



# Control Valves, Fittings and Accessories



NOW WITH  
BATTERY PACK  
OPTION

## WS1EE TWIN ALTERNATING CONTROL VALVE

28 gpm



**WS2H**  
125 gpm



**WS3**  
250 gpm



**WS1.5EE**  
**WS1.5SD/SP**  
70 gpm



**WS2EE**  
**WS2SD/SP**  
115 gpm



**WS2EE/QC\***  
**WS2SP/QC\***  
125 gpm



**WS1.25\***  
**WS1.25CS\***  
34 gpm



**WS1.25EE\***  
**WS1.25SD/SP\***  
34 gpm



**WS1.25TC\***  
34 gpm



**WS1\***  
**WS1CS\***  
27 gpm



**WS1EE\***  
**WS1SD/SP\***  
27 gpm



**WS1TC\***  
27 gpm

\*valves shown with optional accessories

Clack® 

# WS1EE TWIN ALTERNATING CONTROL VALVE

## WATER SPECIALIST CONTROL VALVE



- Service flow 28 gpm, backwash flow 15 gpm with meter and bypass installed
- Solid state microprocessor with easy access front panel settings
- Front panel display for time of day, days until next regeneration, volume remaining, current flow rate and total volume used (Totalizer), and Tank in Service Indication
- Four methods to initiate regeneration; meter immediate, meter delayed, time clock delayed or pressure differential
- Optional double backwash feature offers optimum regeneration, cleaning ability and efficiency
- Adjustable cycle times with 6-cycle control delivers controlled backwash, downflow brining/slow rinse, second backwash, fast rinse, refill and downflow service
- Coin Cell Lithium battery back-up with a 8 hour carry over
- Backwash and brining ability to 21" diameter tanks
- Downflow or upflow brining regeneration
- 12-volt output AC Adapter provides safe and easy installation
- Treated/Soft water post fill and regeneration cycles
- Patented one piece expanding seal spacer stack assembly U.S. Patent 6,402,944
- Patented linearly reciprocating piston operation U.S. Patent 6,444,127
- Reliable and proven DC drives

# Water Specialist 1" EE Twin Alternating Specifications

Inlet/Outlet Fittings..... ¾" to 1.5" NPS  
 Cycles ..... up to 6  
 Valve Material ..... Noryl (1) or equivalent  
 Regeneration ..... downflow

## FLOW RATES

Service @15 psi drop (includes bypass and meter) ..... 28 gpm  
 Backwash @ 25 psi drop (includes bypass) ..... 15 gpm  
 Cv Service ..... 7.28  
 Cv Backwash ..... 2.96

## OPERATING PRESSURES

Minimum/Maximum ..... 20 psi – 125 psi

## OPERATING TEMPERATURES

Minimum/Maximum ..... 40° – 110° F

## METER

Accuracy ..... ± 5%  
 Flow Rate Range..... 0.25 – 30 gpm  
 Gallon Range..... 20 – 1,500,000 gallons  
 Totalizer ..... 1000 - 9,999,000 gallons

## DIMENSIONS & WEIGHT

Distributor Pilot..... 1.050" OD Pipe (¾" NPS)  
 Drain Line ..... ¾" or 1" Male NPT  
 Brine Line ..... ⅜" or ½" OD Poly Tube Compression  
 Mounting Base..... 2 ½" - 8 NPSM  
 Height From Top Of Tank..... 7 ⅜"  
 Weight ..... 16 lbs.

## ELECTRICAL SPECIFICATIONS

### AC Adapter

	<u>U.S.</u>	<u>International</u>
Supply Voltage .....	120V AC.....	230V AC
Supply Frequency .....	60 Hz .....	50 Hz
Output Voltage .....	12V AC.....	12V AC
Output Current .....	500 mA.....	500 mA

## TANK APPLICATIONS

Water Softener ..... 6" – 21" diameter  
 Water Filter (2)..... 6" – 16" diameter

## CYCLES OF OPERATION (Softener / Filter Downflow)

	<u>Softener</u>	<u>Filter</u>
Cycle	Range of time in minutes	
1. Backwash 1 <sup>st</sup> .....	1-95.....	Backwash 1-95
2. Regenerate Draw/Slow Rinse .....	1-180	
3. Backwash 2 <sup>nd</sup> .....	1-95	
4. Fast Rinse .....	1-95.....	Rinse 1-95
5. Regenerant Refill .....	0.1-99.0 or off	
6. Service (downflow)		

