Kinetico®
water systems

DEPEND ON DAVEY WATER PRODUCTS

KINETICO WATER SYSTEMS

Davey Water Products are the New Zealand distributor for Kinetico MACH and CP series products for water softening and filtration. The Kinetico range is unique with many features to make installation and operation as easy and as economical as possible.

The following treatment technologies are offered in the MACH range:

- **Water softening** – ion exchange for the removal of hardness, iron and manganese
- **Macrolite filtration** – 5 micron media filtration to remove fine sediment and insoluble iron
- **Carbon filtration** – removes chlorine, tastes, odours and some organic matter

WHAT MAKES KINETICO SYSTEMS BETTER?

Twin Tanks – Thanks to Kinetico's twin tank design, treated water is always available. When one tank is exhausted service switches to the standby without interruption. It doesn't matter when backwashing takes place, one tank is always available. This means that bypassing of untreated water never happens, nor does the system have to be installed with solenoid valves or relays to control the water pump.


Twin tank dependability

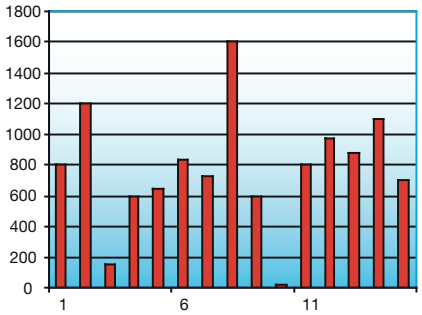
Most efficient – The Kinetico softeners comply with California's stringent salt efficiency rules and therefore have the lowest operating costs available.

No Electricity – Kinetico filters and softeners are powered by the energy of water flow through them. There are no buttons to push, computers to programme, or timers to set (and reset). There are no adjustments to make even after a power cut. Kinetico MACH products can even be installed where there is no power.


Turbine metering

Demand Operated – Since Kinetico control valves are operated by the water flow they adjust automatically to changes in usage. Unnecessary or inadequate backwashing or regeneration is avoided as is unfiltered or hard water breakthrough.

Variation in water usage (Litres/day)



This means that no changes are needed at times of unusually low or high usage. Most electrically operated backwash and regeneration systems cannot operate more than once daily but Kinetico products have no such limitation. Throughput between regenerations can be altered if the water quality changes.


Kinetico control valve

Treated water backwash – The twin tank design means Kinetico filters and softeners are backwashed with treated water which improves performance.

Compact systems – Since Kinetico units can regenerate or backwash many times a day they are frequently far smaller than single tank systems which can usually only regenerate once a day. Some of the systems are remarkably compact and will easily fit under a bench.


The Mach 2020c is tiny

THE WATER SOFTENING PROCESS

'Hard' water causes scale in pipes and on hot water cylinders causing premature element failure and in boilers causing loss of heat transfer and inefficiency. Hardness leaves streaks on windows and glasses and prevents soap lathering properly. Hardness is caused by dissolved calcium and magnesium salts and these precipitate from the water and cause deposits known as scale or lime scale.

In a water softener the water is passed through a tank (or 'bed') of resin beads. The calcium and magnesium ions are removed from the water and are replaced by sodium ions (ion exchange). Sodium salts are very soluble and do not form scales.

THE WATER SOFTENING PROCESS - (Continued)

Softening resin

Once the exchange capacity of the resin bed is close to being exhausted it is regenerated. This is done by flushing a strong salt solution (brine) through the resin to restore its capacity. Spent brine is diverted to waste along with the unwanted calcium and magnesium.

In a Kinetico twin tank softener one bed of resin is always available for use while the other is regenerated. This process is automatic and all the system owner has to do is add salt to the system so the regeneration is effective.

Soft water is much pleasanter to use in the home – like rain water it will:

- Use less soap and cleaning products
- Reduce soap scum in showers and the bathtub 'ring'
- Minimise spotting on crockery and glassware
- Cut down on scale that clogs plumbing and builds up on heating elements
- Increase life expectancy of appliances
- Contribute to softer skin and hair
- Reduce the risk of skin irritations
- Improve the taste of boiled vegetables and ice cubes

Soft water produces sparkling dishes

Nitrates can be removed from water supplies by the same process and equipment but using a different ion exchange resin.

