

Kinetico Water Conditioners use a *twin tank* design to assure that treated water is always available. When one tank regenerates, the other supplies treated water. The *Kinetico Valve*, described in the previous section, controls when each tank is in service, when each tank must be regenerated and the regeneration of each tank. This section describes the service and regeneration cycles for both tanks and the flow patterns of water through both tanks during service and regeneration cycles.

System Operation

While the Main Tank is in service, the Remote Tank is either regenerating or on standby. While the Remote Tank is in service, the Main Tank is regenerating or on standby. Before a tank is exhausted, it is regenerated. After being regenerated, the tank is put on standby to wait for the other tank's regeneration before being put into service again.

Kinetico Standard Softeners are designed for *downflow service* (water flows from the top of the tank down through the media for treatment) and *upflow regeneration* (brine flows up through the media to regenerate it).

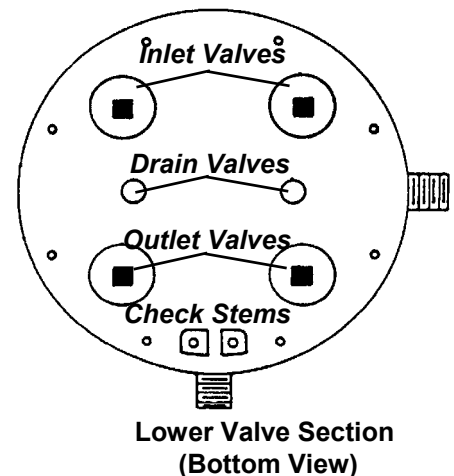
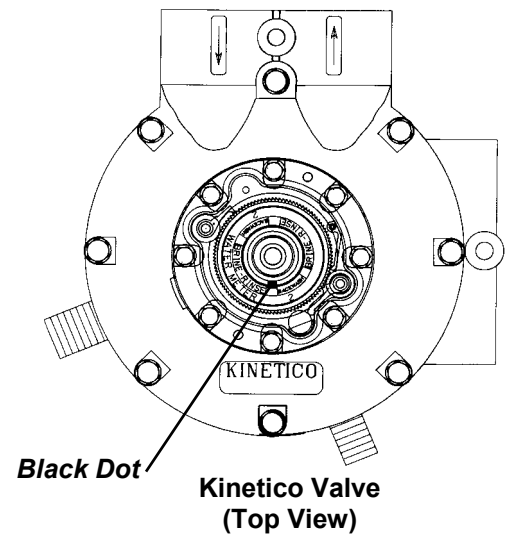
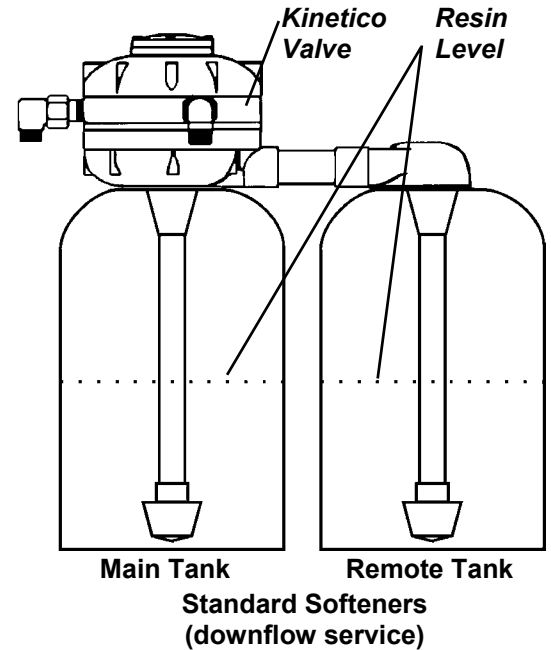
Control Disc Indicator

A visual indicator on top of the control disc (black dot) shows the state of the system at any time. The control disc rotates clockwise. The drawing at right shows the indicator dot on the control disc at the 6 o'clock position. This indicates that the Main Tank is in service. When it is between the 6 o'clock and 12 o'clock positions, the Main Tank is in regeneration. When the indicator dot is at the 12 o'clock position, the Remote Tank is in service. When it is between the 12 o'clock and 6 o'clock positions, the Remote Tank is in regeneration.

