



WTI-300

Manual or automatic iron remover and demanganizer filter for drinking and industrial water

Rev. 1 - 06/24



CHARACTERISTICS



The presence of iron and manganese can alter the drinkability of water and can create significant technological problems such as: colored stains, blockages in pipes, triggering and acceleration of corrosive phenomena, development of iron-bacteria colonies, which are also capable to cause noticeable corrosion phenomena.

As long as the water is deep and lacking in oxygen, iron and manganese are present in the form of colorless soluble salts (bicarbonates). Once the water is brought into contact with the air during pumping, irrigation, storage in tanks, the iron and manganese ions undergo an oxidation process which transforms them into colored insoluble hydroxides. To remove iron and manganese, it is necessary to subject the water to a double treatment in series, consisting of oxidation and filtration.

The WTI-300 iron removal filters contain a mixture of quartzite and pyrolusite (a particular manganese oxide), which acts as a catalyst for the oxidation of iron and manganese by exploiting the action of an oxidant added to the water (sodium hypochlorite). The catalytic process occurs on the surface of the granule which leads to the formation of a floc which is mechanically retained by the quartzite contained in the filter bed. During operation there will therefore be progressive clogging of the filter bed with a consequent increase in pressure losses. It is necessary to periodically carry out backwashing, an operation that sends water countercurrently through the filter bed to remove accumulated solids and thus restore the original filtration capacity.

The WTI-300 filters are rapid pressure filters designed and manufactured for the reduction of iron and manganese in well and groundwater; they are suitable for the treatment of water intended for human consumption, technological or process use.

The WTI-300 filters 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 tanks are internally equipped with an upper plate distributor and a lower perforated plate equipped with a set of distributor nozzles.

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

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



In STANDARD version tanks with diameter 550 mm, -1600 mm the inlet pipe is inserted on the upper part of the tank while in filters with larger diameters the inlet pipe is inserted from the front.

The manual version is equipped with 6 butterfly valves with ductile iron body and AISI 316 stainless steel lens. In the automatic version there are 5 butterfly valves controlled by a pneumatic actuator + 1 manual butterfly shut-off valve.

Parameters to be treated	WTI-300
Turbidity	minimum
Flavors	-
Odors	-
Atrazine and the like	-
Tri+tetrachlorethylene	-
Iron	optimal
Manganese	optimal
Hardness	-



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
- MANUAL butterfly control VALVES with ductile cast iron body and AISI 316 stainless steel lens or AUTOMATIC butterfly control VALVES with pneumatic actuator with ductile cast iron body and AISI 316 stainless steel lens
- 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

TECHNICAL DATA

Code		WT0000628 WT0000633	WT0000629 WT0000634	WT0000630 WT0000635	WT0000631 WT0000636
Model		WTI-300 55	WTI-300 65	WTI-300 80	WTI-300 100
Fittings	DN	40	40	50	65
Working flow rate*	m ³ /h	3,5	5,0	7,5	11,8
Maximum flow rate**	m ³ /h	2,2	3,2	5,0	8,0
Backwash flow rate (water)	m ³ /h	5,0	6,7	10,0	15,7
Min./max. water temperature	°C	+ 5 /+ 40			
Min./max. ambient temperature	°C	+ 5 /+ 50			
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			

Code		WT0000632 WT0000637	WT0000638	WT0000639	WT0000640
Model		WTI-300 120	WTI-300 140	WTI-300 160	WTI-300 180
Fittings	DN	65	80	100	125
Working flow rate*	m ³ /h	17,0	23,0	30,0	38,0
Maximum flow rate**	m ³ /h	11,0	15,0	20,0	25,0
Backwash flow rate (water)	m ³ /h	22,6	30,8	40,2	51,0
Min./max. water temperature	°C	+ 5 /+ 40			
Min./max. ambient temperature	°C	+ 5 /+ 50			
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			

*Pressure drop with clean filter: ΔP=0.3 bar - **Pressure drop with clean filter: ΔP=0.5 bar.

