THE LIMESTONE

and the solubility of Calcium and Magnesium Carbonates

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MAIN PROBLEMS

- **Limestone = Insulating** (loss of thermal efficiency)

- **Limestone = Surfactant antagonist** (greater consumption of detergents and soap)

- **Limestone = Spots and deposits** (tableware, cars, etc.)

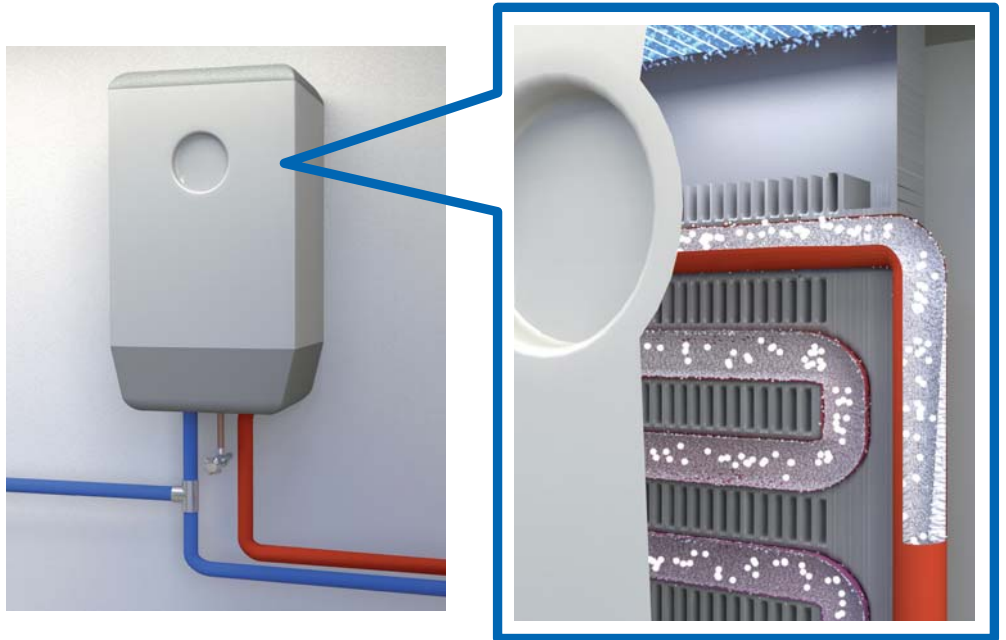- **Limestone = Aesthetic problems** (rough linen, unpleasant sensations on hair and skin)

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HARDNESS Indicator Parameter (°F)

15°F

↑ **softening**

↓ **polyphosphate dosing magnets softening**

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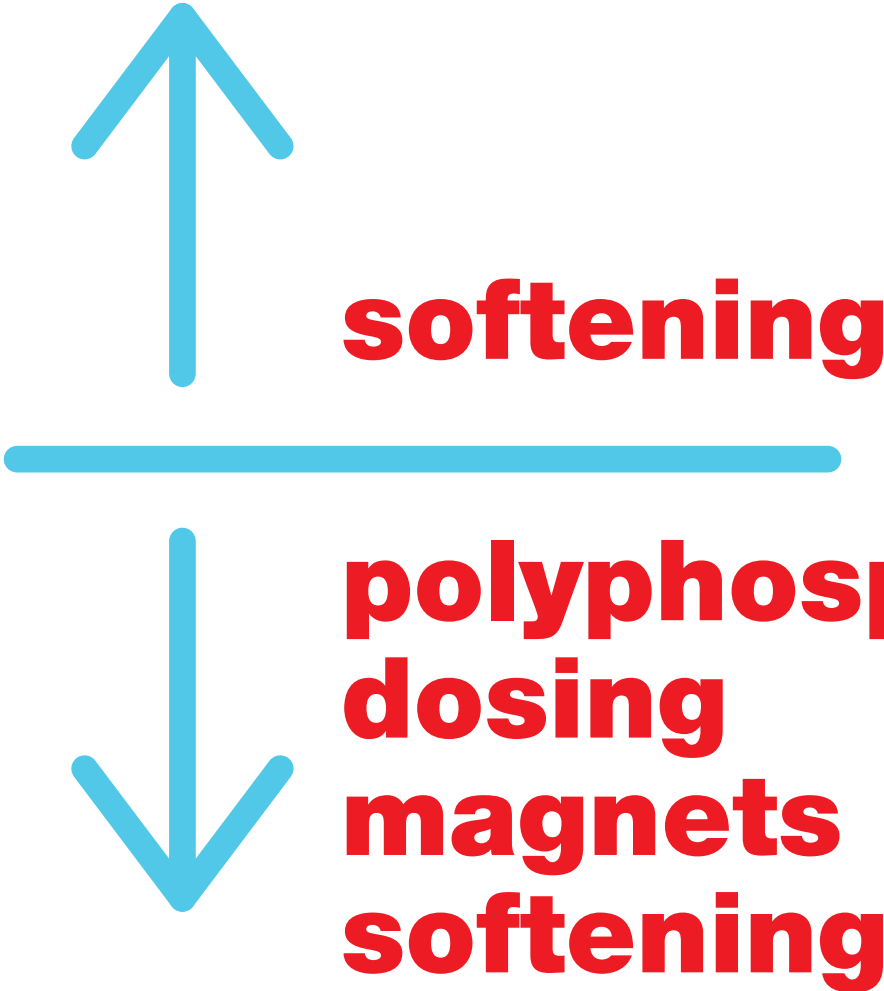
› polyphosphate dosing: powder