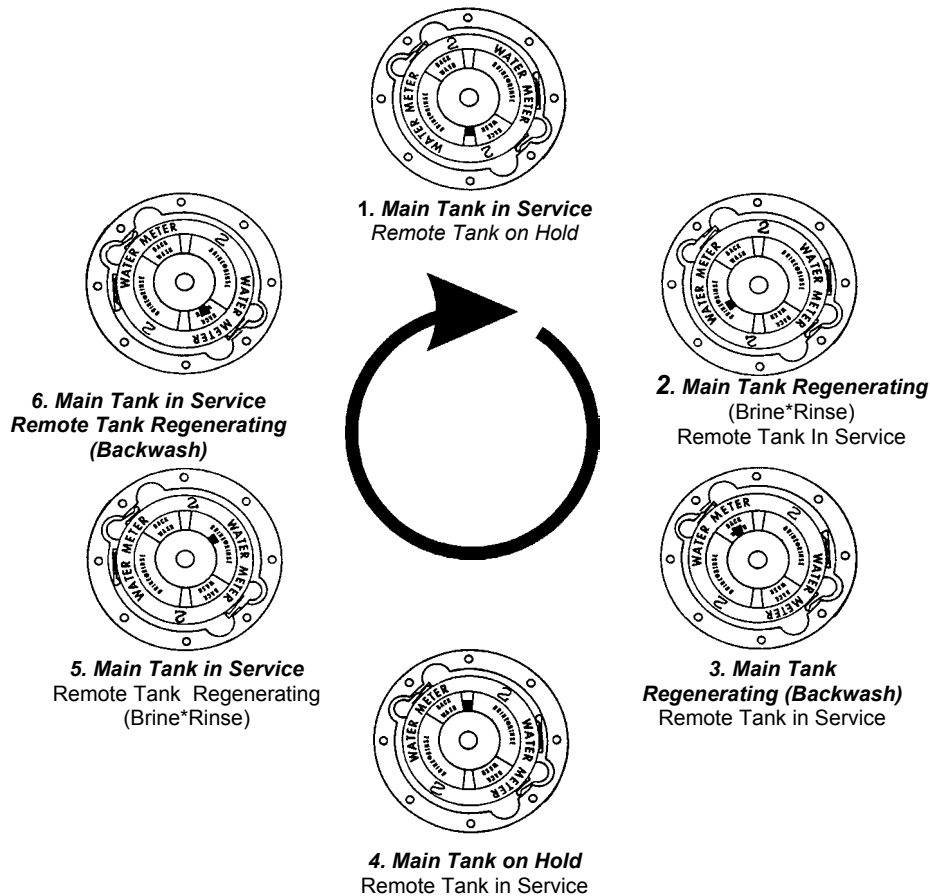
This is shown in greater detail on the next page.

Control Valves

Water flow through the tanks is controlled by servo valves in the Lower Valving Section. In the detailed descriptions of water flow on the following pages, the valves that are open and closed for each cycle are indicated. The drawing at right names these valves and their functions. Note that the valves on the *right* control the *Main Tank*: the valves on the *left* control the *Remote Tank*.



The control disc moves in a clockwise direction. Each cycle is shown below with a brief description.



Counterflow Regeneration Process

During service, water flows *down* through the media bed: during regeneration, water flows *up* through the media bed. For this reason, the process is called *Counterflow Regeneration*.

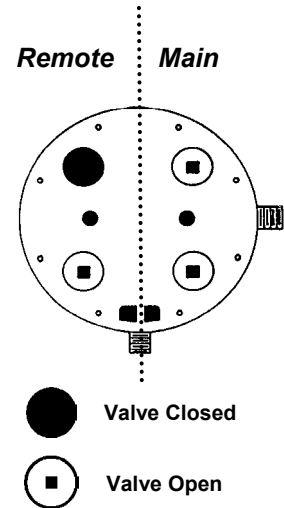
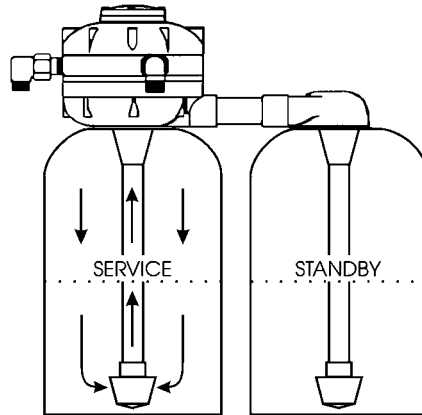
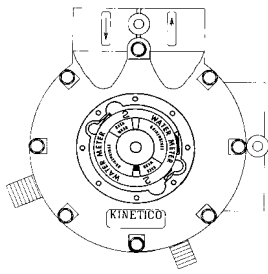
Note that the regeneration process for both tanks consists of three steps: *Brine*, *Rinse* and *Backwash*.

During Brine cycle, brine is drawn from the Brine Drum through the resin and out through the drain valve.

During Rinse cycle, treated water continues to flow through the resin and out the drain valve in a slow rinse.

During Backwash cycle, treated water is forced at a high flow rate down through the distributor tube and up through the resin bed to provide thorough cleaning of hardness ions and excess brine not rinsed in the rinse cycle. A high flow rate provides maximum bed expansion.

1. Main Tank in Service - Remote Tank in Standby

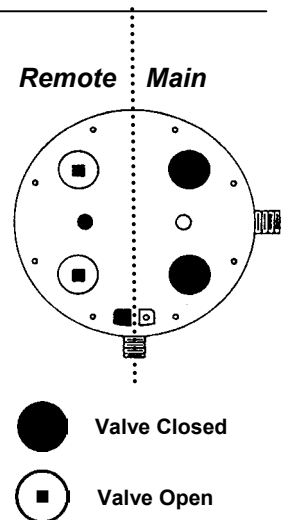
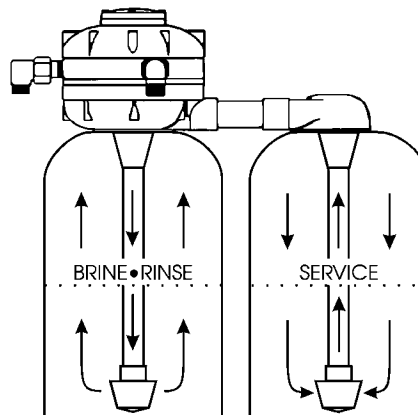
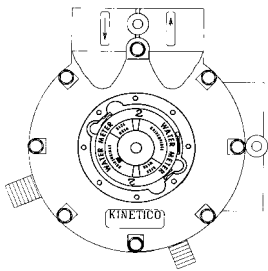


Main Tank is in Service and the Remote Tank is fully regenerated and in Standby.

