AIO SYSTEM SET-UP OPERATION & MAINTENANCE MANUAL

AIR INJECTION SYSTEM

CLACK AIO STANDARD SET-UP

CLACK AIO STANDARD SET-UP USING THE WS1EE CONTROL 10" Tank AIO Set Up			CLACK AIO STANDARD SET-UP USING THE WS1EE CONTROL 12" Tank AIO Set Up		
Injector V3010-1K DLFC Button	1 Cubic Foot System	Lt. Green 4.2gpm	Injector V3010-1K DLFC Button	1.5 Cubic Foot System	Lt. Green 5.3gpm
TIMER SETTINGS (FIRST SET TIME)			TIMER SETTINGS (FIRST SET TIME)		
To Start Control Should Be In Softening Mode			To Start Control Should Be In Softening Mode		
Softening Mode:		Default	Softening Mode:		Default
Downflow Brine (DF):		Default	Downflow Brine (DF):		Default
Regeration Post Fill:		Default	Regeration Post Fill:		Default
1 Set Backwash To:		14 Mins	1 Set Backwash To:		14 Mins
2-Set Brine Draw (DF)To:		40 Mins	2-Set Brine Draw (DF)To:		50 Mins
3-Set Second Backwash To:		OFF	3-Set Second Backwash To:		OFF
4-Rinse To:		OFF	4-Rinse To:		OFF
5-Set Fill To:		OFF	5-Set Fill To:		OFF
d-Set System Capatcity To		5.0x1000	d-Set System Capatcity To		5.0x1000
e-Set Regeneration To: (OFF)		Default	e-Set Regeneration To: (OFF)		Default
f-Set Regeneration To: 28 Days		Default	f-Set Regeneration To: 28 Days		Default
g-Set Relay To: (OFF)		Default	g-Set Relay To: (OFF)		Default
Return Back To Time			Return Back To Time		
Now Set Up For Every 3th Day Regeneration			Now Set Up For Every 3th Day Regeneration		

TIMER SETTINGS (FIRST SET TIME)		TIMER SETTINGS (FIRST SET TIME)	
To Start Control Should Be In Softening Mode		To Start Control Should Be In Softening Mode	
Softening Mode:	Default	Softening Mode:	Default
Downflow Brine (DF):	Default	Downflow Brine (DF):	Default
Regeration Post Fill:	Default	Regeration Post Fill:	Default
1 Set Backwash To:	14 Mins	1 Set Backwash To:	14 Mins
2-Set Brine Draw (DF)To:	60 Mins	2-Set Brine Draw (DF)To:	80 Mins
3-Set Second Backwash To:	OFF	3-Set Second Backwash To:	OFF
4-Rinse To:	OFF	4-Rinse To:	OFF
5-Set Fill To:	OFF	5-Set Fill To:	OFF
d-Set System Capatcity To	5.0x1000	d-Set System Capatcity To	5.0x1000
e-Set Regeneration To: (OFF)	Default	e-Set Regeneration To: (OFF)	Default
f-Set Regeneration To: 28 Days	Default	f-Set Regeneration To: 28 Days	Default
g-Set Relay To: (OFF)	Default	g-Set Relay To: (OFF)	Default
Return Back To Time		Return Back To Time	
Now Set Up For Every 3th Day Regeneration		Now Set Up For Every 3th Day Regeneration	

Medias That Can Be Used With AIO Systems

Birm, Coconut Shell Carbon, Centaur Catalytic Carbon, CAT-HAC Catalytic Carbon

Filter AG, Aldex CR26 & Katalox-Light And Greensand PLUS

NOTE: Above Settings Are Defult Srttings, Please Refer To The WS1EE Manual For Full Programming.

Front Cover and Drive Assembly

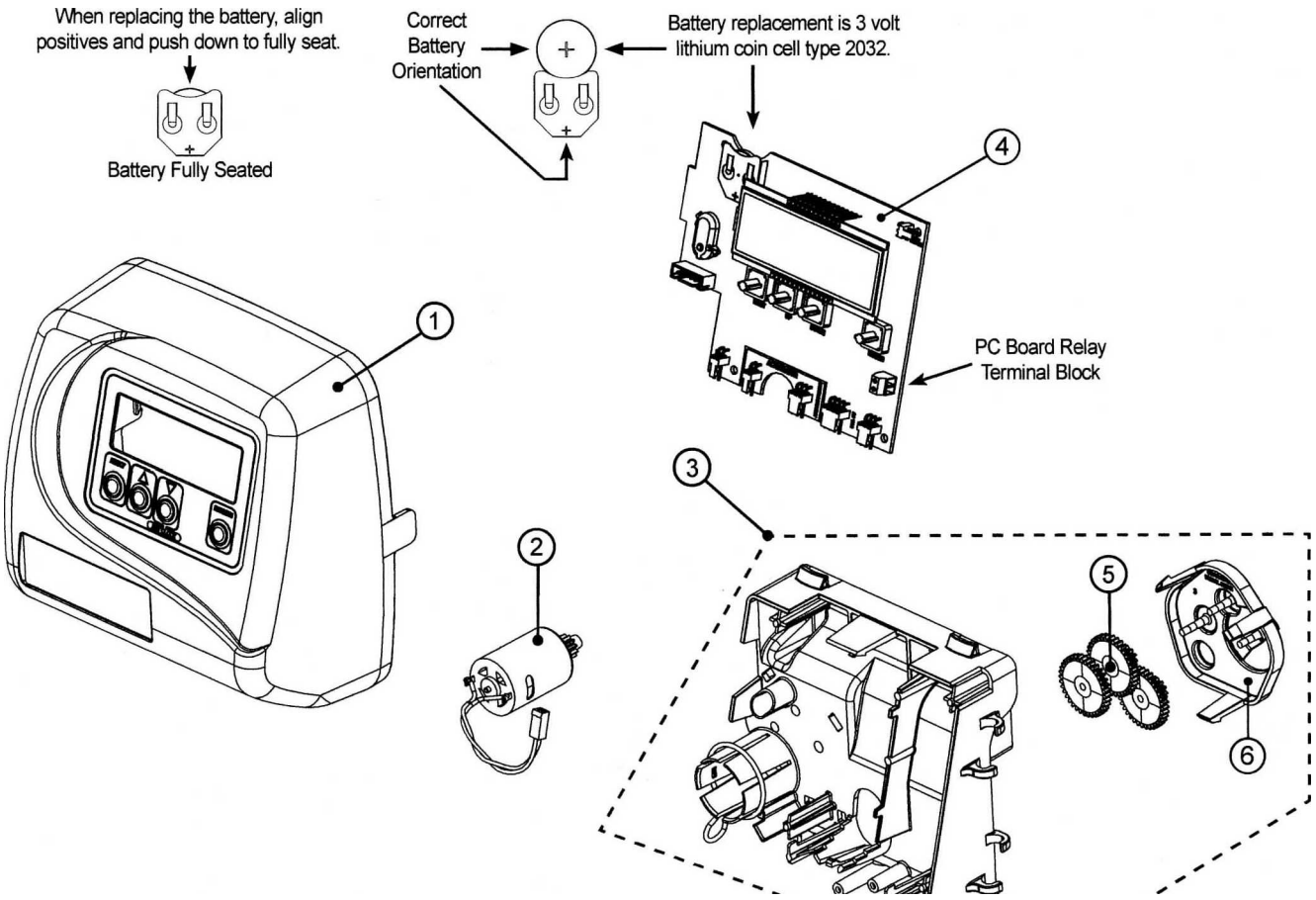
Drawing No.	Order No.	Description	Quantity
1	V3175EE-01	WS1EE FRONT COVER ASSEMBLY	1
2	V3107-01	WS1 MOTOR	1
3	V3002-A	WS1 DRIVE BRACKET ASY	1
4	V3408EE-13BOARD	WS1THRU/2 EE PCB 5 DIGIT REPL	1
5	V3110	WS1 DRIVE GEAR 12X36	3
6	V3109	WS 1 DRIVE GEAR COVER	1
Not Shown	V3186-06	WS1 POWER SUPPLY US 15VDC HOCP	1
	V3186-01	WS1 POWER CORD ONLY	
Not Shown	V3178	WS1 DRIVE BACK PLATE	1

Refer to Control Valve Service Manual for other drawings and part numbers.