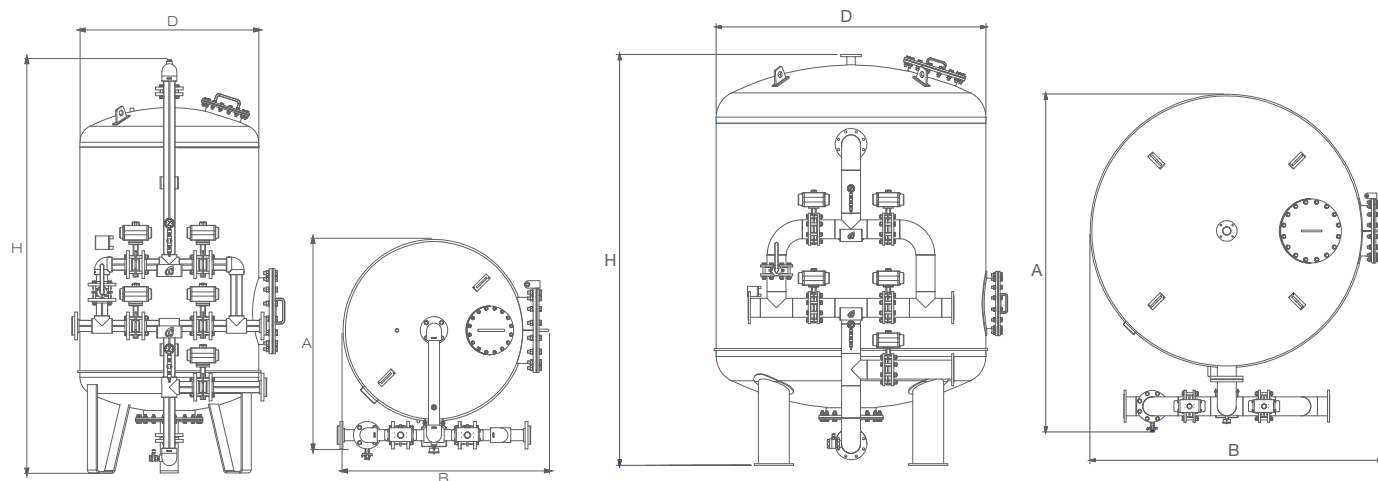
Notes: Choose the equipment based on the working range. The maximum capacity is recommended only for peak loads of limited duration. In the case of water with iron >2 mg/l and/or manganese >0.5 mg/l, provide the dosage of sodium hypochlorite and an oxidation Can of adequate volume. Contact the Technical Dept. for correct sizing.

FILTER MATERIAL FILLING TABLE - Manual and automatic version

Model		Pirolusyte	Quartzite, grain size 2,0 - 3,0
WTI-300 55	Kg	150	50
WTI-300 65	Kg	200	50
WTI-300 80	Kg	300	75
WTI-300 100	Kg	475	125
WTI-300 120	Kg	675	175
WTI-300 140	Kg	925	250
WTI-300 160	Kg	1200	325
WTI-300 180	Kg	1525	400



OVERALL DIMENSIONS



Models 55/160

Model 180

Code	A	B	D	H	Weight a vuoto	
					manuale	automatico
	mm	mm	mm	mm	Kg	
WT0000628-633	800	1000-1060	Ø 550	2360-2390	190	190
WT0000629-634	900	1000-1120	Ø 650	2390-2430	212	215
WT0000630-635	1070	1080-1150	Ø 800	2530-2550	326	330
WT0000631-636	1290	1240-1330	Ø 1000	2680-2700	496	525
WT0000632-637	1490	1400	Ø 1200	2770	624	652
WT0000638	1710	1600	Ø 1400	2810		977
WT0000639	1940	1800	Ø 1600	3000		1188
WT0000640	2350	2010	Ø 1800	3380		1746

Overall dimensions may be subject to changes without notice



EQUIPMENT AND SUPPLY SPECIFICATIONS

WTI-300 is supplied 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

• QUADRO BASE



The automatic version is equipped with a control panel equipped with a micro-PLC which allows the management of the different working phases of the filter. It is possible to set the backwash at regular time intervals or when a settable maximum ΔP is reached (a differential pressure sensor must be installed). Finally, it is always possible to start a manual backwash 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., flocculant dosing station, blower for water-air backwashing, auxiliary contact for management of exchange/bypass systems).

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

control of pneumatic valve actuators. Single column filter management panel with: 5 butterfly valves with single-acting pneumatic actuator (flow management in the operating and washing phases), of which N.C. type valves. Available options: supply of butterfly valves with single-acting pneumatic actuator for air introduction for washing using an external blower (the system is supplied as an optional, see "AIR" kit).

Panel controls:

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

Panel complete with alarm warning light and emergency button.

PLC controls:

- filter set-up choice button (carbon, iron remover, sand)
- wash display / parameter setting button
- wash display / mode setting button
- treated water meter display button (produced water totalizer).

Possible operating modes of the device:

- Carbon filter mode
- Iron removal filter mode
- Sand filter mode

Available regeneration modes:

- timed,
- 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 launcher meter. Flushing function for prolonged inactivity.