Both Main Tank Inlet and Outlet valves are open. Water passes through Inlet valve, down through the resin, through the distributor tube at the bottom, up and out to service through the Main Tank Outlet valve.

Remote Tank Inlet valve is closed, preventing any water from entering and keeping the Remote Tank in Standby.

2. Main Tank Regenerating (Brine - Rinse) - Remote Tank in Service



Main Tank is in Brine•Rinse and Remote Tank is in Service.

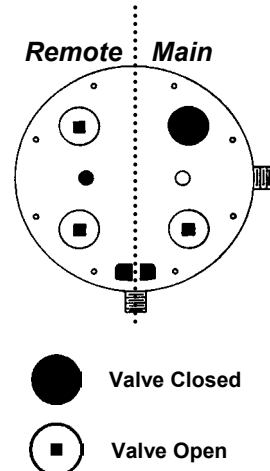
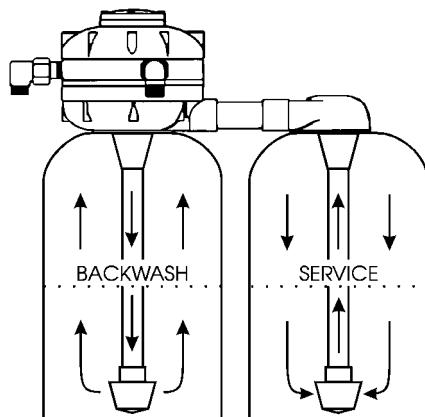
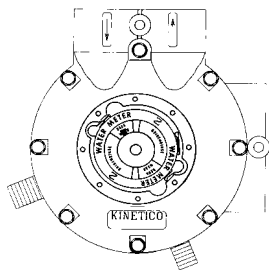
Both the Main Tank Inlet and Outlet valves are closed. The Main Tank Drain valve is open. Soft water from the Remote Tank passes through the venturi, which causes brine to be drawn in past the Check Stem, down the distributor tube, up through the resin and out through the Drain valve.

The unit will continue to draw until the brine valve closes and prevents brine from entering the Main Tank, thus starting the rinse cycle. The system will continue to rinse until the Backwash cycle starts.

Standard Flow Paths



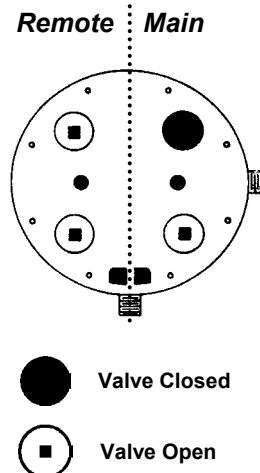
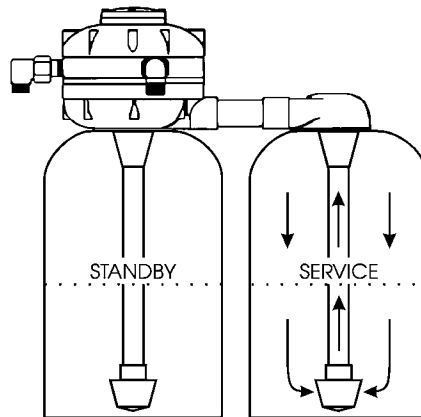
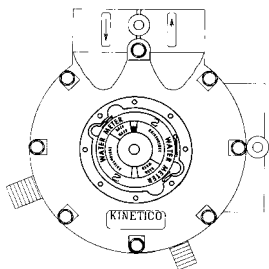
3. Main Tank Regenerating (Backwash) - Remote Tank in Service



Main Tank is in Backwash and Remote Tank is in Service.

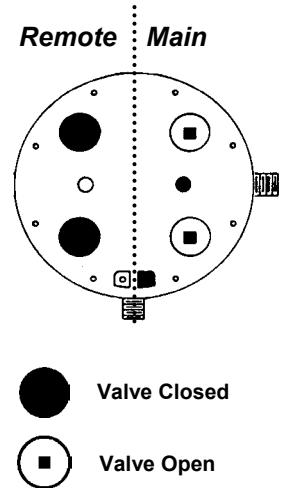
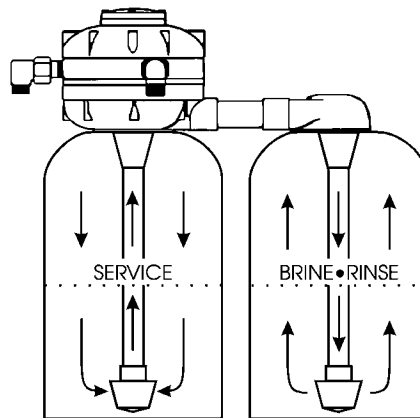
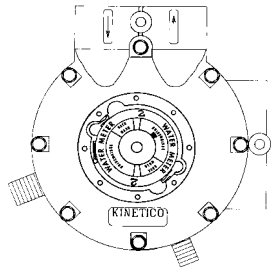
The Main Tank Inlet valve is closed. Both the Main Tank Outlet valve and Main Tank Drain valve are open. Both Check Stems are closed. Soft water from the Remote Tank passes through the Remote Tank Outlet valve over and through the Main Tank Outlet valve and down through the distributor tube. This high flow of water provides thorough cleaning of the hardness ions, iron and excess brine not rinsed during the Rinse cycle.

