SERVICE REQUIREMENTS

⚠️ **WARNING!** *Read and understand the contents of this manual before attempting to service infiniti UV Water Treatment System. Failure to follow the instructions in this manual could result in death, serious personal injury, or severe property damage. Only trained and qualified technicians should attempt to install, maintain, or service Waterlogic Equipment.*

1. Visually inspect all electrical and water connections for signs of wear or damage.

⚠️ **DANGER!** *HIGH VOLTAGE ELECTRICAL HAZARD. Unplug before inspection and service.*

2. *Waterlogic* recommends changing the UV Lamp every 12 months.

   NOTE: When replacing the UV Lamp Assembly***, the UV Lamp wiring harness must also be replaced.
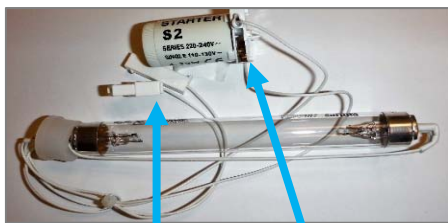
   NOTE: The Glow Starter shown to the right may appear blackened which is normal.

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* If the infiniti UV Water Treatment System has an S2 Starter, it is fully interchangeable with the UV Lamp with Glow Starter.

Switching from S2 Starter to existing Glow-Starter UV Lamp Assembly Instructions

UV Lamp Assembly with S2 Starter:
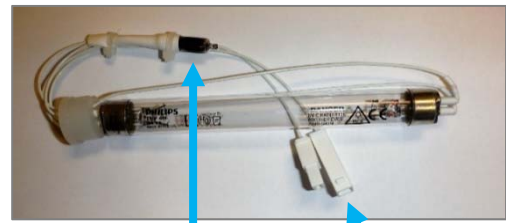Not available as a repair part

UV Lamp Connectors   S2 Starter

A. Disconnect Lamp Male and Female Connection Clips from Ballast.

B. Remove the S2 Starter by pulling upwards.

C. Remove UV Lamp.

UV Lamp Assembly with Glow Starter Part #'s:
8-Watt Bulb 10-2350 (CT-2083)

Glow Starter   UV Lamp Connectors

D. Install Glow Starter UV Lamp.

E. Connect UV Lamp Male and Female Connection Clips to Ballast.

⚠ **WARNING!** *ULTRAVIOLET RADIATION.* *Protect your skin and eyes against ultraviolet rays. Never look directly at an operating UV light. Disconnect before removing UV Lamp.*

⚠ **CAUTION!** *UV LAMPS ARE HAZARDOUS.* *Lamps are considered Hazardous Waste and must be disposed of accordingly.   Refer to Product MSDS sheet for details.*

3. Clean the quartz sleeve that surrounds the UV lamp with a non-abrasive cloth, descaling solution, or ultrasonic bath if needed when changing UV lamps.

⚠ **CAUTION!** *UV SYSTEM IS FRAGILE.* *Never handle the UV lamp or Quartz Sleeve with bare hands. UV Lamp and quartz sleeve must be free of oils and contaminants to ensure proper operation. Use a soft non-abrasive cloth to clean.*

4. Inspect the Quartz Sleeve O-ring for wear or damage and replace as necessary.

5. Ensure there is adequate (minimum of 2") clearance around the unit and clean the condenser grill and compressor fan to provide efficient cooling system operation.

6. Sanitize the Cold Tank per instructions in the pre-installation procedures.

7. Clean and sanitize external surfaces of the unit. Use soap and water or chemicals that are compatible with ABS plastic and will not damage or degrade the product surfaces.

8. Remove and clean the Faucet. Replace as needed.

⚠ **WARNING!** *SANITIZER MAY CONTAIN HAZARDOUS CHEMICALS.* *Use of proper personal protective equipment such as rubber gloves and eye protection is required.*

LG COMPRESSOR UPGRADE

*Parts List in this manual updated to reflect these changes.

> **New LG Compressor 120V R134A 1/8HP CSB035LJCM with external start/run capacitor.**

New LG Compressor with External Start/Run Capacitor
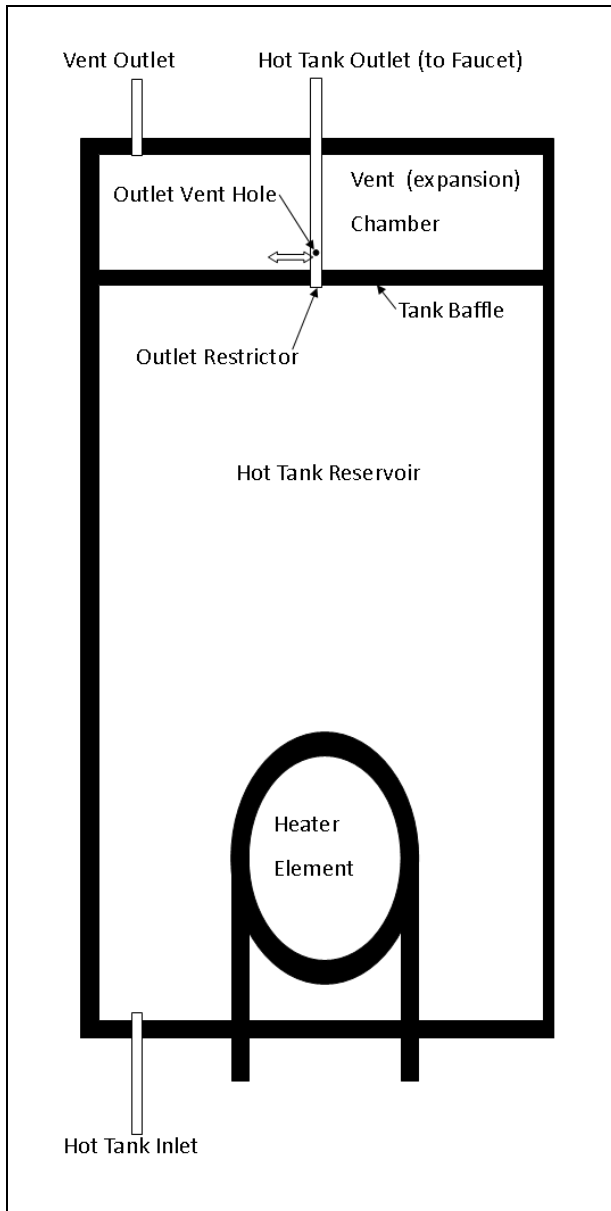

