

WATER | WASTE - WATER TREATMENT  
**Gramco**

# Domestic Softeners



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# Cabinet Softeners

Caribbean cabinet



Trojan cabinet

## What is hard water?

The original source of all the water we use is rain, which itself is soft. Once it falls however, it dissolves mineral salts such as Calcium and Magnesium, from the rock it percolates through. The Calcium and Magnesium then forms a scale on hot surfaces such as kettle elements, boilers, washing machines and shower heads, which insulates the elements and thus reduces heat transfer efficiency. By eliminating scale we can substantially reduce running and maintenance costs. Soap and detergent is "used up" by hard water so cost savings up to 50% can be achieved. Some people with sensitive skin may also benefit from using soft water. All in all, Softening makes the household a more pleasant place to live; cooking, cleaning washing, showering, and bathing are all nicer in softened water. Drinking softened water is a matter of choice but it is recommended that a drinking water supply should be available.

## How do softeners work?

Water softeners work by a process known as ion exchange. The hard water passes through a resin column inside a pressure vessel. The resin removes the Calcium and Magnesium ions and exchanges them for Sodium. When the resin becomes exhausted it is regenerated by drawing a brine solution through the resin which reverses the process. The unwanted Calcium and Magnesium is then flushed down the drain. Regeneration takes around 1 hour and is repeated as often as necessary by either a timeclock at 2 am or by a meter which triggers the regeneration when the resin has been exhausted. No maintenance is required from the customer other than the regular checking and replenishing of the salt level.

## Why fit a water softener?

- ▶ To protect a hot water system from scale
- ▶ To save money on detergent and soap
- ▶ To improve the enjoyment of showers and baths
- ▶ To stop scum forming on the surface of cooking water
- ▶ To stop scaling of shower heads
- ▶ To stop scaling of dishwashers, washing machines and kettles
- ▶ To help some people with their skin care
- ▶ To make baths and wash basins easier to keep clean
- ▶ To save money on the maintenance of hot water systems, washing machines etc
- ▶ To keep the boiler working at peak efficiency
- ▶ To slowly descale existing systems and pipework
- ▶ To reduce fuel bills where scale formation is reducing efficiency.
- ▶ To extend the life of heating elements such as kettles and immersion heaters.

## Choice of size

The bigger the softener the longer the time between regens. Typically the softener should be large enough to deliver soft water continuously for 24 hours so that regeneration can be timed to take place each night when usage is at its lowest. The size needed will depend mainly on the amount of water used, the size of the house and the number of people living there, in addition to the hardness of the water. The installer will be responsible for sizing the softener and setting it up to suit each individual customer's normal usage habits.

## Choice of valve

The heart of any automatic softener is the valve head assembly which controls regeneration and normal service. The valve size needs to be appropriate for the size of the resin bed and the flow rate. They can be either timeclock or meter controlled depending on which will be most efficient for the customer's normal usage. The valve can have either mechanical or digital triggering of regeneration.

# Cabinet Softeners

## Information table for Trojan cabinet softeners

Resin capacity (litres)	4	7	10	14
Service Flow (m3/hr)	0.16	0.28	0.4	0.56
Capacity between regens (litres at 300ppm hardness)	668	1169	1670	2338
Regen time (minutes)	52	52	52	52
Salt used per regen (kgs)	0.56	0.98	1.40	1.96
Water used per regen (litres)	55	84	87	89
Vessel size	6" x 13"	8" x 17"	8" x 17"	8" x 22"
Width of cabinet	230mm	230mm	230mm	230mm
Depth of cabinet	450mm	450mm	450mm	450mm
Total height (no hood)	535mm	635mm	635mm	780mm
Total height (with hood)	550mm	660mm	660mm	805mm
Inlet / outlet connections	3/4" BSPM	3/4" BSPM	3/4" BSPM	3/4" BSPM

## Information table for Caribbean cabinets

Resin capacity (litres)	20	25	30
Service Flow (m3/hr)	0.8	1.0	1.2
Capacity between regens (litres at 300ppm hardness)	3.3	4.1	5.0
Regen time (minutes)	104	104	104
Salt used per regen (kgs)	2.8	3.5	4.2
Water used per regen (litres)	115	202	285
Vessel size	8" x 35"	9" x 35"	10" x 35"
Width of cabinet	340mm	340mm	340mm
Depth of cabinet	520mm	520mm	520mm
Total height (with hood)	1120mm	1120mm	1120mm
Inlet / outlet connections	1" BSPM	1" BSPM	1" BSPM

A selection of valves are available for use with either cabinet  
Trojan cabinet softeners can be purchased with or without a hood

The Caribbean cabinet has an integral hood

Hot water versions (upto 14L) are available



Clack WS1 valve



Copper battery operated valve



Fleck 5600 valve



Autotrol 255 valve