4. Main Tank on Standby - Remote Tank in Service



Remote Tank Inlet and Outlet valves are open. Main Tank Inlet valve is closed, preventing any water from entering and keeping Main Tank in Standby.

5. Main Tank in Service - Remote Tank Regenerating (Brine-Rinse)

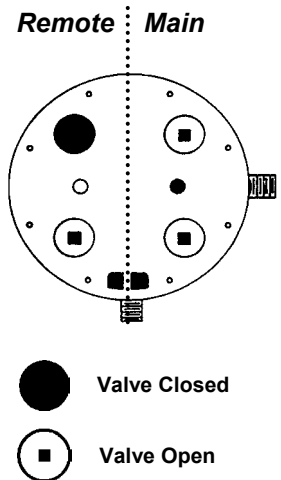
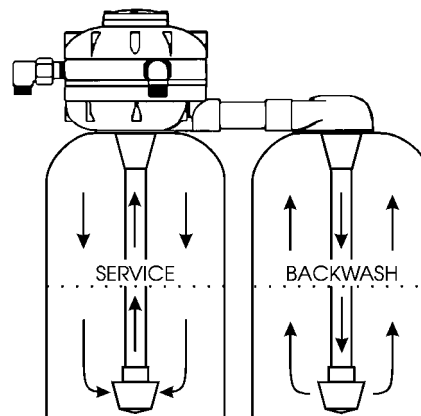
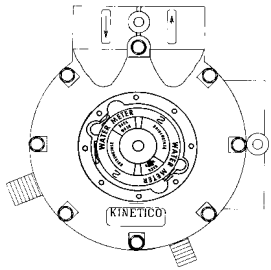


Main Tank is in Service and Remote Tank is in Brine•Rinse.

Both the Remote Tank Inlet and Outlet valves are closed. The Remote Tank Drain valve is open. Soft water from the Main Tank passes through the venturi, which causes brine to be drawn in past the Check Stem, down the distributor tube, up through the resin and out through the Drain valve.

The unit will continue to draw until the brine valve closes and prevents brine from entering the Remote Tank, thus starting the rinse cycle. The system will continue to slow rinse until the Backwash cycle starts.

6. Main Tank in Service - Remote Tank Regenerating (Backwash)



Main Tank is in Service and Remote Tank is in Backwash.

The Remote Tank Inlet valve is closed. Both the Remote Tank Outlet valve and Remote Tank Drain valve are open. Both Check Stems are closed. Soft water from the Main Tank passes through the Main Tank Outlet valve over and through the Remote Tank Outlet valve and down through the distributor tube. This high flow of water provides thorough cleaning of the hardness ions, iron and excess brine not rinsed during the Rinse cycle.

DISC SELECTION CHART

(numbers denote compensated hardness*)

Meter Disc Number

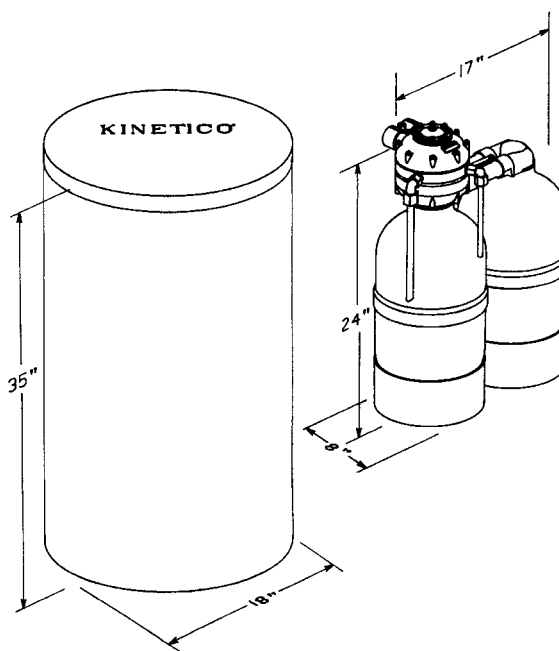
Salt Setting	1	2	3	4	5	6	7	8
1 lb. Salt	3	5- 6	9-10	---	---	---	---	---
1.25 lb. Salt	4	7- 8	11-12	13-15	16-19	20-22	23-25	---
Usable Gallons between Regeneration	1000	500	333	250	200	167	142	---

*Compensated hardness is determined by multiplying the number of PPM of ferrous iron x 3 and adding to the actual hardness.

SPECIFICATIONS

Maximum Hardness (GPG)	25
Media Tank Size (inches)*	8 x 17
Brine Drum Size (inches)*	18 X 35
Resin per Tank (cu. ft.)	.3
Tank Freeboard (inches)	5
Capacity per Cycle (Grains/Tank)	3,988
Salt Used per Cycle (lbs.)	1.25
Regeneration Time (minutes)	29
Water Used per Cycle (gals.)	25
Backwash Flow 50% Expansion (GPM)	2
Service Flow Rate (GPM)†	7

DIMENSIONS



* Diameter X Height

† Service Flow Rate is rated at a 15 psi pressure drop.