External Capacitor

New LG CSB035 LJCM Compressor

Repair/Replacement Parts for are not interchangeable with older/other compressors.

Older version of LG compressor is obsolete and no longer available.

> **New LG CSB035LJCM 120V R134A 1/8HP Compressor Repair Parts**

Part # CO-0017-L00-00   LG Compressor 120V CSB035LJCM-PTC Relay
Part # CO-0018-L00-00   LG Compressor 120V CSB035LJCM-Overload Protector
Part # CO-0019-L00-00   LG Compressor 120V CSB035LJCM-Capacitor

HOT TANK PRINCIPLES OF OPERATION

Vent Outlet   Hot Tank Outlet (to Faucet)

Outlet Vent Hole   Vent (expansion) Chamber

Tank Baffle

Outlet Restrictor

Hot Tank Reservoir

Heater Element

Hot Tank Inlet

The Vent Chamber allows for expansion of the water when it is heated.

The chambers are separated by a welded-in tank baffle.

Water always flows into the bottom of the tank and out the top to the faucet.

The Hot Tank Outlet Tube has a Restrictor in its base. This ensures the reservoir is always full by allowing more water in than out.

There is a small hole in the side of the tank outlet tube that allows air and water to pass into the vent chamber as it is heated.

Water in the vent chamber is suctioned back through the outlet tube vent hole when water is dispensed.

Expansion of water as it is heated in the reservoir will push the water out the faucet when the outlet tube vent hole becomes plugged with debris or scale.

The small Outlet Vent Hole is susceptible to scale build up and is a key indicator that descaling is required.

It is critical to descale the hot tank through the vent line and outlet line on a regular basis to prevent this problem.

Descaling through the inlet and/or outlet lines only will not clean the vent chamber and outlet vent hole properly.

RESETTING THE HOT TANK OVERLOAD OR HIGH LIMIT SAFETY

1.	Red Heater and Power Switch must be in the off position *O=OFF*
2.	Unplug the Power Cord from rear of unit.
3.	Locate the Hot Tank Overload with Manual Reset. Overload with Manual reset - 221°F (105°C) WLCP PN 12-1360 – Factory P/N HT-3012
4.	Depress the Red Hot Tank Overload Button
5.	Plug in the Power Cord.
6.	Make sure the hot and cold tanks are filled with water BEFORE turning on the Red Heater and Power Switch.
7.	Turn the Red Heater and Power Switch On *I = ON*
8.	Verify the *infiniti UV Water Treatment System* is fully operational before installing it at the customers' site.

HOT TANK DESCALING INSTRUCTIONS

The Hot Tank requires removal of mineral deposits (descaling) on a regular basis. Typically descaling should take place every 6 to 12 months to preserve the long-term health of your unit.

Use non-toxic cleaner such as ScaleKleen, DEZCAL, 20% Citric Acid Solution, or Undiluted Vinegar Solution to remove mineral deposits as directed by the manufacturer depending upon filtration and local water conditions.

Descaling is an important process that removes calcium deposits, or scale, that can build up inside a tank over time. Calcium and scale is non-toxic but left unattended will hinder your unit's performance.

⚠ **WARNING!** *PERSONAL PROTECTIVE EQUIPMENT REQUIRED. Always ensure proper ventilation and use rubber or nitrile gloves and eye protection when using chemicals. Refer to Material Safety Data Sheet for specific requirements of each product.*

⚠ **CAUTION!** *STAINLESS STEEL TANK DESCALING.*
The Hot Tank is made from stainless steel. Ensure descaling solution is compatible with stainless and always flush the unit completely. Dispose in an environmentally safe manner.

Materials Needed:
- Personal Protective Equipment. Rubber or Nitrile Safety Gloves and Protective Eyewear
- Phillips Screwdriver
- Temperature Gauge
- Water Pitcher or Container to collect water from the faucet
- 19 Liter (5 gallon) container or drain basin
- Citric Acid Based Cleaner
- ¼" Plastic Tubing, at least 4 feet in length, and assorted ¼" quick connect fittings
- Sanitizing Cartridge
- Food Coloring

1. Put descaler per directions and 3 drops of food coloring into the descaling cartridge.

2. Connect descaling cartridge to the inlet water supply and connect to Inlet Bulkhead Fitting on the back of the *infiniti UV Water Treatment System*. Turn on Water Supply.

