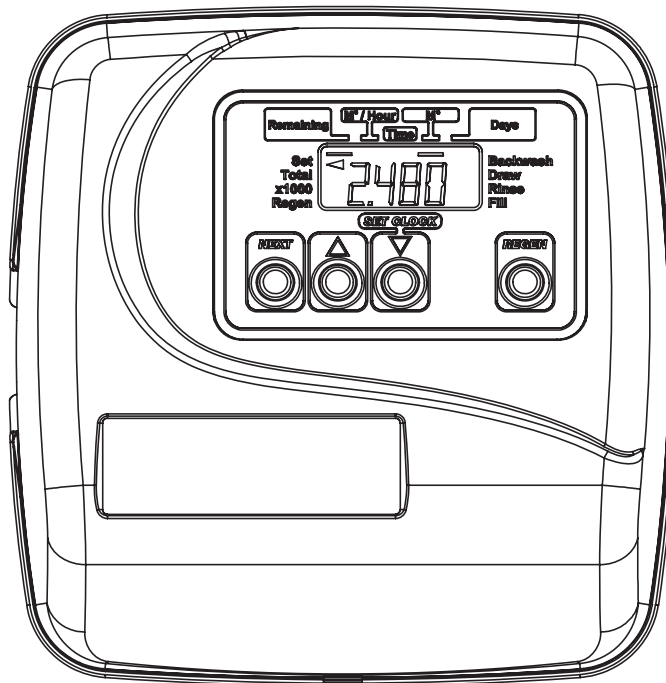


# Water Specialist

1" Control Valve Series Model: WS1EI

1.25" Control Valve Series Model: WS1.25EI



## Operation and Instruction Manual for OEM Only.

*Please Note:* This operation and instruction manual is for the training of the OEM and for the OEM to use to train their customers. This document is not to be used as the complete system manual.



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## Control Valve Function and Cycles of Operation

This glass filled Noryl<sup>1</sup> (or equivalent) fully automatic control valve is designed as the primary control center to direct and regulate all cycles of a water softener or filter. The WS1EI and WS1.25EI control valves are only available in downflow regeneration. When the WS1EI or WS1.25EI control valve is set up as a filter, the control valve can be set to perform downflow regeneration or simply backwash. The control valve can be set to regenerate on demand (consumption of a predetermined amount of water) and/or as a time clock (passage of a particular number of days). The control valve can be set so that a softener can meet the Water Quality Association (WQA) Standard S100 or NSF/ANSI Standard 44 efficiency rating.

The control valve is compatible with a variety of regenerants and resin cleaners. The control valve is capable of routing the flow of water in the necessary paths to regenerate or backwash water treatment systems. The injector regulates the flow of brine or other regenerants. The control valve regulates the flow rates for backwashing, rinsing, and the replenishing of treated water into a regenerant tank, when applicable.

The control valve uses no traditional fasteners (e.g. screws); instead clips, threaded caps, nuts and snap type latches are used. Caps and nuts only need to be firmly hand tightened because radial seals are used. Tools required to service the valve include one small blade screw driver, one large blade screw driver, pliers and a pair of hands. A plastic wrench is available which eliminates the need for screwdrivers and pliers. Disassembly for servicing takes much less time than comparable products currently on the market. Control valve installation is made easy because the distributor tube can be cut 12.7 mm (½") above to 12.7 mm (½") below the top of tank thread. The distributor tube is held in place by an o-ring seal and the control valve also has a bayonet lock feature for upper distributor baskets.

The AC adapter power pack comes with a 4.6 meter (15 foot) power cord and is designed for use with the control valve. The AC adapter power pack is for dry location use only.

Table 1 shows the order of the cycles and available time for the WS1EI or WS1.25EI control valve. The WS1EI and WS1.25EI can be used for downflow softener and filter applications as well as backwash-only filters.

