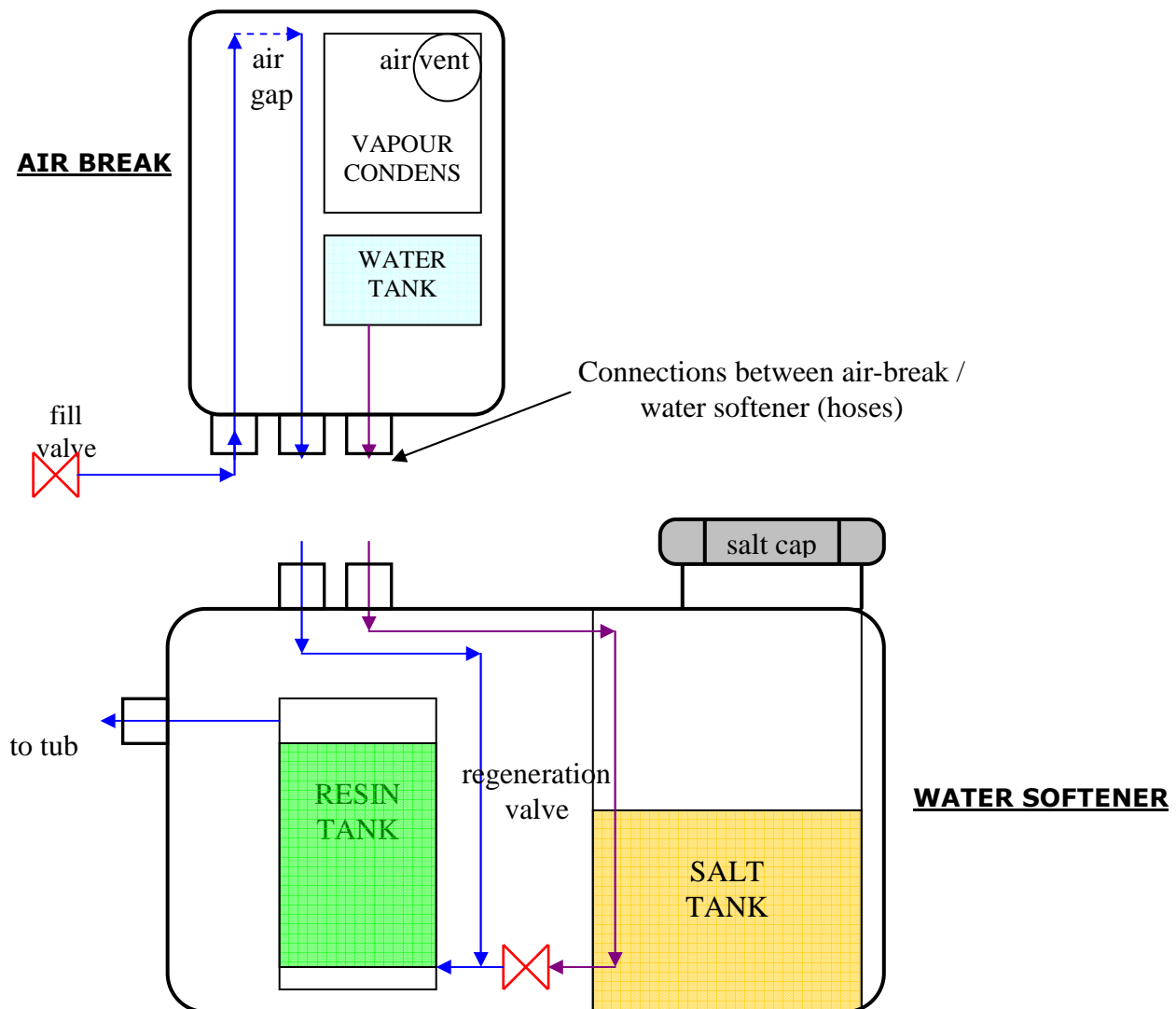


FUNCTIONAL DESCRIPTION: **Water Softener M19 + Air-break AK16**

T&P water softening system is composed by Air break AK16 and Water Softener M19.