3. Select Hot Water and depress the Main Dispensing Button on the Front Control Panel until descaling solution (colored water) comes out of the faucet. Container and drain basic will be required to catch water from the faucet.

4. Turn off water supply and remove sanitizing cartridge from inlet water supply. Reconnect water supply to inlet fitting.

5. Allow descaling solution to remain in the Hot Tank for 15 minutes (length of time may vary depending on water conditions).

6. Place a pitcher, catch basin or other container under the faucet of the *infiniti UV Water Treatment System*.

7. Flush the Hot Tank until water runs clear.

8. Once clear Water dispenses from the faucet the Hot Tank has been descaled.   Always ensure unit is performing to the customer's satisfaction.

⚠ **WARNING!** *HOT WATER HAZARD. Unit Produces Hot Water and Steam. Always use insulated and chemically compatible containers and let unit cool down before draining the hot tank to avoid injury.*

⚠ **CAUTION!** *MUST REPLACE HOT TANK 3-5 YEARS. The hot tank and its controls must be replaced a minimum of every three to five years to ensure efficient and dependable operation.*

⚠**WARNING!** *REINSTALL ALL PANELS AND COVERS. Always reinstall all panels, protective covers, and fasteners after servicing equipment. Failure to do so could result in severe personal injury and will void the certifications and warranty of the equipment.*

ADJUSTING COLD SET POINT

Cold Water Temperature – Factory Set Point is 5°C (41°F) and can be adjusted to 1.1°C to 12.2°C (34°F to 54°F).

The cold set point can be adjusted by accessing the Cold Thermostat Adjustment Screw under the Decal at the rear of the *Waterlogic infiniti UV Water Treatment System*.

Remove the red portion of the Cold Tank Temperature label to access the adjustment screw.

The factory set point is ~5°C (~41°F) and is indicated by the dot on sheet metal.

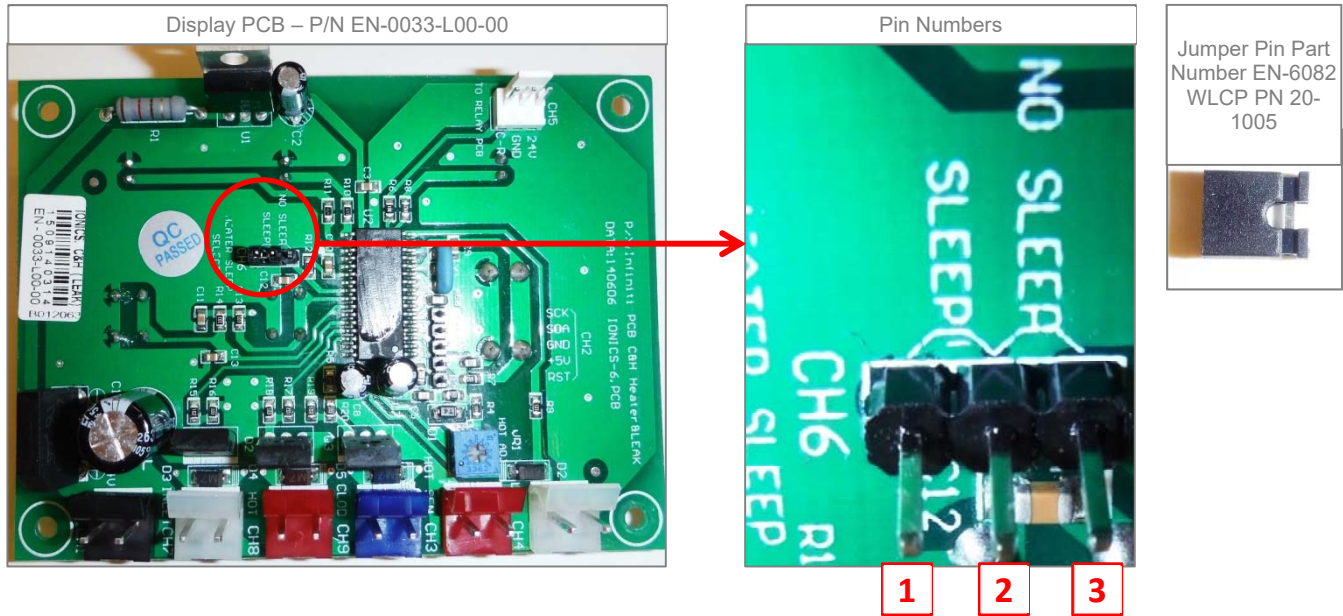Turning the adjustment screw clockwise to lower the set point temperature.

Do not adjust past the "Max Cold" position at 3:00 position to avoid freezing the cold tank.

Turning the adjustment screw counter-clockwise to raise the set point temperature.