Power Supply	U.S.	International
Supply Voltage	100-120 VAC	100-240 VAC
Supply Frequency	50/60 Hz	50/60 Hz
Output Voltage	15 VDC	15 VDC
Output Current	500 mA	500 mA

Relay Driver Output Type - Single Solid-State 12VDC “wet” contact - N.O.
Relay Driver Output Capacity - 12VDC @ 100mA.
NOTE: Check for proper mounting dimensions on valve backplate prior to mounting an external relay under control cover.

Wiring For Correct On/Off Operation	
PC Board Relay Terminal Block	Relay
RLY 1	Coil +
COM	Coil -

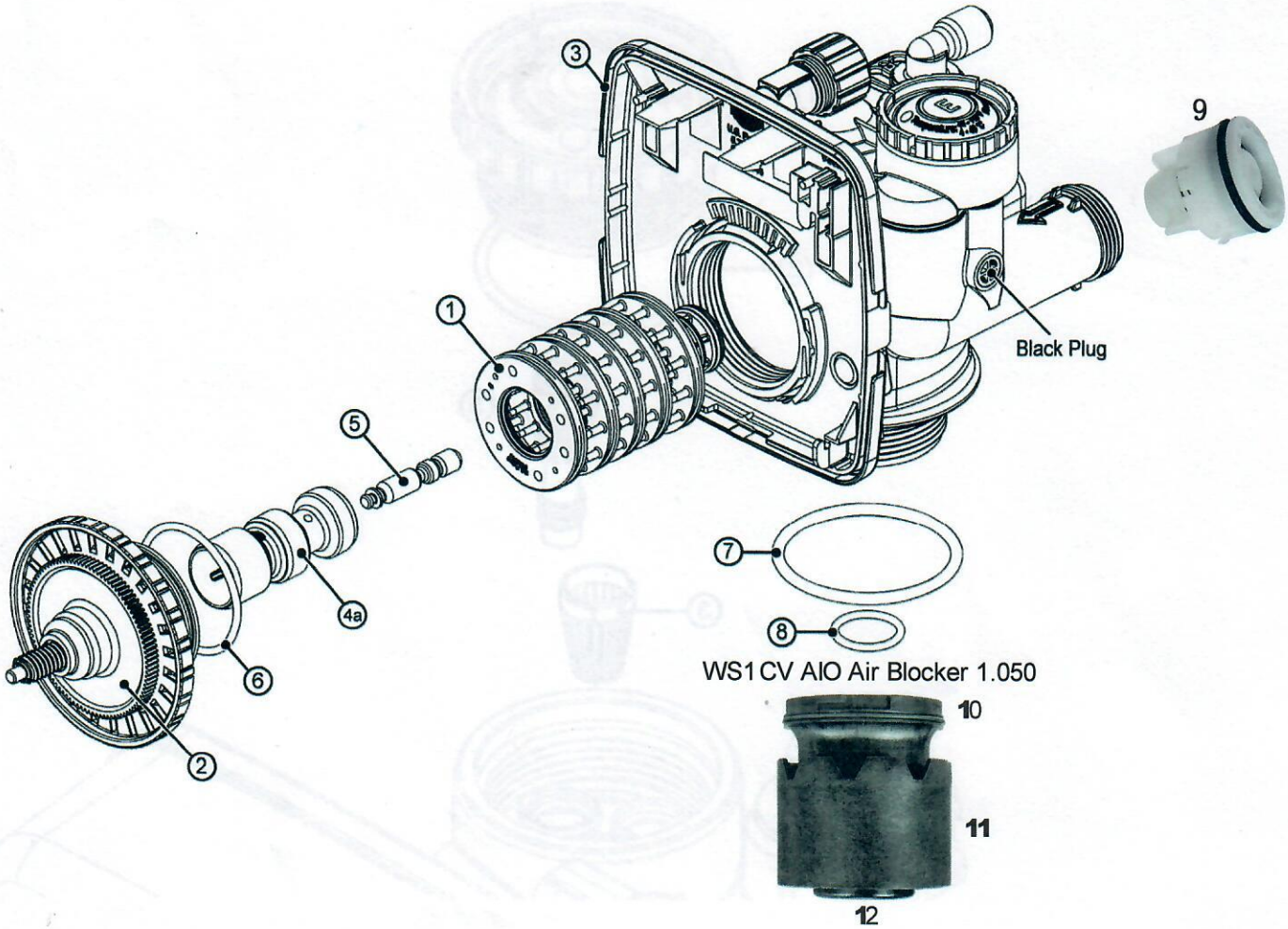


WSl Drive Cap Assembly, Downflow Piston, Regenerant Piston and Spacer Stack Assembly

Drawing No.	Order No.	Description	Quantity
1	V3005-02	WSl Spacer Stack Assembly	1
2	V3004	Drive Cap ASY	1
3	Back Plate	Refer to Programming and Cover Drawing Manual	1
4a	V3011*	WSl Piston Downflow ASY	1
5	V3174	WSl Regenerant Piston	1
6	V3135	O-ring 228	1
7	V3180	O-ring 337	1
8	V3105	O-ring 215 (Distributor Tube)	1
9	V3957	In-Let Back Check Assy	1
Not Shown			
	V3005-10	WSl Downflow Piston, Seal/Spacer Stack, Regenerant Piston & Siiicone Kit	
	V3001	WSl Body ASY Downflow	