IRON AND MANGANESE REMOVAL

These are present in two forms, soluble and insoluble, both leave unsightly stains on whiteware and concrete, generally making a mess and causing problems with blockages in pipes and irrigation systems. Ion exchange is effective in removing the soluble forms. This is typically done as water leaves the source, usually a bore and before a storage tank where the water will be exposed to air. Aeration or chlorination oxidises the iron and manganese to the insoluble form and ion exchange cannot take place, the insoluble forms of iron and manganese are best removed by filtration (see Macrolite below) and in many cases a combination of filtration and ion exchange may be necessary.

In installations where ion exchange is used to remove iron and manganese salt regeneration alone is insufficient to keep the resin in good condition. The best remedy for this is to use a small amount of citric acid with the brine. In some cases intermittent use of a resin cleaning chemical is sufficient.

MACROLITE FILTRATION

Macrolite ceramic media

Macrolite is a backwashable ceramic media used as a filter bed in twin tank Kinetico units. Macrolite filters as fine as 5 microns which makes it ideal for removal of oxidised iron in particular. Regular backwashing keeps the media clean and maintains filtration performance.

Macrolite is a Kinetico manufactured media and it has a service life of many years.

CARBON FILTRATION

Activated carbon

Activated carbon (or GAC) used in a filter bed removes chlorine from the water for drinking or process use so that it tastes nicer, as do products that the water is added to such as soft drinks and other beverages.

Carbon is also effective in removing some unwanted taste and odours, colour and some pesticides and other organic chemicals usually at reduced flow rates compared to chlorine removal flows. Consult Davey for recommendations.

OVERDRIVE (OD) SYSTEMS

Kinetico twin tank filters are supplied in Overdrive configuration. This means that both tanks are in service except during a backwash when only one tank is supplying treated water. The 2060s and 2100s softener models are available as OD versions instead of the standard alternating configuration.

OD versions can therefore offer high peak flow capacities at little extra cost. CP series softeners are always supplied as OD versions.

QUAD SYSTEMS

Kinetico softeners are frequently used in conjunction with prefiltration and therefore we offer combination Quad systems. These units have additional media tanks mounted on top of the softener resin tanks, all controlled by one Kinetico valve. These are frequently used for combination pretreatment of industrial water supplies as well as for home use.

Quad systems are available with Macrolite prefiltration for iron removal or carbon filtration for chorine removal. There is even a combined filter unit – Macrolite and carbon for chlorinated water supplies with a high sediment load, in particular of oxidised iron.

SYSTEM SELECTION

A water analysis is essential unless your supply quality is already well known, in a municipal area for example.

Water supply pressure and your likely flow rate from the size of the pump or the property are needed.

Details of your water supply will be necessary from the simplest case, mains pressure directly into service, through more complex schemes.

If the application is rural or industrial we'll need to know daily water use and whether the water will feed a tank.

In many cases additional equipment is required to offer a complete treatment solution like a prefilter, a polishing filter or pre-treatment like aeration or chlorination.

In most cases equipment selection is simple but technical support is available from Davey whenever advice is needed.

SPECIFICATIONS FOR KINETICO MACH SOFTENERS

Model	Dimensions [1] (h x w x d cm)	In/out size (mm)	Service flow [2] (L/min)	Peak flow (L/min)	Max iron (mg/L)	Application[3]
Home / Rural / Industrial softeners (suitable for hardness and iron removal)						
2025s	58 x 43 x 20	20	30	45	2	Home use
2060s	117 x 43 x 20	32	44	68	6	Home or commercial
2100s	152 x 53 x 25	32	45	72	10	Home or commercial
2175s	152 x 69 x 33	32	61	83	20	For very hard water or high iron
Overdrive softeners						
2060sOD	117 x 43 x 20	32	78	114	6	Large home
2100sOD	152 x 53 x 25	32	79	117	10	Large home or commercial use
CP213sOD	152 x 69 x 33	32	61	151	12	Commercial/industrial
CP216sOD	183 x 84 x 41	32	68	178	12	Commercial/industrial
Specialty softeners						
2020c	48 x 46 x 21	20	32	51	0.1	Compact for town water supply
CC206c	56 x 36 x 36	32	34	57	0.1	Hot water supply (up to 650C)
2060sTAN	117 x 43 x 20	32	30	38	4	Tannin removal
Quadraflow dual function systems						
4060sOD AC	122 x 43 x 20	32	44	68	0.1	Carbon / Softener
4060sOD MAC	122 x 43 x 20	32	44	68	6	Macrolite / Softener
4060fOD MACAC	122 x 43 x 20	32	42	-	-	Macrolite / Carbon filter
MACH Overdrive filters (Rural / Industrial / Community)						
2060fOD MAC	117 x 43 x 20	32	30	45	-	Home or light commercial
2100fOD MAC	152 x 53 x 25	32	38	68	-	Light commercial
CP213fOD MAC	152 x 69 x 33	32	57	76	-	Commercial
Carbon filters						
2060fOD AC	117 x 43 x 20	32	30	57	-	Home or light commercial
2100fOD AC	152 x 52 x 25	32	38	68	-	Light commercial
CP213fOD AC	152 x 69 x 33	32	56	76	-	Commercial
Greensand filter (soluble iron / manganese / H_2S removal)[4]						
2080fOD	117 x 53 x 25	32	30	38	-	Home