PROGRAMMING "DISABLING ENERGY SAVING SLEEP MODE"

Infiniti UV Water Treatment System comes programmed to Energy Saver Mode. To turn off the Energy Saving Mode, move the Jumper on CH6 from Pins 1-2 to Pins 2-3

Display PCB – P/N EN-0033-L00-00	Pin Numbers	Jumper Pin Part Number EN-6082 WLCP PN 20-1005

Infiniti is programmed in Energy Saving Mode from the factory Jumper Pin Position – Pin 1 and 2	
Turn off Energy Saving Mode Jump Pin Position – Pin 2 and 3	

REPLACEMENT COMPONENTS (CONSUMABLES)

Component	WLCP Part No.	Frequency of Replacement
Hot Tank (Factory Set Point of 185°F - 85°C) 1.6 Liter (.42 Gallon) Capacity	10-4029	Every 3-5 years Depending on Usage Factory PN HT-3024
Quartz Sleeve for 4 Watt Lamp **Counter Top Only**	14-1041	Every 12 Months Factory PN CT-2026
UV Lamp Assembly 8 Watt	12-2350	Every 12 Months Factory PN CT-2083
GAC Filter - 10" Carbon Activated Inline Filter – *Filter Element PN FT-0038-WLT*	FT-0035	Every 6-months or as required. Local water conditions will determine proper filter type and maintenance schedule. FT-0035-IL-WLT
Carbon Block - 10" CBC 1 Micron Lead and Cyst Reduction Inline Filter – *Filter Element PN FT-0064-WLT*	FT-0063	Every 6-months or as required. Local water conditions will determine proper filter type and maintenance schedule. FT-0063-IL-WLT
Sediment Filter – 20 Micron *Filter Element PN FT-0055-WLT*	FT-0053	Every 6-months or as required. Local water conditions will determine proper filter type and maintenance schedule. FT-0053-IL-WLT

⚠️ **CAUTION!** **Use only Waterlogic Replacement parts that can be obtained from *Waterlogic* or an *Authorized Waterlogic Dealer*, failure to do so will void the Warranty.**

See Installation and Service Manual for additional information.

Hot Tank Service
Hot Tanks (with controls) must be replaced at least every 3-5 years depending on usage. Descaling hot tank may be required on a regular basis depending upon filtration and local water conditions. See Installation and Service Manual for further details.

Surface Cleaning
Clean on a regular basis with damp lint free cloth. Never use harsh chemicals (alcohol or acid based) or abrasive agents on any part of the product to avoid damage. A mild cleaner such as Simple Green or equivalent is recommended.

DISPOSAL

End of Life
At the **end of this product's life**, ensure that it is disposed of in an environmentally friendly manner which is fully compliant **with all Federal/State/Local Requirements and Guidelines**. Do not dispose of this appliance with normal household or business waste.

Waterlogic infiniti UV COUNTER TOP PARTS DRAWING AND PARTS LIST
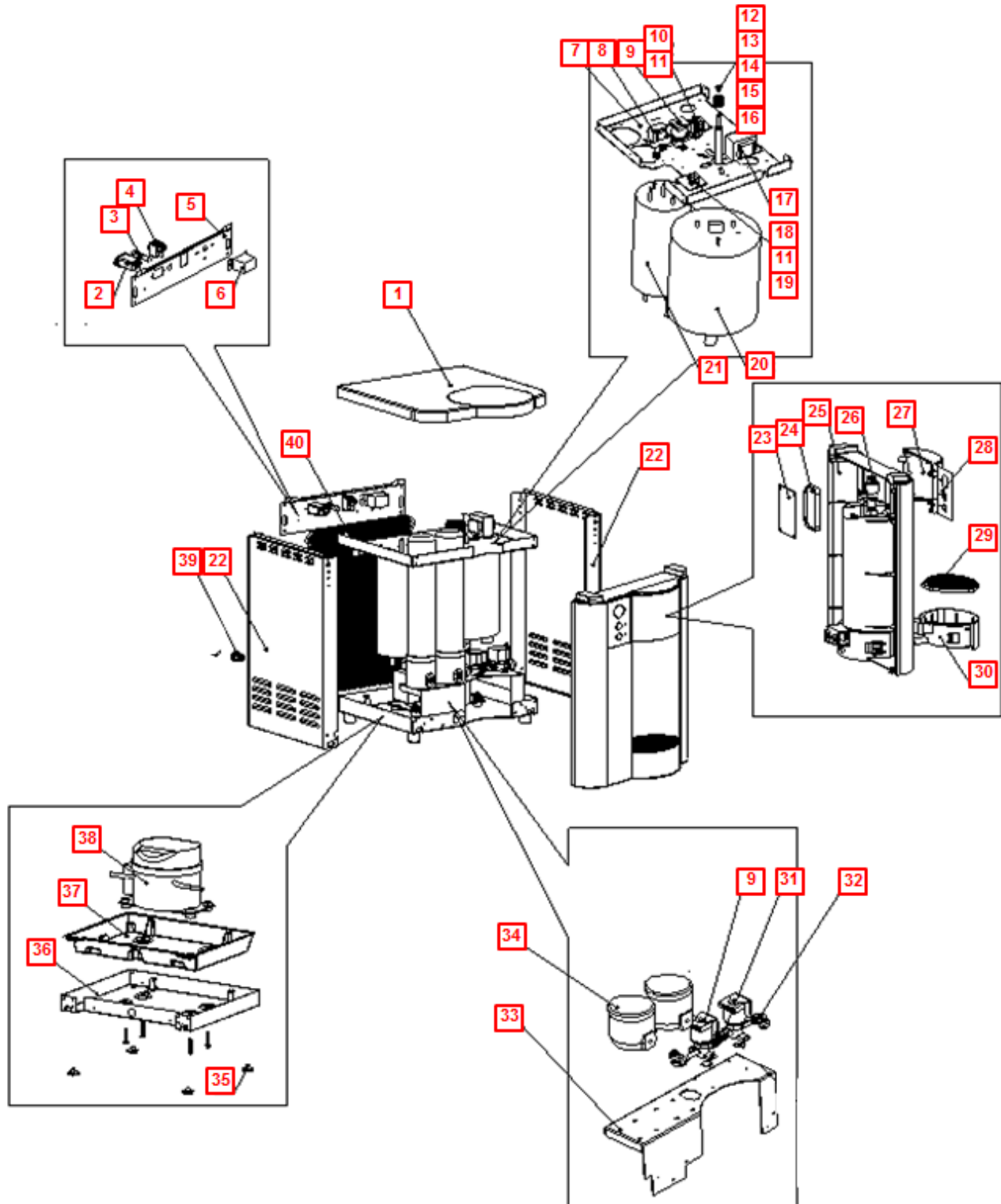
No	WLCP PN	Description	PN	
Not Shown	FT-0063	Carbon Block - 10" CBC 1-Micron Lead and Cyst Reduction Inline Filter **Optional** *Filter Element PN FT-0038-WLT*	FT-0063-IL-WLT	
Not Shown	FT-0035	GAC Filter - 10" Carbon Activated Inline Filter - **Optional** *Filter Element PN FT-0038-WLT*	FT-0035-IL-WLT	
1	NA	Top Cover – Charcoal	PL-0107-L00-CS	
1.1	ST-0049-L00-00	High Voltage Metal Cover (ETL-Certification) **Counter Top Only**	ST-0049-L00-00	
2	10-4013	Socket with ElectroMagnetic Interference Filter (EMI)	EL-5016	
3	10-3014	Fuse Holder and Fuse 120V / 15A with One Wire	EL-5053	
3.1	10-3013	Fuse 120V / 15A	EL-5010	
4	10-3008	Red Compressor and Heater Switch	EL-5004	
5	NA	Back Panel – Charcoal **Counter Top Only**	ST-8238	
6	12-1101	Cold Tank Thermostat	CT-2016	
7	NA	Upper Shelf **Counter Top Only**	ST-8234	
8	10-3010	UV Lamp Ballast 110V/60Hz	EL-5006-A CN	