**Table 1**  
**Regeneration Cycles and Times**

WS1EI & WS1.25EI Cycles of Operation	
Cycle	Range of times (min.)
1. Backwash 1 <sup>st</sup> (upflow)	1 - 20 or OFF
2. Regenerant Draw/Slow Rinse (downflow)	1 - 99 or OFF
3. Backwash 2 <sup>nd</sup> (upflow)	1 - 20 or OFF
4. Fast Rinse (downflow)	1 - 20 or OFF
5. Regenerant Refill (with treated water)	0.1 - 99.9 or OFF
6. Service (downflow)	

<sup>1</sup> Noryl is a trademark of General Electric.

The user can initiate manual regeneration. The user has the option to request the manual regeneration at the delayed regeneration time or to have the regeneration occur immediately:

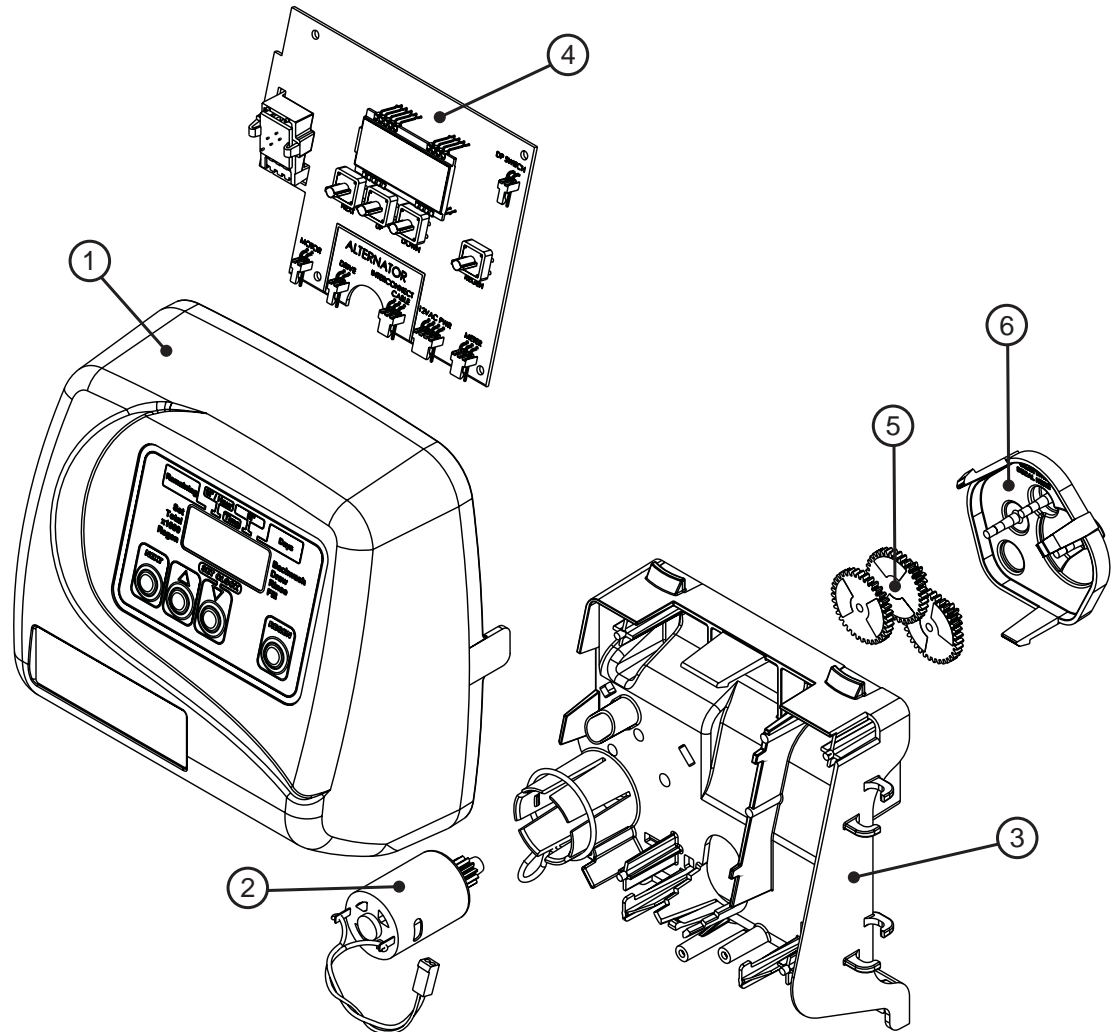
1. Pressing and releasing the REGEN button. “◀” will flash towards Regen on the display and the regeneration will occur at the delayed regeneration time. The user can cancel the request by pressing and releasing the REGEN button.
2. Pressing and holding the REGEN button for approximately 3 seconds will immediately start the regeneration. The user cannot cancel this request, except by resetting the control by pressing NEXT and REGEN buttons simultaneously for 3 seconds.