AK16 air-break is composed by two sides of PP hot-plate welded and contains an air gap, (prescribed by EN 61770 against back siphonage in the main water supply); a water tank to contain water to be used for regeneration and a vapour condensation area with air ventilation in order to connect tub to atmosphere.

M19 water softener is composed by a body, a cover and a bottom, (all in PP) hot-plate welded together while from a point of view of functions, we can distinguish among different parts: a salt container, a resin container, a regeneration valve between them, plus a sensor to detect the presence/absence of salt (if this option is chosen), aside the salt container and a mechanical selector for hardness levels (if this option is chosen).





componenti per elettrodomestici



Working phases

we can consider three phases during the usage of water softener:

- water filling, in order to treat incoming water reducing water hardness, for use during wash of dishes;
- resins' regeneration, in order to recover the treatment capacity after absorption of calcium, magnesium and other positive ions (cations) causing water hardness; this regeneration is made by means of sodium ions, coming from a dense brine composed by a solution of NaCl;
- resins' rinse, in order to eliminate excess of NaCl (used for regeneration) and of calcium / cations (exchanged out of resins during contact with salt brine).

Water filling and treatment of water

Filling valve is energized, and water flows into the system, passing in series:

- the hose between filling valve and air break inlet
- a first channel inside the air-breaker
- the air gap, prescribed by EN 61770 against back siphonage in the main water supply
- a second channel from air gap to air break outlet
- the connection hose from air break to water softener
- the channel inside water softener from water softener inlet to bottom of resin cylinder
- the bottom filter
- the ion exchange resins
- the top filter
- the outlet to sump
- the hose between softener outlet and sump
- the sump.

The usual flow rate on current applications is between 2,5 l/min and 4,5 l/min.

Resins' regeneration

Regeneration valve is energized, so:

- the water amount in the air-breaker drops, and pushes forward the same amount contained into the salt tank;
- the brine amount is pushed ahead into the resin tank, where comes in contact with the resins and activates the ion exchange Ca-Na;
- the fresh water contained in the resin tank, replaced by the brine, moves forward into the sump.



Resins' rinse

After regeneration has occurred, calcium is replaced by sodium in the ion exchange resin beads. But in reality there is always an excess of salt.

Additionally, also the calcium released during this exchange is very concentrated: basically the water coming out of resin tank after the contact with brine, can be as hard as 300-400 °F or more, depending on the water amount in which it is diluted.

Therefore the purpose of resins' rinse is to remove the excess of salt, and the excess (exchanged) of calcium and other cations contributing to hardness, in order to avoid chloride or hardness to go in the tub, during washing phases (about 3 liters of water is an adequate amount).

A certain benefit is obtained by means of some flow 'shots', which help shaking the resins and removing the excess of NaCl and calcium (eg. 6 shots of 0.5 liters each).

In order to execute the resins' rinse, the filling valve is energized, on a time base, until the requested amount have flown through the ion exchange resins.

The passages into the hydraulic circuit are the same as for Phase1 (water filling).