9	12-1500	Solenoid Valve DC24V 1000mm	PU-4016	
9.1	CU-0001	Solenoid Cushion	CU-0001	
10	NA	Relay PCB	EN-0010-L00-00	
11	10-3017	Plastic PCB Support	EN-6059	
12	10-8085	UV Lamp Fixing Rubber (Silicon) (Supplied with CT-2060 UV Lamp 4W)	CT-2001-B	
13	12-1210	UV Lamp Retaining Threaded Nut	PL-1128	
14	10-2500	Black O-Ring for Quartz Sleeve	CT-2006	
15	CT-2084	UV Lamp 4W Assembly with Glow Starter **Counter Top Only**	12-2350	
16	14-1051	Quartz Sleeve for 4W Lamp **Counter Top Only**	CT-2026	
17	12-3117	Power Transformer 120V	EL-5003-A	
18	12-8510	3 Minute Timer PCB	AK-0008-A	
19	NA	Plasti0c PCB Supports (One side)	EN-6059-A	

20	12-3110	2L UV Cold Tank **Counter Top Only**	CT-2060	
20.1	LP-0326	Cold Thermostat Cover Label	LP-0326-L00-00	
21	10-4029	Hot Tank 120V/500W - 1.6L with Thermistor	HT-3024	
21.1	12-1360	Overload with Manual reset - 221°F (105°C)	HT-3012	
22	NA	Side Panel – Charcoal **Counter Top Only**	ST-8236	
23	NA	Display PCB	EN-0033-L00-00	
23.1	20-1005	Jumper Pin	EN-6082	
24	NA	Dispensing Silicon Buttons	PL-0109-L00-00	
25	11-2085	Drip Tray Insert Panel Charcoal	PL-1157	
26	10-2700	Faucet Assembly - Hot and Cold	PL-1011	
26.1	10-2600	Natural Faucet O-Ring – Silicon White	CT-2007	

26.2	10-3048	Faucet Nipple – Blue with Screen	PL-1013	
27	NA	Top Insert Hatch Panel - Silver	PL-0127-L00-00-INF	
28	NA	Display Button Label	LP-7087	
29	NA	Drip Tray Grill - Silver	PL-1163-L00-SI	
30	NA	Drip Tray - Silver - No Logo	PL-1162-L00-SI	
31	Purchase from John Guest	JG Equal Tee Connector 1/4" (PI0208S)	PU-4011-A	
32	Purchase from John Guest	JG Equal Elbow Connector 1/4" (PI0308S)	PU-4008-A	
33	NA	Filter Bracket **Counter Top Only**	ST-8239	
34	NA	Omnipure Non-Valved Head (Q NON VALVED HEAD JJ)	PU-4075	
35	12-3150	Unit Rubber Feet **Counter Top Only**	PL-1251-CN	
36	NA	Lower Shelf **Counter Top Only**	ST-8235	
37	NA	Leak Tray **Counter Top Only**	PL-0116-L00-00	

37.1	12-3180	Leak Containment Tray Clip (sensor 0.5mm)	ST-8207-CN	
37.2	NA	Leak Sensor Wire	EL-5076-KR	

Verify compressor in machine before ordering parts as the Compressor P/N CO-0020-L00-00 and 10-2200 (CO-0001A) and related parts are not interchangeable.