Regeneration cycle with 6 settable phases:

- Drainage
- Air blowing
- Pause
- Backwash
- Regenerating dosage (phase available for iron removal filters only)
- Quick rinse

Functions manageable from the panel:

- #1 pulse launcher meter
- #1 minimum water inlet pressure switch
- #1 maximum water inlet pressure switch
- #1 water outlet pressure control
- #1 air supply pressure control
- #1 flocculant/regenerating dosing pump complete with level control
- #1 backwash pump with water complete with level control
- #1 blower for backwashing with air
- #1 remote start consent
- #1 system status clean contact (operation / washing)
- #1 system status clean contact (filter supply pump request)

Other technical data

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

IP65 protection degree

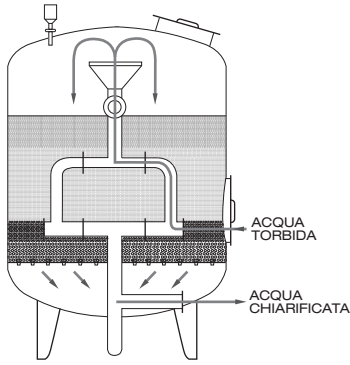
Dimensions WxDxH: 340x160x460 mm

COD. WT0000246

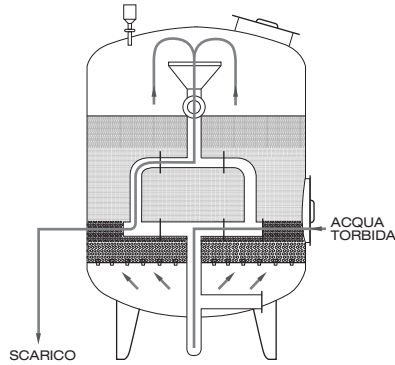
basic panel for filter single column

COD. WT0000248

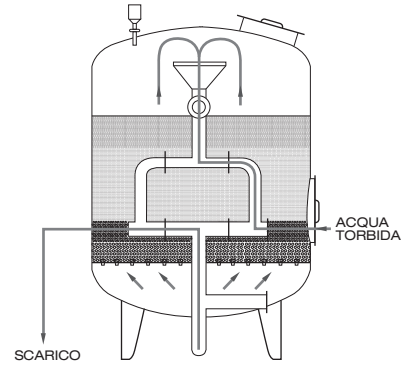
pilot solenoid valve control panel



WORKING PHASE



REGENERATION PHASE



RINSING PHASE

• DOSANET PV OXIDANT DOSING STATION



Complete dosing station for oxidizing product, sodium hypochlorite for the oxidation of iron and manganese.

- 30-liter black HDPE tank
- black HDPE containment tank for reservoir
- suction lance and level probe
- digital dosing pump suitable for dosing chemical products in general, complete with

6x4 crystal PVC suction hose and 6x4 PE delivery hose
The TPG pump of the dosing station must be connected directly to the pulse counter installed in the line.

- Min./Max. TPG pump dosage l/h: 2.5-7.0
- TPG pump pulse/minute frequency: 120
- TPG pump seal kit: PVDF
- Min./max. pressure bar: 8-20
- Power supply: 230 V - 50/60 Hz - Cable with Schuko plug
- Min/max ambient temperature °C: 5-40

COD. SD993025

• PULSE LAUNCHER LITER METER



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.

When the water passes through the meter, its volume is measured and, as it passes, pulses are generated which activate the APG pump of the Dosanet P dosing station; in this way, the right water/chemical product ratio is maintained.

- COD. 9900424063**
- COD. 9900424066**
- COD. 9900424069**
- COD. 9900424072**
- COD. 9900424074**
- COD. 9900424077**

- Pulse counter DN50**
- Pulse counter DN65**
- Pulse counter DN80**
- Pulse counter DN100**
- Pulse counter DN125**
- Pulse counter DN150**

• PRODUCT TO BE DOSED - FERROCID® 8592



Ferrocid® 8592 is an aqueous solution of sodium hypochlorite suitable for use in water intended for human consumption. To be dosed at the top of the filter in proportion to the flow rate of water to be treated. Thanks to its oxidizing capacity, it is also capable of

destroying 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 regulations.

Drinking use - Kg. 20 tank

COD. PC074

• FILTER MATERIAL



sizes.

- High purity siliceous quartzite (SiO₂ content above 95%) suitable for food use.

- Quartzite is used with different grain



- Pyrolusite compliant with EN 13752 standard titled "Products for the treatment of water intended for human consumption - Manganese dioxide".

Filter material - Drinking use -

Packaging: 25 kg bags - 900/1000 kg big bags

I codici corrispondono a 1 L/1 Kg di FILTER MATERIAL.

- COD. 48100006**
- COD. 48100019**

- Quartzite 2,0-3,0**
- Pirolusyte**

• START-UP AND TESTING

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

Contact us for information on the scheduled periodic maintenance service.