Model 25 Service Notes

This unit uses special control disc - Part number 7931.

Distributor tube is snap-fit (not removable).

Can be used with 12 X 16 X 20 brine drum.

Meter = 10 gallons per tooth.

#8 meter disc can go up to 28 GPG hardness.

Drain port is 3 / 8 " NPT.

This unit may use 3/4" or 1" in/out adapters.

This is a downflow service unit.

DISC SELECTION CHART

(numbers denote compensated hardness*)

Meter Disc Number

Salt Setting	1	2	3	4	5	6	7	8
1.8 lbs. Salt (A)	4	10	15	19	23	27	31	34
2.4 lbs. Salt (C)	5	11	17	22	26	31	35	39
2.7 lbs. Salt (D)	6	12	18	23	28	33	38	43
3.0 lbs. Salt (E)	7	13	19	25	30	36	41	45
Usable Gallons between Regeneration	1200	600	400	300	240	200	171	150

*Compensated hardness is determined by multiplying the number of PPM of ferrous iron x 3 and adding to the actual hardness.

SPECIFICATIONS

Maximum Hardness (GPG)	45
Media Tank Size (inches)*	7 X 35
Brine Drum Size (inches)*	18 X 35
Unit Dimensions (inches)**	15 X 41
Resin per Tank (cu. ft.)	.47
Tank Freeboard (inches)	12
Capacity per Cycle (Grains/Tank) @ 1.8 lb. salt setting †	7,837
Capacity per Cycle (Grains/Tank) @ 2.7 lb. salt setting	10,003
Efficiency per Cycle (Grains/lb. of salt) @ 1.8 lb. salt setting †	7,837
Efficiency per Cycle (Grains/lb. of salt) @ 2.7 lb. salt setting	3,704
Regeneration Time (minutes)	40
Water Used per Cycle (gals.)	37
Backwash Flow 50% Expansion (GPM)	1.4
Service Flow Rate (GPM)††	8

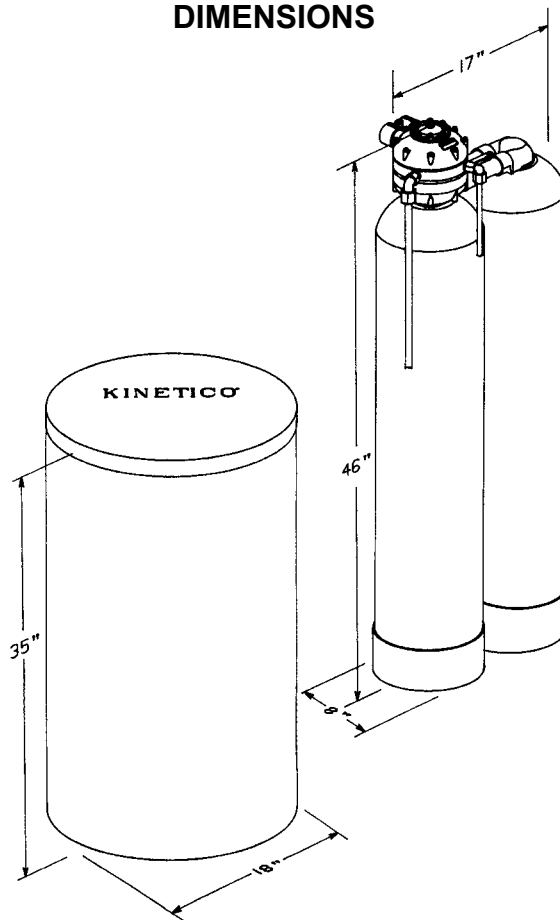
* Diameter X Height

** Width X Height

† 1.8 lb. Salt setting meets California efficiency requirements

†† Service Flow Rate is rated at 15-psi pressure drop.

DIMENSIONS





Model 30 Service Notes

Level One assembly is different than the Model 60.

Meter = 12.5 gallons per tooth.

Can be used with 12" X 40" brine drum.

Drain port is 3/8 " NPT.

This unit may use 3/4 " or 1" in/out adapters.

This is a downflow service unit.

This unit meets California efficiency requirements of 4000 grains per lb. of salt at the 1.8 lb. setting.

Uses a 2-2-7-6 regeneration gear stack

DISC SELECTION CHART

(numbers denote compensated hardness*)

Meter Disc Number

Salt Setting	1	2	3	4	5	6	7	8
2.7 lbs. Salt (D)	8	15	22	28	34	40	45	50
3.6 lbs. Salt (G)	9	18	27	34	41	48	54	60
4.0 lbs. Salt (H)	10	19	28	36	44	51	57	63
4.4 lbs. Salt (J)	11	20	29	38	46	53	60	66
Usable Gallons between Regeneration	1200	600	400	300	240	200	171	150

*Compensated hardness is determined by multiplying the number of PPM of ferrous iron x 3 and adding to the actual hardness.