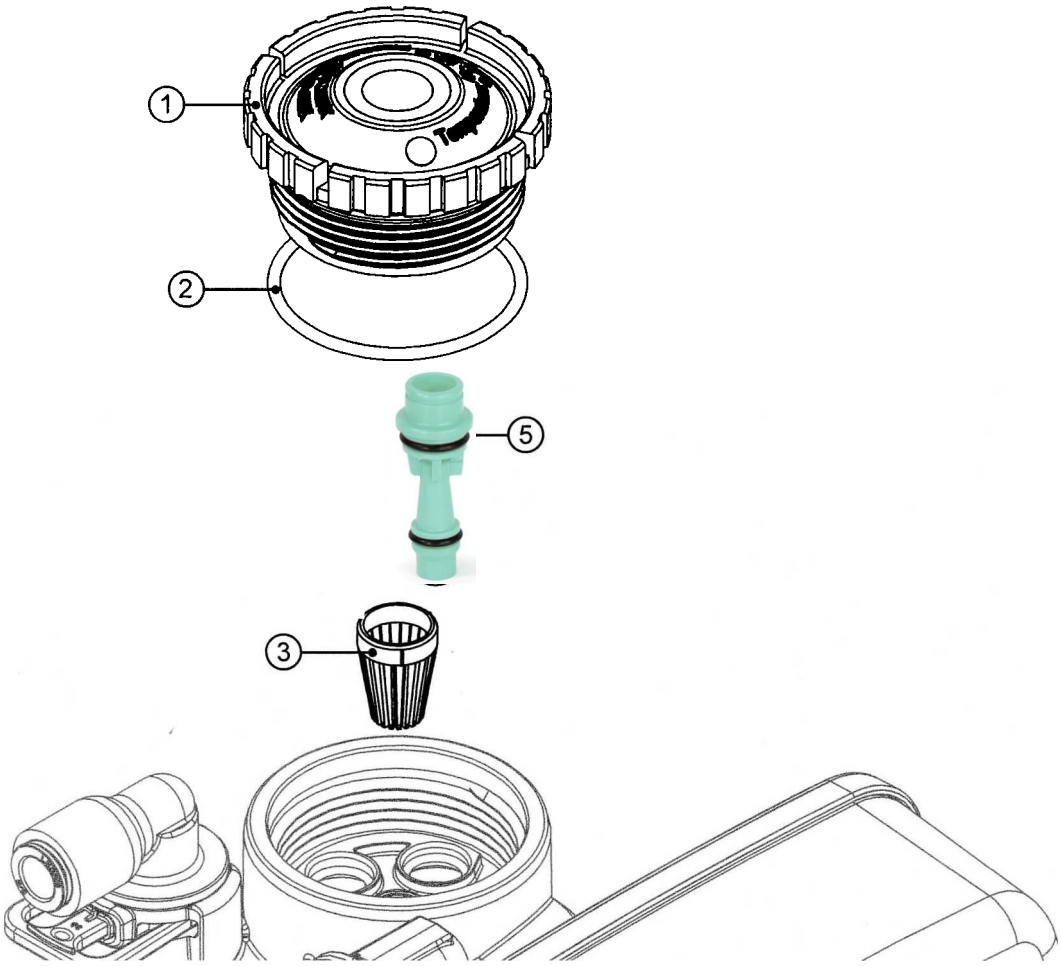
WS1 CV AIO Air Blocker 1.050

10	D1048	O-ring 035
11	D1047	WS1 CV AIO Air Blocker 1.050
12	V3105	O-ring 215



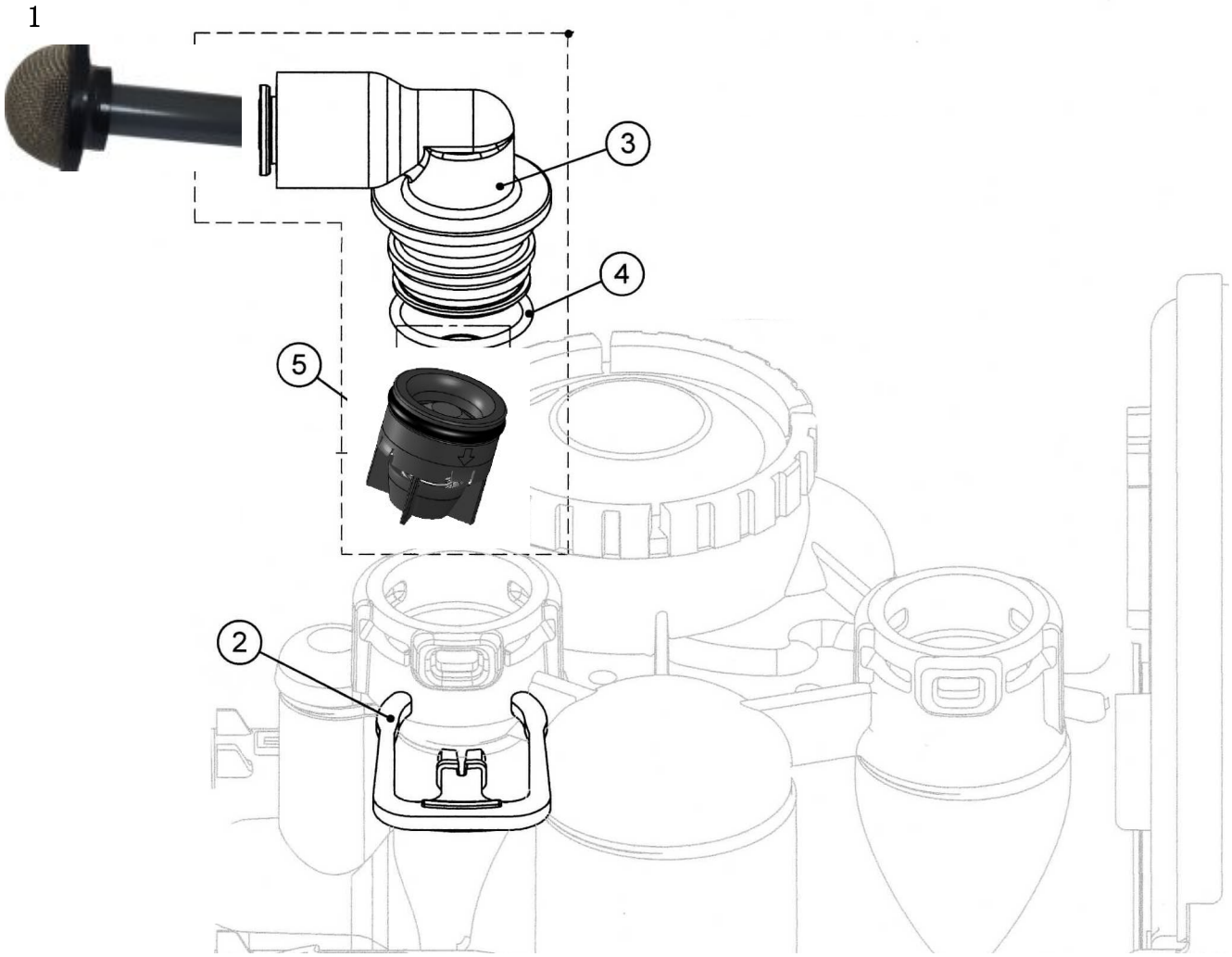
Injector Cap, Injector Screen, Injector, Plug and O-Ring

Drawing No.	Order No.	Description	Quantity
1	V3176	INJECTOR CAP	1
2	V3152	O-RING 135	1
3	V3177-01	INJECTOR SCREEN CAGE	1
			Injector Used In System
5	V3010-1K	WS1 INJECTOR ASY K Lt. Green	
		Lt. Green Injector Used in All Tank Sizes Other Size Injectors Can Be Used Apon Request	



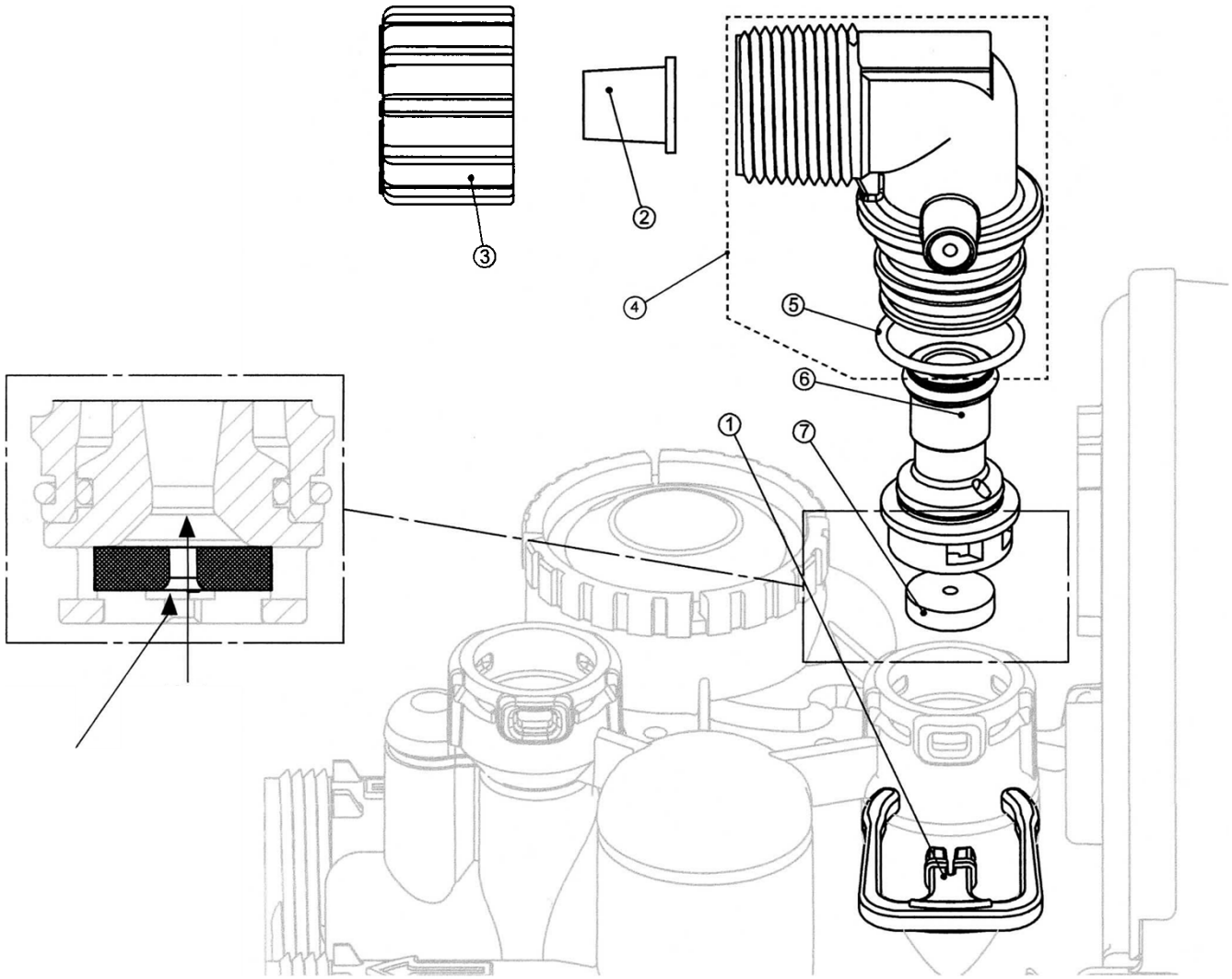
Air intake Flow Control Assembly

Drawing No.	Order No.	Description	Quantity
1	5116346-LG-5P	Brine Valve Air Screen Assy	1
2	H4615	Elbow Locking Clip	1
3	H4628	Elbow 3/8 Brine QC	1
4	V3163	0-ring019	1
5	47049	Brine Valve Back Check Assy	1

