



WTI-200

Manual or automatic activated carbon filter for drinking and industrial water

Rev. 1 - 06/24



CHARACTERISTICS

Water drawn from rivers and lakes or from groundwater may contain dissolved organic substances. Some are of natural origin, such as humic and fulvic acids, while others are micropollutants produced by man such as herbicides, pesticides, solvents and surfactants. Furthermore, some water chlorination processes (disinfection, deammonification) use chlorine-based oxidants which lead to the formation of by-products (chloroacetic acids, trihalomethanes, halogenated humic acids). The presence of these substances can alter the organoleptic and hygienic characteristics of water in various ways, in particular when it is intended for human consumption.

Activated carbon filtration is one of the most reliable and effective technologies for the elimination of unwanted odors, flavors and colors and for the removal of micropollutants, natural organic substances, chlorine and water derivatives. Activated carbon is a material characterized by a very high internal porosity which allows it to remove micropollutants through an adsorption process and not mechanical filtration. During the exercise there will be a progressive reduction in the capacity to reduce micropollutants, due to the saturation of the active coal sites. When the saturation level no longer allows an adequate reduction of pollutants, the activated carbon must be replaced.

WTI-200 filters are pressure filters designed and manufactured for the reduction of organic micropollutants in surface and groundwater as well as the reduction of unwanted odors, flavors and colors. WTI-200 filters are suitable for the treatment of water intended for human consumption, technological or process use.

The characteristics of the activated carbon play a crucial role in defining important operational parameters such as: type of pollutants that can be eliminated, removal capacity, pressure drops, duration of the filtering masses. For this reason, the WTI-200 filters use a granular activated carbon filter bed which allows the optimization of the following working parameters:

- removal of organic micropollutants.
- reduction of oxidizing substances such as chlorine, ozone, hydrogen peroxide, permanganate.
- reduction of colors, flavors and unpleasant odors.

The WTI-200 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 provided 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-200
Turbidity	optimal
Flavors	-
Odors	-
Atrazine and the like	optimal
Tri+tetrachlorethylene	optimal
Iron	-
Manganese	-
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		WT0000564 WT0000569	WT0000565 WT0000570	WT0000566 WT0000571	WT0000567 WT0000572
Model		WTI-200 55	WTI-200 65	WTI-200 80	WTI-200 100
Fittings	DN	40	40	50	65
Working flow rate*	m <sup>3</sup> /h	3,5	5,0	7,5	11,0
Maximum flow rate**	m <sup>3</sup> /h	5,5	7,5	11,6	18,0
Backwash flow rate (water)	m <sup>3</sup> /h	5,0	6,6	10,0	16,0
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			

Code		WT0000568 WT0000573	WT0000574	WT0000575	WT0000576
Model		WTI-200 120	WTI-200 140	WTI-200 160	WTI-200 180
Fittings	DN	65	80	100	125
Working flow rate*	m <sup>3</sup> /h	17,0	23,0	30,0	38,0
Maximum flow rate**	m <sup>3</sup> /h	26,0	35,0	46,0	58,0
Backwash flow rate (water)	m <sup>3</sup> /h	23,0	30,0	40,0	50,0
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:  $\Delta P=0.3$  bar - \*\*Pressure drop with clean filter:  $\Delta P=0.5$  bar.

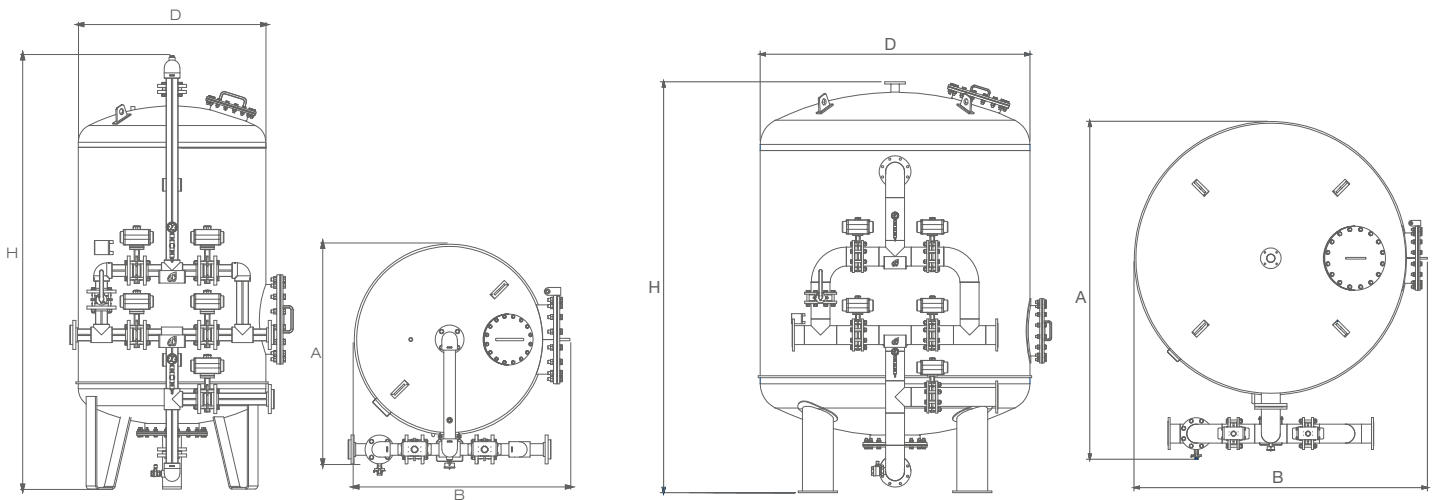
**Notes:** The maximum flow rate is recommended for dechlorination and reduction of oxidizing substances (ozone, hydrogen peroxide, permanganate). The working flow rate is only a guide for the removal of organic micropollutants. Specific organic micropollutants require reducing the working flow rates in order to increase the contact times with the filtering masses (up to 15-20 minutes). Before proceeding with the selection of the filter, consult the Technical Dept. for correct sizing.