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❯ polyphosphate dosing: crystals

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360°

❯ polyphosphate dosing: liquid - DOSAPUMP LP

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polyphosphate dosing: liquid

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mag MF

mag FF

mag MM

› magnets

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> **softening**

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Operating Principle
of a WATER SOFTENER

$$Ca(HCO3)2 + R\text{-}Na = R\text{-}Ca + 2NaHCO3$$

softening

Na⁺ Ca²⁺

Na⁺ Na⁺ Ca²⁺ Ca²⁺

Na⁺ Ca²⁺

regeneration

› softening

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double body softeners

AC plug with transformer

control valve

diffuser tube

treating material

resin tank

brine well

brine tank

water softeners

AC plug with transformer

control valve

diffuser tube

treating material

resin tank

brine well

brine tank

› **softening**

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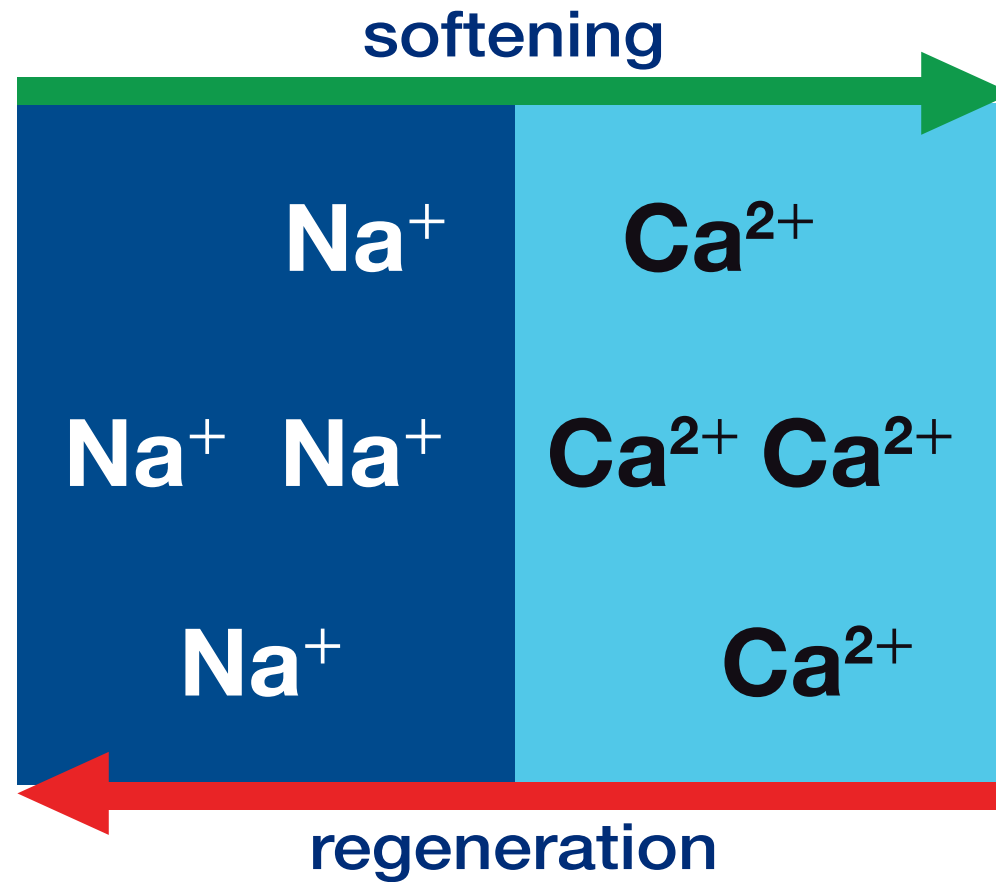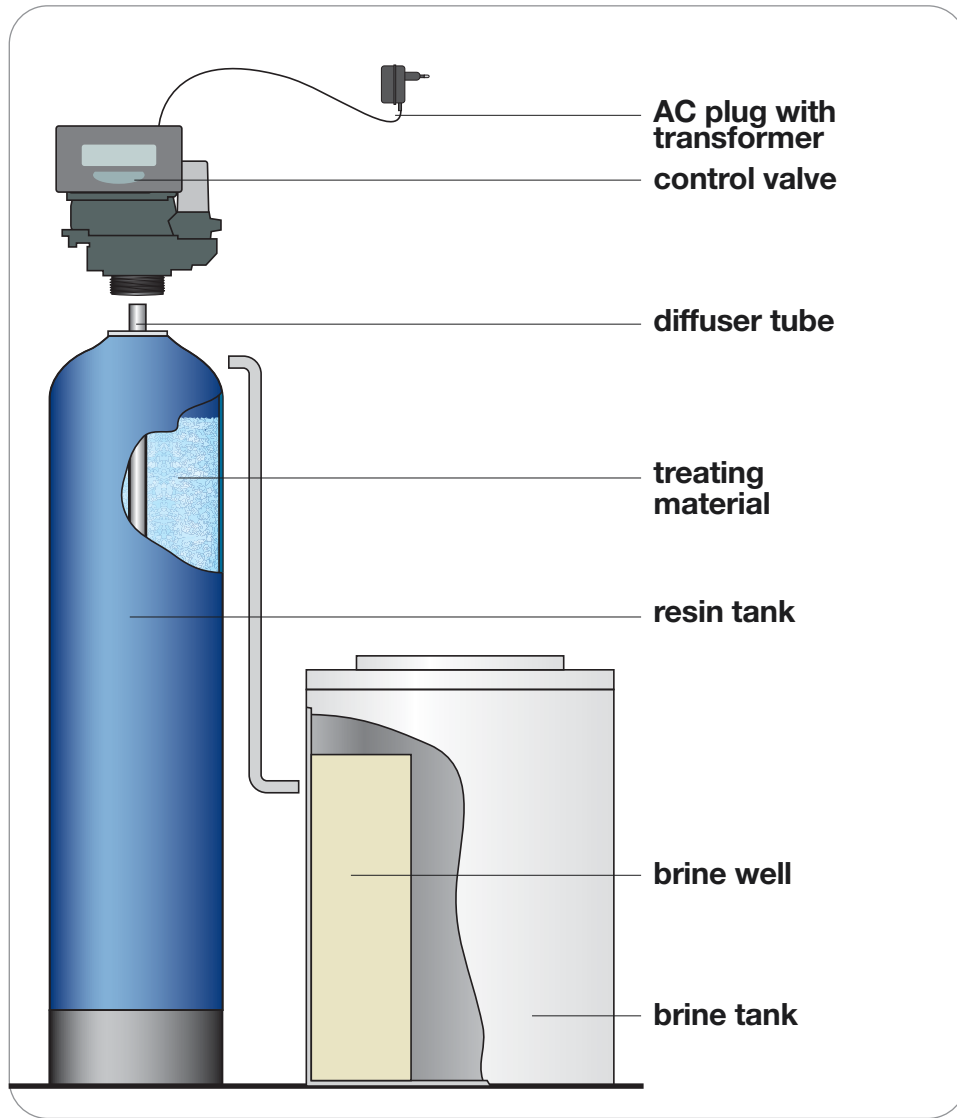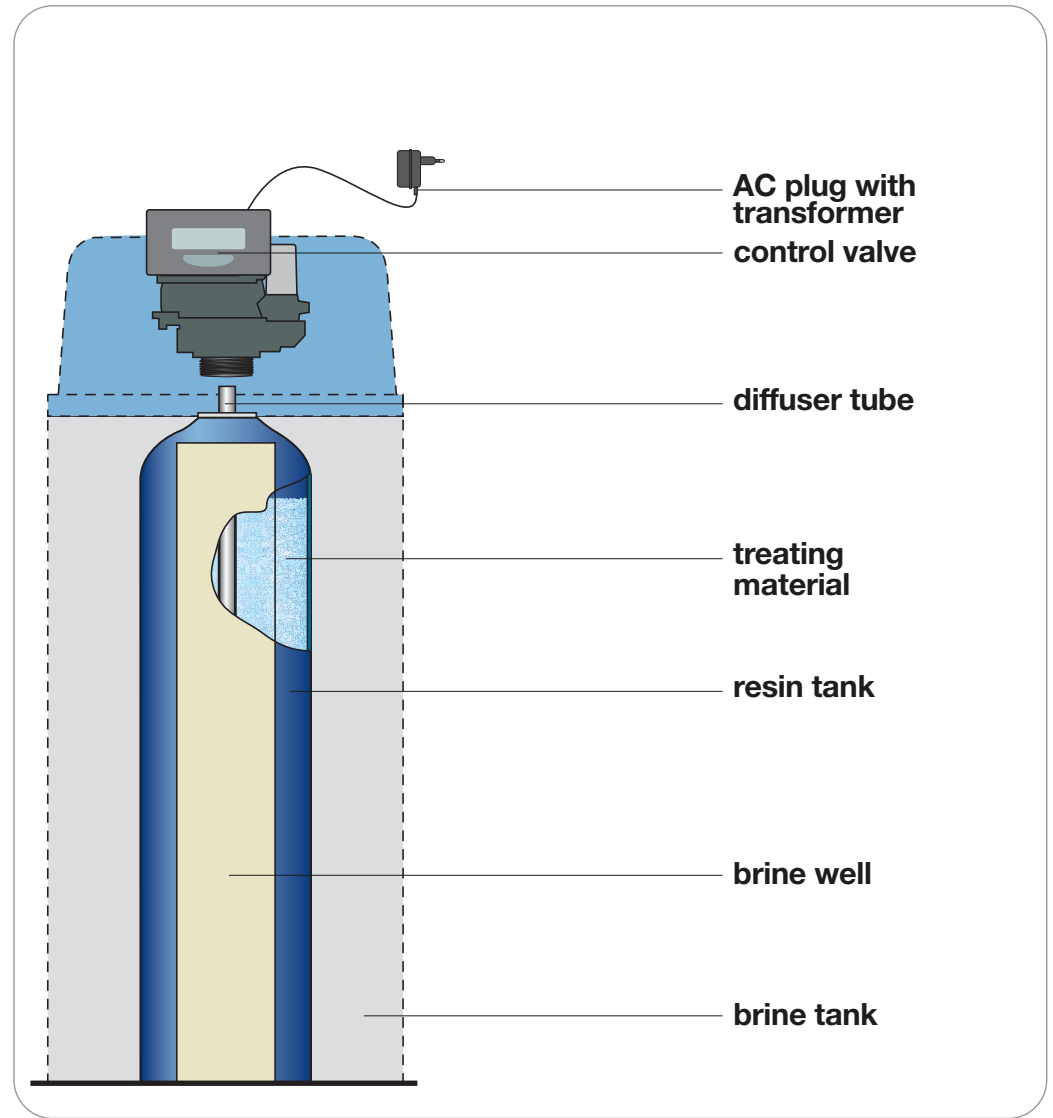
DM 443/90 - Home softeners

