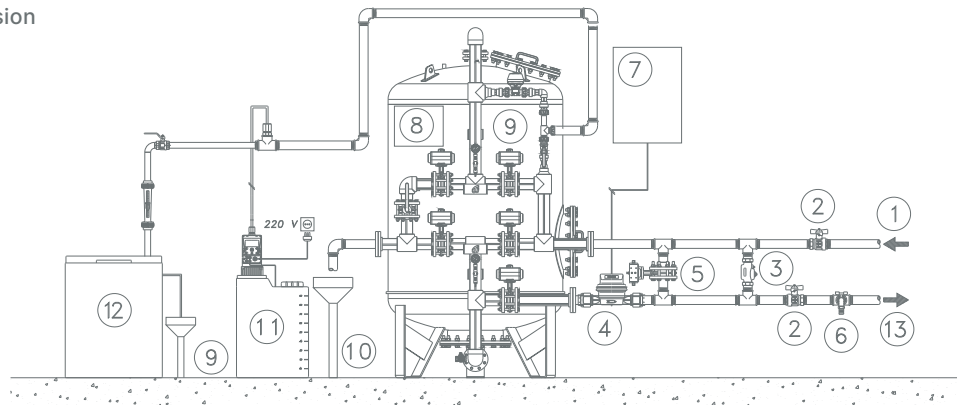


INSTALLATION

Installation must be carried out exclusively by qualified personnel and in full compliance with local regulations. WTI-400 softeners are made to treat water intended for human consumption. Connect the inlet and outlet pipes so as not to allow the filter to empty. The installation must be carried out in hygienically suitable places, provided with the services necessary for the correct operation of the equipment, protected from direct exposure to the sun, frost, bad weather, away from detergents, solvents and chemical products in general. Supply the equipment with water within the specified temperature and pressure limits. If the supply pressure is higher, install a pressure reducer upstream of the equipment. The equipment must be equipped with an adequate by-pass system that allows it to be excluded, if necessary, without preventing the supply of water. Provide an adequate system for collecting and/or disposing of the waste water from the regeneration solution. Check local regulations for waste water disposal. If coarse material such as pebbles, rust flakes or sand is present in the water, install a hydrocyclonic separator or other suitable filtration system upstream of the softener to avoid damaging the control items. Before installing, see the use and maintenance manual.

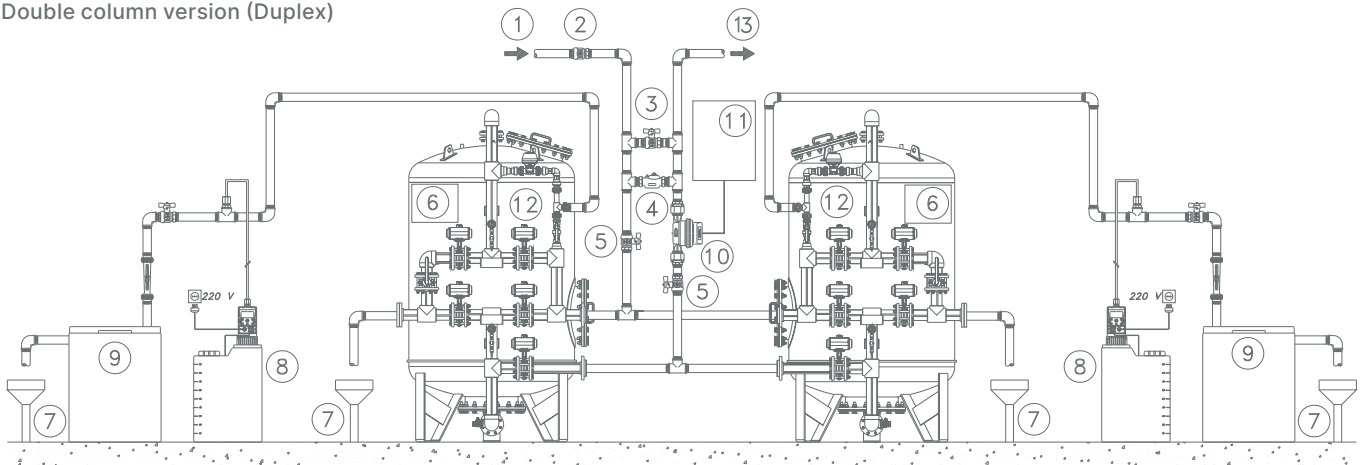
INDICATIVE INSTALLATION DIAGRAM

Single column version



1. Raw water inlet; 2. By-pass valve; 3. Hardness calibrator; 4. Pulse meter; 5. By-pass kit; 6. Sample tap; 7. Control panel; 8. Pneumatic pilot box; 9. WTI-400 water softener; 10. Drain; 11. Geko dosing station; 12. Brine tank; 13. Treated water outlet.

Double column version (Duplex)



1. Raw water inlet; 2. Non return valve; 3. By-pass valve; 4. Hardness calibrator; 5. Shut-off valve; 6. Pneumatic pilot box; 7. Drain; 8. Dosing station; 9. Brine tank; 10. Pulse launcher meter; 11. Control panel; 12. Treated water outlet.

SPARE PARTS

Spare parts for the equipment are available on request in the dedicated price list.

AVERAGE DELIVERY TIMES

3 weeks

GENERAL EXCLUSIONS

- Filling the filter material tank
- Equipment start-up and final testing
- Special dedicated packaging, where required - wooden crates
- Lifting and handling means
- Hydraulic and electrical connections to our plant and to our utilities
- Masonry, carpentry and foundation works
- Chemical analyses
- Structural calculations
- Anything not expressly mentioned in the offer