*Options: Backwash Filter, Bypass, Weather Cover*

Compatible with the following typical concentration of regenerants or chemicals: Sodium chloride, potassium chloride, potassium permanganate, sodium bisulfite, chlorine and chloramines

1. Noryl is a trademark of Sabic Innovative Plastics IP B.V. Company
2. Filter tank size calculated @ 10 gpm of backwash per square foot of bed area



# Clack®



# WS1SD WS1SP

## TWIN ALTERNATING BATTERY VALVE

### WATER SPECIALIST CONTROL VALVE



SD



D Cell Battery Pack

SP



AA Rechargeable  
Battery Pack

SP RECHARGING OPTIONS



AC Adapter



Solar Panel

- Service flow 28 gpm, backwash flow 15 gpm with meter and bypass installed
- Solid state microprocessor with easy access front panel settings
- Front panel display for time of day, days until next regeneration, volume remaining, current flow rate and total volume used (Totalizer), and Tank in Service Indication
- Four methods to initiate regeneration; meter immediate, meter delayed, time clock delayed or pressure differential
- Adjustable cycle times with 6-cycle control delivers controlled backwash, downflow brining/slow rinse, second backwash, fast rinse, refill and downflow service
- Coin Cell Lithium battery back-up with a 8 hour carry over of time of day
- Backwash and brining ability to 21" diameter tanks
- Downflow brining regeneration
- Post treated water regenerant refill
- Patented one piece expanding seal spacer stack assembly U.S. Patent 6,402,944
- Patented linearly reciprocating piston operation U.S. Patent 6,444,127
- Reliable and proven DC drives

# WS1SD and WS1SP Twin Alternating Specifications

Inlet/Outlet Fittings.....	¾" to 1.5" NPS
Cycles .....	up to 6
Valve Material .....	Noryl (1) or equivalent
Regeneration .....	Downflow

## FLOW RATES

Service @15 psi drop (includes bypass and meter) .....	28 gpm
Backwash @ 25 psi drop (includes bypass) .....	15 gpm
Cv Service .....	7.28
Cv Backwash .....	2.96

## OPERATING PRESSURES

Minimum/Maximum .....	20 psi – 125 psi
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## OPERATING TEMPERATURES

Minimum/Maximum .....	40° – 110° F
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## METER

Accuracy .....	± 5%
Flow Rate Range.....	0.25 – 30 gpm
Gallon Range.....	20 – 1,500,000 gallons
Totalizer .....	1000 - 9,999,000 gallons

## DIMENSIONS & WEIGHT

Distributor Pilot.....	1.050" OD Pipe (¾" NPS)
Drain Line .....	¾" or 1" Male NPT
Brine Line .....	⅜" or ½" OD Poly Tube Compression
Mounting Base.....	2 ½" - 8 NPSM
Height From Top Of Tank.....	7 ⅜"
Weight .....	16 lbs.

## BATTERY SPECIFICATIONS - 2 OPTIONS FOR OPERATION

- 6 AA nickel metal hydride batteries rechargeable for SP model
- 6 "D" cell alkaline batteries (**disposable when discharged**) for SD model - "D" batteries not included

## CHARGING SPECIFICATIONS FOR SP MODEL- 2 OPTIONS FOR OPERATION

- Amorphous silicon solar panels capable of three tilt angles
- AC adapter with 12V AC output 500mA

## TANK APPLICATIONS

Water Softener .....	6" – 21" diameter
Water Filter (2).....	6" – 16" diameter

## CYCLES OF OPERATION (Softener / Filter Downflow)

Cycle	<u>Softener</u>	<u>Filter</u>
	Range of time in minutes	
1. Backwash 1 <sup>st</sup> .....	1-95.....	Backwash 1-95
2. Regenerate Draw/Slow Rinse .....	1-180	
3. Backwash 2 <sup>nd</sup> .....	1-95	
4. Fast Rinse .....	1-95.....	Rinse 1-95
5. Regenerant Refill (in service with treated water).....	0.1-99.0 or off	
6. Service (downflow)		

When replacing batteries follow state or local regulations for recycling and disposal.