COD. 84022100 Equipment filling service
daily cost quotation

COD. 84022110 First start-up service
equipment testing
daily cost quotation

Travel expenses relating to the kilometric cost of the car according to ACI tables, as well as motorway journeys, are excluded from the services.

Services referring to the national territory (excluding islands)



MAINTENANCE

Periodically check the correct functioning of the equipment. Ordinary operation of the equipment requires carrying out periodic backwashing. Make sure you have sufficient water flow (or water and air) to ensure adequate backwashing. 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 by qualified personnel. Respect all the instructions given in the Use and Maintenance Manual.



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



INSTALLATION

Installation must be carried out exclusively by qualified personnel and in full compliance with local regulations. WT1-300 filters 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. The equipment must be equipped with an adequate by-pass system that allows it to be excluded if necessary.

It is recommended to install a safety filter with a filtration degree of 50 µm downstream of the clarifying filter. Provide an adequate collection and/or disposal system for backwash waste water. Check local regulations for the disposal of backwash water.

In the most serious cases (iron concentrations >2 mg/l, manganese >0.5 mg/l, presence of ammonia, microbial load), it is advisable to install, upstream of the filter, an oxidant dosing system (sodium hypochlorite) continuously to promote oxidation. Before installing, see the use and maintenance manual.

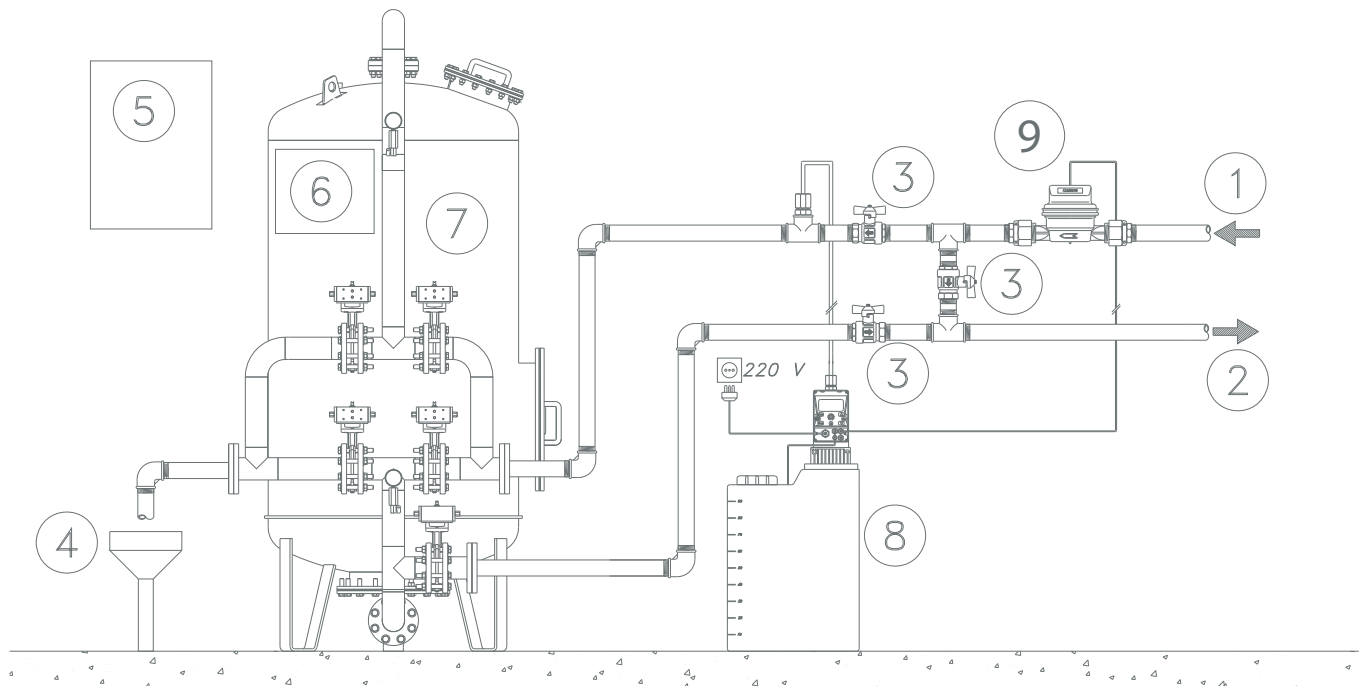


PRECAUTIONS AND WARNINGS

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 Office in advance to verify compatibility with the chloride content of the water to be treated.

INDICATIVE INSTALLATION DIAGRAM



1. Raw water inlet; 2. Raw water outlet; 3. By-pass circuit valve; 4. Wash-water drain;
5. Control panel; 6. Pneumatic pilot box; 7. Oxidant dosing station; 8. Pulse launcher counter.

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