Service Manual WATER SOFTENER



iQ soft

Models: IQ-CS-

541-DC

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WARNING & SAFETY INSTRUCTION

- Before you begin service of the appliance, we advise you to read and to carefully follow the instructions contained in this manual. The actual system may differ from the pictures/illustrations/descriptions in this Service Manual.
- Failure to follow the instructions could cause personal injury or damage to the appliance or property. Only when service is done correctly, the appliance will offer you many years of trouble-free operation.
- Keep this Service Manual in a safe place and ensure that new technicians are familiar with the content.
- The appliance is designed and manufactured in accordance with current safety requirements and regulations. Incorrect service can result in unforeseen danger for the user, for which the manufacturer cannot be held responsible. Therefore, service should only be performed by a competent technician, familiar and trained for this product.
- In respect of the environment, any parts should be disposed of in accordance with Waste Electrical and Electronic Equipment requirements. Refer to national/local laws and codes for correct recycling of the appliance.

PRECAUTIONS

Make sure to adhere to the following precautions before and during service of the appliance:

- Before disassembling any parts from the appliance, make sure to disconnect the power supply to prevent any damage caused by short circuit.
- Before disassembling any hydraulic parts from the appliance, make sure to:
 - > put the appliance hydraulically in bypass,
 - release the pressure from the appliance.
- The appliance contains small parts that may fall out when disassembling the appliance.
- Screws:
 - Whenever reinstalling a screw into a plastic material, make sure not to damage the original screw thread; before tightening the screw, turn it counter clockwise slowly, until you feel the screw dropping in place in the original thread.
 - Whenever a part is fixed by means of multiple screws, always tighten the screws evenly in a cross pattern.
- O-rings & gaskets:
 - Never remove an O-ring or gasket using a sharp tool, to prevent damage to the O-ring or gasket.
 - When reusing an O-ring or gasket, gently clean it with a clean rag or piece of tissue and make sure it is not damaged before reinstalling.
 - Before installing an O-ring or gasket, clean the groove or seat of the O-ring or gasket and the corresponding sealing surface.
 - > Before installing an O-ring or gasket, lubricate it by means of:
 - for dynamic seals on moving parts: food grade silicone grease, to facilitate the assembly/insertion of the part and to reduce the friction of the movement during operation;
 - for static friction-free seals on non-moving parts: a bit of water, to ensure a better water tight seal.

To perform service, you will need the following **tools**:

- Tongue-and-groove pliers
- Pointed pliers
- Torx screwdriver
- Solenoid tool
- Small hand shovel
- Clean rag or tissue

Resin cleaner:

• Brush

•

To perform service, you will need the following parts:

- PNDescription74115Resin cleaner, 1 Ltr bottle74114Resin cleaner, 5 Ltr jug
- Spare parts:

(We strongly advise to have certain spare parts available on-hand for preventive replacement and troubleshooting, to be able to solve possible failures during intervention; see Recommended Spare Parts section "Exploded view" in our Technical manual.)

INSPECTION & MAINTENANCE CHECKLIST

We red	commend to perform service as per the following schedule:				
		1 Year	2 Years	4 Years	
1.	INSPECTION (for more details see Inspection & Preparation - Detailed description)				
1.1.	Check the Wi-Fi connection	~			
1.2.	Measure water hardness before/after appliance	\checkmark			
1.3.	Record Diagnostics parameters of electronic control panel (*) <u>https://youtu.be/-E4BX4YGmul</u>	~			
1.4.	Check Configuration Parameters of electronic control panel (*) <u>https://youtu.be/ydLkkbblgOM</u>				
1.5.	Check Basic Settings of electronic control panel (*) <u>https://youtu.be/ReoDx0j_P8U</u>	~			
1.6.	Check appliance and surrounding area for leaks	✓			
2.	PREPARATION (for more details see Inspection & Preparatio	n – Detaile	ed descrip	tion)	
2.1.	Disinfect appliance	~			
2.2.	Depressurize appliance	~			
3.	MAINTENANCE (for more details see available movies)				
3.1.	Refill solenoid: (*) <u>https://youtu.be/WbHJAvM5aV0</u>	-	-		
	3.1.1. Membrane & plunger assembly	clean	replace		
3.2.	Back cap: (*) <u>https://youtu.be/txw1ENR7lqM</u>				
	3.2.1. Brine draw restrictor	clean			
	3.2.2. Brine draw restrictor check ball	clean			
	3.2.3. Brine refill flow control	clean			
	3.2.4. Gasket			replace	
	3.2.5. Check disc & spring			replace	
3.3.	Injector: (*) <u>https://youtu.be/0_QQVbSJ2Jc</u>				
	3.3.1. Disc	clean			
	3.3.2. Gasket	replace			
	3.3.3. Filter	clean			
3.4.	Valve body: (*) <u>https://youtu.be/KvonyWwLfeM</u>			-	
	3.4.1. Body stem kit		clean	replace	
	3.4.2. Body stem seal		clean	replace	
	3.4.3. O-ring, seat insert small & large		clean	replace	