- Device for the **automatic regeneration** of resins at least once every 4 days;

- Resin **auto disinfection** device;

- **Mixer** for maintaining the recommended residual hardness of 15 °F (150 mg/l)

- **Sodium** contents in the water not exceeding 200 mg/l of Na (law 31 on drinking water)

❯ softening

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formulas

resin volume [l] =

$$\text{daily consumption } [m^3] \text{ x hardness } [°F] \text{ x regeneration interval} \over 5{,}5$$

cyclic capacity [m³ x °F] = resin volume x 5.5

salt consumption [g] = resin volume x 180 g

❯ cycle calculation

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GUIDE TO THE CHOICE OF MODEL

NUMBER OF USERS	WATER CONSUMPTION LITRES/DAY	water hardness in °F and in ppm				
		15-25°f 152-250 ppm	26-35°f 260-350 ppm	36-45°f 360-450 ppm	46-55°f 460-550 ppm	56-65°f 560-650 ppm
2	500	JUPITER 10	JUPITER 10	JUPITER 10	JUPITER 15	JUPITER 15
3 - 5	750 - 1250	JUPITER 15	JUPITER 30	JUPITER 30	JUPITER 30	JUPITER 50
6 - 10	1500 - 2500	JUPITER 30	JUPITER 50	JUPITER 50	JUPITER 70	JUPITER 70
11 - 15	2750 - 3750	JUPITER 50	JUPITER 70	JUPITER 70		
16 - 20	4000 - 5000	JUPITER 50	JUPITER 70			
21 - 25	4250 - 6250	JUPITER 70				

❯ **softening**

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Autotrol Electronic Automatic Valves

TIME and VOLUME versions

> softening

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