## FILTER MATERIAL FILLING TABLE - MANUAL AND automatic version

Model		Coarse quartzite 2,0 - 3,0	Activated carbon
WTI-200 55	Kg	50	125
WTI-200 65	Kg	50	150
WTI-200 80	Kg	75	250
WTI-200 100	Kg	125	350
WTI-200 120	Kg	175	525
WTI-200 140	Kg	250	700
WTI-200 160	Kg	325	900
WTI-200 180	Kg	400	1150



### OVERALL DIMENSIONS



Models 55/160

Model 180

Code	A	B	D	H	Empty weight	
					manual	automatic
	mm	mm	mm	mm	Kg	
WT0000564-569	800	1000-1060	Ø 550	2360-2390	190	190
WT0000565-570	900	1000-1120	Ø 650	2390-2430	212	215
WT0000566-571	1070	1080-1150	Ø 800	2530-2550	326	330
WT0000567-572	1290	1240-1330	Ø 1000	2680-2700	496	525
WT0000568-573	1490	1400	Ø 1200	2770	624	652
WT0000574	1710	1600	Ø 1400	2810		977
WT0000575	1940	1800	Ø 1600	3000		1188
WT0000576	2350	2010	Ø 1800	3380		1746

Overall dimensions may be subject to changes without notice



## EQUIPMENT AND SUPPLY SPECIFICATIONS

WTI-200 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  $\Delta P$  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: 340×160×460 mm

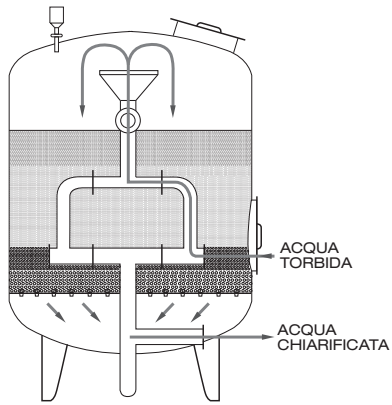
**COD. WT0000246**

**quadro base per filtro  
singola colonna**

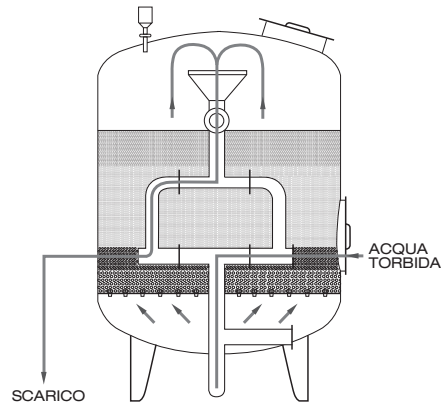
**COD. WT0000248**

**quadro comando  
elettrovalvole pilota**

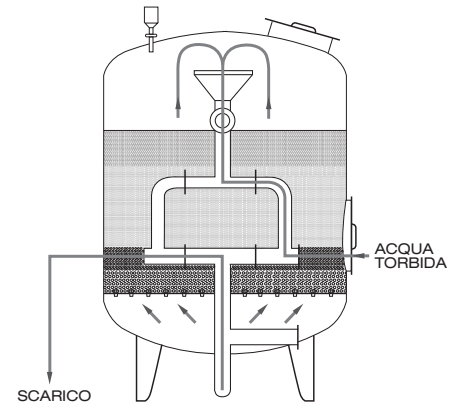
## OPERATING DIAGRAMS



WORKING PHASE



REGENERATION PHASE



RINSING PHASE

### • 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**

### • 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)

### • FILTER MATERIAL



- High purity siliceous quartzite ( $\text{SiO}_2$  content greater than 95%) suitable

- The quartzite used has a grain size of 2,0-3,0.