MAINTENANCE, COMMISSIONING & SERVICE CHECKLIST

		1 Year	2 Years	4 Years	
3.5.	Flow meter: (*) <u>https://youtu.be/fOpDF-i5Syl</u>				
	3.5.1. Impeller	clean			
3.6.	Drain solenoid: (*) <u>https://youtu.be/m80Y7zYuVrk</u>				
	3.6.1. Filter	clean			
	3.6.2. Diaphragm & plunger assembly	clean	replace		
3.7.	Brine valve:				
	3.7.1. Brine valve assembly	clean			
	3.7.2. Brine line filter	clean			
3.8.	Brine Cabinet:				
	3.8.1. Cabinet		clean		
4.	COMMISSIONING (for more details see Commissioning & Se	rvice - Det	ailed desc	ription)	
4.1.	Pressurize the appliance	\checkmark			
4.2.	Check appliance for leaks	✓			
4.3.	Check correct execution of regeneration cycles	✓			
4.4.	Measure water hardness after appliance	✓			
5.	SERVICE (for more details see Commissioning & Service - Detailed description)				
5.1.	Add salt if necessary and reset salt alarm	✓			
5.2.	Clean appliance and surrounding area	✓			
5.3.	Provide feedback to customer about performed works and replaced parts	~			
5.4.	Provide feedback to customer about basic operation and maintenance of appliance	✓			
5.5.	Initiate delayed regeneration	\checkmark			

If additional information is needed, see the above-mentioned section.

^(*)See our video's of the disassembly & assembly of the complete valve to help you during maintenance:

Disassembly: <u>https://youtu.be/JXHcLfThaJg</u> Assembly: <u>https://youtu.be/YQlQY4CsCU0</u>

INSPECTION - DETAILED DESCRIPTION

1. INSPECTION

- 1.1 Check the Wi-Fi connection, if need configure it again: https://youtu.be/_P-qlbJ7ekk
- 1.2 Measure water hardness before/after appliance:
 - Open a cold water faucet before/after the appliance and let the water run for a few minutes.
 - Take a water sample and measure the water hardness; record the values on the Installation Record in the Owner's Manual.
 - Close the cold water faucet.
- 1.3 Record Diagnostics parameters of electronic control panel:
 - Press the *scroll* button and hold it for 6 sec until the display shows:



Within 10 sec, press the *down* S button; the display will show:



- Press the *scroll* → button again to advance to the next parameter.
- Record the following parameters:

Regen X days ago	Capacity
In Srvc	TotAgeCorr
# of Regens	MP Resets
TotVol	Memory Reset
LastSet	Fill
AvgVol	Reserve
LastRgn@	***** A01 B01

- 1.4 Check Configuration Parameters of electronic control panel:



Within 10 sec, press the *up* letton; the display will show:



- If necessary, press the *up* or *down* button to change the selected setting.

- 1.5 Check Basic Settings of electronic control panel:
 - Press the scroll button and hold it for 2 sec until the display shows:

Language:English

- If necessary, press the *up* or *down* button to change the selected setting.
- Press the *scroll* 😧 button again to advance to the next setting.
- 1.6 Check appliance and surrounding area for leaks:
 - Valve body
 - Bypass
 - Inlet/outlet connections
 - Connection between valve body and pressure tank
 - Brine cabinet
 - Drain line from control valve(*): there shouldn't be any water flow
 - Brine cabinet overflow: there shouldn't be any water flow

(* unless appliance is in regeneration).