SPECIFICATIONS

Maximum Hardness (GPG)	66
Media Tank Size (inches)*	8 X 40
Brine Drum Size (inches)*	18 X 35
Unit Dimensions (inches)**	17 X 46
Resin per Tank (cu. ft.)	.7
Tank Freeboard (inches)	15
Capacity per Cycle (Grains/Tank) @ 2.7 lb. salt setting †	12,471
Capacity per Cycle (Grains/Tank) @ 4.0 lb. salt setting	15,652
Efficiency per Cycle (Grains/lb. of salt) @ 2.7 lb. salt setting †	4,618
Efficiency per Cycle (Grains/lb. of salt) @ 4.0 lb. salt setting	3,913
Regeneration Time (minutes)	45
Water Used per Cycle (gals.)	44
Backwash Flow 50% Expansion (GPM)	2.0
Service Flow Rate (GPM)††	9

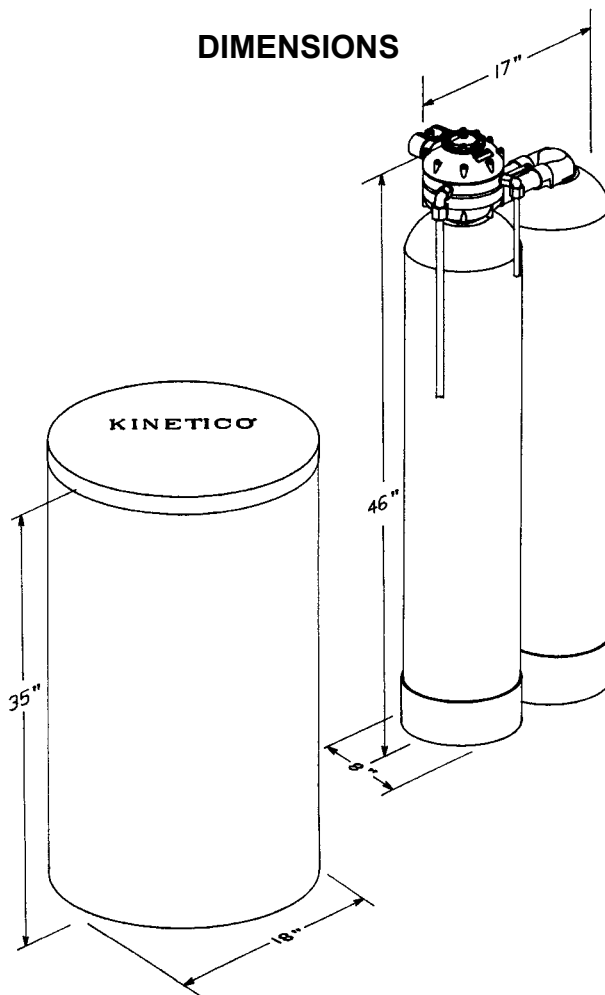
* Diameter x Height

** Width x Height

† 2.7 lb. Salt setting meets California efficiency requirements

†† Service Flow Rate is rated at a 15-psi pressure drop.

DIMENSIONS





Model 60 Service Notes

Level One assembly is different than the Model 30.

Meter = 12.5 gallons per tooth.

Can be used with 12" X 40" brine drum.

Drain port is 3/8" NPT.

This unit may use 3/4" or 1" in/out adapters.

This is a downflow service unit.

This unit meets California efficiency requirements of 4000 grains per lb. of salt at the 2.7 lb. setting.

DISC SELECTION CHART

(numbers denote compensated hardness*)

Salt Setting	Meter Disc Number							
	1	2	3	4	5	6	7	8
5.5 lbs. Salt (L)	10	20	30	38	--	--	--	--
7.5 lbs. Salt (N)	16	30	42	53	--	--	--	--
10 lbs. Salt (P)	18	34	48	61	72	76	80	85
15 lbs. Salt (R)	21	40	57	72	80	88	96	102
Usable Gallons between Regeneration	1700	850	566	425	340	283	242	212

*Compensated hardness is determined by multiplying the number of PPM of ferrous iron x 3 and adding to the actual hardness.

SPECIFICATIONS

Maximum Hardness (GPG)	102
Media Tank Size (inches)*	10 X 54
Brine Drum Size (inches)*	18 X 35
Unit Dimensions (inches)**	21 x 60
Resin per Tank (cu. ft.)	1.5
Tank Freeboard (inches)	18
Capacity per Cycle (Grains/Tank) @ 5.5 lb. salt setting †	27,092
Capacity per Cycle (Grains/Tank) @ 10 lb. salt setting	40,862
Efficiency per Cycle (Grains/lb. of salt) @ 5.5 lb. salt setting †	4,925
Efficiency per Cycle (Grains/lb. of salt) @ 10 lb. salt setting	4,086
Regeneration Time (minutes)	90
Water Used per Cycle (gals.)	120
Backwash Flow 50% Expansion (GPM)	3.0
Service Flow Rate (GPM)††	9