*Options: Backwash Filter, Bypass, Weather Cover*

Compatible with the following typical concentration of regenerants or chemicals: Sodium chloride, potassium chloride, potassium permanganate, sodium bisulfite, chlorine and chloramines

- Noryl is a trademark of Sabic Innovative Plastics IP B.V. Company
- Filter tank size calculated @ 10 gpm of backwash per square foot of bed area

# 1" WATER SPECIALIST VALVE SPECIFICATIONS



SPECIFICATIONS	WS1 WS1CS	WS1EE WS1SD/SP	WS1TC
<b>Service @ 15 psi drop</b>	27 gpm (includes meter and bypass)	27 gpm (includes meter and bypass)	27 gpm (includes bypass)
<b>Backwash @ 25 psi drop</b>	27 gpm (includes bypass)	27 gpm (includes bypass)	27 gpm (includes bypass)
<b>Tank Applications:</b>			
<b>Softener</b>	6" - 21" diameter	6" - 21" diameter	6" - 21" diameter
<b>Filter (1)</b>	6" - 21" diameter	6" - 21" diameter	6" - 21" diameter
<b>Inlet/Outlet</b>	1" - 1.25" NPT	1" - 1.25" NPT	1" - 1.25" NPT
<b>Fitting Connections</b>	3/4" - 1.5" Sweat 3/4" - 1.5" Solvent 3/4" - 1" SharkBite®	3/4" - 1.5" Sweat 3/4" - 1.5" Solvent 3/4" - 1" SharkBite®	3/4" - 1.5" Sweat 3/4" - 1.5" Solvent 3/4" - 1" SharkBite®
<b>Valve Material</b>	Noryl (2)	Noryl (2)	Noryl (2)
<b>Cycles</b>	Up to 6	Up to 6	Up to 6
<b>Regeneration</b>	Downflow/Upflow	Downflow/Upflow	Downflow
<b>Operating Pressures</b>	20 - 125 psi	20 - 125 psi	20 - 125 psi
<b>Operating Temperatures</b>	40° - 110° F	40° - 110° F	40° - 110° F
<b>Meter:</b>			
<b>Flow Rate Range</b>	0.25 - 27 gpm	0.25 - 27 gpm	Not
<b>Volume Range (gallons)</b>	20 - 50,000 gallons	20 - 1,500,000 gallons	Applicable
<b>Totalizer</b>	Yes	Yes	
<b>Distributor Pilot</b>	1.050" O.D. Pipe 3/4" NPS	1.050" O.D. Pipe 3/4" NPS	1.050" O.D. Pipe 3/4" NPS
<b>Drain Line Connection</b>	3/4" Male NPT Standard 1" Male NPT Optional	3/4" Male NPT Standard 1" Male NPT Optional	3/4" Male NPT Standard 1" Male NPT Optional
<b>Brine Line Connection</b>	3/8" or 1/2" O.D. Poly Tube Compression	3/8" or 1/2" O.D. Poly Tube Compression	3/8" or 1/2" O.D. Poly Tube Compression
<b>Mounting Base Options</b>	2 1/2" - 8 NPSM	2 1/2" - 8 NPSM	2 1/2" - 8 NPSM
<b>Height From Top of Tank</b>	7 3/8"	7 3/8"	7 3/8"
<b>Shipping Weight</b>	4.5 lbs.	4.5 lbs.	4.5 lbs.
<b>Electrical:</b>			
<b>Supply Voltage</b>	120V AC	120V AC, 6AA NMHB or 6 "D" Alkaline	120V AC
<b>Supply Frequency</b>	60 Hz	60 Hz	60 Hz
<b>Output Voltage</b>	12V AC	12V AC	12V AC
<b>Output Current</b>	500 mA	500 mA	500 mA

1. Filter tank size calculated @ 10 gpm of backwash per square foot of bed area
2. Noryl is a trademark of Sabic Innovative Plastics IP B.V. Company
3. Acquired by use of external drain line flow control