For additional software features and specific setup refer to the 1.5 & 2L manual for this software.

**EI Front Cover and Drive Assembly**

Drawing No.	Order No.	Description	Quantity
1	V3175EI-01	WS1EI FRONT COVER ASSEMBLY	1
2	V3107-01	WS1 MOTOR	1
3	V3106-01	WS1 DRIVE BRACKET & SPRING CLIP	1
4	V3408EI-01	WS1THRU2L EI PC BOARD ALT	1
5	V3110	WS1 DRIVE REDUCING GEAR 12X36	3
6	V3109	WS1 DRIVE GEAR COVER	1
Not Shown	V3186	WS1 AC ADAPTER 110V-12V	1
	V3186EU	WS1 AC ADAPTER 220-240V-12V EU	
	V3186UK	WS1 AC ADAPTER 220-240V-12V UK	
	V3186-01	WS1 AC ADAPTER CORD ONLY	

AC Adapter	U.S.	International
Supply Voltage	120 V AC	230V AC
Supply Frequency	60 Hz	50 Hz
Output Voltage	12 V AC	12 V AC
Output Current	500 mA	500 mA

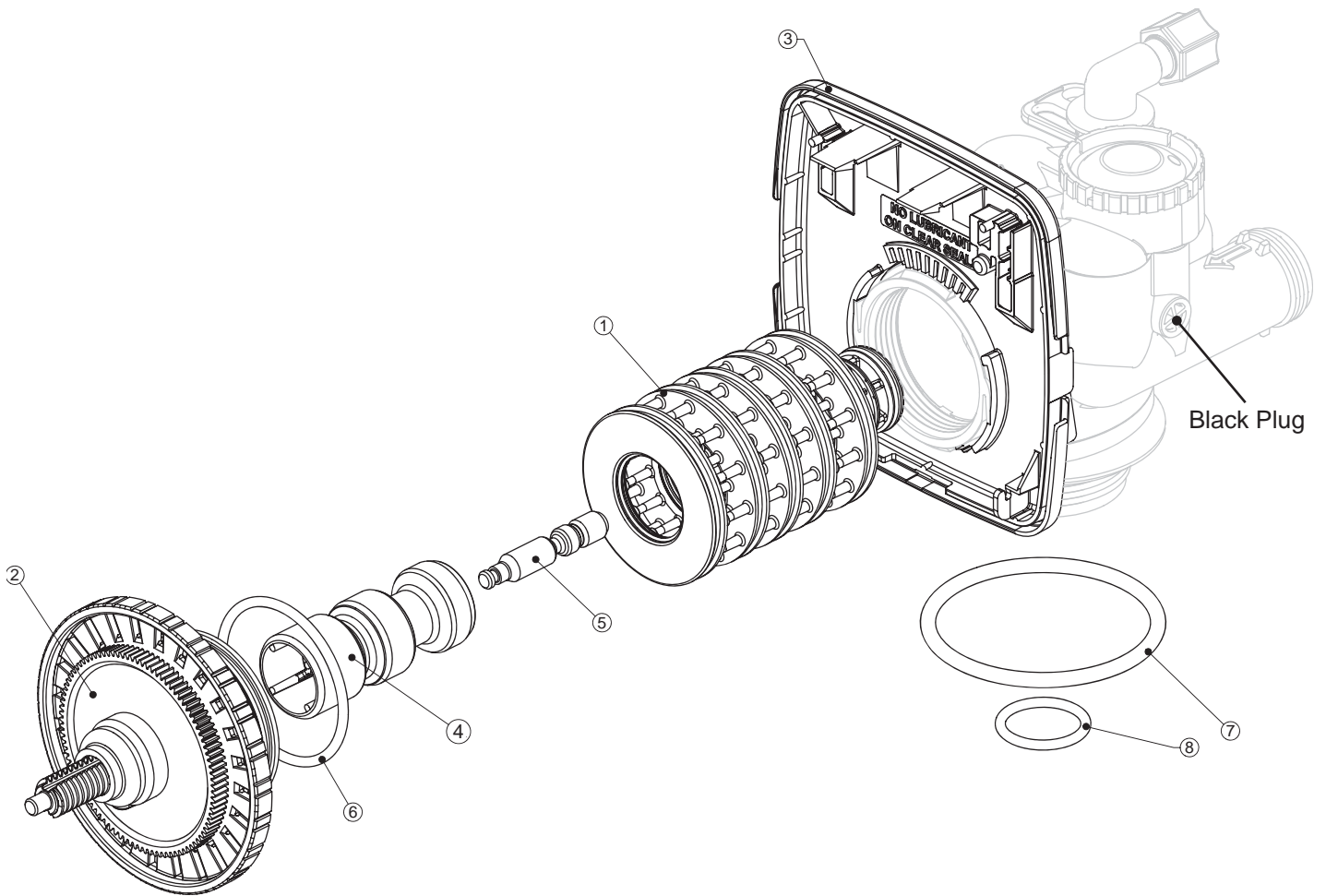


**WS1EI Drive Cap Assembly, Downflow Piston, Regenerant Piston and Spacer Stack Assembly**

Drawing No.	Order No.	Description	Quantity
1	V3005	WS1 Spacer Stack Assembly	1
2	V3004	Drive Cap ASY	1
3	V3178	WS1 Drive Back Plate	1
4	V3011*	WS1 Piston Downflow ASY	1
5	V3174	WS1 Regenerant Piston	1
6	V3135	O-ring 228	1
7	V3180	O-ring 337	1
8	V3105	O-ring 215 (Distributer Tube)	1
Not Shown	V3001	WS1 Body ASY Downflow	1
	V3001-02	WS1 Mixing Valve Body ASY	

\*V3011 is labeled with DN.