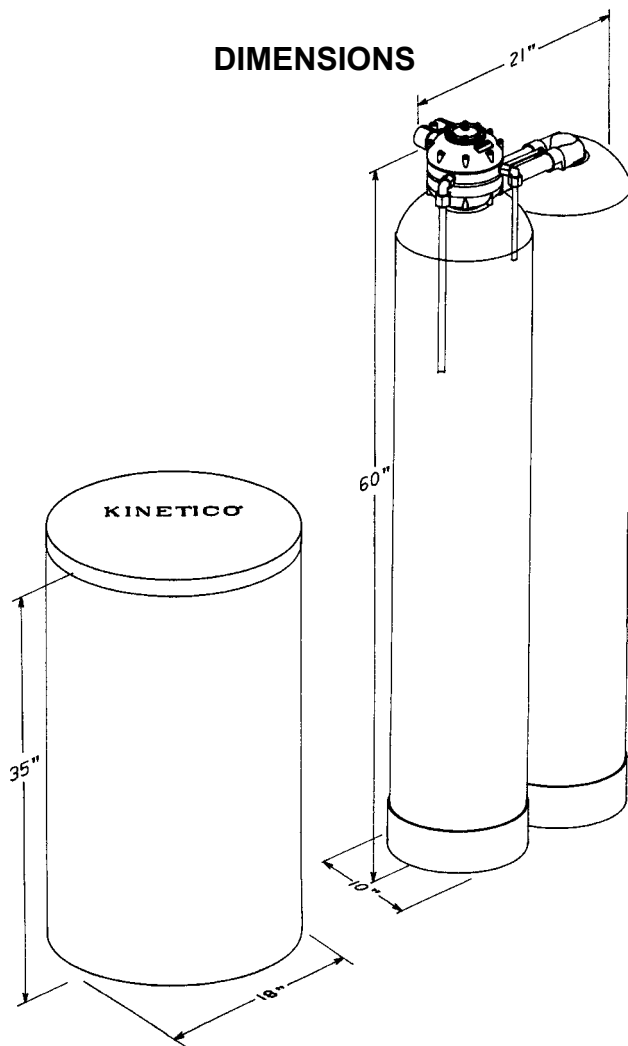
* Diameter x Height

** Width x Height

† 5.5 lb. Salt setting meets California efficiency requirements

†† Service Flow Rate is rated at a 15-psi pressure drop.

DIMENSIONS





Model 100 Service Notes

Meter = 17.5 gallons per tooth.

Cannot be used with 12" X 40" brine drum.

Drain port is 3/8" NPT.

This unit may use 3/4" or 1" in/out adapters.

This is a downflow service unit.

This unit meets California efficiency requirements of 4000 grains per lb. of salt at the 5.5 lb. setting.

DISC SELECTION CHART

(numbers denote compensated hardness*)

Meter Disc Number

Salt Setting	1	2	3	4	5	6	7	8
15 lbs. Salt	28	52	72	90	105	117	129	140
30 lbs. Salt	35	65	90	112	132	148	164	175
Usable Gallons between Regeneration	1700	850	566	425	340	283	242	212

*Compensated hardness is determined by multiplying the number of PPM of ferrous iron x 3 and adding to the actual hardness.

SPECIFICATIONS

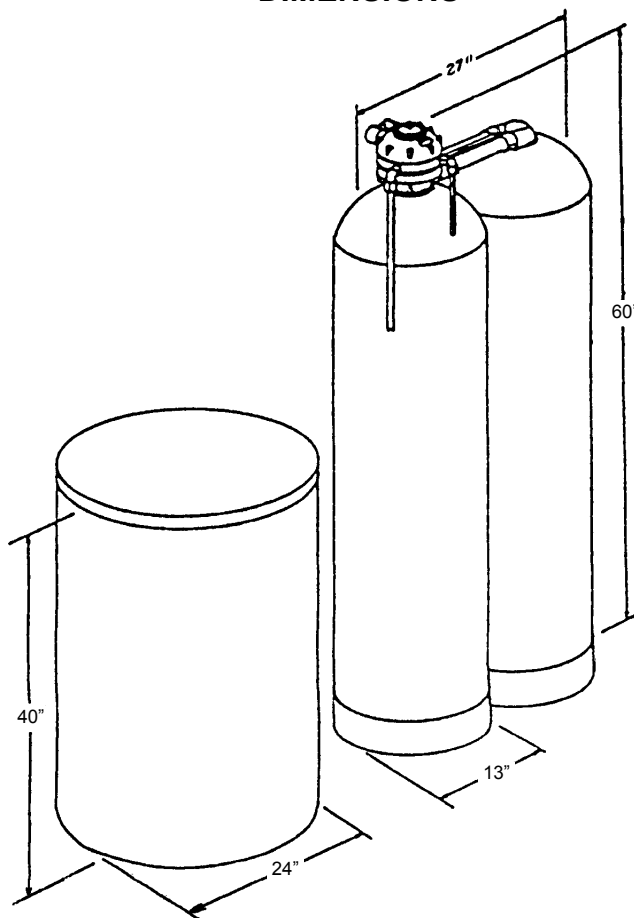
Maximum Hardness (GPG)	140 @ 15 lbs. 175 @ 30 lbs.
Media Tank Size (inches)*	13 X 54
Brine Drum Size (inches)*	24 X 40
Unit Dimensions (inches)**	27 x 60
Resin per Tank (cu. ft.)	2.25
Gravel Underbed per Tank	24 lbs.
Tank Freeboard (inches)	17
Capacity per Cycle (Grains/Tank) @ 15 lb. salt setting	59,525
Capacity per Cycle (Grains/Tank) @ 30 lb. salt setting	80,088
Regeneration Time (minutes)	90
Water Used per Cycle (gals.)	160
Backwash Flow 50% Expansion (GPM)	5.0
Service Flow Rate (GPM)††	10

* Diameter x Height

** Width x Height

†† Service Flow Rate is rated at a 15-psi pressure drop.