CO-0020-L00-00 Compressor

38A.1	CO-0020-L00-00	LG Compressor 120V R134A CSB035LJCM	CO-0020-L00-00	
38.2	CO-0019-L00-00	Compressor Capacitor	CO-0019-L00-00	
38A.3	ST-0216-L00-00	Capacitor Bracket	ST-0216-L00-00	
38A.4	CO-0017-L00-00	PTC Relay	CO-0017-L00-00	
38A.5	CO-0018-L00-00	Overload Protector	CO-0018-L00-00	

CO-9001-A / 10-2200 Compressor

38B.1	10-2200	Compressor (R134a 1/8HP) 120V/60Hz	CO-9001-A	
38B.2	10-3003	Compressor Starter Relay	CO-9016	
38B.3	10-5018	Compressor Overload	CO-9015	
38.1	12-1001	Filter Dryer	CO-9008	
39	10-3067	Bulkhead Union ¼" x ¼" John Guest P/N PI1208S	PU-4028-A	
40	12-3100	Wire Condenser **Counter Top Only**	CO-9031	

Not Shown	10-3007	Power Cord 120V – 1840 mm	EL-5001-B	
Not Shown	Purchase from John Guest	JG Reducing Elbow Connector 5/16" * 1/4" (PI211008S)	PU-4007-A	
Not Shown	10-3062	JG LLDPE Tube - Blue 8mm John Guest P/N PE-0806-100M-B	PU-4014-A	
Not Shown	Purchase from John Guest	JG LLD PE Tube - Blue O.D.1/4"John Guest P/N PE-08-BI-1000F-B	PU-4031-A	
Not Shown	10-7040	Silicon Tube 5/16" for hot water	PU-4064	
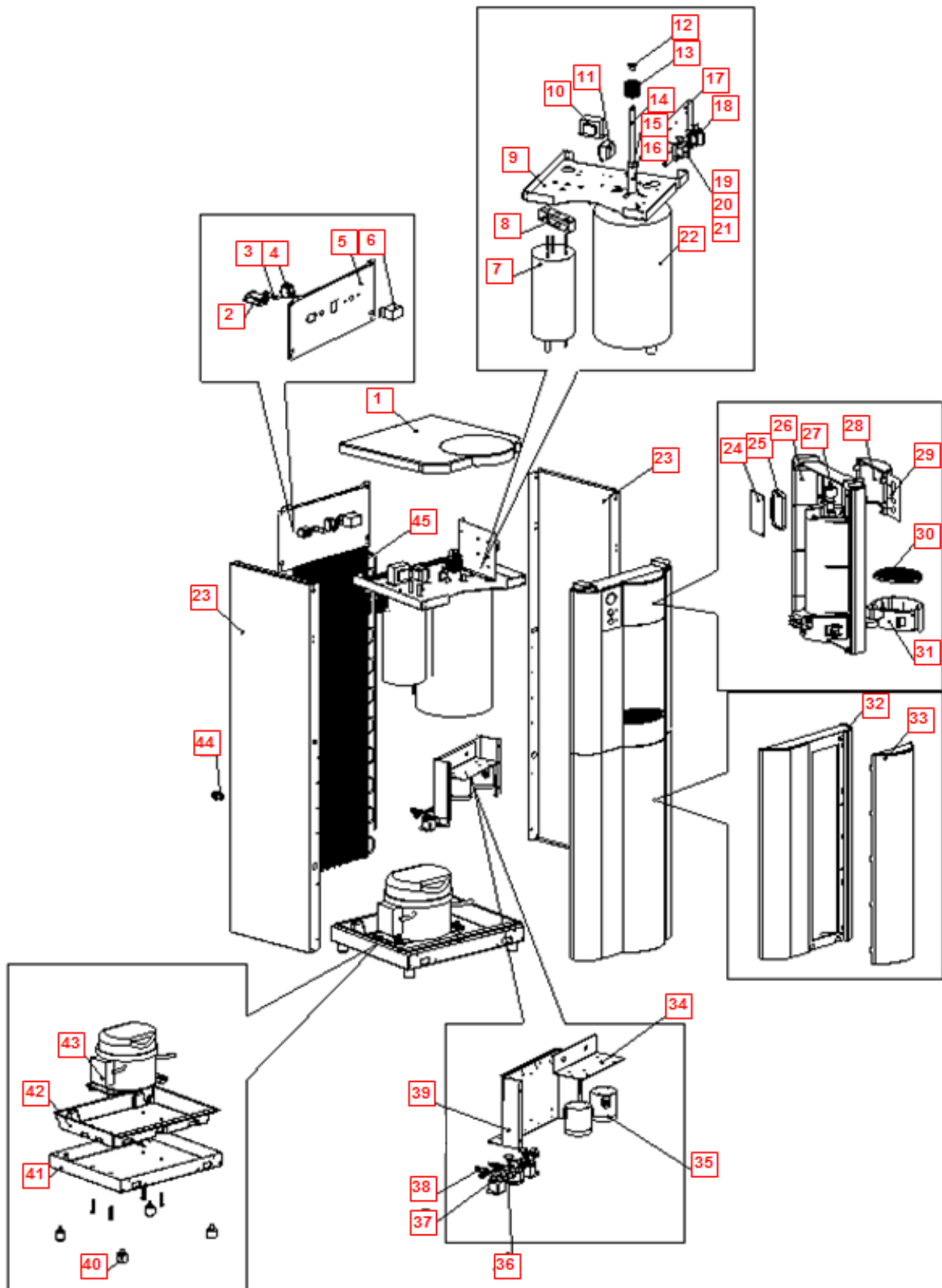
No	Part No	Description	WLCP PN	
Not Shown	FT-0035	GAC Filter - 10" Carbon Activated Inline Filter - *Optional* *Filter Element PN FT-0038-WLT*	FT-0035-IL-WLT	
Not Shown	FT-0063	Carbon Block - 10" CBC 1-Micron Lead and Cyst Reduction Inline Filter *Optional* *Filter Element PN FT-0038-WLT*	FT-0063-IL-WLT	
Not Shown	FT-0053	Sediment Filter - 10" Sediment 20 Micron Inline Filter *Optional* *Filter Element PN FT-0055-WLT*	FT-0053-IL-WLT	
1	NA	Top Cover - Charcoal	PL-0107-L00-CS	
2	10-4013	Socket with ElectroMagnetic Interference Filter (EMI)	EL-5016	
3	10-3014	Fuse Holder and Fuse 120V / 15A with One Wire	EL-5053	
3.1	10-3013	Fuse 120V / 15A	EL-5010	
4	10-3008	Red Compressor and Heater Switch	EL-5004	
5	NA	Back Panel - Charcoal	ST-8154	
6	12-1101	Cold Tank Thermostat	CT-2016	
6.1	LP-0326	Cold Thermostat Cover Label	LP-0326-L00-00	
7	10-4029	Hot Tank 1.6L 120V/500W with Thermistor	HT-3024	