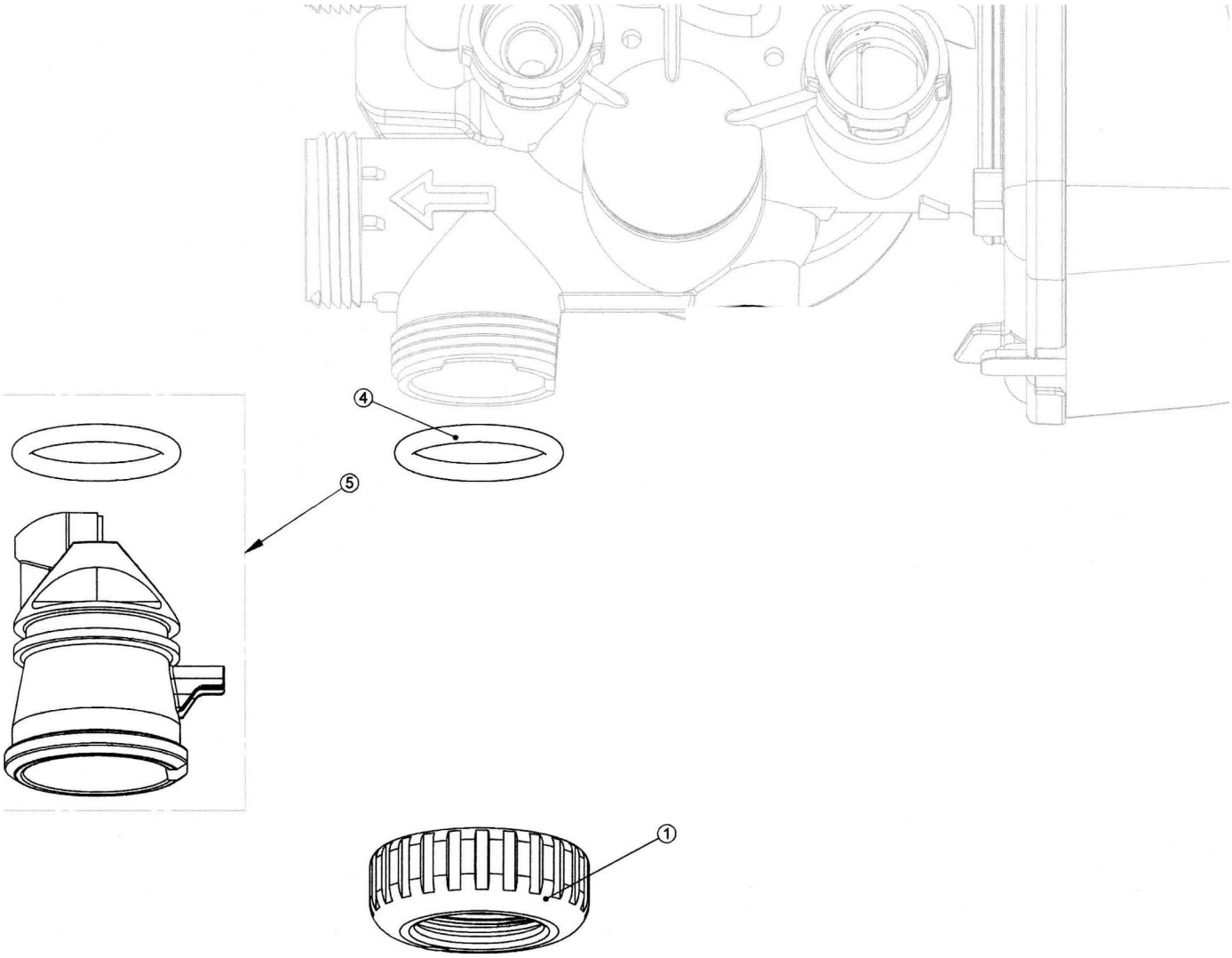


Drain Line - 3/4”

Drawing No.	Order No.	Description	Quantity
1	H4615	Elbow Locking Clip	1
2	PKP10TS8-BULK	Polytube insert 5/8	Option
3	V3192	WS1 Nut % Drain Elbow	Option
4	V3158-01	WS1 Drain Elbow % Male w/Silencer	1
5	V3163	O-ring 019	1
6	V3159-01	WS1 DLFC Retainer ASY	1
7			DLFC used In Systems
	V3162-042	WS1 DLFC 4.2 gpm for 10" Tank	
	V3162-053	WS1 DLFC 5.3 gpm for 12" Tank	
	V3162-075	WS1 DLFC 7.5 gpm for 13" Tank	
	V3162-090	WS1 DLFC 9.0 gpm for 14" Tank	



Meter Plug Assembly



Drawing No.	Order No.	Description	Quantity
1	V3151	WS1 Nut 1” QC	1
			1
			1
4	V3105	O-ring 215	1
5	V3003-01	WS1 Meter Plug ASY	1
			Optional

Drawing No.	Order No.	Description	Quantity
1	V3151	WS1 Nut 1” Quick Connect	2
2	V3150	WS1 Split Ring	2
3	V3105	O-Ring 215	2
4	V3145	WS1 Bypass 1” Rotor	2
5	V3146	WS1 Bypass Cap	2
6	V3147	WS1 Bypass Handle	2
7	V3148	WS1 Bypass Rotor Seal Retainer	2
8	V3152	O-ring 135	2
9	V3155	O-ring 112	2
10	V3156	O-ring 214	2

(Not Shown) Order No. V3191-01, Description: WS1 Bypass Vertical Adapter Assembly

Order No.	Description	Quantity
V3151	WS1 Nut 1” Quick Connect	2
V3150	WS1 Split Ring	2
V3105	O-Ring 215	2
V3191	WS1 Bypass Vertical Adapter	2