DIMENSIONS





Model 175 Service Notes

May be plumbed in using 1" - 1 1/4" or 3/4" - 1" in/out brass adapters.

Drain elbow is 1/2" NPT X 5/8"T.

Gravel Underbed - 24 lbs. per tank. DO NOT LAY UNIT ON SIDE!

This is a downflow service unit.

A Kinetico Bypass may be used with 3/4" or 1" pipe.

Standard Brine Tank is 24" X 40".

An 18" X 35" brine drum may be used for a 15 lb. salt setting only.

Consult Kinetico Technical Service for sizing and applications.

DISC SELECTION CHART

(numbers denote compensated hardness*)

Meter Disc Number

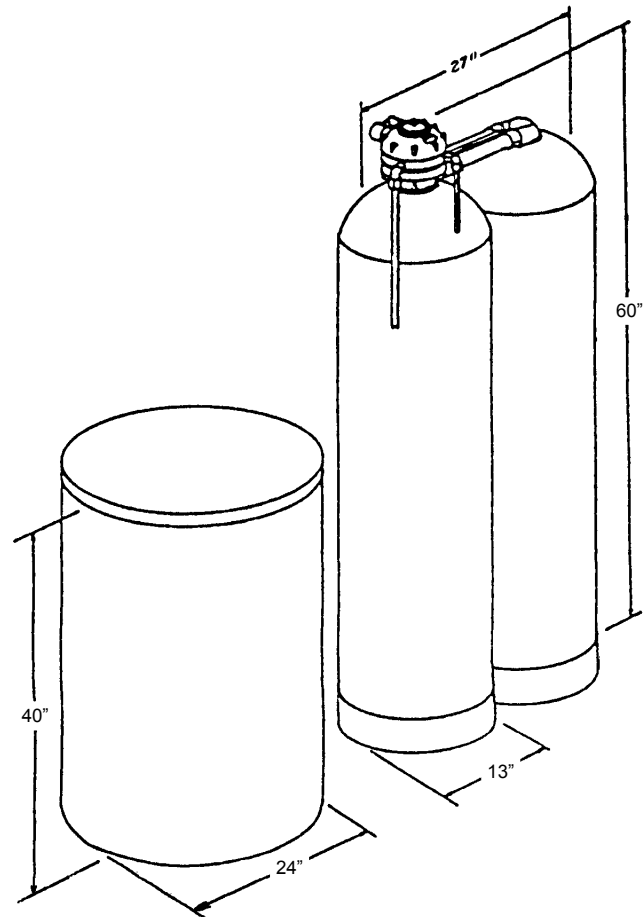
Salt Setting	1	2	3	4	5	6	7	8
8.5 lbs. Salt	3	6	9	12	15	17	20	23
15 lbs. Salt	5	10	15	20	25	30	34	39
30 lbs. Salt	7	13	20	26	32	38	43	49
Usable Gallons between Regeneration	10,500	5,250	3,500	2,625	2,100	1,750	1,500	1,313

*Compensated hardness is determined by multiplying the number of PPM of ferrous iron x 3 and adding to the actual hardness.

SPECIFICATIONS

Maximum Hardness (GPG)	49
Media Tank Size (inches)*	13 X 54
Brine Drum Size (inches)*	24 X 40
Unit Dimensions (inches)**	27 x 60
Resin per Tank (cu. ft.)	2.25
Gravel Underbed per Tank	24 lbs.
Tank Freeboard (inches)	17
Capacity per Cycle (Grains/Tank) @ 8.5 lb. salt setting †	38,568
Capacity per Cycle (Grains/Tank) @ 15 lb. salt setting	57,646
Capacity per Cycle (Grains/Tank) @ 30 lb. salt setting	84,139
Efficiency per Cycle (Grains/lb. of salt) @ 8.5 lb. salt setting †	4,537
Efficiency per Cycle (Grains/lb. of salt) @ 15 lb. salt setting	3,843
Efficiency per Cycle (Grains/lb. of salt) @ 30 lb. salt setting	2,804
Regeneration Time (minutes)	90
Water Used per Cycle (gals.)	160
Backwash Flow 50% Expansion (GPM)	5.0
Service Flow Rate (GPM)††	18

DIMENSIONS



* Diameter x Height

** Width x Height

† 8.5 lb. Salt setting meets California efficiency requirements

†† Service Flow Rate is rated at a 15-psi pressure drop.



Model 2000 Service Notes

Maximum continuous flow rate = 20 GPM at 18 psi pressure drop.

Peak flow rate = 30 GPM.

1 1/4" in/out brass adapters.

Drain port is 1/2" NPT.

Gravel Underbed - 24 lbs. per tank. DO NOT LAY UNIT ON SIDE!

On central drum, get 15 lb. salt setting by using:

- pn 2379 clear venturi throat
- pn 5155 brine flow control

This is a downflow service unit.

Do not use Kinetico Bypass.

Unit may be re-gearred for higher hardness levels.

This unit meets California efficiency requirements of 4000 grains per lb. of salt at the 8.5 lb. setting.