7.1	12-1360	Overload with Manual reset - 105°C / 221°F	HT-3012	
8	12-8006	Hot Tank Fixing Bracket 400mm	ST-8120	
9	12-8003	Upper Shelf	ST-8136-R2	
10	12-3117	Power Transformer 120V	EL-5003-A	
11	10-3010	UV Lamp Ballast 110V/60Hz	EL-5006-A CN	
12	10-8085	UV Lamp Fixing Rubber (Silicon)	CT-2001-B	
13	12-1210	UV Lamp Retaining Threaded Nut	PL-1128	
14	10-2350	UV Lamp 8W Assembly with Glow Starter	CT-2083	
15	10-2500	Black O-Ring for Quartz Sleeve	CT-2006	
16	10-1400	Quartz Sleeve for 8W Lamp	CT-2002	
17	NA	Relay PCB	EN-0010-L00-00	
18	12-5245	Main PCB Fixing Bracket	ST-8165-CN	
19	12-8510	3 Minutes Timer PCB.	AK-0008-A	

20	NA	Plastic PCB Supports (One side)	EN-6059-A	
21	10-3017	Plastic PCB Support	EN-6059	
22	NA	4L Cold Tank	CT-2050	
23	11-2020	Side Panel – Charcoal	ST-8153	
24	NA	Display PCB	EN-0033-L00-00	
24.1	20-1005	Jumper Pin	EN-6082	
25	NA	Dispensing Silicon Buttons	PL-0109-L00-00	
26	11-2085	Drip Tray Insert Panel Charcoal	PL-1157	
27	10-2700	Faucet Assembly	PL-1011	
27.1	10-2600	Natural Faucet O-Ring – Silicon White	CT-2007	
27.2	10-3048	Faucet Nipple – Blue with Screen	PL-1013	

28	NA	Top Insert Hatch Panel - Silver	PL-0127-L00-00-INF	
29	NA	Display Button Label	LP-7087	
30	NA	Drip Tray Grill - Silver	PL-1163-L00-SI	
31	NA	Drip Tray - Silver - No Logo	PL-1162-L00-SI	
32	11-2015	Bottom Front Panel	PL-1159	
33	11-2030	Front Bottom Insert Panel Silver	PL-1160	
34	NA	Filter Mounting Bracket	ST-8248	
35	NA	Omnipure Non-Valved Head (Q NON VALVED HEAD JJ)	PU-4075	
36	Purchase from John Guest	JG Equal Elbow Connector 1/4" (PI0308S)	PU-4008-A	
37	12-1500	Solenoid Valve DC24V 1000mm	PU-4016	
37.1	CU-0001	Solenoid Cushion	CU-0001	

|				
38	Purchase from John Guest	JG Equal Tee Connector 1/4" (PI0208S)	PU-4011-A	
39	12-8005	Filter Bracket	ST-8138	
39.1	NA	Rubber O-Ring for Filter Bracket	PL-1208CN	
40	10-3083	Unit Rubber Feet	ST-8167-CN	
41	12-8004	Bottom Tray	ST-8137	
42	NA	Freestanding Leak Tray	PL-1294-A	
42.1	NA	Leak Detector Sensor Wire	EL-5074-A	
42.2	12-3180	Leak Containment Tray Clip (sensor 0.5mm)	ST-8207-CN	

Verify compressor in machine before ordering parts as the Compressor P/N CO-0020-L00-00 and 10-2200 (CO-0001A) and related parts are not interchangeable.