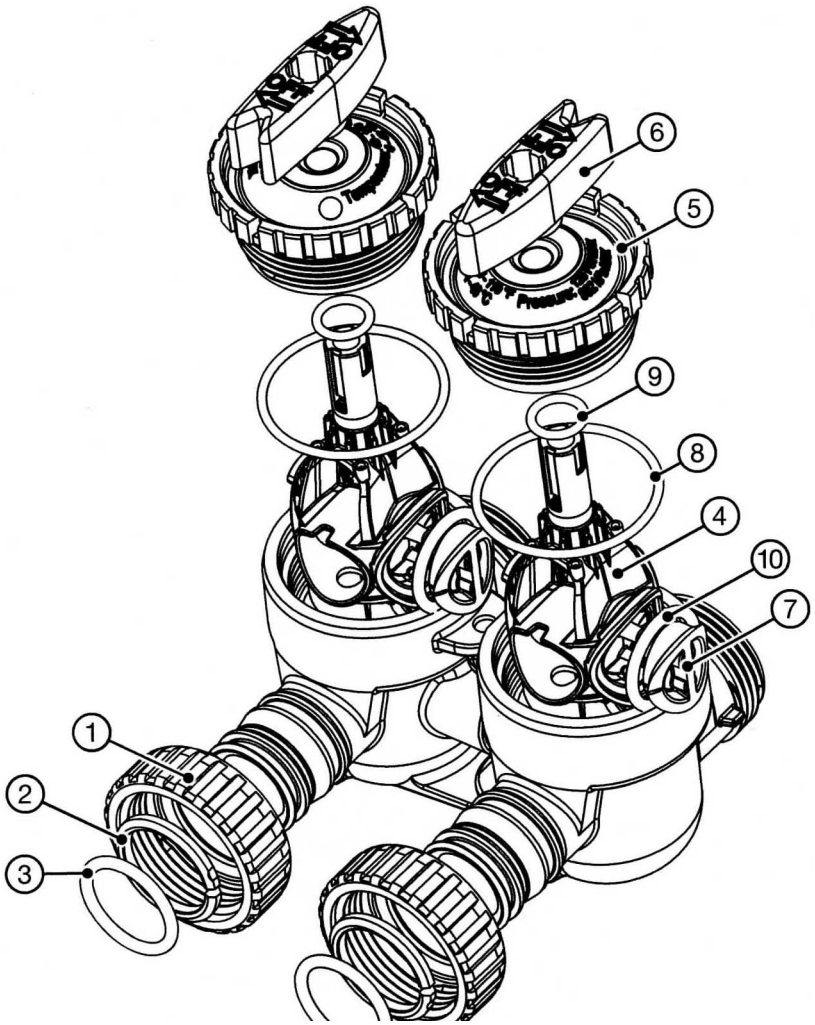


Figure 1

NORMAL OPERATION

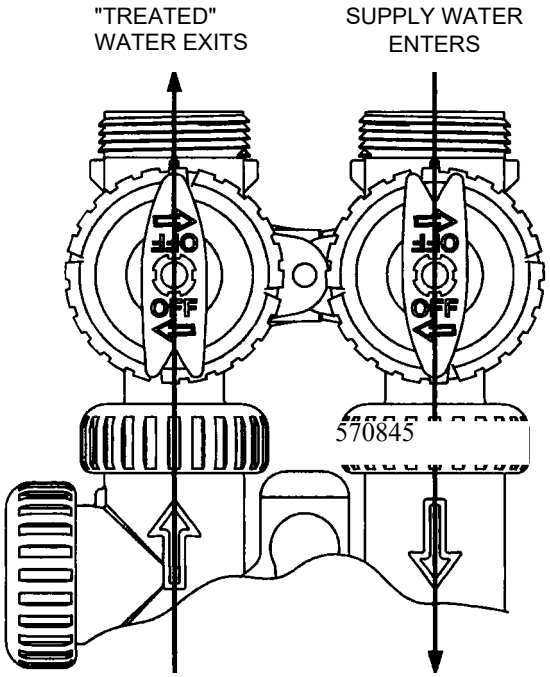


Figure 2

BYPASS OPERATION

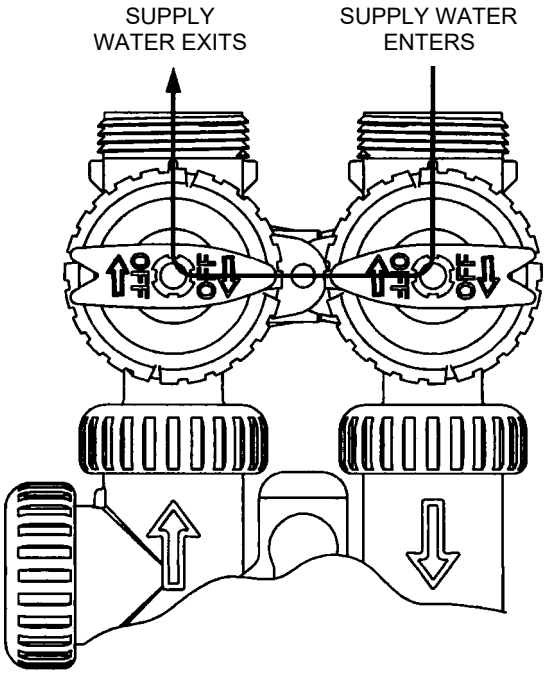


Figure 3

DIAGNOSTIC MODE

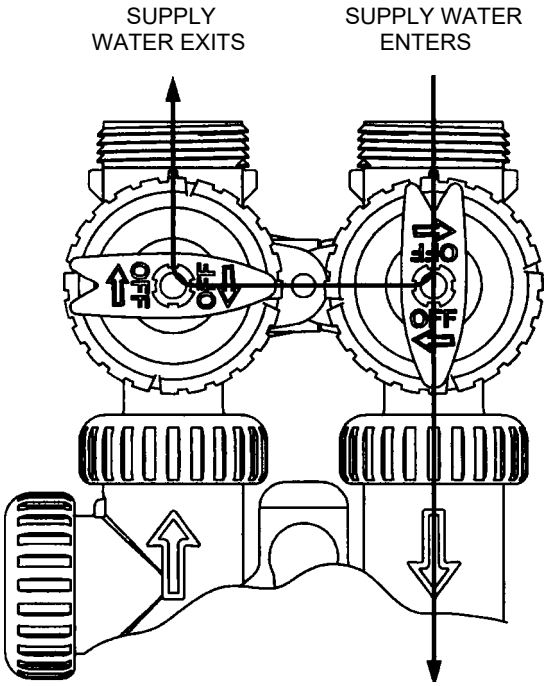
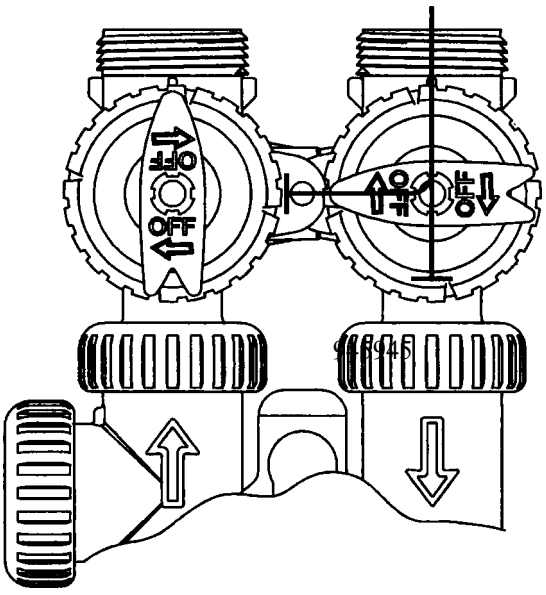


Figure 4

SHUTOFF MODE

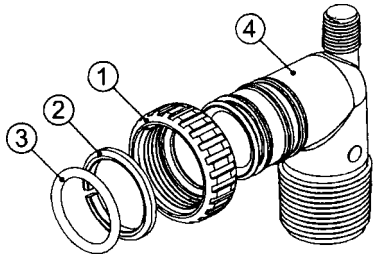
NO WATER SUPPLY WATER IS SHUT OFF
EXITS FROM THE HOUSE AND THE VALVE



WS1 INSTALLATION FITTING ASSEMBLIES

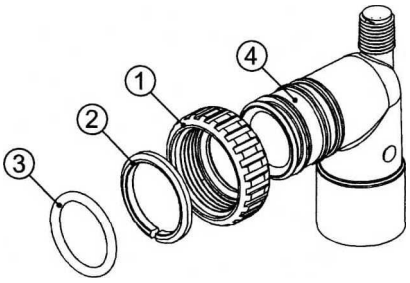
Order No: V3007
Description: WS1 Fitting 1" Male NPT Elbow Assembly

Drawing No.	Order No.	Description	Quantity
1	V3151	WSl NUT I" QUICK CONNECT	2
2	V3150	WS1 SPLIT RING	2
3	V3105	O-RING 215	2
4	V3149	WSl FITTING 1 MALE NPT ELBOW	2



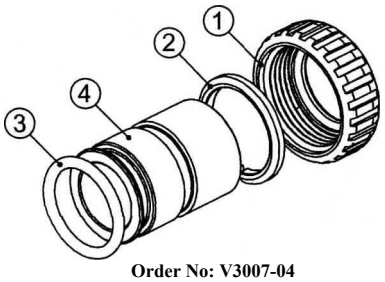
Order No: V3007-01
Description: WS1 Fitting 3/4" & 1" PVC Solvent 90° ASY

Drawing No.	Order No.	Description	Quantity
1	V3151	WSl NUT 1" QUICK CONNECT	2
2	V3150	WSl SPLIT RING	2
3	V3105	O-RING 215	2
4	V3189	WSl FITTING 'A&l PVC SOLVENT 90	2



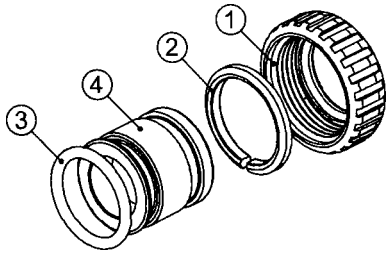
Order No: V3007-02LF
Description: WS1 Fitting 1" Brass Sweat Assembly LF

Drawing No.	Order No.	Description	Quantity
1	V3151	WSl NUT 1" QUICK CONNECT	2
2	V3150	WSl SPLIT RING	2
3	V3105	O-RING 215	2
4	V3188-LF	WSl FITTING 1 BRASS SWEATASSEMBLYLF	2
Do not install in California.			



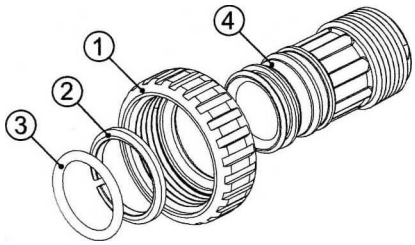
Order No: V3007-03LF
Description: WS1 Fitting 3/4" Brass Sweat Assembly LF

Drawing No.	Order No.	Description	Quantity
1	V3151	WSl NUT 1" QUICK CONNECT	2
2	V3150	WSl SPLIT RING	2
3	V3105	O-RING 215	2
4	V3188-0 ILF	WS1 FITTING % BRASS SWEAT LF	2
Do not install in California.			