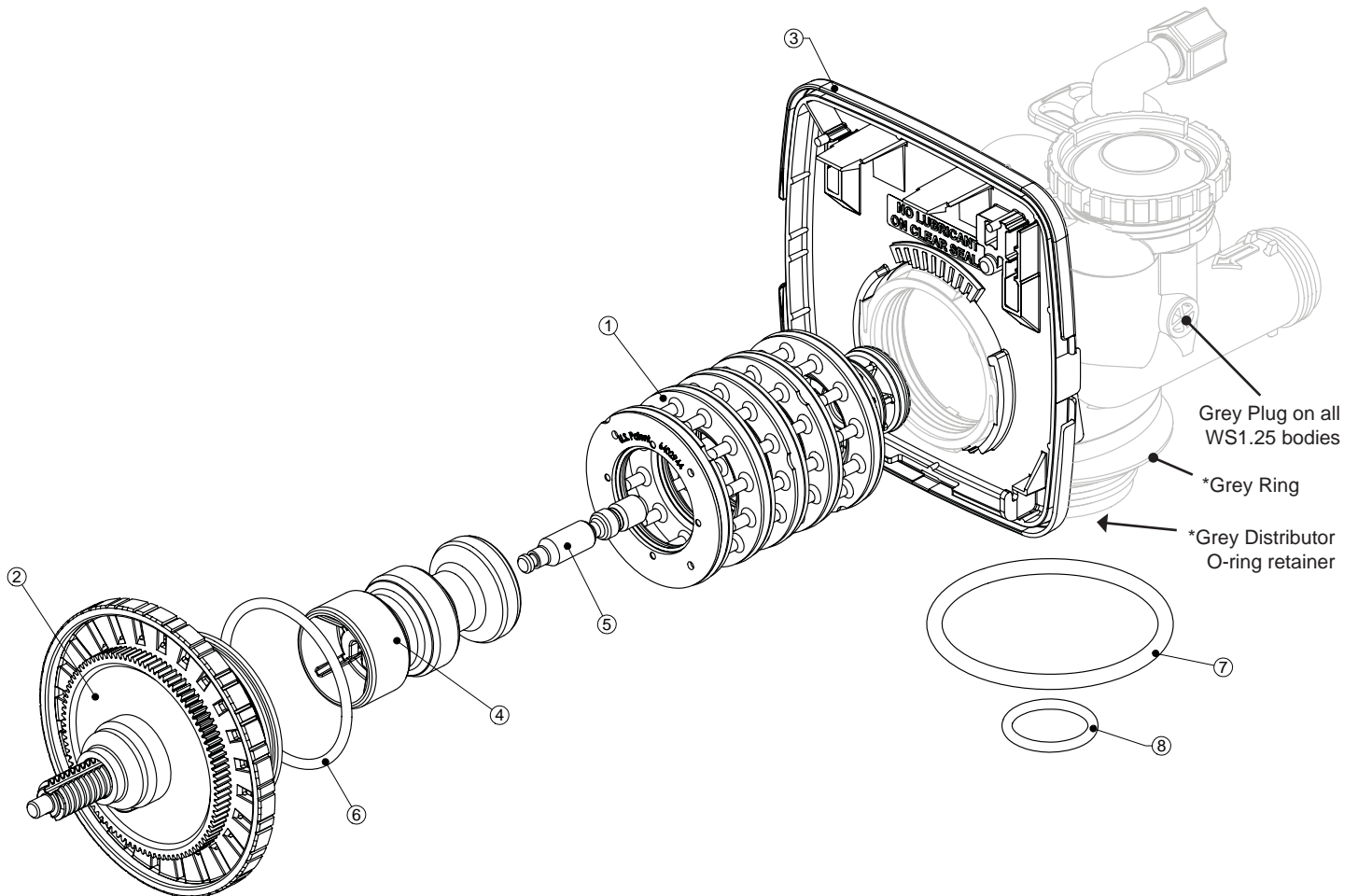
Note: The regenerant piston is not used in backwash only applications.



**WS1.25EI Drive Cap Assembly, Downflow Piston, Regenerant Piston and Spacer Stack Assembly**

Drawing No.	Order No.	Description	Quantity
1	V3430	WS1.5 Spacer Stack Assembly	1
2	V3004	Drive Cap ASY	1
3	V3178	WS1 Drive Back Plate	1
4	V3407	WS1.5 Piston Downflow ASY	1
5	V3174	WS1 Regenerant Piston	1
6	V3135	O-ring 228	1
7	V3180	O-ring 337	1
8	V3358	O-ring 219 (Distributor Tube Opening 33.5 mm (1.32"))	1
	V3357	O-ring 218 (Distributor Tube Opening 32 mm)	
Not Shown	V3020	WS1.25 Body ASY Downflow (Distributor Tube Opening 33.5 mm (1.32"))	1
	V3020-01	WS1.25 Mixing Valve Body Downflow ASY (Distributor Tube Opening 33.5 mm (1.32"))	
	V3020-02	WS1.25 Body ASY Downflow (Distributor Tube Opening 32mm)	
	V3020-03	WS1.25 Mixing Valve Body Downflow ASY (Distributor Tube Opening 32mm)	

Note: The regenerant piston is not used in backwash only applications.