CO-0020-L00-00 Compressor

43A.1	CO-0020-L00-00	LG Compressor 120V R134A CSB035LJCM	CO-0020-L00-00	
43A.2	CO-0019-L00-00	Compressor Capacitor	CO-0019-L00-00	
43A.3	ST-0216-L00-00	Capacitor Bracket	ST-0216-L00-00	
43A.4	CO-0017-L00-00	PTC Relay	CO-0017-L00-00	
43A.5	CO-0018-L00-00	Overload Protector	CO-0018-L00-00	

CO-9001-A / 10-2200 Compressor

43B.1	10-2200	Compressor (R134a 1/8HP) 120V/60Hz	CO-9001-A	
43B.2	10-3003	Compressor Starter Relay	CO-9016	
43B.3	10-5018	Compressor Overload	CO-9015	
43.1	12-1001	Filter Dryer	CO-9008	
44	10-3067	Bulkhead Union ¼" x ¼" John Guest P/N PI1208S	PU-4028-A	
45	12-8102	Wire Condenser	CO-9027	
Not Shown	Purchase from John Guest	JG Reducing Elbow Connector 5/16" * 1/4" (PI211008S)	PU-4007-A	
Not Shown	10-3062	JG LLDPE Tube - Blue 8mm John Guest P/N PE-0806-100M-B	PU-4014-A	
Not Shown	Purchase from John Guest	JG LLD PE Tube - Blue O.D.1/4"John Guest P/N PE-08-BI-1000F-B	PU-4031-A	
Not Shown	10-7040	Silicon Tube 5/16" for Hot Water	PU-4064	
Not Shown	11-2005	Power Cord 120V – 1825 mm	EL-5001-A	

Waterlogic *Infiniti UV* WATER FLOW DIAGRAM
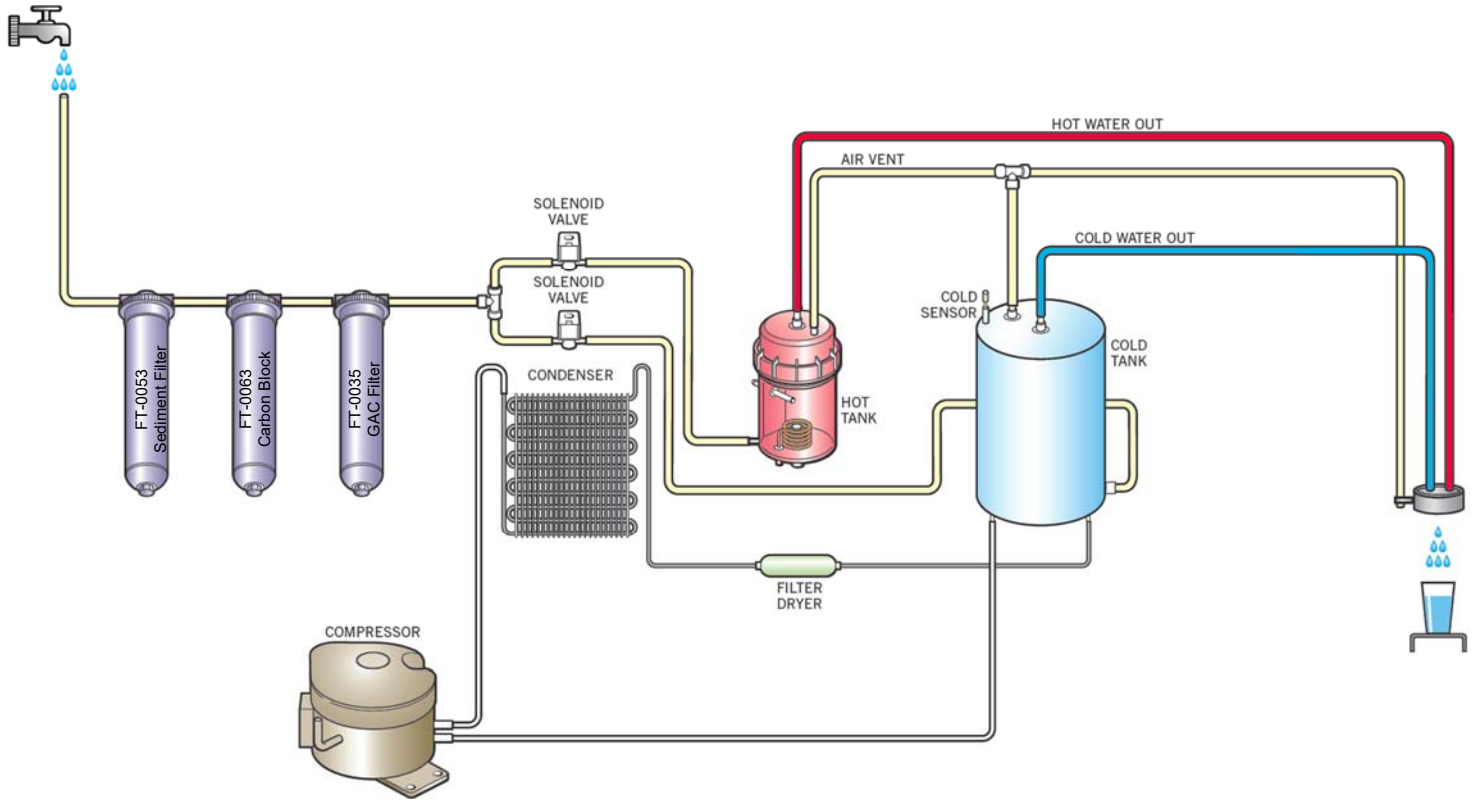
infiniti UV ELECTRICAL DIAGRAM

⚠️**DANGER!** *HIGH VOLTAGE ELECTRICAL HAZARD. PCB (Printed Circuit Board) contains High Voltage. Only trained and qualified technicians should attempt live testing.*