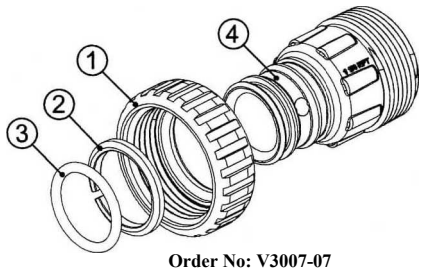
Order No: V3007-04
Description: WS1 Fitting 1" Plastic Male NPT Assembly

Drawing No.	Order No.	Description	Quantity
1	V3151	WSl NUT 1" QUICK CONNECT	2
2	V3150	WSl SPLIT RING	2
3	V3105	O-RING 215	2
4	V3164	WSl FITTING 1" PLASTIC MALE NPT	2



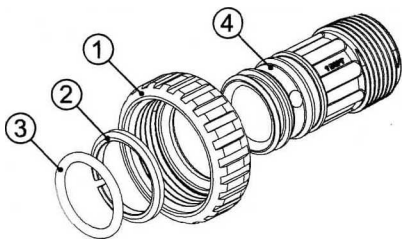
Order No: V3007-05
Description: WS1 Fitting 1-1/4" Plastic Male NPT Assembly

Drawing No.	Order No.	Description	Quantity
1	V3151	WSl NUT 1" QUICK CONNECT	2
2	V3150	WSl SPLIT RING	2
3	V3105	O-RING 215	2
4	V3317	WSl FITTING l-'/d" PLASTIC MALE NPT	2



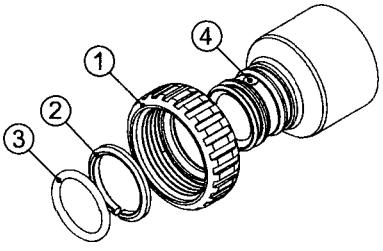
Order No: V3007-06
Description: WS1 Fitting 1" Plastic Male BSPT Assembly

Drawing No.	Order No.	Description	Quantity
1	V3151	WSl NUT 1" QUICK CONNECT	2
2	V3150	WSl SPLIT RING	2
3	V3105	O-RING 215	2
4	V3316	WSl FITTING 1" PLASTIC MALE BSPT	2



Order No: V3007-07
Description: WS1 Fitting 1-1/4" & 1-1/2" PVC Solvent Assembly

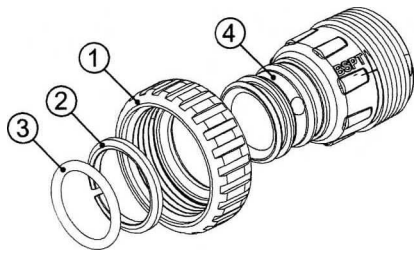
Drawing No.	Order No.	Description	Quantity
1	V3151	WSl NUT 1" QUICK CONNECT	2
2	V3150	WSl SPLIT RING	2
3	V3105	O-RING 215	2
4	V3352	WSl FITTING 1-1/4"&1-1/2"PVC SOLVENT	2



WS1 INSTALLATION FITTING ASSEMBLIES

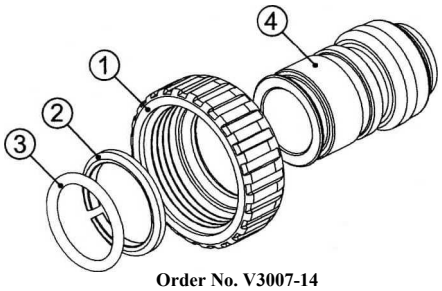
Order No. V3007-08
Description: WS1 Fitting 1-1/4” Plastic Male BSPT Assembly

Drawing No.	Order No.	Description	Quantity
1	V3151	WS1 NUT 1” QUICK CONNECT	2
2	V3150	WSl SPLIT RING	2
3	V3105	O-R1NG2I5	2
4	V3361	WSl FITTING 1-1/4" PLASTIC MALE BSPT	2



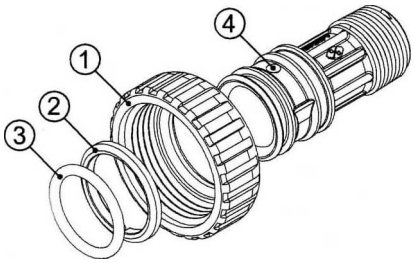
Order No. V3007-12LF
Description: WS1 Fitting 3/4” Brass SharkBite Assembly LF

Drawing No.	Order No.	Description	Quantity
1	V3151	WSl NUT 1”QUICK CONNECT	2
2	V3150	WSl SPLIT RING	2
3	V3105	O-RING 215	2
4	V3628-LF	WSl FTG 3/4 BRASS SHARKBITE LF	2



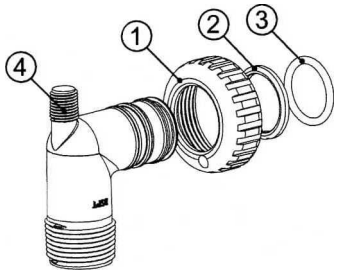
Order No. V3007-14
Description: WS1 Fitting 3/4” Plastic Male BSPT Assembly

Drawing No.	Order No.	Description	Quantity
1	V3151	WSl NUT 1” QUICK CONNECT	2
2	V3150	WSl SPLIT RING	2
3	V3105	O-RING 215	2
4	V3594	WSl FITTING 3/4” PLASTIC MALE BSPT	2



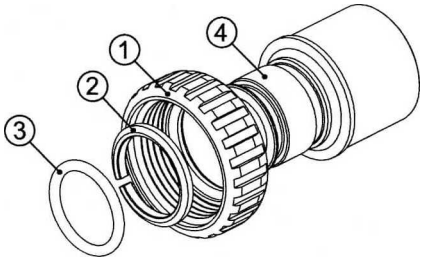
Order No. V3007-16
Description: WS1 Fitting 1” Male BSPT Elbow Assembly

Drawing No.	Order No.	Description	Quantity
1	V3151	WSl NUT 1” QUICK CONNECT	2
2	V3150	WSl SPLIT RING	2
3	V3105	O-RING 215	2
4	V3797	WSl FTG 1” MALE BSPT ELBOW	2



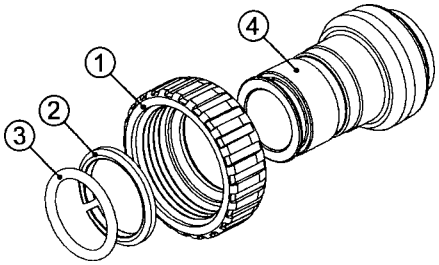
Order No: V3007-09LF
Description: WS1 Fitting 1-1/4” & 1-1/2” Brass Sweat Assembly LF

Drawing No.	Order No.	Description	Quantity
1	V3151	WS1 NUT 1 ” QUICK CONNECT	2
2	V3150	WSl SPLIT RING	2
3	V3105	O-RING 215	2
4	V3375-LF	WSl FITTING 1-1/4" & 1-1/2” BRASS SWEAT LF	2



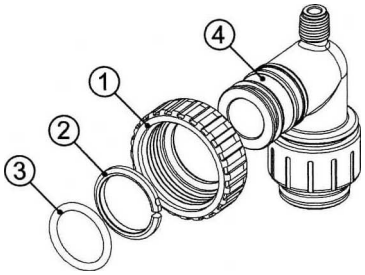
Order No. V3007-13LF
Description: WS1 Fitting 1” Brass SharkBite Assembly LF

Drawing No.	Order No.	Description	Quantity
1	V3151	WSl NUT 1”QUICK CONNECT	2
2	V3150	WSl SPLIT RING	2
3	V31O5	O-RING 215	2
4	V3629-LF	WSl FTG 1” BRASS SHARKBITE LF	2



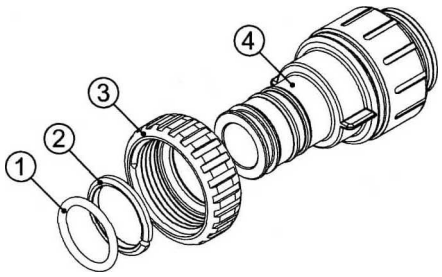
Order No. V3007-15
Description: WS1 FTG 3/4 JG QC 90 ASY