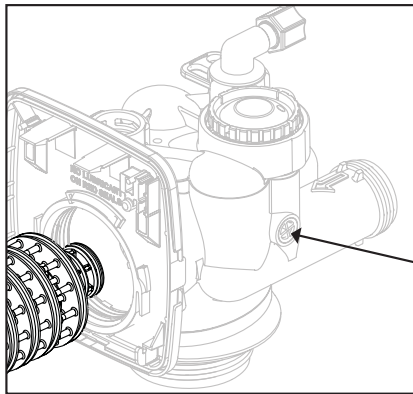


\*Only for valves that have a 32mm Distributor Tube Opening

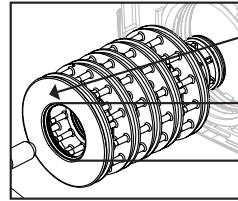


**WS1 & WS1.25 Identification Figure**

**WS1 with 1.050" Distributor Tube Opening Identification**

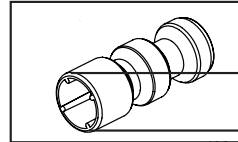


Black Plug



Spacer Color:  
Grey

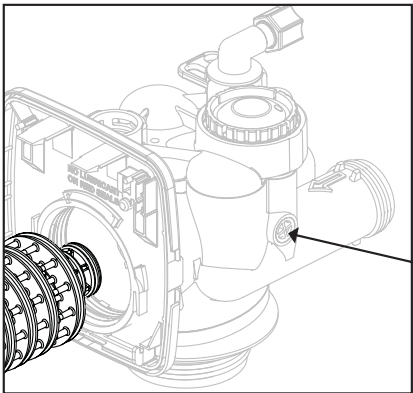
1.25"



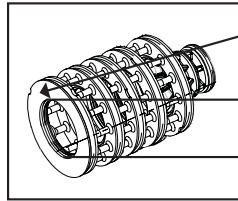
1.25"

Note: The WS1 downflow piston is a solid amber color.

**WS1.25 with 1.32" Distributor Tube Opening Identification**

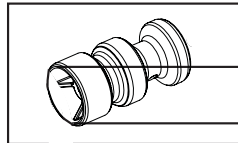


Grey Plug



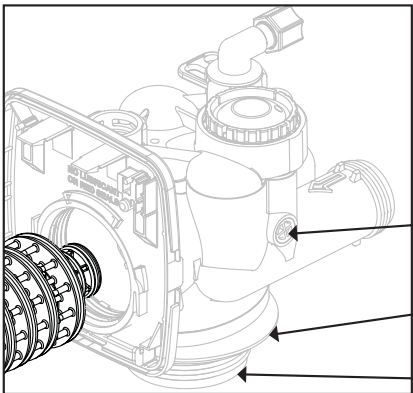
Spacer Color:  
Black

1.5"



1.5"

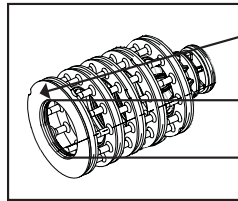
**WS1.25 with 32mm Distributor Tube Opening Identification**



Grey Plug

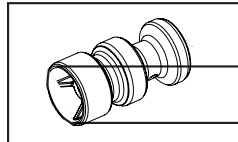
Grey Ring

Grey  
Distributor  
O-ring  
Retainer



Spacer Color:  
Black

1.5"



1.5"



# WS1EI & WS1.25EI Manual

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## Revision History:

11/12/07

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