PREPARATION - DETAILED DESCRIPTION

2. PREPARATION

- 2.1 Remove salt lid and main cover from brine cabinet.
- 2.2 Put bypass in maintenance position:
 - CLOSE the outlet valve from the appliance.
 - Make sure the inlet valve to the appliance remains OPEN.
- 2.3 Desinfect resin bed:
 - Press the scroll button repeatedly until the display shows:

Regen	in	10	sec

• If the control panel is left in this position, the countdown timer will countdown to 0 sec and *start an immediate regeneration*; the display will show:

BRINE FILL

- Press the *scroll* \bigcirc button repeatedly to advance the control valve to the brine draw cycle.
- Remove the polytube from the Quick-fit elbow on the brine valve assembly and insert it in the resin cleaner bottle/jug.
- Let the control valve draw the correct amount of resin cleaner (see label of resin cleaner) into the resin bed.
- Remove the polytube from the resin cleaner bottle/jug and insert it back in the Quick-fit elbow on the brine valve assembly.
- Press the *scroll* 🕑 button repeatedly to advance the control valve back to the service cycle.

2.4 Put bypass in bypass position:

- CLOSE the inlet valve to the appliance.
- Make sure the outlet valve from the appliance remains CLOSED.
- 2.5 Depressurize the softener:
 - Press the scroll button repeatedly until the display shows:



 If the control panel is left in this position, the countdown timer will countdown to 0 sec and *start* an *immediate regeneration*; the display will show:

BRINE FILL

- Water will run to the brine cabinet for a couple seconds, until the appliance is depressurized.
- Press the *scroll* 🕑 button repeatedly to advance the control valve back to the service cycle.

- 2.6 Disconnect the transformer.
 - Loosen the TwistLock clamp.
 - Unplug the transformers output lead from the socket on the appliances power cord.
- 2.7 Allow the resin cleaner to soak the resin bed for at least 20 min, while you continue with the maintenance.

After the **Preparation section**, we advise to perform the recommended maintenance as mentioned below. If there are any kind of defects during this maintenance, make sure to replace these parts and test the performance of the system afterwards.

MAINTENANCE – DETAILED DESCRIPTION

3. MAINTENANCE: CONTROL VALVE

- 3.1 Refill & backwash solenoid
- 3.1.1 Membrane & plunger assembly
- 3.2 Back cap
- 3.2.1 Brine draw restrictor,
- 3.2.2 Brine draw restrictor check ball,
- 3.2.3 Brine refill flow controller,
- 3.2.4 Gasket,
- 3.2.5 Check disc & spring:

Note: Be careful for the check ball

- 3.3 Injector
- 3.3.1 Disc,
- 3.3.2 Gasket,
- 3.3.3 Filter screen

Note: Verify that the injector is not damaged otherwise replace it. PN: 428/5.

- 3.4 Valve body
- 3.4.1 Body stem kit,
- 3.4.2 Body stem seal,
- 3.4.3 O-ring, seat insert small & large
- 3.5 Flow meter
- 3.5.1 Impeller wheel

<u>Note</u>: Make sure you place it deep enough, so the Hub, impeller is not sticking out of the elbow outlet. <u>Warning</u>: Don't use a hammer to push it in.

- 3.6 Drain solenoid
- 3.6.1 Filter screen,
- 3.6.2 Membrane & plunger assembly

Reassemble the valve

• Check the steps **3.1** until **3.6** above to be sure the valve is reassembled correctly.

Check your work area, so no parts are missing in the valve.

3. MAINTENANCE: BRINE VALVE

- 3.7 Brine valve
- 3.7.1 Brine valve assembly:
 - Remove the cover of the cabinet softener (residential)
 - Remove the brine well cap, top
 - Remove the polytube from of the Quick-fit elbow 3/8"

3.7.2 Brine line filter:

- Remove the brine line filter from the brine line.
- Clean the brine line filter.
- Remove the brine valve assembly from the brine well and put it aside.
- Clean all the removed parts with some hot water, so all impurities are removed.
- Make sure the air check, ball inside is properly closing and no dirt is left on the gasket inside.
- Install the brine valve assembly back in the brine well
- Reconnect the polytube
- Put back the brine well cap, top on the brine well

3. MAINTENANCE: BRINE CABINET

3.8 Brine cabinet

Note: This can be done by the end-user.