Drawing No.	Order No.	Description	Quantity
1	V3151	WSl NUT 1 QC	2
2	V3150	WSl SPLIT RING	2
3	V3105	O-RING 215	2
4	V3790	WS 1 ELBOW 3/4 QC W/STEM	2



Order No. V3007-17
Description: WS1 FTG 1” JG QC ASY

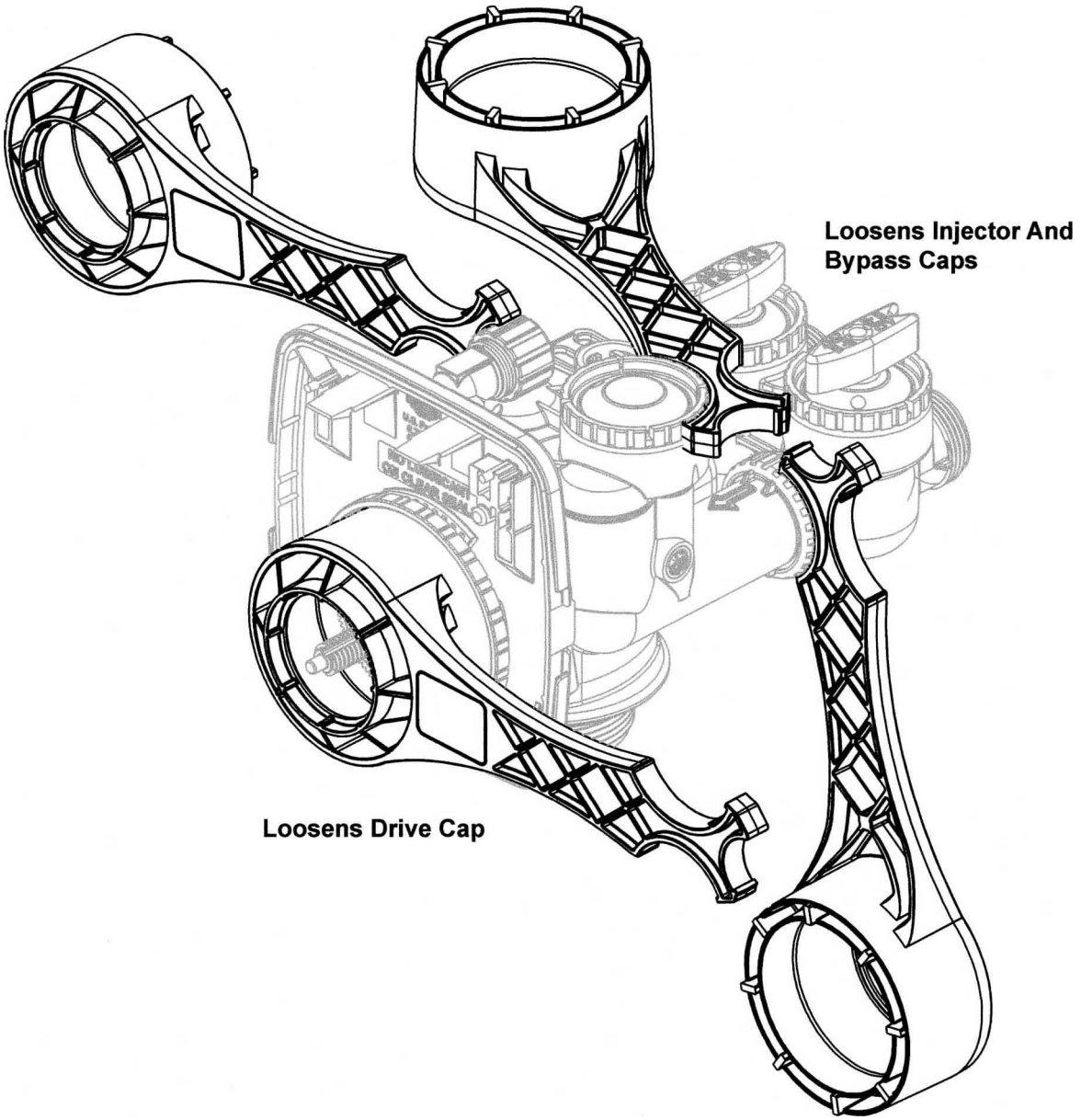
Drawing No.	Order No.	Description	Quantity
1	V3105	O-RING 215	2
2	V3150	WSl SPLIT RING	2
3	V3151	WSl NUT 1 QC	2
4	V4045	WSl FTG 1 INCH QC	2



WS1 Service Spanner Wrench

(Order No. V3193-02)

Although no tools are necessary to assemble or disassemble the valve, the WS1 wrench (shown in various positions on the valve) may be purchased to aid in assembly or disassembly.



Problem	Possible Cause	Solution
1. No Display on PC Board	a. No power at electric outlet	a. Repair outlet or use working outlet
	b. Control valve Power Adapter not plugged into outlet or power cord end not connected to PC board connection	b. Plug Power Adapter into outlet or connect power cord end to PC Board connection
	c. Improper power supply	c. Verify proper voltage is being delivered to PC Board
	d. Defective Power Adapter	d. Replace Power Adapter
	e. Defective PC Board	e. Replace PC Board
2. PC Board does not display correct time of day	a. Power Adapter plugged into electric outlet controlled by light switch	a. Use uninterrupted outlet
	b. Tripped breaker switch and/or tripped GFI	b. Reset breaker switch and/ or GFI switch
	c. Power outage	c. Reset time of day. If PC Board has battery back up present the battery may be depleted. See Front Cover and Drive Assembly drawing for instructions.
	d. Defective PC Board	d. Replace PC Board
4. Control valve regenerates at wrong time of day	a. Power outage	a. Reset time of day. If PC Board has battery back up present the battery may be depleted. See Front Cover and Drive Assembly drawing for instructions.
	b. Time of day not set correctly	b. Reset to correct time of day
	c. Time of regeneration set incorrectly	c. Reset regeneration time
5. Time of day flashes on and off	a. Power outage	a. Reset time of day. If PC Board has battery back up present the battery may be depleted. See Front Cover and Drive Assembly drawing for instructions.
6. Control valve does not regenerate automatically when the correct button(s) is depressed and held. For TC valves the buttons are A&V. For all other valves the button is REGEN	a. Broken drive gear or drive cap assembly	a. Replace drive gear or drive cap assembly
	b. Broken Piston Rod	b. Replace piston rod
	c. Defective PC Board	c. Defective PC Board
7. Control valve does not regenerate automatically but does when the correct button(s) is depressed and held. For TC valves the buttons are A&V. For all other valves the button is REGEN	a. Bypass valve in bypass position	a. Turn bypass handles to place bypass in service position
	g. Defective PC Board	g. Replace PC Board

Problem	Possible Cause	Solution
8. Hard or untreated water is being delivered	a. Bypass valve is open or faulty	a. Fully close bypass valve or replace
	b. Media is exhausted due to high water usage	b. Check program settings or diagnostics for abnormal water usage
	d. Water quality fluctuation	d. Test water and adjust program values accordingly
	e. No regenerant or low level of regenerant in regenerant tank	e. Add proper regenerant to tank
	f. Control fails to draw in regenerant	f. Refer to Trouble Shooting Guide number 12
	g. Insufficient regenerant level in regenerant tank	g. Check refill setting in programming. Check refill flow control for restrictions or debris and clean or replace
	h. Damaged seal/stack assembly	h. Replace seal/stack assembly
	i. Control valve body type and piston type mix matched	i. Verify proper control valve body type and piston type match
	j. Fouled media bed	j. Replace media bed
9. Control valve uses too much regenerant	a. Improper refill setting	a. Check refill setting
	b. Improper program settings	b. Check program setting to make sure they are specific to the water quality and application needs
	c. Control valve regenerates frequently	c. Check for leaking fixtures that may be exhausting capacity or system is undersized
10. Residual regenerant being delivered to service	a. Low water pressure	a. Check incoming water pressure - water pressure must remain at minimum of 25 psi
	b. Incorrect injector size	b. Replace injector with correct size for the application
	c. Restricted drain line	c. Check drain line for restrictions or debris and clean
11. Excessive water in regenerant tank	a. Improper program settings	a. Check refill setting
	b. Plugged injector	b. Remove injector and clean or replace
	c. Drive cap assembly not tightened in properly	c. Re-tighten the drive cap assembly
	d. Damaged seal/ stack assembly	d. Replace seal/ stack
	e. Restricted or kinked drain line	e. Check drain line for restrictions or debris and or un-kink drain line
	f. Plugged backwash flow controller	f. Remove backwash flow controller and clean or replace
	g. Missing refill flow controller	g. Replace refill flow controller
12. Control valve fails to draw in regenerant	a. Injector is plugged	a. Remove injector and clean or replace
	b. Faulty regenerant piston	b. Replace regenerant piston
	c. Regenerant line connection leak	c. Inspect regenerant line for air leak
	d. Drain line restriction or debris cause excess back pressure	d. Inspect drain line and clean to correct restriction
	e. Drain line too long or too high	e. Shorten length and or height
	f. Low water pressure	f. Check incoming water pressure - water pressure must remain at minimum of 25 psi