[1] Dimensions do not include brine tank except the 2020c as this softener sits inside the tank, see unit data sheets for brine tank sizes.
[2] This flow can be sustained under most circumstances but not in continuous service to storage or at high hardness or iron levels.
[3] These are guidelines only, recommendations should come from your dealer or from Davey Water Products.
[4] This unit regenerates with Potassium Permanganate.

LARGE FLOWS AND COMMERCIAL APPLICATIONS (CP SERIES)

Multiple CP softeners or filters are frequently used for large flow rates in industrial or community applications. They provide the user with the ability to easily have standby capacity, constant treated water flows even during regeneration and a small footprint. The metered water use between regenerations avoids a great deal of the complexity required to install large tank softeners and make them operate efficiently.

The efficiency of Kinetico softeners is particularly noticeable when large water volumes are being treated. A central brine tank is an option in multi-unit softening applications. Contact Davey for advice regarding these applications.

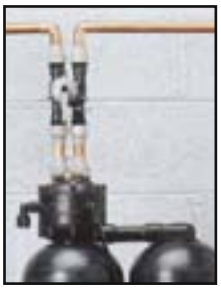
Above: Quad combined carbon filter and softener has four media tanks, two carbon and two softener resin.

Left: Multiple CP softeners for high flow rate uses.

Right: Kinetico systems are suitable for outdoor use.

INSTALLATION AND OPERATION TIPS

Use a prefilter or stainer



The Kinetico bypass makes servicing easier

Pressure - Kinetico units require pressure on the outlet so that filtered water from the service tank can be used for backwashing. This is particularly important when the water supplies an unpressurised tank or if there is a low outlet pressure. Fit a flow restrictor or pressure sustaining valve to maintain outlet pressure in consultation with Davey Water Products or your dealer. The minimum outlet pressure is 100kPa (15 psi) except the CP series which require 175kPa (25psi). Maximum operating pressure is 850kPa (125psi). Regulate the feed pressure if this pressure can be exceeded.

- Service flow rates shown in the specifications are at a headloss of 100 kPa, higher flows are achievable at a higher headloss.
- Fit an in-line strainer or filter ahead of the Kinetico unit to keep debris out of the valve workings.
- Low feed pressure will stop your Kinetico unit backwashing properly – keep prefilters or strainers clean.
- Use clean coarse salt like Chlorgen H or Softsalt from Davey. Block salt is also available to suit small systems.
- Keep the brine tank at least 1/3rd full of solid salt, check level weekly.
- Use citric acid as well as salt for softener regeneration if iron or manganese is present in the water supply. Softsalt is salt preblended with the correct amount of citric acid.
- Most Kinetico units are prefilled with media – transport them upright, do not lay them down.
- Kinetico units regenerate and backwash based on throughput. The volume treated between regenerations is controlled by a disc in the valve. The correct disc is fitted based on your water analysis and is selected on advice from Davey or your dealer. It can easily be changed if your water changes or if the unit is relocated.
- We recommend the Kinetico unit is fitted with a bypass so that it can be removed for service with no interruption to water supply. A preplumbed bypass is available for easy fitting to the Kinetico unit saving installation time and cost.

Sodium content – the unwanted ions in the water are replaced with soluble sodium, normally at levels below that specified in drinking water standards. If the allowed sodium level is exceeded or if the treated level of sodium is of concern whether for drinking or commercial use it can be removed by Reverse Osmosis. Davey Water Products can advise accordingly.

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