- 3.8.1 Cabinet:
 - Remove any remaining salt from the brine cabinet and save it in a clean container, such as a plastic bucket.

<u>Note</u>: If the salt at the bottom of the tank is visibly dirty we

recommend removing it and throw it away.

- Remove the remaining salt and impurities from the bottom of the cabinet.
- Wash out the brine cabinet with water and soap <u>Note</u>: Make sure you rinse long enough, so the soap will not enter your softener.
- Put the brine cabinet back on his original location.
- Fill the brine cabinet completely, not higher than the brine well cap, top
- Put the cover back on the cabinet

COMMISSIONING & SERVICE – DETAILED DESCRIPTION

4. COMMISSIONING

- 4.1 Pressurize the appliance:
 - Put the bypass slowly back in to the service position.
 - Reconnect the transformer.
 - Plug the transformers output lead into the socket. on the appliances power cord.
 - Secure it by means of the TwistLock clamp.
- 4.2 Check appliance for leaks, when under pressure, see inspection section
- 4.3 Check correct execution of regeneration cycles:
 - Manually start a regeneration by pressing the *scroll* button repeatedly until the display start a countdown; wait until the immediate regeneration is started.
 - Check if the refill cycle, first cycle, fill the brine tank <u>Note:</u> Check when the refill is finished, if the water stops flowing through the polytube.
 - Press the scroll button twice to access the brine draw cycle, cycle 3 and check if the water is dropping in the brine cabinet
 - Press the *scroll* 😧 button until the display is back in the service position
- 4.4 Measure water hardness after appliance, after performing maintenance:
 - Open a faucet nearby.
 - Run the cold water for a few minutes.
 - Take a water sample and measure the hardness:
 - **OK**, go to the next checkpoint.
 - **Not OK**, go to the troubleshooting section.

5. SERVICE

- 5.1 Add salt if necessary and reset salt alarm:
 - Refill the brine tank if necessary, make sure at least 1/3 of the brine tank is full
 <u>Note:</u> Without proper salt levels, the water softener may not operate properly.
 <u>Warning:</u> Don't forget to reset the salt alarm
- 5.2 Clean appliance and work area
- 5.3 Inform the customer about the parts that were cleaned and/or replaced with some explanation why this was needed.
- 5.4 Give some explanation about their system if needed:
 - Wi-Fi, salt alarm, holiday mode, ...
 - ask if they need some additional information about their system.
- 5.5 Initiate a delayed regeneration:
 - Press the scroll button until the display show "regen @ --:--" and leave it in this position to initiate a delayed regeneration

TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION		
Hard (untreated) water	Open or defective bypass	Close or replace bypass		
to service	Appliance in regeneration	Wait until regeneration finishes or manually		
		advance regeneration to end		
	No salt in brine cabinet	Add salt and initiate regeneration manually		
	Salt bridging	Break salt bridge(s) and initiate regeneration		
		manually		
	Change in raw water hardness	Measure the hardness of the incoming untreated		
		water and adjust programming accordingly		
	Appliance fails to regenerate	Refer to problem "Appliance fails to regenerate"		
	Improper brine draw	Refer to problem "Improper brine draw"		
	Decreasing exchange capacity of resin	Clean or replace resin bed		
	Loss of resin	Refer to problem "Loss of resin"		
	Leak at riser tube	Verify that riser tube is seated correctly and is not		
		cracked		
Residual hardness in	Bypass not completely closed	Close bypass		
treated water	Appliance is overrunning its softening capacity	Measure the hardness of the incoming untreated		
		water and adjust programming accordingly		
		Verify operation of flow meter		
Appliance fails to	Faulty electrical supply	Verify electrical service (fuse, transformer,)		
regenerate	Defective flow meter	Verify operation of flow meter		
	Defective PCB	Replace PCB		
	Defective drain solenoid	Replace drain solenoid		
	Control valve does not switch to regeneration	Check operating pressure; must be higher than 1,4		
		bar		
Appliance uses too	Excessive water in brine cabinet	Refer to problem "Excessive water in brine cabinet"		
System regenerates too frequently		Measure the hardness of the incoming untreated		
Fuencius weter in		Refer to problem "Impresses bring drow"		
Excessive water in	Improper brine draw	Verify setting of rofill gyala		
	Missing rofill flow control	Verify setting of refill flow, control is installed and		
		properly sized		
	Leak from control value to brine cabinet	Clean or replace plunger and solenoid diaphragm of		
		refill solenoid		
		Check seal between brine draw check ball and brine		
		draw restrictor		
Salt taste in treated	Improper setting of brine draw/slow rinse cycle	Verify setting of brine draw/slow rinse cycle		
water	Excessive water in brine tank	Refer to problem "Excessive water in brine tank"		
	Improper brine draw	Refer to problem "Improper brine draw"		
Loss of water pressure	Mineral or iron build-up in resin tank	Clean resin bed and control valve; increase		
		regeneration frequency		
	Plugged lower and/or upper distributor	Verify that distributors are free of debris		
	Crushed lower and/or upper distributor	Replace distributor(s)		
Drain line from control	Appliance in regeneration	Wait until regeneration finishes or manually		
valve flows		advance regeneration to end		
continuously	Drain solenoid stuck in open position	Clean drain solenoid		
	Defective PCB	Replace PCB		
Drain line from brine	Excessive water in brine cabinet	Refer to problem "Excessive water in brine cabinet"		
cabinet overflow flows	Leak between control valve and pressure tank	Verify seal between control valve and pressure tank		
continuously				
Control valve fails to	Improper setting of refill cycle	Verify setting of refill cycle		
refill brine tank	Plugged refill flow control	Clean refill flow control		
	Refill solenoid not opening	Verify operation of refill solenoid		
Loss of resin	Lower and/or upper distributor damaged	Replace distributor(s)		
	Leak between riser tube and upper distributor	Verify that riser tube is seated correctly and is not		
		cracked		

TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION	
Improper brine draw	Low operating pressure	Check operating pressure; must be higher than 1,4	
		bar	
	Plugged injector and/or brine draw restrictor Clean injector and/or brine draw restrictor		
	Plugged injector filter	Clean injector filter	
	Restricted drain line	Verify drain line for kinks or restrictions	
	Restricted brine line	Verify brine line for kinks or restrictions	
	Leak in brine line	Verify brine line and connections for air leakage	
	No water in brine tank	Refer to problem "Control valve fails to refill brine	
		tank"	
	Fast rinse solenoid remains open	Verify operation of fast rinse solenoid	

DEFAULT CONFIGURATION PARAMETER SETTINGS

Model	IQ-CS-			
Resin	9	12	18	26
Units	Metric	Metric	Metric	Metric
MaintInt (mths)	24	24	24	24
Exchange capacity per liter resin (°f M^3/L) ^{(1) (2)}	3,5	4,5	5,1	5,1
Age correction (%)	1.0	1.0	1.0	1.0
Resin (liters)	9	12	18	26
Override (days)	7	7	7	7
Cycle 1: REFILL (sec) (2)	198	264	396	572
Cycle 2: BRINE PREPARATION (min)	15	15	15	15
Cycle 3: BACKWASH (min)	0	0	0	0
Cycle 4: BRINE DRAW/SLOW RINSE (min)	24	24	35	53
Cycle 5: FAST RINSE (min)	2	3	4	6
Regen	Dlyd/Immd	Dlyd/Immd	Dlyd/Immd	Dlyd/Immd
Regen @	2:00	2:00	2:00	2:00
Salt alarm	ON	ON	ON	ON
Alarm interval (Regens)	8	8	7	9
Rsrv	Variable	Variable	Variable	Variable
Auxilliary contact 2	Regen	Regen	Regen	Regen

When the Hardness Unit is changed in the Basic Settings, the Exchange capacity per liter resin is automatically converted to the new Hardness Unit.
 When the Exchange capacity per liter resin is changed, the refill cycle time needs to be adjusted accordingly.



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