Problem	Possible Cause	Solution
13. Water running to drain	a. Power outage during regeneration	a. Upon power being restored control will finish the remaining regeneration time. Reset time of day.
	b. Damaged seal/ stack assembly	b. Replace seal/ stack assembly
	c. Piston assembly failure	c. Replace piston assembly
	d. Drive cap assembly not tightened in properly	d. Re-tighten the drive cap assembly
14. El, Err - 1001, Err- 101 = Control unable to sense motor movement	a. Motor not inserted full to engage pinion, motor wires broken or disconnected	a. Disconnect power, make sure motor is fully engaged, check for broken wires, make sure two pin connector on motor is connected to the two pin connection on the PC Board labeled MOTOR. Press NEXT and REGEN buttons for 3 seconds to resynchronize software with piston position or disconnect power supply from PC Board for 5 seconds and then reconnect.
	b. PC Board not properly snapped into drive bracket	b. Properly snap PC Board into drive bracket and then Press NEXT and REGEN buttons for 3 seconds to resynchronize software with piston position or disconnect power supply from PC Board for 5 seconds and then reconnect.
	c. Missing reduction gears	c. Replace missing gears
15. E2, Err - 1002, Err - 102 = Control valve motor ran too short and was unable to find the next cycle position and stalled	a. Foreign material is lodged in control valve	a. Open up control valve and pull out piston assembly and seal/ stack assembly for inspection. Press NEXT and REGEN buttons for 3 seconds to resynchronize software with piston position or disconnect power supply from PC Board for 5 seconds and then reconnect.
	b. Mechanical binding	b. Check piston and seal/ stack assembly, check reduction gears, check drive bracket and main drive gear interface. Press NEXT and REGEN buttons for 3 seconds to resynchronize software with piston position or disconnect power supply from PC Board for 5 seconds and then reconnect.
	c. Main drive gear too tight	c. Loosen main drive gear. Press NEXT and REGEN buttons for 3 seconds to resynchronize software with piston position or disconnect power supply from PC Board for 5 seconds and then reconnect.
	d. Improper voltage being delivered to PC Board	d. Verify that proper voltage is being supplied. Press NEXT and REGEN buttons for 3 seconds to resynchronize software with piston position or disconnect power supply from PC Board for 5 seconds and then reconnect.

Problem	Possible Cause	Solution
16. E3, Err- 1003, Err- 103 = Control valve motor ran too long and was unable to find the next cycle position	a. Motor failure during a regeneration	a. Check motor connections then Press NEXT and REGEN buttons for 3 seconds to resynchronize software with piston position or disconnect power supply from PC Board for 5 seconds and then reconnect.
	b. Foreign matter built up on piston and stack assemblies creating friction and drag enough to time out motor	b. Replace piston and stack assemblies. Press NEXT and REGEN buttons for 3 seconds to resynchronize software with piston position or disconnect power supply from PC Board for 5 seconds and then reconnect.
	c. Drive bracket not snapped in properly and out enough that reduction gears and drive gear do not interface	c. Snap drive bracket in properly then Press NEXT and REGEN buttons for 3 seconds to resynchronize software with piston position or disconnect power supply from PC Board for 5 seconds and then reconnect.
17. Err - 1004, Err — 104 = Control valve motor ran too long and timed out trying to reach home position	a. Drive bracket not snapped in properly and out enough that reduction gears and drive gear do not interface	a. Snap drive bracket in properly then Press NEXT and REGEN buttons for 3 seconds to resynchronize software with piston position or disconnect power supply from PC Board for 5 seconds and then reconnect.
18. Err-1006, Err-106, Err - 116 = MAV/ SEPS/ NHBP/ AUX MAV valve motor ran too long and unable to find the proper park position Motorized Alternating Valve = MAV Separate Source = SEPS No Hard Water Bypass = NHBP Auxiliary MAV = AUX MAV	a. Control valve programmed for ALT A or b, nHbP, SEPS, or AUX MAV with out having a MAV or NHBP valve attached to operate that function	a. Press NEXT and REGEN buttons for 3 seconds to resynchronize software with piston position or disconnect power supply from PC Board for 5 seconds and then reconnect. Then re-program valve to proper setting
	b. MAV/ NHBP motor wire not connected to PC Board	b. Connect MAV/ NHBP motor to PC Board two pin connection labeled DRIVE. Press NEXT and REGEN buttons for 3 seconds to resynchronize software with piston position or disconnect power supply from PC Board for 5 seconds and then reconnect.
	c. MAV/ NHBP motor not fully engaged with reduction gears	c. Properly insert motor into casing, do not force into casing Press NEXT and REGEN buttons for 3 seconds to resynchronize software with piston position or disconnect power supply from PC Board for 5 seconds and then reconnect.
	d. Foreign matter built up on piston and stack assemblies creating friction and drag enough to time out motor	d. Replace piston and stack assemblies. Press NEXT and REGEN buttons for 3 seconds to resynchronize software with piston position or disconnect power supply from PC Board for 5 seconds and then reconnect.
19. Err - 1007, Err-107, Err - 117 = MAV/ SEPS/ NHBP/ AUX MAV valve motor ran too short (stalled) while looking for proper park position Motorized Alternating Valve = MAV Separate Source = SEPS No Hard Water Bypass = NHBP Auxiliary MAV = AUX MAV	a. Foreign material is lodged in MAV/ NHBP valve	a. Open up MAV/ NHBP valve and check piston and seal/ stack assembly for foreign material. Press NEXT and REGEN buttons for 3 seconds to resynchronize software with piston position or disconnect power supply from PC Board for 5 seconds and then reconnect.
	b. Mechanical binding	b. Check piston and seal/ stack assembly, check reduction gears, drive gear interface, and check MAV/ NHBP black drive pinion on motor for being jammed into motor body. Press NEXT and REGEN buttons for 3 seconds to resynchronize software with piston position or disconnect power supply from PC Board for 5 seconds and then reconnect.

CLACK CORPORATION
SOFTENER AND FILTER CONTROLS
LIMITED WARRANTY

Clack Corporation ("Clack") warrants to OEM that its Softener and Filter Control Valves will be free from defects in material and workmanship under normal use and service for a period of five years from the date of shipment of such Valves from Clack's plant in Windsor, Wisconsin when installed and operated within recommended parameters. No warranty is made with respect to defects not reported to Clack within the warranty period and/or defects or damages due to neglect, misuse, alterations, accident, misapplication, physical damage, or damage caused by fire, acts of God, freezing or hot water or similar causes. For outdoor installations where the Softener and Filter Control Valves are not under cover, the weather cover must be utilized for the warranty to be valid.

Clack's obligation to OEM under this Limited Warranty shall be limited, at its option, to replacement or repair of any Softener and Filter Control valve covered by this Limited Warranty. Prior to returning a Control Valve, OEM must obtain a return goods authorization number from Clack and return the Control Valve freight prepaid. If any Control Valve is covered under this Limited Warranty, Clack shall return the Control Valve repaired, or its replacement, prepaid to the original point of shipment.

CLACK GIVES THIS WARRANTY TO OEM IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND HEREBY EXPRESSLY DISCLAIMS ALL OTHER SUCH WARRANTIES. CLACK'S LIABILITY HERE UNDER SHALL NOT EXCEED THE COST OF THE PRODUCT. UNDER NO CIRCUMSTANCES WILL CLACK BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES OR FOR ANY OTHER LOSS, DAMAGE OR EXPENSE OF ANY KIND, INCLUDING LOSS OF PROFITS, ARISING IN CONNECTION WITH THE INSTALLATION OR USE OR INABILITY TO USE THE CONTROL VALVES OR ANY WATER TREATMENT SYSTEM THE CONTROL VALVE IS INCORPORATED INTO.