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M19 WATER SOFTENER AND AK16 AIR BREAK MAIN DIMENSIONS



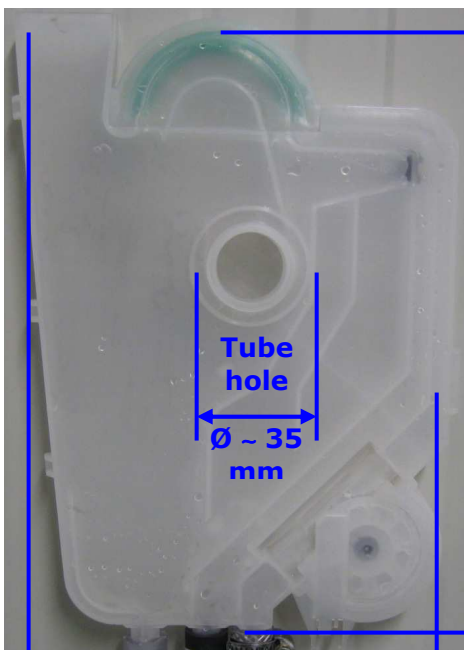
~ 95 mm



Tube hole
Ø ~ 65 mm

~ 210 mm

~ 180 mm



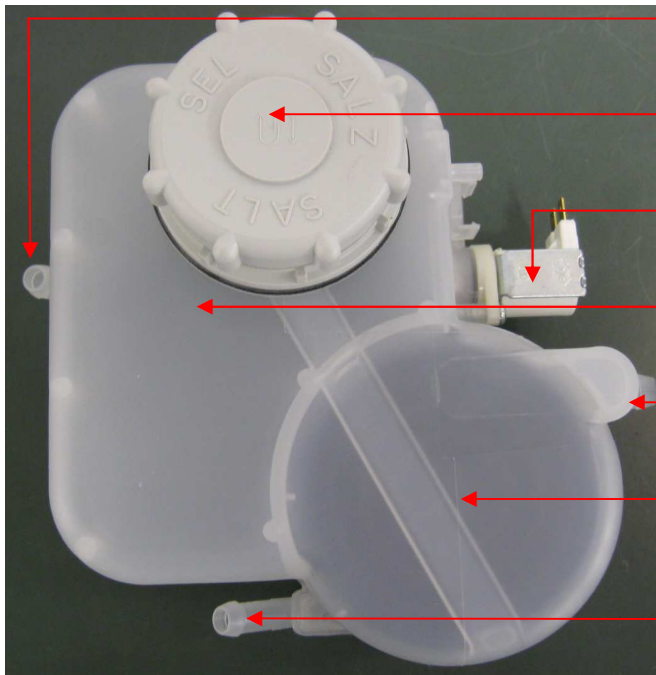
Tube hole
Ø ~ 35 mm

~ 230 mm

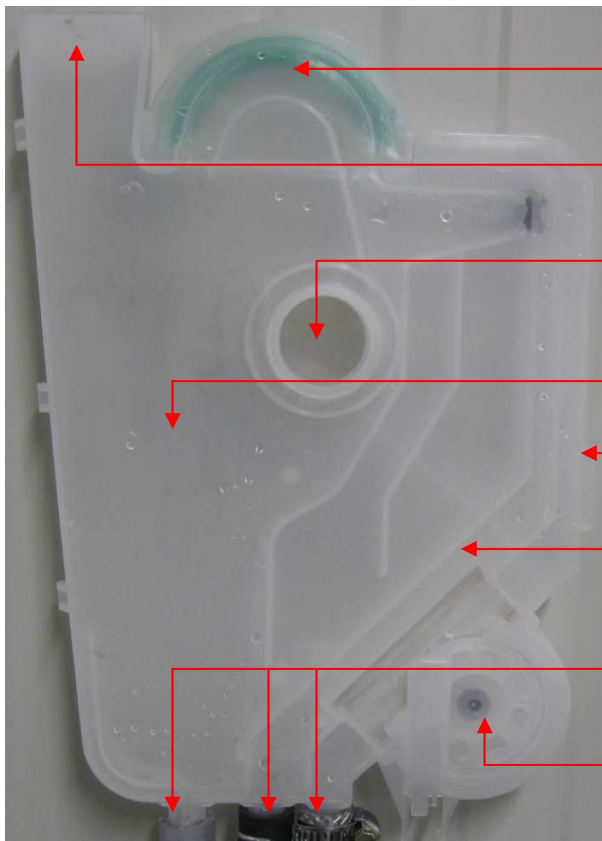
~ 170 mm



M19 WATER SOFTENER AND AK16 AIR BREAK PICTURES



- connection: regeneration water from air-break
- salt cap
- regeneration valve
- salt tank
- water outlet (to sump)
- resin tank
- connection: filling flow from air-break to resins



- Air gap
- Air venting (to outside)
- Air connection (to tub)
- Regeneration tank
- Filling channel (before air gap)
- Filling channel (after air gap)
- Connections to water softener and inlet valve
- Option for flow meter (not present in base version)