- High quality granular activated carbon produced through physical activation of selected raw materials of mineral origin..



Filter material - Drinking use -

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

The codes correspond to 1 L/1 Kg of filter material.

**COD. 48100006** **Coarse quartzite 2,0-3,0**  
**COD. 48100004** **Activated carbon**



## 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 carrying out periodic backwashing. Make sure you have sufficient water flow 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.

The activated carbon filter bed is subject to saturation and must therefore be periodically replaced. The saturation time cannot be predicted a priori and depends on the actual characteristics of the treated water. Furthermore, the exhaustion process does not take place with an increase in pressure drops and it is, therefore, essential to monitor the quality of the water through periodic analyses. If the saturation level of the filter mass no longer allows an adequate reduction of pollutants, it must be replaced. Respect all the instructions given in the Use and Maintenance Manual.



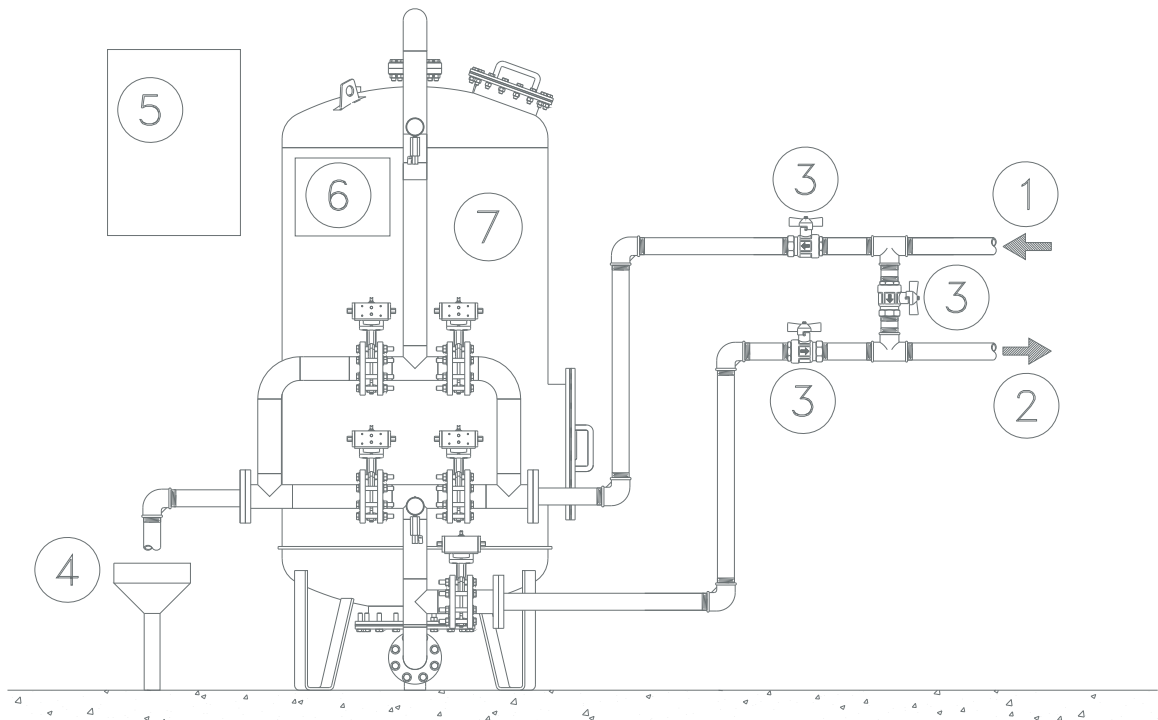
## INSTALLATION

Installation must be carried out exclusively by qualified personnel and in full compliance with local regulations. WTI-200 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. If the supply pressure is higher, install a pressure reducer upstream of the filter. 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.

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.

**Please note.** Activated carbon filters are not mechanical filters. It is, therefore, necessary to feed them with water free of other impurities which could saturate the filtering masses, prematurely exhausting their adsorbent capacity. Activated carbon can be easily and quickly saturated by impurities in water. For this reason, the water supplied to the WTI-200 filter must be free of coarse material and suspended substances, its turbidity must be less than 1 NTU, the iron content must be less than 0.2 mg/l and manganese less than 0.05 mg/l. Oils, greases and hydrogen sulphide must be absent. If the water does not have these requirements, provide adequate pre-treatments (clarifier filters, iron removal filters). Before installing, see the use and maintenance manual.

## INDICATIVE INSTALLATION DIAGRAM



1. Raw water inlet; 2. Filtered water outlet; 3. Valves for by-pass circuit; 4. Washing water drain;  
5. Control panel; 6. Tire pilot box; 7. WTI-200 activated carbon filter

## 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