# 1.25" WATER SPECIALIST VALVE SPECIFICATIONS



**WS1.25  
WS1.25CS**

**WS1.25EE  
WS1.25SD/SP**

**WS1.25TC**

34 gpm (includes meter and bypass) 32 gpm (3) (includes bypass)	34 gpm (includes meter and bypass) 32 gpm (3) (includes bypass)	34 gpm (includes bypass) 32 gpm (3) (includes bypass)
6" - 21" diameter 6" - 24" diameter	6" - 21" diameter 6" - 24" diameter	6" - 21" diameter 6" - 24" diameter
1" - 1.25" NPT 3/4" - 1.5" Sweat 3/4" - 1.5" Solvent 3/4" - 1" SharkBite®	1" - 1.25" NPT 3/4" - 1.5" Sweat 3/4" - 1.5" Solvent 3/4" - 1" SharkBite®	1" - 1.25" NPT 3/4" - 1.5" Sweat 3/4" - 1.5" Solvent 3/4" - 1" SharkBite®
Noryl (2) Up to 6 Downflow/Upflow	Noryl (2) Up to 6 Downflow/Upflow	Noryl (2) Up to 6 Downflow
20 - 125 psi 40° - 110° F	20 - 125 psi 40° - 110° F	20 - 125 psi 40° - 110° F
0.25 - 34 gpm 20 - 50,000 gallons Yes	0.25 - 34 gpm 20 - 1,500,000 gallons Yes	Not Applicable
1.32" O.D. Pipe 1" NPS	1.32" O.D. Pipe 1" NPS	1.32" O.D. Pipe 1" NPS
3/4" Male NPT Standard 1" Male NPT Optional	3/4" Male NPT Standard 1" Male NPT Optional	3/4" Male NPT Standard 1" Male NPT Optional
3/8" or 1/2" O.D. Poly Tube Compression	3/8" or 1/2" O.D. Poly Tube Compression	3/8" or 1/2" O.D. Poly Tube Compression
2 1/2" - 8 NPSM	2 1/2" - 8 NPSM	2 1/2" - 8 NPSM
7 3/8"	7 3/8"	7 3/8"
4.5 lbs.	4.5 lbs.	4.5 lbs.
120V AC  60 Hz 12V AC 500 mA	120V AC, 6AA NMHB or 6 "D" Alkaline 60 Hz 12V AC 500 mA	120V AC  60 Hz 12V AC 500 mA

Valves shown with optional bypass.

# 1.5" & 2" WATER SPECIALIST VALVE SPECIFICATIONS



## SPECIFICATIONS

### WS1.5EE WS1.5SD/SP

### WS2EE WS2SD/SP

<b>Service @ 15 psi drop</b>	70 gpm	115 gpm
<b>Backwash @ 25 psi drop</b>	52 gpm	80 gpm
<b>Tank Applications:</b>		
<b>Softener</b>	12" - 30" diameter	12" - 48" diameter
<b>Filter (1)</b>	12" - 30" diameter	12" - 36" diameter
<b>Inlet/Outlet Fitting Connections</b>	1.5" Female NPT	2" Female NPT
<b>Valve Material</b>	Lead Free Brass	Lead Free Brass
<b>Cycles</b>	Up to 6	Up to 6
<b>Regeneration</b>	Downflow/Upflow	Downflow/Upflow
<b>Operating Pressures</b>	20 - 125 psi	20 - 125 psi
<b>Operating Temperatures</b>	40° - 110° F	40° - 110° F
<b>Meter:</b>		
<b>Flow Rate Range</b>	0.5 - 75 gpm	1.5 - 150 gpm
<b>Volume Range (gallons)</b>	20 - 1,500,000 gallons	20 - 1,500,000 gallons
<b>Totalizer</b>	Yes	Yes
<b>Distributor Pilot</b>	1.90" O.D. Pipe 1.5" NPS	1.90" O.D. Pipe 1.5" NPS
<b>Drain Line Connection</b>	1.25" Female NPT with 3/4" Male NPT Standard 1" Male NPT Optional	1.5" Female NPT
<b>Brine Line Connection</b>	3/4" Female NPT 1/2" O.D. Poly Tube Compression	1" Male NPT elbow 3/4" x 1" Solvent elbow 1/2" O.D. Poly Tube Compression
<b>Mounting Base Options</b>	4" - 8 UN	4" - 8 UN
<b>Height From Top of Tank</b>	9.5"	7.5"
<b>Shipping Weight with Meter</b>	21 lbs.	29 lbs.
<b>Electrical:</b>		
<b>Supply Voltage</b>	120V AC, 6AA NMHB or 6 "D" Alkaline	120V AC, 6AA NMHB or 6 "D" Alkaline
<b>Supply Frequency</b>	60 Hz	60 Hz
<b>Output Voltage</b>	12V AC	12V AC
<b>Output Current</b>	500 mA	500 mA

1. Filter tank size calculated @ 10 gpm of backwash per square foot of bed area



## 2" & 3" WATER SPECIALIST VALVE SPECIFICATIONS



**WS2EE/QC  
WS2SP/QC**



**WS2H**



**WS3**

125 gpm 85 gpm	125 gpm (includes meter) 125 gpm	250 gpm 220 gpm
12" - 48" diameter 12" - 36" diameter	18" - 63" diameter 18" - 48" diameter	18" - 96" diameter (2) 18" - 63" diameter
2" Female NPT	2" Female NPT/ 2.5" Groove Lock	3" Female NPT
Lead Free Brass Up to 6 Downflow/Upflow	Lead Free Brass Up to 9 Downflow	Lead Free Brass Up to 9 Downflow
20 - 125 psi 40° - 110° F	20 - 125 psi 40° - 110° F	20 - 125 psi 40° - 110° F
1.5 - 150 gpm 20 - 1,500,000 gallons Yes	1.5 - 125 gpm 10 - 999,000 gallons Yes	3.5 - 350 gpm 10 - 999,000 gallons Yes
2.375" O.D. Pipe 2" NPS	2.375" O.D. Pipe 2" NPS	3.5" O.D. Pipe 3" NPS
1.5" Female NPT	2" Female NPT/ 2.5" Groove Lock	3" Female NPT
1" Male NPT elbow 3/4" x 1" Solvent elbow 1/2" O.D. Poly Tube Compression	1" Male NPT elbow 3/4" x 1" Solvent elbow	1" Male NPT elbow 3/4" x 1" Solvent elbow
Quick Disconnect 4" - 8 UN 6" Flange Side Mount	Quick Disconnect 4" - 8 UN 6" Flange Side Mount	Quick Disconnect 6" Flange Side Mount
with 4" - 8 UN QC Base is 11.2" with 6" Flange QC Base is 11.3"	with 4" - 8 UN QC Base is 11.5" with 6" Flange QC Base is 11.6"	with 6" Flange QC Base is 12.5"
29 lbs.	50 lbs.	57 lbs. (no meter)
120V AC, 6AA NMHB or 6 "D" Alkaline 60 Hz 12V AC 500 mA	120V AC 60 Hz 24V AC 750 mA	120V AC 60 Hz 24V AC 750 mA

2. 18" - 63" diameter with standard injectors, to 96" with Brine Pump

Valves shown with optional accessories.

# 1" & 1.25" Control Valve Fittings and Accessories



# 1" & 1.25" Control Valve Fittings and Accessories

**3/4" Plastic Male BSPT Assembly**



**Order No. V3007-14**

**3/4" John Guest QC Elbow Assembly**



**Order No. V3007-15**

**1" PVC Male BSPT Elbow Assembly**



**Order No. V3007-16**

**1" John Guest Straight QC**



**Order No. V3007-17**

**Bypass**



**Order No. V3006**

**1" Straight DLFC w/Silencer**



**Order No. V3008-02**

**1" Straight DLFC without Silencer**



**Order No. V3008-04**

**Auxiliary Microswitch Kit**



**Order No. V3009**

**WS1 Series Microswitch Assembly**



**Order No. V3014**

**WS2 Auxiliary Switch Kit**



**Order No. V3017**

**Vertical 90° Adapter Kit**



**Order No. V3191-01**

**Twin Interconnect Kit - 12"-21"**



**Order No. V4052-01**

# 1" & 1.25" Control Valve Fittings and Accessories

**1" & 1.25"  
Motorized Alternating Valve**



**Order No. V3069FF-01 • F x F**

**1" & 1.25"  
No Hard Water Bypass Valve**



**Order No. V3070FF • F x F**

**1" & 1.25"  
Motorized Alternating Valve**



**Order No. V3069MM-01 • M x M**

**1" & 1.25"  
No Hard Water Bypass Valve**



**Order No. V3070FM • F x M**



# 1.5" and 2"

## Control Valve Accessories

**1.5"**  
**Motorized Alternating Valve**



**Order No. V3071 • NPT**  
**Order No. V3071BSPT • BSPT**

**1.5"**  
**No Hard Water Bypass Valve**



**Order No. V3097 • NPT**  
**Order No. V3097BSPT • BSPT**

**2.0"**  
**Motorized Alternating Valve**



**Order No. V3076 • NPT**  
**Order No. V3076BSPT • BSPT**

**2.0"**  
**No Hard Water Bypass Valve**



**Order No. V3098 • NPT**  
**Order No. V3098BSPT • BSPT**



# 3" Control Valve Accessories

**3"**  
**Motorized Alternating Valve**



**Order No. V3083 • NPT**  
**Order No. V3083BSPT • BSPT**

**3"**  
**No Hard Water Bypass Valve**



**Order No. V3099 • NPT**  
**Order No. V3099BSPT • BSPT**

## Other Accessories

**Weather Covers**



**Order No. V3175WC-W • White**  
**Order No. V3175WC-A • Almond**

**Wrench**



**Order No. V3193-02**